



Meeting of the Village of Buffalo Grove Planning and Zoning Commission

**Regular Meeting
October 6, 2021 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. Consider a Variation for a Proposed Sunroom Addition, Which Would Encroach into the Rear Setback 61 Somerset Dr. (Trustee Pike) (Staff Contact: Nicole Woods)
2. Consider a Variation for an Existing Driveway to Exceed Max Front Yard Coverage at 811 Summer Court (Trustee Johnson) (Staff Contact: Nicole Woods)
3. Consider Approval for (1) an Amendment to Planned Development Ordinance 93-45, as Amended; (2) a Final Plat of Subdivision; (3) a Rezoning to a B3 Planned Business District; (4) Approval of a Vacation; (5) a Preliminary Plan; and (6) with Zoning and Sign Variations at 201 & 241 N Milwaukee Rd (Trustee Pike) (Staff Contact: Nicole Woods)

III. Regular Meeting

A. Other Matters for Discussion

B. Approval of Minutes

1. Planning and Zoning Commission - Regular Meeting - Sep 15, 2021 7:30 PM

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.

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 : Consider a Variation for a Proposed Sunroom Addition, Which Would Encroach into the Rear Setback 61 Somerset Dr.

Recommendation of Action

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

The Petitioner is seeking to construct a sunroom in the rear yard of their property at 61 Somerset Dr. The Petitioner is requesting for a variation to the Zoning Code, Section 17.40 to allow the proposed sunroom to encroach into rear yard setback.

ATTACHMENTS:

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

Trustee Liaison
Pike

Staff Contact
Nicole Woods, Community Development

Wednesday, October 6, 2021

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

MEETING DATE:	October 6, 2021
SUBJECT PROPERTY LOCATION:	61 Somerset Dr
PETITIONER:	Harold Harris
PREPARED BY:	Rati Akash, Village Planner
REQUEST:	A variation for the proposed sunroom addition which encroaches into the rear yard setback of the subject property.
EXSITING LAND USE AND ZONING:	The property is improved with a single-family home currently zoned R6-A.
COMPREHENSIVE PLAN:	The approved Village Comprehensive Plan calls for this property and the immediate neighborhood to be single-family detached.

PROJECT BACKGROUND

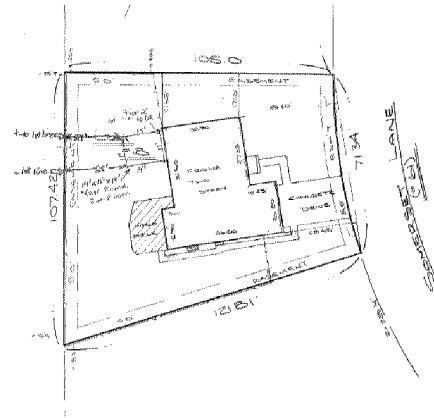
The Petitioner is requesting a variation for the purpose of constructing the proposed sunroom addition which encroaches into the rear yard setback of the subject property. The R6-A Zoning Code requires a 30' rear yard setback, and hence a variation is required to install the sunroom addition.

PLANNING & ZONING ANALYSIS

- The proposed sunroom addition will be located in the rear yard of the subject property.
- The subject property has an existing deck in the rear yard; the proposed sunroom will be a separate addition north of the deck.
- This proposed sunroom addition measures 14' in length and 11' in width, with is a total area of 154 square feet.
- This expanded sunroom addition will encroach 6' into the required 30' rear yard setback.
- The proposed sunroom addition will be located approximately 25' from the rear property line.



- The Planning and Zoning Commission is allowed to grant sunroom additions which encroach up to 33% into the depth of the required rear yard depth of the setback. In this case, the proposed sunroom rear yard encroachment of 6' constitutes 20% of the required 30' rear yard setback and meets the requirement.



Variations requested

A rear yard variation from Section 17.40.020 from the Buffalo Grove Zoning Code to allow the encroachment of a sunroom addition.

The following is a recently approved setback variations for rear yard setback variations:

Address	Rear Yard Setback	Sunroom addition encroachment	Percentage encroachment
67 W Fabish	30'	5'-4"	18%
425 Mayfair	40'	13'-4"	33%
860 Holly Stone Lane	40'	10'	33%
958 Parker Lane	40'	5'-6"	17%
2324 Acorn Place	40'	12'	30%

DEPARTMENTAL REVIEWS

Village Department	Comments
Engineering	The Village Engineer has reviewed the proposed sunroom addition, and does not have any engineering concerns with the location of the proposed sunroom.

SURROUNDING PROPERTY OWNERS

Pursuant to Village Code, the contiguous property owners 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 call inquiring about the proposed rear yard setback variation, however no objections were expressed.

STANDARDS

The Planning & Zoning Commission is authorized to grant variations of the Zoning Code based on the following criteria:

1. The plight of the owner is due to unique circumstances;
2. The proposed variation will not alter the essential character of the neighborhood;
3. There are practical difficulties or particular hardships in carrying out the strict letter of this Chapter which difficulties or hardships have not been created by the person presently having an interest in the property; and,

4. The proposed variation will not be detrimental to the public health safety and welfare.

The petitioner has provided a written response to the standards for a variation which are included in this packet.

STAFF RECOMMENDATION

Village staff recommends approval for the purpose of constructing a sunroom addition that would encroach 6' into the rear yard setback:

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

ACTION REQUESTED

The Planning & Zoning Commission (PZC) shall open the public hearing and take public testimony concerning the variation. The PZC shall make a final decision on whether or not to approve the variation.

Suggested PZC Motion

PZC moves to grant a variation to Section 17.40 of the Buffalo Grove Zoning Code to allow for a proposed sunroom addition in the rear yard which encroaches 6' into the required rear yard setback on the subject property. The sunroom shall be constructed in accordance with the documents and plans submitted as part of this petition.

August 18, 2021

Village of Buffalo Grove
Department of Building and Zoning
Fifty Raupp Blvd
Buffalo Grove, IL 60089

RE: Addition

Planning & Zoning Commission:

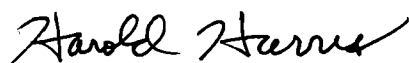
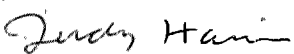
Since the beginning of the Coronavirus Pandemic, we have been sheltering at home. We spend a considerable amount of time in the house and plan to be for a while longer in hopes of staying healthy. I have seen new projects built throughout the village. These include screened porches as well as three- and four-season sunrooms. This would be a good way to bring the outdoors inside my home and add space to relax.

I would like to start construction on a year-round sunroom but with tight backyard space a variance would be required to receive further consideration for permit approval.

Response to Standards

1. Our plight or predicament is shared by most homeowners in that due to the pandemic our activities are greatly curtailed and opportunities to get out of the house are limited. People are making long put off improvements to their homes and backyards to improve their quality of life.
2. Our project will fit right in with the essential character of the neighborhood as this is a common and popular addition to its homes. It will enhance the architectural appeal and make the property more desirable. It will be constructed with material that match the existing construction in like kind and quality.
3. The practical difficulty is that the location at the rear of the house where the addition can fit is the exterior wall of the dining room. The addition would encroach roughly 6' into the required 30' rear yard.
4. The proposed variation will be designed by an architect licensed only for the purpose of protecting the public health, safety, and welfare.

Sincerely,

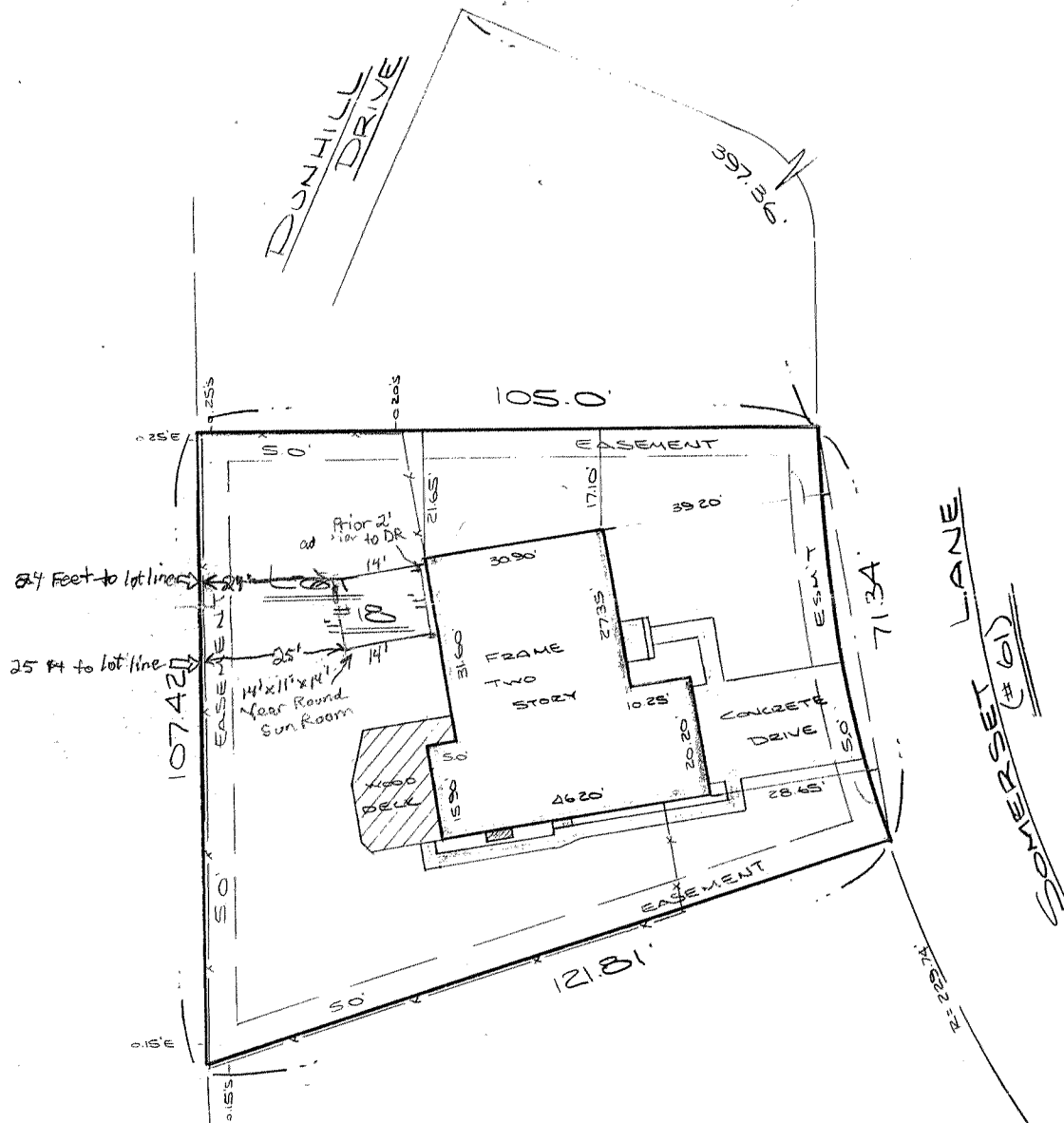


Harold and Judy Harris

Attachment: Plan Set (Consider a Variation for a Sunroom Addition, Which Encroaches into the Rear Setback 61 Somerset Dr.)

PLAT OF SURVEY

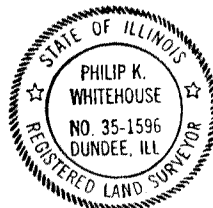
OF PROPERTY DESCRIBED AS:

LOT 18 IN BLOCK 8 IN HIGHLAND POINT UNIT NO. 4, BEING A SUBDIVISION OF PART OF THE NORTH HALF OF SECTION 33, TOWNSHIP 43 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED APRIL 6, 1978 AS DOCUMENT 1908341, IN LAKE COUNTY, ILLINOIS.



DUNDEE ENGINEERING
310 River Street
Dundee, Ill. 60118

Dated: 04/11/84
Scale: 1" = 20.0'
Order: DELANTY & LAMBERIS
Owner: BROCK
Atlas: 431133B
Job #: 49227M



STATE OF ILLINOIS ss
COUNTY OF KANE

I hereby certify that I have surveyed the above described property and that the plat hereon drawn correctly represents said survey.

Philip Whitehouse

Illinois land surveyor # 35-1596

8931

Judy and Harold Harris, 61 Somerset Ln, BG

Response to Standards

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

Your Evidentiary Statement:

Our plight or predicament is one shared by many homeowners. Due to the coronavirus pandemic our activities have been greatly curtailed and opportunities to safely spend time out of the house are limited. Homeowners are adding comfortable living space to improve their quality of life and are making long delayed improvements to their homes and backyards.

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

Your Evidentiary Statement:

Our project will fit the essential character of the neighborhood as this is a popular and sought-after addition to many area homes. It will enhance the architectural appeal of our home and make the property more desirable. It will be constructed with materials that match our existing construction in like kind and quality.

3. There are practical difficulties or particular hardships in carrying out the strict letter of this Chapter which difficulties or hardships have not been created by the person presently having an interest in the property; and,

Your Evidentiary Statement:

The practical difficulty is that the location at the rear of our home where the addition can fit, sharing the outside wall of the dining room, would encroach roughly 6' into the required 30' rear yard. This is due to our tight backyard space which is much wider than it is deep.

4. The proposed variation will not be detrimental to the public health safety and welfare.

Your Evidentiary Statement:

Granting the variance will be in harmony with the spirit and purpose of the ordinance. It will not be injurious to other property within the area. It will be screened by a five-foot board on board cedar fence and a row of Arborvitae that already reach seven to ten feet tall.

Attachment: Plan Set (Consider a Variation for a Sunroom Addition, Which

2.1.b







Action Item : Consider a Variation for an Existing Driveway to Exceed Max Front Yard Coverage at 811 Summer Court

Recommendation of Action

Village Staff recommends denial of the variation.

The petitioner, Ornis Mala, recently expanded his driveway at 811 Summer Court without applying for a permit. After an inspection was conducted on site, it was found that the existing driveway expansion does not comply with the drainage pattern and exceeds the maximum 40% front yard coverage of approved impervious surfaces.

ATTACHMENTS:

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

Trustee Liaison
Johnson

Staff Contact
Nicole Woods, Community Development

Wednesday, October 6, 2021

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

MEETING DATE:	October 6, 2021
SUBJECT PROPERTY LOCATION:	811 Summer Ct
PETITIONER:	Ornis Mala
PREPARED BY:	Rati Akash, Village Planner
REQUEST:	A variation to allow for an existing driveway to exceed the 40% of front yard coverage maximum.
EXSITING LAND USE AND ZONING:	The property is improved with a single-family home currently zoned R3.
COMPREHENSIVE PLAN:	The approved Village Comprehensive Plan calls for this property and the immediate neighborhood to be single family detached.

PROJECT BACKGROUND

The petitioner, Ornis Mala recently expanded their driveway on the south without applying for a permit, and after receiving a stop work order notice from the Village prior to when the concrete was poured.

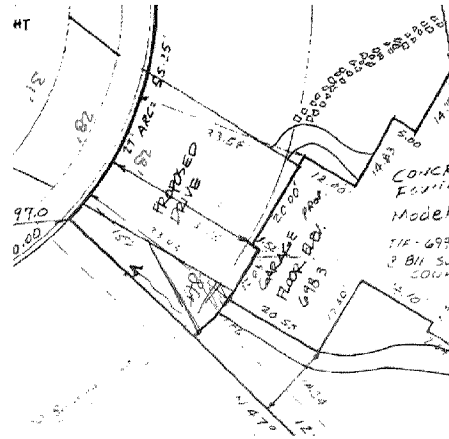
The Petitioner applied for a permit and a variance after the driveway expansion work was completed. The existing driveway expansion exceeds the required 40% front yard coverage. As a result, a variation is required.

After an inspection was conducted on site, it was found that the existing driveway expansion does not comply with the drainage pattern. Since then, the Petitioner has worked with the Village Staff and agreed to remove a portion of the driveway on the easement and repour it to be in compliance with the existing drainage pattern in the easement.



History of Events

1. On June 14, 2021, a stop work order notice was given to the Petitioner at 811 Summer Ct after a receiving a complaint. When this stop work order was delivered, the concrete was not poured on the existing driveway expansion.
2. The Petitioner came to the Village and applied for a permit and a variance after the driveway was poured and the driveway expansion was completed.
3. After review, it was found that the existing driveway exceeds the required 40% front yard coverage.
4. After an inspection was conducted, it was found the driveway was not in compliance with the existing drainage pattern of the site.
5. This item is being continued from the September 15, 2021 Public Hearing date.
6. The Petitioner has agreed to re-pour part of the concrete, to address the engineering issues.



- The existing driveway expansion has been extended on the south portion of driveway. Pursuant to the Zoning Ordinance, the maximum permitted front yard coverage must be 40%, the property is allowed up to approximately 804 square feet of impervious coverage for their driveway and walkways.
- The existing driveway expansion on the south of the driveway measures 60 square feet in total.
- The total impervious surface in the front yard measures 45.12%. The total impervious surface exceeds the permissible 40% front yard coverage by 5.12%.
- The approximate area of the driveway on the easement, which requires the grade changes is 25 square feet. It must be noted that even if this portion of the driveway is removed, a variance is still required as it still will exceed the 40%.
- In the petitioner's response to standards, the petitioner claims that the unique circumstances for this variation is that the fence door opening requires ground support.
- Upon reviewing this proposal, staff found that the fence 6' tall fence on the subject property, which also is not a permitted fence. Building and zoning staff will review this fence and other improvements and modifications made to this subject property without a permit.



Variation Requested

A front yard coverage variation from **Section 17.36** from the Buffalo Grove Zoning Code states that the maximum of 40% of the required front yard area may be covered by approved paved and impervious surfaces including driveways and walkways.

DEPARTMENTAL REVIEWS

Village Department	Comments
Engineering	The Engineer has reviewed the existing driveway expansion and the attached memo that show concerns with grading in the easement. It must be noted that the Petitioner has agreed to re-pour the concrete to meet the grading requirements.

SURROUNDING PROPERTY OWNERS

Pursuant to Village Code, the contiguous property owners 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, two calls were received, however no objections were raised.

STANDARDS

The Planning & Zoning Commission is authorized to grant variations to the regulations of the Zoning Ordinance based upon findings of fact which are made based upon evidence presented at the hearing that:

1. The plight of the owner is due to unique circumstances;
2. The proposed variation will not alter the essential character of the neighborhood;
3. There are practical difficulties or particular hardships in carrying out the strict letter of this Chapter which difficulties or hardships have not been created by the person presently having an interest in the property; and,
4. The proposed variation will not be detrimental to the public health safety and welfare.

The petitioner has provided a response to the standards.

STAFF RECOMMENDATION

Village Staff recommends denial of the variation to allow the existing driveway expansion that would exceed the required front yard coverage by 5.12% as staff feels the petitioner does not adequately meet the variation standards.

ACTION REQUESTED

The Planning & Zoning Commission (PZC) shall reopen the public hearing and take public testimony concerning the request. The PZC shall make a recommendation to the Village Board.

Suggested PZC Motion

PZC moves to grant denial of the variation which would allow existing driveway expansion that would exceed the required front yard coverage by 5.12% based on failure to meet the variation standards.

From: Ornis Mala

Address: 811 Summer Ct, Buffalo Grove IL 60089

To: Planning & Zoning Commission, Village of Buffalo Grove

To Whom It May Concern:

We are trying to add an additional section to the sidewalk, to the right-hand side of the house (looking from the front). The measurements are displayed in the attached file. The reason for this addition is because we have fixed the fence doors three times since we purchased the house in 2018, because the doors hang loose after we open them, and the bottom does not touch the concrete no longer.

Therefore, we had the company that maintains our yard prepare the drawing for us.

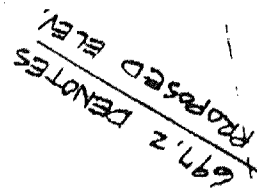
If you have any other questions, please let us know!

Sincerely,

Ornis Mala

Attachment: Plan Set (Consider a Variation for an Existing Driveway to Exceed Max Front Yard Coverage at 811 Summer Court)

697.2 DENOTES
PROPOSED ELEV.



SUMMER
COURT

PROPOSED /
STREET LIGHT

PROPOSED
FIRE HYDRANT

AC 691

5.96.5

697.0

PURPOSE:

APPROVED

ZONING REVIEW

DATE _____

BY:

ENGINEERING REVIEW

DATE _____

BY:



Attachment: Plan 84. (Consider a Variation for an Existing Driveway to Exceed Max Front Yard Coverage at 011 Summer Court)



Attachment: Plan Set (Consider a Variation for an Existing Driveway to Exposed Max Front Yard Coverage at 611 Summer Court)

Response to Standards

The plight of the owner is due to unique circumstances;

Your Evidentiary Statement:

Correct. It is because the fence doors open hanging each time. Because of the weight of the door, not being able to land on concrete, or hard surface, it causes damages and necessity to change doors or fix them constantly.

The proposed variation will not alter the essential character of the neighborhood;

Your Evidentiary Statement:

Not by any means. I have actually spoken to the neighbours, but it's not visible in any way, and does not change the landscape, look and feel and it is absolutely not noticeable.

There are practical difficulties or particular hardships in carrying out the strict letter of this Chapter which difficulties or hardships have not been created by the person presently having an interest in the property; and,

Your Evidentiary Statement:

No, issues have not been created by a person.

The proposed variation will not be detrimental to the public health safety and welfare.

Your Evidentiary Statement:

No it will not have any effect on the public health and safety and welfare.

VILLAGE OF BUFFALO GROVE



MEMORANDUM

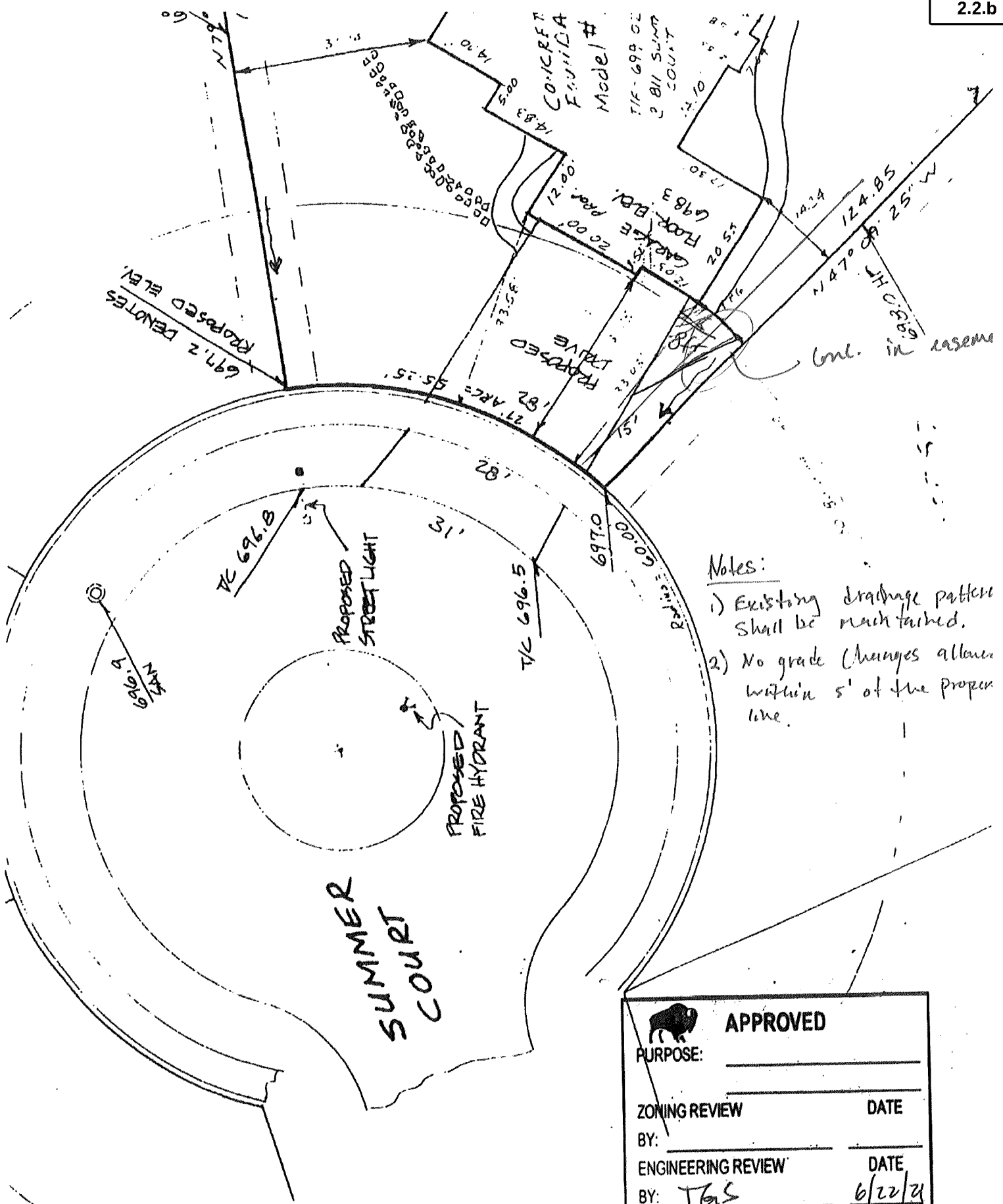
DATE: September 7, 2021
TO: Rati Akash, Village Planner
FROM: Ted Sianis, Civil Engineer II
SUBJECT: 811 Summer Court – Driveway Extension/Sidewalk

The Engineering Department received a request to inspect/verify grading for a driveway extension adjacent to the driveway serving 811 Summer Court. This work was performed without a permit and permitted post construction. Upon inspection, the newly poured concrete does not comply with Village code. The driveway extension has slightly raised the grade through a portion of the property where a drainage easement exists. There are three scenarios available to rectify this issue. The homeowner at 811 Summer Court may:

1. Remove the portion of concrete driveway extension within the easement and regrade adjacent to the remaining concrete;
2. Remove the new concrete in its entirety; or
3. Replace the concrete within the easement, lowering the new concrete to meet the previously existing grade.

Enclosed with this memo are:

1. The plat that was submitted with the permit post construction which shows the Engineering Department comments for the work, and a circled area where the new concrete does not meet Village Code.
2. A picture illustrating the grade change.
3. Aerial pictures illustrating additional unpermitted fence replacement.

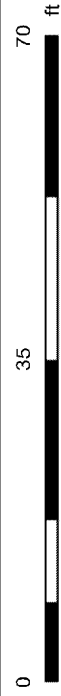






Legend

Print Date: 9/7/2021



Notes

Disclaimer: The GIS Consortium and MGP Inc. are not liable for any use, misuse, modification or disclosure of any map provided under applicable law. This map is for general information purposes only. Although the information is believed to be generally accurate, errors may exist and the user should independently confirm for accuracy. The map does not constitute a regulatory determination and is not a base for engineering design. A Registered Land Surveyor should be consulted to determine precise location boundaries on the ground.



Action Item : Consider Approval for (1) an Amendment to Planned Development Ordinance 93-45, as Amended; (2) a Final Plat of Subdivision; (3) a Rezoning to a B3 Planned Business District; (4) Approval of a Vacation; (5) a Preliminary Plan; and (6) with Zoning and Sign Variations at 201 & 241 N Milwaukee Rd

Recommendation of Action

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

Christian Kalischefski and Frank Petrich with WT Group on behalf of Speedway at 201 N Milwaukee is seeking to acquire and demolish the existing 2-story office building to the north (251 N Milwaukee) and construct a new larger gas station on the entire site. The proposed Speedway expansion will include the construction of a new auto fuel canopy, commercial fueling lanes, and a convenience store. The petitioner has requested approval for (1) an amendment to Planned Development Ordinance 93-45, as amended; (2) a final Plat of Subdivision; (3) a rezoning to a B3 Planned Business District; (4) approval of a vacation of a portion of the alley depicted on the plat of vacation; (5) a Preliminary Plan; and (6) with zoning and sign variations at 201 N Milwaukee Rd and 241 N Milwaukee Rd.

ATTACHMENTS:

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

Trustee Liaison
Pike

Staff Contact
Nicole Woods, Community Development

Wednesday, October 6, 2021

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

MEETING DATE:	October 6, 2021
SUBJECT PROPERTY LOCATION:	201 N Milwaukee Rd and 241 N Milwaukee Rd
PETITIONER:	Christian Kalischefski and Frank Petrich with WT Group on behalf of Speedway
PREPARED BY:	Rati Akash, Village Planner
REQUEST:	Petition to the Village of Buffalo Grove for approval of an expansion to Speedway which includes the construction of a new auto fuel canopy, commercial fueling lanes, and a convenience store. The petitioner has requested the following: (1) an amendment to Planned Development Ordinance 93-45, as amended; (2) a final Plat of Subdivision; (3) a rezoning to a B3 Planned Business District; (4) approval of a vacation of a portion of the alley depicted on the plat of vacation; (5) a Preliminary Plan; and (6) with zoning and sign variations.
EXSITING LAND USE AND ZONING:	201 N Milwaukee Rd, Zoned B3 Planned Business District 241 N Milwaukee Rd, Zoned RE Residential District
COMPREHENSIVE PLAN:	The approved Village Comprehensive Plan calls for this property to be Industrial.

PROJECT BACKGROUND

Christian Kalischefski and Frank Petrich with WT Group on behalf of Speedway at 201 N Milwaukee is seeking to acquire and demolish the existing 2-story office building to the north (251 N Milwaukee) and construct a new larger gas station on the entire site. Their goal is to develop a site that provides better flow for both passenger (auto) and commercial vehicles.

The proposed Speedway expansion will include the construction of a new auto fuel canopy, commercial fueling lanes, and a



convenience store. The petitioner has requested the following:

- (1) An amendment to Planned Development Ordinance 93-45;
- (2) A final Plat of Subdivision;
- (3) A rezoning to a B3 Planned Business District;
- (4) An approval of a vacation of a portion of the alley depicted on the plat of vacation;
- (5) A Preliminary Plan;
- (6) With zoning and sign variations listed part of this petition:

Zoning Variations

- a. Encroachment into the required 25' landscape setback along the Public Right of Way Riverwalk Rd and Milwaukee Ave.
- b. Allow for an accessory structure (canopy) to be present in-between building and right-of-way along Riverwalk Dr and Milwaukee Ave.

Sign Variations

- a. Allow for two additional wall signs on the auto fuel canopy that exceeds the required width of a wall sign and a wall sign's location not facing the right-of-way.
- b. Allow for a wall sign on the commercial fuel canopy, which is not facing the right-of-way.

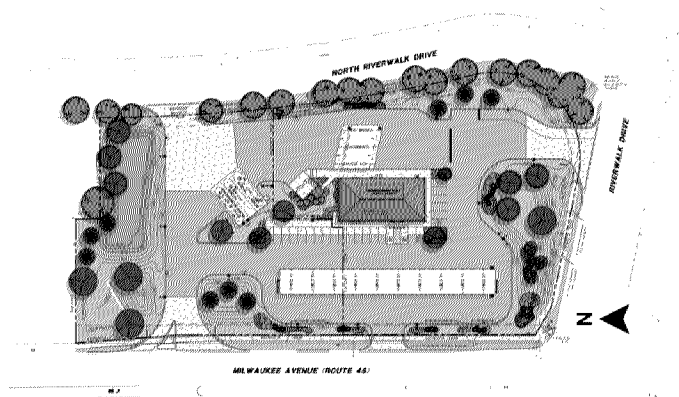
PLANNING & ZONING ANALYSIS

Workshop History

This concept plan for the Speedway Expansion had originally been heard before the Village Board on June 21, 2020 and was referred to the Planning & Zoning Commission (PZC). Subsequent to the Board meeting, the PZC held one workshop on July 21, 2021 to review the concept plans. Since the workshops were conducted, Speedway has worked to address the PZC comments, and provided detailed plans requested for signage, landscaping as well as the traffic analysis report.

Site Plan

- The existing Speedway at 201 Milwaukee is seeking to acquire and demolish the office building located on the parcel to north at 241 Milwaukee Road.
- The proposed site comprising of both the parcels measures approximately 3.47 acres.
- The subject property will include a new expanded convenience, with an auto fuel canopy on the west of the convenience store and the commercial fuel canopy east of convenience store.
- The auto fuel canopy along Milwaukee Ave has 20 fuel dispensers.
- The auto fuel canopy measures approximately 6,132 square feet in area and measures 20'-4" in height.
- The commercial fuel canopy along N Riverwalk Drive comprises of a two-lane access with 3 dispenser pumps in total utilized by trucks.
- The commercial fuel canopy measures approximately 1,750 square feet in area and measures 20'-4" in height.



- The convenience store measures 4,608 square feet and measures 23'-6" in height.
- Speedway auto and commercial fuel canopy and the convenience store will be operated 24 hours all seven days of the week, and will employ in total 15-20 employees through various shifts during the day and night.

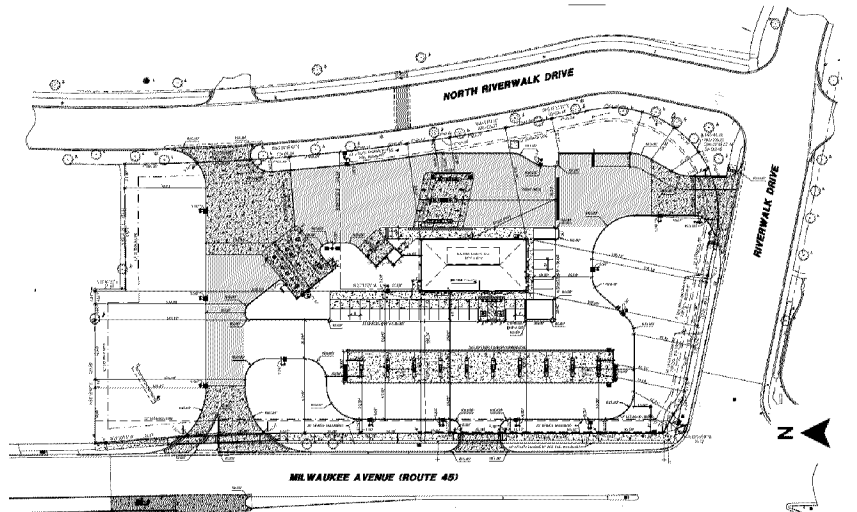
Video Gaming

State Statute

Pursuant to State Statute, should Speedway proceed with the concept, they would qualify as a "Truck Stop" since they are greater than 3-acres and sell more than 10,000 gallons of diesel per month. Speedway will not be providing truck stop amenities such as showers, laundry, a sit down restaurant, etc. The acquisition of the parcel to the north is what would allow for them to meet the land size requirements. One key difference from bars/restaurants with video gaming is that state classified truck stops with gaming are permitted to operate machines 24 hours/day. Furthermore, they are not required to sell liquor for on-site consumption. Lastly, they may be permitted up to ten video gaming machines versus the maximum six for a bar/restaurant. Staff has reviewed our Gaming regulations and found that the site would be permitted to operate the gaming machines, subject to the approval of the Village Board as part of their zoning petition.

Parking & Traffic

- The site consists of four separate curb cuts to allow access to the proposed site along Milwaukee Ave, Riverwalk Dr and N Riverwalk Dr.
- Along Milwaukee Ave, two curb cuts are being proposed. The one to the south will allow for right-in right-out auto circulation movement. The second curb cut to the North will allow for full access movement for both auto and truck circulation to the site.
- Along Riverwalk Dr, a curb cut is being proposed to allow for auto entering and exiting the site and trucks to exit the site.
- Along N Riverwalk Dr, a curb cut is being proposed to allow for full access movement for both auto and truck circulation to the site.
- The petitioner has provided a traffic analysis from KLOA who have indicated that the existing traffic facilities can accommodate the development.
- The project will include 23 parking spaces found south and west of the convenience store, and the auto fuel canopy provides for 20 parking spaces while fueling. The Speedway development meets the Code for parking.



Plat of Vacation

- As part of the request, Speedway is seeking that the Village vacate a parcel part of 241 Milwaukee Rd property. It appears that when the office building was constructed in the County, a portion of the old alley was never vacated.
- Staff supports the request to vacate the property.
- The petitioner has also provided a plat of vacation for this subject property.

Plat of Subdivision

- The existing site consists of 2 parcels for the subject property at 201 Milwaukee Road and 241 Milwaukee Road.
- As part of their request, the petitioner is proposing a final plat of subdivision to consolidate two parcels into one lot and retain the 201 Milwaukee Rd Address.
- As a condition of approval, the final plat shall be revised in a manner acceptable to the Village.

Stormwater

- Engineering has reviewed the stormwater report and has requested further clarification on how the stormwater in the south portion is connected to detention basin in the northeast corner of the site; responses and updates to the stormwater report will be submitted in their final engineering plans to the Village.
- The preliminary engineering plans as proposed have been reviewed by the Village Engineer. As a condition of approval, final engineering will have to be submitted in a manner acceptable to the Village.

Landscaping

- The Petitioner has provided a landscape plan showing new and existing landscaping throughout the development.
- The Zoning Ordinance requires a minimum 25' landscape setback along Milwaukee Avenue and Riverwalk Drive. The Petitioner's plans show a 12' landscape maintained along Milwaukee Ave and N Riverwalk Dr, thereby a variation is required.
- The Petitioner has included that the reduction in landscaping is accounted for having the auto and commercial fuel canopy between convenience store building and the public right of way.
- The Village Forester has reviewed the landscape plan and does not have any concerns with the proposed and existing landscaping.

Building Elevations

- The proposed 23'-6" tall convenience store building is centrally located on the Speedway site and is comprised of brick masonry.
- The auto and commercial fuel canopies are painted the Speedway conventional gray and red and measure 20'-4" in height.

Signage**Freestanding Ground Sign**

- Speedway is retaining the original Speedway Ground Sign in the same location which was approved as part of the Ordinance No. 2013-70.

Building Sign

- The proposed sign on the convenience store meets Code.

Auto fuel (wall) canopy

- Speedway has proposed 4 canopy signs on the auto fuel canopy.
- The two logo signs on the east and west elevations of the auto fuel canopy meet Code.
- The two 'Speedway' signs on the north and south elevations of the auto fuel canopy require a variation for the width of the sign. In addition the sign on the north elevation requires a variation for location as it does not face a right-of-way.
- The 'Speedway' sign measures 15' -9" in width; and exceeds the maximum allowable width of the sign by 6' -6".

Commercial fuel (wall) canopy

- Speedway is proposing two logo signs on the commercial fuel canopy.
- The two logo sign on the south elevation of the commercial fuel canopy requires a variation for the location as it does not face a right-of-way.
- The two logo signs meet all sign requirements for height, area and width of the sign.

Billboard Sign

- There is a large commercial billboard sign located on the northern portion of the property, which Staff is recommending removal.

VARIATIONS

Zoning Ordinance

The following is a summary of the requested Zoning Ordinance variations reflected in the plan:

A Variation to Section 17.32.020 of the Zoning Ordinance to allow an accessory structure in the front and side yards as depicted on the Preliminary Plan

Per the Zoning Ordinance, any accessory structure (canopy) cannot be located closer to the front lot line than the principal building. Since the auto and commercial fuel canopies are located between the main building (convenience store) and the roads (Milwaukee Ave and N Riverwalk Drive), the variation is required. Staff notes that this is a common variation for all gas station requests and finds that the variation is warranted.

A Variation to Section 17.36.040 of the Zoning Ordinance to reduce the landscape setback of 25' to 12' along N Riverwalk Dr and Milwaukee Ave

Per the Zoning Ordinance, a landscape setback of 25' has to be maintained along public right of ways which in this case is Milwaukee Ave and N Riverwalk Dr. Speedway has a 12' landscape setback along N Riverwalk Dr and Milwaukee Ave. For comparative purposes, the existing Speedway parking lot is setback approximately 10' from the Riverwalk Drive at its closest point and approximately 6' from Milwaukee. Furthermore, the existing office building's parking lot is up to the lot line.

Signage

Auto Fuel Canopy Sign

- a) *A Variation to Chapter 14.16 of the Sign Code for the location of the canopy sign; and,*
- b) *A Variation to Chapter 14.16 of the Sign Code to exceed the maximum allowable width of the sign.*

Commercial Fuel Canopy

- a) *A Variation to Chapter 14.16 of the Sign Code for the location of the canopy sign; and,*

DEPARTMENTAL REVIEWS

Village Department	Comments
Engineering	The Engineering Department has reviewed the engineering plans and has no specific comments or concerns regarding the engineering plans.
Landscaping	The Village Forester has reviewed the landscape plan and has no concerns with the proposed landscaping.
Fire Department	The Fire Department has reviewed the proposed plans and does not have any objections.

SURROUNDING PROPERTY OWNERS

Pursuant to Village Code, the contiguous property owners 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 report, the Village received three calls of which two of the callers had no issues. In addition, the property owner of the subject property at 301 N Riverwalk Dr has appointed Teska Associates who have provided comments based on the drawings submitted which is attached as part of this packet. Speedway has provided a response to each of the listed comments also attached to this packet.

STANDARDS

Variations

The following are the applicable standards for a variations requested:

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.

Petitioner has provided a response to the Standards

Signs

The Planning & Zoning Commission is authorized to make a recommendation to the Village Board for a variation to the Sign Code 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
 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.

Petitioner has provided a response to the Signage Standards

STAFF RECOMMENDATION

Staff recommends approval of an amendment to Planned Development Ordinance 93-45; A final Plat of Subdivision; A rezoning to a B3 Planned Business District; An approval of a vacation of a portion of the alley depicted on the plat of vacation; A Preliminary Plan; with zoning and sign variations listed part of this petition

1. The proposed development shall be developed in substantial conformance to the plans attached as part of the petition.
2. A final plat of subdivision shall be revised in a manner acceptable to the Village as required.
3. A final plat of vacation shall be revised in a manner acceptable to the Village as required.
4. Final Engineering plans and stormwater report shall be revised in a manner acceptable to the Village as required.
5. Any directional or incidental sign added to the sign package provided shall be reviewed administratively by Staff.
6. The existing billboard sign on the northern portion of the site prior to the issuance of a site development permit.

ACTION REQUESTED

The Planning & Zoning Commission (PZC) shall open the public hearing and take public testimony concerning the request. The PZC shall make a recommendation to the Village Board.

Suggested PZC Motion

PZC moves to grant approval of an amendment to Planned Development Ordinance 93-45; A final Plat of Subdivision; A rezoning to a B3 Planned Business District; An approval of a vacation of a portion of the alley depicted on the plat of vacation; A Preliminary Plan; with zoning and sign variations listed part of this petition. The proposed development shall be developed in substantial conformance to the plans attached as part of the petition. A final plat of subdivision shall be revised in a manner acceptable to the Village as required. Final Engineering plans and stormwater report shall be revised in a manner acceptable to the Village as required. Any directional or incidental sign added to the sign package provided shall be reviewed administratively by Staff. Billboard sign on the northern portion of the site shall be removed once Speedway begins improvements on the site.

SPEEDWAY #7649

201 N Milwaukee Ave, Buffalo Grove, IL 60089

Project Narrative

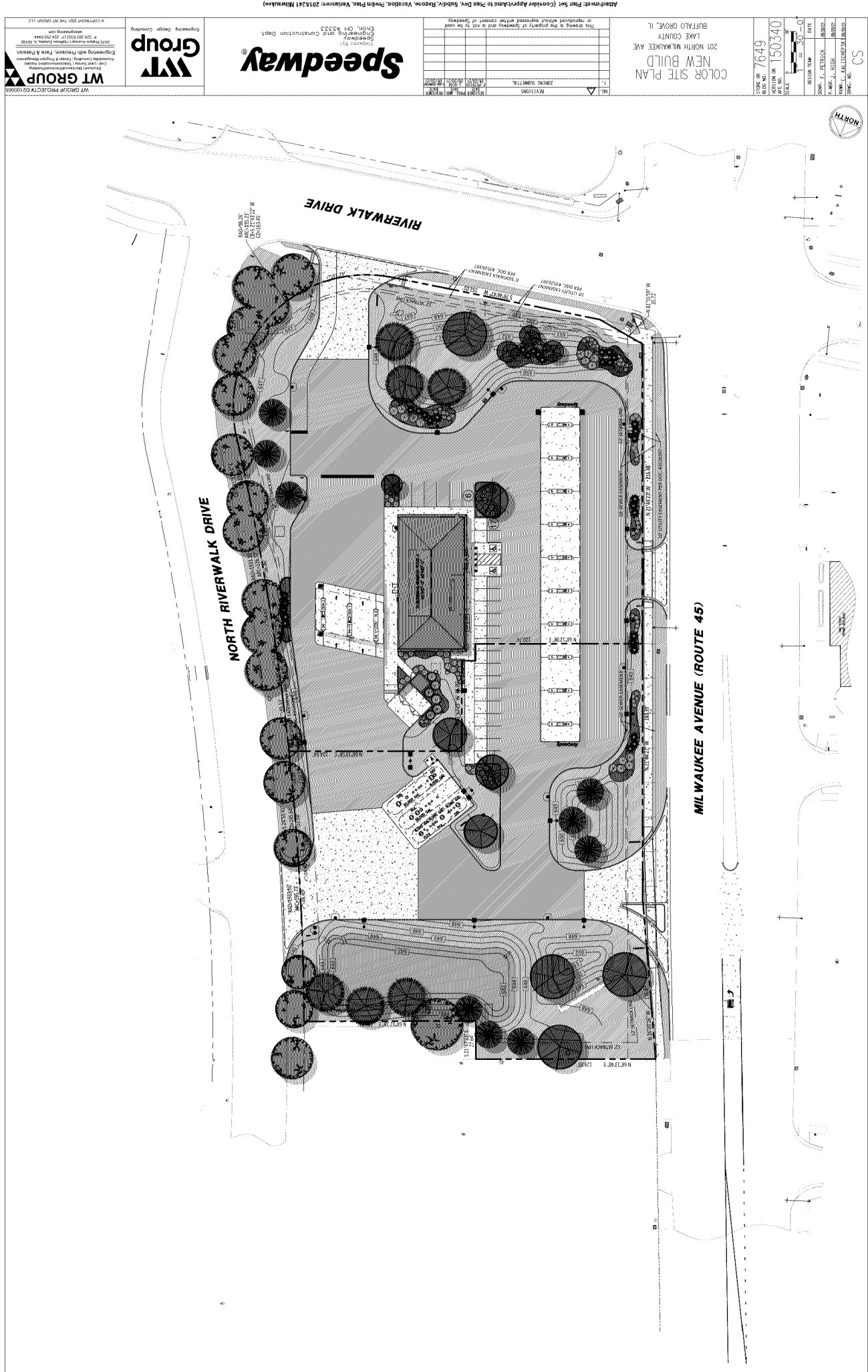
August 13, 2021

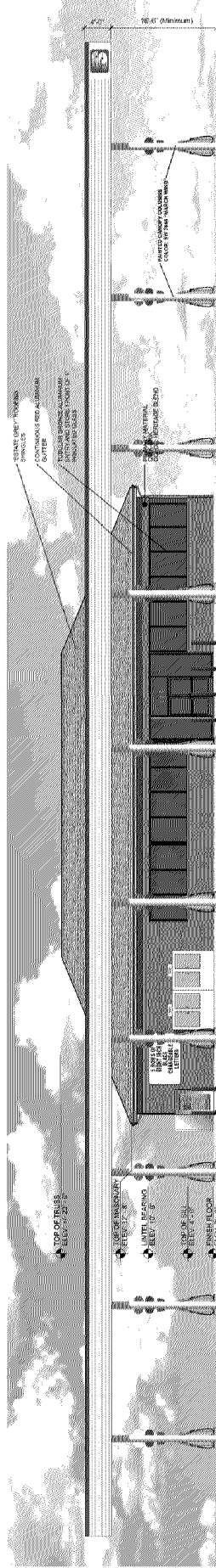
The existing Speedway site is located at 201 N Milwaukee Ave in the Village of Buffalo Grove, IL. The proposed development will include purchasing +/- 1.526 acres of land to the north that is currently office buildings. Speedway will combine that property with their existing +/- 1.955 acres to allow them to redevelop the site for a total of +/- 3.481 acres. The onsite improvements will include the 4,600 sqft Speedway Retail store with an increased footprint, updated amenities, fresh food, a 10 dispenser Starter Gate Auto Canopy, 2 Commercial Fueling Lanes (CFL) Canopy, one goal post ID sign and other typical site improvements. Speedway is proposing to have video gaming at this location. The minimum lot area required for video gaming at a truck stop location is 3 acres. Even though Speedway would be classified as a truck stop, Speedway will not be providing in store truck stop amenities such as showers, laundry, a sit down restaurant, etc. Speedway is known for hiring and promoting from local communities. This facility would provide 15-20 employment opportunities for the local individuals. Speedway makes a commitment to the local community not only through employment but also through charitable giving and even with the materials used to build the facility. The Retail store is a masonry bearing building with the latest in consumer driven technology.

The current Speedway is zoned B-3 (Planned Business Center District). The northern parcel is currently zoned R-E (One Family Dwelling District). The purchased parcel will be rezoned to B-3 (Planned Business Center District) and then combined to the current Speedway parcel. The underlying ordinances will then have to be amended for the Plat of Subdivision.

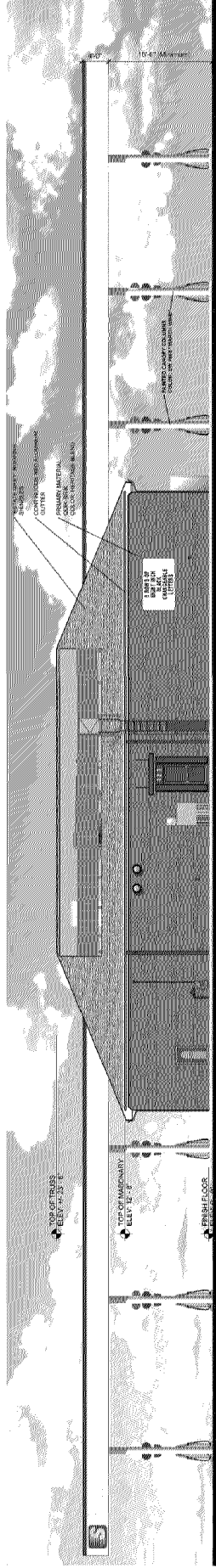
The site would consist of four separate curb cuts to allow access to the proposed site. Along Milwaukee Ave, two curb cuts are being proposed. First one will allow for right in right out auto circulation movement. The second curb cut will allow for full access movement for both auto and truck circulation to the site. Along Riverwalk Dr, a curb cut is being proposed to allow for auto entering and exiting the site and trucks to exit the site. Along N Riverwalk Dr, a curb cut is being proposed to allow for full access movement for both auto and truck circulation to the site.

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

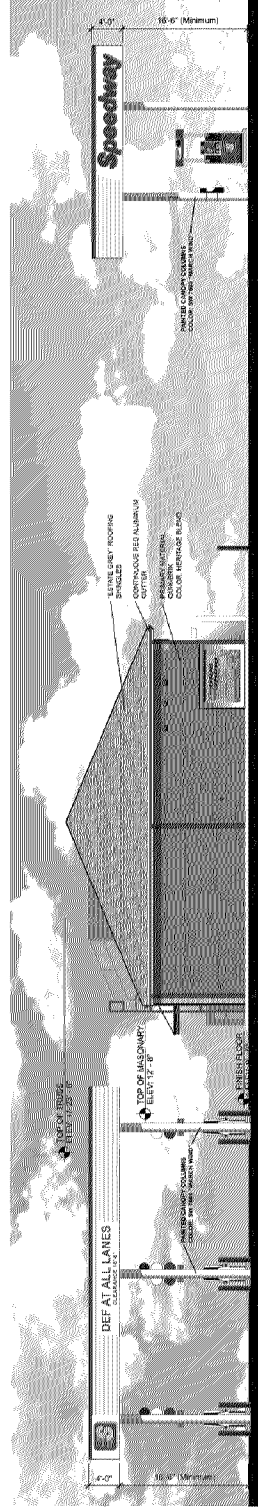




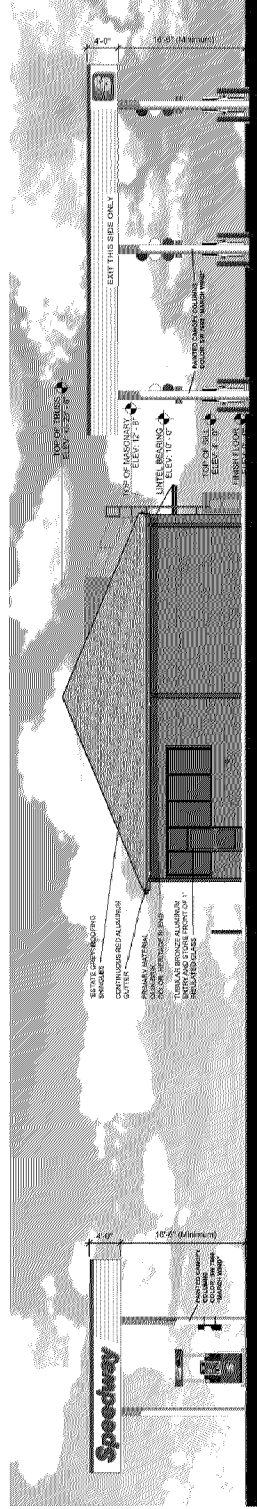
WEST ELEVATION



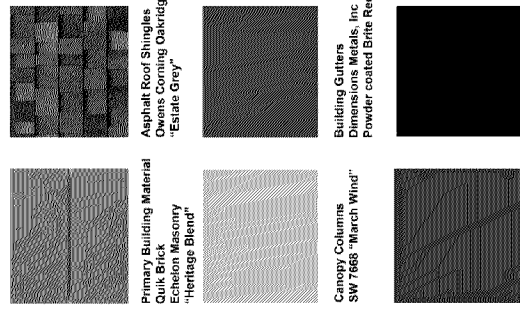
EAST ELEVATION



NORTH ELEVATION



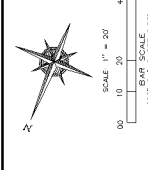
SOUTH ELEVATION



**Downspout
Dimensional Metals, Inc
"Dark Bronze"**

Downspout
Dimensional Metals, Inc.

- PLANS: 402-111
- 13-33-402-070
- 13-33-402-071
- 13-33-402-072
- 13-33-402-073
- 13-33-402-074
- 13-33-402-075
- 13-33-402-076
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- 13-33-402-086
- 13-33-402-087
- 13-33-402-088



BASES OF BEARINGS IS TRUE NORTH BASED ON
ILLINOIS STATE PLATING SYSTEM, ILLINOIS
EAST 1201 ZONE.

PLAT OF VACATION

THE NORTHEASTERN 1/4 OF 20, 2007 MOVED ALLEY 1/4 SECTION 35, TOWNSHIP 43 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED JULY 10, 1992 AS DOCUMENT 283352, IN BOOK "9" OF PLATS, PAGE 92, IN LAKE COUNTY, ILLINOIS.

NORTH RIVERWALK DRIVE

RAD=1933.10'
ARC=422.30'
CB=S 28°17'09" E
CD=421.46'

LOT 1
PROPOSED SPEEDWAY BUFFALO GROVE SUBDIVISION
3.276 ACRES (142,697 SQ. FT.)

LOT 1
EMRO SUBDIVISION
REG. 470796 AS DOC. 300367
PARCEL 3

10' ALLEY
HEREBY VACATED

MILWAUKEE AVENUE (ROUTE 45)

RIGHT OF WAY WITH MARKS

LEGEND

PORTION OF ALLEY TO BE VACATED

PROPERTY LINE

— SET CONCRETE MONUMENT / SET IRON PIPE
— CENTERLINE OF RIGHT OF WAY
— UNDERLYING PROPERTY LINES
— RECORD PROPERTY DIMENSIONS
— EXISTING EASEMENTS TO REMAIN

WT GROUP

WILLIAM T. WATSON, INC.
A Division of William T. Watson & Associates, Inc.
1000 N. Waukegan Road, Suite 100
Waukegan, IL 60087
Phone: (847) 266-1111
Fax: (847) 266-1112
www.wtgroup.com

PREPARED BY:
WT Group

Engineering Department
Fifty-One Raupp Blvd.
Buffalo Grove, IL 60089-2198
Fax 847-537-5845

Ted Sianis, P.E.
Civil Engineer II
Phone 847-459-2532
tsianis@vbg.org

September 27, 2021

Frank Petrich, P.E.
Project Designer, WT Group
2675 Pratum Avenue
Hoffman Estates, IL 60192

Re: Preliminary Engineering Submittal - Speedway (201 N Milwaukee Ave.)

Dear Mr. Petrich:

The Village's Engineering Department received and reviewed engineering drawings, plat of subdivision, stormwater report, cost estimate, and P.E. calculation submitted digitally on September 13, 2021 for the Speedway development project at 201 N. Milwaukee Ave. in the Columbian Gardens/EMRO subdivisions. Below are comments that shall be addressed prior to the next submittal and/or issuance of any Village permits.

General

1. Enclosed is a draft Development Improvement Agreement (DIA). The Developer will be required to execute and submit the DIA including;
 - a. A Letter of Credit (\$662,314.00).
 - b. Engineering review and inspection fees (\$19,844.00).
 - c. A cash deposit (\$6,690.00).
2. Plat of Subdivision:
 - a. Please add the Corporate Authority's Certificate (can be found at the end of Chapter 16 in our municipal code).
3. Please provide a WDO permit application for review and execution by the Village Enforcement officer.
4. Please provide the offsite improvement plans for review.
5. Village Exhibits still missing from plans. Enclosed are PDF's of the required Village Exhibits.

Plan Sheets

CD (Demolition Plan)

1. The building being demolished at 251 N. Milwaukee is believed to have one Village water connection and one private water well. If the water well still exists, it will need to be properly abandoned.
2. Enclosed is the Village's GIS record of the location of the water service connection to building 251 N. Milwaukee. This may not be the actual location; however, no water services are shown on the demo plan for the 251 building. Please add removal of the water service to the demo plan.

CS (Plot/Dimension Plan)

1. The Village requires Neenah or EJ Ironworks ADA panels (brick red/colonial red). Do not mix/match manufacturers as the colors are slightly different.
2. Please eliminate unused pavement sections from the legend.

CG (Grading Plan)

1. Shorten/lower 5'-6'+ tall mounds to 3' above the top of curb.
2. Define the 100-year storm overland flow route(s).

CE (SWPP Plans)

1. SE/SC will be required on the west side of IL-21. Not sure if you were going to show on this set of plans, or offsite plans.
2. Add inlet protection to the storm structures along Riverwalk Drive immediately south of the proposed Riverwalk Drive construction entrance.
3. Both CE sheets drawing no.'s are CE. Please update the drawing no. on the second sheet to CE1.
4. The concrete washout detail is very faint on sheet CE1.

CU (Piping & Utilities Plan)

1. Two consecutive sanitary sewer cleanouts are not allowed per code. If one clean out is insufficient, please add another sanitary structure.
2. Crossing X1 has 4" of separation between pipes. Have pipe material thicknesses been accounted for?
3. Please replace the existing storm inlet at the NE speedway entrance with a catch basin.
4. Pipe crossing X7 shall be placed in casing or WMQ pipe utilized for the storm sewer.
5. Are the ADS inlet filters shown on page CU1 permanent or to be utilized for SE/SC purposes?
6. If an irrigation system is incorporated into the project, a separate Building Department permit will be required prior to system installation.
7. Maximum structure riser ring height allowed is 2 courses at 6". Please update details on CUD-1.
8. Eliminate the last five rows of pipe specifications on CUD-1.

STD-CPC-1 (Pavement and Curbing Details)

1. Please remove the cold weather curb installation detail.
2. Update pavement berm detail to show 3:1 max slope.

Stormwater Management Report

1. Please confirm use of the ISWS Bulletin 75 rainfall data.
2. It appears Area 11 and 12 do not connect to the proposed detention basin. How is this unrestricted flow accounted for?
3. It appears storm sewers 2-5 surcharge during the 10-year event. Please size these accordingly to convey the 10-year storm within the pipe.

If there are any additional questions, please feel free to call me at (847) 459-2532.

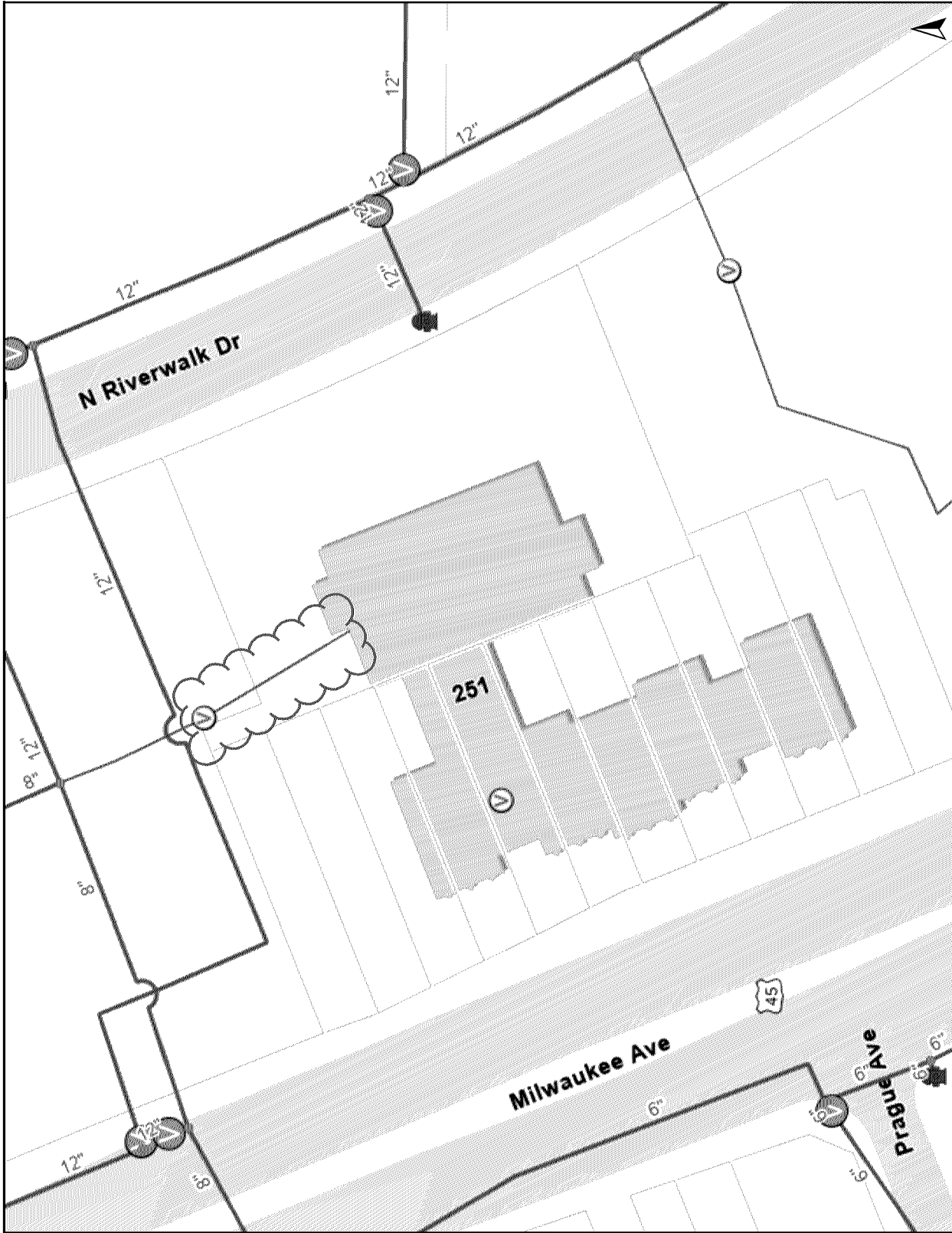
Sincerely,



Ted Sianis, P.E.
Civil Engineer II

G:\ENGINEER\Developments\Speedway\Engineering\2021.09.13_Plan Submittal\LET T Petrich_Speedway_Review_09-27-2021.docx

- Legend**
- Water Utilities
 - Hydrant
 - Water Fitting
 - Water Valve
 - Water Service Valve
 - Water Meter
 - Water Lateral
 - Water Main
 - Active
 - Active



Notes

Print Date: 9/27/2021

0 100 200 ft

Disclaimer: The GIS Consortium and WGP Inc. are not liable for any use, misuse, modification or disclosure of any map provided under applicable law. This map is for general information purposes only. Although the information is believed to be generally accurate, errors may exist and the user should independently confirm for accuracy. The map does not constitute a regulatory determination and is not a base for engineering design. A Registered Land Surveyor should be consulted to determine precise location boundaries on the ground.

PAVEMENT SECTIONS

- 4" ONLY NORMALS HERE IN CONCRETE PAVEMENT
6" NORMAL STRENGTH CONCRETE PAVEMENT
8" HEAVY DUTY CONCRETE PAVEMENT
NORMAL FINISHES IN ASPHALT PAVEMENT
1 1/2" THICK SURFACE COURSE
ROADWAY CONCRETE PAVEMENT

- GENERAL NOTES
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
 2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.
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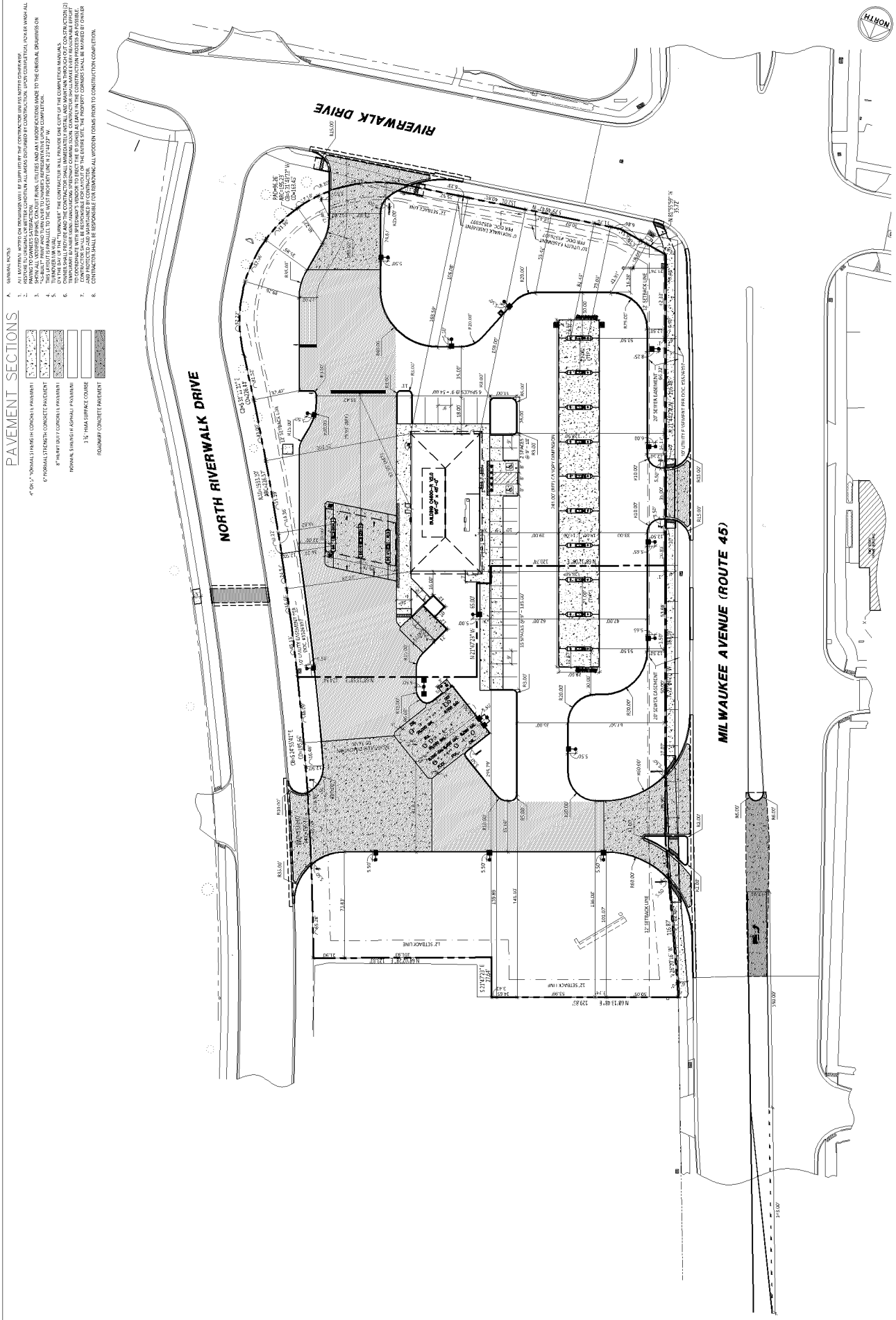
WT GROUP
Engineering and Construction
201 North Milwaukee Ave
Suite 200
Chicago, IL 60610
Phone: (773) 344-1100
Fax: (773) 344-1101
www.wtgroup.com

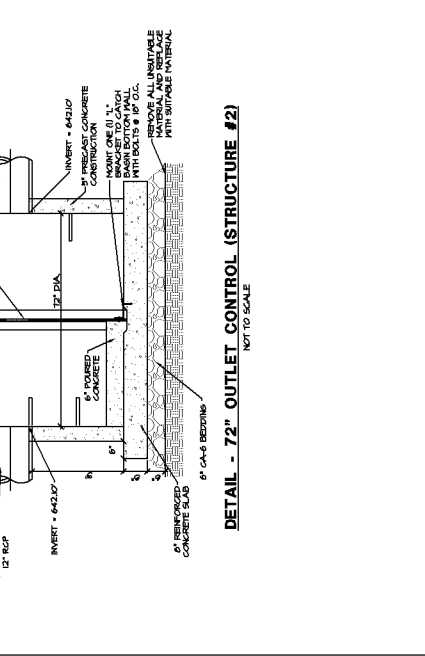
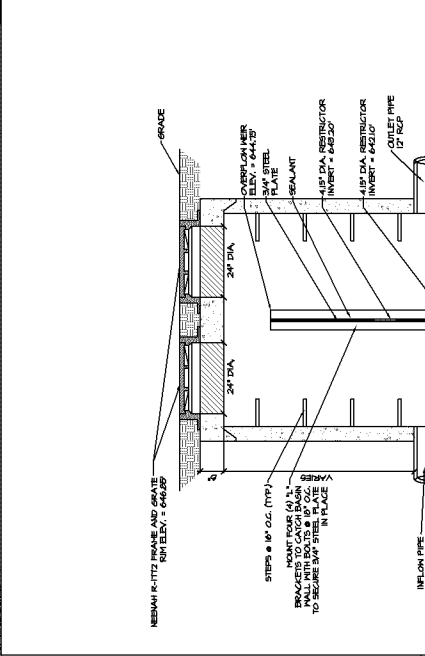
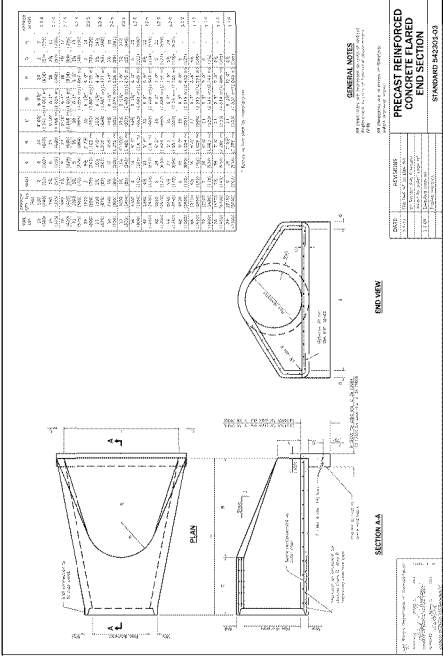
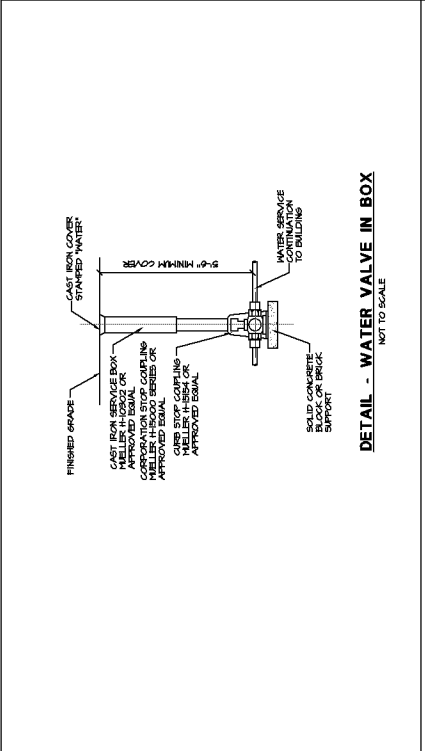
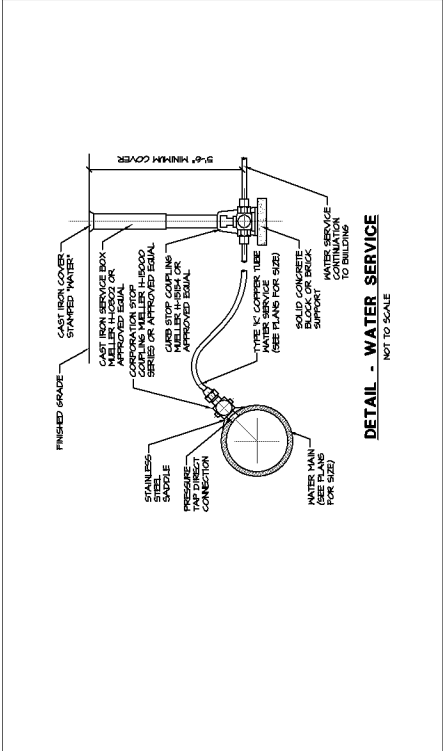
Speedway
Engineering and Construction
201 North Milwaukee Ave
Suite 200
Chicago, IL 60610
Phone: (773) 344-1100
Fax: (773) 344-1101
www.wtgroup.com

NO.	REVISIONS
1	GENERAL CONCRETE
2	GENERAL CONCRETE
3	GENERAL CONCRETE
4	GENERAL CONCRETE
5	GENERAL CONCRETE
6	GENERAL CONCRETE
7	GENERAL CONCRETE
8	GENERAL CONCRETE
9	GENERAL CONCRETE
10	GENERAL CONCRETE

RE-BUILD
201 NORTH MILWAUKEE AVE
LAKE COUNTY
BUFFALO GROVE, IL

PROJECT NO.	7949
VERSION NO.	150340
DATE	03/11/10
BY	J. BLASCHKE
CHECKED BY	J. BLASCHKE
DATE	03/11/10





FLEXSTORM® PURE PERMANENT INLET PROTECTION

SPRINT WITH CONFIDENCE

Storm drains and manholes are critical to the safety of your home. The FLEXSTORM PURE system is the preferred choice for sewer inlet protection. FLEXSTORM PURE is made of 100% recycled polypropylene. It is designed to prevent debris from entering your sewer system. FLEXSTORM PURE is available in 12\"/>

FLEXSTORM PURE INLET FILTERS SPECIFICATION

IDENTIFICATION

FLEXSTORM PURE is a precast concrete structure that is designed to be installed in the ground. It is made of 100% recycled polypropylene. It is designed to prevent debris from entering your sewer system. FLEXSTORM PURE is available in 12\"/>

Speedway

Engineering and Construction Group

10000 Highway 100, Suite 100, Houston, TX 77036

Phone: 281.460.1000

Fax: 281.460.1001

Website: www.speedwayeng.com

WT GROUP

Engineering and Construction Group

10000 Highway 100, Suite 100, Houston, TX 77036

Phone: 281.460.1000

Fax: 281.460.1001

Website: www.wtgroup.com

STORE OR 31100 NO.	7649
DESIGN OR 150340	
SCALE	0 30'
1" = 30'-0"	
DESIGN TEAM	DATE
MR. J. GLASCOTT	05/11/71
MR. J. HIGH	06/11/71
MR. I. ARBANS	05/11/71

CIRCULATION PLAN
RE-BUILD
201 NORTH MILWAUKEE AVE
LAKE COUNTY
BUFFALO GROVE, IL

[illegible]

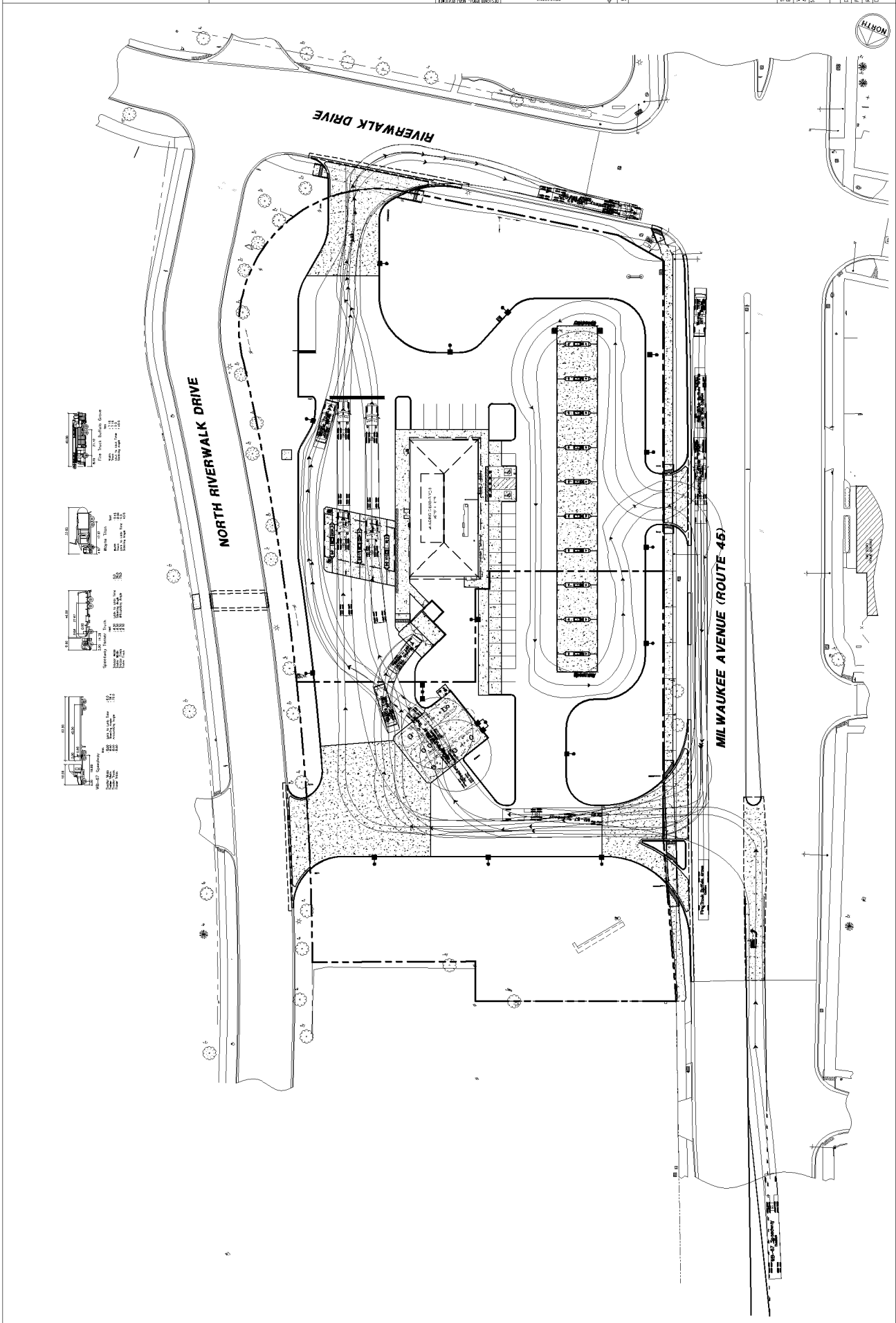
		Assigned order on reg
0001 = 0	0101000	0001 = 0
0000 = 1	1001	10000000 = 1
0001 = 0	01010100	0001 = 0
0000 = 1	1001	10000000 = 1
0001 = 0	01010100	0001 = 0
0000 = 1	1001	10000000 = 1
0001 = 0	01010100	0001 = 0
0000 = 1	1001	10000000 = 1

Speedy
 "Speedy"
 2000-01-01
 Engineering and Construction Dept.
 Email: CH-45371



Ernst & Young
Group

WT GROUP
WT GROUP PROJECT # D21000815
Call for bids or visit website for
Engineering, Design, Procurement, Construction
P.O. Box 100000, Dallas, Texas 75210-0000
P: 214.229.6553 | F: 214.229.6444
E: info@wtgroup.com | www.wtgroup.com



NOTES

1. THE BENCHMARK P_1 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE ON THE EAST SIDE OF MILWAUKEE AVENUE, 83' SOUTH OF THE NORTHWEST CORNER OF A STORY TOWER BUILDING AS SHOWN (ELEVATION=448.82') (NAD83).

2. THE BENCHMARK P_2 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE AT THE NORTHWEST CORNER OF RIVERWALK DRIVE AND NORTH RIVERWALK DRIVE AS SHOWN (ELEVATION=447.54') (NAD83).

3. THE BENCHMARK P_3 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE ON THE SOUTHEAST CORNER OF WOOD CHURCH AS SHOWN (ELEVATION=446.56') (NAD83).

4. THE BENCHMARK P_4 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE ON THE SOUTHEAST CORNER OF TRAVIS ENCLOSURE AS SHOWN (ELEVATION=446.56') (NAD83).

5. THE FIELD WORK COMPLETED ON MAY 28TH, 2021.

6. A SURVEY PREPARED FOR SPECIMEN

7. THE SURVEYOR HAS NO KNOWING POSSIBLE

* SEE SHEET 4 FOR RIMS & INVERT INFORMATION



SCALE: 1" = 20'

BAR SCALE

[illegible]

PREPARED BY:

WTV Group

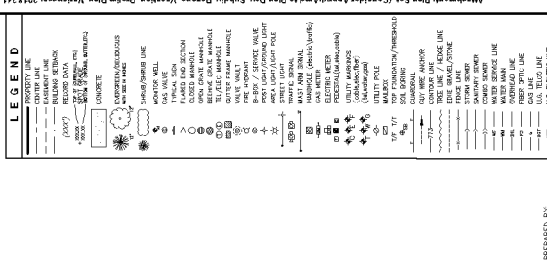
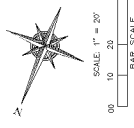
Established 1908

Speedway
0001 241500

9

ALTA/NSPS SURVEY
201 N. MILWAUKEE AVENUE
BUFFALO GROVE, ILLINOIS
LAKE COUNTY

SCALE	1"=20'	DATE	
DWG#	REM	5/21/21	
CHGR	FIM		
		DWG.	
		M.O.	
		D2100065	



1. **NOTE:** BENCHMARK #1 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE ON THE EAST SIDE OF 2 MAINWAY DRIVE, 83' SOUTHWEST OF THE NORTHWEST CORNER OF 2 STORY STUDIO BUILDING AS SHOWN. ELEVATION=60.92'
2. **NOTE:** BENCHMARK #2 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE ON THE NORTHWEST CORNER OF PERENNIAL DRIVE AND NORTH RIVERHILL DRIVE AS SHOWN. ELEVATION=64.45' (NAVD83)
3. **NOTE:** BENCHMARK #3 = SQUARE CUT IN CONCRETE BASE OF LIGHT POLE ON THE SOUTHEAST CORNER OF 2 MAINWAY DRIVE AND NORTH RIVERHILL DRIVE AS SHOWN. ELEVATION=64.50' (NAVD83)
4. **NOTE:** ELEVATION OF UNDERPASS RAILROAD WAS DETERMINED BY FIELD OBSERVATION AND WATER MANNING (UL)
5. **FIELD WORK COMPLETED ON MAY 16TH, 2017**
6. **SURVEY PROPOSED FOR SPEEDWAY**
7. **ALL CORRECTIONS FOUND WITHIN THIS DOCUMENT NEED TO BE REPORTED TO THE CLIENT**

ALTA/NSPS SURVEY 201 N. MILWAUKEE AVENUE BUFFALO GROVE, ILLINOIS LAKE COUNTY		SCALE DISTR CNR	1"=20' REM FM	DATE 5/21/21	FILE NO. DWG.	02100065
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SCALE	1"=20'	DATE	FILE
DFTFR	REM	5/21/21	NO.
CHKR	FIM		DWG.
			NO.

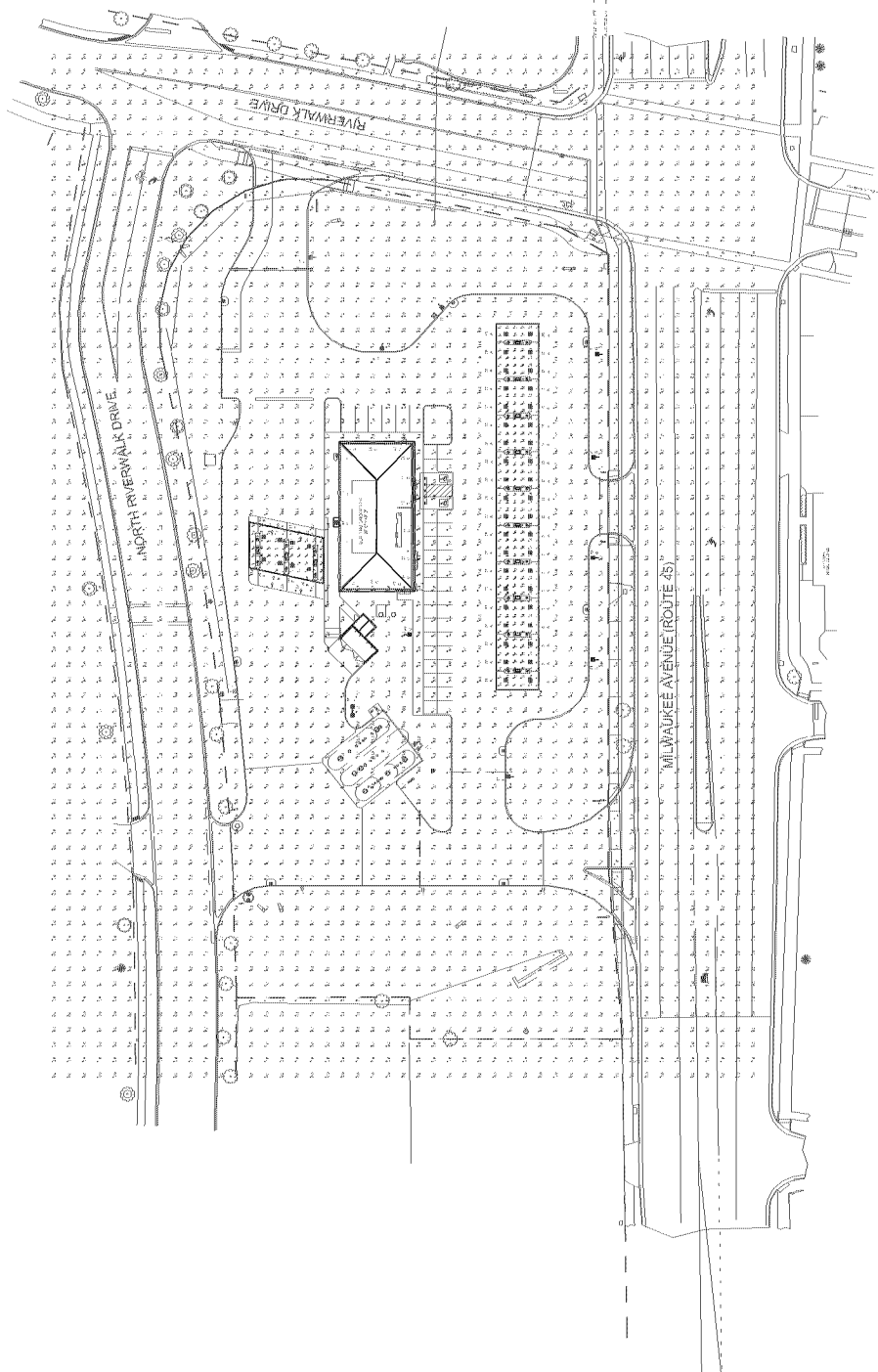


Engineering • Design • Consulting

Estimated Population Equivalent for Speedway #7649 – Buffalo Grove, IL

The following population information is the anticipated loading produced by the development:

- Estimated vehicles served per day is 250. For purposes of this calculation, it is assumed the service station will produce a flow of 5 Gallons / Vehicle / Day.
- Estimated employees is 5. For purposes of this calculation, it is assumed the service station will produce a flow of 20 Gallons / Employee / Day.
- New total flow expected is $250 \text{ Vehicles} \times 5 \text{ Gallons / Vehicle / Day} + 5 \text{ Employees} \times 20 \text{ Gallons / Employee / Day} = 1250 \text{ GPD} + 100 \text{ GPD} = 1350 \text{ GPD}$
- Estimated Population equivalent is $1350 \text{ GPD} / 100 \text{ GPD / PE} = 13.5 \sim \mathbf{14 \text{ PE}}$
- Estimated BOD Population equivalent is $0.17 \times 14 \text{ PE} = \mathbf{2.38 \text{ BOD PE}}$
- Estimated Suspended Solids PE is $0.20 \times 14 \text{ PE} = \mathbf{2.80 \text{ Suspended Solids PE}}$



UNDER AUTO CANOPY			
LOT NO.	AREA	AVG. HT.	AVG. HT.
1	1.0	10.5	10.5
2	1.0	10.5	10.5
3	1.0	10.5	10.5
4	1.0	10.5	10.5
5	1.0	10.5	10.5
6	1.0	10.5	10.5
7	1.0	10.5	10.5
8	1.0	10.5	10.5
9	1.0	10.5	10.5
10	1.0	10.5	10.5
11	1.0	10.5	10.5
12	1.0	10.5	10.5
13	1.0	10.5	10.5
14	1.0	10.5	10.5
15	1.0	10.5	10.5
16	1.0	10.5	10.5
17	1.0	10.5	10.5
18	1.0	10.5	10.5
19	1.0	10.5	10.5
20	1.0	10.5	10.5
21	1.0	10.5	10.5
22	1.0	10.5	10.5
23	1.0	10.5	10.5
24	1.0	10.5	10.5
25	1.0	10.5	10.5
26	1.0	10.5	10.5
27	1.0	10.5	10.5
28	1.0	10.5	10.5
29	1.0	10.5	10.5
30	1.0	10.5	10.5
31	1.0	10.5	10.5
32	1.0	10.5	10.5
33	1.0	10.5	10.5
34	1.0	10.5	10.5
35	1.0	10.5	10.5
36	1.0	10.5	10.5
37	1.0	10.5	10.5
38	1.0	10.5	10.5
39	1.0	10.5	10.5
40	1.0	10.5	10.5

NOTES:
-ALL AREA LIGHTS ON NEW 15 FT. OR 30 FT. POLE MOUNTED ON 2 FT. CONCRETE BASE
-THIS SITE IS LOCATED IN A RESIDENTIAL ZONING DISTRICT
-RELOCATED BY LOCAL ORDINANCES

UNDER AUTO CANOPY			
LABEL	AVG	MAX	MAX
SITE PAVED AREA	5.61	26.1	6.51
TANK PAD	9.84	13.0	1.66
UNDEVELOPED	0.25	12.7	N.A.
UNDER AUTO CANOPY	49.4	80	2.22
UNDER CPL CANOPY	42.28	85	4.70
			7.22

RELOCATED AREAS			
SYMBOL	QTY	AREA	DESCRIPTION
1	40	1.00	UNDER AUTO CANOPY
2	40	1.00	UNDER CPL CANOPY
3	40	1.00	UNDER CPL CANOPY
4	40	1.00	UNDER CPL CANOPY
5	40	1.00	UNDER CPL CANOPY
6	40	1.00	UNDER CPL CANOPY
7	40	1.00	UNDER CPL CANOPY
8	40	1.00	UNDER CPL CANOPY
9	40	1.00	UNDER CPL CANOPY
10	40	1.00	UNDER CPL CANOPY
11	40	1.00	UNDER CPL CANOPY
12	40	1.00	UNDER CPL CANOPY
13	40	1.00	UNDER CPL CANOPY
14	40	1.00	UNDER CPL CANOPY
15	40	1.00	UNDER CPL CANOPY
16	40	1.00	UNDER CPL CANOPY
17	40	1.00	UNDER CPL CANOPY
18	40	1.00	UNDER CPL CANOPY
19	40	1.00	UNDER CPL CANOPY
20	40	1.00	UNDER CPL CANOPY
21	40	1.00	UNDER CPL CANOPY
22	40	1.00	UNDER CPL CANOPY
23	40	1.00	UNDER CPL CANOPY
24	40	1.00	UNDER CPL CANOPY
25	40	1.00	UNDER CPL CANOPY
26	40	1.00	UNDER CPL CANOPY
27	40	1.00	UNDER CPL CANOPY
28	40	1.00	UNDER CPL CANOPY
29	40	1.00	UNDER CPL CANOPY
30	40	1.00	UNDER CPL CANOPY
31	40	1.00	UNDER CPL CANOPY
32	40	1.00	UNDER CPL CANOPY
33	40	1.00	UNDER CPL CANOPY
34	40	1.00	UNDER CPL CANOPY
35	40	1.00	UNDER CPL CANOPY
36	40	1.00	UNDER CPL CANOPY
37	40	1.00	UNDER CPL CANOPY
38	40	1.00	UNDER CPL CANOPY
39	40	1.00	UNDER CPL CANOPY
40	40	1.00	UNDER CPL CANOPY

RED LEONARD ASSOCIATES
1380 Maple Street, Suite 200, Oak Creek, WI 53090
414.764.8323 | info@redleonard.com

REV. DATE DESCRIPTION

R1	01/2021	RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS
R2	02/2021	RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

SPEEDWAY #7669 - REBUILD
BUFFALO GROVE, IL

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

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RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

RELOCATED AREAS LIGHTS ARE, DGS, DYS & PARK TO AUTO UTILITY CONDUITS

QTY LABEL DESCRIPTION

1

A

CPV250-20W-4000K-100V-27K

1

D

CPV250-20W-4000K-100V-27K

1

E

CPV250-20W-4000K-100V-27K

QTY LABEL DESCRIPTION

1

E

CPV250-20W-4000K-100V-27K

QTY LABEL DESCRIPTION

1

C

CPV250-20W-4000K-100V-27K

QTY LABEL DESCRIPTION

1

B

CPV250-20W-4000K-100V-27K

1

H

CPV250-20W-4000K-100V-27K

1

J

CPV250-20W-4000K-100V-27K

1

K

CPV250-20W-4000K-100V-27K

1

L

CPV250-20W-4000K-100V-27K

CPV Series - Version B

Product Description: CPV Series - Version B is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
CPV250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

XSP Series

Product Description: XSP Series is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
XSP250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

Z28 Series™

Product Description: Z28 Series™ is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
Z28250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

OSD Series

Product Description: OSD Series is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
OSD250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

CPV Series - Version B

Product Description: CPV Series - Version B is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
CPV250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

XSP Series

Product Description: XSP Series is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
XSP250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

Z28 Series™

Product Description: Z28 Series™ is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
Z28250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours

OSD Series

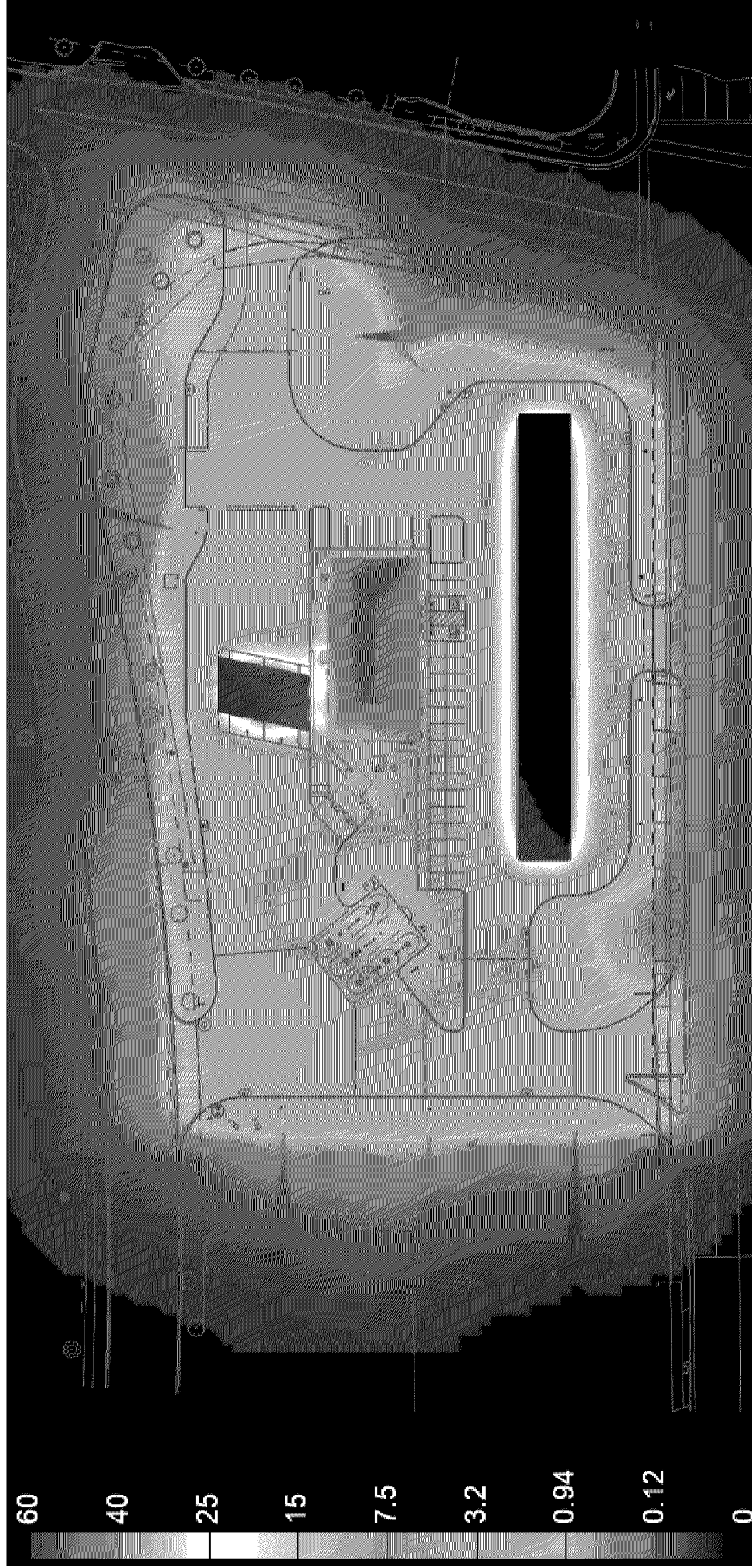
Product Description: OSD Series is a high-performance, high-efficiency LED lighting fixture. It is designed for use in a variety of applications, including commercial, industrial, and residential. The fixture is available in multiple wattage and color temperature options, and is designed to provide long-lasting, reliable performance.

Key Features:

- High Efficiency: The fixture is designed to provide high efficiency, with a typical efficacy of 100 lm/W.
- Long Life: The fixture is designed to provide a long life, with a typical life expectancy of 50,000 hours.
- Dimmable: The fixture is dimmable, allowing for flexible lighting control.
- Wide Beam Angle: The fixture has a wide beam angle, providing uniform illumination.
- Easy Installation: The fixture is easy to install, with a simple, standard design.

Model	Wattage	Color Temperature	Beam Angle	Typical Efficacy	Typical Life
OSD250-20W-4000K-100V-27K	20W	4000K	100V	27K	50,000 hours



[illegible]

RED LEONARD
ASSOCIATES



1961, 1962 and 1963, 1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 26



1340 Karpner Meadows Dr, Forest Park, GA 30054
513-574-8500 | mellie@uic.edu

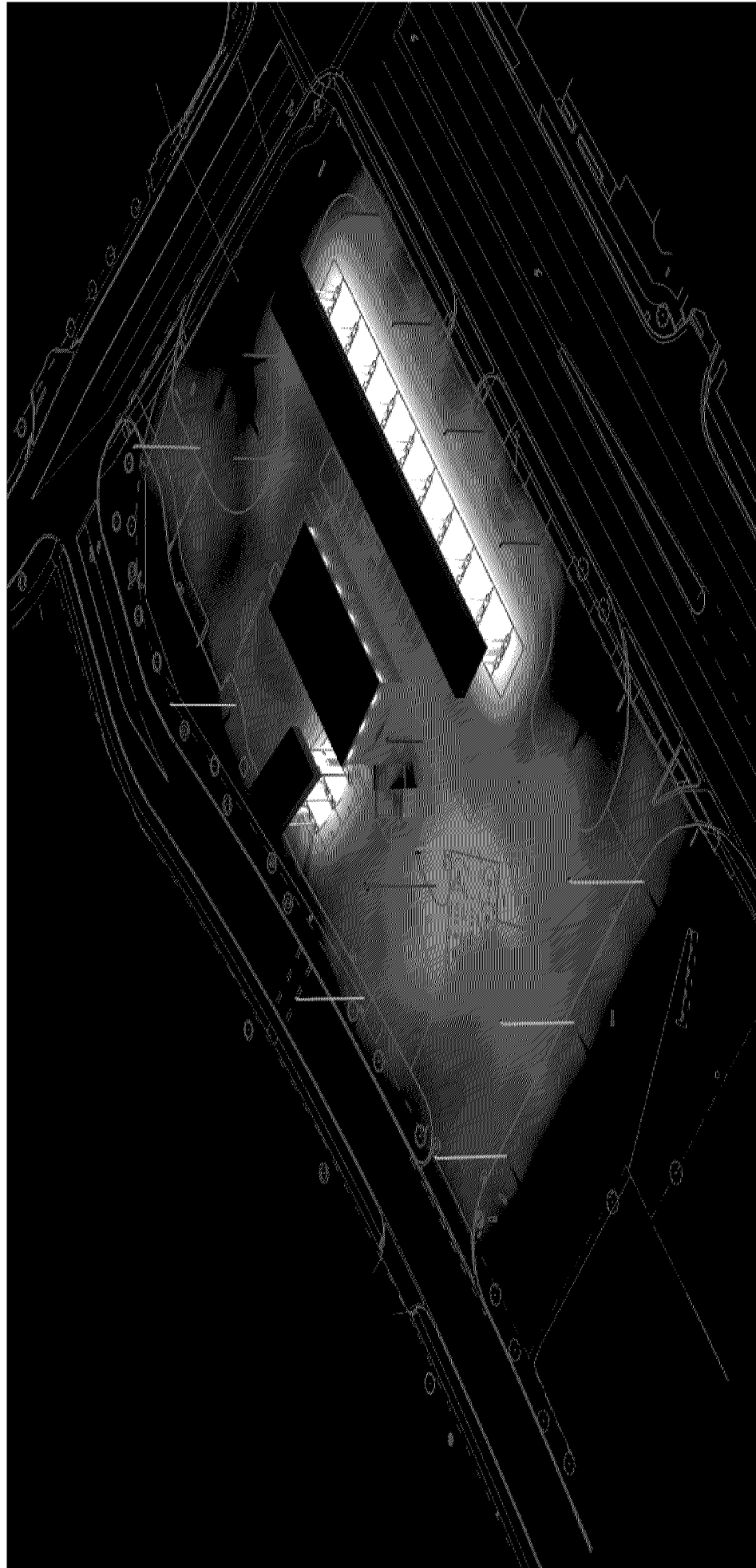


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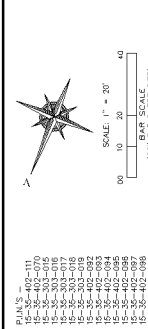
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PRELIMINARY PLAT OF
SPEEDWAY BUFFALO GROVE SUBDIVISION

BEING A SUBDIVISION OF THE SOUTH HALF OF SECTION 35, TOWNSHIP 43 NORTH, RANGE 11 EAST OF THE THIRD PRINCIPAL MERIDIAN, IN LAKE COUNTY, ILLINOIS.



BASED ON BEARING 15 TRUE NORTH BASED ON
ILLINOIS STATE PLATING SYSTEM, LAMAR
EAST 1201 ZONE.

NORTH RIVERWALK DRIVE
DEDICATED PER DOC. #352352

RAD=1933.10'
ARC=422.30'
CB=S 281°09' E
CD=421.46'

10' UTILITY EASEMENT PER DOC. #352357
10' COMED EASEMENT PER DOC. #457571

STORMWATER EASEMENT #1
(HURST GRANTED)

LOT 1
3.276 ACRES (142,697 SQ. FT.)

BLOCK 3
UNIT 21 OF COLUMBIAN GARDENS
REC. 1749/1938 AS DOC. #352352

STORMWATER EASEMENT #1
(HURST GRANTED)

LOT 1
EMRO SUBDIVISION
REC. 1473/1938 AS DOC. #352357

RIVERWALK DRIVE

N 81°55'59" W
35.72'

N 21°44'27" W
399.87'

N 26°20'16" W
116.87'

MILWAUKEE AVENUE (ROUTE 45)
RIGHT OF WAY WIDTH 116.87'

LEGEND

- PROPERTY LINE
- COVERLINE OF RIGHT OF WAY
- UNDERLYING PROPERTY LINES
- SET CONCRETE MONUMENT / SET IRON PIPE
- RECORD PROPERTY DIMENSIONS
- EASEMENT (HURST GRANTED)
- EXISTING EASEMENTS TO REMAIN

Curve #	Area	Radius	Chord	Chord Distance
C1	118.15	1031.01	S 23°42'01" E	118.13
C2	120.30	1031.01	S 27°27'46" E	120.28
C3	10.35	1031.01	S 29°26'54" E	10.35
C4	20.52	26.24	N 12°21'17" E	20.52
C5	14.23	106.28	S 10°58'24" E	14.22

Line Table			Line Table		
Line #	Direction	Length	Line #	Direction	Length
L29	N 22°23'17" E	17.20	L36	N 01°26'06" E	88.03
L30	N 21°48'32" E	86.23	L37	S 30°34'36" W	107.78
L31	N 68°13'48" E	45.03	L38	N 31°25'04" W	103.00
L32	S 01°46'01" E	53.71	L39	N 55°34'56" E	99.80
L33	S 84°10'35" E	63.62	L40	N 62°30'55" E	45.62
L34	N 21°05'10" E	10.24	L41	N 27°39'07" E	10.00
L35	N 20°26'55" E	59.57	L42	S 62°30'05" E	47.86

Line Table			Line Table		
Line #	Direction	Length	Line #	Direction	Length
L15	S 68°15'53" W	140.25	L22	S 71°25'27" E	175.17
L16	S 22°25'11" W	2.85	L23	N 21°42'26" E	90.85
L17	S 21°44'27" E	60.35	L24	S 69°33'31" E	10.00
L18	N 52°23'41" E	46.61	L25	S 64°22'10" W	98.35
L19	S 37°07'19" E	10.00	L26	N 21°42'55" W	185.55
L20	S 32°29'31" E	51.22	L27	N 08°37'33" E	103.67
L21	S 05°29'31" W	100.30	L28	N 21°44'27" E	90.85

Lwp Table			Lwp Table		
Line #	Direction	Length	Line #	Direction	Length
7	N 68°13'48" E	66.66	8	N 68°13'48" E	66.66
8	S 81°55'59" W	35.72	9	S 81°55'59" W	35.72
9	S 27°40'27" E	175.17	10	S 27°40'27" E	175.17
10	N 21°44'27" W	86.23	11	N 21°44'27" W	86.23
11	N 21°44'27" W	86.23	12	N 21°44'27" W	86.23
12	S 27°40'27" E	175.17	13	S 27°40'27" E	175.17
13	S 27°40'27" E	175.17	14	S 27°40'27" E	175.17
14	N 21°44'27" W	86.23	15	N 21°44'27" W	86.23
15	S 27°40'27" E	175.17	16	S 27°40'27" E	175.17
16	S 27°40'27" E	175.17	17	S 27°40'27" E	175.17
17	N 21°44'27" W	86.23	18	N 21°44'27" W	86.23
18	S 27°40'27" E	175.17	19	S 27°40'27" E	175.17
19	S 27°40'27" E	175.17	20	S 27°40'27" E	175.17
20	N 21°44'27" W	86.23	21	N 21°44'27" W	86.23
21	S 27°40'27" E	175.17	22	S 27°40'27" E	175.17
22	S 27°40'27" E	175.17	23	S 27°40'27" E	175.17
23	N 21°44'27" W	86.23	24	N 21°44'27" W	86.23
24	S 27°40'27" E	175.17	25	S 27°40'27" E	175.17
25	S 27°40'27" E	175.17	26	S 27°40'27" E	175.17
26	N 21°44'27" W	86.23	27	N 21°44'27" W	86.23
27	S 27°40'27" E	175.17	28	S 27°40'27" E	175.17
28	S 27°40'27" E	175.17	29	S 27°40'27" E	175.17
29	N 21°44'27" W	86.23	30	N 21°44'27" W	86.23
30	S 27°40'27" E	175.17	31	S 27°40'27" E	175.17
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37	S 27°40'27" E	175.17	38	S 27°40'27" E	175.17
38	N 21°44'27" W	86.23	39	N 21°44'27" W	86.23
39	S 27°40'27" E	175.17	40	S 27°40'27" E	175.17
40	S 27°40'27" E	175.17	41	S 27°40'27" E	175.17
41	N 21°44'27" W	86.23	42	N 21°44'27" W	86.23
42	S 27°40'27" E	175.17	43	S 27°40'27" E	175.17
43	S 27°40'27" E	175.17	44	S 27°40'27" E	175.17
44	N 21°44'27" W	86.23	45	N 21°44'27" W	86.23
45	S 27°40'27" E	175.17	46	S 27°40'27" E	175.17
46	S 27°40'27" E	175.17	47	S 27°40'27" E	175.17
47	N 21°44'27" W	86.23	48	N 21°44'27" W	86.23
48	S 27°40'27" E	175.17	49	S 27°40'27" E	175.17
49	S 27°40'27" E	175.17	50	S 27°40'27" E	175.17
50	N 21°44'27" W	86.23	51	N 21°44'27" W	86.23
51	S 27°40'27" E	175.17	52	S 27°40'27" E	175.17
52	S 27°40'27" E	175.17	53	S 27°40'27" E	175.17
53	N 21°44'27" W	86.23	54	N 21°44'27" W	86.23
54	S 27°40'27" E	175.17	55	S 27°40'27" E	175.17
55	S 27°40'27" E	175.17	56	S 27°40'27" E	175.17
56	N 21°44'27" W	86.23	57	N 21°44'27" W	86.23
57	S 27°40'27" E	175.17	58	S 27°40'27" E	175.17
58	S 27°40'27" E	175.17	59	S 27°40'27" E	175.17
59	N 21°44'27" W	86.23	60	N 21°44'27" W	86.23
60	S 27°40'27" E	175.17	61	S 27°40'27" E	175.17
61	S 27°40'27" E	175.17	62	S 27°40'27" E	175.17
62	N 21°44'27" W	86.23	63	N 21°44'27" W	86.23
63	S 27°40'27" E	175.17	64	S 27°40'27" E	175.17
64	S 27°40'27" E	175.17	65	S 27°40'27" E	175.17
65	N 21°44'27" W	86.23	66	N 21°44'27" W	86.23
66	S 27°40'27" E	175.17	67	S 27°40'27" E	175.17
67	S 27°40'27" E	175.17	68	S 27°40'27" E	175.17
68	N 21°44'27" W	86.23	69	N 21°44'27" W	86.23
69	S 27°40'27" E	175.17	70	S 27°40'27" E	175.17
70	S 27°40'27" E	175.17	71	S 27°40'27" E	175.17
71	N 21°44'27" W	86.23	72	N 21°44'27" W	86.23
72	S 27°40'27" E	175.17	73	S 27°40'27" E	175.17
73	S 27°40'27" E	175.17	74	S 27°40'27" E	175.17
74	N 21°44'27" W	86.23	75	N 21°44'27" W	86.23
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91	S 27°40'27" E	175.17	92	S 27°40'27" E	175.17
92	N 21°44'27" W	86.23	93	N 21°44'27" W	86.23
93	S 27°40'27" E	175.17	94	S 27°40'27" E	175.17
94	S 27°40'27" E	175.17	95	S 27°40'27" E	175.17
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96	S 27°40'27" E	175.17	97	S 27°40'27" E	175.17
97	S 27°40'27" E	175.17	98	S 27°40'27" E	175.17
98	N 21°44'27" W	86.23	99	N 21°44'27" W	86.23
99	S 27°40'27" E	175.17	100	S 27°40'27" E	175.17

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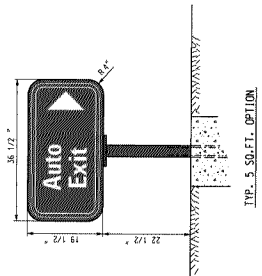
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10	CONCEPT SUBMITTAL

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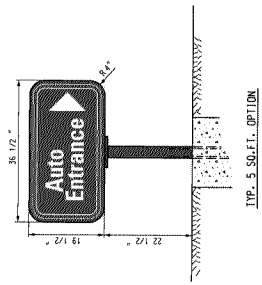
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SS3
 Product Fig. 68



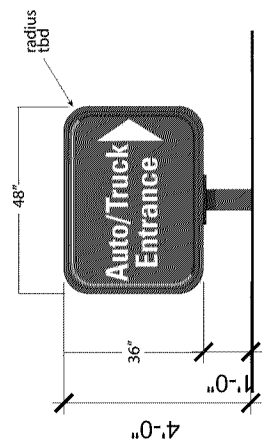
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*REFER TO EVERBRITE DRAWINGS FOR FOUNDATION DETAILS



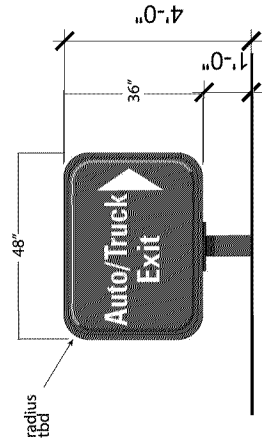
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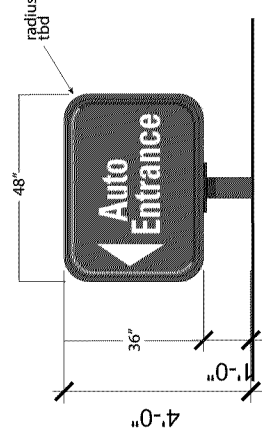
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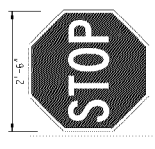
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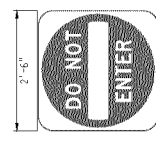
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*REFER TO EVERBRITE DRAWINGS FOR FOUNDATION DETAILS



STOP SIGN
 ELEVATION "E6"
 SCALE: 3/4" = 1'-0"

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DO NOT ENTER SIGN
 ELEVATION "E7"
 SCALE: 3/4" = 1'-0"

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Stormwater Management Report Lake County



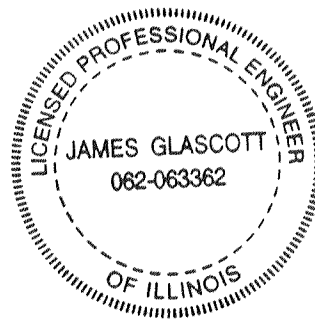
Speedway #7649

Re-Build

201 North Milwaukee Ave
Buffalo Grove, Illinois 60089
WT Group Project #D2100065

September 10, 2021

Jim Glascott P.E. CPESC
Illinois P.E. License No. 062-063362
Expires: 11-30-2021



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Hoffman Estates, IL 60192

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 - Stormwater Volume Summary
 - TR-20 Model
 - Water Quality Treatment Volume Summary
 - Lake County Runoff Volume Reduction
 - Overflow Weir Calculation
 - TR-20 Model
 - Overflow Weir Calculation
- Storm Sewer Calculations
 - Hydraflow Storm Sewer Capacity Calculations
- Appendix
 - EX-1.0: Existing Condition Exhibit
 - EX-2.0: Proposed Condition Exhibit
 - EX-3.0: Storm Sewer Area Exhibit

Project Narrative

Project Scope of Work:

Speedway is seeking to build a new gas station with a 4,600 square foot convenience store building, new fueling canopy with ten (10) dispensers, a new two (2) lane commercial fueling canopy, twenty-five (25) parking spaces, drive aisles, a new trash enclosure, one (1) new driveway connection to North Riverwalk Drive, one (1) new driveway connection to Riverwalk Drive, two (2) new driveway connections to Milwaukee Avenue (Route 45), one (1) above-ground detention basin, and associated utilities located at 201 North Milwaukee Avenue in Buffalo Grove, Illinois.

Existing Conditions:

The total contiguous property area is 3.28 acres. The existing site consists of an existing commercial building and Speedway gas station that will be demolished as part of the improvements.

Per FIRM #17097C0266K, a portion of the property is located within Zone X. Per US Fish and Wildlife maps, there are no existing wetlands on the site. Per NRCS soil survey data, the existing soil is classified as hydrologic soil group B. Hydrologic soil group C will be used in proposed condition calculations.

Stormwater Improvements:

The purpose of this Stormwater Management Report is to demonstrate that the site is conformance with Lake County Watershed Development Ordinance (WDO).

The total on-site project area that will be disturbed is approximately 3.28 acres.

The allowable release for the project area was determined based on the existing flow tributary to the existing storm structure #44 at the north side of the property on North Riverwalk Drive (Existing Area 2). In order to not exceed the existing flow to the existing storm sewer, the total allowable release rate from the basin will be 0.46 cfs and 1.36 cfs for the 2-year 24-hour and 100-year 24-hour storm events respectively. The proposed flow to the southeast and west will be reduced as well.

Stormwater Detention Requirements:

Per the Lake County WDO, stormwater detention is not required if less than 1 acre of new impervious area is added after 1992. The impervious area on the site is reduced from 2.356 acre to 1.90 acres for a total reduction of 0.456 acres. An above ground detention basin, located northeast of the proposed convenience store building, is proposed to match the existing release rate of the site and the water quality requirements of the Lake County WDO. Total volume provided within the new above ground detention basin is approximately 0.3091 ac-ft. Stormwater discharge from the detention basin will be restricted by two orifice restrictors with a 4.15-inch diameter orifice opening for the 2-year storm event and 4.15-inch diameter orifice opening for the 100-year storm event in order to maintain existing release rates. The restrictors are located within Storm Structure 2 located southeast of the above ground detention basin.

The runoff discharges from Structure 2 and into the existing storm sewer on North Riverwalk Drive, which ultimately drains to the northeast.

The high water level (HWL) for the 2-year and 100-year storm events is 643.18' and 644.72' respectively.

In addition, water quality treatment volume has been provided based on the requirement of 0.01 inch of runoff for every 1% of impervious surface area which equals 0.092 ac-ft required. Approximately 0.106 ac-ft of volume will be provided below the outlet and between elevations of 642.00' and 643.00' in the proposed pond.

A TR20 model was created to determine the peak critical duration 100-year flow in order to size the overflow weir. The results are as follows:

	Storm Event	Peak Discharge
On-site Area 2	100-year, 0.5-hour	15.35 cfs

The overflow weir wall will be set at 644.75' in the outlet control structure. This peak flow can be passed over the 6' wide overflow weir with a depth of 0.84', resulting in a high water elevation of 645.59'.

Hydrocarbon Removal Technology:

The inlets that collect runoff tributary to detention basin will be fitted with Flexstorm pure permanent inlet protection to absorb hydrocarbons. Detention Basin is a wetland bottom basin and the Lake County Stormwater Management Commission accepts wetland basins as hydrocarbon removal technology. The area tributary to detention basin is a gas station and hydrocarbon removal technology will be provided via a Hydro-International First Defense Treatment Unit.

Runoff Volume Reduction:

Runoff volume reduction is accomplished in accordance with the WDO Section 503.01 as follows:

1. The existing channel/drainageway at the northeast corner of the site along North Riverwalk Drive and at the east side of the site along Riverwalk Drive will be preserved.
2. Infiltration and storage characteristics of the site are increased with the proposed wetland bottom detention basin.
3. The wetland bottom detention basin provides water quality and volume reduction.
4. The requirements of the Lake County Stormwater ordinance, an Aqua Swirl Treatment Unit proposed downstream of the above-ground detention basin provides water quality and volume reduction

The minimum RVR quantitative standard shall be volume achieved utilizing applicable RVR credits, as determined by the applicant and approved by the Enforcement Officer, based on the maximum extent practicable, for the development. In accordance with the

WDO Section 503.02 B. RVR Credits, the following may be used alone or in combination to meet the RVR quantity requirement:

1. Detention Facility Credit – The wetland bottom detention basin provides 0.106 ac-ft of storage below the primary outlets. 50% of RVR Quantity.
2. Native Vegetation Cover Credit – The detention basin is designed with native vegetation cover with will assist in infiltration and absorption of runoff. In addition, the buffers along the wetlands have established native vegetation.
3. Water Quality Treatment Credit – The detention basin meets the Water Quality Treatment Volume requirements. 100% of RVR Quantity.

Runoff Volume Reduction Hierarchy:

1. The existing drainage way is preserved.
2. Native plantings are proposed for the detention basin.
3. The site has been designed around the natural features of the site.

Temporary Best Management Practices:

During construction, several erosion control devices and features will be used to minimize sediment from leaving the site. These include a gravel construction entrance, silt fence, flexstorm catch-it inlet protection devices, and seeding and erosion control blankets.

Permanent Best Management Practices:

In order to meet the post construction requirements of the Lake County Stormwater ordinance, a Hydro-International First Defense Treatment Unit will be installed downstream of the detention system and restrictor structure.

Storm Sewers:

All new storm sewers tributary to the new detention basin were designed to pass the 10-year event using Hydraflow software. Storm sewer calculations for the 10-year storm are enclosed.

Conclusion:

The proposed improvements will meet Lake County and the Village of Buffalo Grove detention and infiltration requirements.

Maps

- Location Map
- USGS Topo Map
- NRCS Soils Map
- U.S. Fish and Wildlife Wetland Map
- FIRM Panel 17097C0266K

Location Map

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Google Maps 201 Milwaukee Ave



Imagery ©2021 Maxar Technologies, U.S. Geological Survey, USDA Farm Service Agency, Map data ©2021 500 ft



201 Milwaukee Ave



Directions



Save



Nearby



Send to your
phone



Share



201 Milwaukee Ave, Buffalo Grove, IL 60089



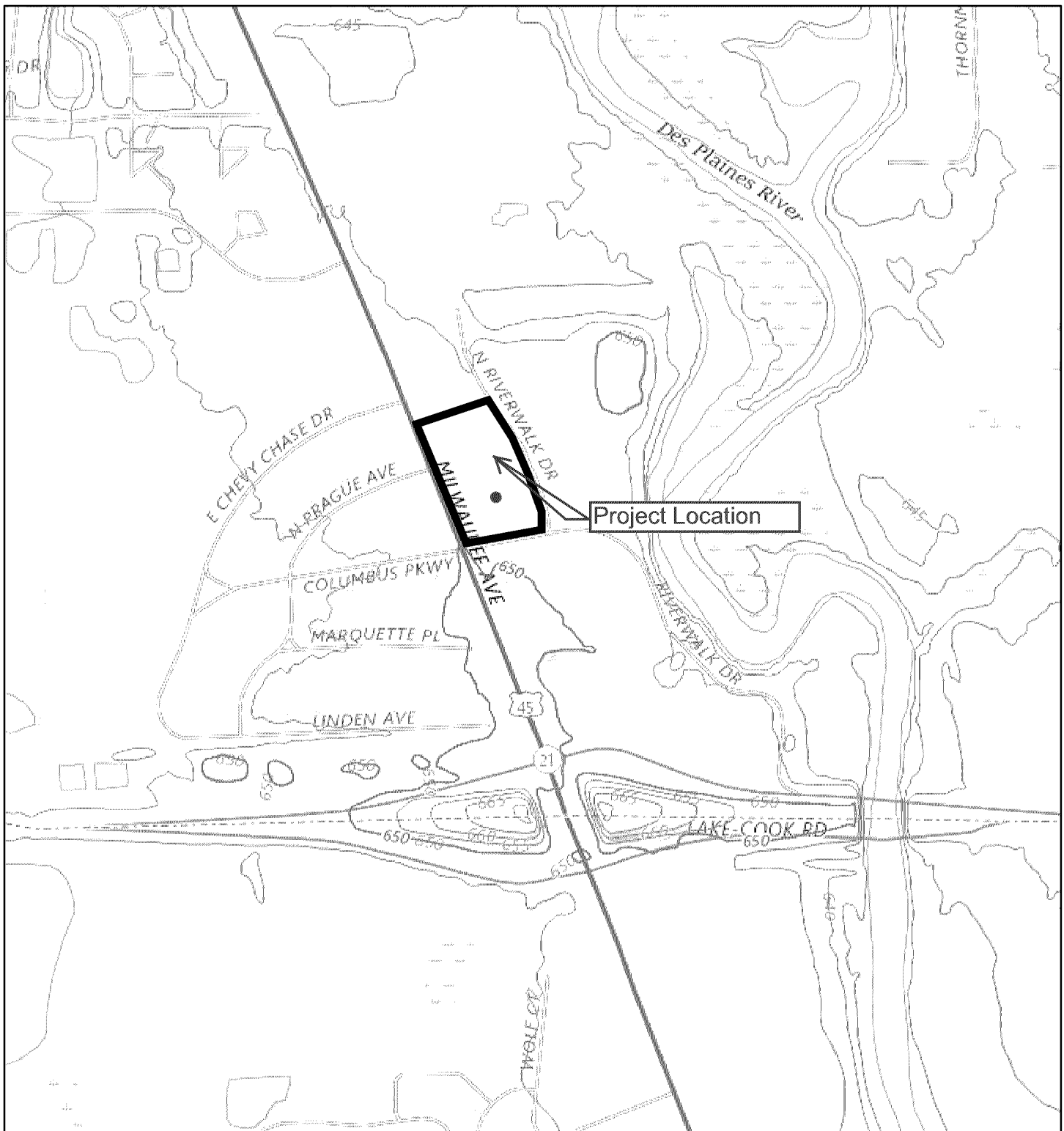
534M+JJ Buffalo Grove, Illinois

Photos

USGS Topo Map

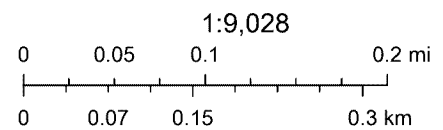
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

The National Map Advanced Viewer



9/7/2021, 12:43:12 PM

- Normal Intermediate Contours
- Normal Index Contours

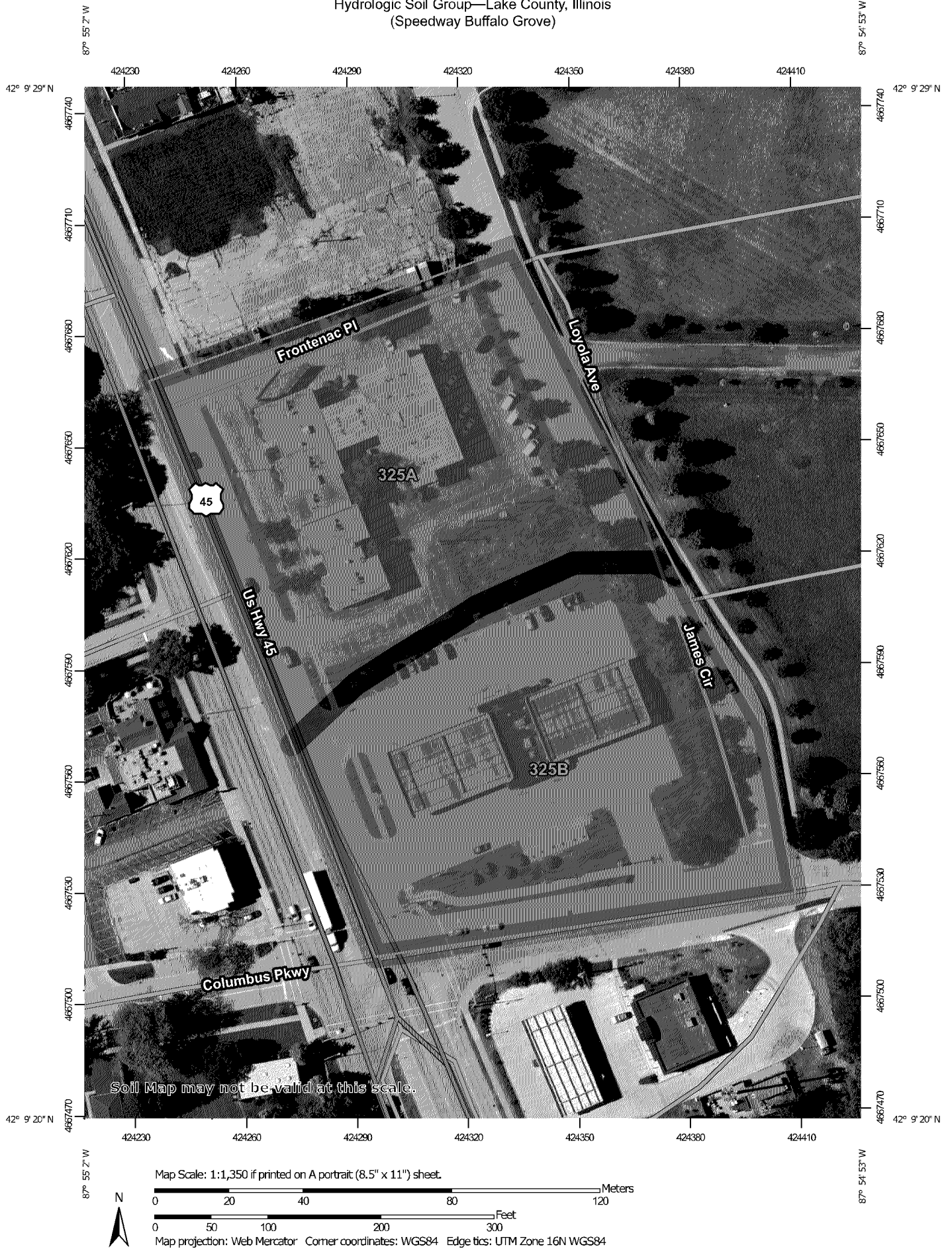


USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census

NRCS Soils Map

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Hydrologic Soil Group—Lake County, Illinois
(Speedway Buffalo Grove)



Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lake County, Illinois
Survey Area Data: Version 15, May 29, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2020—Jul 1, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
325A	Dresden silt loam, 0 to 2 percent slopes	B	2.5	49.9%
325B	Dresden silt loam, 2 to 4 percent slopes	B	2.5	50.1%
Totals for Area of Interest			5.0	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

U.S. Fish and Wildlife Wetland Map

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)



U.S. Fish and Wildlife Service

National Wetlands Inventory

201 North Milwaukee Ave Buffalo Grove, IL

2.3.b



September 1, 2021

Wetlands

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

FIRM Panel 17097C0266K

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

National Flood Hazard Layer FIRMette



87°55'18"W 42°9'37"N

Legend

2.3.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, A99
- With BFE or Depth Zone AE, AG, AH, X
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

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

OTHER AREAS

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

OTHER FEATURES

- 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

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped



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 9/1/2021 at 4:40 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 unmodernized areas are not included for regulatory purposes.

Packet Pg. 87



Existing Condition Calculations

- Curve Number Calculation
- Time of Concentration Calculation
- TR-20 Model

JPG

SPW Buffalo Grove
Existing Condition
Lake County, Illinois

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Area 1	Open space; grass cover > 75% (good)	B	.268	61
	Paved parking lots, roofs, driveways	B	.594	98
	Total Area / Weighted Curve Number		.86 ===	86 ==
Area 2	Open space; grass cover > 75% (good)	B	.61	61
	Paved parking lots, roofs, driveways	B	1.6	98
	Total Area / Weighted Curve Number		2.21 =====	88 ==
Area 3	Open space; grass cover > 75% (good)	B	.049	61
	Paved parking lots, roofs, driveways	B	.162	98
	Total Area / Weighted Curve Number		.21 ===	89 ==

JPG

SPW Buffalo Grove
Existing Condition
Lake County, Illinois

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

Area 1							
SHEET	100	0.0189	0.011				0.020
SHALLOW	40	0.0189	0.050				0.005
					Time of Concentration		0.1
							=====
Area 2							
SHEET	100	0.0105	0.240				0.301
SHALLOW	190	0.0137	0.050				0.028
					Time of Concentration		.329
							=====
Area 3							
SHEET	21	0.0340	0.240				0.054
SHALLOW	19	0.0153	0.025				0.002
					Time of Concentration		0.1
							=====

WinTR-20 Printed Page File Beginning of Input Data List
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WinTR-20: Version 1.11 0 0 .01 0
 Speedway Buffalo Grove, IL - Existing Conditions

SUB-AREA:

Area 01	OUTLET	0.0013437586.	0.167	YN NN
Area 02	OUTLET	0.0034531388.	0.329	YN NN
Area 03	OUTLET	0.0003281389.	0.167	YN NN

STORM ANALYSIS:

100Y24H	8.57	24 Hour	2
2Y24H	3.34	24 Hour	2

RAINFALL DISTRIBUTION:

48 Hour	2.4			
	0.	.0231	.0479	.0712
	.1253	.1523	.1791	.2033
	.2541	.2835	.3125	.3390
	.3861	.4124	.4508	.5129
	.6919	.8005	.8971	.9604
				1.00
24 Hour	1.2			
	0.	.0205	.0431	.0667
	.1171	.1436	.1691	.1964
	.2633	.3093	.3635	.4392
	.6102	.6989	.7819	.8492
	.9311	.9534	.9706	.9856
				1.00
18 Hour	0.9			
	0.	.0205	.0431	.0667
	.1171	.1436	.1691	.1964
	.2633	.3093	.3635	.4392
	.6102	.6989	.7819	.8492
	.9311	.9534	.9706	.9856
				1.00
12 Hour	0.6			
	0.	.0229	.0482	.0778
	.1579	.2139	.2841	.3644
	.5435	.6238	.6976	.7548
	.8470	.8781	.9022	.9217
	.9529	.9657	.9774	.9884
				1.00
6 Hour	0.3			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
3 Hour	0.15			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
2 Hours	0.10			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
1 Hour	0.05			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
0.5 Hour	0.025			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00

```

72 Hour      3.6
              0.      .0231      .0479      .0712      .0978
              .1253      .1523      .1791      .2033      .2283
              .2541      .2835      .3125      .3390      .3633
              .3861      .4124      .4508      .5129      .5931
              .6919      .8005      .8971      .9604      1.00

0.25 Hour    .0125
              0.      .0836      .1773      .2811      .3833
              .4745      .5550      .6225      .6722      .7082
              .7417      .7697      .7981      .8255      .8518
              .8740      .8947      .9117      .9270      .9403
              .9536      .9656      .9774      .9885      1.00

0.17 Hour    0.0085
              0.      .0836      .1773      .2811      .3833
              .4745      .5550      .6225      .6722      .7082
              .7417      .7697      .7981      .8255      .8518
              .8740      .8947      .9117      .9270      .9403
              .9536      .9656      .9774      .9885      1.00

0.08 Hour    0.004
              0.      .0836      .1773      .2811      .3833
              .4745      .5550      .6225      .6722      .7082
              .7417      .7697      .7981      .8255      .8518
              .8740      .8947      .9117      .9270      .9403
              .9536      .9656      .9774      .9885      1.00

120 Hour     6.
              0.      .0231      .0479      .0712      .0978
              .1253      .1523      .1791      .2033      .2283
              .2541      .2835      .3125      .3390      .3633
              .3861      .4124      .4508      .5129      .5931
              .6919      .8005      .8971      .9604      1.00

240 Hour     12.
              0.      .0231      .0479      .0712      .0978
              .1253      .1523      .1791      .2033      .2283
              .2541      .2835      .3125      .3390      .3633
              .3861      .4124      .4508      .5129      .5931
              .6919      .8005      .9604      1.00

GLOBAL OUTPUT:
  2      .01      0.1      YNNNN      YNNNNN

VERIFICATION:
  DATA PREP      Y      Y      Y      Y
  PROCESSING      Y      Y      Y

```

WinTR-20 Printed Page File End of Input Data List

Speedway Buffalo Grove, IL - Existing Conditions

Name of printed page file:
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STORM 100Y24H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Time (hr)	Peak Flow Rate (cfs)	Rate (csm)
Area 01	0.001		6.882		19.20	0.52	387.94
Area 02	0.003		7.125		19.21	1.36	392.90
Area 03	0.328E-03		7.211		19.20	0.13	395.65
OUTLET	0.005		7.067		19.20	2.01	391.77

STORM 2Y24H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Time (hr)	Peak Flow Rate (cfs)	Rate (csm)
Area 01	0.001		1.945		19.21	0.17	126.84
Area 02	0.003		2.121		19.23	0.46	133.16
Area 03	0.328E-03		1.917		19.21	0.04	136.86
OUTLET	0.005		2.062		19.22	0.68	131.72

WinTR-20 Version 1.11

Page 1

06/14/2021 11:21

Speedway Buffalo Grove, IL - Existing Conditions

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	Peak Flow by Storm				
			100Y24H (cfs)	2Y24H (cfs)	(cfs)	(cfs)	(cfs)
Area 01	0.001		0.52	0.17			
Area 02	0.003		1.36	0.46			
Area 03	0.328E-03		0.13	0.04			
OUTLET	0.005		2.01	0.68			

Proposed Condition Calculations

- Curve Number Calculation
- Restrictor Release Rate Calculation
- Stormwater Volume Summary
- TR-20 Model
- Water Quality Treatment Volume Summary
- Lake County Runoff Volume Reduction
- Overflow Weir Calculation
 - TR-20 Model
 - Overflow Weir Calculation

JPG

SPW Buffalo Grove
Proposed Condition
Lake County, Illinois

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
Area 1	Open space; grass cover > 75% (good)	C	.42	74
	Paved parking lots, roofs, driveways	C	.38	98
	Total Area / Weighted Curve Number		.8 ==	85 ==
Area 2	Open space; grass cover > 75% (good)	C	.96	74
	Paved parking lots, roofs, driveways	C	1.52	98
	Total Area / Weighted Curve Number		2.48 ====	89 ==

ALLOWABLE RELEASE RATE AND
DETENTION POND RESTRICTOR CALCULATIONS DISTURBED 2 YEAR

$$DIA. = 2 \times \sqrt{\frac{Q}{C \times 3.14 \times \sqrt{2 \times G \times H}}}$$

G = 32.2 FT/S²

Q(basin) = 0.45 CFS

C = 0.61

HWL ELEV. = 643.20 FEET
 ORIFICE INV. = 642.10 FEET

H = 0.93 FEET

DIA. = 4.18 INCHES
 USE 4.15 INCH RESTRICTOR

DETENTION POND RESTRICTOR CALCULATIONS DISTURBED 100 YEAR

$$DIA. = 2 \times \sqrt{\frac{Q}{C \times 3.14 \times \sqrt{2 \times G \times H}}}$$

G = 32.2 FT/S²

Q(basin) = 1.35 CFS

C = 0.61

HWL ELEV. = 645.00 FEET
 ORIFICE INV. = 643.20 FEET

H = 1.63 FEET

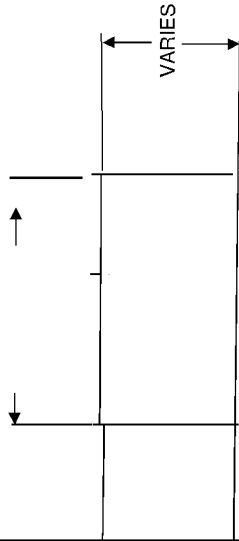
Q (2YR RESTRICTOR AT 100 YR HWL)= 0.76 CFS

NET Q_{ALLOWABLE}= 0.59 CFS

DIA. = 4.17 INCHES
 USE 4.15 INCH RESTRICTOR

PROPOSED DISCHARGE FROM DETENTION POND

PROPOSED OVERFLOW WEIR



NOTE: NOT TO SCALE

$Q = Cx Ax (H^{0.5})$

WHERE: C= 3
A= H^2 ft²
H= VARIES ft
 $Q_{\text{overflow}} = Cx Ax (H^{0.5})$ CFS

FLOW THROUGH POND-2 YR RESTRICTOR

$Q = A \times C \times \sqrt{2 \times G \times H}$

$G = 32.2 \text{ FT/S}^2$

$C = 0.61$

$H = \text{VARIES FEET}$

$DIA. = 4.15 \text{ INCHES}$

FLOW THROUGH POND-100 YR RESTRICTOR

$Q = (DIA/12)^2 \times C \times 3.14 \times \sqrt{2 \times G \times H}$

$G = 32.2 \text{ FT/S}^2$

$C = 0.61$

$H = \text{VARIES FEET}$

$DIA. = 4.15 \text{ INCHES}$

OUTFLOW SUMMARY TABLE

HWL	OVERFLOW H (HWL-) (FT)	WEIR Q (cfs)	2 YR RESTRICTOR Q (cfs)	100 YR RESTRICTOR Q (cfs)	TOTAL Q (CFS)
642.10			0.0000	-	0.0000
643.00			0.3921	-	0.3921
643.20			0.4427	0.0000	0.4427
644.00			0.6043	0.3641	0.9684
644.70			0.7164	0.5297	1.2461
645.00			0.7594	0.5865	1.3459

2YR HWL (Allowable = 0.46 cfs)

100 YR HWL (Allowable = 1.36 cfs)

Pond Storage Volume			Incremental Storage Volume		Cumulative Storage Volume	
Elevation	Area					
645.00	8,240 Sq. Ft.	OR	0.1892 Ac.	2,247 Cu. Ft.	13,463 Cu. Ft.	0.3091 Ac-Ft
644.72 100-YR HWL	7,810 Sq. Ft.	OR	0.1793 Ac.	5,226 Cu. Ft.	11,215 Cu. Ft.	0.2575 Ac-Ft
644.00	6,706 Sq. Ft.	OR	0.1539 Ac.	4,906 Cu. Ft.	5,990 Cu. Ft.	0.1375 Ac-Ft
643.20 2-YR HWL	5,560 Sq. Ft.	OR	0.1276 Ac.	1,083 Cu. Ft.	1,083 Cu. Ft.	0.0249 Ac-Ft
643.00	5,273 Sq. Ft.	OR	0.1211 Ac.			
TOTAL POND V _{645.00} =					13,463 CU. FT.	
					OR	0.3091 AC-FT

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 Speedway Buffalo Grove, IL - Proposed Conditions

SUB-AREA:

Area 01	OUTLET	0.00125	85.	0.167	YN NN
Area 02	TO BASIN	0.003875	89.	0.167	YN NN

STREAM REACH:

TO BASIN	OUTLET	STRUC 01	YN NNN
----------	--------	----------	--------

STORM ANALYSIS:

100Y24H	8.57	24 Hour	2
2Y24H	3.34	24 Hour	2

STRUCTURE RATING:

STRUC 01	642.10		
	642.10	0.	0.
	643.00	0.3921	0.001
	643.15	0.4427	0.0249
	644.00	0.9684	0.1375
	645.00	1.3459	0.3091

RAINFALL DISTRIBUTION:

48 Hour	2.4			
	0.	.0231	.0479	.0712
	.1253	.1523	.1791	.2033
	.2541	.2835	.3125	.3390
	.3861	.4124	.4508	.5129
	.6919	.8005	.8971	.9604
				1.00
24 Hour	1.2			
	0.	.0205	.0431	.0667
	.1171	.1436	.1691	.1964
	.2633	.3093	.3635	.4392
	.6102	.6989	.7819	.8492
	.9311	.9534	.9706	.9856
				1.00
18 Hour	0.9			
	0.	.0205	.0431	.0667
	.1171	.1436	.1691	.1964
	.2633	.3093	.3635	.4392
	.6102	.6989	.7819	.8492
	.9311	.9534	.9706	.9856
				1.00
12 Hour	0.6			
	0.	.0229	.0482	.0778
	.1579	.2139	.2841	.3644
	.5435	.6238	.6976	.7548
	.8470	.8781	.9022	.9217
	.9529	.9657	.9774	.9884
				1.00
6 Hour	0.3			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
3 Hour	0.15			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
2 Hours	0.10			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255
	.8740	.8947	.9117	.9270
	.9536	.9656	.9774	.9885
				1.00
1 Hour	0.05			
	0.	.0836	.1773	.2811
	.4745	.5550	.6225	.6722
	.7417	.7697	.7981	.8255

	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
0.5 Hour	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
72 Hour	3.6				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.8971	.9604	1.00
0.25 Hour	.0125				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
0.17 Hour	0.0085				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
0.08 Hour	0.004				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
120 Hour	6.				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.8971	.9604	1.00
240 Hour	12.				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.9604	1.00	

GLOBAL OUTPUT:
2 .01 0.1 YNNNN YNNNNN

VERIFICATION:
DATA PREP Y Y
PROCESSING Y Y

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Speedway Buffalo Grove, IL - Proposed Conditions

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STORM 100Y24H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 02	0.004		7.246		19.20	1.53	395.65
TO BASIN	0.004	Upstream	7.246		19.20	1.53	395.65
TO BASIN	0.004	Downstream	7.246	644.72	20.57	1.24	320.40
Area 01	0.001		6.761		19.21	0.48	385.02
OUTLET	0.005		7.128		20.41	1.69	330.38

STORM 2Y24H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Time (hr)	Rate (cfs)	Rate (csm)
Area 02	0.004		2.208		19.21	0.53	136.86
TO BASIN	0.004	Upstream	2.208		19.21	0.53	136.86
TO BASIN	0.004	Downstream	2.208	643.18	20.52	0.46	119.12
Area 01	0.001		1.861		19.21	0.15	123.37
OUTLET	0.005		2.123		20.42	0.61	119.07

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Speedway Buffalo Grove, IL - Proposed Conditions

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	100Y24H (cfs)	2Y24H (cfs)	Peak Flow by Storm (cfs)	(cfs)	(cfs)
Area 01	0.001		0.48	0.15			
Area 02	0.004		1.53	0.53			
TO BASIN	0.004		1.53	0.53			
DOWNSTREAM			1.24	0.46			
OUTLET	0.005		1.69	0.61			

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CIVIL ENGINEERING
2675 PRATUM AVENUE
HOFFMAN ESTATES, IL 60192
(224) 293-6333
WWW.WTENGINEERING.COM

PROJECT NAME: SPW Buffalo Grove
PROJECT NUMBER: D2100065
LOCATION: Buffalo Grove, IL
DATE: 9/1/2021
BY: DAK

Lake County Required Volume Control Storage

Drainage Area: 3.28 acres
Proposed Impervious Area: 82,764 ft²
1.90 ac
Percent Impervious: 58 %
Requirement of 0.01 inch of runoff for every 1% of impervious surface area: 0.58 inch

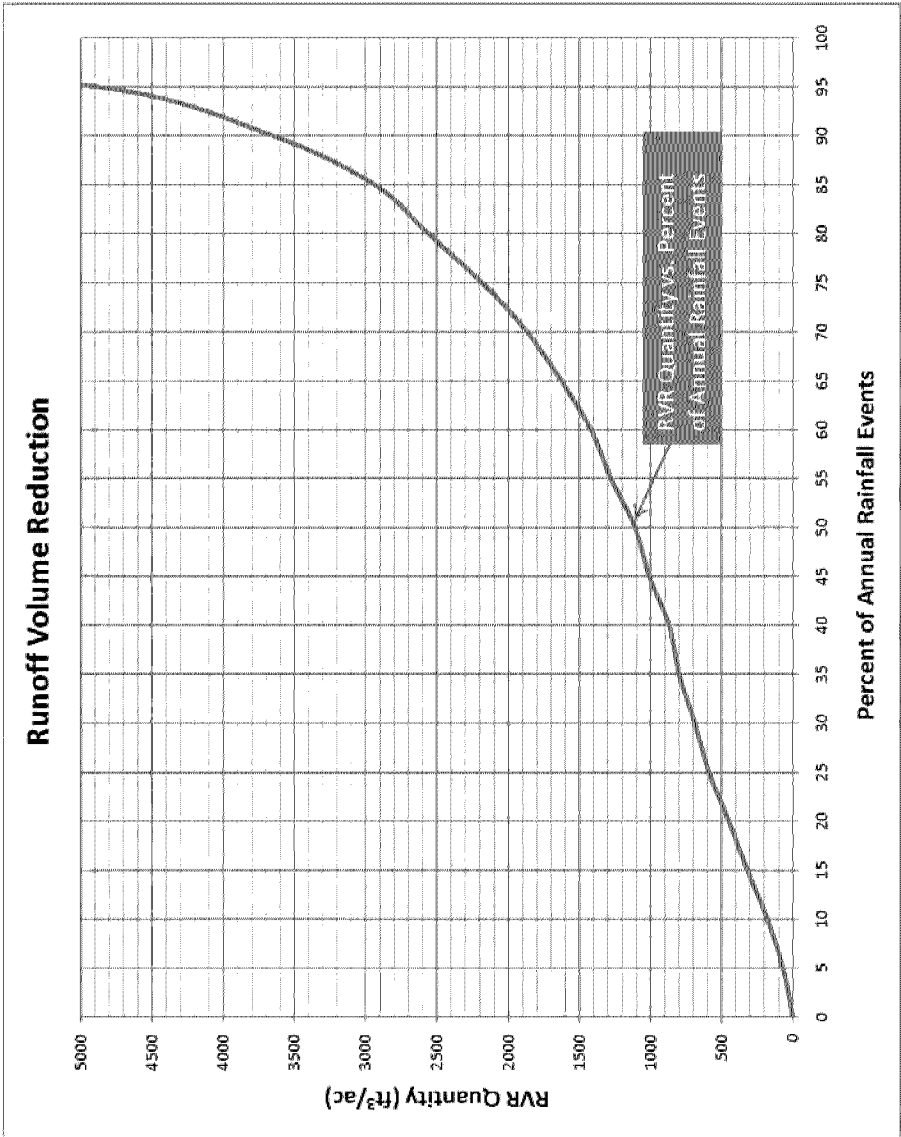
Runoff Volume to Detain: 0.092 ac-ft
3995 cf

VOLUME CONTROL RESERVOIR VOLUME

ELEVATION	Provided Volume Control Storage		CUMULATIVE STORAGE VOLUME
	AREA	INCR. STORAGE VOLUME	
643.00	5,273 SQ. FT.		
		4,607 CU. FT.	4,607 CU. FT. OR 0.106 AC-FT
642.00	3,940 SQ. FT.		
TOTAL POND V _{643.00} =			4,607 ft ³
OR			0.106 ac-ft

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Appendix O: Runoff Volume Reduction



Runoff Depth based on Figure 3 of the Center For Watershed Protection Report.
Runoff Depth = P*R, where:
P = Rainfall Depth (inches)
R=Volumetric Runoff Coefficient = 0.95 for 100% impervious cover [0.05+0.009(I)], where I is 100% (impervious cover)]
RVR Quantity = Runoff Depth (in) / 12 (in/ft) * 43560 (ft² /ac)

100% impervious values		
Percent of Annual Rainfall Events	Runoff Depth (in)	RVR Quantity ft³/ac new Impervious
0	0	0
5	0.02	70
10	0.05	180
15	0.09	320
20	0.12	450
25	0.16	590
30	0.19	690
35	0.22	800
40	0.24	870
45	0.28	1010
50	0.30	1110
55	0.35	1280
60	0.39	1420
65	0.45	1630
70	0.51	1870
75	0.60	2180
80	0.70	2560
85	0.81	2940
90	1.01	3660
95	1.35	4900
99	2.41	8760

Site Impervious
= 1.90 Ac New Impervious / 3.28 Ac
Total Site Area
= 0.58

Water Quality Volume Provided
= 4,607 C.F.
RVR Quantity =
4,607 C.F./ 1.90 Ac New Impervious
= 2,424 C.F.
= 79% +/-

Detention Basin Water Quality Volume: 4,607C.F.

Overflow Weir Calculation

- TR-20 Model
- Overflow Weir Calculation

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 Speedway Buffalo Grove, IL - Proposed Conditions - Overland Flood Route

SUB-AREA:

Area 01	OUTLET	0.00125	85.	0.167	YN NN
Area 02	OUTLET	0.003875	89.	0.167	YN NN

STORM ANALYSIS:

100Y24H	8.57	24 Hour	2
100Y18H	8.06	18 Hour	2
100Y12H	7.46	12 Hour	2
100Y6H	6.43	6 Hour	2
100Y3H	5.49	3 Hour	2
100Y2H	4.97	2 Hours	2
100Y1H	4.03	1 Hour	2
100Y.5H	3.17	0.5 Hour	2
100Y.25H	2.32	0.25 Hour	2
100Y.17H	1.80	0.17 Hour	2
100Y.08H	1.03	0.08 Hour	2
100Y48H	9.28	48 Hour	2

RAINFALL DISTRIBUTION:

48 Hour	2.4				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.8971	.9604	1.00
24 Hour	1.2				
	0.	.0205	.0431	.0667	.0912
	.1171	.1436	.1691	.1964	.2278
	.2633	.3093	.3635	.4392	.5211
	.6102	.6989	.7819	.8492	.8974
	.9311	.9534	.9706	.9856	1.00
18 Hour	0.9				
	0.	.0205	.0431	.0667	.0912
	.1171	.1436	.1691	.1964	.2278
	.2633	.3093	.3635	.4392	.5211
	.6102	.6989	.7819	.8492	.8974
	.9311	.9534	.9706	.9856	1.00
12 Hour	0.6				
	0.	.0229	.0482	.0778	.1133
	.1579	.2139	.2841	.3644	.4529
	.5435	.6238	.6976	.7548	.8038
	.8470	.8781	.9022	.9217	.9381
	.9529	.9657	.9774	.9884	1.00
6 Hour	0.3				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
3 Hour	0.15				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
2 Hours	0.10				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
1 Hour	0.05				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082

	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
0.5 Hour	0.025				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
72 Hour	3.6				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.8971	.9604	1.00
0.25 Hour	.0125				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
0.17 Hour	0.0085				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
0.08 Hour	0.004				
	0.	.0836	.1773	.2811	.3833
	.4745	.5550	.6225	.6722	.7082
	.7417	.7697	.7981	.8255	.8518
	.8740	.8947	.9117	.9270	.9403
	.9536	.9656	.9774	.9885	1.00
120 Hour	6.				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.8971	.9604	1.00
240 Hour	12.				
	0.	.0231	.0479	.0712	.0978
	.1253	.1523	.1791	.2033	.2283
	.2541	.2835	.3125	.3390	.3633
	.3861	.4124	.4508	.5129	.5931
	.6919	.8005	.9604	1.00	
GLOBAL OUTPUT:					
2	.01	0.1	YNNNN	YNNNNN	
VERIFICATION:					
DATA PREP			Y Y		Y Y
PROCESSING	Y	Y	Y		

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Speedway Buffalo Grove, IL - Proposed Conditions - Overland Flood Route

Name of printed page file:

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STORM 100Y24H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		6.761		19.21	0.48	385.02
Area 02	0.004		7.246		19.20	1.53	395.65
OUTLET	0.005		7.128		19.20	2.01	393.05

STORM 100Y18H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		6.269		14.41	0.60	479.49
Area 02	0.004		6.745		14.40	1.91	494.18
OUTLET	0.005		6.629		14.40	2.51	490.59

STORM 100Y12H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		5.692		6.01	0.81	647.04
Area 02	0.004		6.157		6.01	2.64	680.61
OUTLET	0.005		6.044		6.01	3.45	672.42

STORM 100Y6H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		4.709		1.24	1.35	1081.40
Area 02	0.004		5.153		1.23	4.66	1202.89
OUTLET	0.005		5.044		1.23	6.01	1173.06

STORM 100Y3H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		3.823		0.79	2.10	1680.68
Area 02	0.004		4.242		0.67	7.42	1913.86
OUTLET	0.005		4.140		0.67	9.50	1854.45

STORM 100Y2H

Speedway Buffalo Grove, IL - Proposed Conditions - Overland Flood Route

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		3.340		0.56	2.69	2153.37
Area 02	0.004		3.743		0.52	9.52	2457.20
OUTLET	0.005		3.645		0.53	12.20	2380.50

STORM 100Y1H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		2.484		0.37	3.65	2918.89
Area 02	0.004		2.851		0.35	13.24	3415.65
OUTLET	0.005		2.762		0.35	16.87	3292.05

STORM 100Y.5H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		1.731		0.24	4.05	3241.03
Area 02	0.004		2.054		0.23	15.35	3961.74
OUTLET	0.005		1.975		0.24	19.40	3785.24

STORM 100Y.25H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		1.036		0.20	3.46	2765.36
Area 02	0.004		1.298		0.19	13.69	3533.46
OUTLET	0.005		1.235		0.19	17.13	3343.37

STORM 100Y.17H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		0.652		0.19	2.64	2113.95
Area 02	0.004		0.865		0.18	10.91	2814.26
OUTLET	0.005		0.813		0.18	13.54	2641.10

STORM 100Y.08H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		0.187		0.15	0.99	793.69
Area 02	0.004		0.304		0.15	4.94	1275.12

Speedway Buffalo Grove, IL - Proposed Conditions - Overland Flood Route

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.005		0.275		0.15	5.93	1156.18

STORM 100Y48H

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
Area 01	0.001		7.443		50.40	0.33	260.05
Area 02	0.004		7.945		50.40	1.03	265.07
OUTLET	0.005		7.822		50.40	1.35	263.84

Speedway Buffalo Grove, IL - Proposed Conditions - Overland Flood Route

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	----- Peak Flow by Storm -----				
			100Y24H (cfs)	100Y18H (cfs)	100Y12H (cfs)	100Y6H (cfs)	100Y3H (cfs)
Area 01	0.001		0.48	0.60	0.81	1.35	2.10
Area 02	0.004		1.53	1.91	2.64	4.66	7.42
OUTLET	0.005		2.01	2.51	3.45	6.01	9.50

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	----- Peak Flow by Storm -----				
			100Y2H (cfs)	100Y1H (cfs)	100Y.5H (cfs)	100Y.25H (cfs)	100Y.17H (cfs)
Area 01	0.001		2.69	3.65	4.05	3.46	2.64
Area 02	0.004		9.52	13.24	15.35	13.69	10.91
OUTLET	0.005		12.20	16.87	19.40	17.13	13.54

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	----- Peak Flow by Storm -----				
			100Y.08H (cfs)	100Y48H (cfs)	(cfs)	(cfs)	(cfs)
Area 01	0.001		0.99	0.33			
Area 02	0.004		4.94	1.03			
OUTLET	0.005		5.93	1.35			

Overflow Weir Wall in Outlet Control Structure

Rectangular Weir

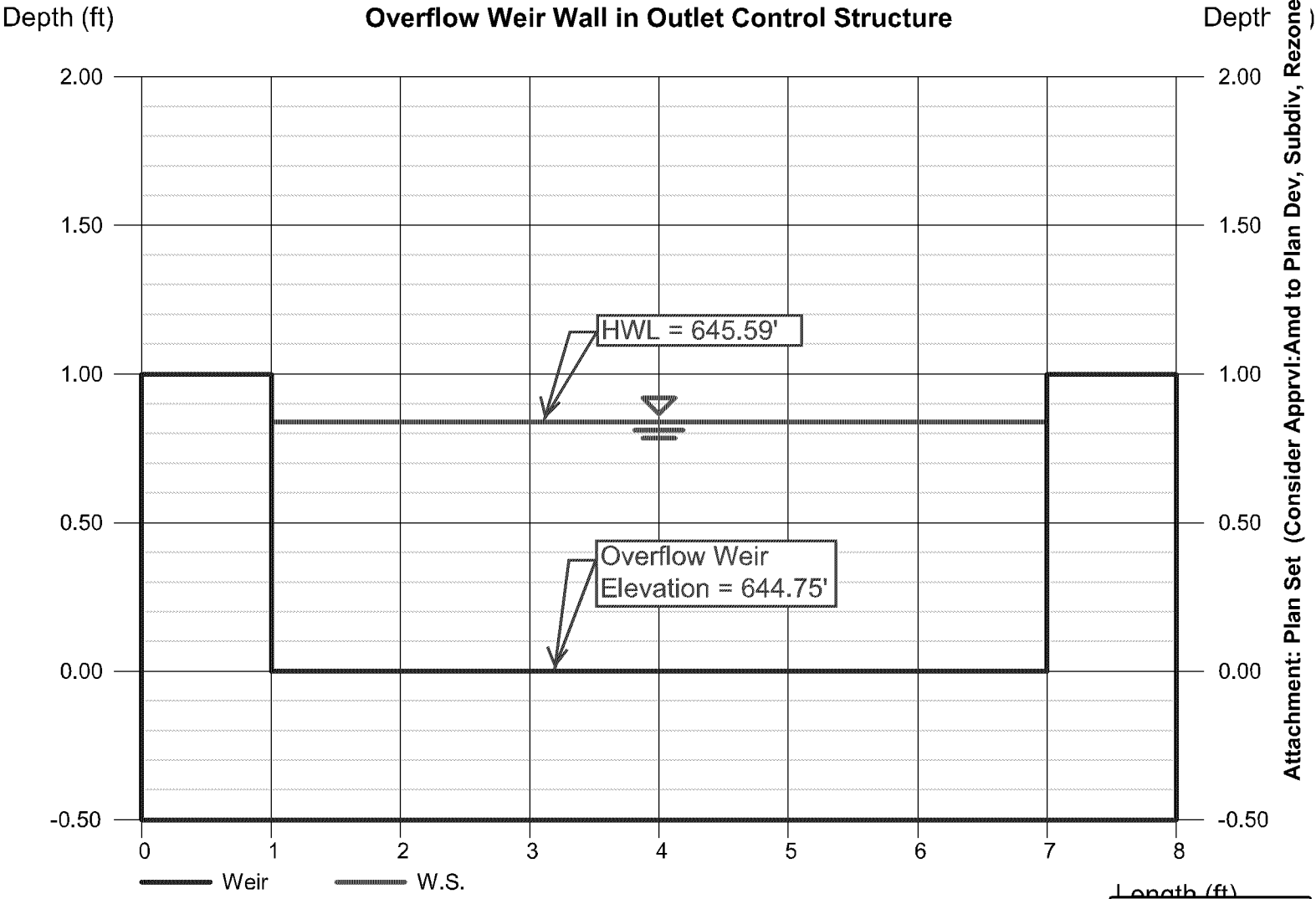
Crest = Sharp
Bottom Length (ft) = 6.00
Total Depth (ft) = 1.00

Highlighted

Depth (ft) = 0.84
Q (cfs) = 15.35
Area (sqft) = 5.03
Velocity (ft/s) = 3.05
Top Width (ft) = 6.00

Calculations

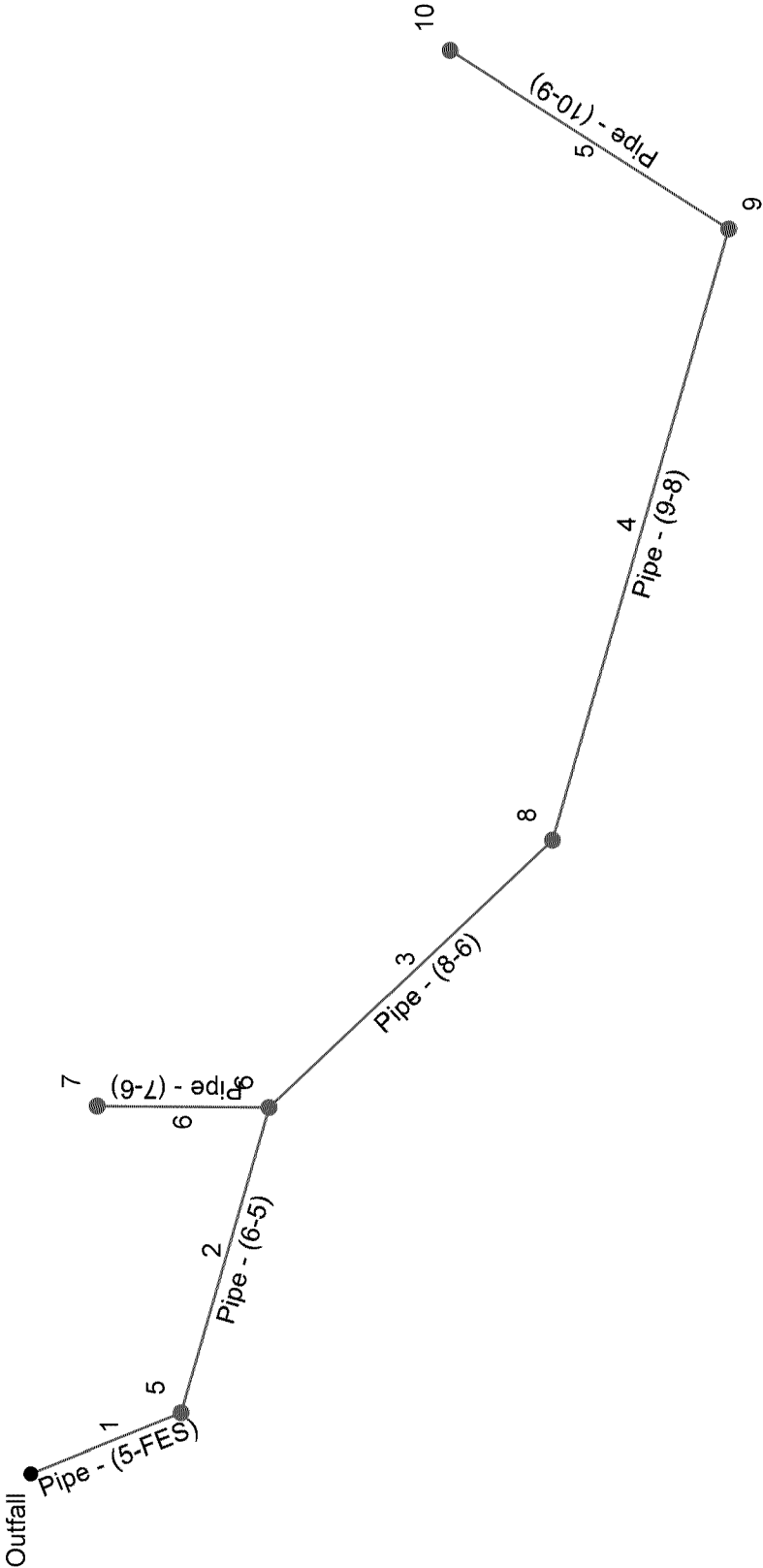
Weir Coeff. Cw = 3.33
Compute by: Known Q
Known Q (cfs) = 15.35



Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Storm Sewer Calculations

- Hydraflow Storm Sewer Capacity Calculations



Line No.	Line ID	Line Length	Drng Area	Runoff Coeff	Incr CxA	Tc	Pipe Travel	i Inlet	Flow Rate	Line Rise	Line Span	n-val Pipe	Capac Full	Pipe Travel	i Sys	Drng Area	Runoff Coeff	Incr CxA	Coef C1	Area A1	Coef C2
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,																					
Project File: Storm Sewer FES W.stm													Number of lines: 6			Date: 9/9/2021					
1	Pipe - (5-FES)	45,000	0.16	0.73	0.12	7.5	0.18	7.44	7.33	18	18	0.013	16.42	0.18	6.78	0.16	0.73	0.12	0.90	0.10	0.45
2	Pipe - (6-5)	88,000	0.41	0.84	0.34	7.1	0.39	7.44	6.63	18	18	0.013	7.51	0.39	6.88	0.41	0.84	0.34	0.90	0.36	0.45
3	Pipe - (8-6)	108,000	0.15	0.79	0.12	6.6	0.55	7.44	3.97	15	15	0.013	4.39	0.55	7.01	0.15	0.79	0.12	0.90	0.11	0.45
4	Pipe - (9-8)	176,000	0.15	0.74	0.11	5.5	1.10	7.44	3.27	15	15	0.013	3.61	1.10	7.30	0.15	0.74	0.11	0.90	0.10	0.45
5	Pipe - (10-9)	92,000	0.40	0.84	0.34	5.0	0.48	7.44	2.50	12	12	0.013	2.63	0.48	7.44	0.40	0.84	0.34	0.90	0.34	0.45
6	Pipe - (7-6)	48,000	0.12	0.45	0.05	5.0	1.56	7.44	0.40	12	12	0.013	3.63	1.56	7.44	0.12	0.45	0.05	0.90	0.00	0.45

Area A2	DnStm Ln No	Gnd/Rim El Up	Gnd/Rim El Dn	HGL Up	HGL Dn	Known Q	Inlet Time	Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,
(ac)		(ft)	(ft)	(ft)	(ft)	(cfs)	(min)	
0.06	Outfall	647.70	643.50	644.15	642.70	0.00	5.0	
0.05	1	647.50	647.70	644.65	644.20	0.00	5.0	
0.04	2	647.70	647.50	645.41	645.00	0.00	5.0	
0.06	3	647.90	647.70	645.95	645.50	0.00	5.0	
0.06	4	648.10	647.90	646.51	646.06	0.00	5.0	
0.12	2	648.00	647.50	645.26 j	645.00	0.00	5.0	
								Number of lines: 6
								Date: 9/9/2021

Project File: Storm Sewer FES W.stm

NOTES: ** Critical depth

Hydraulic Grade Line Computations

2.3.b

Line	Size (in) (2)	Q (cfs) (3)	Downstream								Len (ft) (12)	Upstream								Check		JL coeff (K) (23)	Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan, (	
			Invert elev (ft) (4)	HGL elev (ft) (5)	Depth (ft) (6)	Area (sqft) (7)	Vel (ft/s) (8)	Vel head (ft) (9)	EGL elev (ft) (10)	Sf (%) (11)		Invert elev (ft) (13)	HGL elev (ft) (14)	Depth (ft) (15)	Area (sqft) (16)	Vel (ft/s) (17)	Vel head (ft) (18)	EGL elev (ft) (19)	Sf (%) (20)	Ave Sf (%) (21)	Enrgy loss (ft) (22)			
1	18	7.33	642.00	642.70	0.70	0.81	9.02	0.48	643.18	0.000	45.000	643.10	644.15	1.05**	1.32	5.56	0.48	644.63	0.000	0.000	n/a	0.82		
2	18	6.63	643.10	644.20	1.10*	1.38	4.80	0.36	644.55	0.511	88.000	643.55	644.65	1.10	1.38	4.80	0.36	645.00	0.511	0.511	0.450	1.00		
3	15	3.97	643.55	645.00	1.25	1.23	3.23	0.16	645.17	0.378	108.000	644.05	645.41	1.25	1.23	3.23	0.16	645.57	0.377	0.377	0.408	0.56		
4	15	3.27	644.05	645.50	1.25	1.23	2.66	0.11	645.61	0.256	176.000	644.60	645.95	1.25	1.23	2.66	0.11	646.06	0.256	0.256	0.450	0.97		
5	12	2.50	644.60	646.06	1.00	0.79	3.18	0.16	646.22	0.493	92.000	645.10	646.51	1.00	0.79	3.18	0.16	646.67	0.493	0.493	0.453	1.00		
6	12	0.40	644.50	645.00	0.50	0.16	1.02	0.09	645.10	0.000	48.000	645.00	645.26 j	0.26**	0.16	2.45	0.09	645.36	0.000	0.000	n/a	1.00		
Project File: Storm Sewer FES W.stm																							Run Date: 9/9/2021	
Number of lines: 6																								

Hydraflow HGL Computation Procedure

2.3.b

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

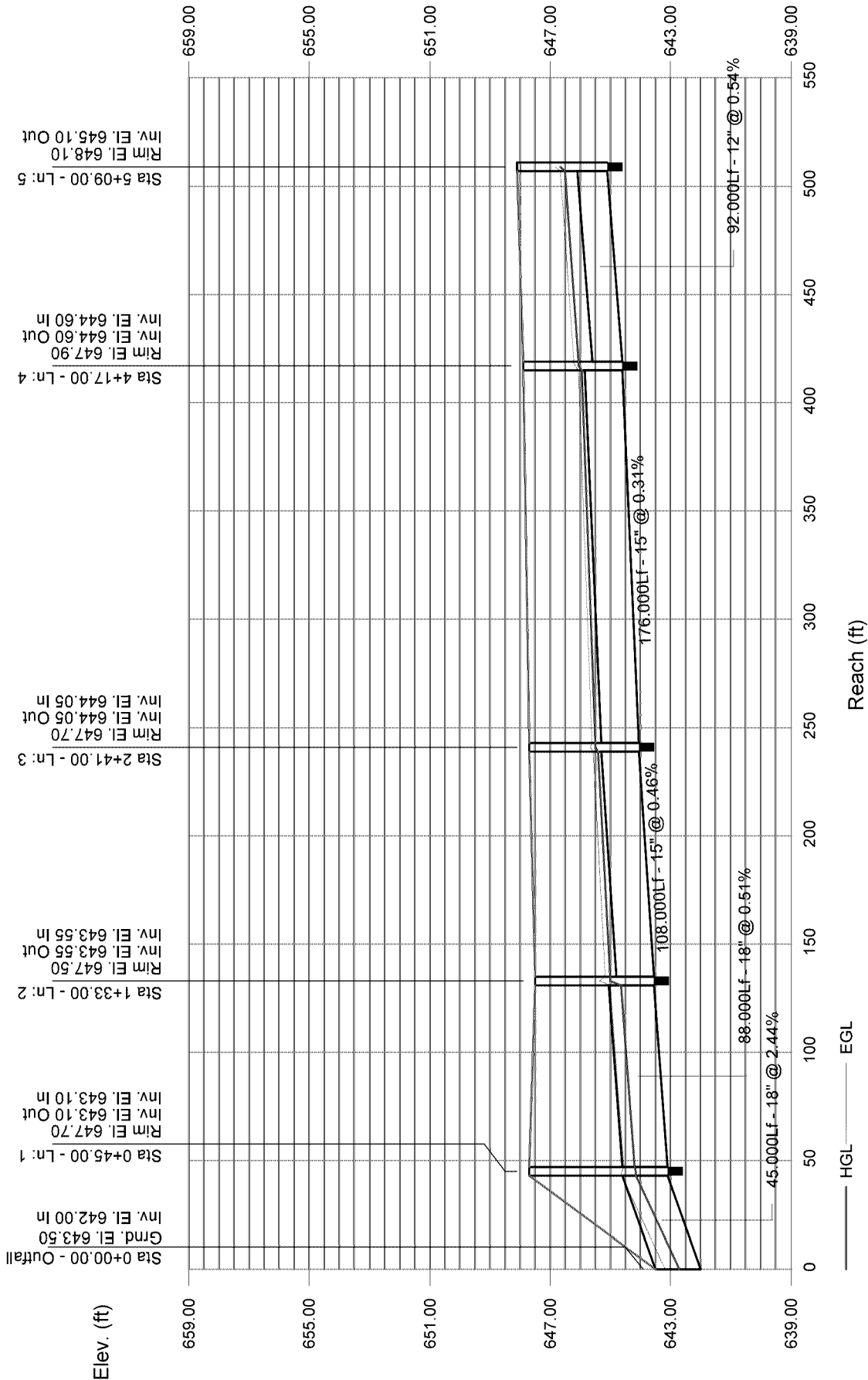
- Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.
- Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.
- Col. 3 Total flow rate in the line.
- Col. 4 The elevation of the downstream invert.
- Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.
- Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.
- Col. 7 Cross-sectional area of the flow at the downstream end.
- Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).
- Col. 9 Velocity head (Velocity squared / 2g).
- Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).
- Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).
- Col. 12 The line length.
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- Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).
- Col. 21 The average of the downstream and upstream friction slopes.
- Col. 22 Energy loss. Average $Sf/100 \times \text{Line Length}$ (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.
- Col. 23 The junction loss coefficient (K).
- Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

Storm Sewer Profile

Proj. file: Storm Sewer

2.3.b

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan,

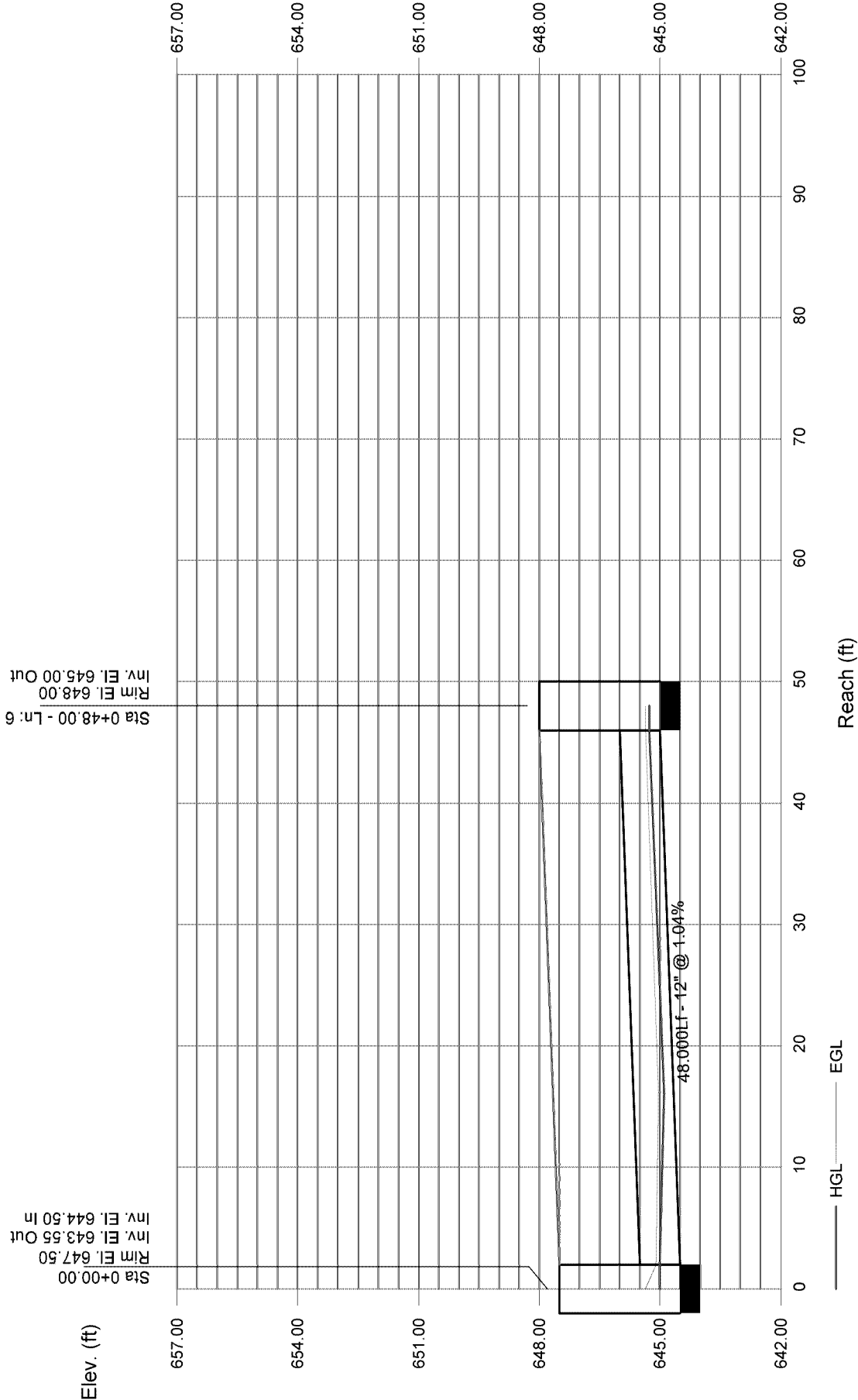


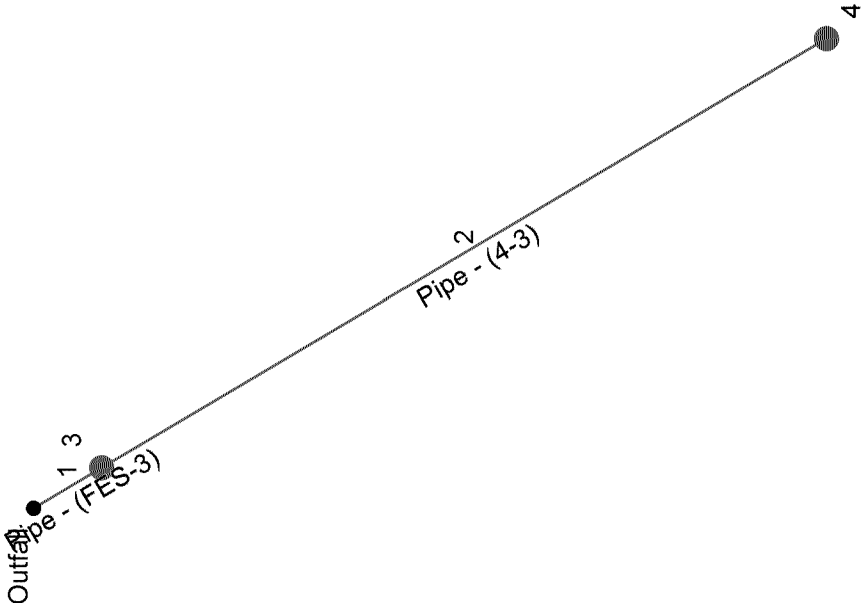
Storm Sewer Profile

Proj. file: Storm Sewer

2.3.b

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,





Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,																					
Project File: Storm Sewer FES SE.stm																	Number of lines: 2		Date: 9/9/2021		
Line No.	Line ID	Line Length	Drng Area	Runoff Coeff	Incr CxA	Tc	Pipe Travel	i Inlet	Flow Rate	Line Rise	Line Span	n-val Pipe	Capac Full	Pipe Travel	i Sys	Drng Area	Runoff Coeff	Incr CxA	Coeff C1	Area A1	Coef C2
1	Pipe - (FES-3)	14,000	0.31	0.90	0.28	6.3	0.05	7.44	3.36	12	12	0.013	8.77	0.05	7.08	0.31	0.90	0.28	0.90	0.31	0.41
2	Pipe - (4-3)	148,000	0.22	0.89	0.20	5.0	1.33	7.44	1.46	12	12	0.013	4.58	1.33	7.44	0.22	0.89	0.20	0.90	0.22	0.41

NOTES: Intensity = 181.97 / (Inlet time + 20.80) ^ 0.98 -- Return period = 10 Yrs. ; ** Critical depth

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,								Number of lines: 2		Date: 9/9/2021	
Area A2	DnStm Ln No	Gnd/Rim El Up (ft)	Gnd/Rim El Dn (ft)	HGL Up (ft)	HGL Dn (ft)	Known Q (cfs)	Inlet Time (min)				
0.00	Outfall	645.50	643.50	643.63	642.43	0.00	5.0				
0.01	1	648.00	645.50	645.81 j	643.63	0.00	5.0				

NOTES: ** Critical depth

Hydraulic Grade Line Computations

2.3.b

Line	Size	Q (cfs) (3)	Downstream							Len (ft) (12)	Upstream								Check		JL coeff (K) (23)	Minor loss (K) (23)	
			Invert elev (ft) (4)	HGL elev (ft) (5)	Depth (ft) (6)	Area (sqft) (7)	Vel (ft/s) (8)	Vel head (ft) (9)	EGL elev (ft) (10)		Sf (%) (11)	Invert elev (ft) (13)	HGL elev (ft) (14)	Depth (ft) (15)	Area (sqft) (16)	Vel (ft/s) (17)	Vel head (ft) (18)	EGL elev (ft) (19)	Sf (%) (20)	Ave Sf (%) (21)			Enrgy loss (ft) (22)
1	12	3.36	642.00	642.43	0.43	0.32	10.42	0.40	642.83	0.000	14.000	642.85	643.63	0.78**	0.66	5.09	0.40	644.04	0.000	0.000	n/a	0.15	
2	12	1.46	642.85	643.63	0.78	0.40	2.21	0.20	643.84	0.000	148.000	645.30	645.81 j	0.51**	0.40	3.61	0.20	646.01	0.000	0.000	n/a	1.00	
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan, (																							
Project File: Storm Sewer FES SE.stm												Number of lines: 2					Run Date: 9/9/2021						

Hydraflow HGL Computation Procedure

2.3.b

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

- Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.
- Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.
- Col. 3 Total flow rate in the line.
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- Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.
- Col. 7 Cross-sectional area of the flow at the downstream end.
- Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).
- Col. 9 Velocity head (Velocity squared / 2g).
- Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).
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- Col. 22 Energy loss. Average Sf/100 x Line Length (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.
- Col. 23 The junction loss coefficient (K).
- Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

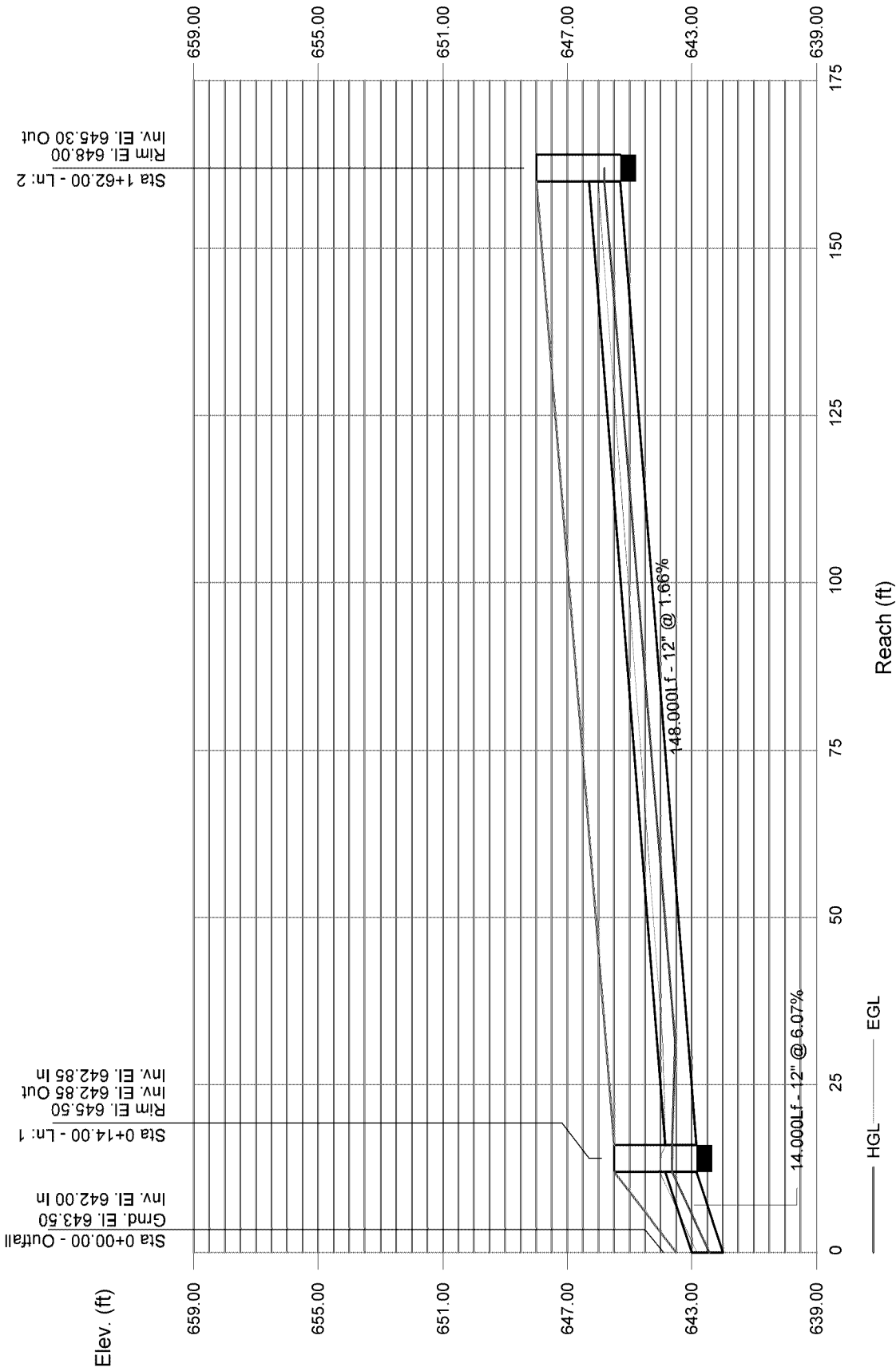
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan,

Storm Sewer Profile

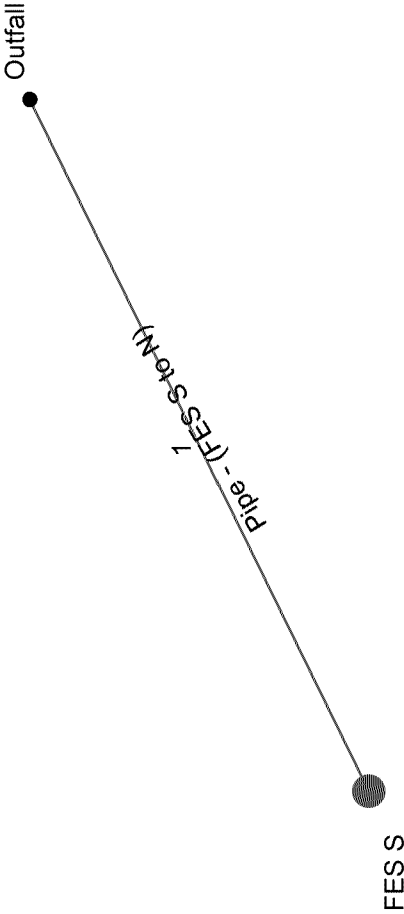
Proj. file: Storm Sewer

2.3.b

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



Project File: Storm Sewer FES S.stm																	Number of lines: 1		Date: 9/7/2021	
Line No.	Line ID	Line Length (ft)	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Tc (min)	Pipe Travel (min)	i Inlet (in/hr)	Flow Rate (cfs)	Line Rise (in)	Line Span (in)	n-val Pipe	Capac Full (cfs)	Pipe Travel (min)	i Sys (in/hr)	Drng Area (ac)	Runoff Coeff (C)	Incr CxA	Coeff C1 (C)	Area A1 (ac)
1	Pipe - (FES S to N)	104.000	0.16	0.44	0.07	5.0	2.60	7.44	0.52	12	12	0.013	2.47	2.60	7.44	0.16	0.44	0.07	0.90	0.03
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan, ;																				

Area A2	DnStm Ln No	Gnd/Rim El Up (ft)	Gnd/Rim El Dn (ft)	HGL Up (ft)	HGL Dn (ft)	Known Q (cfs)	Inlet Time (min)	
0.13	Outfall	647.00	647.00	646.02	645.51	0.00	5.0	
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,								
Project File: Storm Sewer FES S.stm							Number of lines: 1	Date: 9/7/2021

NOTES: ** Critical depth

Hydraulic Grade Line Computations

2.3.b

Line	Size (in) (2)	Q (cfs) (3)	Downstream								Len (ft) (12)	Upstream								Check		JL coeff (K) (23)	Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan, (		
			Invert elev (ft) (4)	HGL elev (ft) (5)	Depth (ft) (6)	Area (sqft) (7)	Vel (ft/s) (8)	Vel head (ft) (9)	EGL elev (ft) (10)	Sf (%) (11)		Invert elev (ft) (13)	HGL elev (ft) (14)	Depth (ft) (15)	Area (sqft) (16)	Vel (ft/s) (17)	Vel head (ft) (18)	EGL elev (ft) (19)	Sf (%) (20)	Ave Sf (%) (21)	Enrgy loss (ft) (22)				
1	12	0.52	645.20	645.51	0.31	0.21	2.53	0.10	645.61	0.497	104.000	645.70	646.02	0.32	0.21	2.46	0.09	646.11	0.460	0.479	0.498	1.00			
Project File: Storm Sewer FES S.stm																								Run Date: 9/7/2021	
Number of lines: 1																									

; c = cir e = ellip b = box

Hydraflow HGL Computation Procedure

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

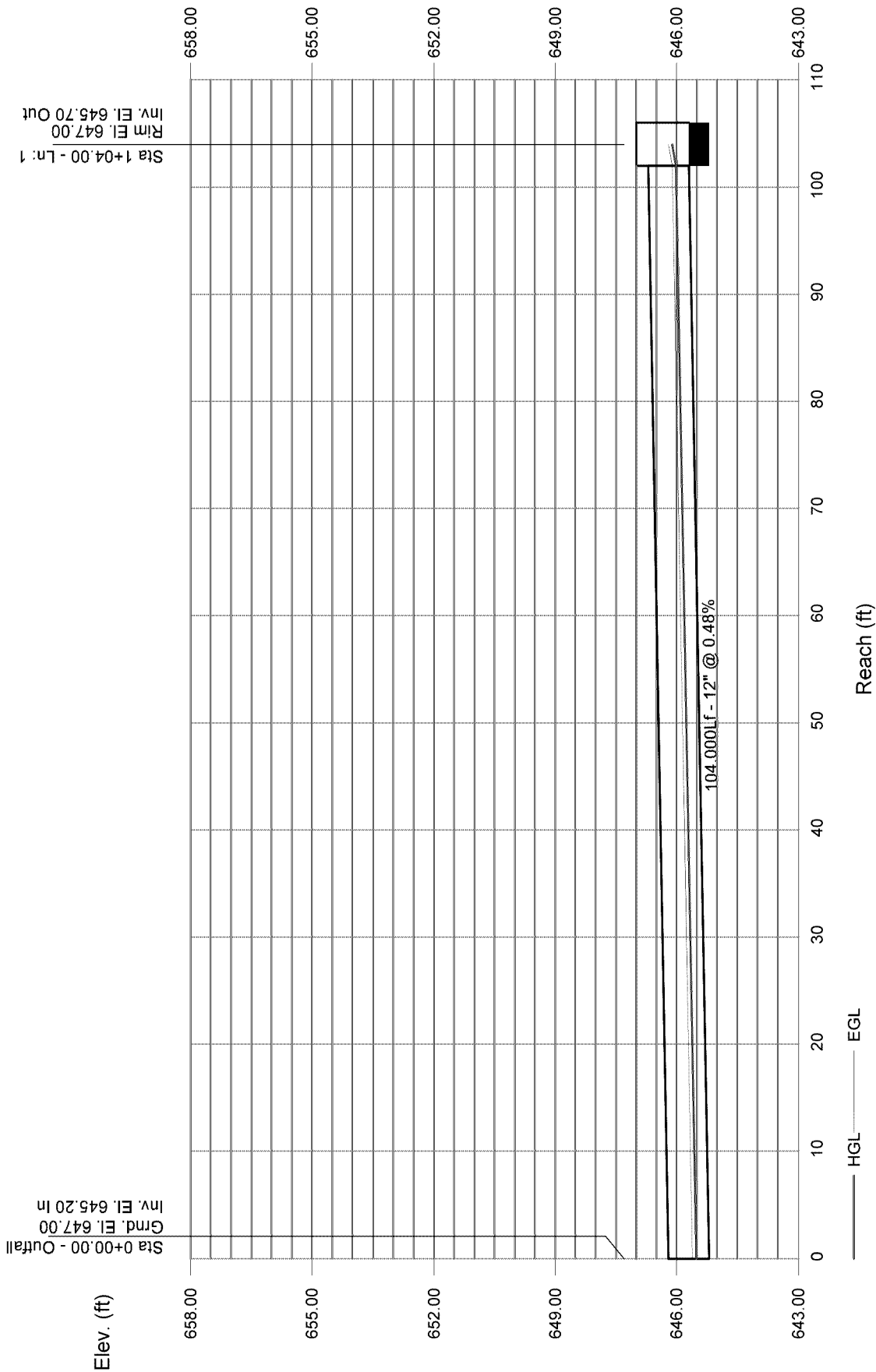
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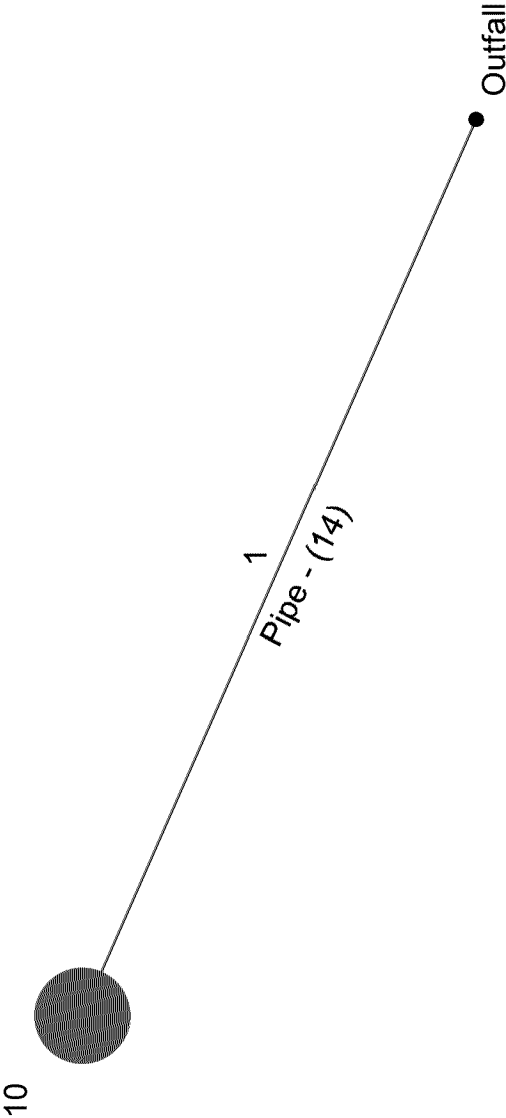
Storm Sewer Profile

Proj. file: Storm Sewer

2.3.b

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,





Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,

Line No.	Line ID	Line Length	Drng Area	Runoff Coeff	Incr CxA	Tc	Pipe Travel	i Inlet	Flow Rate	Line Rise	Line Span	n-val Pipe	Capac Full	Pipe Travel	i Sys	Drng Area	Runoff Coeff	Incr CxA	Coeff C1	Area A1	Coef# C2
1	Pipe - (14)	43.000	0.36	0.20	0.07	5.0	1.05	7.44	0.54	12	12	0.013	2.72	1.05	7.44	0.36	0.20	0.07	0.90	0.36	0.41
Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezzone, Vacation, Prelim Plan,																					
Project File: New.stm															Number of lines: 1					Date: 9/7/2021	

NOTES: Intensity = 181.97 / (Inlet time + 20.80) ^ 0.98 -- Return period = 10 Yrs. ; ** Critical depth

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,								Number of lines: 1		Date: 9/7/2021	
Area A2	DnStm Ln No	Gnd/Rim El Up	Gnd/Rim El Dn	HGL Up	HGL Dn	Known Q	Inlet Time				
0.01	Outfall	647.65	647.00	645.75	645.64	0.00	5.0				

NOTES: ** Critical depth

Hydraulic Grade Line Computations

2.3.b

Line	Size (in) (2)	Q (cfs) (3)	Downstream								Len (ft) (12)	Upstream								Check		JL coeff (K) (23)	Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, (
			Invert elev (ft) (4)	HGL elev (ft) (5)	Depth (ft) (6)	Area (sqft) (7)	Vel (ft/s) (8)	Vel head (ft) (9)	EGL elev (ft) (10)	Sf (%) (11)		Invert elev (ft) (13)	HGL elev (ft) (14)	Depth (ft) (15)	Area (sqft) (16)	Vel (ft/s) (17)	Vel head (ft) (18)	EGL elev (ft) (19)	Sf (%) (20)	Ave Sf (%) (21)	Enrgy loss (ft) (22)		
1	12	0.54	645.20	645.64	0.44	0.20	1.61	0.11	645.75	0.000	43.000	645.45	645.75	0.30**	0.20	2.66	0.11	645.86	0.000	0.000	n/a	1.00	
Run Date: 9/7/2021																							
Number of lines: 1																							
Project File: New.stm																							

Hydraflow HGL Computation Procedure

2.3.b

General Procedure:

Hydraflow computes the HGL using the Bernoulli energy equation. Manning's equation is used to determine energy losses due to pipe friction. In a standard step, iterative procedure, Hydraflow assumes upstream HGLs until the energy equation balances. If the energy equation cannot balance, supercritical flow exists and critical depth is temporarily assumed at the upstream end. A supercritical flow Profile is then computed using the same procedure in a downstream direction using momentum principles.

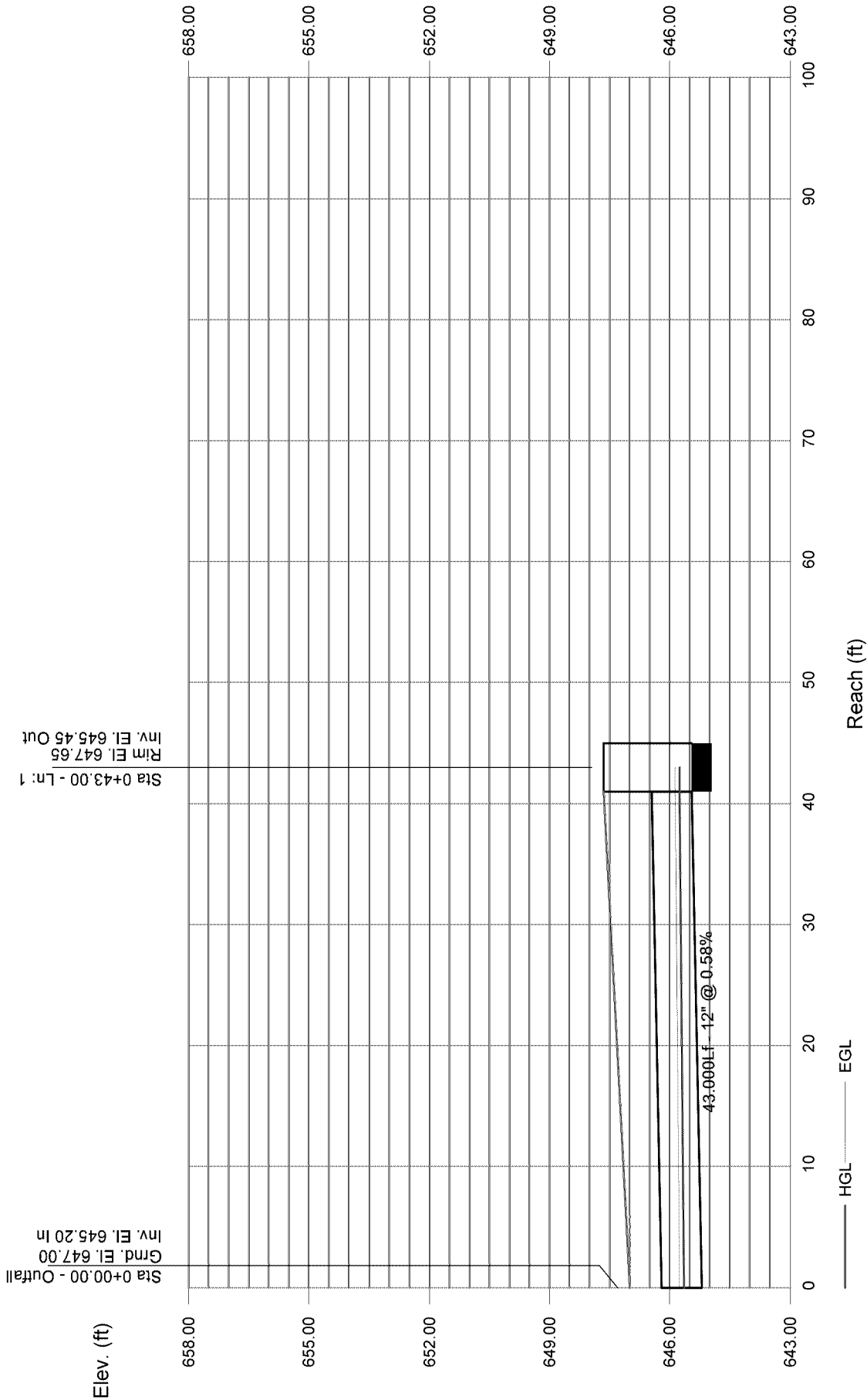
- Col. 1 The line number being computed. Calculations begin at Line 1 and proceed upstream.
- Col. 2 The line size. In the case of non-circular pipes, the line rise is printed above the span.
- Col. 3 Total flow rate in the line.
- Col. 4 The elevation of the downstream invert.
- Col. 5 Elevation of the hydraulic grade line at the downstream end. This is computed as the upstream HGL + Minor loss of this line's downstream line.
- Col. 6 The downstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.
- Col. 7 Cross-sectional area of the flow at the downstream end.
- Col. 8 The velocity of the flow at the downstream end, (Col. 3 / Col. 7).
- Col. 9 Velocity head (Velocity squared / 2g).
- Col. 10 The elevation of the energy grade line at the downstream end, HGL + Velocity head, (Col. 5 + Col. 9).
- Col. 11 The friction slope at the downstream end (the S or Slope term in Manning's equation).
- Col. 12 The line length.
- Col. 13 The elevation of the upstream invert.
- Col. 14 Elevation of the hydraulic grade line at the upstream end.
- Col. 15 The upstream depth of flow inside the pipe (HGL - Invert elevation) but not greater than the line size.
- Col. 16 Cross-sectional area of the flow at the upstream end.
- Col. 17 The velocity of the flow at the upstream end, (Col. 3 / Col. 16).
- Col. 18 Velocity head (Velocity squared / 2g).
- Col. 19 The elevation of the energy grade line at the upstream end, HGL + Velocity head, (Col. 14 + Col. 18) .
- Col. 20 The friction slope at the upstream end (the S or Slope term in Manning's equation).
- Col. 21 The average of the downstream and upstream friction slopes.
- Col. 22 Energy loss. Average $Sf/100 \times \text{Line Length}$ (Col. 21/100 x Col. 12). Equals (EGL upstream - EGL downstream) +/- tolerance.
- Col. 23 The junction loss coefficient (K).
- Col. 24 Minor loss. (Col. 23 x Col. 18). Is added to upstream HGL and used as the starting HGL for the next upstream line(s).

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezone, Vacation, Prelim Plan,

Storm Sewer Profile

Proj. f 2.3.b

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



Appendix

- EX-1.0: Existing Condition Exhibit
- EX-2.0: Proposed Condition Exhibit
- EX-3.0: Storm Sewer Area Exhibit

PROPOSED CONDITION	IMPERVIOUS AREA (ACRES)	PERVIOUS AREA (ACRES)	TOTAL AREA (ACRES)
AREA 1	0.594	0.268	0.86
AREA 2	1.600	0.610	2.21
AREA 2	0.162	0.049	0.21

HATCH
PERVIOUS
IMPERVIOUS

TC PATH - - - - -

WT GROUP
 10000 WILSON AVENUE, SUITE 200
 WILSON, OHIO 44095
 (440) 948-1234
 www.wtgroup.com

WT Group
 10000 WILSON AVENUE, SUITE 200
 WILSON, OHIO 44095
 (440) 948-1234
 www.wtgroup.com

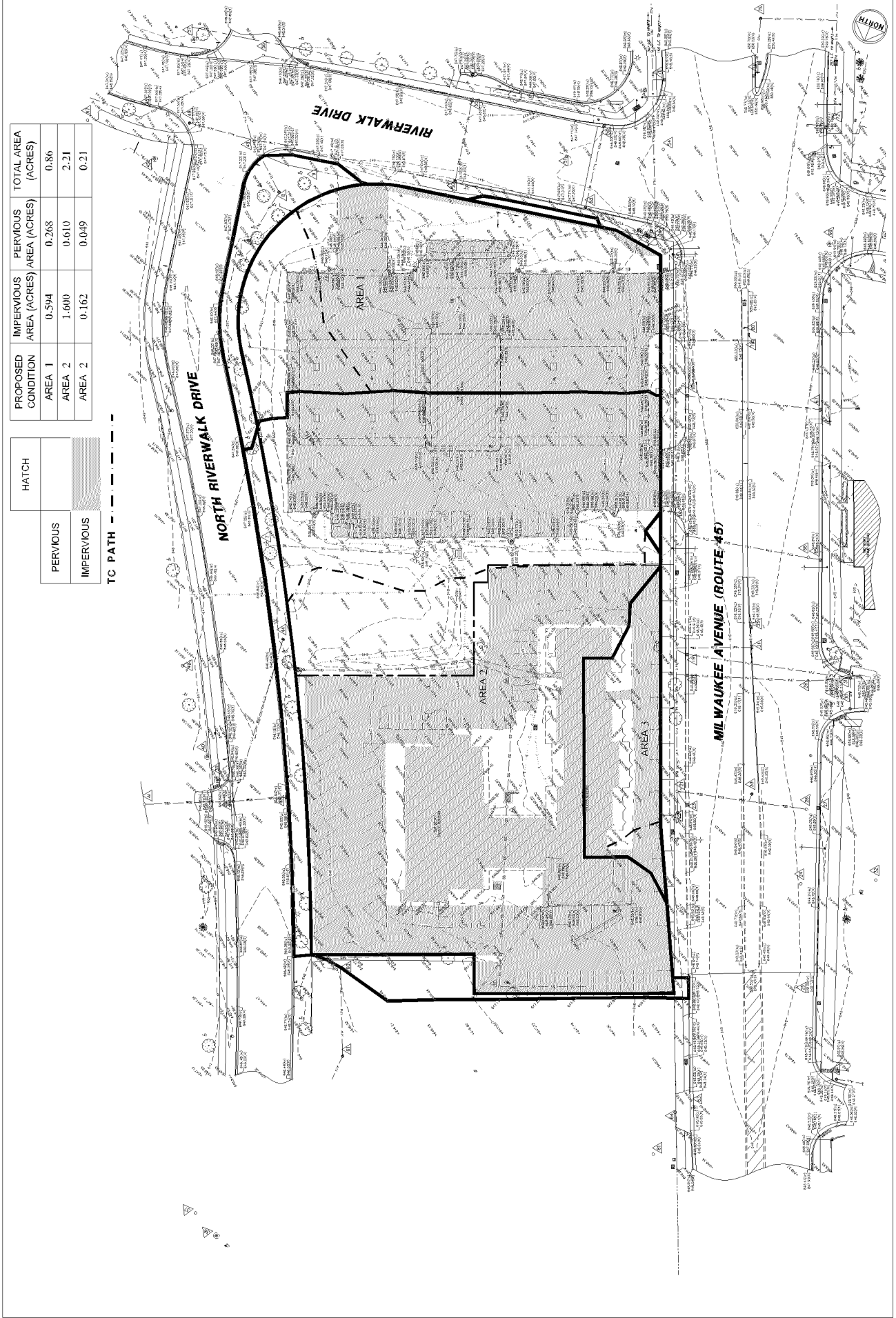
Speedway
 10000 WILSON AVENUE, SUITE 200
 WILSON, OHIO 44095
 (440) 948-1234
 www.wtgroup.com

NO.	DESCRIPTION	DATE
1	ISSUED FOR PERMIT	08/11/2011
2	REVISION	

EXISTING CONDITION EXHIBIT
 NEW BUILD
 301 NORTH RIVERWALK AVE
 LANE COUNTY
 BIRFALO GROVE, IL

PROJECT NO.	7649
DATE	08/11/2011
BY	J. BLASCHKE
CHECKED BY	J. BLASCHKE
SCALE	AS SHOWN
PROJECT NAME	301 NORTH RIVERWALK AVE

EX-1



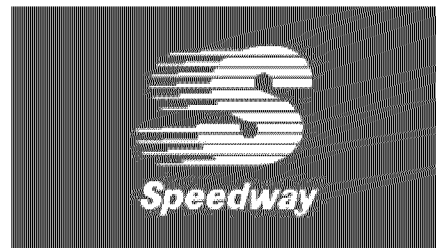
Packet Pg. 130

Traffic Impact Study Proposed Speedway Fuel Center Expansion

Buffalo Grove, Illinois



Prepared For:



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

August 13, 2021

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 the proposed rebuild and expansion of the existing Speedway fuel center located in the northeast corner of the intersection of Milwaukee Avenue with Riverwalk Drive in Buffalo Grove, Illinois. The existing Speedway fuel center contains 16 fueling positions and an approximately 4,200 square-foot convenience store. The plans call for expanding the site to include the vacant building to the north in order to provide four additional passenger vehicle fueling positions (totaling 20 passenger vehicle fueling positions), two truck fueling positions, and an approximately 4,600 square-foot convenience store. The existing fuel center is currently served by two restricted access drives on Milwaukee Avenue and a full movement access drive on Riverwalk Drive. Access to the expanded site will be provided via a three-quarter movement access drive and a right-in/right-out access drive on Milwaukee Avenue, a full movement access drive on Riverwalk Drive, and a full movement access drive on N. Riverwalk Drive.

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed expansion 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 development.

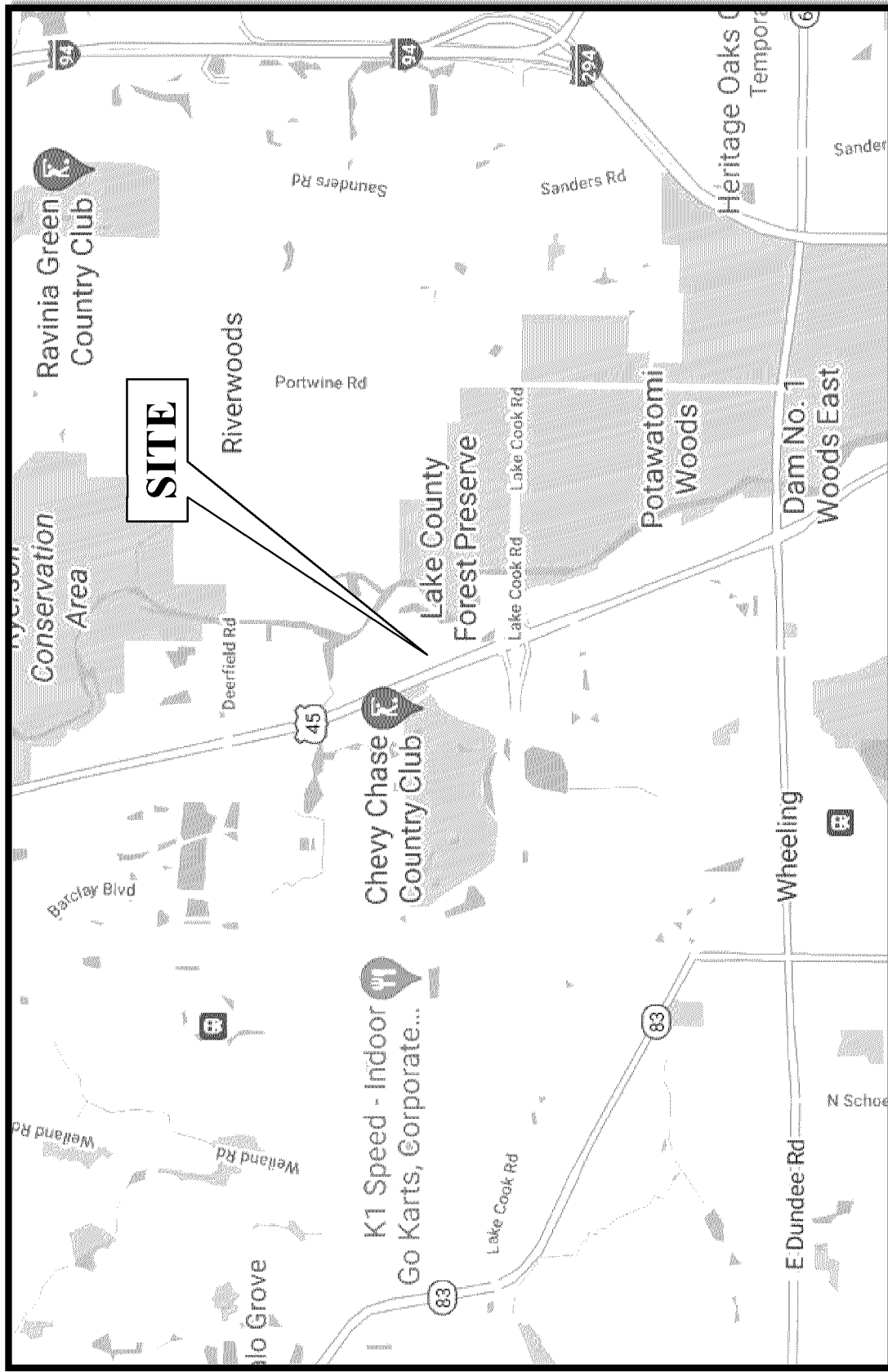
Figure 1 shows the location of the site in relation to the area roadway system. **Figure 2** shows an aerial view of the site.

The sections of this report present the following:

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

Traffic capacity analyses were conducted for the weekday morning and weekday peak hours for the following conditions:

1. Existing Conditions – Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes in the surrounding area.
2. No-Build Conditions – Analyzes the capacity of the existing roadway system using existing peak hour traffic volumes increased by a regional growth factor.
3. Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes that include the background traffic volumes, and the traffic estimated to be generated by the proposed development.



Site Location

Figure 1



Aerial View of Site Location

Figure 2

Speedway Fuel Center Expansion
Buffalo Grove, Illinois



2. Existing Conditions

Existing transportation conditions in the vicinity of the site were documented based on field visits conducted by KLOA, Inc. in order to obtain a database for projecting future 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 is currently occupied by the existing Speedway fuel center and a vacant building, is located in the northeast quadrant of the intersection of Milwaukee Avenue with Riverwalk Drive and Columbus Parkway. Land uses in the vicinity of the include Chery Chase County Club, Mi Mexico restaurant and Beyer Dental & Associates to the west and a Shell fuel center to the south.

Existing Roadway System Characteristics

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

Milwaukee Avenue (US Route 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. 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 and the parking lot access 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 and the parking lot access drive, 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 the Speedway gas station access drives, Milwaukee Avenue provides two through lanes and a combined through/right-turn lane on the northbound approaches and four through lanes on the southbound approaches. It should be noted that Milwaukee Avenue narrows from three lanes to two lanes in the northbound direction just south of E. Chevy Chase Drive. 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 with Milwaukee Avenue, Columbus Parkway provides an exclusive left-turn lane and a shared through/right-turn lane. Both the east and west legs of this intersection provide standard style crosswalks with pedestrian countdown signals. At its unsignalized intersection with N. Riverwalk Drive, Riverwalk Drive provides a combined left-turn lane/through/right-turn on both approaches. At its unsignalized intersection with the Speedway gas station access drive, Riverwalk Drive provides a combined through/left-turn lane on the eastbound approach. The westbound approach provides two through lanes and a combined through/right-turn lane. 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/through/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.

E. 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/through/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.

N. Riverwalk Drive is a north-south local roadway that provides one lane in each direction. At its unsignalized intersection with Riverwalk Drive, Riverwalk Drive provides an exclusive right-turn lane and a combined through/left-turn lane on the southbound approach and a combined left-turn/through/right-turn lane on the northbound approach under stop sign control. N. Riverwalk Drive is under the jurisdiction of the Village of Buffalo Grove.

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 on Thursday, July 15, 2021, during the weekday morning (6:30 to 9:00 A.M.) and evening (4:00 to 6:30 P.M.) peak periods at the following intersections:

- Milwaukee Avenue with Riverwalk Drive and Columbus Parkway
- Milwaukee Avenue with Gas Station Access Drives
- Milwaukee Avenue with Prague Avenue
- Milwaukee Avenue with E. Chery Chase Drive
- Riverwalk Drive with Gas Station Access Drive
- Riverwalk Drive with N. Riverwalk Drive

In order to represent normal conditions, counts along Milwaukee Avenue were compared with the hourly counts found on the IDOT website and were therefore increased by 35 percent during the weekday morning peak hour and by 10 percent during the weekday evening peak hour.

The results of the traffic counts showed that the weekday morning peak hour of traffic occurs from 7:15 A.M. to 8:15 A.M. and the weekday evening peak hour of traffic occurs from 4:15 P.M. to 5:15 P.M.

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

Crash Analysis

KLOA, Inc. obtained crash data¹ from IDOT for the most recent available five years (2016 to 2020) for the intersections of Milwaukee Avenue with Riverwalk Drive and Columbus Parkway, Milwaukee Avenue with the gas station access drives, Milwaukee Avenue with Prague Avenue, Milwaukee Avenue with E. Chery Chase Drive, Riverwalk Drive with the gas station access drive, and Riverwalk Drive with N. Riverwalk Drive. **Tables 1 through 4** summarize the crash data for the intersections of Milwaukee Avenue with Riverwalk Drive and Columbus Parkway, Milwaukee Avenue with Prague Avenue, Milwaukee Avenue with the gas station access drive, and Riverwalk Drive with the gas station access drive, respectively. In addition, there were seven crashes reported at the intersection of Milwaukee Avenue with E. Chevy Chase Drive and seven crashes reported at the intersection of Riverwalk Drive with N. Riverwalk Drive over the five-year period. A review of the crash data indicated that no fatalities were reported at any of the studied intersections between 2016 and 2020.

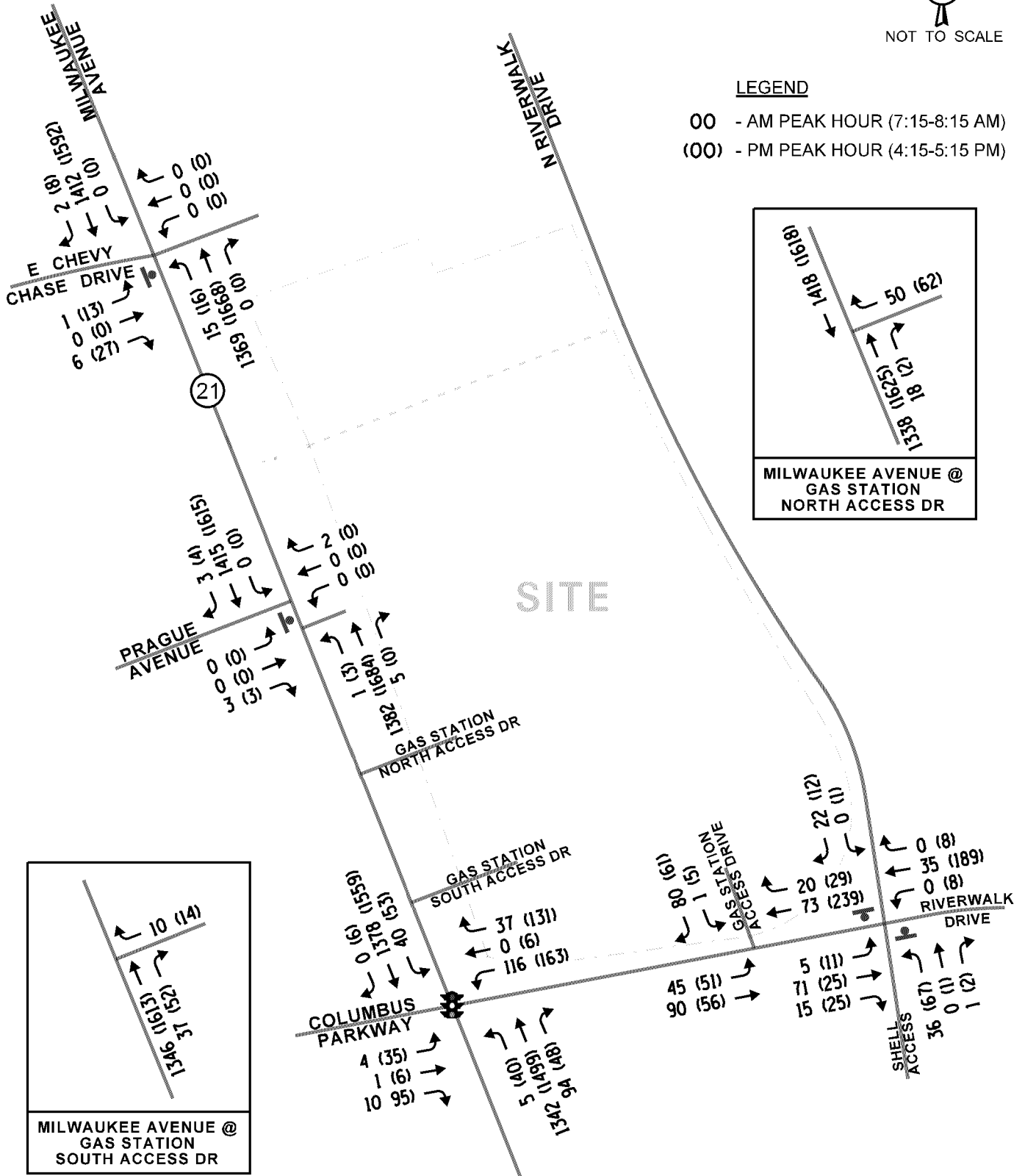
¹ IDOT DISCLAIMER: The motor vehicle crash data referenced herein was provided by the Illinois Department of Transportation. Any conclusions drawn from analysis of the aforementioned data are the sole responsibility of the data recipient(s). Additionally, for coding years 2015 to present, the Bureau 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.



NOT TO SCALE

LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (4:15-5:15 PM)



Speedway Expansion
Buffalo Grove, Illinois

Year 2021 Base Traffic Volumes



Job No: 21-143

Figure: 4

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Table 1
MILWAUKEE AVENUE WITH RIVERWALK DRIVE AND COLUMBUS PARKWAY -
CRASH SUMMARY

Year	Type of Accident Frequency						Total
	Angle	Object	Rear End	Sideswipe	Turning	Other	
2016	0	1	3	1	6	0	11
2017	1	0	1	3	1	0	6
2018	0	1	4	2	2	0	9
2019	0	0	0	2	1	0	3
2020	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>2</u>
Total	1	2	9	8	11	0	31
Average/Year	<1.0	<1.0	1.8	1.6	2.2	0	6.2

Table 2
MILWAUKEE AVENUE WITH PRAGUE AVENUE - CRASH SUMMARY

Year	Type of Accident Frequency						Total
	Angle	Object	Rear End	Sideswipe	Turning	Other	
2016	0	0	2	0	1	0	3
2017	0	0	2	1	0	0	3
2018	0	1	1	1	1	0	4
2019	0	0	0	2	0	0	2
2020	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>2</u>
Total	0	1	6	5	2	0	14
Average/Year	0	<1.0	1.2	1.0	<1.0	0	2.8

Table 3

MILWAUKEE AVENUE WITH GAS STATION ACCESS DRIVE - CRASH SUMMARY

Year	Type of Accident Frequency						Total
	Angle	Object	Rear End	Sideswipe	Turning	Other	
2016	0	1	3	1	5	0	10
2017	0	0	1	4	1	0	6
2018	0	1	4	2	3	0	10
2019	0	0	0	1	1	0	2
2020	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>1</u>	<u>0</u>	<u>2</u>
Total	0	2	8	9	11	0	30
Average/Year	0	<1.0	1.6	1.8	2.2	0	6.0

Table 4

RIVERWALK DRIVE WITH GAS STATION ACCESS DRIVE - CRASH SUMMARY

Year	Type of Accident Frequency						Total
	Angle	Object	Rear End	Sideswipe	Turning	Other	
2016	0	1	1	0	4	0	6
2017	1	0	0	2	2	0	5
2018	0	0	3	2	4	0	9
2019	0	0	0	1	0	0	1
2020	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>1</u>	<u>0</u>	<u>2</u>
Total	2	1	4	5	11	0	23
Average/Year	<1.0	<1.0	<1.0	1.0	2.2	0	4.6

3. Traffic Characteristics of the Proposed Fuel Center

In order to properly evaluate future traffic conditions in the surrounding area, it was necessary to determine the traffic characteristics of the proposed fuel center expansion, including the directional distribution and volumes of traffic that it will generate.

Proposed Site and Expansion Plan

As indicated earlier, the plans for the rebuild and expansion of the existing fuel center call for 20 passenger vehicle fueling positions, two truck fueling positions, and an approximately 4,600 square-foot convenience store. Access to the site will be provided via the following:

- A proposed three-quarter movement access drive on Milwaukee Avenue to be located approximately 435 feet north of Riverwalk Drive. This access drive, which replaces an existing full-movement access drive, will be designed to physically restrict left-turn movements exiting the site and will provide one inbound lane and one outbound lane. Outbound movements should be under stop sign control. Inbound left turns will be accommodated via the provision of a left-turn lane to be provided within the existing median on Milwaukee Avenue which will be designed to provide approximately 150 feet of storage and 145 feet of taper. The access drive will be designed to accommodate inbound truck movements.
- A right-in/right-out access drive on Milwaukee Avenue to be located approximately 205 feet north of Riverwalk Drive, replacing an existing restricted access drive that is less than 100 feet north of Riverwalk Drive. This access drive will provide one inbound lane and one outbound lane. Outbound movements should be under stop sign control. Left-turn movements will be restricted via the existing raised median on Milwaukee Avenue.
- An existing full movement access drive on Riverwalk Drive located approximately 265 feet east of Milwaukee Avenue. This access drive provides one inbound lane and one outbound lane and will be widened to accommodate exiting truck traffic. Outbound movements should be under stop sign control.
- A proposed full movement access drive on N. Riverwalk Drive aligned opposite the 301 Riverwalk Place access drive located approximately 500 feet north of Riverwalk Drive. This access drive will provide one inbound lane and one outbound lane. Outbound movements should be under stop sign control.

It should be noted that the number of curb cuts along Milwaukee Avenue will be reduced from four to two, which will improve the traffic flow along Milwaukee Avenue. Furthermore, the design and the location of the access drives with trucks entering from Milwaukee Avenue at the three-quarter movement access drive and exiting onto Riverside Drive will minimize conflicts and interaction with passenger vehicles.

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

Directional Distribution

The directions from which patrons and employees of the expanded Speedway fuel center 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 the development-generated traffic.

Peak Hour Traffic Volumes

The increase in the number of peak hour trips estimated to be generated by the expansion of Speedway fuel center was based on the trip rates of the existing Speedway fuel center based on the traffic counts conducted at the driveways serving the site. It is important to note that the trip rates observed at the existing Speedway fuel center are generally higher than the trip rates using “Gas Station with Convenience Store” (Land-Use Code 945) found in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition., as shown in **Table 5**. Therefore, the observed trip rates were utilized to estimate the increase in traffic resulting from the proposed expansion of the Speedway fuel center. Given the limited traffic generation data available for fuel stations specific to trucks, the number of peak hour truck trips estimated to be generated by the commercial vehicle fueling positions was estimated based on a maximum possible usage of four trucks per fueling position per hour.

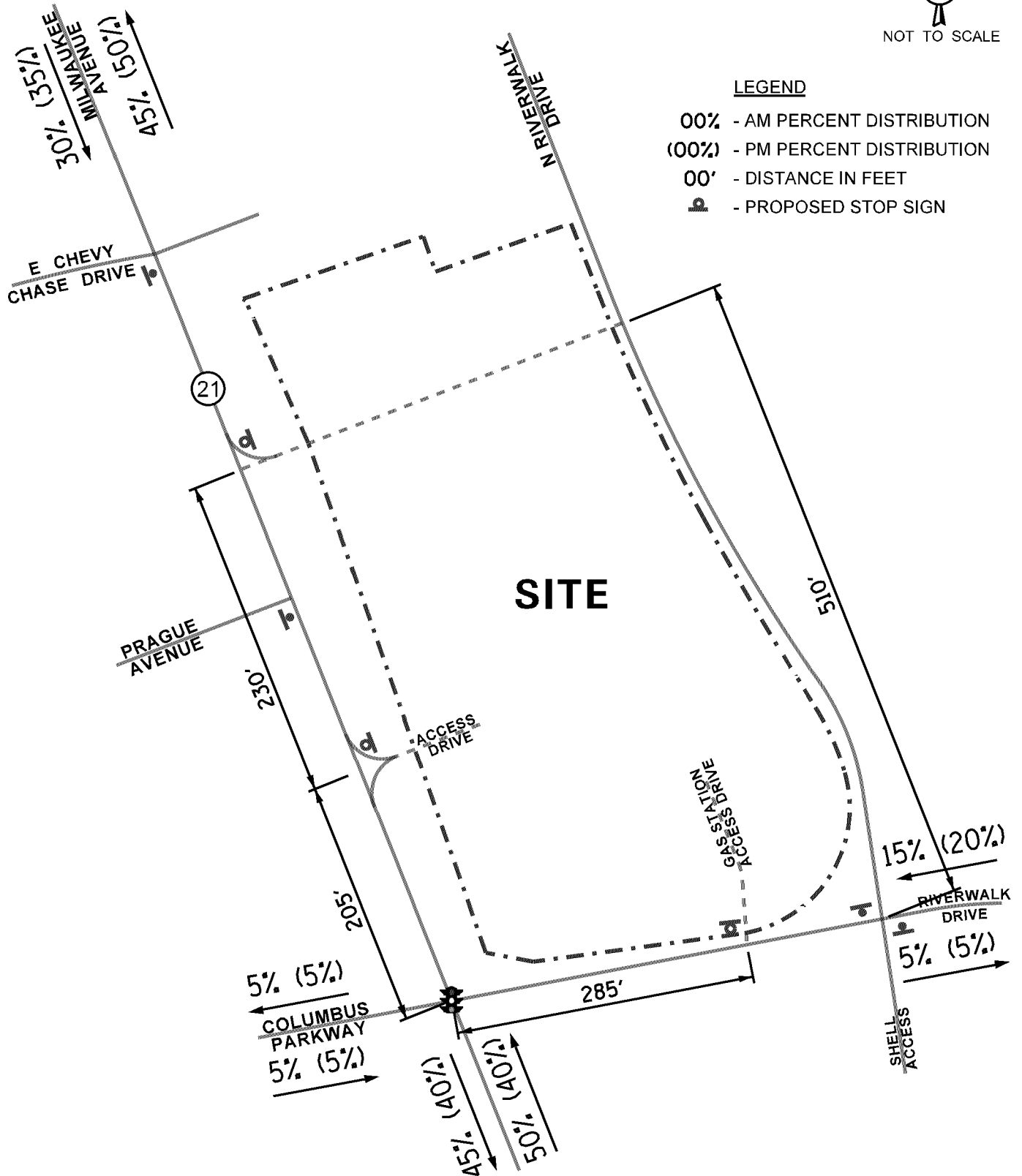
It is also important to note that surveys conducted by ITE have shown that approximately 60 percent of trips made to fuel centers are diverted from the existing traffic on the roadway system. This is particularly true during the weekday morning and evening peak hours when traffic is diverted from the home-to-work and work-to-home trips (pass-by traffic). As such, the new site traffic to be generated by the fuel center was reduced by 60 percent to account for pass-by traffic. **Table 5** shows the traffic for the existing Speedway fuel center. **Table 6** shows the net increase of traffic for the proposed expanded Speedway fuel center.



NOT TO SCALE

LEGEND

- 00% - AM PERCENT DISTRIBUTION
- (00%) - PM PERCENT DISTRIBUTION
- 00' - DISTANCE IN FEET
-  - PROPOSED STOP SIGN



Speedway Expansion
Buffalo Grove, Illinois

Estimated Directional Distribution



Job No: 21-143

Figure: 5

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Table 5

PEAK HOUR VEHICLE TRIP GENERATION – EXISTING SPEEDWAY

Type/Size		Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		In	Out	Total	In	Out	Total
KLOA Counts	Existing Speedway Fuel Center (Counts)	120	143	263	134	142	276
ITE LUC 945	Gas Station with Convenience Market (20 positions)	<u>127</u>	<u>122</u>	<u>249</u>	<u>143</u>	<u>137</u>	<u>280</u>
	Additional Trips	+7	-21	-14	+9	-5	+4

Table 6

ESTIMATED PEAK HOUR VEHICLE TRIP GENERATION – EXPANDED SITE

Type/Size		Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		In	Out	Total	In	Out	Total
	Existing Speedway Fuel Center (16 Positions)	120	143	263	134	142	276
	<i>Increased by 25 percent</i>	<i>150</i>	<i>179</i>	<i>329</i>	<i>168</i>	<i>177</i>	<i>345</i>
	Net Increase	+30	+36	+66	+34	+35	+69
	<i>60% Pass-by Reduction</i>	<u>-20</u>	<u>-20</u>	<u>-40</u>	<u>-20</u>	<u>-20</u>	<u>-40</u>
	Subtotal New Trips	10	16	26	14	15	29
	Truck Fueling Positions (2 Positions)	8	8	16	8	8	16
	Additional New Trips	18	24	42	22	23	45
	Additional Pass-By Trips	20	20	40	20	20	40

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 expanded Speedway fuel center.

Speedway Traffic Assignment

The estimated weekday morning and evening peak hour traffic volumes that will be generated by the proposed expansion were assigned to the roadway system in accordance with the previously described directional distribution (Figure 5). **Figure 6** illustrates the traffic assignment of the additional passenger vehicle trips generated by the expansion of the Speedway fuel center and **Figure 7** illustrates the traffic assignment of the additional pass-by trips generated by the proposed expansion of the Speedway fuel center. It should be noted that the trips serving the existing Speedway gas station were reassigned based on the new access system.

Background Traffic Conditions

The existing 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 (one-year buildout plus five years) totaling one percent to represent Year 2027 no-build conditions. **Figure 8** shows the Year 2027 no-build traffic conditions. A copy of the CMAP 2050 projections letter is included in the Appendix.

Year 2027 Total Projected Traffic Conditions

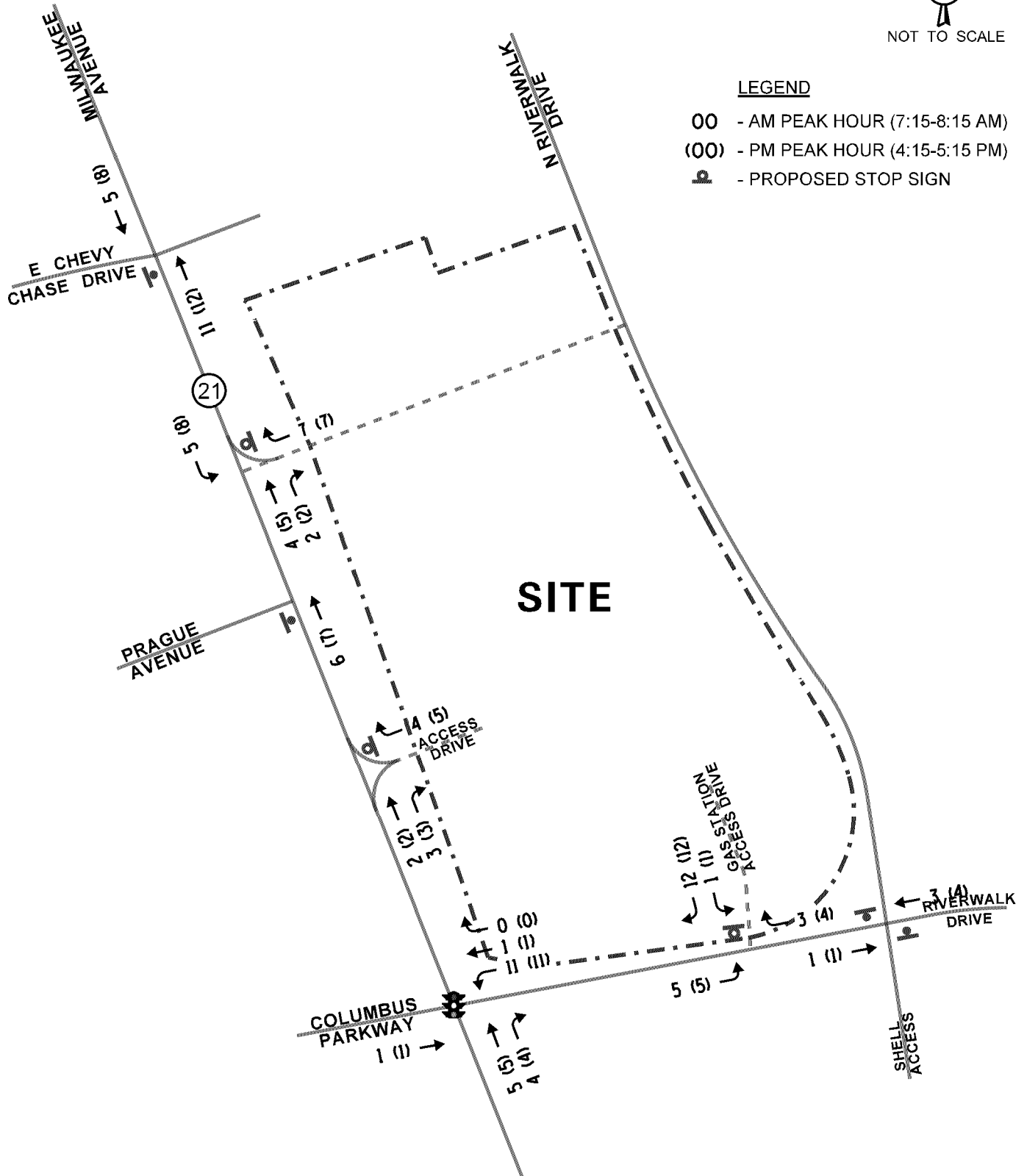
The new and pass-by development-generated traffic (Figures 6 and 7) was added to the no-build traffic volumes (Figure 8) to determine the Year 2027 total projected traffic volumes, which are illustrated in **Figure 9**.



NOT TO SCALE

LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (4:15-5:15 PM)
-  - PROPOSED STOP SIGN



Speedway Expansion
Buffalo Grove, Illinois

New Trips (Additional)



Job No: 21-143

Figure: 6

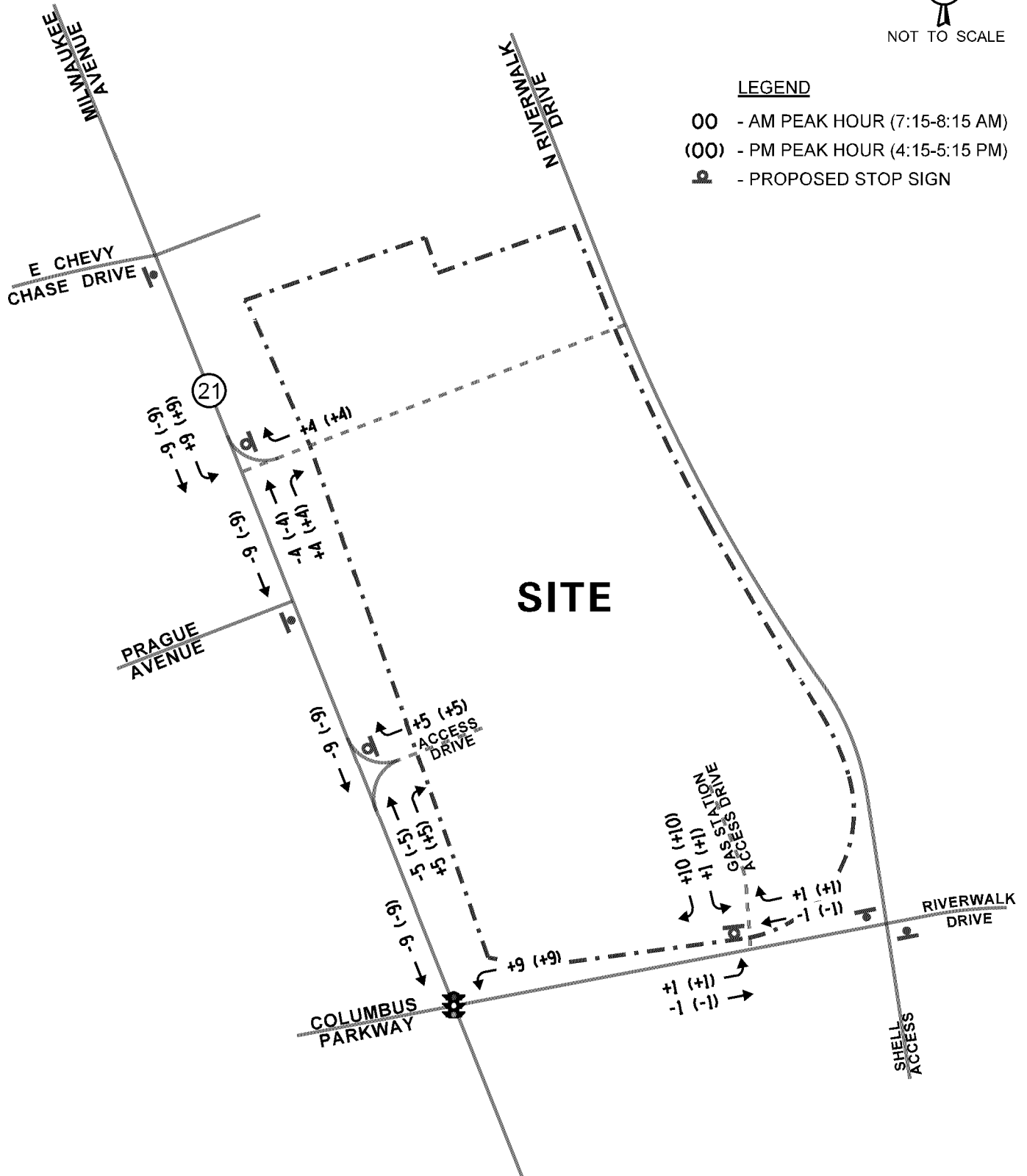
Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)



NOT TO SCALE

LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (4:15-5:15 PM)
-  - PROPOSED STOP SIGN



Speedway Expansion
Buffalo Grove, Illinois

Pass-By Traffic Assignment (Additional)

KLOA
Kerig, Lindgren, O'Hara, Aboona, Inc.

Job No: 21-143

Figure: 7

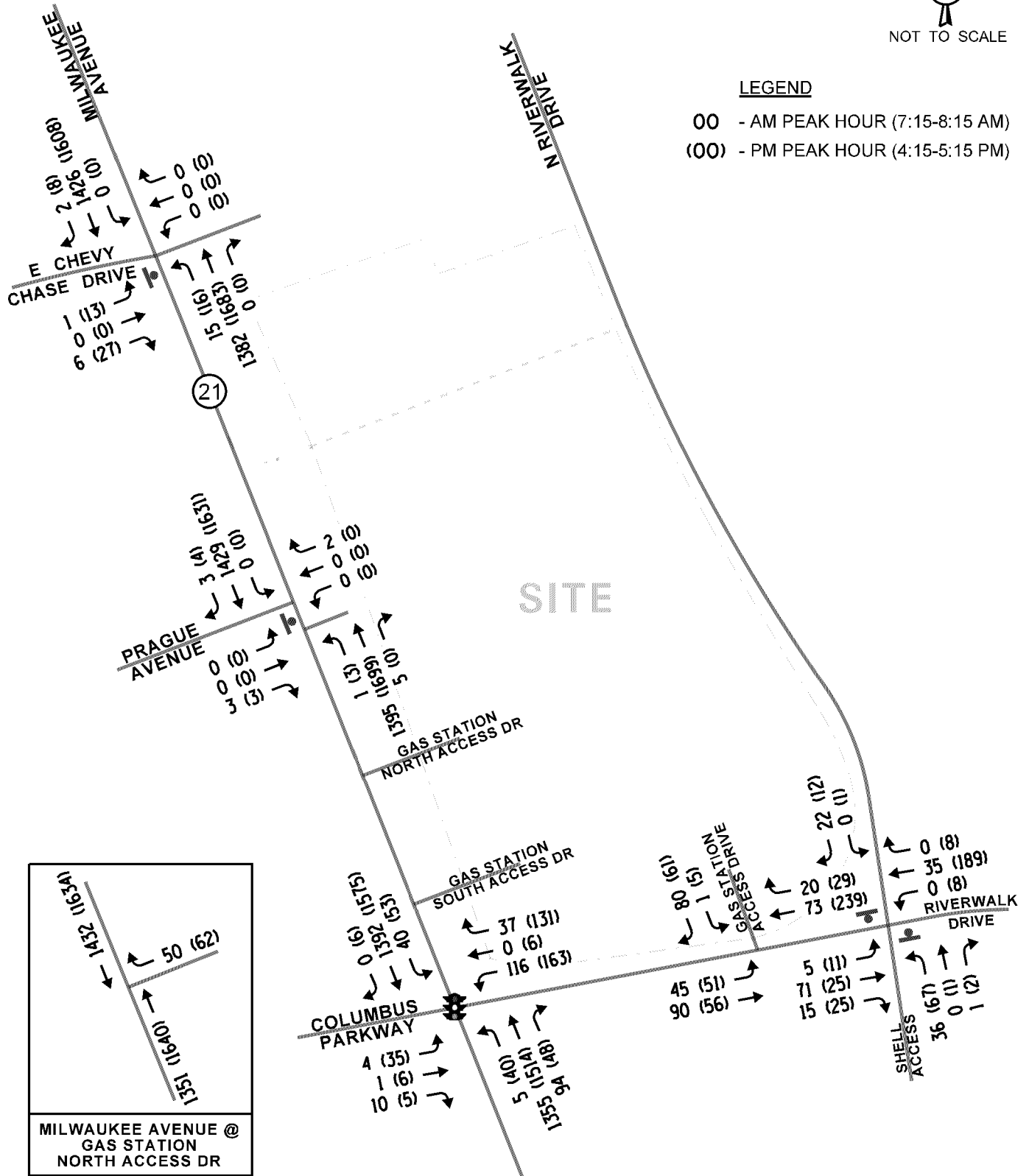
Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)



NOT TO SCALE

LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
 (00) - PM PEAK HOUR (4:15-5:15 PM)



Speedway Expansion
 Buffalo Grove, Illinois

No-Build Traffic Volumes



Job No: 21-143

Figure: 8

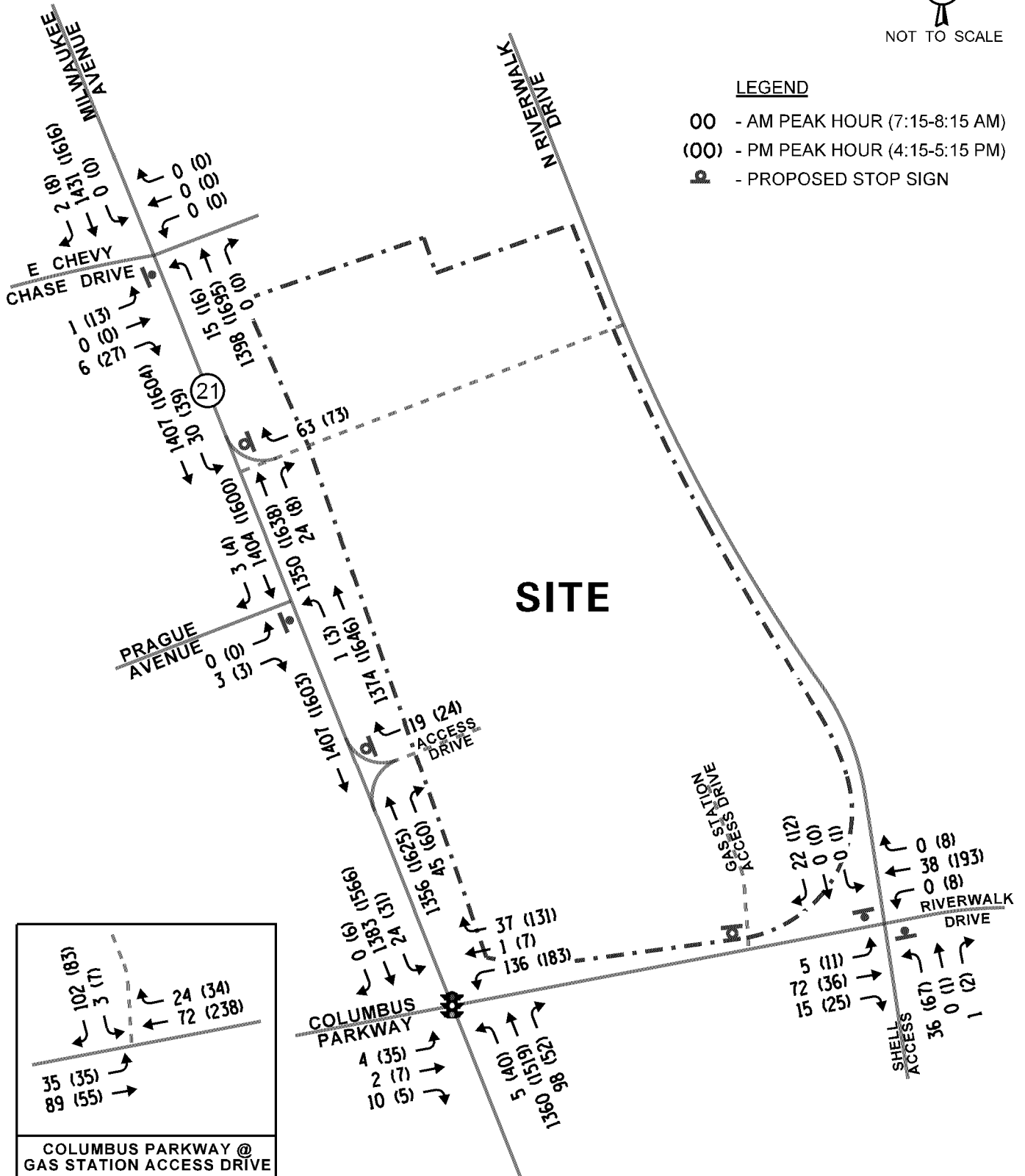
Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)



NOT TO SCALE

LEGEND

- 00 - AM PEAK HOUR (7:15-8:15 AM)
- (00) - PM PEAK HOUR (4:15-5:15 PM)
-  - PROPOSED STOP SIGN



Speedway Expansion
Buffalo Grove, Illinois

Total Projected Traffic Volumes



Job No: 21-143

Figure: 9

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

5. Traffic Analysis and Recommendations

The following provides an evaluation conducted for the weekday morning and weekday evening 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 and weekday peak hours for the base (Year 2021), Year 2027 no-build, and Year 2027 total projected 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 Synchro/SimTraffic 11 software. The analysis for the traffic-signal controlled intersection of Milwaukee Avenue with Riverwalk Drive and Columbus Parkway was 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 Year 2021 base, Year 2027 no-build, and Year 2027 total projected conditions are presented in **Tables 7 through 10**. A discussion of each intersection follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 7
CAPACITY ANALYSIS RESULTS – MILWAUKEE AVENUE WITH RIVERWALK DRIVE AND COLUMBUS PARKWAY – SIGNALIZED

	Peak Hour	Eastbound		Westbound		Northbound			Southbound			Overall
		L	T/R	L	T/R	L	T	R	L	T/R		
Year 2021 Base Conditions	Weekday Morning Peak Hour	E 59.5	E 57.2	E 59.1	D 52.5	A 4.8	A 8.8	A 2.0	A 5.2	A 6.5	B 10.2	
		E – 57.8		E – 57.5		A – 8.4			A – 6.5			
	Weekday Evening Peak Hour	E 73.6	E 59.6	D 47.0	E 65.5	A 10.0	B 15.9	A 2.1	B 10.7	B 15.7	B 19.5	
E – 70.3		E – 55.5		B – 15.3			B – 15.6					
Year 2027 No-Build Conditions	Weekday Morning Peak Hour	E 59.5	E 57.2	E 59.1	D 52.5	A 4.8	A 8.9	A 2.0	A 5.2	A 6.6	B 10.2	
		E – 57.8		E – 57.5		A – 8.4			A – 6.5			
	Weekday Evening Peak Hour	E 73.6	E 59.6	D 47.0	E 65.5	A 10.1	B 15.9	A 2.1	B 10.7	B 15.8	B 19.6	
E – 70.3		E – 55.5		B – 15.4			B – 15.7					
Year 2027 Total Projected Traffic Volumes	Weekday Morning Peak Hour	E 59.5	E 57.3	E 59.9	D 51.6	A 5.2	A 8.5	A 1.9	A 5.1	A 6.8	B 10.6	
		E – 57.8		E – 58.1		A – 8.1			A – 6.8			
	Weekday Evening Peak Hour	E 73.6	E 59.6	D 47.6	E 65.5	A 10.0	B 14.6	A 1.9	A 9.4	B 15.8	B 19.2	
E – 70.0		E – 55.3		B – 14.1			B – 15.7					
Letter denotes Level of Service L – Left-Turns R – Right-Turns Delay is measured in seconds. T – Through												

Table 8

CAPACITY ANALYSIS RESULTS – YEAR 2021 BASE CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Milwaukee Avenue with E. Chevy Chase Drive/Parking Lot				
• Northbound Left Turns	B	13.4	B	14.3
• Eastbound Approach	C	22.2	F	99+
Milwaukee Avenue with Prague Avenue				
• Northbound Left Turns	C	23.5	C	24.9
• Eastbound Approach	C	18.1	C	21.8
• Westbound Approach	C	17.7	A	0.1
• Southbound Left Turns	A	0.1	A	0.1
Milwaukee Avenue with Gas Station Northern Access Drive				
• Westbound Approach	C	22.3	C	24.1
Milwaukee Avenue with Gas Station Southern Access Drive				
• Westbound Approach	C	18.4	C	20.8
Riverwalk Drive with Gas Station Access Drive				
• Eastbound Left Turns	A	8.9	A	9.6
• Southbound Approach	A	9.9	B	10.6
Riverwalk Drive with N. Riverwalk Drive and Shell Access Drive				
• Northbound Approach	A	9.6	B	11.5
• Eastbound Left Turns	A	7.3	A	7.7
• Westbound Left Turns	A	0.1	A	7.3
• Southbound Approach	A	8.5	A	9.6
LOS = Level of Service Delay is measured in seconds.				

Table 9

CAPACITY ANALYSIS RESULTS – NO BUILD CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Milwaukee Avenue with E. Chevy Chase Drive/Parking Lot				
• Northbound Left Turns	B	13.5	B	14.5
• Eastbound Approach	C	22.5	F	99+
Milwaukee Avenue with Prague Avenue				
• Northbound Left Turns	C	23.8	D	25.4
• Eastbound Approach	C	18.3	C	22.0
• Westbound Approach	C	17.8	A	0.1
• Southbound Left Turns	A	0.1	A	0.1
Milwaukee Avenue with Fuel Center Northern Access Drive				
• Westbound Approach	C	22.5	C	24.3
Milwaukee Avenue with Fuel Center Southern Access Drive				
• Westbound Approach	C	18.5	C	21.0
Riverwalk Drive with Fuel Center Access Drive				
• Eastbound Left Turns	A	8.9	A	9.6
• Southbound Approach	A	9.9	B	10.6
Riverwalk Drive with N. Riverwalk Drive and Shell Access Drive				
• Northbound Approach	A	9.6	B	11.5
• Eastbound Left Turns	A	7.3	A	7.7
• Westbound Left Turns	A	0.1	A	7.3
• Southbound Approach	A	8.5	A	9.6
LOS = Level of Service Delay is measured in seconds.				

Table 10

CAPACITY ANALYSIS RESULTS – PROJECTED CONDITIONS – UNSIGNALIZED

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Milwaukee Avenue with E. Chevy Chase Drive/Parking Lot				
• Northbound Left Turns	B	13.6	B	14.5
• Eastbound Approach	C	22.8	F	99+
Milwaukee Avenue with Prague Avenue				
• Northbound Left Turns	C	23.2	C	24.6
• Eastbound Approach	C	18.0	C	21.6
Milwaukee Avenue with Proposed Right-In/Right-Out Access Drive				
• Westbound Approach	C	20.5	C	21.6
Milwaukee Avenue with Proposed Three-Quarter Access Drive				
• Westbound Approach	C	19.2	C	24.8
• Southbound Left Turns	C	22.1	D	31.8
Riverwalk Drive with Fuel Center Access Drive				
• Eastbound Left Turns	A	8.9	A	9.5
• Southbound Approach	B	10.1	B	10.8
Riverwalk Drive with N. Riverwalk Drive and Shell Access Drive				
• Northbound Approach	A	9.7	B	11.6
• Eastbound Left Turns	A	7.3	A	7.7
• Westbound Left Turns	A	0.1	A	7.3
• Southbound Approach	A	8.6	A	9.7
LOS = Level of Service Delay is measured in seconds.				

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 expansion-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 evening peak hours. The eastbound and westbound approaches are operating at LOS E during the weekday morning and evening peak hours. The northbound and southbound approaches currently operate at LOS B or better during both peak hours.

Under Year 2027 no-build conditions, this intersection will continue to operate at LOS B during the weekday morning and evening peak hours 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 2027 total projected conditions, this intersection will continue to operate at the same existing level of service during both 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 both peak hours with increases in delay of less than one second. In addition, the westbound approach will experience 95th percentile queues of approximately 90 feet during the weekday morning peak hour and 185 feet during the weekday evening peak hour and, as such, the westbound queues will generally not extend to or past the access drive serving the Speedway fuel center. Overall, the proposed expansion of the Speedway fuel center is only projected to consist of less than one percent of the total traffic traversing this intersection during the weekday morning and evening peak hours. As such, this intersection has sufficient reserve capacity to accommodate the traffic projected to be generated by the proposed fuel center.

Milwaukee Avenue with E. Chevy Chase Drive/ Parking Lot

The results of the capacity analysis indicate that the northbound left-turn movements are operating at LOS B during the weekday morning and evening peak hours. In addition, the eastbound approach currently operates at LOS C during the weekday morning peak hour and LOS F 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 2027 no-build conditions, the northbound left-turn movements and the eastbound approach will continue to operate at the same levels of service during the weekday morning and evening peak hours with increases in delay of less than one second.

Under Year 2027 total projected conditions, the northbound left-turn movements and the eastbound approach will continue to operate at the same levels of service during the weekday morning and evening peak hours with increases in delay of less than one second. Overall, the traffic that will be generated by the proposed fuel center will have a limited impact on the operations of this intersection.

Milwaukee Avenue with Prague Avenue

The results of the capacity analysis indicate that all movements and approaches are operating at LOS C or better during the weekday morning and evening peak hours.

Under Year 2027 no-build conditions, the northbound left-turn movements will operate at LOS C during the weekday morning peak hour and LOS D during the weekday evening peak hour. In addition, all of the other movements and approaches will continue to operate at the same levels of service during both peak hours.

Under Year 2027 total projected conditions, all movements will operate at LOS C during the weekday morning and evening peak hours. Overall, the traffic that will be generated by the proposed gas station will have a limited impact on the operations of this intersection.

Milwaukee Avenue with Speedway Fuel Center Right-In/Right-Out Access Drive

The results of the capacity analysis indicate that the outbound movements are operating at LOS C during the weekday morning and evening peak hours.

Under Year 2027 no-build conditions, the outbound movements will operate at LOS C during both peak hours with increases in delay of less than one second.

As previously indicated, the existing right-in/right-out access drive that is less than 100 feet north of Riverwalk Drive will be relocated approximately 205 feet north of Riverwalk Drive. Under Year 2027 total projected conditions, the outbound movements will continue to operate at LOS C during the weekday morning and evening peak hours. As such, the Speedway access drive will be adequate in accommodating the traffic estimated to be generated by the proposed expansion and will ensure efficient and flexible access is provided.

Milwaukee Avenue with the Proposed Speedway Fuel Center Three-Quarter Access Drive

The results of the capacity analysis indicate that the outbound movements will operate at LOS C during the weekday morning and evening peak hours with 95th percentile queues of one to two vehicles. In addition, the southbound left-turn movements will operate at LOS C during the weekday morning peak hour and LOS D during the weekday evening peak hour with 95th percentile queues of one to two vehicles that will be accommodated by the proposed southbound exclusive left-turn lane which will provide 150 feet of storage length. As such, the Speedway access drives will be adequate in accommodating the traffic estimated to be generated by the proposed Speedway fuel center and will ensure efficient and flexible access is provided.

Riverwalk Drive with N. Riverwalk Drive and Shell Access Drive

The results of the capacity analysis indicate that all movements and approaches are operating at LOS B or better during the weekday morning and evening peak hours.

Under Year 2027 no-build conditions, all movements and approaches will continue to operate at the same existing levels of service during both peak hours with increases in delay of less than one second.

Under Year 2027 total projected conditions, all movements and approaches will continue to operate at the same levels of service during both peak hours with increases in delay of less than one second.

6. Conclusion

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

- The traffic projected to be generated by the proposed expansion of the Speedway fuel center will be reduced due to the volume of pass-by traffic.
- The net increase in traffic resulting from the proposed expansion will not be significant and can be accommodated by the existing roadway system.
- The proposed access system will ensure that flexible access is provided for traffic entering and exiting the site and will maximize the separation between passenger vehicles and truck traffic.
- The number of curb cuts along Milwaukee Avenue will be reduced from four to two, which will improve the traffic flow along Milwaukee Avenue.
- The design and the location of the access drives with trucks entering from Milwaukee Avenue at the three-quarter movement access drive and exiting onto Riverside Drive will minimize conflicts and interaction with passenger vehicles.

Appendix

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

Traffic Count Summary Sheets



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

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

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

2.3.b

Turning Movement Data

Start Time	Gas Station Drive Westbound					N Milwaukee Dr Northbound					N Milwaukee Dr Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	Int. Total
6:30 AM	0	0	6	0	6	0	178	0	0	178	0	0	183	0	367
6:45 AM	0	0	10	0	10	0	217	1	0	218	0	0	203	0	431
Hourly Total	0	0	16	0	16	0	395	1	0	396	0	0	386	0	798
7:00 AM	0	0	8	1	8	0	157	1	0	158	0	0	220	0	386
7:15 AM	0	0	13	0	13	0	215	5	0	220	0	0	244	0	477
7:30 AM	0	0	19	0	19	0	256	3	0	259	0	0	288	0	566
7:45 AM	0	0	12	0	12	0	288	8	0	296	0	1	311	0	620
Hourly Total	0	0	52	1	52	0	916	17	0	933	0	1	1063	0	2049
8:00 AM	0	0	6	0	6	0	268	2	0	270	0	0	242	0	518
8:15 AM	0	0	9	0	9	0	219	0	0	219	0	0	287	0	515
8:30 AM	0	0	9	0	9	0	232	1	0	233	0	0	276	0	518
8:45 AM	0	0	12	0	12	0	266	1	0	267	0	0	361	0	640
Hourly Total	0	0	36	0	36	0	985	4	0	989	0	0	1166	0	2191
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	7	0	7	0	375	2	0	377	0	0	344	0	728
4:15 PM	0	0	18	0	18	0	391	0	0	391	0	0	357	0	766
4:30 PM	0	0	19	0	19	0	345	0	0	345	0	0	376	0	740
4:45 PM	0	0	13	0	13	0	418	2	0	420	0	0	373	0	806
Hourly Total	0	0	57	0	57	0	1529	4	0	1533	0	0	1450	0	3040
5:00 PM	0	0	12	0	12	0	373	0	0	373	0	0	363	0	748
5:15 PM	0	0	17	0	17	0	414	1	0	415	0	0	353	0	785
5:30 PM	0	0	13	0	13	0	388	3	0	391	0	0	330	0	734
5:45 PM	0	0	14	0	14	0	386	1	0	387	0	0	346	0	747
Hourly Total	0	0	56	0	56	0	1561	5	0	1566	0	0	1392	0	3014
6:00 PM	0	0	9	0	9	0	315	2	0	317	0	0	337	0	663
6:15 PM	0	0	9	0	9	0	350	0	0	350	0	0	290	0	649
Grand Total	0	0	235	1	235	0	6051	33	0	6084	0	1	6084	0	12004
Approach %	0.0	0.0	100.0	-	-	0.0	99.5	0.5	-	-	0.0	0.0	100.0	-	-
Total %	0.0	0.0	1.9	-	1.9	0.0	48.8	0.3	-	49.0	0.0	0.0	49.0	-	49.1
Lights	0	0	216	-	216	0	5794	31	-	5825	0	1	5856	-	11898
% Lights	-	-	91.9	-	91.9	-	95.8	93.9	-	95.7	-	100.0	96.3	-	96.3
Buses	0	0	1	-	1	0	40	0	-	40	0	0	32	-	73
% Buses	-	-	0.4	-	0.4	-	0.7	0.0	-	0.7	-	0.0	0.5	-	0.6
Single-Unit Trucks	0	0	10	-	10	0	92	0	-	92	0	0	99	-	201
% Single-Unit Trucks	-	-	4.3	-	4.3	-	1.5	0.0	-	1.5	-	0.0	1.6	-	1.6
Articulated Trucks	0	0	8	-	8	0	125	2	-	127	0	0	96	-	96

% Articulated Trucks	-	-	3.4	-	3.4	-	2.1	6.1	-	2.1	-	0.0	1.6	-	1.6	1.9
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	1	-	1	1
% 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	-	-	-	-	-	-	-	-	-	-	-	-

2.3.b

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



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

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Count Name: N Milwaukee Ave with Gas Station
Drive
Site Code:
Start Date: 07/15/2021
Page No.: 3

2.3.b

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Gas Station Drive Westbound					N Milwaukee Dr Northbound					N Milwaukee Dr Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	Int. Total
7:15 AM	0	0	13	0	13	0	215	5	0	220	0	0	244	0	477
7:30 AM	0	0	19	0	19	0	256	3	0	259	0	0	288	0	566
7:45 AM	0	0	12	0	12	0	288	8	0	296	0	1	311	0	620
8:00 AM	0	0	6	0	6	0	268	2	0	270	0	0	242	0	518
Total	0	0	50	0	50	0	1027	18	0	1045	0	1	1085	0	2181
Approach %	0.0	0.0	100.0	-	-	0.0	98.3	1.7	-	-	0.0	0.1	99.9	-	-
Total %	0.0	0.0	2.3	-	2.3	0.0	47.1	0.8	-	47.9	0.0	0.0	49.7	-	49.8
PHF	0.000	0.000	0.658	-	0.658	0.000	0.891	0.563	-	0.893	0.000	0.250	0.872	-	0.870
Lights	0	0	40	-	40	0	964	17	-	981	0	1	1027	-	1028
% Lights	-	-	80.0	-	80.0	-	93.9	94.4	-	93.9	-	100.0	94.7	-	94.7
Buses	0	0	1	-	1	0	13	0	-	13	0	0	6	-	6
% Buses	-	-	2.0	-	2.0	-	1.3	0.0	-	1.2	-	0.0	0.6	-	0.6
Single-Unit Trucks	0	0	5	-	5	0	25	0	-	25	0	0	34	-	34
% Single-Unit Trucks	-	-	10.0	-	10.0	-	2.4	0.0	-	2.4	-	0.0	3.1	-	3.1
Articulated Trucks	0	0	4	-	4	0	25	1	-	26	0	0	18	-	18
% Articulated Trucks	-	-	8.0	-	8.0	-	2.4	5.6	-	2.5	-	0.0	1.7	-	1.7
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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



Kenig Lindgren O'Hara Aboona, Inc.
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Count Name: N Milwaukee Ave with Gas Station
Drive
Site Code:
Start Date: 07/15/2021
Page No: 4

2.3.b

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Gas Station Drive Westbound					N Milwaukee Dr Northbound					N Milwaukee Dr Southbound				
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	Int. Total
4:15 PM	0	0	18	0	18	0	391	0	0	391	0	0	357	0	766
4:30 PM	0	0	19	0	19	0	345	0	0	345	0	0	376	0	740
4:45 PM	0	0	13	0	13	0	418	2	0	420	0	0	373	0	806
5:00 PM	0	0	12	0	12	0	373	0	0	373	0	0	363	0	748
Total	0	0	62	0	62	0	1527	2	0	1529	0	0	1469	0	3060
Approach %	0.0	0.0	100.0	-	-	0.0	98.9	0.1	-	-	0.0	0.0	100.0	-	-
Total %	0.0	0.0	2.0	-	2.0	0.0	49.9	0.1	-	50.0	0.0	0.0	48.0	-	48.0
PHF	0.000	0.000	0.816	-	0.816	0.000	0.913	0.250	-	0.910	0.000	0.000	0.977	-	0.977
Lights	0	0	59	-	59	0	1469	2	-	1471	0	0	1427	-	1427
% Lights	-	-	95.2	-	95.2	-	96.2	100.0	-	96.2	-	-	97.1	-	97.1
Buses	0	0	0	-	0	0	12	0	-	12	0	0	8	-	8
% Buses	-	-	0.0	-	0.0	-	0.8	0.0	-	0.8	-	-	0.5	-	0.5
Single-Unit Trucks	0	0	2	-	2	0	13	0	-	13	0	0	16	-	16
% Single-Unit Trucks	-	-	3.2	-	3.2	-	0.9	0.0	-	0.9	-	-	1.1	-	1.1
Articulated Trucks	0	0	1	-	1	0	33	0	-	33	0	0	18	-	18
% Articulated Trucks	-	-	1.6	-	1.6	-	2.2	0.0	-	2.2	-	-	1.2	-	1.2
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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



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Count Name: N Milwaukee Ave with E Chevy Chase Dr
Site Code:
Start Date: 07/15/2021
Page No: 1

Turning Movement Data

Start Time	E Chevy Chase Dr Eastbound						Parking Lot Drive Westbound						N Milwaukee Dr Northbound						N Milwaukee Dr 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
6:30 AM	0	1	0	2	0	3	0	0	0	0	0	0	0	2	193	0	0	195	0	0	210	0	0	210
6:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	218	0	0	222	0	0	201	0	0	201
Hourly Total	0	1	0	2	0	3	0	0	0	0	0	0	0	6	411	0	0	417	0	0	411	0	0	411
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	163	0	0	166	0	0	207	0	0	207
7:15 AM	0	0	0	1	1	1	0	0	0	0	2	0	0	2	230	0	0	232	0	0	255	0	0	255
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	290	0	0	292	0	0	285	0	0	285
7:45 AM	0	1	0	1	0	2	0	0	0	0	0	0	0	7	275	0	0	282	0	0	303	1	0	304
Hourly Total	0	1	0	2	1	3	0	0	0	0	2	0	0	14	958	0	0	972	0	0	1050	1	0	1051
8:00 AM	0	0	0	4	0	4	0	0	0	0	0	0	0	4	273	0	0	277	0	0	248	1	0	249
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	228	0	0	232	0	0	302	1	0	303
8:30 AM	0	1	0	1	0	2	0	0	0	0	0	0	0	5	250	0	0	255	0	0	294	1	0	295
8:45 AM	0	0	0	1	2	1	0	0	0	0	0	0	0	3	257	0	0	260	0	0	342	0	0	342
Hourly Total	0	1	0	6	2	7	0	0	0	0	0	0	0	16	1008	0	0	1024	0	0	1186	3	0	1189
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	0	4	0	5	0	0	0	0	0	0	1	1	378	0	0	380	0	0	342	2	0	344
4:15 PM	0	3	0	5	0	8	0	0	0	0	0	0	0	1	400	0	0	401	0	0	338	2	0	340
4:30 PM	0	8	0	5	3	13	0	0	0	0	0	0	1	3	357	0	0	361	0	0	370	1	0	371
4:45 PM	0	1	0	9	0	10	0	0	0	0	0	0	0	5	395	0	0	400	0	0	355	0	0	355
Hourly Total	0	13	0	23	3	36	0	0	0	0	0	0	2	10	1530	0	0	1542	0	0	1405	5	0	1410
5:00 PM	0	1	0	8	1	9	0	0	0	0	0	0	0	6	386	0	0	392	0	0	364	5	0	369
5:15 PM	0	0	0	6	1	6	0	0	0	0	0	0	1	5	410	0	0	416	0	0	332	2	0	334
5:30 PM	0	2	0	1	4	3	0	0	0	0	0	0	0	1	391	0	0	392	0	0	318	0	0	318
5:45 PM	0	2	0	0	2	2	0	0	0	0	0	0	0	1	409	0	0	410	0	0	359	3	0	362
Hourly Total	0	5	0	15	8	20	0	0	0	0	0	0	1	13	1596	0	0	1610	0	0	1373	10	0	1383
6:00 PM	0	4	0	3	2	7	0	0	0	0	0	0	0	0	330	0	0	330	0	0	337	2	0	339
6:15 PM	0	2	0	4	3	6	0	0	0	0	0	0	0	1	327	0	0	328	0	0	291	0	0	291
Grand Total	0	27	0	55	19	82	0	0	0	0	2	0	3	60	6160	0	0	6223	0	0	6053	21	0	6074
Approach %	0.0	32.9	0.0	67.1	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.0	99.0	0.0	-	-	0.0	0.0	99.7	0.3	-	-
Total %	0.0	0.2	0.0	0.4	-	0.7	0.0	0.0	0.0	0.0	-	0.0	0.0	0.5	49.8	0.0	-	50.3	0.0	0.0	48.9	0.2	-	49.1
Lights	0	27	0	52	-	79	0	0	0	0	-	0	3	59	5900	0	-	5962	0	0	5826	21	-	5847
% Lights	-	100.0	-	94.5	-	96.3	-	-	-	-	-	-	100.0	98.3	95.8	-	-	95.8	-	-	96.2	100.0	-	96.3
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	44	0	-	44	0	0	29	0	-	29
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	0.0	0.0	0.7	-	-	0.7	-	-	0.5	0.0	-	0.5
Single-Unit Trucks	0	0	0	3	-	3	0	0	0	0	-	0	0	1	98	0	-	98	0	0	106	0	-	106
% Single-Unit Trucks	-	0.0	-	5.5	-	3.7	-	-	-	-	-	-	0.0	1.7	1.6	-	-	1.6	-	-	1.8	0.0	-	1.7



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Count Name: N Milwaukee Ave with E Chevy
Chase Dr
Site Code:
Start Date: 07/15/2021
Page No: 3

Turning Movement Peak Hour Data (7:15 AM)

Start Time	E Chevy Chase Dr Eastbound						Parking Lot Drive Westbound						N Milwaukee Dr Northbound						N Milwaukee Dr 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
7:15 AM	0	0	0	1	1	1	0	0	0	0	2	0	0	2	230	0	0	232	0	0	255	0	0	255	488
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	290	0	0	292	0	0	285	0	0	285	577
7:45 AM	0	1	0	1	0	2	0	0	0	0	0	0	0	7	275	0	0	282	0	0	303	1	0	304	588
8:00 AM	0	0	0	4	0	4	0	0	0	0	0	0	0	4	273	0	0	277	0	0	248	1	0	249	530
Total	0	1	0	6	1	7	0	0	0	0	2	0	0	15	1068	0	0	1083	0	0	1091	2	0	1093	2183
Approach %	0.0	14.3	0.0	85.7	-	-	0.0	0.0	0.0	0.0	-	-	0.0	1.4	98.6	0.0	-	-	0.0	0.0	99.8	0.2	-	-	-
Total %	0.0	0.0	0.0	0.3	-	0.3	0.0	0.0	0.0	0.0	-	0.0	0.0	0.7	48.9	0.0	-	49.6	0.0	0.0	50.0	0.1	-	50.1	-
PHF	0.000	0.250	0.000	0.375	-	0.438	0.000	0.000	0.000	0.000	-	0.000	0.000	0.536	0.921	0.000	-	0.927	0.000	0.000	0.900	0.500	-	0.899	0.928
Lights	0	1	0	5	-	6	0	0	0	0	-	0	0	15	991	0	-	1006	0	0	1029	2	-	1031	2043
% Lights	-	100.0	-	83.3	-	85.7	-	-	-	-	-	-	-	100.0	92.8	-	-	92.9	-	-	94.3	100.0	-	94.3	93.6
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	13	0	-	13	0	0	7	0	-	7	20
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	1.2	-	-	1.2	-	-	0.6	0.0	-	0.6	0.9
Single-Unit Trucks	0	0	0	1	-	1	0	0	0	0	-	0	0	0	32	0	-	32	0	0	36	0	-	36	69
% Single-Unit Trucks	-	0.0	-	16.7	-	14.3	-	-	-	-	-	-	-	0.0	3.0	-	-	3.0	-	-	3.3	0.0	-	3.3	3.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	32	0	-	32	0	0	19	0	-	19	51
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	3.0	-	-	3.0	-	-	1.7	0.0	-	1.7	2.3
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
Pedestrians	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-



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Count Name: N Milwaukee Ave with E Chevy Chase Dr
Site Code:
Start Date: 07/15/2021
Page No: 4

2.3.b

Turning Movement Peak Hour Data (4:15 PM)

Start Time	E Chevy Chase Dr Eastbound						Parking Lot Drive Westbound						N Milwaukee Dr Northbound						N Milwaukee Dr 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
4:15 PM	0	3	0	5	0	8	0	0	0	0	0	0	0	1	400	0	0	401	0	0	338	2	0	340
4:30 PM	0	8	0	5	3	13	0	0	0	0	0	0	1	3	357	0	0	361	0	0	370	1	0	371
4:45 PM	0	1	0	9	0	10	0	0	0	0	0	0	0	5	395	0	0	400	0	0	355	0	0	355
5:00 PM	0	1	0	8	1	9	0	0	0	0	0	0	0	6	386	0	0	392	0	0	364	5	0	369
Total	0	13	0	27	4	40	0	0	0	0	0	0	1	15	1538	0	0	1554	0	0	1427	8	0	1435
Approach %	0.0	32.5	0.0	67.5	-	-	0.0	0.0	0.0	0.0	-	-	0.1	1.0	99.0	0.0	-	-	0.0	0.0	99.4	0.6	-	-
Total %	0.0	0.4	0.0	0.9	-	1.3	0.0	0.0	0.0	0.0	-	0.0	0.0	0.5	50.8	0.0	-	51.3	0.0	0.0	47.1	0.3	-	47.4
PHF	0.000	0.406	0.000	0.750	-	0.769	0.000	0.000	0.000	0.000	-	0.000	0.250	0.625	0.961	0.000	-	0.969	0.000	0.000	0.964	0.400	-	0.967
Lights	0	13	0	26	-	39	0	0	0	0	-	0	1	15	1486	0	-	1502	0	0	1391	8	-	1399
% Lights	-	100.0	-	96.3	-	97.5	-	-	-	-	-	-	100.0	100.0	96.6	-	-	96.7	-	-	97.5	100.0	-	97.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	14	0	-	14	0	0	7	0	-	7
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	0.0	0.0	0.9	-	-	0.9	-	-	0.5	0.0	-	0.5
Single-Unit Trucks	0	0	0	1	-	1	0	0	0	0	-	0	0	0	12	0	-	12	0	0	16	0	-	16
% Single-Unit Trucks	-	0.0	-	3.7	-	2.5	-	-	-	-	-	-	0.0	0.0	0.8	-	-	0.8	-	-	1.1	0.0	-	1.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	26	0	-	26	0	0	13	0	-	13
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	0.0	0.0	1.7	-	-	1.7	-	-	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
Pedestrians	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	0	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



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

2.3.b

Turning Movement Data

Start Time	Prague Ave Eastbound				Parking Lot Drive Westbound				N Milwaukee Dr Northbound				N Milwaukee Dr Southbound				App. Total	Int. Total
	Left	Thru	Right	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds			
6:30 AM	0	0	0	0	0	0	0	0	0	0	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	2	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	6	1	5	6015	27	0	6042	12334	
Approach %	8.3	0.0	91.7	-	0.0	16.7	0.0	83.3	-	-	0.0	0.1	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	-	95.9	100.0	-	96.2	85.2	-	96.1	96.0	
Buses	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	-	0.5	0.0	-	0.5	0.6	
Single-Unit Trucks	0	0	1	1	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	



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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								
	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	Int. 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	0.000	0.883	0.625	-	0.882	0.000	0.000	0.853	0.375	-	-	0.856	0.869
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,



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

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

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									
	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	Int. Total	
4:15 PM	0	0	1	1		0	0	0	0	0	0	0	0	414	0	0	0	414	0	0	360	1	0	361	776
4:30 PM	0	0	1	1		0	0	0	0	0	0	0	0	357	0	0	0	357	0	0	379	1	0	380	738
4:45 PM	0	0	1	1		0	0	0	0	0	0	0	1	423	0	0	0	424	0	0	364	1	0	365	790
5:00 PM	0	0	0	0		0	0	0	0	0	0	0	0	386	0	0	0	386	0	0	342	1	0	343	729
Total	0	0	3	3		0	0	0	0	0	0	0	3	1578	0	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	0.0	0.1	52.0	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	0.000	0.375	0.933	0.000	-	0.932	-	0.000	0.000	0.953	1.000	-	0.953	0.960
Lights	0	0	2	2		0	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	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan,

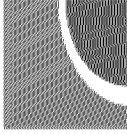
Study Name N Milwaukee Ave with with Riverwalk Dr and Gas Station Drive
Start Date Thursday, July 15, 2021 6:30 AM
End Date Thursday, July 15, 2021 6:30 PM
Site Code

Report Summary

Time Period	Class	Eastbound					Westbound					Northbound					Southbound					Southwestbound					Crosswalk																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
		L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T	R	U	L	BL	T

Site Plan

CMAP 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

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

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: <i>Highway Capacity Manual</i> , 2010.		

Capacity Analysis Summary Sheets

Base Weekday Morning

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
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	2000	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	0		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			90			155			180		
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	5103	0
Flt Permitted	0.950			0.950			0.157			0.147		
Satd. Flow (perm)	1805	1638	0	3155	1495	0	298	5151	1495	274	5103	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			265			497			188	
Travel Time (s)		17.3			6.0			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)	9.5	53.0		13.0	56.5		9.5	49.5	13.0	9.5	49.5	
Total Split (%)	7.6%	42.4%		10.4%	45.2%		7.6%	39.6%	10.4%	7.6%	39.6%	
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)	5.0	8.2		11.0	13.4		95.9	89.4	105.4	99.2	95.7	
Actuated g/C Ratio	0.04	0.07		0.09	0.11		0.77	0.72	0.84	0.79	0.77	

21-143 Speedway Rebuild - Buffalo Grove
Year 2021 Weekday AM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.06	0.11		0.45	0.24		0.02	0.39	0.08	0.15	0.38	
Control Delay	59.5	57.2		59.1	52.5		4.8	8.8	2.0	5.2	6.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	59.5	57.2		59.1	52.5		4.8	8.8	2.0	5.2	6.5	
LOS	E	E		E	D		A	A	A	A	A	
Approach Delay		57.8			57.5			8.4			6.5	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	3	9		49	30		1	128	6	4	81	
Queue Length 95th (ft)	16	31		80	64		5	257	18	20	257	
Internal Link Dist (ft)		554			185			417			108	
Turn Bay Length (ft)	235						165		265	200		
Base Capacity (vph)	72	615		276	603		296	3682	1260	292	3907	
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	0.06	0.02		0.45	0.06		0.02	0.39	0.08	0.15	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 21 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 51.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

											
Ø1	Ø2 (R)			Ø4					Ø3		
9.5 s	49.5 s			53 s					13 s		
											
Ø5	Ø6 (R)			Ø7	Ø8						
9.5 s	49.5 s			9.5 s	56.5 s						

HCM 6th TWSC

2: Milwaukee Avenue & E. Chevy Chase Drive/Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕↕			↕↕		
Traffic Vol, veh/h	1	0	6	0	0	0	15	1369	0	0	1412	2
Future Vol, veh/h	1	0	6	0	0	0	15	1369	0	0	1412	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	17	0	0	0	0	7	0	0	6	0
Mvmt Flow	1	0	6	0	0	0	16	1472	0	0	1518	2
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2287	3023	760	2263	3024	736	1520	0	0	1472	0	0
Stage 1	1519	1519	-	1504	1504	-	-	-	-	-	-	-
Stage 2	768	1504	-	759	1520	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.24	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.47	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	22	13	317	23	13	366	445	-	-	464	-	-
Stage 1	127	183	-	130	186	-	-	-	-	-	-	-
Stage 2	365	186	-	369	183	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	19	10	317	19	10	366	445	-	-	464	-	-
Mov Cap-2 Maneuver	75	79	-	79	76	-	-	-	-	-	-	-
Stage 1	102	183	-	104	149	-	-	-	-	-	-	-
Stage 2	293	149	-	361	183	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	22.2		0		1.4		0					
HCM LOS	C		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	445	-	-	217	-	464	-	-				
HCM Lane V/C Ratio	0.036	-	-	0.035	-	-	-	-				
HCM Control Delay (s)	13.4	1.3	-	22.2	0	0	-	-				
HCM Lane LOS	B	A	-	C	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-	0	-	-				

HCM 6th TWSC

3: Milwaukee Avenue & Prague Avenue /Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕↕↕			↕↕↕		
Traffic Vol, veh/h	0	0	3	0	0	2	1	1382	5	0	1415	3
Future Vol, veh/h	0	0	3	0	0	2	1	1382	5	0	1415	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	6	0
Mvmt Flow	0	0	3	0	0	2	1	1589	6	0	1626	3
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2266	3225	815	2244	3223	798	1629	0	0	1595	0	0
Stage 1	1628	1628	-	1594	1594	-	-	-	-	-	-	-
Stage 2	638	1597	-	650	1629	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	7.1	6.4	6.5	7.1	5.3	-	-	5.3	-	-
Critical Hdwy Stg 1	7.3	5.5	-	7.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	5.5	-	6.7	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.8	4	3.9	3.8	4	3.9	3.1	-	-	3.1	-	-
Pot Cap-1 Maneuver	44	10	279	46	10	286	196	-	-	204	-	-
Stage 1	73	162	-	77	168	-	-	-	-	-	-	-
Stage 2	397	168	-	391	162	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	42	10	279	44	10	286	196	-	-	204	-	-
Mov Cap-2 Maneuver	42	10	-	44	10	-	-	-	-	-	-	-
Stage 1	70	162	-	74	160	-	-	-	-	-	-	-
Stage 2	376	160	-	386	162	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s	18.1		17.7		0.4		0					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	196	-	-	279	286	204	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.012	0.008	-	-	-				
HCM Control Delay (s)	23.5	0.4	-	18.1	17.7	0	-	-				
HCM Lane LOS	C	A	-	C	C	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				

HCM 6th TWSC

4: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑↑↑
Traffic Vol, veh/h	0	50	1338	18	0	1064
Future Vol, veh/h	0	50	1338	18	0	1064
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	88	88	88	88	88	88
Heavy Vehicles, %	0	20	6	6	0	5
Mvmt Flow	0	57	1520	20	0	1209
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	770	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.1	-	-	-	-
Pot Cap-1 Maneuver	0	265	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	265	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	22.3	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	265	-		
HCM Lane V/C Ratio	-	-	0.214	-		
HCM Control Delay (s)	-	-	22.3	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	0.8	-		

HCM 6th TWSC

5: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑↑↑
Traffic Vol, veh/h	0	10	1346	37	0	1064
Future Vol, veh/h	0	10	1346	37	0	1064
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	94	94	94	94	94	94
Heavy Vehicles, %	0	20	6	14	3	7
Mvmt Flow	0	11	1432	39	0	1132
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	736	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.1	-	-	-	-
Pot Cap-1 Maneuver	0	280	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	280	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	18.4	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	280	-		
HCM Lane V/C Ratio	-	-	0.038	-		
HCM Control Delay (s)	-	-	18.4	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	0.1	-		

HCM 6th TWSC

6: Riverwalk Drive & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↕ ↑↑↑ ↕					
Traffic Vol, veh/h	45	90	73	20	1	80
Future Vol, veh/h	45	90	73	20	1	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	24	0	11	6	0	14
Mvmt Flow	48	96	78	21	1	85
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	99	0	-	0	281	50
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	192	-
Critical Hdwy	5.66	-	-	-	6.05	7.31
Critical Hdwy Stg 1	-	-	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.328	-	-	-	3.65	4.033
Pot Cap-1 Maneuver	969	-	-	-	707	829
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	969	-	-	-	670	829
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	814	-
Approach	EB	WB		SB		
HCM Control Delay, s	3	0		9.9		
HCM LOS	A					
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	969	-	-	-	827	
HCM Lane V/C Ratio	0.049	-	-	-	0.104	
HCM Control Delay (s)	8.9	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	

HCM 6th TWSC

7: Shell Access Drive/N Riverwalk Drive & Riverwalk Drive

08/02/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	5	71	15	0	35	0	36	0	1	0	0	22
Future Vol, veh/h	5	71	15	0	35	0	36	0	1	0	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	105
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	11	0	0	0	0	0	0	0
Mvmt Flow	5	76	16	0	37	0	38	0	1	0	0	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	37	0	0	92	0	0	143	131	84	132	139	37
Stage 1	-	-	-	-	-	-	94	94	-	37	37	-
Stage 2	-	-	-	-	-	-	49	37	-	95	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1587	-	-	1515	-	-	831	763	981	845	756	1041
Stage 1	-	-	-	-	-	-	918	821	-	984	868	-
Stage 2	-	-	-	-	-	-	969	868	-	917	815	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1587	-	-	1515	-	-	810	761	981	842	754	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	761	-	842	754	-
Stage 1	-	-	-	-	-	-	915	819	-	981	868	-
Stage 2	-	-	-	-	-	-	947	868	-	913	813	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			9.6			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	814	1587	-	-	1515	-	-	-	1041			
HCM Lane V/C Ratio	0.048	0.003	-	-	-	-	-	-	0.022			
HCM Control Delay (s)	9.6	7.3	0	-	0	-	-	0	8.5			
HCM Lane LOS	A	A	A	-	A	-	-	A	A			
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-	0.1			

Capacity Analysis Summary Sheets

Base Weekday Evening

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
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	1559	6
Future Volume (vph)	35	6	5	163	6	131	40	1499	48	53	1559	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	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	0		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			90			155			180		
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	3467	1598	0	1805	5250	1583	1719	5296	0
Flt Permitted	0.950			0.950			0.094			0.103		
Satd. Flow (perm)	1805	1780	0	3467	1598	0	179	5250	1583	186	5296	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			265			497			188	
Travel Time (s)		17.3			6.0			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%	1%	0%	2%	0%	4%	2%	5%	3%	0%
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)	38	12	0	177	149	0	43	1629	52	58	1702	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)	11.4	53.0		14.0	55.6		9.5	53.5	14.0	9.5	53.5	
Total Split (%)	8.8%	40.8%		10.8%	42.8%		7.3%	41.2%	10.8%	7.3%	41.2%	
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)	6.6	8.2		23.4	18.6		88.6	81.2	109.7	89.6	81.7	
Actuated g/C Ratio	0.05	0.06		0.18	0.14		0.68	0.62	0.84	0.69	0.63	

21-143 Speedway Rebuild - Buffalo Grove
Year 2021 Weekday PM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.42	0.11		0.28	0.65		0.21	0.50	0.04	0.27	0.51	
Control Delay	73.6	59.6		47.0	65.5		10.0	15.9	2.1	10.7	15.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	73.6	59.6		47.0	65.5		10.0	15.9	2.1	10.7	15.7	
LOS	E	E		D	E		A	B	A	B	B	
Approach Delay		70.3			55.5			15.3			15.6	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	32	10		61	120		10	280	4	14	295	
Queue Length 95th (ft)	70	31		102	184		27	383	10	34	396	
Internal Link Dist (ft)		554			185			417			108	
Turn Bay Length (ft)	235						165		265	200		
Base Capacity (vph)	95	643		624	609		203	3278	1335	211	3328	
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	0.40	0.02		0.28	0.24		0.21	0.50	0.04	0.27	0.51	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 60 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 19.5

Intersection LOS: B

Intersection Capacity Utilization 60.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

Ø1	Ø2 (R)						Ø4					Ø3
9.5 s	53.5 s						53 s					14 s
Ø5	Ø6 (R)						Ø7	Ø8				
9.5 s	53.5 s						11.4 s	55.6 s				

HCM 6th TWSC

2: Milwaukee Avenue & E. Chevy Chase Drive/Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	4.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕↕			↕↕		
Traffic Vol, veh/h	13	0	27	0	0	0	16	1668	0	0	1592	8
Future Vol, veh/h	13	0	27	0	0	0	16	1668	0	0	1592	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	4	0	0	0	0	3	0	0	2	0
Mvmt Flow	13	0	28	0	0	0	16	1702	0	0	1624	8
Major/Minor	Minor2		Minor1		Major1				Major2			
Conflicting Flow All	2511	3362	816	2546	3366	851	1632	0	0	1702	0	0
Stage 1	1628	1628	-	1734	1734	-	-	-	-	-	-	-
Stage 2	883	1734	-	812	1632	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.98	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.34	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	15	8	316	14	8	308	403	-	-	379	-	-
Stage 1	108	162	-	93	144	-	-	-	-	-	-	-
Stage 2	311	144	-	343	161	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	~ 6	2	316	5	2	308	403	-	-	379	-	-
Mov Cap-2 Maneuver	22	29	-	22	29	-	-	-	-	-	-	-
Stage 1	29	162	-	25	39	-	-	-	-	-	-	-
Stage 2	84	39	-	313	161	-	-	-	-	-	-	-
Approach	EB		WB		NB				SB			
HCM Control Delay, s	151		0		5.2				0			
HCM LOS	F		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	403	-	-	59	-	379	-	-				
HCM Lane V/C Ratio	0.041	-	-	0.692	-	-	-	-				
HCM Control Delay (s)	14.3	5.1	-	151	0	0	-	-				
HCM Lane LOS	B	A	-	F	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	2.9	-	0	-	-				
Notes												
~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon												

HCM 6th TWSC

3: Milwaukee Avenue & Prague Avenue /Parking Lot

08/02/2021

Intersection														
Int Delay, s/veh	2.7													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	↕			↕			↕↕↕			↕↕↕				
Traffic Vol, veh/h	0	0	3	0	0	0	3	1684	0	0	1615	4		
Future Vol, veh/h	0	0	3	0	0	0	3	1684	0	0	1615	4		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0		
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free		
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None		
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-		
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-		
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-		
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96		
Heavy Vehicles, %	0	0	33	0	0	0	0	4	0	0	3	0		
Mvmt Flow	0	0	3	0	0	0	3	1754	0	0	1682	4		
Major/Minor	Minor2		Minor1			Major1			Major2					
Conflicting Flow All	2392	3444	843	2433	3446	877	1686	0	0	1754	0	0		
Stage 1	1684	1684	-	1760	1760	-	-	-	-	-	-	-		
Stage 2	708	1760	-	673	1686	-	-	-	-	-	-	-		
Critical Hdwy	6.4	6.5	7.76	6.4	6.5	7.1	5.3	-	-	5.3	-	-		
Critical Hdwy Stg 1	7.3	5.5	-	7.3	5.5	-	-	-	-	-	-	-		
Critical Hdwy Stg 2	6.7	5.5	-	6.7	5.5	-	-	-	-	-	-	-		
Follow-up Hdwy	3.8	4	4.23	3.8	4	3.9	3.1	-	-	3.1	-	-		
Pot Cap-1 Maneuver	37	7	218	35	7	254	184	-	-	170	-	-		
Stage 1	67	152	-	59	139	-	-	-	-	-	-	-		
Stage 2	360	139	-	378	152	-	-	-	-	-	-	-		
Platoon blocked, %								-	-		-	-		
Mov Cap-1 Maneuver	18	3	218	17	3	254	184	-	-	170	-	-		
Mov Cap-2 Maneuver	18	3	-	17	3	-	-	-	-	-	-	-		
Stage 1	24	152	-	21	50	-	-	-	-	-	-	-		
Stage 2	130	50	-	373	152	-	-	-	-	-	-	-		
Approach	EB		WB			NB			SB					
HCM Control Delay, s	21.8		0			5.3			0					
HCM LOS	C		A											
Minor Lane/Major Mvmt	NBL		NBT		NBR		EBLn1WBLn1		SBL		SBT		SBR	
Capacity (veh/h)	184		-		-		218		-		170		-	
HCM Lane V/C Ratio	0.017		-		-		0.014		-		-		-	
HCM Control Delay (s)	24.9		5.3		-		21.8		0		0		-	
HCM Lane LOS	C		A		-		C		A		A		-	
HCM 95th %tile Q(veh)	0.1		-		-		0		-		0		-	

HCM 6th TWSC

4: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑↑↑
Traffic Vol, veh/h	0	62	1625	2	0	1216
Future Vol, veh/h	0	62	1625	2	0	1216
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	5	4	0	0	3
Mvmt Flow	0	65	1711	2	0	1280
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	857	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.95	-	-	-	-
Pot Cap-1 Maneuver	0	253	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	253	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	24.1	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	253	-		
HCM Lane V/C Ratio	-	-	0.258	-		
HCM Control Delay (s)	-	-	24.1	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	1	-		

21-143 Speedway Rebuild - Buffalo Grove
Year 2021 Weekday PM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

HCM 6th TWSC

5: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑↑↑
Traffic Vol, veh/h	0	14	1613	52	0	1216
Future Vol, veh/h	0	14	1613	52	0	1216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	4	4	0	3
Mvmt Flow	0	15	1753	57	0	1322

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	905	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.1	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.9	-
Pot Cap-1 Maneuver	0	243	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	243	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	243
HCM Lane V/C Ratio	-	-	0.063
HCM Control Delay (s)	-	-	20.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

HCM 6th TWSC

6: Riverwalk Drive & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕ ↕↕↕			↕↕	
Traffic Vol, veh/h	51	56	239	29	5	61
Future Vol, veh/h	51	56	239	29	5	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	40	3	4	0	0
Mvmt Flow	58	64	272	33	6	69
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	305	0	-	0	469	153
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	180	-
Critical Hdwy	5.3	-	-	-	6.05	7.1
Critical Hdwy Stg 1	-	-	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.1	-	-	-	3.65	3.9
Pot Cap-1 Maneuver	843	-	-	-	563	741
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	843	-	-	-	523	741
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	824	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.6	0		10.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	843	-	-	-	718	
HCM Lane V/C Ratio	0.069	-	-	-	0.104	
HCM Control Delay (s)	9.6	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	

HCM 6th TWSC

7: Shell Access Drive/N Riverwalk Drive & Riverwalk Drive

08/02/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	11	25	25	8	189	8	67	1	2	1	0	12
Future Vol, veh/h	11	25	25	8	189	8	67	1	2	1	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	105
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	40	4	0	3	13	0	0	0	0	0	8
Mvmt Flow	13	28	28	9	215	9	76	1	2	1	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	224	0	0	56	0	0	313	310	42	308	320	220
Stage 1	-	-	-	-	-	-	68	68	-	238	238	-
Stage 2	-	-	-	-	-	-	245	242	-	70	82	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.372
Pot Cap-1 Maneuver	1357	-	-	1562	-	-	643	608	1034	648	600	805
Stage 1	-	-	-	-	-	-	947	842	-	770	712	-
Stage 2	-	-	-	-	-	-	763	709	-	945	831	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1357	-	-	1562	-	-	624	598	1034	637	590	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	598	-	637	590	-
Stage 1	-	-	-	-	-	-	938	834	-	762	707	-
Stage 2	-	-	-	-	-	-	745	704	-	932	823	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.3			11.5			9.6		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	631	1357	-	-	1562	-	-	637	805			
HCM Lane V/C Ratio	0.126	0.009	-	-	0.006	-	-	0.002	0.017			
HCM Control Delay (s)	11.5	7.7	0	-	7.3	0	-	10.7	9.5			
HCM Lane LOS	B	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0	0.1			

Capacity Analysis Summary Sheets

No-Build Weekday Morning

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
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	1355	94	40	1392	0
Future Volume (vph)	4	1	10	116	0	37	5	1355	94	40	1392	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	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	0		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			90			155			180		
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	5103	0
Flt Permitted	0.950			0.950			0.154			0.144		
Satd. Flow (perm)	1805	1638	0	3155	1495	0	293	5151	1495	268	5103	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			265			497			188	
Travel Time (s)		17.3			6.0			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	1441	100	43	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)	9.5	53.0		13.0	56.5		9.5	49.5	13.0	9.5	49.5	
Total Split (%)	7.6%	42.4%		10.4%	45.2%		7.6%	39.6%	10.4%	7.6%	39.6%	
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)	5.0	8.2		11.0	13.4		95.9	89.4	105.4	99.2	95.7	
Actuated g/C Ratio	0.04	0.07		0.09	0.11		0.77	0.72	0.84	0.79	0.77	

21-143 Speedway Rebuild - Buffalo Grove
 Year 2027 No Build Weekday AM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.06	0.11		0.45	0.24		0.02	0.39	0.08	0.15	0.38	
Control Delay	59.5	57.2		59.1	52.5		4.8	8.9	2.0	5.2	6.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	59.5	57.2		59.1	52.5		4.8	8.9	2.0	5.2	6.6	
LOS	E	E		E	D		A	A	A	A	A	
Approach Delay		57.8			57.5			8.4			6.5	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	3	9		49	30		1	130	6	4	83	
Queue Length 95th (ft)	16	31		80	64		5	260	18	20	261	
Internal Link Dist (ft)		554			185			417			108	
Turn Bay Length (ft)	235						165		265	200		
Base Capacity (vph)	72	615		276	603		292	3682	1260	287	3907	
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	0.06	0.02		0.45	0.06		0.02	0.39	0.08	0.15	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 21 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

 Ø1	 Ø2 (R)	 Ø4	 Ø3
9.5 s	49.5 s	53 s	13 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
9.5 s	49.5 s	9.5 s	56.5 s

HCM 6th TWSC

2: Milwaukee Avenue & E. Chevy Chase Drive/Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	0	6	0	0	0	15	1382	0	0	1426	2
Future Vol, veh/h	1	0	6	0	0	0	15	1382	0	0	1426	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	17	0	0	0	0	7	0	0	6	0
Mvmt Flow	1	0	6	0	0	0	16	1486	0	0	1533	2
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2309	3052	768	2285	3053	743	1535	0	0	1486	0	0
Stage 1	1534	1534	-	1518	1518	-	-	-	-	-	-	-
Stage 2	775	1518	-	767	1535	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.24	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.47	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	21	13	313	22	13	362	439	-	-	458	-	-
Stage 1	124	180	-	127	183	-	-	-	-	-	-	-
Stage 2	361	183	-	365	180	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	18	10	313	18	10	362	439	-	-	458	-	-
Mov Cap-2 Maneuver	73	78	-	76	75	-	-	-	-	-	-	-
Stage 1	98	180	-	100	145	-	-	-	-	-	-	-
Stage 2	286	145	-	357	180	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	22.5			0			1.5			0		
HCM LOS	C			A								
Minor Lane/Major Mvmt	NBL			NBT			NBR			EBLn1WBLn1		
Capacity (veh/h)	439			-			-			213		
HCM Lane V/C Ratio	0.037			-			-			0.035		
HCM Control Delay (s)	13.5			1.4			-			22.5		
HCM Lane LOS	B			A			-			C		
HCM 95th %tile Q(veh)	0.1			-			-			0.1		

HCM 6th TWSC

3: Milwaukee Avenue & Prague Avenue /Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	0.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕↕↕			↕↕↕		
Traffic Vol, veh/h	0	0	3	0	0	2	1	1395	5	0	1429	3
Future Vol, veh/h	0	0	3	0	0	2	1	1395	5	0	1429	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	0	0	0	0	6	0	0	6	0
Mvmt Flow	0	0	3	0	0	2	1	1603	6	0	1643	3
Major/Minor	Minor2		Minor1		Major1				Major2			
Conflicting Flow All	2288	3256	823	2265	3254	805	1646	0	0	1609	0	0
Stage 1	1645	1645	-	1608	1608	-	-	-	-	-	-	-
Stage 2	643	1611	-	657	1646	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	7.1	6.4	6.5	7.1	5.3	-	-	5.3	-	-
Critical Hdwy Stg 1	7.3	5.5	-	7.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	5.5	-	6.7	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.8	4	3.9	3.8	4	3.9	3.1	-	-	3.1	-	-
Pot Cap-1 Maneuver	43	9	275	44	9	283	193	-	-	201	-	-
Stage 1	71	159	-	76	166	-	-	-	-	-	-	-
Stage 2	394	165	-	387	159	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	41	9	275	42	9	283	193	-	-	201	-	-
Mov Cap-2 Maneuver	41	9	-	42	9	-	-	-	-	-	-	-
Stage 1	68	159	-	72	158	-	-	-	-	-	-	-
Stage 2	372	157	-	382	159	-	-	-	-	-	-	-
Approach	EB		WB		NB				SB			
HCM Control Delay, s	18.3		17.8		0.4				0			
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	193	-	-	275	283	201	-	-				
HCM Lane V/C Ratio	0.006	-	-	0.013	0.008	-	-	-				
HCM Control Delay (s)	23.8	0.4	-	18.3	17.8	0	-	-				
HCM Lane LOS	C	A	-	C	C	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-				

HCM 6th TWSC

4: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑			↑↑↑
Traffic Vol, veh/h	0	50	1351	18	0	1074
Future Vol, veh/h	0	50	1351	18	0	1074
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	88	88	88	88	88	88
Heavy Vehicles, %	0	20	6	6	0	5
Mvmt Flow	0	57	1535	20	0	1220
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	778	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.1	-	-	-	-
Pot Cap-1 Maneuver	0	262	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	262	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	22.5	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	262	-		
HCM Lane V/C Ratio	-	-	0.217	-		
HCM Control Delay (s)	-	-	22.5	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	0.8	-		

HCM 6th TWSC

5: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑↑↑
Traffic Vol, veh/h	0	10	1359	37	0	1074
Future Vol, veh/h	0	10	1359	37	0	1074
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	94	94	94	94	94	94
Heavy Vehicles, %	0	20	6	14	3	7
Mvmt Flow	0	11	1446	39	0	1143
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	743	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.1	-	-	-	-
Pot Cap-1 Maneuver	0	277	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	277	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	18.5	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	277	-		
HCM Lane V/C Ratio	-	-	0.038	-		
HCM Control Delay (s)	-	-	18.5	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	0.1	-		

HCM 6th TWSC

6: Riverwalk Drive & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	3.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑↑			↑↑	
Traffic Vol, veh/h	45	90	73	20	1	80
Future Vol, veh/h	45	90	73	20	1	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	24	0	11	6	0	14
Mvmt Flow	48	96	78	21	1	85
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	99	0	-	0	281	50
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	192	-
Critical Hdwy	5.66	-	-	-	6.05	7.31
Critical Hdwy Stg 1	-	-	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.328	-	-	-	3.65	4.033
Pot Cap-1 Maneuver	969	-	-	-	707	829
Stage 1	-	-	-	-	876	-
Stage 2	-	-	-	-	814	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	969	-	-	-	670	829
Mov Cap-2 Maneuver	-	-	-	-	670	-
Stage 1	-	-	-	-	830	-
Stage 2	-	-	-	-	814	-
Approach	EB	WB		SB		
HCM Control Delay, s	3	0		9.9		
HCM LOS				A		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	969	-	-	-	827	
HCM Lane V/C Ratio	0.049	-	-	-	0.104	
HCM Control Delay (s)	8.9	0	-	-	9.9	
HCM Lane LOS	A	A	-	-	A	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	

HCM 6th TWSC

7: Shell Access Drive/N Riverwalk Drive & Riverwalk Drive

08/02/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	5	71	15	0	35	0	36	0	1	0	0	22
Future Vol, veh/h	5	71	15	0	35	0	36	0	1	0	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	105
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	11	0	0	0	0	0	0	0
Mvmt Flow	5	76	16	0	37	0	38	0	1	0	0	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	37	0	0	92	0	0	143	131	84	132	139	37
Stage 1	-	-	-	-	-	-	94	94	-	37	37	-
Stage 2	-	-	-	-	-	-	49	37	-	95	102	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1587	-	-	1515	-	-	831	763	981	845	756	1041
Stage 1	-	-	-	-	-	-	918	821	-	984	868	-
Stage 2	-	-	-	-	-	-	969	868	-	917	815	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1587	-	-	1515	-	-	810	761	981	842	754	1041
Mov Cap-2 Maneuver	-	-	-	-	-	-	810	761	-	842	754	-
Stage 1	-	-	-	-	-	-	915	819	-	981	868	-
Stage 2	-	-	-	-	-	-	947	868	-	913	813	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			9.6			8.5		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	814	1587	-	-	1515	-	-	-	1041			
HCM Lane V/C Ratio	0.048	0.003	-	-	-	-	-	-	0.022			
HCM Control Delay (s)	9.6	7.3	0	-	0	-	-	0	8.5			
HCM Lane LOS	A	A	A	-	A	-	-	A	A			
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-	0.1			

Capacity Analysis Summary Sheets

No-Build Weekday Evening

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
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	1514	48	53	1575	6
Future Volume (vph)	35	6	5	163	6	131	40	1514	48	53	1575	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	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	0		0	165		265	200		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			90			155			180		
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	3467	1598	0	1805	5250	1583	1719	5296	0
Flt Permitted	0.950			0.950			0.092			0.101		
Satd. Flow (perm)	1805	1780	0	3467	1598	0	175	5250	1583	183	5296	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			265			497			188	
Travel Time (s)		17.3			6.0			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%	1%	0%	2%	0%	4%	2%	5%	3%	0%
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)	38	12	0	177	149	0	43	1646	52	58	1719	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)	11.4	53.0		14.0	55.6		9.5	53.5	14.0	9.5	53.5	
Total Split (%)	8.8%	40.8%		10.8%	42.8%		7.3%	41.2%	10.8%	7.3%	41.2%	
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)	6.6	8.2		23.4	18.6		88.6	81.2	109.7	89.6	81.7	
Actuated g/C Ratio	0.05	0.06		0.18	0.14		0.68	0.62	0.84	0.69	0.63	

21-143 Speedway Rebuild - Buffalo Grove
 Year 2027 No Build Weekday PM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.42	0.11		0.28	0.65		0.21	0.50	0.04	0.28	0.52	
Control Delay	73.6	59.6		47.0	65.5		10.1	15.9	2.1	10.7	15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	73.6	59.6		47.0	65.5		10.1	15.9	2.1	10.7	15.8	
LOS	E	E		D	E		B	B	A	B	B	
Approach Delay		70.3			55.5			15.4			15.7	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	32	10		61	120		10	284	4	14	299	
Queue Length 95th (ft)	70	31		102	184		27	388	10	34	401	
Internal Link Dist (ft)		554			185			417			108	
Turn Bay Length (ft)	235						165		265	200		
Base Capacity (vph)	95	643		624	609		200	3278	1335	209	3328	
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	0.40	0.02		0.28	0.24		0.21	0.50	0.04	0.28	0.52	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 60 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 19.6

Intersection LOS: B

Intersection Capacity Utilization 61.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

Ø1	Ø2 (R)	Ø4	Ø3
9.5 s	53.5 s	53 s	14 s
Ø5	Ø6 (R)	Ø7	Ø8
9.5 s	53.5 s	11.4 s	55.6 s

HCM 6th TWSC

2: Milwaukee Avenue & E. Chevy Chase Drive/Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	9.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	13	0	27	0	0	0	16	1683	0	0	1608	8
Future Vol, veh/h	13	0	27	0	0	0	16	1683	0	0	1608	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	4	0	0	0	0	3	0	0	2	0
Mvmt Flow	13	0	28	0	0	0	16	1717	0	0	1641	8

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2536	3394	825	2570	3398	859	1649	0	0	1717	0	0
Stage 1	1645	1645	-	1749	1749	-	-	-	-	-	-	-
Stage 2	891	1749	-	821	1649	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.98	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.34	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	14	8	312	13	8	304	397	-	-	374	-	-
Stage 1	106	159	-	91	141	-	-	-	-	-	-	-
Stage 2	308	141	-	339	158	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	~ 4	1	312	3	1	304	397	-	-	374	-	-
Mov Cap-2 Maneuver	~ 10	14	-	10	14	-	-	-	-	-	-	-
Stage 1	~ 13	159	-	11	17	-	-	-	-	-	-	-
Stage 2	38	17	-	309	158	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	515.8	0	6.3	0
HCM LOS	F	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	397	-	-	29	-	374	-	-
HCM Lane V/C Ratio	0.041	-	-	1.407	-	-	-	-
HCM Control Delay (s)	14.5	6.2	-	515.8	0	0	-	-
HCM Lane LOS	B	A	-	F	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	4.7	-	0	-	-

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

HCM 6th TWSC

3: Milwaukee Avenue & Prague Avenue /Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕↕↕			↕↕↕		
Traffic Vol, veh/h	0	0	3	0	0	0	3	1699	0	0	1631	4
Future Vol, veh/h	0	0	3	0	0	0	3	1699	0	0	1631	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	33	0	0	0	0	4	0	0	3	0
Mvmt Flow	0	0	3	0	0	0	3	1770	0	0	1699	4
Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	2415	3477	852	2456	3479	885	1703	0	0	1770	0	0
Stage 1	1701	1701	-	1776	1776	-	-	-	-	-	-	-
Stage 2	714	1776	-	680	1703	-	-	-	-	-	-	-
Critical Hdwy	6.4	6.5	7.76	6.4	6.5	7.1	5.3	-	-	5.3	-	-
Critical Hdwy Stg 1	7.3	5.5	-	7.3	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	5.5	-	6.7	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.8	4	4.23	3.8	4	3.9	3.1	-	-	3.1	-	-
Pot Cap-1 Maneuver	36	7	215	34	7	251	180	-	-	167	-	-
Stage 1	65	149	-	57	137	-	-	-	-	-	-	-
Stage 2	357	137	-	375	149	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	2	0	215	2	0	251	180	-	-	167	-	-
Mov Cap-2 Maneuver	2	0	-	2	0	-	-	-	-	-	-	-
Stage 1	0	149	-	0	1	-	-	-	-	-	-	-
Stage 2	2	1	-	370	149	-	-	-	-	-	-	-
Approach	EB		WB			NB			SB			
HCM Control Delay, s	22		0			8.3			0			
HCM LOS	C		A									
Minor Lane/Major Mvmt	NBL		NBT	NBR		EBLn1	WBLn1	SBL	SBT	SBR		
Capacity (veh/h)	180		-	-	215	-	167	-	-			
HCM Lane V/C Ratio	0.017		-	-	0.015	-	-	-	-			
HCM Control Delay (s)	25.4		8.3	-	22	0	0	-	-			
HCM Lane LOS	D		A	-	C	A	A	-	-			
HCM 95th %tile Q(veh)	0.1		-	-	0	-	0	-	-			

HCM 6th TWSC

4: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑				↑↑↑
Traffic Vol, veh/h	0	62	1640	2	0	1226
Future Vol, veh/h	0	62	1640	2	0	1226
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	5	4	0	0	3
Mvmt Flow	0	65	1726	2	0	1291

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	864	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.2	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.95	-
Pot Cap-1 Maneuver	0	251	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	251	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	24.3	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	251
HCM Lane V/C Ratio	-	-	0.26
HCM Control Delay (s)	-	-	24.3
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1

HCM 6th TWSC

5: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑				↑↑↑
Traffic Vol, veh/h	0	14	1628	52	0	1226
Future Vol, veh/h	0	14	1628	52	0	1226
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	4	4	0	3
Mvmt Flow	0	15	1770	57	0	1333

Major/Minor	Minor1	Major1	Major2
Conflicting Flow All	-	914	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	7.1	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.9	-
Pot Cap-1 Maneuver	0	240	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	240	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	21	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBT
Capacity (veh/h)	-	-	240
HCM Lane V/C Ratio	-	-	0.063
HCM Control Delay (s)	-	-	21
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	0.2

HCM 6th TWSC

6: Riverwalk Drive & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕ ↕ ↕ ↕			↕ ↕	
Traffic Vol, veh/h	51	56	239	29	5	61
Future Vol, veh/h	51	56	239	29	5	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	40	3	4	0	0
Mvmt Flow	58	64	272	33	6	69
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	305	0	-	0	469	153
Stage 1	-	-	-	-	289	-
Stage 2	-	-	-	-	180	-
Critical Hdwy	5.3	-	-	-	6.05	7.1
Critical Hdwy Stg 1	-	-	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.1	-	-	-	3.65	3.9
Pot Cap-1 Maneuver	843	-	-	-	563	741
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	824	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	843	-	-	-	523	741
Mov Cap-2 Maneuver	-	-	-	-	523	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	824	-
Approach	EB	WB		SB		
HCM Control Delay, s	4.6	0		10.6		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	843	-	-	-	718	
HCM Lane V/C Ratio	0.069	-	-	-	0.104	
HCM Control Delay (s)	9.6	0	-	-	10.6	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3	

HCM 6th TWSC

7: Shell Access Drive/N Riverwalk Drive & Riverwalk Drive

08/02/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	11	25	25	8	189	8	67	1	2	1	0	12
Future Vol, veh/h	11	25	25	8	189	8	67	1	2	1	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	105
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	40	4	0	3	13	0	0	0	0	0	8
Mvmt Flow	13	28	28	9	215	9	76	1	2	1	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	224	0	0	56	0	0	313	310	42	308	320	220
Stage 1	-	-	-	-	-	-	68	68	-	238	238	-
Stage 2	-	-	-	-	-	-	245	242	-	70	82	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.372
Pot Cap-1 Maneuver	1357	-	-	1562	-	-	643	608	1034	648	600	805
Stage 1	-	-	-	-	-	-	947	842	-	770	712	-
Stage 2	-	-	-	-	-	-	763	709	-	945	831	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1357	-	-	1562	-	-	624	598	1034	637	590	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	624	598	-	637	590	-
Stage 1	-	-	-	-	-	-	938	834	-	762	707	-
Stage 2	-	-	-	-	-	-	745	704	-	932	823	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.3			11.5			9.6		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	631	1357	-	-	1562	-	-	637	805			
HCM Lane V/C Ratio	0.126	0.009	-	-	0.006	-	-	0.002	0.017			
HCM Control Delay (s)	11.5	7.7	0	-	7.3	0	-	10.7	9.5			
HCM Lane LOS	B	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0	0.1			

Capacity Analysis Summary Sheets

Projected Weekday Morning

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	2	10	136	1	37	5	1360	98	24	1383	0
Future Volume (vph)	4	2	10	136	1	37	5	1360	98	24	1383	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	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	0		0	165		265	0		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			90			155			180		
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		0.873			0.854				0.850			
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1659	0	3155	1505	0	1805	5151	1495	1770	5103	0
Flt Permitted	0.950			0.950			0.153			0.146		
Satd. Flow (perm)	1805	1659	0	3155	1505	0	291	5151	1495	272	5103	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			265			497			207	
Travel Time (s)		17.3			6.0			8.5			3.5	
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	13	0	145	40	0	5	1447	104	26	1471	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)	9.5	53.0		13.0	56.5		9.5	49.5	13.0	9.5	49.5	
Total Split (%)	7.6%	42.4%		10.4%	45.2%		7.6%	39.6%	10.4%	7.6%	39.6%	
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)	5.0	8.3		11.5	13.9		96.4	91.0	108.5	98.6	95.2	
Actuated g/C Ratio	0.04	0.07		0.09	0.11		0.77	0.73	0.87	0.79	0.76	

21-143 Speedway Rebuild - Buffalo Grove
 Year 2027 Total Weekday AM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.06	0.12		0.50	0.24		0.02	0.39	0.08	0.09	0.38	
Control Delay	59.5	57.3		59.9	51.6		5.2	8.5	1.9	5.1	6.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	59.5	57.3		59.9	51.6		5.2	8.5	1.9	5.1	6.8	
LOS	E	E		E	D		A	A	A	A	A	
Approach Delay		57.8			58.1			8.1			6.8	
Approach LOS		E			E			A			A	
Queue Length 50th (ft)	3	10		58	31		1	130	6	3	82	
Queue Length 95th (ft)	16	32		91	64		5	265	19	15	266	
Internal Link Dist (ft)		554			185			417			127	
Turn Bay Length (ft)	235						165		265			
Base Capacity (vph)	72	623		289	608		292	3750	1297	286	3886	
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	0.06	0.02		0.50	0.07		0.02	0.39	0.08	0.09	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 125

Actuated Cycle Length: 125

Offset: 21 (17%), 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: 10.6

Intersection LOS: B

Intersection Capacity Utilization 45.9%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

 Ø1	 Ø2 (R)	 Ø4	 Ø3
9.5 s	49.5 s	53 s	13 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
9.5 s	49.5 s	9.5 s	56.5 s

HCM 6th TWSC

2: Milwaukee Avenue & E. Chevy Chase Drive/Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	1	0	6	0	0	0	15	1398	0	0	1431	2
Future Vol, veh/h	1	0	6	0	0	0	15	1398	0	0	1431	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	17	0	0	0	0	7	0	0	6	0
Mvmt Flow	1	0	6	0	0	0	16	1503	0	0	1539	2
Major/Minor	Minor2		Minor1		Major1		Major2		Major2		Major2	
Conflicting Flow All	2324	3075	771	2305	3076	752	1541	0	0	1503	0	0
Stage 1	1540	1540	-	1535	1535	-	-	-	-	-	-	-
Stage 2	784	1535	-	770	1541	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	7.24	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.47	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	20	12	312	21	12	357	437	-	-	452	-	-
Stage 1	123	179	-	124	180	-	-	-	-	-	-	-
Stage 2	357	180	-	364	179	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	17	9	312	17	9	357	437	-	-	452	-	-
Mov Cap-2 Maneuver	71	76	-	73	73	-	-	-	-	-	-	-
Stage 1	96	179	-	96	140	-	-	-	-	-	-	-
Stage 2	278	140	-	356	179	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB		SB		SB	
HCM Control Delay, s	22.8		0		1.6		0		0		0	
HCM LOS	C		A									
Minor Lane/Major Mvmt	NBL		NBT		NBR		EBLn1WBLn1		SBL		SBT	
Capacity (veh/h)	437		-		-		210		-		-	
HCM Lane V/C Ratio	0.037		-		-		0.036		-		-	
HCM Control Delay (s)	13.6		1.5		-		22.8		0		0	
HCM Lane LOS	B		A		-		C		A		A	
HCM 95th %tile Q(veh)	0.1		-		-		0.1		-		0	

HCM 6th TWSC

3: Milwaukee Avenue & Prague Avenue

08/02/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	3	1	1374	1404	3
Future Vol, veh/h	0	3	1	1374	1404	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, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	0	0	6	6	0
Mvmt Flow	0	3	1	1579	1614	3
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2250	809	1617	0	-	0
Stage 1	1616	-	-	-	-	-
Stage 2	634	-	-	-	-	-
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	70	281	199	-	-	-
Stage 1	102	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	67	281	199	-	-	-
Mov Cap-2 Maneuver	67	-	-	-	-	-
Stage 1	98	-	-	-	-	-
Stage 2	452	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	18	0.3		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	199	-	281	-	-	
HCM Lane V/C Ratio	0.006	-	0.012	-	-	
HCM Control Delay (s)	23.2	0.3	18	-	-	
HCM Lane LOS	C	A	C	-	-	
HCM 95th %tile Q(veh)	0	-	0	-	-	

HCM 6th TWSC

4: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑				↑↑↑
Traffic Vol, veh/h	0	19	1356	45	0	1055
Future Vol, veh/h	0	19	1356	45	0	1055
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	88	88	88	88	88	88
Heavy Vehicles, %	0	20	6	6	0	5
Mvmt Flow	0	22	1541	51	0	1199
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	796	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.5	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	4.1	-	-	-	-
Pot Cap-1 Maneuver	0	254	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	254	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	20.5	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	254	-		
HCM Lane V/C Ratio	-	-	0.085	-		
HCM Control Delay (s)	-	-	20.5	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	0.3	-		

HCM 6th TWSC

5: Milwaukee Avenue & Three Quarter Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↘ ↘	↗ ↘ ↘		↗ ↘ ↘	↗ ↘ ↘
Traffic Vol, veh/h	0	63	1350	24	30	1407
Future Vol, veh/h	0	63	1350	24	30	1407
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	-	-	150	-
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	6
Mvmt Flow	0	66	1421	25	32	1481
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	723	0	0	1446	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	5.3	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	0	320	-	-	242	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	320	-	-	242	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	19.2	0		0.5		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	320	242	-	
HCM Lane V/C Ratio	-	-	0.207	0.13	-	
HCM Control Delay (s)	-	-	19.2	22.1	-	
HCM Lane LOS	-	-	C	C	-	
HCM 95th %tile Q(veh)	-	-	0.8	0.4	-	

HCM 6th TWSC

6: Riverwalk Drive & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	4.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕ ↕ ↕ ↕			↕ ↕	
Traffic Vol, veh/h	35	89	72	24	3	102
Future Vol, veh/h	35	89	72	24	3	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	24	0	11	6	0	14
Mvmt Flow	37	95	77	26	3	109
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	103	0	-	0	259	52
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	169	-
Critical Hdwy	5.66	-	-	-	6.05	7.31
Critical Hdwy Stg 1	-	-	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.328	-	-	-	3.65	4.033
Pot Cap-1 Maneuver	965	-	-	-	726	827
Stage 1	-	-	-	-	875	-
Stage 2	-	-	-	-	833	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	965	-	-	-	697	827
Mov Cap-2 Maneuver	-	-	-	-	697	-
Stage 1	-	-	-	-	840	-
Stage 2	-	-	-	-	833	-
Approach	EB	WB		SB		
HCM Control Delay, s	2.5	0		10.1		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	965	-	-	-	823	
HCM Lane V/C Ratio	0.039	-	-	-	0.136	
HCM Control Delay (s)	8.9	0	-	-	10.1	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

HCM 6th TWSC

7: Shell Access Drive/N Riverwalk Drive & Riverwalk Drive

08/02/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	5	72	15	0	38	0	36	0	1	0	0	22
Future Vol, veh/h	5	72	15	0	38	0	36	0	1	0	0	22
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	105
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	11	0	0	0	0	0	0	0
Mvmt Flow	5	77	16	0	40	0	38	0	1	0	0	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	40	0	0	93	0	0	147	135	85	136	143	40
Stage 1	-	-	-	-	-	-	95	95	-	40	40	-
Stage 2	-	-	-	-	-	-	52	40	-	96	103	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1583	-	-	1514	-	-	826	760	980	840	752	1037
Stage 1	-	-	-	-	-	-	917	820	-	980	866	-
Stage 2	-	-	-	-	-	-	966	866	-	916	814	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1583	-	-	1514	-	-	805	758	980	837	750	1037
Mov Cap-2 Maneuver	-	-	-	-	-	-	805	758	-	837	750	-
Stage 1	-	-	-	-	-	-	914	818	-	977	866	-
Stage 2	-	-	-	-	-	-	944	866	-	912	812	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.4			0			9.7			8.6		
HCM LOS							A			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	809	1583	-	-	1514	-	-	-	1037			
HCM Lane V/C Ratio	0.049	0.003	-	-	-	-	-	-	0.023			
HCM Control Delay (s)	9.7	7.3	0	-	0	-	-	0	8.6			
HCM Lane LOS	A	A	A	-	A	-	-	A	A			
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-	0.1			

Capacity Analysis Summary Sheets Projected Weekday Evening

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	7	5	183	7	131	40	1519	52	31	1566	6
Future Volume (vph)	35	7	5	183	7	131	40	1519	52	31	1566	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	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	0		0	165		265	0		0
Storage Lanes	1		0	2		0	1		1	1		0
Taper Length (ft)	95			90			155			180		
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		0.942			0.858				0.850		0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1805	1790	0	3467	1600	0	1805	5250	1583	1719	5296	0
Flt Permitted	0.950			0.950			0.091			0.105		
Satd. Flow (perm)	1805	1790	0	3467	1600	0	173	5250	1583	190	5296	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		25			30			40			40	
Link Distance (ft)		634			265			497			207	
Travel Time (s)		17.3			6.0			8.5			3.5	
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%	1%	0%	2%	0%	4%	2%	5%	3%	0%
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)	38	13	0	199	150	0	43	1651	57	34	1709	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)	11.4	53.0		14.0	55.6		9.5	53.5	14.0	9.5	53.5	
Total Split (%)	8.8%	40.8%		10.8%	42.8%		7.3%	41.2%	10.8%	7.3%	41.2%	
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)	6.6	8.2		23.4	18.6		90.0	83.8	113.2	88.9	81.6	
Actuated g/C Ratio	0.05	0.06		0.18	0.14		0.69	0.64	0.87	0.68	0.63	

21-143 Speedway Rebuild - Buffalo Grove
Year 2027 Total Weekday PM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

Lanes, Volumes, Timings

1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

08/02/2021



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio	0.42	0.12		0.32	0.66		0.21	0.49	0.04	0.17	0.51	
Control Delay	73.6	59.6		47.6	65.5		10.0	14.6	1.9	9.4	15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Delay	73.6	59.6		47.6	65.5		10.0	14.6	1.9	9.4	15.8	
LOS	E	E		D	E		A	B	A	A	B	
Approach Delay		70.0			55.3			14.1			15.7	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	32	11		70	121		10	283	4	8	298	
Queue Length 95th (ft)	70	33		113	184		27	379	11	23	399	
Internal Link Dist (ft)		554			185			417			127	
Turn Bay Length (ft)	235						165		265			
Base Capacity (vph)	95	647		624	610		201	3382	1378	204	3325	
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	0.40	0.02		0.32	0.25		0.21	0.49	0.04	0.17	0.51	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 60 (46%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 19.2

Intersection LOS: B

Intersection Capacity Utilization 58.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Milwaukee Avenue & Columbus Parkway/Riverwalk Drive

Ø1	Ø2 (R)	Ø4	Ø3
9.5 s	53.5 s	53 s	14 s
Ø5	Ø6 (R)	Ø7	Ø8
9.5 s	53.5 s	11.4 s	55.6 s

HCM 6th TWSC

2: Milwaukee Avenue & E. Chevy Chase Drive/Parking Lot

08/02/2021

Intersection												
Int Delay, s/veh	3.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕↕			↕↕		
Traffic Vol, veh/h	13	0	27	0	0	0	16	1695	0	0	1616	8
Future Vol, veh/h	13	0	27	0	0	0	16	1695	0	0	1616	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	0	0	4	0	0	0	0	3	0	0	2	0
Mvmt Flow	13	0	28	0	0	0	16	1730	0	0	1649	8
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	2550	3415	829	2587	3419	865	1657	0	0	1730	0	0
Stage 1	1653	1653	-	1762	1762	-	-	-	-	-	-	-
Stage 2	897	1762	-	825	1657	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.98	7.5	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.5	5.5	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.34	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	14	7	310	13	7	301	394	-	-	370	-	-
Stage 1	105	157	-	89	139	-	-	-	-	-	-	-
Stage 2	305	139	-	337	157	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	0	310	-	0	301	394	-	-	370	-	-
Mov Cap-2 Maneuver	-	-	-	62	0	-	-	-	-	-	-	-
Stage 1	105	157	-	89	0	-	-	-	-	-	-	-
Stage 2	-	0	-	307	157	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Control Delay, s			0		7.2		0					
HCM LOS	-		A									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	394	-	-	-	-	370	-	-				
HCM Lane V/C Ratio	0.041	-	-	-	-	-	-	-				
HCM Control Delay (s)	14.5	7.1	-	-	0	0	-	-				
HCM Lane LOS	B	A	-	-	A	A	-	-				
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0	-	-				

HCM 6th TWSC

3: Milwaukee Avenue & Prague Avenue

08/02/2021

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Y			↑↑↑	↑↑↑	
Traffic Vol, veh/h	0	3	3	1646	1600	4
Future Vol, veh/h	0	3	3	1646	1600	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, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	0	33	0	4	3	0
Mvmt Flow	0	3	3	1715	1667	4
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	2361	836	1671	0	-	0
Stage 1	1669	-	-	-	-	-
Stage 2	692	-	-	-	-	-
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	61	220	187	-	-	-
Stage 1	94	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	40	220	187	-	-	-
Mov Cap-2 Maneuver	40	-	-	-	-	-
Stage 1	62	-	-	-	-	-
Stage 2	421	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	21.6	2.8		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR	
Capacity (veh/h)	187	-	220	-	-	
HCM Lane V/C Ratio	0.017	-	0.014	-	-	
HCM Control Delay (s)	24.6	2.8	21.6	-	-	
HCM Lane LOS	C	A	C	-	-	
HCM 95th %tile Q(veh)	0.1	-	0	-	-	

HCM 6th TWSC

4: Milwaukee Avenue & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑↑↑			↑↑↑
Traffic Vol, veh/h	0	24	1625	60	0	1202
Future Vol, veh/h	0	24	1625	60	0	1202
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	5	4	0	0	3
Mvmt Flow	0	25	1711	63	0	1265
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	887	0	0	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.2	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.95	-	-	-	-
Pot Cap-1 Maneuver	0	242	-	-	0	-
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	242	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	21.6	0		0		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBT		
Capacity (veh/h)	-	-	242	-		
HCM Lane V/C Ratio	-	-	0.104	-		
HCM Control Delay (s)	-	-	21.6	-		
HCM Lane LOS	-	-	C	-		
HCM 95th %tile Q(veh)	-	-	0.3	-		

21-143 Speedway Rebuild - Buffalo Grove
Year 2027 Total Weekday PM Peak Hour

Synchro 11 Report

Attachment: Plan Set (Consider Apprvl:Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

HCM 6th TWSC

5: Milwaukee Avenue & Three Quarter Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	0.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations		↗ ↑↑↑	↗ ↑↑↑		↘ ↑↑↑	↘ ↑↑↑
Traffic Vol, veh/h	0	73	1638	8	39	1604
Future Vol, veh/h	0	73	1638	8	39	1604
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	-	-	150	-
Veh in Median Storage, #	1	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	4	0	0	3
Mvmt Flow	0	77	1724	8	41	1688
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	-	866	0	0	1732	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.1	-	-	5.3	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.9	-	-	3.1	-
Pot Cap-1 Maneuver	0	258	-	-	175	-
Stage 1	0	-	-	-	-	-
Stage 2	0	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	258	-	-	175	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	WB	NB		SB		
HCM Control Delay, s	24.8	0		0.8		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT	
Capacity (veh/h)	-	-	258	175	-	
HCM Lane V/C Ratio	-	-	0.298	0.235	-	
HCM Control Delay (s)	-	-	24.8	31.8	-	
HCM Lane LOS	-	-	C	D	-	
HCM 95th %tile Q(veh)	-	-	1.2	0.9	-	

HCM 6th TWSC

6: Riverwalk Drive & Gas Station Access Drive

08/02/2021

Intersection						
Int Delay, s/veh	2.9					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕ ↕↕↕			↕↕	
Traffic Vol, veh/h	35	55	238	34	7	83
Future Vol, veh/h	35	55	238	34	7	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	40	3	4	0	0
Mvmt Flow	40	63	270	39	8	94
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	309	0	-	0	433	155
Stage 1	-	-	-	-	290	-
Stage 2	-	-	-	-	143	-
Critical Hdwy	5.3	-	-	-	6.05	7.1
Critical Hdwy Stg 1	-	-	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	3.1	-	-	-	3.65	3.9
Pot Cap-1 Maneuver	839	-	-	-	589	739
Stage 1	-	-	-	-	669	-
Stage 2	-	-	-	-	855	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	839	-	-	-	560	739
Mov Cap-2 Maneuver	-	-	-	-	560	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	855	-
Approach	EB	WB		SB		
HCM Control Delay, s	3.7	0		10.8		
HCM LOS				B		
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	
Capacity (veh/h)	839	-	-	-	721	
HCM Lane V/C Ratio	0.047	-	-	-	0.142	
HCM Control Delay (s)	9.5	0	-	-	10.8	
HCM Lane LOS	A	A	-	-	B	
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	

HCM 6th TWSC

7: Shell Access Drive/N Riverwalk Drive & Riverwalk Drive

08/02/2021

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↕			↕			↕			↕		
Traffic Vol, veh/h	11	26	25	8	193	8	67	1	2	1	0	12
Future Vol, veh/h	11	26	25	8	193	8	67	1	2	1	0	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	105
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	0	40	4	0	3	13	0	0	0	0	0	8
Mvmt Flow	13	30	28	9	219	9	76	1	2	1	0	14
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	228	0	0	58	0	0	319	316	44	314	326	224
Stage 1	-	-	-	-	-	-	70	70	-	242	242	-
Stage 2	-	-	-	-	-	-	249	246	-	72	84	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.372
Pot Cap-1 Maneuver	1352	-	-	1559	-	-	638	603	1032	643	596	801
Stage 1	-	-	-	-	-	-	945	841	-	766	709	-
Stage 2	-	-	-	-	-	-	759	706	-	943	829	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1352	-	-	1559	-	-	619	593	1032	632	586	801
Mov Cap-2 Maneuver	-	-	-	-	-	-	619	593	-	632	586	-
Stage 1	-	-	-	-	-	-	936	833	-	758	704	-
Stage 2	-	-	-	-	-	-	741	701	-	930	821	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	1.4			0.3			11.6			9.7		
HCM LOS							B			A		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2			
Capacity (veh/h)	626	1352	-	-	1559	-	-	632	801			
HCM Lane V/C Ratio	0.127	0.009	-	-	0.006	-	-	0.002	0.017			
HCM Control Delay (s)	11.6	7.7	0	-	7.3	0	-	10.7	9.6			
HCM Lane LOS	B	A	A	-	A	A	-	B	A			
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0	0.1			

Speedway - Buffalo Grove, IL
ENGINEERS OPINION OF PROBABLE COST

SCOPE - STORM SEWER	QUANTITY	UNITS	UNIT COST	TOTAL COST
6" PVC SDR 26	221.00	L.F.	\$18.00	\$3,978.00
6" PVC C-900	102.00	L.F.	\$20.00	\$2,040.00
12" R.C.P. STORM SEWER	527.00	L.F.	\$27.00	\$14,229.00
15" R.C.P. STORM SEWER	284.00	L.F.	\$32.00	\$9,088.00
18" R.C.P. STORM SEWER	129.00	L.F.	\$35.00	\$4,515.00
12" CONCRETE FLARED END SECTION	5.00	EA.	\$500.00	\$2,500.00
18" CONCRETE FLARED END SECTION	1.00	EA.	\$750.00	\$750.00
HYDRO INTERNATIONAL WATER QUALITY UNIT	1.00	EA.	\$10,000.00	\$10,000.00
48" PRECAST CONCRETE MANHOLE	4.00	EA.	\$2,000.00	\$8,000.00
48" PRECAST CONCRETE HEAVY DUTY CATCH BASIN	2.00	EA.	\$2,250.00	\$4,500.00
24" PRECAST CONCRETE YARD DRAIN	1.00	EA.	\$750.00	\$750.00
CLEANOUT	21.00	EA.	\$100.00	\$2,100.00
72" PRECAST CONCRETE CATCH BASIN WITH RESTRICTOR	1.00	EA.	\$5,000.00	\$5,000.00
ENVIRONMENTAL CATCH BASIN	1.00	EA.	\$2,750.00	\$2,750.00
CORE DRILL EXISTING STRUCTURE AND CONNECT NEW STORM SEWER	1.00	EA.	\$350.00	\$350.00

TOTAL STORM SEWER COST = \$62,450.00

SCOPE - SOIL EROSION CONTROL	QUANTITY	UNITS	UNIT COST	TOTAL COST
EROSION CONTROL BLANKET (DS75) / RESTORATION	6221.00	S.Y.	\$2.00	\$12,442.00
EROSION CONTROL BLANKET (SC150) / RESTORATION	586.00	S.Y.	\$3.00	\$1,758.00
RIP RAP	46.00	S.Y.	\$10.00	\$460.00
SILT FENCE	1665.00	L.F.	\$3.00	\$4,995.00
CATCH ALL INLET PROTECTION	15.00	EA.	\$100.00	\$1,500.00
CONCRETE WASHOUT	1.00	EA.	\$250.00	\$250.00
CONSTRUCTION ENTRANCE	120.00	S.Y.	\$10.00	\$1,200.00

TOTAL SOIL EROSION CONTROL COST = \$22,605.00

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

SCOPE - SITE IMPROVEMENTS	QUANTITY	UNITS	UNIT COST	TOTAL COST
NEW NORMAL STRENGTH ASPHALT PAVEMENT	3018.00	S.Y.	\$30.00	\$90,540.00
NEW HIGH STRENGTH ASPHALT PAVEMENT	2888.00	S.Y.	\$35.00	\$101,080.00
PAVEMENT STRIPING	1.00	LS	\$3,000.00	\$3,000.00
5" CONCRETE PAVEMENT	353.00	S.Y.	\$40.00	\$14,120.00
6" CONCRETE PAVEMENT	1260.00	S.Y.	\$45.00	\$56,700.00
8" CONCRETE PAVEMENT	2081.00	S.Y.	\$60.00	\$124,860.00
ROADWAY CONCRETE PAVEMENT (MILWAUKEE AVE)	205.00	S.Y.	\$75.00	\$15,375.00
1-3/4" MILL AND OVERLAY	353.00	S.Y.	\$18.00	\$6,354.00
BARRIER CURB	1826.00	L.F.	\$18.00	\$32,868.00
B6.12 CONCRETE CURB AND GUTTER	322.00	L.F.	\$22.00	\$7,084.00
B6.24 CONCRETE CURB AND GUTTER	203.00	L.F.	\$28.00	\$5,684.00
DETECTABLE WARNING STRIP	328.00	S.F.	\$25.00	\$8,200.00
TOTAL SITE IMPROVEMENTS COST =				\$457,665.00
SCOPE - WATER	QUANTITY	UNITS	UNIT COST	TOTAL COST
2" TYPE K COPPER WATER	192.00	L.F.	\$20.00	\$3,840.00
B-BOX	1.00	EA.	\$500.00	\$500.00
TOTAL WATER COST =				\$4,340.00
SCOPE - SANITARY SEWER	QUANTITY	UNITS	UNIT COST	TOTAL COST
6" PVC SDR 26	32.00	L.F.	\$18.00	\$576.00
8" PVC SDR 26	288.00	L.F.	\$22.00	\$6,336.00
48" PRECAST CONCRETE MANHOLE	2.00	EA.	\$2,500.00	\$5,000.00
GREASE TRAP	1.00	EA.	\$7,500.00	\$7,500.00
CONCRETE PIPE ENCASEMENT	24.00	L.F.	\$20.00	\$480.00
TOTAL SANITARY SEWER COST =				\$19,892.00
SUBTOTAL =				\$566,952.00
18% CONTINGENCY AND L.O.C. =				\$102,051.36
TOTAL =				\$669,003.36

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)



September 10, 2021

Village of Buffalo Grove
Engineering Department
Fifty One Raupp Blvd.
Buffalo Grove, IL 60089

Attn: Mr. Ted Sianis- P.E.
tsianis@vbg.org

Re: Zoning Submittal- Speedway (201 N Milwaukee Ave.)
Review Letter No.:1
WTCE Project No.: D2100065

Dear Mr. Sianis:

Listed below in **bold** are our responses to comments from your E-mailed letter dated August 26, 2021.

General

1. Please provide any necessary other agency permits.

This project will require an IEPA NPDES approval, and a permit from IDOT. These approvals will be forwarded upon receipt.

2. Please provide a stormwater management report.

A Stormwater Management Report for this project is included within this submittal.

3. Building demolition will require a separate demolition permit through the Village. This form can be found on our Building/Zoning website.

It is our understanding that this is being coordinated separately with the Village, and that this comment is not applicable at this time.

4. Please add a demolition plan, soil erosion/sediment control plan, and details to the plan set.
 - a. Enclosed are the Village standard details/exhibits for inclusion.

The Demolition Plan, Stormwater Pollution Prevention Plan, and applicable detail sheets have been added to the plan set. The provided Village standard details and exhibits have been added.

5. Final plan set will require PE stamp.

The enclosed plan set has been signed and sealed.

6. When Village Engineering Department approval is provided for the development, two (2) paper full size plan sets will be required for the Engineering Department.

Understood.

7. If flood plain maps will be modified by development, please complete a CLOMR now, or a LOMR at the completion of the project to update the flood plain maps for the site.

No floodplain maps will be modified by this development as no 100 year floodplain encroaches on the property.

8. Please provide an Engineer's Opinion of Probable Cost (EOPC). Include a 10% contingency as well as an 8% increase for Letter of Credit purposes per ordinance 16.20.130.

An Engineer's Opinion of Probable Cost is included within this submittal.

9. Once the Village has an EOPC, we will develop and provide you a draft Development Improvement Agreement (DIA). The Developer will be required to execute and submit the DIA including;
 - a. A Letter of Credit

Understood.

- b. Engineering review and inspection fees

Understood.

- c. A cash deposit

Understood.

10. Plat of Subdivision:
 - a. Please add the County Clerk's Certificate (can be found in our municipal code).

The County Clerk's Certificate has been added to the Plat of Subdivision included within this submittal.

11. Plat of Easement:
 - a. Create public utility easements to cover proposed water main, storm sewer, and sanitary service lateral.
 - i. Easement provisions provided in the enclosed document.

The proposed easements have been added to the Plat of Subdivision per direction received from the Village of Buffalo Grove.

- b. Add storm water infrastructure maintenance activity and responsibility language.

This language has been added to the Plat of Subdivision included in this submittal.

- c. Provide restrictions on the plat for the proposed comp. storage areas.

No compensatory storage is required for the proposed improvements.

- d. After review and approval of a plat of easement, you will be required to provide mylar copies of the plat for execution and recording (to be recorded by developer) in Lake County.

Understood.

- 12. Provide sanitary service PE calculation.

The sanitary sewer population equivalent calculations are included within this submittal.

Plan Sheets

CS (Plot Plan)

- 1. Please verify pavement designs are adequate for the proposed use.

The proposed pavement designs are adequate for the proposed use based on Speedway's national standards and history with thousands of sites using these designs.

- 2. Please add sidewalk along North Riverwalk Drive.

Per your email to Frank Petrich dated September 1, 2021, this will no longer be required due to the presence of mature trees within the ROW along North Riverwalk Drive.

CG (Grading Plan)

- 1. Shorten/lower 6'+ tall mounds.

The mounds on the site have been lowered to reduce the proposed heights below 6' as shown on the revised Grading Plan, sheet CG.

- 2. Add/define 100-year storm overland flow route(s).

The 100-year overland flow route is shown on the Grading Plan, sheet CG.

CU (Piping & Utilities Plan)

1. For your information, the Village's streetlights currently powered from existing transformer on site.

Understood.

2. Storm/Sanitary/Water infrastructure will require easements.

Easements for the storm, sanitary, and water improvements have been provided on the Plat of Subdivision, which is included within this submittal.

3. Based on site grading, Structure #10 shall also be an oil/water separator structure.

The structure south of the canopy, which is now Structure #11, has been changed to be an environmental catch basin as shown. Please note that we have also added Flexstorm Pure Permanent Inlet Protection devices to all open rim structures in the paved areas to further treat site runoff for any hydrocarbons.

4. Please confirm rip rap is sized appropriately at NE corner of site.

The proposed rip rap has been appropriately sized based on the discharge pipe size and the discharge location configuration.

5. Per Village code, HDPE pipe is not permitted for storm sewer.

The proposed storm sewers have been changed from HDPE to RCP as shown on the revised Piping and Utilities Plan, sheet CU.

Respectfully Submitted,

The W-T Group, LLC



**Jim Glascott, PE CPESC
Project Manager, Civil Engineering**

SPEEDWAY #7649

201 N Milwaukee Ave, Buffalo Grove, IL 60089

Response to Standards

September 20, 2021

Variations**1. A variance request to reduce the landscape setback of 25'-0" to 12'-0" along N Riverwalk Dr and Milwaukee Ave.**

- a. 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;
 - i. This variance is being requested due to the locations of the Auto Canopy and the CFL Canopy need to be placed in a safe location to allow for proper site circulation. If the canopies were located to obtain the required landscape setback, the onsite circulation would be compromised from the safety standpoint and would discourage costumers from using the site. Hence the site could not yield a reasonable return.
- b. The plight of the owner is due to unique circumstances;
 - i. The variance is being requested due to the nature of the fueling center and to provide a safe environment for the workers and costumers.
 - ii. In addition, the site is bounded by streets on three sides. This limits the east / west dimension of the site and therefore necessitates the need for the variance.
- c. The proposed variation will not alter the essential character of the neighborhood.
 - i. The variance is being requested due to the nature of the fueling center and to provide a safe environment for the workers and costumers. Please note that the variance is only being requested at the areas directly adjacent to the canopies, all other areas hence the majority of the site exceed the landscape requirement of 25'-0". Therefore, the essential character of the neighborhood will be enhanced.

2. A variance request to allow for an accessory structure of the Auto Canopy and CFL Canopy to be in between the main building and ROW of N Riverwalk Dr and Milwaukee Ave.

- a. 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;
 - i. This variance is being requested to allow for the fueling canopies to be located in front of the convenience store for the safe circulation and visibility by the costumer as they are traveling down the roadway and entering the site. Canopies at fueling locations need to be seen by the costumer in order to yield a reasonable return.
- b. The plight of the owner is due to unique circumstances;
 - i. The variance is being requested due to the nature of the fueling center and to provide a safe environment for the workers and costumers.
 - ii. In addition, the site is bounded by streets on three sides. Thus necessitating the need for the canopies to be between the main building and the ROW.
- c. The proposed variation will not alter the essential character of the neighborhood.
 - i. The variance is being requested due to the nature of the fueling center and to provide a safe environment for the workers and costumers and will not have an adverse effect on the neighboring properties.

Sign Variations

1. A variance request to allow for (2) additional wall signs on top of the (2) allowed to total (4) for the proposed Auto Canopy which will not exceed the total allowable 288 sqft limit.

- a. The literal interpretation and strict application of the provisions or 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.
 - i. Speedway is built around automobile and truck traffic. The variance is being requested due to the nature of the location being at a signalized intersection and Speedway providing the right amount of signage to allow the costumer to see the signs at a safe distance for them to maneuver safely into the site and also around the site once they have entered. The variance will allow Speedway to have (4) wall signs on the auto canopy which will all not exceed the total allowable 288 sqft limit. The current site has (5) wall signs on the auto canopy and Speedway will be reducing that amount to (4) for the auto canopy along N Milwaukee Ave.
- b. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity;
 - i. The variance is being requested due to the nature of the fueling center and to provide a safe environment for the workers and costumers and will not have an adverse effect on the neighboring properties.
 - ii. Speedway will be reducing (1) sign from the auto canopy from (5) to (4) wall signs.
- c. The unusual conditions applying to the specific property do not apply generally to the other properties in the Village;
 - i. The unusual condition is that this location has costumers traveling towards the site from (4) directions. The (4) directions each require a sign.
- d. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020.
 - i. The granting of the variance will not be contrary to the ordinance in that only 218.5 sqft of wall signage is being requested verses the 288 sqft allowed. Therefore, 69.5 sqft of signage is not being used in order to get the right amount of signs for the auto canopy.

2. A variance request to allow the location of signage C1 ("Speedway" channel letters on North elevation) and C4 ("S" Badge on the East elevation) to be placed on the auto canopy elevations not facing a public right of way.

- a. The literal interpretation and strict application of the provisions or 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.
 - i. The variance is being requested due to the nature of the location being at a signalized intersection and Speedway placing the right amount of signage at 90 degrees to the flow of traffic to allow the costumer to see the signs at a safe distance for them to maneuver safely into the site and also around the site once they have entered.
- b. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity;
 - i. The variance is being requested due to the nature of the fueling center and to provide a safe environment for the workers and costumers and will not have an adverse effect on the neighboring properties.
 - ii. Speedway will be reducing (1) sign from the auto canopy from (5) to (4) wall signs.

- c. The unusual conditions applying to the specific property do not apply generally to the other properties in the Village;
 - i. The unusual condition is that this location has costumers traveling towards the site from (4) directions. The (2) signs needing a variance are 90 degrees to (2) or the (4) traffic directions.
- d. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020.
 - i. The granting of the variance will not be contrary to the ordinance in that only 218.5 sqft of wall signage is being requested verses the 288 sqft allowed. Therefore, 69.5 sqft of signage is not being used in order to place the signage in the correct locations.

3. A variance request to allow for the “Speedway” channel letters on the north / south elevations of the Auto Canopy to exceed the 1/3 length and 1/2 height requirement and to allow for the “S” badge on the east / west elevations of the auto canopy to exceed the 1/2 height requirement to match the existing channel letters and badge sizes currently onsite.

- a. The literal interpretation and strict application of the provisions or 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.
 - i. The variance will allow Speedway to display their name and logo which will match the existing onsite signage style and size on all sides of the canopy faces that face each direction of the traffic traveling along Milwaukee Ave and Riverwalk Dr. The proposed size of the signs allows the costumer to see the signs at a safe distance.
- b. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity;
 - i. The proposed variance will allow for safely recognized signage and yet does not exceed the maximum allowable signage. Therefore, the variance will not be detrimental to the adjacent property owners.
- c. The unusual conditions applying to the specific property do not apply generally to the other properties in the Village;
 - i. The unusual condition is that this location has costumers traveling towards the site from (4) directions. The signs needing the variance are 90 degrees to the traffic directions and provide recognition from a safe distance.
- d. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020.
 - i. The granting of the variance will not be contrary to the ordinance in that only 218.5 sqft of wall signage is being requested verses the 288 sqft allowed. Therefore, 69.5 sqft of signage is not being used in order to allow for the placement of the safely sized signage.

4. A variance request to allow the location of signage C5 (“S” badge on North elevation) to be placed on the CFL canopy elevation not facing a public right of way.

- a. The literal interpretation and strict application of the provisions or 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.
 - i. The unique condition is that the location of the (C5) sign needs to be 90 degrees towards the traffic flow.
- b. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity;
 - i. The granting of this variance will allow for a safe condition. Therefore, will not be materially detrimental to the adjacent property owners. Please note, that if the sign was placed on the allowable side of the canopy, it would be facing directly to residential property.

- c. The unusual conditions applying to the specific property do not apply generally to the other properties in the Village;
 - i. The unusual condition is that this location has costumers traveling towards the site from (4) directions. The signs needing the variance are 90 degrees to the traffic directions and provide recognition from a safe distance.
- d. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020.
 - i. The granting of the variance will not be contrary to the ordinance in that only 218.5 sqft of wall signage is being requested verses the 288 sqft allowed. Therefore, 69.5 sqft of signage is not being used in order to allow for the proper placement of the sign.

5. A variance request to allow for the “S” badge on the north / south elevations of the CFL Canopy to exceed the 1/2 height requirement to match the existing badge size currently onsite.

- a. The literal interpretation and strict application of the provisions or 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.
 - i. The variance will allow Speedway to display their logo which will match the existing onsite signage style and size on the canopy faces that face each direction of the traffic traveling along North Riverwalk Dr and Riverwalk Dr. The proposed size of the signs allows the costumer to see the signs at a safe distance.
- b. The granting of the requested variance would not be materially detrimental to the property owners in the vicinity;
 - i. The proposed variance will allow for safely recognized signage and yet does not exceed the maximum allowable signage. Therefore, the variance will not be detrimental to the adjacent property owners.
- c. The unusual conditions applying to the specific property do not apply generally to the other properties in the Village;
 - i. The unusual condition is that this location has costumers traveling towards the site from (2) directions. The signs needing the variance are 90 degrees to the traffic directions and provide recognition from a safe distance.
- d. The granting of the variance will not be contrary to the purpose of this Title pursuant to Section 14.04.020.
 - i. The granting of the variance will not be contrary to the ordinance in that only 218.5 sqft of wall signage is being requested verses the 288 sqft allowed. Therefore, 69.5 sqft of signage is not being used in order to allow for the placement of the safely sized signage.



September 30, 2021

Ms. Rati Akash
Village Planner
Village of Buffalo Grove
50 Raup Boulevard
Buffalo Grove, IL 60089

RE: Review of Proposed Speedway Planned Development Applications – Buffalo Grove

Dear Ms. Akash,

Thank you for this opportunity to provide comments and questions regarding the proposed Planned Development amendment and related variations for an expanded Speedway located on properties at 201 N Milwaukee Avenue and 241 N. Milwaukee Avenue. I am writing on behalf of Mr. Bill Johnson and other owners with interest in properties located directly east of the proposed development across N. Riverwalk Drive. Plans are still being formulated, but their intent is to develop those properties for multiple family dwellings. While the gas station is an existing use, the expanded facility presents several potential adverse impacts on existing and anticipated future residential uses, which can be mitigated as part of the Village's application review process.

Having examined the zoning application materials at the Village Hall, we have a few questions and concerns regarding the Speedway development, and appreciate additional information you can provide about them. We also welcome these items being considered by the Plan Commission in reviewing the Speedway proposal. Our questions and concerns focus around the four points described below.

Questions and Comments

The variation requested to reduce the landscape setback from 25' to 12' along N. Riverwalk Drive is concerning as it reduces landscaped area in which to buffer existing (301 Riverwalk Place) and future residential uses from operation of the gas station and associated activities. Primary concerns relate to light and noise impacts from the gas station operations, particularly the trucks that will be using the diesel pumps on the east side of the site.

Question 1: How can the landscape area along N. Riverwalk Drive be enlarged and/or enhanced to mitigate light and noise impacts from the gas station.

- The landscape plan indicates the existing trees on the east side will remain – during summer months, these will provide some visual screen of the station (similar tree cover does not appear to extent north to where the office building is currently located). However, the greater concern are impacts headlights and noise from the trucks will have on adjacent residential uses. The reduced landscape buffer limits understory plantings that could deflect or absorb this noise and

headlights. Based on current use of the site, it can be expected that this use will include early morning visits by local landscape contractors. Addition shrubs and evergreen landscaping should be included in this area to reduce the potential noise and light impacts year-round. Noise impacts might be aggravated not just by direct noise, but truck noise echoing off of the main building. If adequate landscaping cannot be provided in the reduced area, a privacy fence or wall along the east property line should be considered.

Question 2: Can the N. Riverwalk Drive Curb Cut be eliminated from the proposal.

- There is no description of the need for this curb cut in the traffic study and the turning template included in the packet does not indicate that driveway being used for access. The elevations indicate a sign on the south side of the canopy for the diesel pumps being for exiting. Does this mean that the trucks southbound from Milwaukee Avenue are expected to access the site from N. Riverwalk Drive and this driveway? If so, this will increase the traffic and noise impacts on properties to the east. Understandably, without that driveway, trucks would have to circulate around the building to access the diesel pumps. While inconvenient, it would very much reduce the light, noise and traffic impacts on properties to the east, particularly during the morning hours when landscaping vehicles use the pumps.

Question 3: What additional business operations will be associated with the facility and how will potential adverse impacts on nearby residential uses be address?

- Information from a previous presentation by the applicant and questions of the Village indicated that the proposal may include: 1) 10 video game machines, 2) 24 hour operation, 3) expanded alcohol package store liquor sales area, and 4) on premises dining. Are these still part of the plan? If so, what limitations and controls on these activities (especially as they relate to 24 hour operations of gaming and liquor sales) are anticipated to be included in the approval ordinance mitigate noise, light, and late night activity that will impact existing and anticipated residential uses to the east. In addition, as the use will technically be designated as a truck stop, will limitations on additional activities related to such uses but not common for local commercial districts (overnight truck parking, showers, etc) being prevented through the approval ordinance?

Question 4: Can signage be reduced to mitigate impacts on properties to the east?

- The elevations and variation information provided indicate limited signage on the east façade of the building and canopy. From the elevations is it not clear if the diesel canopy will have signage on the east façade, but as it would face residential uses, that would seem unnecessary. Similarly, we would question whether the changeable copy sign on the eastern façade (facing residential uses) is necessary given the limited number of fueling pumps there.

Site enhancements: in considering the questions raised here, we offer a few ideas for enhancements to the proposed site that would mitigate impacts on existing and future residential uses to the east.

- Remove the curb cut along North Riverwalk Drive.
- Place a privacy fence along the east side of the site and increase landscaping on the outside of the fence to screen the operation and improve the view overall.

- Increased evergreen planting should be used on the east side to improve year round buffering.
- Foundation landscaping should be provided around the convenience store to create a more attractive site.
- Signage and the canopy lighting should be limited on the east side of the structures and the hours on which lights on the east side are illuminated (or fully illuminated) should be limited.
- The site does not show any stormwater detention, which may be needed to meet drainage requirements. If so, addition of stormwater areas should not diminish the number of trees. Also, to the extent possible, areas around in in the detention basins be planted with attractive, water absorbing native plants.

Thank you very much for your assistance.



Michael Blue, FAICP
Principal

SPEEDWAY #7649

201 N Milwaukee Ave, Buffalo Grove, IL 60089

Responses to Teska Comments

October 1, 2021

Question 1:

- Please note the proposed development will greatly enhance the aesthetics of the area and improve land values for all surrounding properties. The proposed development will be removing dated buildings, dramatically reducing the FAR development density ratio and greatly enhancing the amount of landscaping.
- Please note that if the CFL canopy was not behind the building the landscape setback would still be 12'. Because the building is 87' from the property line the allowable reduction is 20' from the required 25' with a 12' minimum. So we are not reducing below the allowable 12'.
- The comment regarding evergreen landscaping is warranted and evergreen trees could be placed along the CFL area. However, please note the existing landscaping is being greatly enhanced.
- Regarding noise, the loudest noise is already in the area. Traffic noise on Milwaukee is the loudest noise in the area. The existing site has both Auto and Truck customers. The existing canopy is 29' feet away from the property line compared to the proposed 30.5'. Therefore, the proposed new development is not changing the use but rather it is improving onsite circulation, moving the canopy further away from the east property line and lowering the FAR development density ratio.
- In addition, the proposed development is moving the more intense Auto use from the east portion of the site to the farthest west portion of the site and screening the use via the proposed building from the land to the east.

Question 2:

- The proposed curb cut as stated is a Tertiary cut that will help the flow of onsite traffic as needed. This curb cut will be used only slightly as a relief valve. Though not the primary curb cut its use as a relief valve is very important.
- The main entrance for the CFL canopy will be off of Milwaukee and the exit will be onto Riverwalk. As stated above minimal traffic will be on North Riverwalk, and it will act as an important relief valve.

Question 3:

- The only proposed additional business operation would be for the gaming. All other business operation currently are offered on the existing site.
- There is no expanded liquor sales. The existing packaged license would continue with the new proposal.
- Hours of operation would continue as they are today.
- Seating will be minimal and will not provide for full service dining.
- No typical "Truck Stop" amenities will be offered. There are no showers, no full service restaurant, and no truck parking let alone overnight parking.
- Lighting would become horizontal cutoff LED luminaries; which will further enhance the safety of the proposed development.
- AS stated above the Auto use is being placed on the west side of the site while the less intense CFL use is on the east side. This use typically occurs during business hours.

Question 4:

- The proposed design is already requesting dramatically less signage than what is allowed. The proposed Sign square footage is 69.5sf less than the allowable 288sf.
- There is no Signage on the East side of the CFL canopy.
- According to the American Planners Association the size of the font on the proposed reader board will only be discernable by the customer at the CFL canopy. Thereby meeting the intent of the reader board.

In summary the proposed development will greatly enhance the aesthetics of the area, improve land values for all surrounding property, greatly increase and enhance the landscaping, locate the more intense Auto use to the west side of the site and provide limited signage. In short this will be a very positive improvement for the area.

6/4/93

ORDINANCE NO. 93- 45

AN ORDINANCE AMENDING THE COMPREHENSIVE ZONING
ORDINANCE OF THE VILLAGE OF BUFFALO GROVE
COOK AND LAKE COUNTIES, ILLINOIS
Speedway Service Station, 923 N. Milwaukee Avenue

WHEREAS, the Village of Buffalo Grove is a Home Rule Unit by virtue of the Illinois Constitution of 1970; and,

WHEREAS, the property legally described in Exhibit A hereto was annexed to the Village of Buffalo Grove by Ordinance No. 93-44 pursuant to a written Annexation Agreement dated June 7, 1993, and approved by the Village by Ordinance No. 93-43; and,

WHEREAS, notices of public hearings for zoning and annexation on said Annexation Agreement have been given and public hearings were held.

NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF BUFFALO GROVE, COOK AND LAKE COUNTIES, ILLINOIS:

Section 1. The Comprehensive Zoning Ordinance of the Village of Buffalo Grove, Cook and Lake Counties, Illinois as amended is hereby further amended by classifying the property described in Exhibit A hereto into the B-3 Planned Business Center District.

Section 2. Development of the property shall be in compliance with the Annexation Agreement dated June 7, 1993, passed and approved pursuant to Ordinance No. 93-43.

Section 3. This Ordinance shall be in full force and effect on and after its passage and approval according to law. This Ordinance shall not be codified.

AYES: 4 - Marienthal, Kahn, Braiman, Hendricks

NAYES: 0 - None

ABSENT: 2 - Reid, Rubin

PASSED: June 7, 1993 APPROVED: June 7, 1993

ATTEST:

APPROVED:

Gonit M. Srabian
Village Clerk

SIDNEY H. MATHIAS, Village President

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

EXHIBIT A**LEGAL DESCRIPTION**

**Emro Marketing Company
Buffalo Grove Annexation**

Parcel 1

Lots 21 and 22 in Block 3 in Unit No. 2 of Columbian Gardens, being a Subdivision of Section 35, Township 43 North, Range 11, East of the Third Principal Meridian, according to the Plat thereof, recorded July 10, 1926 as Document 282352, in Book "P" of Plats, page 92 in Lake County, Illinois.

Parcel 2

The Westerly 1/2 of the alley Easterly and adjoining Lot 21 in Block 3, and the Easterly half of the Alley Westerly and adjoining Lot 22 in Block 3, all in Unit No. 2 of Columbian Gardens aforesaid, vacated by the instrument recorded April 3, 1978 as Document 1907357 in Lake County, Illinois.

Parcel 3

Lots 14, 15, 16, 17, 18, 19, 20, 23, 24, 25 and 26 in Block 3 in Unit 2 of 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 10, 1926, as Document 282352, in Book "P" of Plats, page 92, in Lake County, Illinois.

Parcel 4

The South Westerly half of vacated alley lying North Easterly and adjoining Lots 14 to 20, both inclusive, in Parcel 1, and the North Easterly half of the vacated alley lying South Westerly and adjoining Lots 23 and 24, and that part lying South Westerly and adjoining and accruing Lot 25, Parcel 1, vacated by the Instrument recorded April 28, 1978, as Document 1913494, in Lake County, Illinois.

Attachment: Plan Set (Consider Apprvl: Amd to Plan Dev, Subdiv, Rezoning, Vacation, Prelim Plan, Variances: 201&241 Milwaukee)

3/19/2013

ORDINANCE NO. 2013- 17**AN ORDINANCE AMENDING CHAPTER 5.20 LIQUOR CONTROLS**

WHEREAS, the Village of Buffalo Grove is a Home Rule Unit pursuant to the Illinois Constitution of 1970.

NOW, THEREFORE, BE IT ORDAINED BY THE PRESIDENT AND BOARD OF TRUSTEES OF THE VILLAGE OF BUFFALO GROVE, COOK AND LAKE COUNTIES, ILLINOIS. As follows:

Section 1. The Village of Buffalo Grove Municipal Code, as amended, is further amended in TITLE 5 - BUSINESS TAXES, LICENSES AND REGULATIONS, Chapter 5.20, Liquor Controls, by adding Section 5.20.035, "Consumption on Property," in its entirety in the manner and form shown and inserting therein such new text in the manner and form and shown in underlined bold type below, so that said Section 5.20.035 shall hereafter provide as follows:

5.20.035 – Consumption on Property.

It is unlawful for any owner or occupant of property within the Village, other than Dwellings, as defined in Chapter 17 of this Code, house trailers and mobile homes to permit alcoholic liquor to be consumed on such property without a license issued under this chapter.

Section 2. The Village of Buffalo Grove Municipal Code, as amended, is further amended in TITLE 5 - BUSINESS TAXES, LICENSES AND REGULATIONS, Chapter 5.20, Liquor Controls, Section 5.20.070, "License – Classifications," sub-section 5.20.070(G) (Class G Licenses), by deleting the text in the manner and form shown in strikethrough type below and inserting therein such new text in the manner and form shown in underlined bold type below, so that said Section 5.20.070(G) shall hereafter provide as follows:

G. Class G licenses are divided into the following classes:

- 1.** Class G1 licenses, authorizing retail sales of alcoholic liquors for consumption on the premises owned or leased by nonprofit ~~or governmental~~ organizations and occupied by the licensees. Class G1 licenses shall be subject to the following conditions and limitations:

- ~~1. Nonprofit organizations:~~

- a. Special events sponsored by nonprofit organizations must be for the licensee's members and their guests,

- b. Special events for nonmembers on the licensed premise is limited to ~~two~~ **four** events per calendar year,
 - c. No event shall be longer than one continuous twenty-four hour period,
 - d. The fee for each special event license is **twenty-five** ~~fifteen~~ dollars;
2. **Class G2 licenses, authorizing retail sales of alcoholic liquors for consumption on the premises owned or leased by governmental organizations and occupied by the licensees. Class G2 licenses shall be subject to the following conditions and limitations:**
- a. Prearranged events sponsored by governmental organizations must include the service of food,
 - b. A representative of the governmental organization must be present throughout every such event,
 - c. The annual fee for each license shall be one hundred dollars;
3. **Class G3 licenses, authorizing the retail sales of alcoholic liquors for consumption on a premise owned or leased by a "for profit" organization, for a special event open to the public and sponsored by a bona fide nonprofit or charitable organization where the sale and consumption of alcohol is incidental to a specified charitable event, shall be subject to the following conditions and limitations:**
- a. **Dram shop liability insurance will be provided,**
 - b. **The sale and consumption of alcohol shall not be related to any commercial purpose or in connection with the sale of non-alcoholic products or to promote the sale of non-alcoholic products. The "for profit" premise owner or leasee shall not conduct its regular business, make any sales of non-alcoholic products for profit or provide any paid services for profit during the special event,**
 - c. **The fee for the special event license is twenty-five dollars,**
 - d. **No event shall be longer than one continuous twenty-four hour period,**
 - e. **The license shall be valid only for the date shown on the face of the license,**
 - f. **No more than 6 such licensees shall be issued per day,**
 - g. **No more than 2 such licensees shall be issued to any one location within a calendar year.**

4. Class G4 licenses, authorizing the giving away of alcoholic liquors for consumption on premises of any property within the Village, other than Dwellings, as defined in Chapter 17 of this Code, house trailers and mobile homes for a Private Function, where attendance is by invitation only and not open to the public, shall be subject to the following conditions and limitations:

- a. Dram shop liability insurance will be provided,**
- b. The fee for the special event license is twenty-five dollars,**
- c. No event shall be longer than one continuous twenty-four hour period,**
- d. The license shall be valid only for the date shown on the face of the license,**
- e. No more than 6 such licensees shall be issued per day,**
- f. No more than 2 such licensees shall be issued to any one licensee within a calendar year.**

Section 3. The Village of Buffalo Grove Municipal Code, as amended, is further amended in TITLE 5 - BUSINESS TAXES, LICENSES AND REGULATIONS, Chapter 5.20, Liquor Controls, Section 5.20.090, "License – Renewal," by inserting therein such new text in the manner and form shown in underlined bold type below, so that said Section 5.20.090 shall hereafter provide as follows:

5.20.090 – License - Renewal.

- A.** Any licensee may renew the license at the expiration thereof; provided the licensee is then qualified to receive a license, and the premises for which such renewal license is sought is suitable for such purpose.
- B.** No license shall be renewed unless the owner or manager of the license attends an annual liquor law/alcohol awareness training seminar conducted by the Village. The fee for the Village providing a make-up seminar shall not exceed five hundred dollars per licensee.

C. This Section shall not apply to Class G1, G3, and G4 Liquor Licenses.

Section 4. The Village of Buffalo Grove Municipal Code, as amended, is further amended in TITLE 5 - BUSINESS TAXES, LICENSES AND REGULATIONS, Chapter 5.20, Liquor Controls, Section 5.20.110, "License – Term – Annual Fee Proration," by inserting therein such new text in the manner and form shown in underlined bold type below, so that said Section 5.20.110 shall hereafter provide as follows:

5.20.110 – License – Term – Annual fee proration.

- A. Each license shall terminate on the 30th day of April next following its issuance. Renewal fee shall be due on or before May 1st. In the event the application is denied, the whole fee shall be refunded.
- B. At the time application is made, the applicant shall pay the Village the sum set forth in Section 5.20.070. Notwithstanding the annual fees set forth in Section 5.20.070, if an application for a liquor license is received by the Village between November 1st and April 30th of a fiscal year, the license fee shall be one-half of the annual fee.
- C. This Section shall not apply to Class G1, G3, and G4 Liquor Licenses.**

Section 5. This Ordinance shall be in full force and in effect from and after its passage, approval and publication.

AYES: 5 – Trilling, Sussman, Terson, Stein, Ottenheimer

NAYS: 0 - None

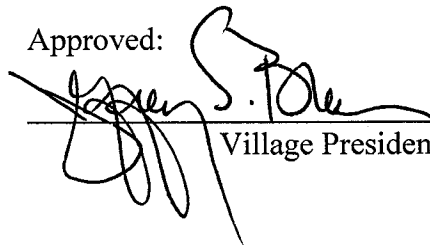
ABSENT: 1 - Berman

PASSED: March 18, 2013

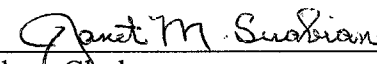
APPROVED: March 18, 2013

PUBLISHED: March 19, 2013

Approved:


Village President

ATTEST:


Village Clerk

STATE OF ILLINOIS) ss.
COUNTY OF COOK)

CERTIFICATE

I, Janet M. Sirabian, certify that I am the duly elected and acting Village Clerk of the Village of Buffalo Grove, Cook and Lake Counties, Illinois. I further certify that on March 18, 2013, the Corporate Authorities of the Village passed and approved Ordinance No. 2013-17, AN ORDINANCE AMENDING CHAPTER 5.20 LIQUOR CONTROLS OF BUFFALO GROVE MUNICIPAL CODE a copy of such Ordinance was posted in and at the Village Hall, commencing on March 19, 2013 and continuing for at least ten days thereafter. Copies of such Ordinance were also available for public inspection upon request in the Office of Village Clerk.

Dated at Buffalo Grove, Illinois, this 19th day of March, 2013.

Janet M. Sirabian
Village Clerk

Carol Lieber
By

3/19/2013

ORDINANCE NO. 2013- 17**AN ORDINANCE AMENDING CHAPTER 5.20 LIQUOR CONTROLS**

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- 1.** Class **G1** licenses, authorizing retail sales of alcoholic liquors for consumption on the premises owned or leased by nonprofit ~~or governmental~~ organizations and occupied by the licensees. Class **G1** licenses shall be subject to the following conditions and limitations:

- ~~1. Nonprofit organizations:~~

- a. Special events sponsored by nonprofit organizations must be for the licensee's members and their guests,

- b. Special events for nonmembers on the licensed premise is limited to two four events per calendar year,
 - c. No event shall be longer than one continuous twenty-four hour period,
 - d. The fee for each special event license is twenty-five ~~fifteen~~ dollars;
2. **Class G2 licenses, authorizing retail sales of alcoholic liquors for consumption on the premises owned or leased by governmental organizations and occupied by the licensees. Class G2 licenses shall be subject to the following conditions and limitations:**
- a. Prearranged events sponsored by governmental organizations must include the service of food,
 - b. A representative of the governmental organization must be present throughout every such event,
 - c. The annual fee for each license shall be one hundred dollars;
3. **Class G3 licenses, authorizing the retail sales of alcoholic liquors for consumption on a premise owned or leased by a "for profit" organization, for a special event open to the public and sponsored by a bona fide nonprofit or charitable organization where the sale and consumption of alcohol is incidental to a specified charitable event, shall be subject to the following conditions and limitations:**
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 - b. **The sale and consumption of alcohol shall not be related to any commercial purpose or in connection with the sale of non-alcoholic products or to promote the sale of non-alcoholic products. The "for profit" premise owner or leasee shall not conduct its regular business, make any sales of non-alcoholic products for profit or provide any paid services for profit during the special event,**
 - c. **The fee for the special event license is twenty-five dollars,**
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- B. At the time application is made, the applicant shall pay the Village the sum set forth in Section 5.20.070. Notwithstanding the annual fees set forth in Section 5.20.070, if an application for a liquor license is received by the Village between November 1st and April 30th of a fiscal year, the license fee shall be one-half of the annual fee.
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AYES: 5 – Trilling, Sussman, Terson, Stein, Ottenheimer

NAYS: 0 - None

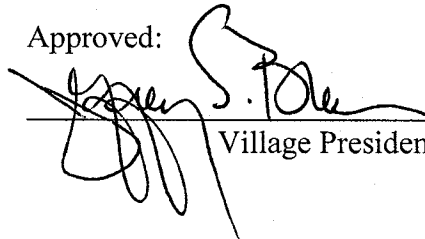
ABSENT: 1 - Berman

PASSED: March 18, 2013

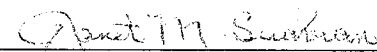
APPROVED: March 18, 2013

PUBLISHED: March 19, 2013

Approved:


Village President

ATTEST:


Village Clerk

09/15/2021

**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, SEPTEMBER 15, 2021**

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 Variation to the Fence Code to Install a Fence in the Front Yard at 8 Columbus Parkway. (Trustee Pike) (Staff Contact: Nicole Woods)

Village Planner Akash provided background on the subject property at 8 Columbus Parkway regarding the proposed installation of a fence in the front yard on the east side of the property. Akash noted that the subject property abuts Mi Mexico restaurant which is in the B3 planned business district.

Ms. Mancewicz provided additional detail on their property. Ms. Mancewicz noted their reasoning for the desire to extend the fence was for safety and privacy purposes due to the proximity of the parking lot of Mi Mexico.

Com. Richards asked the petitioners to describe their plan for the fence.

Mr. Mancewicz referenced packet page 10 and showed the petitioners the plan for the fence.

Chairperson Cesario reference packet page 7 and reiterated the petitioners plan as explained to the Commissioners.

Com. Richards asked the petitioners what style the fence would be.

Mr. Mancewicz said a solid 6-foot fence.

Com. Khan asked the petitioners when they installed the other sections of the fence.

Mr. Mancewicz said it was roughly two weeks ago.

Com. Richards asked staff if they had received any phone calls regarding the variance.

Village Planner Akash said yes, but once the variance was explained the callers were in support of the variance.

The staff report was entered as exhibit one.

The public hearing closed at 7:39 PM.

Com Khan made a motion to grant a variation to Section 15.20 of the Buffalo Grove Fence Code to allow a proposed 6-foot solid fence in the front yard provided the fence shall be installed in accordance with the documents and plans submitted as part of this petition.

Com Richards seconded the motion

Com. Au spoke in favor of the motion

Chairperson Cesario spoke in favor of the motion.

Minutes Acceptance: Minutes of Sep 15, 2021 7:30 PM (Approval of Minutes)

09/15/2021

RESULT:	APPROVED [UNANIMOUS]
AYES:	Spunt, Cesario, Khan, Au, Richards, Worlikar
ABSENT:	Adam Moodhe, Stephen Goldspiel, Mitchell Weinstein

2. Consider a Variation for an Existing Driveway to Exceed Max Front Yard Coverage at 811 Summer Court (Request to Continue to October 6, 2021) (Trustee Johnson) (Staff Contact: Nicole Woods)

Village Planner Akash provided an explanation of the tabled public hearing item to consider a variation for an existing driveway to exceed max front yard coverage at 811 Summer Court.

Deputy Community Development Director Woods explained the engineering issues that were discovered after the item was on the agenda. Woods explained that there is more work to be done by the homeowner.

Com. Kahn asked how the Village found out about the driveway.

Village Planner Akash said that there was a complaint regarding the driveway construction.

Com. Khan made a motion to table the public hearing for a variation for an existing driveway to exceed max front yard coverage at 811 Summer Court to the October 6 Planning and Zoning Meeting.

Com. Richards seconded the motion.

RESULT:	TABLED [UNANIMOUS]
AYES:	Spunt, Cesario, Khan, Au, Richards, Worlikar
ABSENT:	Adam Moodhe, Stephen Goldspiel, Mitchell Weinstein

Regular Meeting

Other Matters for Discussion

None.

Approval of Minutes

1. Planning and Zoning Commission - Regular Meeting - Aug 18, 2021 7:30 PM

RESULT:	ACCEPTED [5 TO 0]
AYES:	Spunt, Cesario, Khan, Au, Richards
ABSTAIN:	Neil Worlikar
ABSENT:	Adam Moodhe, Stephen Goldspiel, Mitchell Weinstein

Chairman's Report

None.

Committee and Liaison Reports

Commission spoke about the items at the last Village Board meeting.

Staff Report/Future Agenda Schedule

Minutes Acceptance: Minutes of Sep 15, 2021 7:30 PM (Approval of Minutes)

09/15/2021

Staff provided details on items coming to the Planning and Zoning Commission.

Public Comments and Questions

None.

Adjournment

The meeting was adjourned at 7:50 PM

Chris Stilling

APPROVED BY ME THIS 15th DAY OF September, 2021

Minutes Acceptance: Minutes of Sep 15, 2021 7:30 PM (Approval of Minutes)