AGENDA
Municipal Services Committee Meeting
March 24, 2025
5:30 P.M. – Council Chambers

1. **Call to Order & Roll Call**
2. **Establishment of Quorum**
3. **Old Business**
4. **New Business**
   a. **Resolution** - Accepting a proposal from Steve Piper and Sons, Inc., for Tub Grinding Services in an amount not to exceed $6,500.00.

   b. **Ordinance** - Authorizing the disposal of surplus property.

   c. **Resolution** - Authorizing the extension of a proposal from Sprinklers, Inc., for the spring startup and winter shutdown maintenance and backflow prevention testing of City owned irrigation systems and potable water backflow preventers as per the schedule of unit prices.

   d. **Resolution** – Waiving the competitive bid process and accepting a proposal from Mosca Design for the purchase of holiday lighting and decorative displays at a cost not to exceed $35,000.

   e. **Resolution** – Accepting the extension of a proposal at the unit prices for sidewalk grinding from Hard Rock Concrete Cutters, Inc., in an amount not to exceed $250,000

   f. **PZC2024-14** - Special Use Amendment, Variations – 8226 S. Cass Avenue - Petitioner (True North Energy, LLC) requests an amendment to the Special Use Permit which previously permitted the construction and operation of an automobile service station, drive-through car wash, and mini-mart, to allow for the demolition of the existing car wash and mini-mart, and the relocation/expansion of the mini-mart. The project includes requested variations from the City's landscape requirements. On-site improvements include parking facilities, landscape improvements and drainage/stormwater improvements. The subject property is located in the General Business District B-3 at the northwest corner S. Cass Avenue and N. Frontage Road, commonly known as 8226 S. Cass Avenue.

   g. **PZC2025-02** - Short-Term Rentals – Zoning Text Amendment - Petition from the City of Darien to amend Title 5A (Zoning Regulations) to add "the offering of a short-term rental" as a prohibited action under the existing short-term rental prohibition contained in Section 5A-5-16 of the City Code.

   h. **Ordinance** – Preliminary approval for a licensing agreement between the City of Darien and Metronet for a City-wide fiber optic infrastructure implementation.

   i. Minutes – **March 3, 2025** Municipal Services Committee

5. **Director's Report**
   a. Update - Marquis Sign
6. **Next scheduled meeting – April 28, 2025**
7. **Adjournment**

AGENDA MEMO
Municipal Services Committee
March 24, 2025

ISSUE STATEMENT

A **resolution** accepting a proposal from Steve Piper and Sons, Inc., for Tub Grinding Services in an amount not to exceed $6,500.00.

BACKGROUND

The City of Darien requires the services of re-grinding wood mulch accumulated through the City's brush pick-up program twice a year. The wood chips are then utilized for City planters throughout town and are delivered at a cost to residents. Residents also have the opportunity to pick up the double ground chips at no cost from the Public Works facility. The work would be completed at the Municipal Services Facility.

The scope of work includes the vendor to supply and stage an industrial tub grinder and the Municipal Services Department assists the vendor with a loader to load the chips and restack.

The City sales for wood chips for FYE25 were $3,620.00 to date. The sale of wood chips are advertised through the City's media portals and the costs for delivery are as follows: $35.00 for half a load (covers 3-4 cubic yards) and $55.00 for a full load (covers 7-8 cubic yards).

The City requested competitive quotes for the tub grinding and received two responses.

VENDOR	COST
Steve Piper and Sons	**$3,136 per occurrence**
Kramer Tree	$4,640 per occurrence
Homer Tree	non-responsive
Smitty's Tree	non-responsive

The budgeted expenditure would be expended from the following account:

Account Number	Account Description	FY 25-26 Budget	Proposed Expenditure
01-30-4243	Rent - Equipment	$ 6,500	$ 6,500

STAFF RECOMMENDATION

Staff recommends approval of a resolution accepting a proposal from Steve Piper and Sons, Inc., for Tub Grinding Services in an amount not to exceed $6,500.00. Steve Piper and Sons has provided satisfactory tub grinding services for the City in the past.

ALTERNATE CONSIDERATION

As directed by the Committee.

DECISION MODE

This item will be placed on the April 7, 2025 City Council agenda for formal consideration.

MEMO

RESOLUTION NO._____

A RESOLUTION ACCEPTING A PROPOSAL FROM STEVE PIPER AND SONS, INC., FOR TUB GRINDING SERVICES IN AN AMOUNT NOT TO EXCEED $6,500.00

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The City Council of the City of Darien hereby accepts a proposal from Steve Piper and Sons, Inc., for Tub Grinding Services in an amount not to exceed $6,500.00, a copy of which is attached hereto as "**Exhibit A**".

SECTION 2: This Resolution shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April, 2025.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April, 2025.

_____
JOSEPH MARCHESE, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM

_____
CITY ATTORNEY

Darien illinois

2025 TUB GRINDING SERVICES

Vendor Name: STEVE PIPER AND SONS

The City of Darien is seeking quotes for the services of re-grinding wood mulch accumulated through the City's brush pick-up program. The proposed work would be completed at the Municipal Services Facility located at 1041 South Frontage Road. The proposed vendor shall provide 1, minimal 800 horsepower tub-grinder, and operator(s) to double grind the woodchips at the above-mentioned site. A Case wheel loader shall be supplied by the City for the awarded vendor's use. The City of Darien will supply the fuel required for the equipment.

Proposed Tub Grinder Schedule:

May 7, 2025
July 9, 2025
September 3, 2025
November 5, 2025

It is estimated that each frequency will require 4-12 hours of double grinding. Each day shall have a minimal of 4 hours. The proposed rate shall include travel, equipment, permits (not required by the City of Darien) and labor.

The vendor shall complete the following:

Hourly Rate Tub Grinder with Operator 4 hours	$ 450 00
Hourly Rate Tub Grinder with Operator 8 hours	$ 392 00
Hourly Rate Tub Grinder with Operator every Hour over 8 hours	$ 392 00

***MOBILIZATION FEE MUST BE INCLUDED FOR ALL HOURLY RATES**

CITY OF DARIEN

This form must be completed & faxed to 630-852-4709 or email rkokkinis@darienil.gov by no later than March 19, 2025 @ 11:00 a.m. attn: Municipal Services
Questions may be directed to municipal services at 630-353-8105

Submitted by: STEVE PIPER

Vendor Name: STEVE PIPER AND SONS

Address: 31W320 RAMM DR, NAPERVILLE IL

Date: 3/4/2025

Phone: 6308986050 **Cell:** 708.997.5096

Fax #: NA

E-mail Address: ~~info@~~ stevepiperandsons.com

Authorized Signature: S Piper

The vendor shall provide three references with phone numbers below:

1. CITY OF YORKVILLE (630)553.4370
2. VILLAGE OF LAGRANGE (708) 528.6324
3. LISLE PARK DISTRICT (630).675.6106

Acceptance of Quote:

By: _____ Date: _____
City of Darien

Authorized and Accepted:

By: _____

Title: _____

Date: _____

AGENDA MEMO
Municipal Services Committee
March 24, 2025

ISSUE STATEMENT
Approval of an **ordinance** authorizing the disposal of surplus property.

BACKGROUND/HISTORY
Staff is requesting that the following property be declared as surplus property and auctioned using an on-line auction service, GovDeals, Inc**,** or disposed of:

	ITEM	MODEL	QUANTITY	EXPLANATION
1	2 drawer plat files with 2” wood top and 6” wood base (42”w x 38” t x 33.5” d)	n/a	2	obsolete
2	5 drawer plat files with a 4” steel base (54” w x 36” t x 41.5” d)	n/a	2	obsolete
3	5 drawer plat files with a 4” steel base (46.5” w x 35” t x 35.5” d)	n/a	2	obsolete
4	4 drawer file cabinets	n/a	3	obsolete
5	2 drawer file cabinets	n/a	3	obsolete

STAFF RECOMMENDATION
Staff recommends the above be declared surplus property and auctioned using GovDeals, Inc or disposed of.

ALTERNATE CONSIDERATION
As recommended by the Committee.

DECISION MODE
This item will be placed on the April 7, 2025 City Council Agenda for formal approval.

MEMO

CITY OF DARIEN

DU PAGE COUNTY, ILLINOIS

ORDINANCE NO._____

AN ORDINANCE AUTHORIZING THE SALE OF PERSONAL PROPERTY OWNED BY THE CITY OF DARIEN

ADOPTED BY THE

MAYOR AND CITY COUNCIL

OF THE

CITY OF DARIEN

THIS 7th DAY OF APRIL, 2025

Published in pamphlet form by authority of the Mayor and City Council of the City of Darien, DuPage County, Illinois, and this 7th day of April, 2025

ORDINANCE NO. _____

AN ORDINANCE AUTHORIZING THE SALE OF PERSONAL PROPERTY OWNED BY THE CITY OF DARIEN

WHEREAS, in the opinion of at least three fourths of the corporate authorities of the City of Darien, it is no longer necessary or useful, or for the best interests of the City of Darien, to retain ownership of the personal property hereinafter described; and

WHEREAS, it has been determined by the Mayor and City Council of the City of Darien to sell said personal property at a Public Auction or dispose of said property.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, IN THE EXERCISE OF ITS HOME RULE POWERS, as follows:

SECTION 1: The Mayor and City Council of the City of Darien find that the following described personal property, now owned by the City of Darien, is no longer necessary or useful to the City of Darien and the best interests of the City of Darien will be served by auctioning it using Gov Deals, Inc or disposing of said property.

	ITEM	MODEL	QUANTITY	EXPLANATION
1	2 drawer plat files with 2" wood top and 6" wood base (42"w x 38" t x 33.5" d)	n/a	2	obsolete
2	5 drawer plat files with a 4" steel base (54" w x 36" t x 41.5" d)	n/a	2	obsolete
3	5 drawer plat files with a 4" steel base (46.5" w x 35" t x 35.5" d)	n/a	2	obsolete
4	4 drawer file cabinets	n/a	3	obsolete
5	2 drawer file cabinets	n/a	3	obsolete

SECTION 2: The City Administrator is hereby authorized and directed to sell the aforementioned personal property, now owned by the City of Darien. Items will be auctioned using GovDeals, Inc or disposing of said property.

SECTION 3: This Ordinance and each of its terms shall be the effective legislative act of a home rule municipality without regard to whether such Ordinance should (a) contain terms contrary to the provisions of current or subsequent non-preemptive state law, or (b) legislate in a manner or

regarding a matter not delegated to municipalities by state law. It is the intent of the corporate authorities of the City of Darien that to the extent that the terms of this Ordinance should be inconsistent with any non-preemptive state law, that this Ordinance shall supersede state law in that regard within its jurisdiction.

SECTION 4: This Ordinance shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April 2025.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April 2025.

_____
JOSEPH MARCHESE, MAYOR

ATTEST:

_____
JOANNE RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

AGENDA MEMO
Municipal Services Committee
March 24, 2025

ISSUE STATEMENT

A **resolution** authorizing the extension of a proposal from Sprinklers, Inc., for the spring startup and winter shutdown maintenance and backflow prevention testing of City owned irrigation systems and potable water backflow preventers as per the schedule of unit prices.

BACKGROUND/HISTORY

The City owns and maintains 12 irrigation backflow preventer sites and various potable, fire suppression and irrigation backflow devices between the City Hall and Police Department. The required backflow devices prevent any type of contaminants from flowing back into the City's potable watermain system. The devices are required to be certified by a licensed plumber/backflow preventer specialist. The backflow prevention program is mandated by the State Plumbing Code and annual certifications are required by the Environmental Protection Agency Backflow Prevention Program.

The services include the following:

Spring Startup
- Startup of System
- Install Backflow Device and Meter
- Inspection of Controller
- Pressurize all Lines
- Inspect and Adjust all Irrigation Devices
  - *Repair Defective Devices and Fittings

Winter Shutdown
- Shutdown of Irrigation
- Remove Meters and Backflow Devices
- Test Backflow Devices
- Certify Test results
  - *Repairs of Backflow Devices

***All repairs will be based on an hourly rate of $125 plus required materials.**

Staff solicited for competitive quotes and received two (2) on February 28, 2024, with the option of an extension. See **Attachment A**. The City's annual cost breakdown as it applies to each location is attached and labeled as **Attachment B**.

The FY25/26 Budget includes for the irrigation project at the City Hall and would be expended from the following account:

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	FY 25/26 BUDGET	PROPOSED EXPENDITURE	PROPOSED BALANCE
01-30-4223	Street Dept. Maintenance Building	$5,500.00	$3,952.50	$ 1,547.50

02-50-4223	Water Dept. Maintenance Building	$5,500.00	$3,952.50	$1,547.50
	*Contingency-Repairs		$1,500.00	$1,595.00
			$9,405.00	$1,595.00

***A contingency has been included for any required repairs and materials**

The extension was confirmed on March 10, 2025. See **Attachment C**.

STAFF RECOMENDATION

A resolution authorizing the extension of a proposal from Sprinklers, Inc., for the spring startup and winter shutdown maintenance and backflow prevention testing of City owned irrigation systems and potable water backflow preventers as per the schedule of unit prices.

ALTERNATE CONSIDERATION

As directed by the Committee.

DECISION MODE

This item will be placed on the April 7, 2025 City Council agenda for formal consideration.

City of Darien Public Works
1702 Plainfield Rd
Darien IL 60561
sealed bid: Irrigation RPZ Maint
Opening date/Time: Feb. 28, 2024 9:30 a.m.

MEMO

Attachment A

2024 City of Darien Landscape Irrigation - Spring Start Up & Winter Shutdown Maintenance & Backflow Prevention Testing for Irrigation Systems & City Hall Complex Mantenance

	MARK 1 LANDSCAPE SPRINKLERS, INC.					HALLORAN & YAUCH, INC.				
LOCATION	Test & Certify RPZ Unit Cost-Per Location	Spring Startup Unit Cost-Per Location	Winter Shutdown Unit Cost-Per Location	Labor Cost Unit Cost-Hourly Rate	SUB TOTAL COST	Test & Certify RPZ Unit Cost-Per Location	Spring Startup Unit Cost-Per Location	Winter Shutdown Unit Cost-Per Location	Labor Cost Unit Cost-Hourly Rate	SUB TOTAL COST
1710 Plainfield Rd - Police Department	$ 275.00	$ 225.00	$ 255.00	$ 125.00	**$ 880.00**	$ 600.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,645.00**
1702 Plainfield Rd - City Hall	$ 275.00	$ 175.00	$ 200.00	$ 125.00	**$ 775.00**	$ 600.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,645.00**
7532 S Cass Ave - Dunkin Donuts	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 300.00	$ 300.00	$ 145.00	**$ 865.00**
Clock Tower Sprinkler - Cass Ave & Plainfield Rd	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 300.00	$ 300.00	$ 145.00	**$ 865.00**
75th St-east of Plainfield/McDonalds	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 600.00	$ 600.00	$ 145.00	**$ 1,465.00**
75th St & Plainfield Rd Berm	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,165.00**
75th St west of Plainfield Rd	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,165.00**
75th St east of Cass Ave-Taco Bell	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,165.00**
75th St west of Cass Lace School	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,165.00**
75th St east of Adams St	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,165.00**
75th St west of Adams St	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 450.00	$ 450.00	$ 145.00	**$ 1,165.00**
75th St west of Park Ave 1502 75th St	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 120.00	$ 600.00	$ 600.00	$ 145.00	**$ 1,465.00**
TOTAL COST					**$ 7,905.00**					**$ 14,940.00**

2024 IRRIGATION & BACKFLOW PREVENTION MAINTENANCE PROGRAM COST SUMMARY

ACCOUNT NUMBER	DESCRIPTION NUMBER	DESCRIPTION - BUILDING MAINTENANCE	IRRIGATION UNIT COST START UP	NO OF UNITS	COST	IRRIGATION UNIT COST SHUT DOWN	NO OF UNITS	COST	BACKFLOW DEVICES	NO OF UNITS	COST	ANNUAL COST	
30-4223	1	POLICE DEPT. MAINTENANCE - 1710 PLAINFIELD RD - POLICE DEPT.	$ 225.00	1	$ 225.00	$ 255.00	1	$ 255.00				$ 480.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
		FIRE SUPPRESSION BACKFLOW DEVICE * ADDITONAL BACKFLOW DEVICE IDENTIFIED AFTER THE BID RELEASE							$ 150.00	2	$ 300.00	$ 300.00	$ 550.00
		POTABLE WATER BACKFLOW DEVICE* BACKFLOW DEVICE IDENTIFIED AFTER THE BID RELEASE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	2	CITY MAINTENANCE - 1702 PLAINFIELD RD - CITY HALL	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	$ 425.00
		FIRE SUPPRESSION BACKFLOW DEVICE * ADDITONAL BACKFLOW DEVICE IDENTIFIED AFTER THE BID RELEASE							$ 150.00	2	$ 300.00	$ 300.00	
30-4223	3	75TH & CASS WATERFALL WALL - 7532 CASS AVE	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	4	CLOCK TOWER - CASS AVE & PLAINFIELD RD	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	5	75TH ST - 75TH ST EAST OF PLAINFIELD RD/MCDONALDS	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
	6	75TH ST & PLAINFIELD RD BERM	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	7	75TH ST - 75TH ST WEST OF PLAINFIELD RD	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
	8	75TH ST EAST OF CASS AVE-TACO BELL	$ 175.00	1	$ 175.00	$ 200.00		$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	9	75TH ST- 75TH ST WEST OF CASS AVE/LACE SCHOOL	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	10	75TH ST- 75TH ST EAST OF ADAMS ST	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
30-4223	11	75TH ST - 75TH ST WEST OF ADAMS ST	$ 175.00	1	$ 175.00	$ 200.00	1	$ 200.00				$ 375.00	
		IRRIGATION BACKFLOW DEVICE							$ 125.00	1	$ 125.00	$ 125.00	
	12	75TH ST WEST OF PARK AVE 1502 75th St	$ 175.00	1	$ 175.00	$ 200.00						$ 175.00	
		IRRIGATION BACKFLOW DEVICE						$ 200.00	$ 125.00	$ 1.00	$ 125.00	$ 325.00	
		TOTAL ANNUAL COST			**$ 2,150.00**			**$ 2,455.00**			**$ 2,225.00**	**$ 6,830.00**	
		ALL REPAIR COSTS MATERIAL COST + 15% AT HOURLY RATE $125										$ 6,830.00	

	MARK 1 LANDSCAPE SPRINKLERS, INC. - BID TAB					
LOCATION	Test & Certify RPZ Unit Cost-Per Location	Spring Startup Unit Cost-Per Location	Winter Shutdown Unit Cost-Per Location	Labor Cost Unit Cost-Hourly Rate	SUB TOTAL COST	
1710 Plainfield Rd - Police Department	$ 275.00	$ 225.00	$ 255.00	$ 125.00	**$ 880.00**	
1702 Plainfield Rd - City Hall	$ 275.00	$ 175.00	$ 200.00	$ 125.00	**$ 775.00**	
7532 S Cass Ave - Dunkin Donuts	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
Clock Tower Sprinkler - Cass Ave & Plainfield Rd	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - east of Plainfield/McDonalds	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St & Plainfield Rd Berm	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - west of Plainfield Rd	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - east of Cass Ave-Taco Bell	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - west of Cass Lace School	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - east of Adams St	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - west of Adams St	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	
75th St - west of Park Ave 1502 75th St	$ 125.00	$ 175.00	$ 200.00	$ 125.00	**$ 625.00**	$ 500.00
TOTAL BID COST	**$ 1,800.00**	**$ 2,150.00**	**$ 2,455.00**	**$ 1,500.00**	**$ 7,905.00**	

MEMO

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From: Susan VerHaar <susan@mark1landscape.com>
Sent: Monday, March 10, 2025 11:13 AM
To: Regina Kokkinis; Andrew Moore
Cc: Kris Throm; Dan Gombac
Subject: RE: Backflow/Irrigation Contract - 2025-26

Good Morning Regina,

Yes, we are in agreement with the contract extension and pricing for May 1, 2025 – April 30, 2026

Thank you

Susan VerHaar
Mark1 Landscape, Inc.
Sprinklers, Inc.
Office: 847-648-0008
Cell: 847-431-7455

From: Regina Kokkinis <rkokkinis@darienil.gov>
Sent: Monday, March 10, 2025 10:22 AM
To: Susan VerHaar <susan@mark1landscape.com>; Andrew Moore <andy@mark1landscape.com>
Cc: Kris Throm <kthrom@darienil.gov>; Dan Gombac <dgombac@darienil.gov>
Subject: RE: Backflow/Irrigation Contract - 2025-26

Good morning,

Please see the attached pricing schedule as it relates to the subject line and confirm you are in agreement with the contract extension of the unit pricing for May 1, 2025 – April 30, 2026.

Sincerely,

Regina Kokkinis
Administrative Assistant, Municipal Services
City of Darien
630-353-8105
To receive important information from the City of Darien sign up for our electronic newsletter:
DARIEN DIRECT CONNECT
Follow the link and subscribing is simple!
https://darien.il.us/reference-desk/directconnect-enews

From: Dan Gombac <dgombac@darienil.gov>
Sent: Tuesday, March 12, 2024 4:04 PM
To: Susan VerHaar <susan@mark1landscape.com>; Andrew Moore <andy@mark1landscape.com>
Cc: Regina Kokkinis <rkokkinis@darienil.gov>; Kris Throm <kthrom@darienil.gov>
Subject: RE: Backflow/Irrigation Contract

Hi Susan and Andrew

Attached is the program schedule and cost per year. Any additional labor will be paid at the $125 per hr and any materials shall be cost plus 15%.

Pls Review the spreadsheet and provide your concurrence.

Sincerely,

Daniel Gombac
Director of Municipal Services
630-353-8106 Mobile 630-514-2519

From: Susan VerHaar <susan@mark1landscape.com>
Sent: Tuesday, March 12, 2024 2:51 PM
To: Dan Gombac <dgombac@darienil.gov>
Cc: Andrew Moore <andy@mark1landscape.com>; Regina Kokkinis <rkokkinis@darienil.gov>
Subject: RE: Backflow/Irrigation Contract

Good Afternoon Dan,

In response to your email about pricing for additional backflow devices

City Hall

1. One additional backflow device for the fire suppression will add $150.00

Police Department

1. One additional for potable will add $125.00
2. Two additional for fire will add $300.00

Feel free to reach out if there are any questions.

Thank you

Susan VerHaar
Mark1 Landscape Inc.
Sprinklers Inc.
Office: 847-648-0008
Cell: 847-431-7455

From: Andrew Moore <andy@mark1landscape.com>
Sent: Tuesday, March 12, 2024 2:46 PM
To: Susan VerHaar <susan@mark1landscape.com>
Subject: Fwd: Backflow/Irrigation Contract

Begin forwarded message:

From: Dan Gombac <dgombac@darienil.gov>
Subject: Backflow/Irrigation Contract
Date: March 12, 2024 at 12:42:14 PM CDT
To: "Andy@mark1landscape.com" <Andy@mark1landscape.com>
Cc: Regina Kokkinis <rkokkinis@darienil.gov>

Good morning Andy,

As a follow up attached is the bid tabulation in respect to the Subject. Upon review at the City Hall and Police Department there are additional Backflow devices as follows:

City Hall

1. One additional backflow device for the fire suppression

Police Department

1. One additional for potable
2. Two additional for fire

The total additional backflow devices that require testing is 4 and of the 4, 2 additional were pictured on pages 16 and 18 respectively. It appears that 1 potable and 1 fire suppression were not pictured.

We are requesting whether the attached costs are inclusive of the 2 additional backflow devices pictured on the abovementioned pages?
Since there are 2 additional backflow devices that were not pictured; 1 potable and 1 fire suppression, what is the extra charge on these devices or would you include the devices at the pricing per the att?

Please review and let me know.

Thanks

Daniel Gombac
Director of Municipal Services
630-353-8106 Mobile 630-514-2519

MEMO

RESOLUTION NO. _____

A RESOLUTION AUTHORIZING THE EXTENSION OF A PROPOSAL FROM SPRINKLERS, INC., FOR THE SPRING STARTUP AND WINTER SHUTDOWN MAINTENANCE AND BACKFLOW PREVENTION TESTING OF CITY OWNED IRRIGATION SYSTEMS AND POTABLE WATER BACKFLOW PREVENTERS AS PER THE SCHEDULE OF UNIT PRICES

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The City Council of the City of Darien hereby authorizes the extension of a proposal from Sprinklers, Inc., for the spring startup and winter shutdown maintenance and backflow prevention testing of City owned irrigation systems and potable water backflow preventers as per the schedule of unit prices, a copy of which is attached hereto as "**Exhibit A**".

SECTION 2: This Resolution shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April, 2025.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April, 2025.

_____
JOSEPH MARCHESE, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM

_____
CITY ATTORNEY

SECTION II

VENDOR SUMMARY SHEET

2024 City of Darien Landscape Irrigation-Spring Startup and Winter Shutdown Maintenance and Backflow Prevention Testing for Irrigation Systems and City Hall Complex Maintenance Agreement.

Firm Name: Sprinklers, Inc.

Address: 1540 Hecht Dr. unit K

City, State, Zip Code: Bartlett, Illinois 60103

Contact Person: Andrew Moore

FEIN #: 86-1118282

Phone: (847) 648-0008 Fax: (___) _____

Mobile: (630) 240-3969

E-mail Address: ANDY@MARK1LANDSCAPE.COM

RECEIPT OF ADDENDA: The receipt of the following addenda is hereby acknowledged:

Addendum No. _____, Dated _____

Addendum No. _____, Dated _____

GENERAL PROVISIONS

Quote – The successful Vendor will be required to enter into a standard form Quote, (attached in Section III page 15) with the City of Darien within ten (10) days of notice of quote award (hereinafter referred to as the "Quote").

Period of Performance - Actual work cannot begin until the City issues a written Notice to Proceed to the Vendor. In order to receive said Notice, the Vendor shall submit to the City for its approval all the necessary Quotes and insurance. City approval of the Quotes and insurance shall be evidenced by its issuance of the signed Quote by the City and the Notice to Proceed. The City reserves the right to terminate the relationship with the successful Vendor if these documents are not submitted to and approved by the City within ten (10) days of notice of quote award.

Assignment – Successful Vendor shall not assign the work of this Project without the prior written approval of the City.

Compliance with Laws – The Vendor shall at all times observe and comply with all laws, ordinances and regulations of the federal, state, local and City governments, which may in any manner affect the preparation of quotes or the performance of the Quote. Vendor hereby agrees that it will comply with all requirements of the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq., including the provision dealing with sexual harassment and that if awarded the Quote will not engage in any prohibited form of discrimination in employment as defined in that Act and will require that its sub-Vendors agree to the same restrictions. The Vendor shall maintain, and require that its sub-Vendors maintain, policies of equal employment opportunity which shall prohibit discrimination against any employee or applicant for employment on the basis of race, religion, color, sex, national origin, ancestry, citizenship status, age, marital status, physical or mental disability unrelated to the individual's ability to perform the essential functions of the job, association with a person with a disability, or unfavorable discharge from military service. Vendors and all sub-Vendors shall comply with all requirements of the Act and of the Rules of the Illinois Department of Human Rights with regard to posting information on employees' rights under the Act. Vendors and all sub-Vendors shall place appropriate statements identifying their companies as equal opportunity employers in all advertisements for workers to be employed in work to be performed. Not less than the Prevailing Rate of Wages as found by the DuPage County or the Department of Labor shall be paid to laborers, workmen, and mechanics performing work under the Quote. If awarded the Quote, Vendor must comply with all provisions of the Illinois Prevailing Wage Act, including, but not limited to, providing certified payroll records. Vendor shall be required to comply with all applicable federal laws, state laws and regulations regarding minimum wages, limit on payment to minors, minimum fair wage standards for minors, payment of wage due employees, and health and safety of employees. Vendor is required to pay employees all rightful salaries, medical benefits, pension and social security benefits pursuant to applicable labor agreements and federal and state statutes and to further require withholdings and deposits therefore.

Indemnification - The selected Vendor shall indemnify and hold harmless the City of Darien ("City"), and the County of DuPage, its officials, officers, directors, agents, employees, representative and assigns, from lawsuits, actions, costs (including attorney's fees), claims or liability of any character, incurred due to the alleged negligence of the Vendor, brought because of any injuries or damages received or sustained by any person, persons or property on account of any act or omission, neglect or misconduct of said Vendor, its officers, agents and/or employees arising out of , or in performance of any of the provisions of the Quote Documents, including and claims or amounts recovered for any infringements of patent, trademark or copyright; or from any claims or amounts arising or recovered under the "Worker's Compensation Act: or any other law, ordinance, order or decree. In connection with any such claims, lawsuits, actions or liabilities, the

City, its officials, officers, directors, agents, employees, or representatives and their assigns shall have the right to defense counsel of their choice. The Vendor shall be solely liable for all costs of such defense and for all expenses, fees, judgments, settlements and all other costs arising out of such claims, lawsuits, actions or liabilities. The Vendor shall not make any settlement or compromise of a lawsuit or claim, or fail to pursue any available avenue of appeal of any adverse judgment, without the approval of the City and any other indemnified party. The City or any other indemnified party, in its or their sole discretion, shall have the option of being represented by its or their own counsel. If this option is exercised, then the Vendor shall promptly reimburse the City or other indemnified party, upon written demand, for any expenses, including but not limited to court costs, reasonable attorneys' and witnesses' fees and other expenses of litigation incurred by the City or other indemnified party in connection therewith. The Vendor shall supply a certificate of insurance to a private property owner prior to engagement of work.

Firm Name: Sprinklers, Inc.

Signature of Authorized Representative: Andrew Moore

Title: President Date: 2/23/24

ACCEPTANCE: This proposal is valid for 120 calendar days from the date of submittal.

BUSINESS ORGANIZATION:

_____ Sole Proprietor: An individual whose signature is affixed to this quote.

_____ Partnership: Attach sheet and state full names, titles and address of all responsible principals and/or partners.

__X__ Corporation: State of incorporation: Illinois

Provide a disclosure of all officers and principals by name and business address, date of incorporation and indicate if the corporation is authorized to do business in Illinois. In submitting this quote, it is understood that the City of Darien reserves the right to reject any or all quotes, to accept an alternate quote, and to waive any informalities in any quote. In compliance with your Invitation to Quote, and subject to all conditions thereof, the undersigned offers and agrees, if this quote is accepted, to furnish the services as outlined.

Sprinklers, Inc. (Corporate Seal)
Business Name

Andrew Moore
Signature

Andrew Moore
Print or type name

President
Title

2/23/24
Date

CITY OF DARIEN **QUOTE**

This Quote is made this _____ day of _____, 20__ by and between the City of Darien (hereinafter referred to as the "CITY") and Sprinklers, Inc (Hereinafter referred to as the "VENDOR").

WITNESSETH

In consideration of the promises and covenants made herein by the CITY and the VENDOR (hereinafter referred to collectively as the "PARTIES"), the PARTIES agree as follows:

SECTION 1: THE QUOTE DOCUMENTS: This Quote shall include the following documents (hereinafter referred to as the "QUOTE DOCUMENTS") however this Quote takes precedence and controls over any contrary provision in any of the QUOTE DOCUMENTS. The Quote, including the QUOTE DOCUMENTS, expresses the entire agreement between the PARTIES and where it modifies, adds to or deletes provisions in other QUOTE DOCUMENTS; the Quote's provisions shall prevail. Provisions in the Quote Documents unmodified by this Quote shall be in full force and effect in their unaltered condition.

The Invitation to Quote
The Instructions to the VENDORs
This Quote
The Terms and Conditions
The Quote as it is responsive to the City's quote requirements
All Certifications required by the City
Certificates of insurance
Performance and Payment Bonds as may be required by the CITY

SECTION 2: SCOPE OF THE WORK AND PAYMENT: The VENDOR agrees to provide labor, equipment and materials necessary to provide the services as described in the Quote Documents and further described below:

2024 City of Darien Landscape Irrigation-Spring Startup and Winter Shutdown Maintenance and Backflow Prevention Testing for Irrigation Systems and City Hall Complex Maintenance Agreement.

(Hereinafter referred to as the "Work") and the CITY agrees to pay the VENDOR pursuant to the provisions of the Local Government Prompt Payment Act (50 ILCS 505/1 *et seq.*) the following amount for performance of the described unit prices.

SECTION 3: ASSIGNMENT: VENDOR shall not assign the duties and obligations involved in the performance of the WORK which is the subject matter of this Quote without the written consent of the CITY.

SECTION 4: TERM OF THE QUOTE: This Quote shall commence on the date of its execution. The WORK shall commence upon receipt of a Notice to Proceed and continue for the period specified. This Quote shall terminate upon completion of the WORK, but may be terminated by either of the PARTIES for default upon failure to cure after ten (10) days prior written notice of said default from the aggrieved PARTY. The CITY, for its convenience, may terminate this Quote with thirty (30) days prior written notice.

SECTION 5: INDEMNIFICATION AND INSURANCE: The VENDOR shall indemnify and hold harmless the City of Darien and the County of DuPage, its officials, officers, directors, agents, employees and representatives and assigns, from lawsuits, actions, costs (including attorneys' fees), claims or liability of any character, incurred due to the alleged negligence of the VENDOR, brought because of any injuries

or damages received or sustained by any person, persons or property on account of any act or omission, neglect or misconduct of said VENDOR, its officers, agents and/or employees arising out of, or in performance of any of the provisions of the QUOTE DOCUMENTS, including any claims or amounts recovered for any infringements of patent, trademark or copyright; or from any claims or amounts arising or recovered under the "Worker's Compensation Act" or any other law, ordinance, order or decree. In connection with any such claims, lawsuits, actions or liabilities, the CITY, its officials, officers, directors, agents, employees, representatives and their assigns shall have the right to defense counsel of their choice. The VENDOR shall be solely liable for all costs of such defense and for all expenses, fees, judgments, settlements and all other costs arising out of such claims, lawsuits, actions or liabilities. The VENDOR shall not make any settlement or compromise of a lawsuit or claim, or fail to pursue any available avenue of appeal of any adverse judgment, without the approval of the City and any other indemnified party. The City or any other indemnified party, in its or their sole discretion, shall have the option of being represented by its or their own counsel. If this option is exercised, then the VENDOR shall promptly reimburse the City or other indemnified party, upon written demand, for any expenses, including but not limited to court costs, reasonable attorneys' and witnesses' fees and other expenses of litigation incurred by the City or other indemnified party in connection therewith. Execution of this Quote by the CITY is contingent upon receipt of Insurance Certificates provided by the VENDOR in compliance with the QUOTE DOCUMENTS.

SECTION 6: COMPLIANCE WITH LAWS: The VENDOR shall at all times observe and comply with all laws, ordinances and regulations of the federal, state, local and City governments, which may in any manner affect the preparation of quotes or the performance of the Quote. VENDOR hereby agrees that it will comply with all requirements of the Illinois Human Rights Act, 775 ILCS 5/1-101 et seq., including the provision dealing with sexual harassment and that if awarded the Quote will not engage in any prohibited form of discrimination in employment as defined in that Act and will require that its sub VENDORs agree to the same restrictions. The VENDOR shall maintain, and require that its sub VENDORs maintain, policies of equal employment opportunity which shall prohibit discrimination against any employee or applicant for employment on the basis of race, religion, color, sex, national origin, ancestry, citizenship status, age, marital status, physical or mental disability unrelated to the individual's ability to perform the essential functions of the job, association with a person with a disability, or unfavorable discharge from military service. VENDORs and all sub VENDORs shall comply with all requirements of the Act and of the Rules of the Illinois Department of Human Rights with regard to posting information on employees' rights under the Act. VENDORs and all sub VENDORs shall place appropriate statements identifying their companies as equal opportunity employers in all advertisements for workers to be employed in work to be performed. Not less than the Prevailing Rate of Wages as found by the City of Darien or the Department of Labor shall be paid to laborers, workmen, and mechanics performing work under the Quote. If awarded the Quote, VENDOR must comply with all provisions of the Illinois Prevailing Wage Act, including, but not limited to, providing certified payroll records to the Municipal Services Department. VENDOR and sub VENDORs shall be required to comply with all applicable federal laws, state laws and regulations regarding minimum wages, limit on payment to minors, minimum fair wage standards for minors, payment of wage due employees, and health and safety of employees. VENDOR and sub VENDOR are required to pay employees all rightful salaries, medical benefits, pension and social security benefits pursuant to applicable labor agreements and federal and state statutes and to further require withholdings and deposits therefore. The VENDOR shall obtain all necessary local and state licenses and/or permits that may be required for performance of the WORK and provide those licenses to the CITY prior to commencement of the WORK if applicable.

SECTION 7: NOTICE: Where notice is required by the QUOTE DOCUMENTS it shall be considered received if it is delivered in person, sent by registered United States mail, return receipt requested, delivered by messenger or mail service with a signed receipt, sent by facsimile or e-mail with an acknowledgment of receipt, to the following:

City of Darien
1702 Plainfield Road
Darien, IL 60561
Attn: Director of Municipal Services

SECTION 8: STANDARD OF SERVICE: Services shall be rendered to the highest professional standards to meet or exceed those standards met by others providing the same or similar services in the Chicagoland area. Sufficient competent personnel shall be provided who with supervision shall complete the services required within the time allowed for performance. The VENDOR'S personnel shall, at all times present a neat appearance and shall be trained to handle all contact with City residents or City employees in a respectful manner. At the request of the Director of Municipal Services or a designee, the VENDOR shall replace any incompetent, abusive or disorderly person in its employ.

SECTION 9: PAYMENTS TO OTHER PARTIES: The VENDOR shall not obligate the CITY to make payments to third PARTIES or make promises or representations to third PARTIES on behalf of the CITY without prior written approval of the City Administrator or a designee.

SECTION 10: COMPLIANCE: VENDOR shall comply with all of the requirements of the Quote Documents, including, but not limited to, the Illinois Prevailing Wage Act where applicable and all other applicable local, state and federal statutes, ordinances, codes, rules and regulations.

SECTION 11: LAW AND VENUE: The laws of the State of Illinois shall govern this Quote and venue for legal disputes shall be DuPage County, Illinois.

SECTION 12: MODIFICATION: This Quote may be modified only by a written amendment signed by both PARTIES.

SECTION 13: LOCATION OF WORK:
The system for the planter beds is located on 75th Street between Farmingdale Drive to the east and Adams Street to the west. There are 8 planter beds with controlled boxes with a meter and backflow device. The awarded VENDOR will be responsible for the folowing:

SECTION 14: SPRING STARTUP-APRIL 1
Installation of water meter
Installation of backflow device
Pressurizing zone
Review sytem heads and supply lines for leaks and spray patterns

SECTION 15: VENDOR SHALL MAKE REPAIRS TO ALL IDENTIFIED DEFICIENCIES.
The VENDOR shall provide parts; invoice for parts shall be submitted and the VENDOR shall have the abilty to provide a 15% markup. The repairs shall be made on actual time to repair the deficiency.

SECTION 16: WINTER SHUTDOWN-OCTOBER15

City will shutdown the water service supply
VENDOR shall complete the following:
Remove and tag water meter as per location listed below
Removal, tagging and testing of each backflow device per loaction listed below
Submitting the backflow results electronically to Aqua Backflow. (City will provide link) and to the Municipal Services Department representative
Depressurize and evacutate all irrigation lines from residual water

SECTION 17-REPAIRS

VENDOR shall certify and/or make repairs to the specific backflow device. The VENDOR shall provide parts; invoice for parts shall be submitted and the VENDOR shall have the abilty to provide a 15% markup. The VENDOR will also make a reinbursable paymenet to file the backflow device with Aquabackflow. The repairs shall be made on actual time to repair the deficiency of the backflow device.

FOR: THE CITY	FOR: THE VENDOR
By: _____	By: Andrew Moore
Print Name: _____	Print Name: Andrew Moore
Title: Mayor	Title: President
Date: _____	Date: 2/23/24

2024 City of Darien
Landscape Irrigation-Spring Startup and Winter Shutdown Maintenance and Backflow Prevention Testing for Irrigation Systems and City Hall Complex Maintenance

SCHEDULE OF PRICES

QUOTE SUMMARY SHEET 2024						
		COST CENTER A	COST CENTER B	COST CENTER C	COST CENTER D	SUB TOTAL COST
	Cost Schedule	Test & Certify RPZ	Spring Startup	Winter Shutdown	Labor Cost	TOTALS OF A+B+C+D
	Location	Unit Cost-Per Location	Unit Cost-Per Location	Unit Cost-Per Location	Unit Cost-Hourly Rate	
1	1710 Plainfield Rd - Police Department	275.	225.	255.	125.	880.
2	1702 Plainfield Rd - City Hall	275.	175.	200.	125.	775.
3	7532 S Cass Ave - Dunkin Donuts	125.	175.	200.	125.	625.
4	Clock Tower Sprinkler - Cass Ave & Plainfield Rd	125.	175.	200.	125.	625.
5	75th St-east of Plainfield/McDonalds	125.	175.	200.	125.	625.
6	75th St & Plainfield Rd Berm	125.	175.	200.	125.	625.
7	75th St west of Plainfield Rd	125.	175.	200.	125.	625.
8	75th St east of Cass Ave-Taco Bell	125.	175.	200.	125.	625.
9	75th St west of Cass Lace School	125.	175.	200.	125.	625.
10	75th St east of Adams St	125.	175.	200.	125.	625.
11	75th St west of Adams St	125.	175.	200.	125.	625.
12	75th St west of Park Ave 1502 75th St	125.	175.	200.	125.	625.
					COST CENTER- TOTAL COST 1-12	7905.

Total Cost in written form: Seven Thousand Nine Hundred and Five Dollars

VENDOR INFORMATION SHEET

CONTACT NAME: Andrew Moore

ADDRESS: 1540 Hecht Dr. Unit K

CITY, STATE, ZIP: Bartlett, Illinois 60103

PHONE NUMBERS: 847-648-0008

OFFICE: 847-648-0008 CELL: 630-240-3969

FAX NUMBER:

E-MAIL ADDRESS: ANDY@MARK1LANDSCAPE.COM

ALTERNATE CONTACT NAME: SUSAN - SUSAN@MARK1LANDSCAPE.COM

AGENDA MEMO
Municipal Services Committee
March 24, 2025

ISSUE STATEMENT

A **resolution** waiving the competitive bid process and accepting a proposal from Mosca Design for the purchase of holiday lighting and decorative displays at a cost not to exceed $35,000.

BACKGROUND/HISTORY

The 2025/26 Budget calls out for additional enhancements of the City's center of town corridor as well as various locations. The currently stocked holiday decorations are targeted for the following sites:

- 1702-1710 Plainfield Rd-City Hall & Police Department
- Plainfield Rd & Cass Ave-Clock Tower
- 75th St & Plainfield Rd-Berm area at the north east corner
- 75th St & Cass Ave-Historical Society

The proposed enhancement would further compliment the displays and include additional illumination opportunism. Staff is presenting the item at this time as the products sellout quickly by early summer and are not available until the following year. By placing orders during the off-season additional discounting is included with this proposal. The proposed program would allow for the purchase of holiday displays as per the attached presentation, **Attachment A**.

Please recall the evergreen tree, (Holiday Tree) at the Historical Society at 75th St. and Cass Ave., had been removed due to its mortality. The Staff replaced it with an artificial tree at a height of eighteen feet. While the placement and setting of the tree provided positive community feedback, the tree height is dwarfed due to the large and busy intersection. Staff recommended an additional 4-foot section to allow for the tree to be extended to a height of twenty-two feet.

Mosca Design was retained for their ongoing customer service and early pricing opportunities. The manufacturer's representative is local and has been responsive to redesigns, technical questions and provides field installation oversight as requested at no additional cost. The Municipal Services Department installs, dismantles and stores the holiday decorations.

Due to the inconsistencies of products between manufacturers, Staff is requesting to waive the competitive bid process and accept the proposal from Mosca Design. Staff has previously utilized Mosca Design with positive results.

The proposed item would be expended from the following account:

Account Number	Account Description	FY 25/26 Budget	Proposed Expenditure	Proposed Balance
01-30-4257	Building Maintenance	$35,000.00	$33,471.12	$ 1,528.88
	Contingency		$ 1,528.88	$0

STAFF RECOMMENDATION

Staff recommends approving a resolution waiving the competitive bid process and accepting a proposal from Mosca Design for the purchase of holiday lighting and decorative displays at a cost not to exceed $35,000.

ALTERNATE CONSIDERATION

As recommended by the Committee**.**

DECISION MODE

This item will be placed on the April 7, 2025 City Council agenda for formal consideration.

New Décor Pricing

- *14’ 3D Sphere Tree with 3,360 bulbs Reg Price $17,352 – Special Pricing $15,999*
- *LED Starburst 16” / 12 per case Reg Price $429.60 – Special Pricing $399/case*
- *5mm LED Mini Lights any color, standard plug, case of 25 with Green Wire – Reg $366.12/case – Special pricing $329.40/case*

Tree Increase

- ***18’ - 22’***
- *With Light Ornament package - Reg $9,767*
- *Special Price thru 5/25 - $7,032*

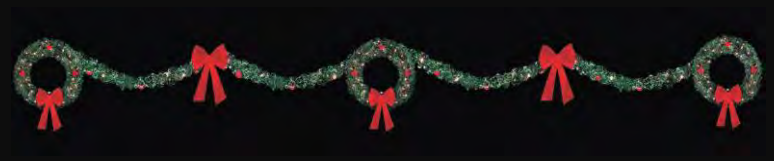
Building Front Wreaths

- *BFLF-144 Double Swag Wreath 24’ Wide*

Reg Price $2,521 – Special Pricing $1,815.12

- *OH-517 Made as a Building Front, 40’ Wide with 3 wreaths*

Reg Price $3,055 – Special Pricing $2,199.60



Metal Orbs

- *12” $72/each Special $66*
- *20” $123/each Special $115*
- *32” $184/each Special $172*

MEMO

RESOLUTION NO._____

A RESOLUTION WAIVING THE COMPETITIVE BID PROCESS AND ACCEPTING A PROPOSAL FROM MOSCA DESIGN FOR THE PURCHASE OF HOLIDAY LIGHTING AND DECORATIVE DISPLAYS AT A COST NOT TO EXCEED $35,000

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The City Council of the City of Darien hereby approves waiving the competitive bid process and accepting a proposal from Mosca Design for the purchase of holiday lighting and decorative displays at a cost not to exceed $35,000, a copy of which is attached hereto as "**Exhibit A**",

SECTION 2: This Resolution shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April 2025.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April 2025.

_____
JOSEPEH MARCHESE, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

355 Park Ave.
Youngsville, NC 27596
1 (800) 332-6798
www.moscadesign.com

Created Date	3/12/2025
Expiration Date	5/27/2025
Quote Number	00002190
Payment Terms	Net 20 Days after delivery with purchase order

Prepared By	Dawn Harmon
Email	dawn@moscadesign.com

Contact Name	Kris Throm
Phone Number	(630) 852-5000
Email	kthrom@darienil.gov

Bill To Name	City of Darien, IL
Bill To	1702 Plainfield Rd Darien, IL 60561 US

Ship To Name	City of Darien, IL
Ship To	1041 S Frontage Rd Darien, IL 60561 US

Quantity	Product	Product Code	Line Item Description	Product Description	List Price	Discounted Item Price	Total Price
1.00	Double Wreath Swag	BFLF-144	Warm White for clears	24ft Wide Double Wreath Swag Contains 158 C7 Lamps Weight: 88 lbs.	$2,521.00	$1,815.12	$1,815.12
1.00	Triple Wreath Skyline	OH-517	Warm white for Clear	40' triple wreath skyline	$3,055.00	$2,199.60	$2,199.60
2.00	5mm LED - Pure White, 70L Green Wire - Standard Plug - Case (25x)	5mm-purewhite-g-s-case		70 lights per strand, 25 Per Case, 23 ft. length, 4 in. spacing, 4.83 total watts, 0.069 watts per bulb, 120 volt, 43 max sets connected, End to end connectors. Plastic non-breakable bulbs. Use for wrapping limbs on trees. Produces a strong, intense light.	$366.12	$329.40	$658.80
2.00	5mm LED - Ruby Red, 70L Green Wire - Standard Plug - Case (25x)	5mm-70-RubyRed-g-s-case		70 lights per strand, 25 Per Case, 23 ft. length, 4 in. spacing, 4.83 total watts, 0.069 watts per bulb, 120 volt, 43 max sets connected, End to end connectors. Plastic non-breakable bulbs. Use for wrapping limbs on trees. Produces a strong, intense light.	$366.12	$329.40	$658.80
2.00	5mm LED - Blue, 70L Green Wire - Standard Plug - Case (25x)	5mm-70-Blue-g-s-case		70 lights per strand, 25 Per Case, 23 ft. length, 4 in. spacing, 4.83 total watts, 0.069 watts per bulb, 120 volt, 43 max sets connected, End to end connectors. Plastic non-breakable bulbs. Use for	$366.12	$329.40	$658.80

By signing above, purchaser agrees to all terms and conditions, and authorizes Mosca Design, Inc. to place order accordingly

THANK YOU FOR YOUR BUSINESS

355 Park Ave.
Youngsville, NC 27596
1 (800) 332-6798
www.moscadesign.com

				wrapping limbs on trees. Produces a strong, intense light.			
1.00	Grow Your Extended Branch Panel Tree - From 18 ft. to 22 ft. - Light Ornament Pkg.	GYExBPT-22-LOP		Adding: 420 C7 LED bulbs, 243 watts, 9 panels, with a 12' base ring	$9,767.00	$7,032.00	$7,032.00
1.00	Metal Orbs - 12" in.	3D-metal-orbs-12	Green		$72.00	$66.00	$66.00
1.00	Metal Orbs - 20" in.	3D-metal-orbs-20	Red		$123.00	$115.00	$115.00
1.00	Metal Orbs - 32" in.	3D-metal-orbs-32	Warm White		$184.00	$172.00	$172.00
1.00	Pure White Star Burst-LED - 16" in.	Pure White Star Burst-16		Per case of 12 each	$429.60	$399.00	$399.00
1.00	Blue Star Burst-LED - 16" in.	Blue Starburst-16		Per case of 12 each	$429.60	$399.00	$399.00
1.00	Classic White Star Burst-LED - 16" in.	Classic White Starburst-16-case		Per case of 12 each	$429.60	$399.00	$399.00
1.00	Green Star Burst-LED - 16" in.	Green Star Burst-16		Per case of 12 each	$429.60	$399.00	$399.00
1.00	3D Sphere Tree - 14 ft.	SSST-14			$17,352.00	$15,999.00	$15,999.00

All orders paid with a credit card will include a 3.5% Bank Service Fee added to the final bill.
If freight is not quoted, then it will be billed at cost.

Subtotal	$30,971.12
Total Price	$30,971.12
Shipping and Handling	$2,500.00
Grand Total	$33,471.12

Accepted By: _____

Accepted Date: _____

By signing above, purchaser agrees to all terms and conditions, and authorizes Mosca Design, Inc. to place order accordingly
THANK YOU FOR YOUR BUSINESS

AGENDA MEMO
Municipal Services Committee
March 24, 2025

ISSUE STATEMENT

A **resolution** accepting the extension of a proposal at the unit price for sidewalk grinding from Hard Rock Concrete Cutters, Inc., in an amount not to exceed $250,000.

BACKGROUND/HISTORY

Staff is tasked annually with evaluating, identifying and marking sidewalk squares that require replacement. Typical replacement consists of replacing vertical mismatches starting at approximately ¾ of an inch. During the course of the past 20 years, the City has replaced numerous slabs and we have identified that in many cases we are replacing slabs that were removed and replaced 5-10 years prior. The cause of premature replacement is due to the tree roots. Due to the heavy clay content the roots thrive for the closest source of water and typically the storm water flows under the sidewalk due to stone base. As roots seek the water they continue to grow thus lifting sidewalk slabs resulting in mismatches and further creating a trip and fall hazard. In other situations, many of the mismatches are caused due to the frost and thaw cycles vertical mismatches. Please note the concrete grinding would only be utilized with vertical mismatches.

In 2023, a pilot program was initiated to demonstrate the cost savings of removing and replacing the concrete through a grinding process. The program consisted of completing 615 cuts/slabs at a cost of approximately $25,000. The program was successful with no complaints regarding aesthetics, dusts or any additional environmental issues. The end result is an exposed aggregate finish and the structural integrity of the walk is not affected by the grinding. Staff solicited for competitive quotes in 2024 and received two, see **Attachment A**. Hard Rock was the awarded vendor for last year's project and completed it professionally including a detailed report documenting all grinds. The funding for the 2024 program allowed for the completion of the limits between Clarendon Hills Rd to Cass Ave, 75th Street to 67th Street and approximately 75% completion between Fairview to Cass Ave and from 75th Street to the northern limits.

The FY 25/26 Budget allocated funding for the program to mechanically grind the concrete mismatches. This year's goal is to complete grinding within the between Cass Avenue to Clarendon Hills Road and the 6600 Block to Plainfield Road. Upon completion of the grinding, a review will be completed of the 2024 work to determine future maintenance grinding needs and funding. The program to date has been very effective and reduced costs to the alternative of replacing concrete sidewalks. The 2024 contract called out for two optional extensions. While neither vendor submitted revised unit pricing for subsequent extensions. Staff was able to negotiate no unit price increase for this year's grinding program, see e-mail labeled as **Attachment B**.

The proposed expenditure would be expended from the following line account:

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	FY 25-26 BUDGET	PROPOSED EXPENDITURE
25-35-4380	CONCRETE GRINDING	$250,000	$250,000

STAFF RECOMMENDATION

Staff recommends a resolution accepting a proposal at the unit prices for sidewalk grinding from Hard Rock Concrete Cutters, Inc., in an amount not to exceed $250,000

ALTERNATE DECISION

As recommended by the Committee.

DECISION MODE

This item will be on the April 7, 2025 City Council, New Business agenda for formal consideration.

MEMO

ch 27, 2024
City of Darien - 9:30 a.m.

Quote for Saw Cutting/Grinding Fees
2024/2025

			Murphy Construction Services, LLC.		Hard Rock Concrete Cutters, Inc.	
DESCRIPTION	**QUANTITY-RANGE**	**UNIT**	**UNIT PRICE PER HOUR**	**TOTAL COSTS**	**UNIT PRICE PER HOUR**	**TOTAL COSTS**
Saw Cutting/Grinding	6000	per cut or per slab	$ 80.00	$ 480,000.00	$ 41.85	$ 251,100.00

MEMO

From: Corrie Krula <Corrie@hardrockconcretecutters.com>
Sent: Wednesday, March 19, 2025 10:23 AM
To: Dan Gombac
Cc: Luis Diaz; Regina Kokkinis; Bryon Vana
Subject: RE: sidewalk cutting / grinding 2025-26

Hi Dan,
I confirm that Hard Rock agrees to continue at the current per cut price of $41.85 for 2025. Thank you for considering our request. We are happy to hear there is good potential to get started around April 9th.

As for 2026, I'd anticipate we request consideration for a small single digit percentage increase to offset added labor costs. But we can firm that up later.

Looking forward to getting started on another succesful cutting season!

Corrie Krula
President, CEO
Hard Rock Concrete Cutters
WBE & DBE Certified
O. 847.850.7713 | **C.** 224.688.1342
E. corrie@hrccinc.com

From: Dan Gombac <dgombac@darienil.gov>
Sent: Wednesday, March 19, 2025 9:59 AM
To: Corrie Krula <Corrie@hardrockconcretecutters.com>
Cc: Luis Diaz <Luis@hardrockconcretecutters.com>; Regina Kokkinis <rkokkinis@darienil.gov>; Bryon Vana <bvana@darienil.gov>
Subject: RE: sidewalk cutting / grinding 2025-26

Good morning Corrie,

Appreciate the conversation this morning and appreciate your consideration to maintain the per cut unit pricing at $41.85, as per the 2024 Sidewalk Grinding Program contract. Pls confirm that we are in agreement with the existing cost. Staff is further providing a recommendation to the Council for the 1st extension to the program.

Please note, the contract has an additional extension for next year and no additional pricing was submitted per the original contract. Staff is requesting of Hard Rock to review any price increases for the 2026 Extension over the next couple months.

Sincerely,

Daniel Gombac
Director of Municipal Services
630-353-8106 Mobile 630-514-2519

From: Corrie Krula <Corrie@hardrockconcretecutters.com>
Sent: Tuesday, March 18, 2025 11:38 AM
To: Dan Gombac <dgombac@darienil.gov>
Cc: Luis Diaz <Luis@hardrockconcretecutters.com>
Subject: RE: sidewalk cutting / grinding 2025-26

Hi Dan,
We are excited to come back out this year to complete more sidewalk cutting for the city. With the contract extension, I'd like to ask for your approval on a 2% increase in consideration of our year over year cost increases. This would bring it to $42.69 per cut.

Thank you for your consideration,

Corrie Krula
President, CEO
Hard Rock Concrete Cutters
WBE & DBE Certified
O. 847.850.7713 | **C.** 224.688.1342
E. corrie@hrccinc.com

From: Regina Kokkinis <rkokkinis@darienil.gov>
Sent: Tuesday, March 18, 2025 9:43 AM
To: Corrie Krula <Corrie@hardrockconcretecutters.com>
Cc: Dan Gombac <dgombac@darienil.gov>; Kris Throm <kthrom@darienil.gov>
Subject: RE: sidewalk cutting / grinding 2025-26

Good morning,

Just wanted to follow up and put this at the top of your email.
Please let me know if you are in agreement with the price extension for the 2025-26 season.

Sincerely,

Regina Kokkinis
Administrative Assistant, Municipal Services
City of Darien
630-353-8105
To receive important information from the City of Darien sign up for our electronic newsletter:
DARIEN DIRECT CONNECT
Follow the link and subscribing is simple!
https://darien.il.us/reference-desk/directconnect-enews

From: Corrie Krula <Corrie@hardrockconcretecutters.com>
Sent: Monday, March 10, 2025 10:40 AM
To: Regina Kokkinis <rkokkinis@darienil.gov>
Cc: Dan Gombac <dgombac@darienil.gov>; Kris Throm <kthrom@darienil.gov>
Subject: Re: sidewalk cutting / grinding 2025-26

Thank you for sending this over. I know we are excited to work for you again on your sidewalks. I have forwarded to my Sidewalks team. We will get back to you soon.

Thank you,

Corrie Krula

President, CEO

Hard Rock Concrete Cutters

WBE & DBE Certified

O. 847.850.7713 | **C.** 224.688.1342

E. corrie@hrccinc.com

From: Regina Kokkinis <rkokkinis@darienil.gov>
Sent: Monday, March 10, 2025 10:32 AM
To: Corrie Krula <Corrie@hardrockconcretecutters.com>
Cc: Dan Gombac <dgombac@darienil.gov>; Kris Throm <kthrom@darienil.gov>
Subject: sidewalk cutting / grinding 2025-26

Good morning,

Please see the attached pricing schedule as it relates to the subject line and confirm you are in agreement with the contract extension of the unit pricing for May 1, 2025 – April 30, 2026.

Sincerely,

Regina Kokkinis
Administrative Assistant, Municipal Services
City of Darien
630-353-8105

MEMO

RESOLUTION NO._____

A RESOLUTION ACCEPTING THE EXTENSION OF A PROPOSAL AT THE UNIT PRICE FOR SIDEWALK GRINDING FROM HARD ROCK CONCRETE CUTTERS, INC., IN AN AMOUNT NOT TO EXCEED $250,000

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: The City Council of the City of Darien does hereby accept the extension of a proposal at the unit price for sidewalk grinding from Hard Rock Concrete Cutters, Inc., in an amount not to exceed $250,000, a copy of which is attached hereto as "**Exhibit A**".

SECTION 2: This Resolution shall be in full force and effect from and after its passage and approval as provided by law.

PASSED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of April 2025.

AYES: _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS this 7th day of April 2025.

_____
JOSEPH MARCHESE, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

APPENDIX C: AGREEMENT ACCEPTANCE

CITY OF DARIEN 2025 SIDEWALK SAW CUTTING PROGRAM ACCEPTANCE

The Contract/Proposal attached hereto and by this reference incorporated herein and made a part hereof is hereby accepted by the order of the City of Darien ("Owner") this_____day of_____, 20____.

This Acceptance, together with the Contract/Proposal attached hereto, constitutes the entire and only agreement between the parties relating to the accomplishment of the Work and the compensation therefore and supersedes and merges any other prior or contemporaneous discussions, agreements, or understandings, whether written or oral, and shall prevail over any contradictory or inconsistent terms or conditions contained in any purchase order, acceptance, acknowledgement, invoice, or other standard form used by the parties in the performance of the Contract/Proposal. Any such contradictory or inconsistent terms or conditions shall be deemed objected to by Owner without further notice of objection and shall be of no effect nor in any circumstances binding upon Owner unless accepted by Owner in a written document plainly labeled "Amendment to Contract/Proposal." Acceptance or rejection by Owner or any such contradictory or inconsistent terms or conditions shall not constitute acceptance of any other contradictory or inconsistent terms or conditions.

By: _____

Title: Mayor-City of Darien

SCHEDULE OF PRICES
2024 SIDEWALK SAW CUTTING PROGRAM
CITY OF DARIEN, ILLINOIS

DESCRIPTION	QUANTITY	UNIT	UNIT COST	TOTAL COST
SAW CUTTING/GRINDING	6000	PER CUT OR PER SLAB	$41.85	$251,100.00
		TOTAL PROJECT COST		

Total Cost in written form: Two-hundred fifty-one thousand one hundred dollars and 00/100 cents

Company Name: Hard Rock Concrete Cutters, Inc.

Address: 601 Chaddick Drive, Wheeling, IL 60090

Contact Name: Corrie B. Krula

Office Number: 847-850-7713

Mobile Number: 224-688-1342

Email: corrie@hrccinc.com

Authorized signature: Corrie B Krula

BIDDER SUMMARY SHEET

2024 CITY OF DARIEN SIDEWALK SAWCUTTING PROGRAM

Firm Name: Hard Rock Concrete Cutters, Inc.

Address: 601 Chaddick Drive

City, State, Zip Code: Wheeling, IL 60090

Contact Person: Mrs. Corrie B. Krula

FEIN #: 36-3498113

Phone: (847) 850-7713 Fax: (847) 699-0292

Mobile: (224) 688-1342

E-mail Address: corrie@hrccinc.com.

RECEIPT OF ADDENDA: The receipt of the following addenda is hereby acknowledged:

Addendum No. 1, Dated March 13, 2024

Addendum No. _____, Dated _____

THE SECTION BELOW MUST BE COMPLETED IN FULL AND SIGNED

The undersigned hereby certifies that they have read and understand the contents of this solicitation and agree to furnish at the prices show n any or all of the items above, subject to all instructions, conditions, specifications and attachments hereto. Failure to have read all the provisions of this solicitation shall not be cause to alter any resulting contract or to accept any request for additional compensation. By signing this bid document, the bidder hereby certifies that they are not barred from bidding on this contract as a result of a violation of either Section 33E-3 or 33E-4 of the Illinois Criminal Code of 1961, as amended.

Authorized Signature: Corrie B Krula

Company Name: Hard Rock Concrete Cutters, Inc.

Name Printed: Mrs. Corrie B. Krula

Title: President

Date: March 18, 2024

Telephone Number: 847-850-7713

E-mail: corrie@hrccinc.com

AGENDA MEMO
MUNICIPAL SERVICES COMMITTEE
MARCH 24, 2025

CASE
PZC2024-14 Special Use Amendment, Variations – 8226 S. Cass Avenue

ORDINANCE

ISSUE STATEMENT
Petitioner (True North Energy, LLC) requests an amendment to the Special Use Permit which previously permitted the construction and operation of an automobile service station, drive-through car wash, and mini-mart, to allow for the demolition of the existing car wash and mini-mart, and the relocation/expansion of the mini-mart. The project includes requested variations from the City's landscape requirements. On-site improvements include parking facilities, landscape improvements and drainage/stormwater improvements. The subject property is located in the General Business District B-3 at the northwest corner S. Cass Avenue and N. Frontage Road, commonly known as 8226 S. Cass Avenue.

Applicable Regulations:	Ordinance No. O-31-85 Zoning Section 5A-8-4, B-3 District Standards

GENERAL INFORMATION

Petitioner:	True North Energy, LLC
Property Owner:	True North Energy, LLC
Property Location:	8226 S. Cass Avenue
PIN Number:	09-33-205-036-0000
Existing Zoning:	General Business District (B-3)
Existing Land Use:	Gas Station, Drive-Through Carwash, Mini-Mart
Proposed Land Use:	Gas Station, Mini-Mart
Comprehensive Plan:	Commercial (Existing); Commercial (Future)
Surrounding Zoning & Uses	
North:	Multi Family Residence District (R-3); Townhomes
East:	Neighborhood Convenience Shopping District (B-1) and Multi Family Residence District (R-3); Bank and Apartments
South:	Single Family Residence District (R-1); Our Lady of Mt. Carmel Church
West:	General Business District (B-3); Banquet Hall
Size of Property:	1.64 Acres
Floodplain:	N/A
Natural Features:	Site is fully developed and professionally landscaped with trees, shrubs and groundcover.
Transportation:	The petition site gains access from two driveways off of Cass Avenue and one driveway off of North Frontage Road.

ATTACHMENTS

1) **LOCATION MAP & AERIAL IMAGE (BY CITY STAFF)**
2) **ORDINANCE O-31-85**
3) **PLAT OF SURVEY (EXISTING)**
4) **ZONING APPLICATION**
5) **SITE PLAN, UTILITY PLAN AND GRADING PLAN (PROPOSED)**
6) **ARCHITECTURAL PLANS**
7) **ARCHITECTURAL RENDERINGS**
8) **TRAFFIC STUDY**
9) **ENGINEERING REVIEW LETTER**
10) **LANDSCAPE PLANS**
11) **VARIATION JUSTIFICATION LETTER**
12) **SPECIAL USE AND VARIATION CRITERIA**

BACKGROUND/OVERVIEW

The 1.64-acre subject property is located at the northwest corner of Cass Avenue and the North Frontage Road intersection (see Attachment 1), within the General Business District (B-3). On October 7, 1985, the City Council adopted Ordinance No. O-31-85 (see Attachment 2), approving a Special Use Permit for the construction of the existing site, which includes automobile service station with a canopy and 10 fuel pumps, a mini-mart approximately 936 square feet in size, and a drive-through carwash (see Attachment 3).

In 2010, the property was purchased from Shell Oil Products US by True North Energy, LLC (the Petitioner), which owns and operates automobile service stations and convenience stores across the Midwest. In the last several years, the Petitioner has reinvested in its branded convenience stores, and as part of that effort, is now requesting to amend the existing Special Use Permit (see Attachment 4) to perform a full tear down and renovation of the property which includes a fuel island and canopy for six pumps, a new convenience store approximately 5,425 square feet in size, and the removal of the carwash. On-site improvements are proposed including a new trash enclosure, pedestrian access, parking and landscape areas, and drainage/stormwater improvements.

ANALYSIS

A) Zoning and Land Use

Existing Zoning and Land Use: The property is currently zoned General Business District (B-3). The site is bordered by Multi Family Residence District (R-3) and townhomes to the north; Neighborhood Convenience Shopping District (B-1) and Multi Family Residence District (R-3) to the east, consisting of a bank and apartments; General Business District (B-3) and a banquet hall to the west; and lastly, Single Family Residence District (R-1) to the south, which consists of the Our Lady of Mt. Carmel Church.

B) Automobile Service Station and Mini-Mart (Special Use Amendment and Variations)

Special Use Permit Amendment: Automobile service stations and carwash facilities are permitted as special uses, per Section 5A-8-3-4 and 5A-8-4-4 of the City's Zoning Ordinance. As the project involves a change in the land use and site plan, a Special Use Permit Amendment is required.

Site and Architectural Design: The project site (see Attachment 5 – Site Plan, Utility Plan and Grading Plan) is designed with the new 5,425 square foot convenience store in the same approximate location as the previous drive-through carwash, on the west of the property, behind the renovated fuel island and canopy in the center of the site. To the rear of the convenience store and adjacent to the west property line, the existing detention pond will be further excavated and redesigned. Changes to the pond include the construction of a retaining wall along the western property line that will function as the edge of the pond. The wall varies in height from 2-feet to 7-feet tall, with an approximately 2.5 to 3-foot portion of the wall's height being below grade. A landscaped refuse and recycling enclosure is proposed to the south of the convenience store building.

The floor plan and elevations (see Attachment 6) show that the rectangular building utilizes a contemporary commercial design, with a corniced flat roof and a prominent arched entryway. The exterior materials include stucco and stone veneer, while the arched entryway and awnings incorporate a bronze finish. The prominent front elevation uses large aluminum storefront windows and wall sconce lighting, while the rear employs wall-pack security lighting. In addition to the plans, enhanced 3D renderings were provided (see Attachment 7).

Access, Circulation and Parking: Access to the site is provide by two restricted driveways on Cass Avenue (right-in and right-out), and a shared drive aisle that access from North Frontage Road. The existing raised curb/island barrier between the shared drive aisle and the project site will be demolished and the area will consist of open paving. 19 dedicated parking stalls are proposed, along with 12 stalls available at the fuel pumps, with additional unmarked parking surfaces are provided near the perimeter of the site which meets the minimum requirement of 21 parking stalls.

Traffic Study: Cass Avenue right-of-way is under the jurisdiction of DuPage County – however, the petitioner provided a traffic study (see Attachment 8) prepared by Kenig, Lindgren, O'Hara, Aboona, Inc. (KLOA), dated February 25, 2025 to evaluate the potential for transportation impacts resulting from the development of the proposed project. The study analyzed existing conditions without the project, existing conditions plus the project, future traffic conditions, and analyzed the specific roadway and site access existing or included as part of the project. Results indicate that peak hour trips will increase by approximately 1%, and due to the existing capacity, the proposed project is forecast to result in no substantial transportation impacts or degradation in level of service.

Site Plan Review: Staff have reviewed the petitioner submitted plans and found that the project complies with all required development standards, except with regard to perimeter landscaping requirements, as outlined below. The preliminary plans were reviewed and accepted by Christopher B. Burke Engineering's Dan Lynch on January 22, 2025, and the applicant will be required to address the comments in the letter during the plan check process and prior to permit issuance (see Attachment 9).

Variation Request: Based on the site layout and submitted documents, the petitioner is requesting variations from the following sections of the City's Zoning Regulations:

Section 5A-8-4-8(B)(2)	To allow for parking areas near the northern property line to be located within the 30-foot parking setback.
Section 5A-10-6	To allow for no landscape islands to be provided in the parking area directly in front of the mini-mart.
Section 5A-10-5	To allow for less perimeter landscaping than would otherwise be required at the eastern, western, and southern property lines, in lieu of the proposed landscaping.

The City's landscape ordinance is based on a point system. Trees provide the most points, while shrubs and groundcover provide fewer points. The table details the required and proposed landscape points.

Table 1: Landscaping Tabulation

	Required Landscaping	**Proposed Landscaping**
North	1680 pts	1780 pts (complies)
South	1192.5 pts	780 pts (*deficient*)
East	1197 pts	405 pts (*deficient*)
West	1192.5 pts	880 pts (*deficient*)

The proposed landscape plan provides planting details and a breakdown of the landscaping calculations – see Attachment 10.

Justification Letter and Findings of Fact: As previously mentioned, a justification letter for the various findings of fact for the special use amendment and variations have been prepared by the petitioner and are attached to the application as Attachment 11. They generally refer to site constraints and as-built conditions that prevent strict compliance with the required landscaping scores. For reference, the criteria the Planning, Zoning and Economic Development Commission and City Council apply in their actions for Special Uses and Variation requests are included in Attachment 12.

Conditions of Approval: All existing conditions of approval established under Ordinance No. O-31-85 will remain in place, except those regarding carwash operations, and landscaping. Should the petition be approved, the new ordinance would supersede those conditions of approval where necessary. Should the Planning, Zoning and Economic Development Commission recommend approval of this petition, staff recommended adding the following conditions of approval:

1. ~~Plans submitted for the project shall include enhanced landscaping along the northern property line, to consist of additional shade/overstory trees in areas where no trees are provided.~~ (Removed by PZC on 03/05/2025)

2. Prior to the issuance of a final certificate of occupancy, the petitioner shall include pavement rehabilitation or resurfacing of those portions of the shared access drive that are located on the subject property that are generally in disrepair, to the satisfaction of the Director of Community Development.

3. Comply with the comments and requirements within the letter from Christopher B. Burke Engineering, Ltd. dated January 22, 2025.

PZC MEETING UPDATE – 03/05/2025

The Planning and Zoning Commission reviewed this petition at its March 5, 2025 meeting. The petitioner was present and answered questions after staff's introduction of the case. There were members of the public in attendance and provided comment on the landscaping and fencing at the north end of the site. Staff answered various questions about the site design, nature of variations requested, and recommended conditions of approval.

Based on testimony and discussion at the meeting, the Planning and Zoning Commission made a motion to forward the case with a favorable recommendation to the Municipal Services Committee and City Council. The motion passed with a unanimous 7-0 vote. The following conditions of approval were included:

1. **Prior to issuance of a certificate of occupancy, the petitioner shall complete pavement rehabilitation or resurfacing of those portions of the shared access drive that are located on the subject property that are generally in disrepair to the satisfaction of the Director of Community Development.**
2. **The developer/petitioner shall comply with the comments and requirements within the letter from Christopher B. Burke Engineering, LTE dated January 22, 2025.**
3. **Comply with all requirements of the original ordinance, including fencing, but excluding landscaping as amended herein.**
4. **Replace or provide signage to clarify existing right-in and right-out access on Cass Avenue.**

DECISION MODE

The Municipal Services Committee will consider this item at is meeting on March 24, 2025.

MEETING SCHEDULE

City Council April 7, 2025

CITY OF DARIEN

PLANNING, ZONING AND ECONOMIC DEVELOPMENT COMMISSION

MARCH 5, 2025

LOCATION MAP

Project No.: PZC2024-14 – 8226 S. Cass Avenue

MEMO

Zoning Book

CITY OF DARIEN

ORDINANCE NUMBER O-31-85

AN ORDINANCE GRANTING A SPECIAL USE PERMIT FOR CERTAIN PROPERTY WITHIN THE CITY OF DARIEN (KLOSKI/SHELL)

ADOPTED BY THE

MAYOR AND CITY COUNCIL

OF THE

CITY OF DARIEN

THIS 7th DAY OF October, 19 85

Published in pamphlet form by authority of the Mayor and City Council of the City of Darien, DuPage County, Illinois, this 8th day of October, 19 85.

STATE OF ILLINOIS)
) SS
COUNTY OF DU PAGE)

CERTIFICATE

I, Gertrude M. Coit, C.M.C., certify that I am the duly elected and acting municipal clerk of the City of Darien, Du Page County, Illinois.

I further certify that on October 7, 1985, the Corporate Authorities of such municipality passed and approved Ordinance Number 0-31-85, entitled AN ORDINANCE GRANTING A SPECIAL USE PERMIT FOR CERTAIN PROPERTY WITHIN THE CITY OF DARIEN (KLOSKI/SHELL)

which provided by its terms that it should be published in pamphlet form.

The pamphlet form of Ordinance Number 0-31-85, including the Ordinance and a cover sheet thereof was prepared, and a copy of such Ordinance was posted in the municipal building, commencing on October 8, 1985, and continuing for at least ten (10) days thereafter. Copies of such Ordinance were also available for public inspection upon request in the office of the municipal clerk.

DATED at Darien, Illinois, this 8th day of October, 1985.

(SEAL)

Gertrude M. Coit, C.M.C.
Municipal Clerk

JDM/MSP/10/02/85

ORDINANCE NUMBER 0-31-85

AN ORDINANCE GRANTING A SPECIAL USE PERMIT FOR CERTAIN PROPERTY WITHIN THE CITY OF DARIEN (KLOSKI/SHELL)

WHEREAS, the owner and the contract purchaser of the property legally described on Exhibit "A" attached hereto and made a part hereof ("subject property") have filed a petition with the City of Darien for a Special Use Permit to allow the construction and operation of an automobile service station, car wash, and mini-mart facility on the subject property; and,

WHEREAS, pursuant to due and proper legal notice, the Darien Plan Commission conducted a public hearing with respect to said petition on August 28, 1985; and,

WHEREAS, the Plan Commission has forwarded its report and recommendation to the City Council; and,

WHEREAS, following review of the Plan Commission's report and recommendation, the City Council has determined to grant the Special Use Permit, subject to the conditions set forth hereinbelow; and,

WHEREAS, the subject property is currently in the B-3 Zoning District of the City and gas stations and car washes and mini-marts are allowable Special Uses in said zoning district.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, as follows:

SECTION 1: A Special Use Permit is hereby granted to permit the construction and operation of a gasoline service station, car wash, and mini-mart on the subject property.

SECTION 2: The facility shall be constructed in accordance with the site plan prepared by FGM/C Incorporated and dated July 23, 1984 and shall be constructed in accordance with the representations made by Shell Oil Company during the August 28, 1985 Plan Commission hearing and shall further be subject to the following specific terms and conditions:

- Contd. -

ORDINANCE NUMBER 0-31-85

A. GENERAL CONDITIONS

1. The facility shall at all times be operated in accordance with relevant provisions of the Darien City Code to include relevant noise and odor emission regulations of the Illinois Environmental Protection Agency.

2. The facility shall not perform any automobile service or repair or vehicle or trailer rentals.

3. No alcoholic beverages shall be sold from the facility.

4. The car wash hours of operation shall be from 7:00 A.M. to 9:00 P.M.

B. TRAFFIC REGULATIONS

1. The owner shall post and maintain "NO EXIT" or similar signs in order to prevent vehicles from exiting the facility at the north curb cut on Cass Avenue and a "RIGHT TURN ONLY" sign at the south curb cut on Cass Avenue.

2. The owner shall utilize cones or similar on-site regulatory devices to prevent vehicles awaiting a car wash from stacking onto either Cass Avenue or Frontage Road.

3. Two (2) "NO LEFT HAND TURN" signs shall be installed in the west Cass Avenue right-of-way to face northbound Cass Avenue traffic at both north and south curb cuts on Cass Avenue. The signs shall be supplied and erected by the City of Darien.

4. On-site traffic signs to indicate north bound Cass Avenue traffic to exit via Frontage Road.

ORDINANCE NUMBER 0-31-85

C. ENGINEERING AND UTILITIES

1. No construction shall commence until such time as the City Engineer approves of Shell's drainage and storm water retention plans.

2. Owner agrees to tap onto the City of Darien's water and other utility lines at the owner's property line at such time as an appropriate service connection is available to the subject property from Cass Avenue. Owner further agrees to pay a maximum of five-thousand dollars ($5,000.00) as its share of the cost of the extension of such lines. Construction of the water line to serve Shell shall be coordinated so that Shell can tap onto the system during the course of construction of the facility. If this coordination cannot be achieved, even after good faith negotiation has been conducted to arrive at an equitable solution, Shell shall not be required to tap onto this system.

D. LIGHTING AND SIGNAGE

1. All on-site lighting shall be designed and installed in such a manner as to prevent any spillage onto all adjacent private properties.

2. Without waiving any of its rights to the use of the easement for road purposes along the southern edge of the subject property, permission is granted by the City to allow the owner to erect and maintain its identification sign on said easement in accordance with the facility site plan and in accordance with all applicable City ordinances and other regulations.

3. All signage shall meet and comply with City of Darien Code requirements.

ORDINANCE NUMBER 0-31-85

E. LANDSCAPING AND FENCING

1. The owner shall install an eight foot (8') high stockade-type fence along the north two-hundred twenty-five feet (225') of the western perimeter of the subject property.

2. A fence shall be constructed along the west two-hundred forty feet (240') of the northern property line with the first two-hundred twenty feet (220') being eight feet (8') in height, and the next ten feet (10') being six feet (6') in height, with the next ten feet (10') being four feet (4'), or such other acceptable method of constructing the fence as the City and Shell may agree. The remaining portion of the north property line shall be landscaped with low-line vegetation. However, in the event it is determined that the eastern building line of the residence to the immediate north of the subject property is set back less than sixty feet (60') from the property line along Cass Avenue, the owner shall extend the fence along the northern proeprty line of the subject property so that said fence extends at least ten feet (10') east of said building line.

3. In addition, the owner shall construct a berm and plantings on the church property along the westerly one-hundred feet (100') of the abutting property line.

SECTION 3: This Ordinance shall be in full force and effect upon its passage, approval, and publication in pamphlet form as provided by law.

ORDINANCE NUMBER 0-31-85

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of October, 1985.

Gertrude M. Coit, CMC
City Clerk

AYES: 6: Biehl, Gillespie, Nosbisch, Smith, Thompson, VonZuckerstein

NAYS: 2: Colby, Sims

ABSENT: 0: None

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this 7th day of October, 1985.

Mayor

ATTEST:

Gertrude M. Coit, CMC
City Clerk

APPROVED AS TO FORM:

City Attorney

CITY OF DARIEN

ORDINANCE NUMBER 0-31-85

EXHIBIT "A"

The East 280.0 feet of Lot 1 (except the East 15 feet thereof) and also the East 280.0 feet of Lot 2, (except that part thereof lying East of a line drawn from the North East corner of Lot 2 to a point 15 feet West of the South East corner of Lot 2), in Smart Acres, being a Subdivision of the South 1/2 of the North East 1/4 of Section 33, Township 38 North, Range 11, East of the Third Principal Meridian, DuPage County, Illinois.

BOUNDARY & TOPOGRAPHIC SURVEY

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.

PROPERTY AREA

71,408 SQUARE FEET (1.64 ACRES), MORE OR LESS

P.I.N. NUMBERS

09-33-205-036

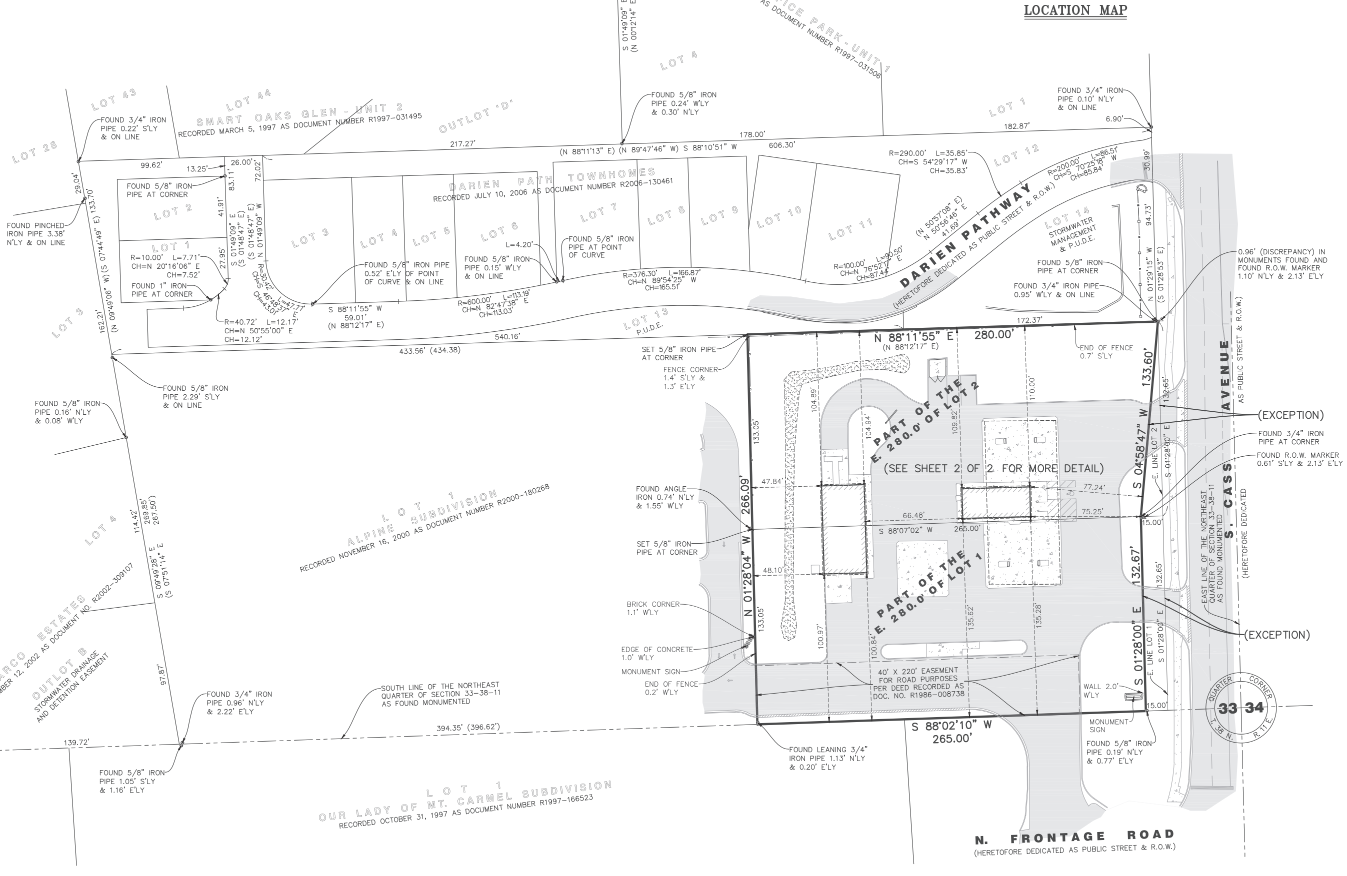
LEGAL DESCRIPTION

THE EAST TWO HUNDRED EIGHTY FEET (280.0') OF LOT 1 EXCEPT THE EAST FIFTEEN FEET (15.0') THEREOF AND ALSO THE EAST TWO HUNDRED EIGHTY FEET (280.0)' OF LOT 2, EXCEPT THAT PART THEREOF LYING EAST OF A LINE DRAWN FROM THE NORTHEAST CORNER OF LOT 2, TO A POINT FEFTEEN FEET (15.0') WEST OF THE SOUTHEAST CORNER OF LOT 2, IN SMART ACRES, BEING A SUBDIVISION OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 33, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF, RECORDED OCTOBER 21, 1947 AS DOCUMENT 532141, IN DUPAGE COUNTY, ILLINOIS.

LOCATION MAP

LEGEND

- 50.00' = MEASURED DIMENSION
- (50.0') = RECORD/DEED DIMENSION
- B.S.L. = BUILDING SETBACK LINE
- NLY,WLY = DIRECTION (ie NORTHERLY)
- P.U.E. = PUBLIC UTILITY EASEMENT
- P.U.D.E. = PUBLIC UTILITY & DRAINAGE EASEMENT
- R.O.W. = RIGHT-OF-WAY
- BOX = BUILDING CORNER TIE
- = PROPERTY LINE
- = EASEMENT LINE
- = SECTION LINE
- = DEPRESSED CURB
- = CHAIN-LINK FENCE
- = WOOD FENCE
- = METAL/COMPOSITE FENCE
- = WIRE FENCE
- = COMBINATION SEWER LINE
- = ROOF/UNDERDRAIN LINE
- = STORM LINE
- = SANITARY LINE
- = FORCE MAIN LINE
- = WATER MAIN LINE
- = UNDERGROUND GAS LINE
- = UNDERGROUND ELECTRICAL LINE
- = UNDERGROUND TELECOM LINE
- = OVERHEAD WIRES
- = TREE/BRUSH LINE
- = WETLANDS
- = FLOOD PLAIN LIMIT LINE
- = WATER LINE
- = 1 FOOT CONTOURS
- L.A. = LANDSCAPE AREA
- = GUARD RAIL
- = OVERLAND STORMWATER FLOW
- = SURVEY MONUMENT DRIVEN
- = SURVEY NOTCH CUT
- = FOUND CUT CROSS
- = BENCHMARK
- = SURVEY CONTROL POINT
- = MISCELLANEOUS MANHOLE (MH)
- = STORM MANHOLE (STMH)
- = STORM CATCH BASIN (CB)
- = STORM INLET (INL)
- = FLARED END SECTION (FES)
- = DOWN SPOUT TO GRADE
- = RIP-RAP
- = STORM SEWER MARKER
- = SANITARY MANHOLE (SMH)
- = GREASE TRAP (GT)
- = LIFT STATION (LS)
- = CLEANOUT (CO)
- = SANITARY SEWER MARKER
- = COMBINATION SEWER MANHOLE (CMH)
- = FIRE HYDRANT W/AUX. VALVE
- = VALVE BOX (VB)
- = VALVE VAULT (VV)
- = WATER METER
- = WATER SERVICE BUFFALO BOX (B-BOX)
- = MONITORING WELL
- = WELL HEAD
- = SPRINKLER CONTROL VALVE
- = WATER MARKER
- = GAS VALVE
- = GAS METER
- = GAS MANHOLE
- = JULIE GAS MARKER
- = ELECTRICAL METER
- = ELECTRICAL PEDESTAL
- = ELECTRICAL MANHOLE
- = ELECTRICAL OUTLET/PULL BOX
- = JULIE ELECTRIC MARKER
- = HANDHOLE
- = DOUBLE HANDHOLE BOX
- = TELECOM PEDESTAL
- = TELECOM MANHOLE
- = TELECOM VAULT
- = TELECOM CONTROL BOX
- = TELECOM MARKER
- = PETROLEUM MARKER
- = UTILITY POLE
- = GUY WIRE
- = LIGHT STANDARD
- = LIGHT BOLLARD
- = GROUND LIGHT
- = TRAFFIC SIGNAL
- = TRAFFIC SIGNAL WITH ARM
- = TRAFFIC SIGNAL MANHOLE
- = DOUBLE TRAFFIC SIGNAL MANHOLE
- = SIGN
- = DOUBLE POLE SIGN
- = MAILBOX
- = BOLLARD
- = FLAG POLE
- = PAY/EMERGENCY PHONE
- = FIRE SPRINKLER CONNECTION
- = AIR CONDITIONING UNIT
- = WATER POST INDICATOR VALVE
- = SOIL BORING W/ID NUMBER
- = BASKETBALL HOOP
- = HANDICAPPED PARKING
- = RAILROAD CONTROL BOX
- = RAILROAD CROSSING GATE
- = RAILROAD SWITCH
- = SPOT ELEVATION
- = BUSHES
- = DECIDUOUS TREE WITH TRUNK DIAMETER IN INCHES
- = CONIFEROUS TREE WITH TRUNK DIAMETER IN INCHES
- = TREE CLUMP W/NUMBER-SIZE
- = RIM ELEVATION INVERT ELEVATION
- = BUILDING LIMITS
- = ASPHALT PAVEMENT
- = CONCRETE PAVEMENT
- = GRAVEL SURFACE
- = BRICK PAVERS
- = WOOD SURFACE
- = STONE PAVERS
- = HANDICAP DOME INSERT (UNLESS NOTED OTHERWISE)



JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS

Call 48 hours before you dig (Excluding Sat., Sun. & Holidays)

1-800-892-0123

BENCH MARKS: (NAVD88)

SOURCE BENCH MARK:

NGS MONUMENT WITH PID MF1255 BEING AN FLANGE-ENCASED STEEL ROD.
(SEE NGS DATA SHEET FOR A MORE DETAILED DESCRIPTION)

ELEVATION=784.09

SITE BENCH MARK:

NORTH BOLT ON HYDRANT LOCATED 13.3' N'LY & 18.8' E'LY OF THE SOUTHEAST CORNER OF THE SUBJECT PROPERTY.

ELEVATION=725.91

SURVEYOR SIGNATURE AND SEAL

THIS PROFESSIONAL SERVICE CONFORMS TO THE CURRENT ILLINOIS MINIMUM STANDARDS FOR A BOUNDARY AND TOPOGRAPHIC SURVEY.

DATE SIGNED: NOVEMBER 25, 2024

ILLINOIS PROFESSIONAL LAND SURVEYOR NO. 035.003520
LICENSE EXPIRES NOVEMBER 30, 2024
DESIGN FIRM REGISTRATION NO. 184.005510
LICENSE EXPIRES APRIL 30, 2025
DATE OF FIELD WORK: NOVEMBER 11, 2024

MICHAEL S. ULIBARRI 3520 PROFESSIONAL LAND SURVEYOR STATE OF ILLINOIS LAKE ZURICH, ILLINOIS

"WE GET CORNERS OTHER PEOPLE CUT"
LAND SURVEYING, TOPOGRAPHIC MAPPING, SITE STAKING, SITE PLANS, GRADING PLANS, FEMA CERTIFICATES AND MORE
SIGHT ON SOLUTIONS, INC.
557 CAPITAL DRIVE, LAKE ZURICH, ILLINOIS 60047
PHONE: 847.356.7539 FAX: 815.578.9647 www.sightonsolutions.com
Surveyor's email: mikeu@sightonsolutions.com

SCALE: 1"=40' DATE: 11/25/24 CHECKED BY: M.S.U. DRAWN BY: K.C.

BOUNDARY & TOPOGRAPHIC SURVEY
8226 S. CASS AVENUE
DARIEN, ILLINOIS

SHEET 1 OF 2

SOS#: 24174

BOUNDARY & TOPOGRAPHIC SURVEY

LEGAL DESCRIPTION

THE EAST TWO HUNDRED EIGHTY FEET (280.0') OF LOT 1 EXCEPT THE EAST FIFTEEN FEET (15.0') THEREOF AND ALSO THE EAST TWO HUNDRED EIGHTY FEET (280.0') OF LOT 2, EXCEPT THAT PART THEREOF LYING EAST OF A LINE DRAWN FROM THE NORTHEAST CORNER OF LOT 2, TO A POINT FEFTEEN FEET (15.0') WEST OF THE SOUTHEAST CORNER OF LOT 2, IN SMART ACRES, BEING A SUBDIVISION OF THE SOUTH HALF OF THE NORTHEAST QUARTER OF SECTION 33, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF, RECORDED OCTOBER 21, 1947 AS DOCUMENT 532141, IN DUPAGE COUNTY, ILLINOIS.

N

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

LEGEND

50.00'	= MEASURED DIMENSION
(50.0')	= RECORD/DEED DIMENSION
B.S.L.	= BUILDING SETBACK LINE
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P.U.E.	= PUBLIC UTILITY EASEMENT
P.U.D.E.	= PUBLIC UTILITY & DRAINAGE EASEMENT
R.O.W.	= RIGHT-OF-WAY
BDX	= BUILDING CORNER TIE
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	= SECTION LINE
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	= CHAIN-LINK FENCE
	= WOOD FENCE
	= METAL/COMPOSITE FENCE
	= WIRE FENCE
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	= UNDERGROUND ELECTRICAL LINE
	= UNDERGROUND TELECOM LINE
	= OVERHEAD WIRES
	= TREE/BRUSH LINE
	= WETLANDS
	= FLOOD PLAIN LIMIT LINE
	= WATER LINE
780	= 1 FOOT CONTOURS
LA	= LANDSCAPE AREA
	= GUARD RAIL
	= OVERLAND STORMWATER FLOW
	= SURVEY MONUMENT DRIVEN
	= SURVEY NOTCH CUT
	= FOUND CUT CROSS
	= BENCHMARK
	= SURVEY CONTROL POINT
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	= STORM INLET (INL)
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DSO	= DOWN SPOUT TO GRADE
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	= CLEANOUT (CO)
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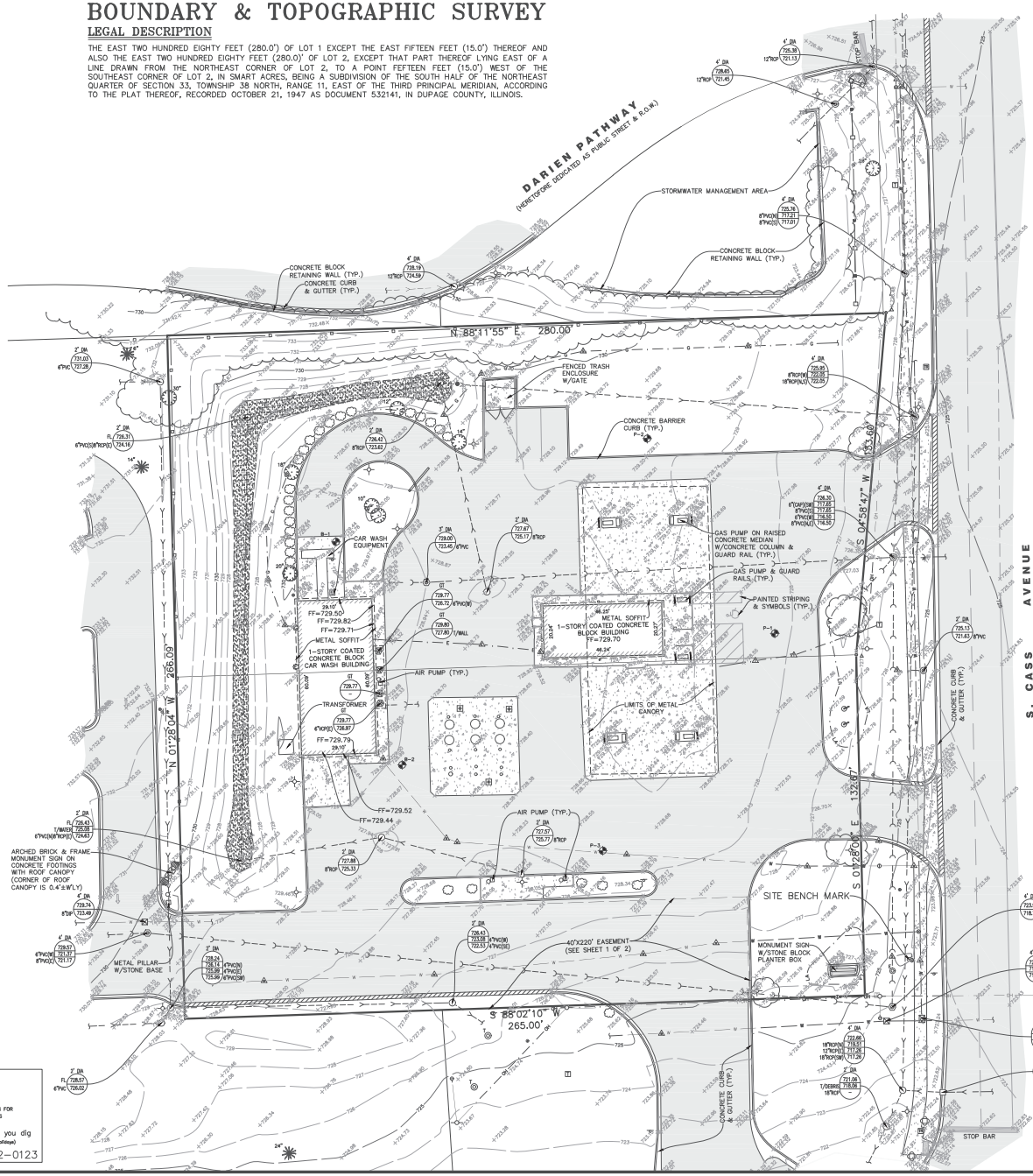
	= GRAVEL SURFACE
	= BRICK PAVERS
	= WOOD SURFACE
	= STONE PAVERS
	= HANDICAP DOME INSERT (UNLESS NOTED OTHERWISE)

SURVEYOR'S NOTES

1. THIS SURVEY WAS PREPARED FOR RTM ENGINEERING CONSULTANTS, INC.
3. NO EASEMENTS OR SETBACKS WERE CREATED BY THE FINAL PLAT OF SUBDIVISION, EASEMENT SHOWN HEREON WAS CREATED BY DOCUMENTNUMBER R86-08735; REFER TO CURRENT TITLE COMMITMENT, ZONING REGULATIONS OR OTHER DOCUMENTS FOR SETBACK, EASEMENT OR OTHER REQUIREMENTS NOT SHOWN HEREON, IF ANY.
4. BUILDING TIES ARE SHOWN FROM OUTSIDE LIMITS OF COATED CONCRETE BLOCK CONSTRUCTION.
5. DISTANCES ARE MARKED IN U.S. SURVEY FEET, NO DIMENSION SHALL BE ASSUMED BY SCALE MEASUREMENT HEREON. DISTANCES AND/OR BEARINGS SHOWN IN PARENTHESIS (456.67') ARE RECORD OR DEED VALUES, NOT FIELD MEASURED. BEARINGS ARE GEODETIC BASED ON FOUND MONUMENTATION LOCATED AND MEASURED USING TRIMBLE'S VIRTUAL REFERENCE SYSTEM (NAD 83, ILLINOIS STATE PLANE, EAST ZONE), AND THE FINAL PLAT OF SUBDIVISION.
6. MANHOLES, INLETS, OTHER UTILITY RIMS OR GRATES, SHOWN HEREON ARE FROM FIELD LOCATION OF SUCH BASED ON LID MARKINGS, AND ONLY REPRESENT SUCH UTILITY IMPROVEMENTS WHICH ARE VISIBLE FROM ABOVE GROUND AT TIME OF SURVEY, THROUGH A NORMAL SEARCH AND WALK THROUGH OF THE SITE. UNDERGROUND UTILITY LINES EXIST BUT ARE NOT SHOWN HEREON AND OBSERVATIONS HAVE NOT BEEN MADE TO DETERMINE THE EXTENT OF UTILITIES SERVING OR EXISTING ON THE PROPERTY.
7. ONLY THE IMPROVEMENTS WHICH WERE VISIBLE FROM ABOVE GROUND AT TIME OF SURVEY AND THROUGH A NORMAL SEARCH AND WALK THROUGH OF THE SITE ARE SHOWN ON THE FACE OF THIS PLAT. LAWN SPRINKLER SYSTEM HEADS, IF ANY, ARE NOT SHOWN ON THIS SURVEY.
8. THIS SURVEY MAY NOT REFLECT ALL IMPROVEMENTS ON THE PROPERTY IF SUCH ITEMS WERE HIDDEN BY LANDSCAPING, FOLIAGE, EARTH, PAVEMENT, CONCRETE OR WERE COVERED BY SUCH ITEMS AS DUMPSTERS, PALETTES, STOCK MATERIALS, EQUIPMENT, TRAILERS OR OTHER OBJECTS.
9. OTHER THAN VISIBLE OBSERVATIONS NOTED HEREON, THIS SURVEY MAKES NO STATEMENT REGARDING THE ACTUAL PRESENCE OR ABSENCE OF ANY SERVICE OR UTILITY LINE. USE OF UTILITY ATLAS RECORDS, IF ANY, AND/OR CONTROLLED UNDERGROUND EXPLORATORY EFFORTS, TOGETHER WITH UTILITY COMPANY LOCATE MARKINGS IS RECOMMENDED TO DETERMINE THE EXTENT OF UNDERGROUND SERVICE AND UTILITY LINES. CONTACT JURISDICTIONAL AGENCIES, J.U.L.I.E., D.I.G.G.E.R. OR PRIVATE UTILITY LOCATING COMPANY FOR RECORDS OR SCHEDULING A LOCATE.
10. THE LOCATION OF THE PROPERTY LINES SHOWN ON THE FACE OF THIS PLAT ARE BASED ON THE LEGAL DESCRIPTION AND INFORMATION PROVIDED BY THE CLIENT. THE PARCEL WHICH IS DEFINED MAY NOT REFLECT ACTUAL OWNERSHIP, BUT REFLECTS WHAT WAS SURVEYED. FOR OWNERSHIP, CONSULT YOUR TITLE COMPANY.
11. COMPARE THIS PLAT, LEGAL DESCRIPTION AND ALL SURVEY MONUMENTS BEFORE BUILDING, AND IMMEDIATELY REPORT ANY DISCREPANCIES TO THE SURVEYOR.

J.U.L.I.E. JOINT UTILITY LOCATING INFORMATION FOR EXCAVATORS
Call 48 hours before you dig (Excluding Sat., Sun. & Holidays)
1-800-892-0123



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SIGHT ON SOLUTIONS, INC.
557 CAPITAL DRIVE, LAKE ZURICH, ILLINOIS 60047
PHONE: 847.356.7539 FAX: 815.576.9647 www.sightonsolutions.com
Surveyor's email: mike@sightonsolutions.com

DATE	REFERENCE	DRAWN BY	CHECKED BY

SCALE: 1"=20' DATE: 11/25/24 DRAWN BY: M.S.U. CHECKED BY: K.C.

BOUNDARY & TOPOGRAPHIC SURVEY
8226 S. CASS AVENUE
DARIEN, ILLINOIS

SHEET 2 OF 2

SOS#: 24174

ZONING VARIATIONS

INFORMATION and APPLICATION

REV 12/21

Assistance

All zoning standards and procedures are described in detail in the City Code, Title 5A, which is presented in full on the City website www.darienil.us. This website also has links to this packet and related information. The City Staff is dedicated to help all those involved. Our goal is to make your experience understandable, informative, meaningful, protective of your rights, responsive to your needs, and not unnecessarily long or costly. Contact the City Planner for guidance.

Available Relief

The zoning standards are uniform throughout the City and for each zoning district. However, there may be some unique properties that would be very difficult to develop if strictly conforming to these zoning standards. So, zoning relief may be available. Property owners have the opportunity to apply for variations that would substitute a lesser zoning standard to be used for a particular development but only for properties that have a unique hardship situation. For example, locating a proposed house 35 feet setback from the rear lot line of a property in the R-1 District would not normally be allowed where the uniform zoning standard is 40 feet, however a variation might be justified if the particular lot is extra shallow.

Fair Process

The City has a process to review each zoning variation application on its merits. It starts with the property owner or buyer or builder or their representative submitting an application with all the relevant information needed. The City staff (and consultants if needed) review the application, assist the applicant on technical issues, and schedule a public hearing for the Planning and Zoning Commission. The PZC are nine volunteer residents appointed by the Mayor and City Council to evaluate all variation applications. The PZC approves or denies 'simple' variations, which are front yard or corner side yard reductions of 10% or less or side yard reductions to not less than 7.5 feet for single family houses. For all other types of variations, the PZC recommends to the Municipal Services Committee. The MSC are three aldermen who review the findings of the PZC and make their own recommendation to the full City Council. The City Council then has the final vote to approve or deny. The process usually takes about 2-3 months, but in some cases it may take longer if hearings are continued to get more information.

Transparency

A key step in the process is the public hearing held by the PZC. The application and City staff report are posted on the City website for all to see before the hearing. City staff mails notice of the hearing to neighbors and publishes it in a local newspaper and posts it in City Hall. The applicant places a sign on the property that gives notice of the hearing. Everyone is invited to attend, listen to the applicant's presentation, join in the discussion, and give their comments. Decision criteria in the Code are used to focus all input to determine the unbiased, objective reasons for or against the variation requested.

CITY OF DARIEN

ZONING VARIATIONS

SUBMITTAL CHECKLIST

X 1. APPLICATION. *See attached one-page form.*

X 2. OWNER AUTHORIZATION LETTER. If the applicant is not the owner, include letter from owner describing the relation to applicant and authorizing the applicant to act on behalf of the owner.

N/A 3. PROOF OF OWNERSHIP. If the owner name and address on the Application form is different than on the County Tax Assessor's records, then include proof of ownership such as a deed or title search and list of trust beneficiaries, partners, or corporation owners and officers.

X 4. APPLICATION FEE. Cash or check payable to the City of Darien. This is non-refundable and is used to pay for administrative expenses. *See attached Fee Schedule.*

X 5. REIMBURSEMENT AGREEMENT. Some case reviews may need extra engineering, legal, or other consultants review, publication, recording, or other costs. By signing this form, the applicant agrees to reimburse the City if there are such costs. *See attached form.*

X 6. NEIGHBOR LIST. Provide a stamped envelope with name and address of the owner of each of the neighboring properties within 250 feet of the applicant's property. City staff will put notices of the public hearing in each envelope and then mail them. These names and addresses can be obtained from the Downers Grove Township Assessor's Office 630-719-6630.

___ 7. PUBLIC NOTICE SIGN(S). The applicant must provide and post one or two signs on the property giving notice when the public hearing is scheduled. *See attached Public Hearing Signs and Hearing Schedule.*

X 8. PLAT OF SURVEY. It should show property boundaries, easements, buildings, other structures, legal description, and any other existing conditions relevant to the variation requested.

X 9. PLANS. Usually this includes a site plan, drawn to scale on the plat of survey, showing proposed improvements with appropriate dimensions. One copy is sufficient if 11"x17" or smaller. Ten copies if larger than 11"x17" or in color. Additional plans may be appropriate to show all relevant information depending on the nature of the variation being requested, such as;

- X elevation drawings
- X photos simulations
- ___ traffic studies
- X landscaping plans
- ___ other (*contact the City Planner for guidance*)

X 10. JUSTIFICATION NARRATIVE. The applicant is responsible for providing written evidence (facts) that supports a conclusion (finding) that the variation is necessary and would not cause problems. *See attached form.*

ZONING APPLICATION

CITY OF DARIEN
1702 Plainfield Road, Darien, IL 60561
www.darienil.us 630-852-5000

CONTACT INFORMATION

Lindsay Lyden	True North Energy, LLC
Applicant's Name	Owner's Name
10346 Brecksville, Rd., Brecksville OH 44141	10346 Brecksville, Rd., Brecksville OH 44141
Address, City, State, Zip Code	Address, City, State, Zip Code
(440) 792-4200	(440) 792-4200
Telephone	Telephone
llyden@truenorth.org	llyden@truenorth.org
Email	Email

PROPERTY INFORMATION

8226 Cass Ave.	0933205036
Property address	PIN Number(s)
Special Use O-30-23	Fuel Station with Car Wash
Zoning District	Current Land Use(s)

(Attach additional information per the Submittal Checklist.)

REQUEST

Brief description of the zoning approval requested. (Contact the City Planner for guidance.)

Reconstruct the site for a new fuel station and convenience store.

Lindsay Lyden
Applicant Signature

As Notary Public, in and for ~~DuPage~~ LUCAS County in ~~Illinois~~ OHIO, I do hereby certify that LINDSAY LYDEN is personally known by me to be the same person whose name is subscribed above and has appeared before me this day in person and acknowledged that they have signed this document as their own free and voluntary act, for the purposes therein set forth.
Given under my hand and seal, this 3rd day of December 2024.

Diane M Long
Notary Public

For office use only
Date Received:
Case Number:
Fee Paid:
Hearing Date:

NOTARIAL SEAL STATE OF OHIO

DIANE M. LONG
Notary Public, State of Ohio
My Commission Expires: March 31, 2025

CITY OF DARIEN
1702 Plainfield Road, Darien, Illinois 60561

DEVELOPMENT APPLICATIONS

REIMBURSEMENT AGREEMENT

The undersigned applicant for development approval acknowledges that the City of Darien may seek advice and council from professional sources outside the employee staff of the City of Darien. The purpose of such consultation would be for traffic impact analysis, engineering, stormwater, legal, or other such reviews related to variation, special use, rezoning, subdivision, site plan, permits, or other proposals submitted to the City of Darien by the applicant. The City of Darien may also incur expenses as part of the development review and approval process, such as copying, mailing, publication, recording, inspecting, or other such activities.

As an express condition in submitting said application and the consideration thereof by the City of Darien, the applicant both personally and on behalf of the property owner(s), agrees to reimburse the City of Darien forthwith for all costs and expenses that may be incurred by the City of Darien for such consultation and activities.

The applicant hereby accepts and acknowledges that if at any time the application fails to pay for such consultation and activity costs in accordance with the direction of the City of Darien, the no further action will be taken by the City of Darien in relation to the application until such time as said payment is paid in full.

Lindsay Lyden

Applicant's Name (print)

Lindsay Lyden

Applicant's Name (signature)

10346 Brecksville, Rd., Brecksville OH 44141

Applicant's Address

December 4, 2024

Date

CITY OF DARIEN

Fee Schedule
Ordinance O-38-92

	Residential		Commercial	
	<5 acres	**> 5 acres**	**< 5 acres**	**> 5 acres**
Rezoning	385.00	435.00	485.00	510.00
Special Use	510.00	535.00	585.00	610.00
Special Use Amendment	460.00	460.00	510.00	560.00
Special Use PUD	600.00	650.00	700.00	750.00
Major PUD Amendment	485.00	510.00	560.00	610.00
Minor PUD Amendment	385.00	410.00	435.00	460.00

	Residential			Commercial
	< 5 lots	**> 5 lots**	**> 10 lots**	
Preliminary Plat	205.00	230.00 + 15.00 per lot	305.00 + 15.00 per lot	305.00 + 30.00 per lot
Final Plat	180.00	205.00 + 10.00 per lot	255.00 + 10.00 per lot	255.00 + 20.00 per lot

	Residential		Commercial
	Single lot	**Multi lot**	
Major Variation	360.00	460.00	485.00
Simple Variation	75.00		

	One lot	**> 1 lot**
Annexation Petition	30.00	50.00
Annexation Agreements	200.00	
Annexation Agreement Amendment	200.00	
Text Amendment	400.00	
Appeal of Administrative Decisions/Interpretation	250.00	

For new development/redevelopment (excluding petitions involving a single-family residence):
$2,000.00 deposit required when the petition is submitted, to be returned once all invoices from professional services are paid (engineering, legal and traffic reviews, etc.)

The bill incurred for publishing the public hearing notice in the newspaper will be billed to the petitioner (excluding petitions involving a single-family residence.)

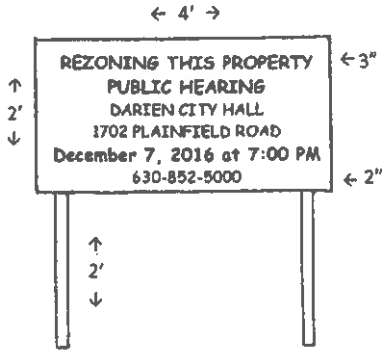
CITY OF DARIEN

ZONING APPLICATIONS

PUBLIC NOTICE SIGNS

Applicants requesting zoning approval of a map amendment, special use, variation or annexation are responsible for obtaining, posting, and maintaining signs on the subject property to inform the public about the application and the public hearing. See City Code Section 5A-2-3 (B).
Contact the City Planner for guidance.

1. Post sign(s) for 15 – 30 days before hearing and remove within 3 days after City Council vote.
2. Place one sign in front yard where most visible to drivers, but not in parkway.
3. Place a second sign for large or usual lots.
4. Signs should be made of durable materials to withstand weather.
5. Signs are to be self-supporting – not attached to buildings, fences, trees.
6. Signs should be legible from street – light background, dark letters – no hand lettering.
7. Minimum sizes 8 – 32 square feet – see samples below.



For lots less than 1 acre

For lots 1 acre or larger

CITY OF DARIEN
PLANNING AND ZONING COMMISSION

2022 Schedule

First and Third Mondays | **Fifteen Days Before Hearing** | **Forty-Five Days Before Hearing**

Meeting Dates	Public Hearing Notice and Sign Posting Deadlines	Submittal Deadlines
January 5	December 21, 2021	November 22, 2021
January 19	January 4	December 6, 2021
February 2	January 18	December 28, 2021**
February 16	February 1	January 3
March 2	February 15	January 17
March 16	March 1	January 31
April 6	March 22	February 22**
April 20	April 5	March 7
May 4	April 19	March 21
May 18	May 3	April 4
June 1	May 17	April 18
June 15	May 31	May 2
July 6	June 21	May 23
July 20	July 5	June 6
August 3	July 19	June 20
August 17	August 2	July 5**
September 7	August 23	July 25
September 21	September 6	August 8
October 5	September 20	August 22
October 19	October 4	September 6**
November 2	October 18	September 19
November 16	November 1	October 3
December 7	November 22	October 24
December 21	December 6	November 7

Meetings are Held in the Council Chambers at Darien City Hall, 1702 Plainfield Road, Beginning at 7:00 PM.

****Due to City Hall Closure for Holiday, Please Note Date Change.**

CITY OF DARIEN

ZONING VARIATIONS

JUSTIFICATION NARRATIVE

Purpose

To be consistent and fair, the City is obligated to make decisions on zoning variation requests based on findings-of-fact. The Applicant should write a justification narrative that contains evidence (facts) that support a conclusion (finding) that the variation is necessary and would not cause problems. It should include: a) explanation of why the variation is being requested, b) describe the 'hardship condition' of the property that makes it difficult to conform, c) estimate the impact on neighbors , and d) respond to each of the decision criteria below.

Decision Criteria (See City Code Section 5A-2-2-3)

2a. The property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulations in the zone.

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

2c. The variation if granted will not alter the essential character of the locality.

3a. Essential Need? The owner would suffer substantial difficulty or hardship and not mere inconvenience or a decrease in financial gain if the variation is not granted.

3b. Problem with Property? There is a feature of the property such as slope or shape or change made to the property, which does not exist on neighboring properties, which makes it unreasonable for the owner to make the proposed improvement in compliance with the Zoning Code. Such feature or change was not made by the current owner and was not known to the current buyer at the time of purchase.

3c. Smallest Solution? There is no suitable or reasonable way to redesign the proposed improvements without incurring substantial difficulty or hardship or reduce the amount of variation required to make such improvements.

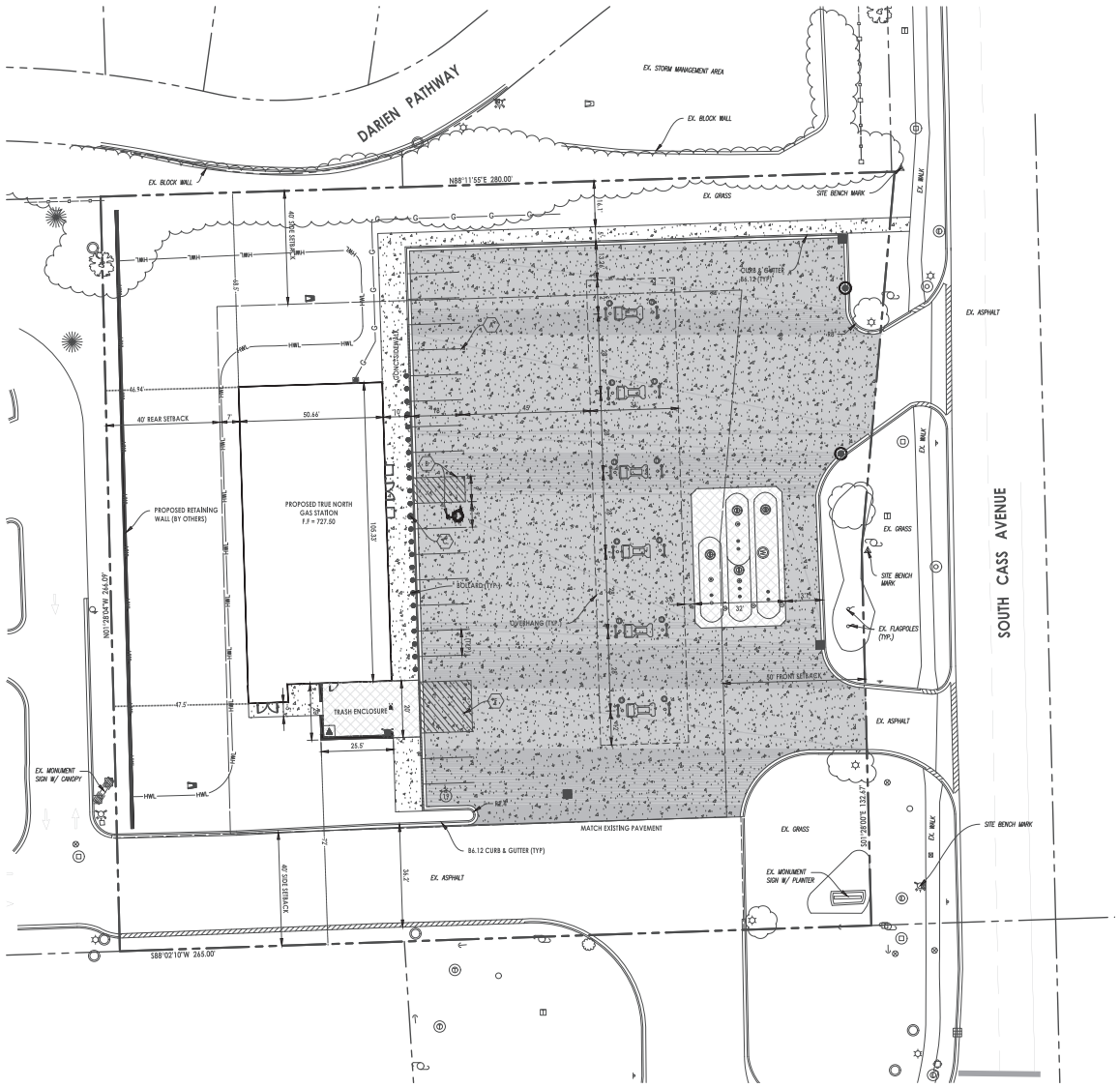
3d. Create Neighbor Problem? The variation, if granted, will not cause a substantial difficulty, undue hardship, unreasonable burden, or loss of value to the neighboring properties.

3e. Create Community Problem? The variation, if granted, may result in the same or similar requests from other property owners within the community, but will not cause an unreasonable burden or undesirable result within the community.

3f. Net Benefit? The positive impacts to the community outweigh the negative impacts.

3g. Sacrifice Basic Protections? The variation, if granted, will comply with the purposes and intent of the Zoning Code set forth in Section 5A-1-2(A) and summarized as follows; to lessen congestion, to avoid overcrowding, to prevent blight, to facilitate public services, to conserve land values, to protect from incompatible uses, to avoid nuisances, to enhance aesthetic values, to ensure an adequate supply of light and air, and to protect public health, safety, and welfare.

MEMO



NOTES:

1. ALL DIMENSIONS ALONG CURB LINES ARE TO FACE OF CURB, UNLESS NOTED OTHERWISE.
2. BUILDINGS AND ADJACENT TO BUILDING IMPROVEMENTS SHOWN ON THESE PLANS ARE BASED UPON THE BUILDING PLANS PROVIDED BY OTHERS AT THE DATE OF THESE PLANS BEING PREPARED. BUILDING PLANS NORMALLY CONTINUE TO CHANGE AFTER SITE PLANS HAVE BEEN APPROVED. THEREFORE THE CONTRACTOR SHALL USE THE BUILDING PLANS FOR FINAL BUILDING IMPROVEMENTS, AND VERIFY THAT ALL ADJACENT IMPROVEMENTS ARE CONSISTENT WITH THE DESIGN INTENT AND REQUIREMENTS OF THE SITE PLANS. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF CLARIFICATION IS NEEDED, OR IF CONFLICTS OR INCONSISTENCIES EXIST.
3. ADA DETECTIBLE WARNING STRIPS SHALL BE CAST IRON TILES, WET SET INTO CONCRETE SURFACE, PER MANUFACTURERS INSTALLATION RECOMMENDATIONS.
4. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY SIGHT ON SOLUTIONS, INC.

(X) SIGNING AND STRIPING SCHEDULE

A. 4" YELLOW STRIPING
B. YELLOW HANDICAP PARKING STRIPING (SEE DETAIL)
C. "ACCESSIBLE" PARKING STALL SIGN ASSEMBLY (S250 R1NE)
D. "STOP" SIGN R1-1 (30"X30")
E. 24" WHITE THERMOPLASTIC STOP BAR
F. 4" PAINTED CROSS STRIPING 4' C-C
G. DIRECTIONAL ARROW
H. RIGHT TURN ONLY R3-5 (24"X30")
I. THERMOPLASTIC RIGHT TURN ONLY STRIPING
J. 4" YELLOW LINES, 5.5' C-C SKIP-DASH AND SOLID
K. 6" SOLID WHITE THERMOPLASTIC.
L. "NO LEFT TURN" SIGN (30"X30")
M. 6" WHITE THERMOPLASTIC 6' SKIP 2' DASH

STRIPING NOTE: ON-SITE PAVEMENT MARKINGS AND GRAPHICS SHALL CONSIST OF TWO (2) COATS OF TRAFFIC-RATED PAINT APPLIED A MINIMUM OF 30 DAYS APART. STRIPING AND GRAPHICS AT ENTRY DRIVES SHALL BE THERMOPLASTIC AS NOTED. MATERIALS SHALL MEET ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARDS.

(X) PARKING SUMMARY

	PROPOSED
REGULAR STALLS (9'x18')	18
ACCESSIBLE STALLS (16'x18')	1
TOTAL STALL COUNT	19

LEGEND:

- ADA TRUNCATED DOMES
- EXISTING BARRIER CURB
- EXISTING CURB AND GUTTER
- EXISTING CURB AND GUTTER - DEPRESSED
- B6.12 CURB AND GUTTER UNLESS NOTED OTHERWISE
- B6.12 CURB AND GUTTER - DEPRESSED
- B6.12 CURB AND GUTTER - TRANSITION (ZERO TO FULL HEIGHT)
- BARRIER CURB AND GUTTER UNLESS NOTED OTHERWISE
- BARRIER CURB AND GUTTER - DEPRESSED
- B6.12 CURB AND GUTTER - TRANSITION (ZERO TO FULL HEIGHT)
- SAWCUT LINE
- CONCRETE PAVEMENT FOR TANK PAD, DUMPSTER ENCLOSURE, AND APRONS: 8" P.C. CONCRETE (CLASS PV) W/ 6x6 WWF EACH WAY; 6" AGGREGATE BASE COURSE, TYPE B, CA-6
- CONCRETE PAVEMENT FOR FUEL AND ISLAND PARKING: 6" P.C. CONCRETE (CLASS PV) W/ #4 REBAR @12" O.C. EACH WAY; 6" AGGREGATE BASE COURSE, TYPE B, CA-6
- CONCRETE SIDEWALK: 5" P.C. CONCRETE (CLASS SI); 4" AGGREGATE BASE COURSE, TYPE B, CA-6

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

NO	DATE	DESCRIPTION
1	04/26/19	INTERNAL REVIEW

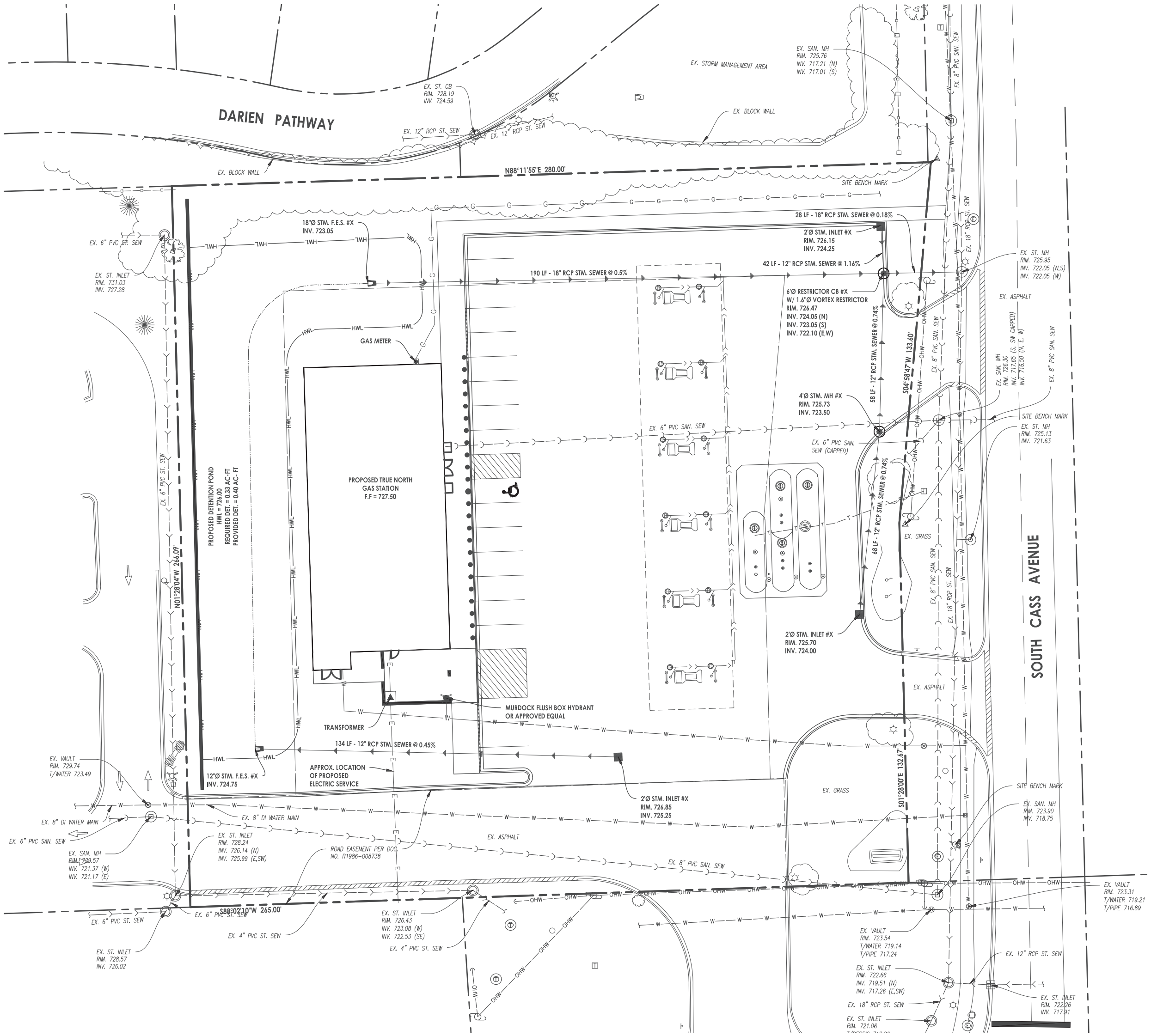
rtm engineering consultants
620 E. Algonquin Road
Suite 250
Schaumburg, IL 60173
Telephone: (847) 795-4280
www.rtmec.com
IL Design Firm: 184.008877-0002

SHEET NAME: SITE GEOMETRIC PLAN

PROJECT NAME: TRUENORTH
8226 CASS AVE.
DARIEN, IL

PROJECT No. TN 984

SHEET No. C2.0
OF 13 SHEETS



NOTES:

1. EX. ITEMS SHALL BE FIELD VERIFIED. RELOCATION OR ADJUSTMENT MAY BE NEEDED. CONTRACTOR TO VERIFY.
2. CONTRACTOR SHALL VERIFY ALL WORK, INCLUDING BUT LIMITED TO, SIZES, MATERIALS AND LOCATION, WITH UTILITY COMPANIES PRIOR TO INSTALLATION.
3. VERIFY SERVICE LOCATIONS WITH BUILDING PLANS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
4. RIM GRADES ALONG CURBS ARE FLOW LINE ELEVATIONS.
5. SEE SPECIFICATIONS SHEET FOR ALL STORM, SANITARY, AND WATER PIPE AND STRUCTURE SPECIFICATIONS.
6. ALL UTILITY TIE DIMENSIONS ARE FROM CENTER OF UTILITY AND TO BACK OF CURB WHEN TIED TO CURB LINES, UNLESS OTHERWISE NOTED.
7. CONTRACTOR TO INSPECT EXISTING SEWER AT POINT OF CONNECTION. CONTRACTOR TO VERIFY THAT EXISTING PIPE IS IN GOOD WORKING CONDITION. CONTRACTOR TO REPAIR AS REQUIRED.
8. CONTRACTOR TO NOTIFY OWNER/ENGINEER IF CONFLICTS OCCUR.
9. NEW OPENING/CONNECTIONS TO EXISTING COMBINED AND SANITARY MANHOLE/STRUCTURES SHALL BE CORE-DRILLED AND UTILIZE RUBBER BOOTS CONFORMING TO ASTM C-923.

GRAPHIC SCALE
20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

No.	DATE	DESCRIPTION
0	04/26/19	INTERNAL REVIEW

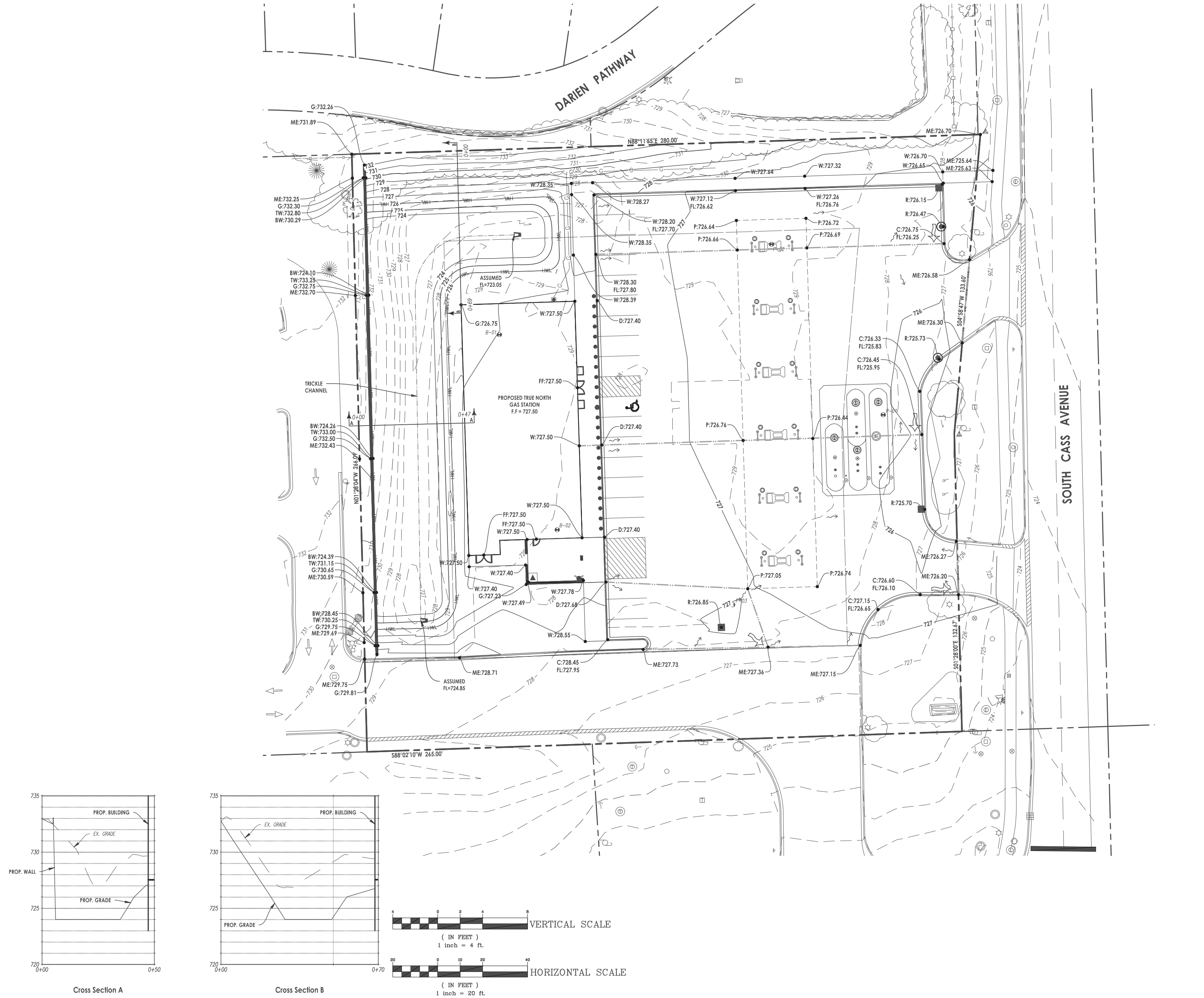
rtm engineering consultants
650 E. Algonquin Road
Suite 250
Schaumburg, IL 60173
Telephone: (847) 756-4180
www.rtmec.com
IL Design Firm: 184006771-0002

SHEET NAME: UTILITY PLAN

PROJECT NAME: TRUENORTH
8226 CASS AVE.
DARIEN, IL

PROJECT No. TN 984

SHEET No. C3.0
OF 13 SHEETS



NOTES:

1. PROPOSED ELEVATIONS SHOWN ON PROPOSED CURB LINES ARE FLOW LINE ELEVATIONS UNLESS NOTED OTHERWISE. ADD 0.50' TO OBTAIN TOP OF CURB ELEVATIONS.
2. A CONSTANT SLOPE SHALL BE MAINTAINED BETWEEN SPOT GRADES.
3. 2% MINIMUM SLOPE AND 3:1 MAXIMUM SLOPE IN TURF AREAS AND 1% MINIMUM SLOPE AND 5% MAXIMUM SLOPE IN PAVED AREAS.
4. RIM GRADES ALONG CURBS ARE FLOW LINE ELEVATIONS.
5. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY SIGHT ON SOLUTIONS, INC.

LEGEND:

	EXISTING	PROPOSED
1 FOOT CONTOUR		
5 FOOT CONTOUR		
GRADE	× 0.00	0.00
RIDGE LINE		
TOP OF CURB		C:XX.XX
TOP OF WALK		W:XX.XX
TOP OF PAVEMENT		P:XX.XX
FLOW LINE @ DEPRESSED CURB		D:XX.XX
FLOW LINE		F:XX.XX
EDGE OF PAVEMENT		E:XX.XX
FINISHED GROUND		G:XX.XX
RIM GRADE		R:XX.XX
MATCH EXISTING		ME:XX.XX
FINISHED FLOOR		FF:XX.XX
FLOW ARROW		
OVERFLOW		

No.	DATE	DESCRIPTION

No.	DATE	DESCRIPTION
0	04/26/19	INTERNAL REVIEW

rtm engineering consultants

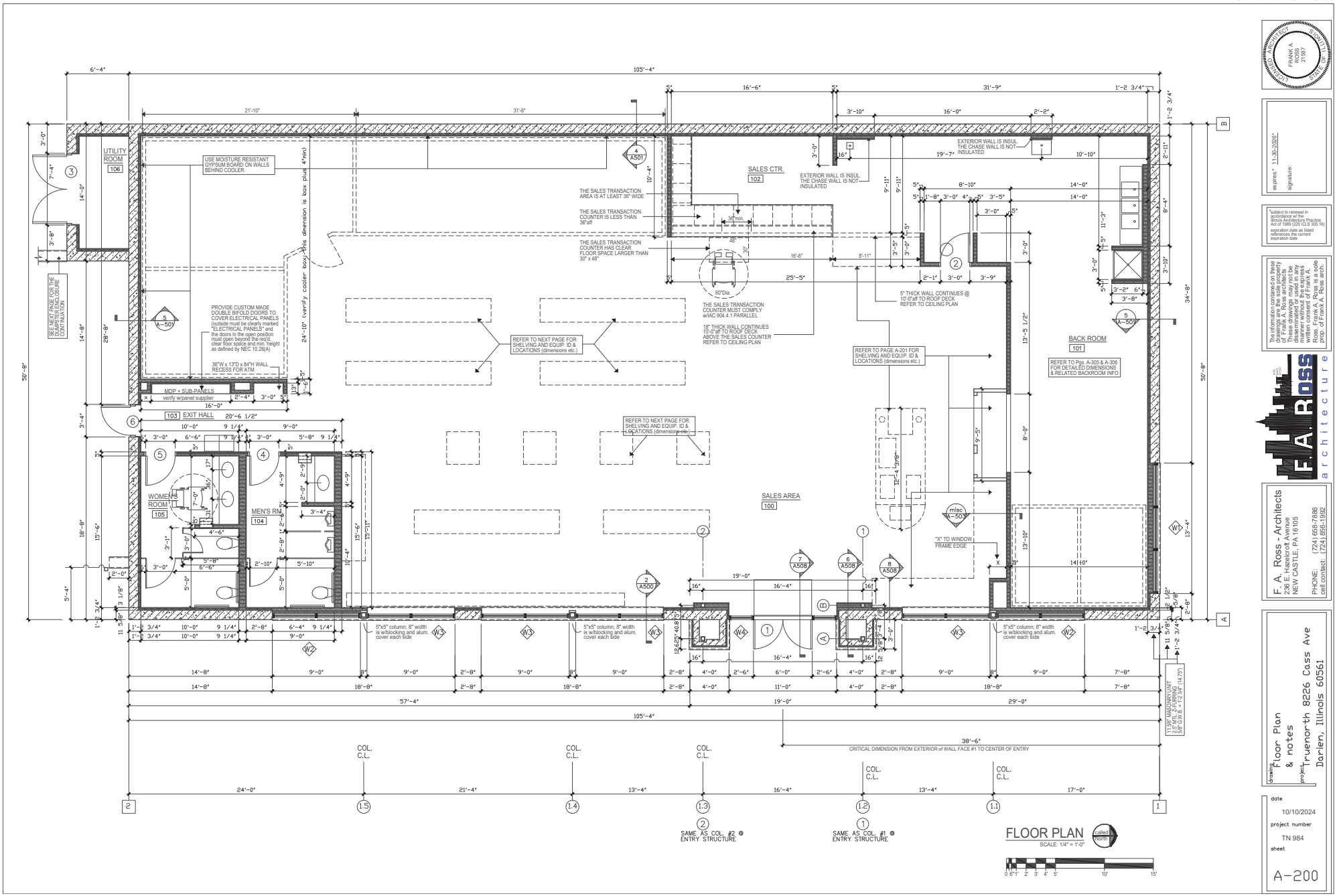
650 E. Algonquin Road
Suite 250
Schaumburg, IL 60173
Telephone: (847) 756 - 4180
www.rtmec.com
IL Design Firm: 184006777-0002

SHEET NAME
GRADING PLAN

PROJECT NAME
TRUENORTH
8226 CASS AVE.
DARIEN, IL

PROJECT No. TN984

SHEET No. C4.0
OF 13 SHEETS



FLOOR PLAN
SCALE: 1/4" = 1'-0"

FRANK A. ROSS 21587 STATE OF ILLINOIS REGISTERED ARCHITECT

expires:* 11-30-2026*
signature:

Subject to renewal in accordance with the Illinois Architecture Practice Act of 1989 (225 ILCS 305 16)
expiration date as listed references the current expiration date

F. A. Ross - Architects
236 E. Hazelcroft Avenue
NEW CASTLE, PA 16105
PHONE: (724) 658-7886
cell contact: (724) 856-1992

F.A. Ross architecture

drawing: Floor Plan & notes
project: Truenorth 8226 Cass Ave Darien, Illinois 60561

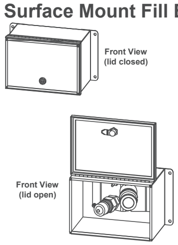
date 10/10/2024
project number TN 984
sheet A-200

FRONT ELEVATION

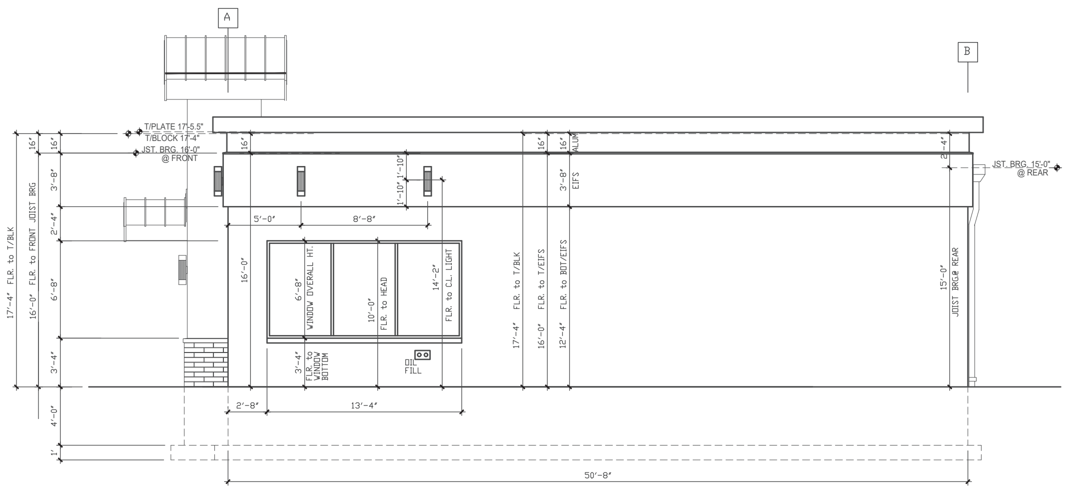
SCALE: 1/4" = 1'-0"

DETAIL A (pictorial view, verify with supplier)

Surface Mount Fill Box



- Fill Box Dimensions:
  - Height = 7"
  - Width = 13" (including flange)
  - Depth = 6"
- Materials of Construction:
  - Stainless steel enclosure
  - Stainless steel inner panel
- Features:
  - Integral locking latch (key retained by RTI employees)
  - Food-grade new oil coupler
  - Incompatible waste oil coupler
  - Electrical connector for overfill protection
  - Drip tray to catch residual oil
- Mounting details:
  - Surface mounted
  - 3" diameter hole through wall (sealed)
  - Locate within 15 feet of waste oil tank (longer distances possible, but delivery times increase)
  - Locate away from drive-thru (if applicable)



RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

LICENSED ARCHITECT FRANK A. ROSS 21587 STATE OF ILLINOIS

expires: 11-30-2026*

signature:

F. A. Ross - Architects
236 E. Hazelcroft Avenue
NEW CASTLE, PA 16105
PHONE: (724) 658-7886
cell contact: (724) 856-1992

*subject to renewal in accordance w/ the Illinois Architecture Practice Act of 1989 (225 ILCS 305/16) expiration date as listed references the current expiration date

F. A. ROSS architecture

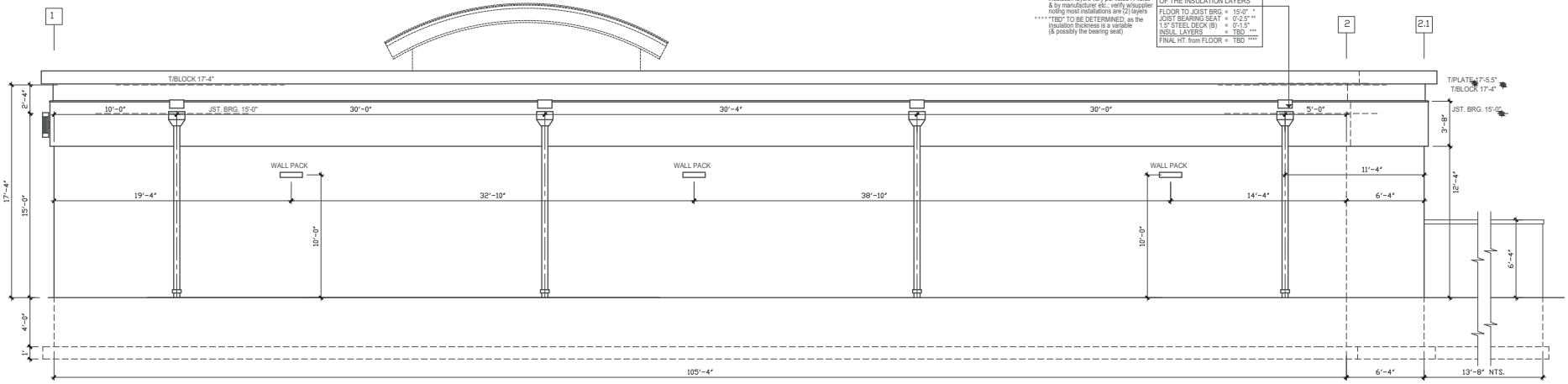
drawing: Front and side dimension elevations

project: Truenorth 8226 Cass Ave Darien, Illinois 60561

date 10/10/2024

project number TN 984

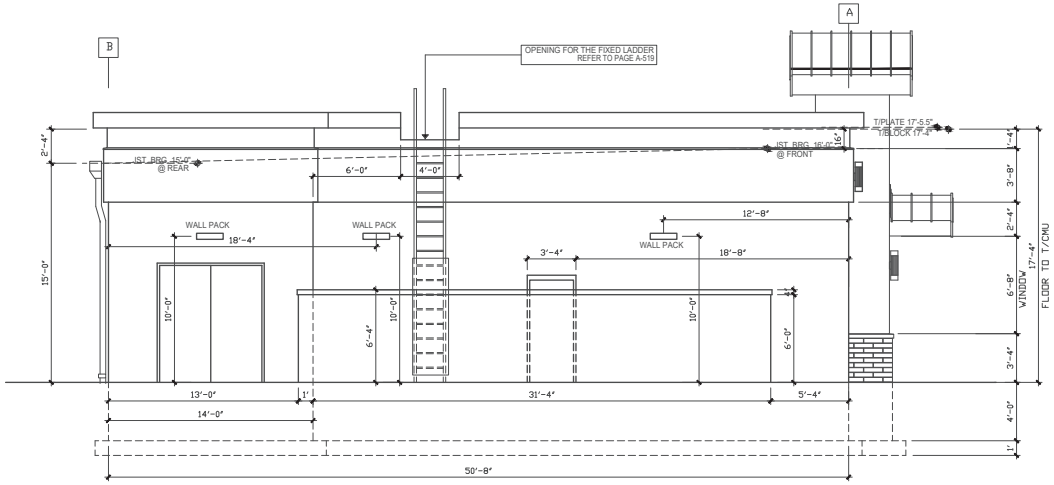
sheet A-400



REAR ELEVATION

SCALE: 1/4" = 1'-0"

0 6" 1' 2' 3' 4' 5' 10' 15'



LEFT ELEVATION

SCALE: 1/4" = 1'-0"

0 6" 1' 2' 3' 4' 5' 10' 15'

FRANK A. ROSS 21587 STATE OF ILLINOIS REGISTERED ARCHITECT

expires:* 11-30-2026*

signature:

*subject to renewal in accordance with the Illinois Architecture Practice Act of 1989 (225 ILCS 305/16)

expiration date as listed references the current expiration date

F.A. ROSS architecture

F. A. Ross - Architects
236 E. Hazelcroft Avenue
NEW CASTLE, PA 16105
PHONE: (724) 658-7886
cell contact: (724) 856-1992

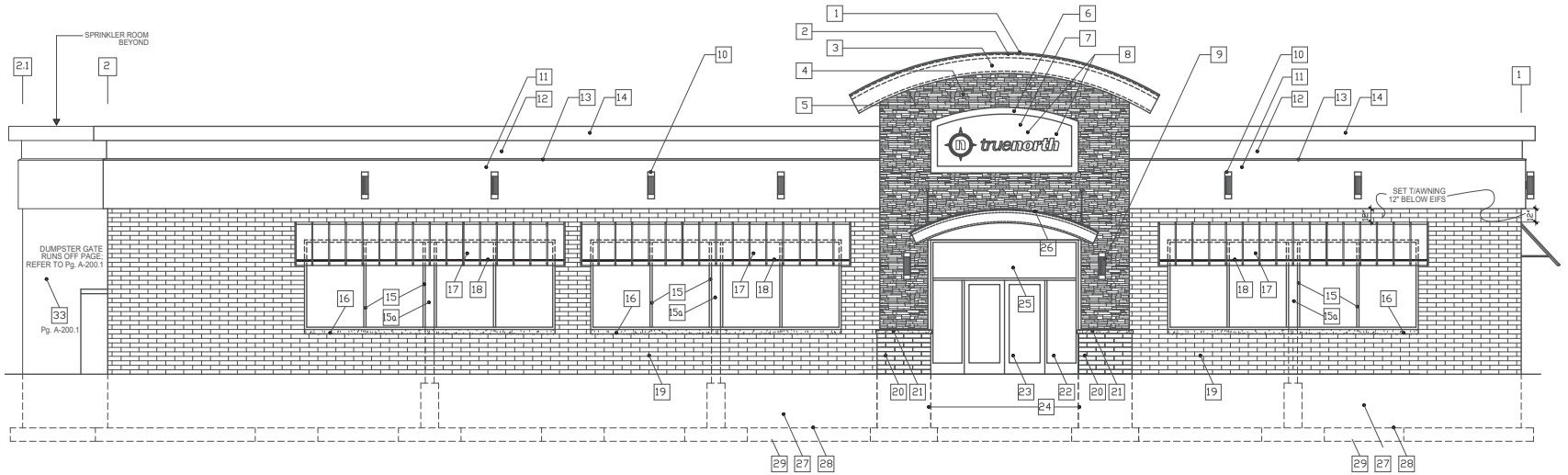
graphic: Rear and side dimension elevations

project: Truenorth 8226 Cass Ave Darien, Illinois 60561

date 10/10/2024

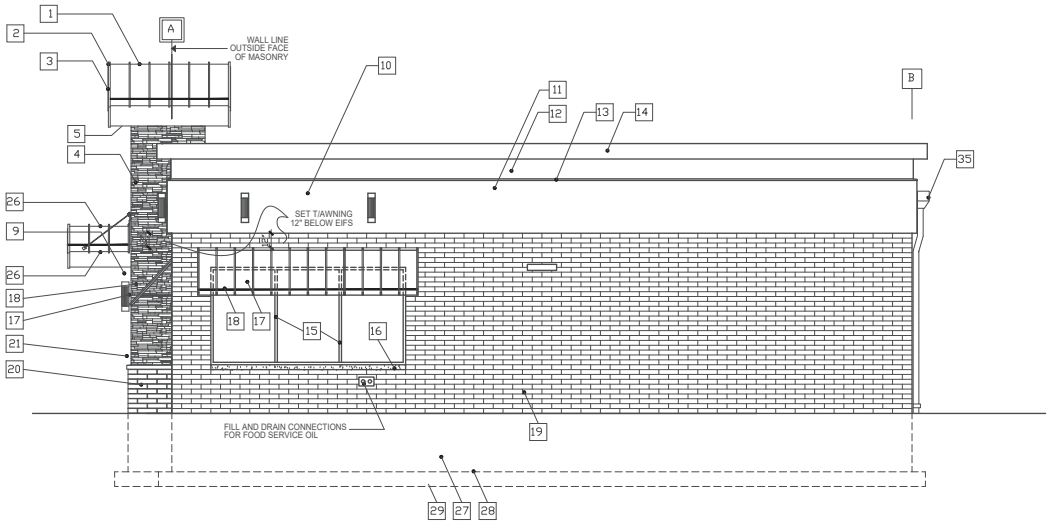
project number TN 984

sheet A-401



FRONT ELEVATION

SCALE: 1/4" = 1'-0"



RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

FRANK A. ROSS 21587 REGISTERED ARCHITECT STATE OF ILLINOIS

expires:* 11-30-2026*

signature:

*subject to renewal in accordance with the Illinois Architecture Practice Act of 1989 (225 ILCS 305 16) expiration date as listed references the current expiration date

The information contained on these drawings is the property of Frank A. Ross architects These drawings may not be duplicated, used or disclosed in any manner without the express written consent of Frank A. Ross. Frank A. Ross is a sole prop. of Frank A. Ross arch.

F.A. ROSS architecture

F. A. Ross - Architects
236 E. Hazelcroft Avenue
NEW CASTLE, PA 16105
PHONE: (724) 658-7886
cell contact: (724) 856-1992

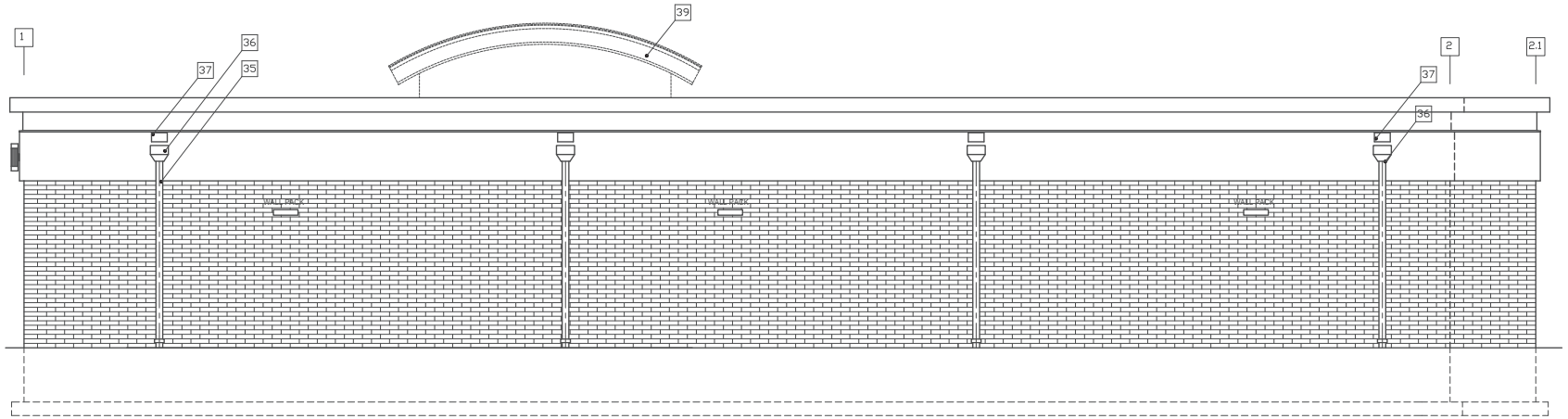
drawing: Front and side materials elevations

project: Truenorth 8226 Cass Ave Darien, Illinois 60561

date 10/10/2024

project number TN 984

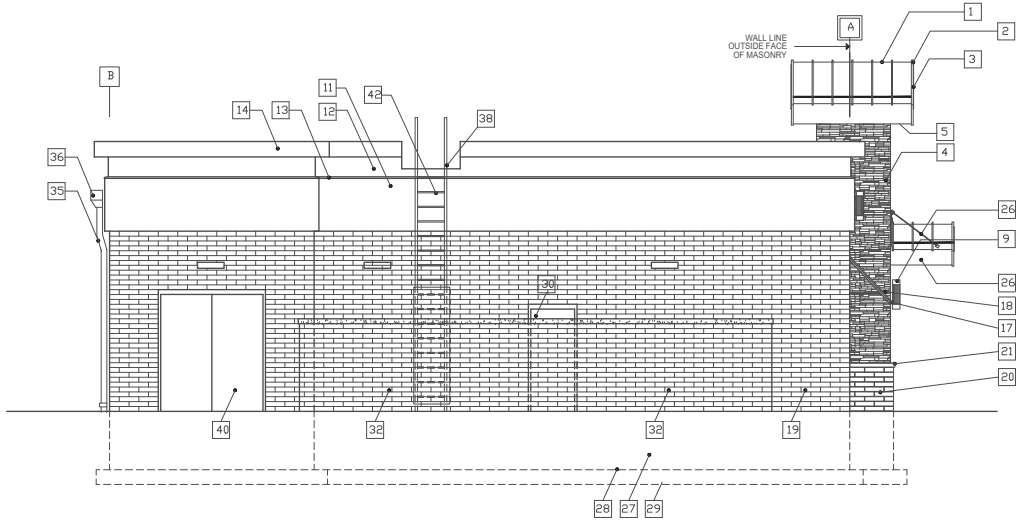
sheet A-402



REAR ELEVATION

SCALE: 1/4" = 1'-0"

0 6"1' 2' 3' 4' 5' 10' 15'



RIGHT ELEVATION

SCALE: 1/4" = 1'-0"

0 6"1' 2' 3' 4' 5' 10' 15'

FRANK A. ROSS 21587 REGISTERED ARCHITECT STATE OF ILLINOIS

expires:* 11-30-2026*

signature:

*subject to renewal in accordance with the Illinois Architecture Practice Act of 1989 (225 ILCS 305 16)

expiration date as listed references the current expiration date

The information contained on these drawings is the property of Frank A. Ross architects These drawings may not be duplicated, used or disclosed in any manner without the express written consent of Frank A. Ross. Frank A. Ross is a sole prop. of Frank A. Ross arch.

F.A. ROSS architecture

F. A. Ross - Architects
236 E. Hazelcroft Avenue
NEW CASTLE, PA 16105
PHONE: (724) 658-7886
cell contact: (724) 856-1992

graphic: Rear and side materials elevations

project: Truenorth 8226 Cass Ave Darien, Illinois 60561

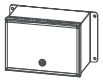
date 10/10/2024

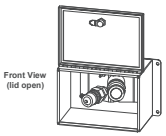
project number TN 984

sheet A-403

COOKING OIL FILL PORT
(pictorial view, verify with supplier)
(obtain supplier cut sheet for both)

Surface Mount Fill Box





- Fill Box Dimensions:
  - Height = 7"
  - Width = 13" (including flange)
  - Depth = 6"
- Materials of Construction:
  - Stainless steel enclosure
  - Stainless steel inner panel
- Features:
  - Integral locking latch (key retained by RTI employees)
  - Food-grade new oil coupler
  - Incompatible waste oil coupler
  - Electrical connector for overfill protection
  - Drip tray to catch residual oil
- Mounting details:
  - Surface mounted
  - 3" diameter hole through wall (sealed)
  - Locate within 15 feet of waste oil tank (longer distances possible, but delivery times increase)
  - Locate away from drive-thru (if applicable)

ELEVATIONS NOTES

X	CODE NOTES ELEVATIONS
1	STANDING SEAM METAL ROOF; CUSTOM CURVED ATOP SEGMENTAL ARCH AT ENTRY.
2	CUSTOM ALUM. DRIP EDGE ALONG SIDE EDGE OF CUSTOM CURVED ARCH ATOP ENTRY.
3	CUSTOM CURVED ALUM. FASCIA AT THE CUSTOM CURVED ARCH ATOP ENTRY.
4	ADHERED TYPE STONE; REFER TO SPECIFICATIONS & SECTIONS
5	CUSTOM CURVED ALUM. "F" MOULD CHANNEL AT EACH END OF ENTRY AND STANDARD LINEAR SOFFIT PANELS SET IN ALONG THE RADIUS.
6	FRAMED EDGE OF EIFS TO CREATE THE SIGN PANEL RECESS.
7	BACK SURFACE OF EIFS TO CREATE THE SIGN PANEL RECESS. (concealed can light)
8	NON-ILLUMINATED (not internally) SIGN by OWNER (external can light shines on sign)
9	ENTRY WALL SCONCE; REFER TO LIGHTING PLAN.
10	MAIN WALL SCONCE; REFER TO LIGHTING PLAN.
11	EIFS WALL SURFACE; REFER TO WALL SECTIONS.
12	ALUMINUM WALL SURFACE; REFER TO WALL SECTIONS.
13	ALUMINUM FLASHING AT TRANSITION BETWEEN EIFS AND ALUM. SURFACES REFER TO WALL SECTIONS.
14	OVERHEAD ALUMINUM FASCIA AT THE PARAPET; REFER TO WALL SECTIONS.
15	BRONZE ANODIZED THERMALLY BROKEN WINDOW FRAME AND INSULATED GLASS; REFER TO WALL SECTIONS.
16	LIMESTONE WINDOW SILL.
17	CUSTOM MADE STANDING SEAM METAL CANOPY ATOP WINDOW; REFER TO MFG. SHOP DRAWINGS.
18	SNOW AND ICE RETENTION BAR OR GUARDS IN COLOR BRONZE.
19	12" HALF HEIGHT (2) courses = 8" w/mortar) SET IN RUNNING BOND.
20	12" HALF HEIGHT (2) courses = 8" w/mortar) SET IN RUNNING BOND.
21	LIMESTONE SILL BETWEEN THE BRICK AT THE ENTRY BASE AND THE STONE ABOVE.
22	BRONZE ANODIZED THERMALLY BROKEN DOOR FRAME AND SIDELITE INSULATION GLASS; REFER TO WALL SECTIONS.
23	BRONZE ANODIZED DOUBLE ENTRY DOOR; REFER TO DOOR SCHEDULE.
24	REINFORCED FOUNDATION FOR THE ENTRY STRUCTURE.
25	BRONZE ANODIZED TRANSOM FRAME AND GLASS; REFER TO DOOR SCHEDULE.

X	CODE NOTES ELEVATIONS CONT.
26	CUSTOM ARCHED CANOPY ATOP THE ENTRY DOOR; REFER TO CANOPY SHOP DRAWINGS. PLEASE NOTE YOU MUST OBTAIN A SHOP DRAWING PLAN AND IT MUST SHOW THE BLOCKING FOR ALL THE ARCH AND FOR THE ATTACHMENT AREA; AND DO NOT INSTALL THE STONE UNTIL THE ARCHTIS INSTALLED • PROVIDE SOLID BLOCKING AND GROUTING IN CMU LOCATIONS FIRST; PER MFG.'S SHOP DRAWING • AFTER ARCH IS IN PLACE INSTALL TOP FLASHING TO FLASH WATER OVER AND NOT BEHIND AWNING • AFTER ARCH IS AND FLASHING ARE IN PLACE AND EIFS SIGN RECESS IN PLACE; THE STONE CAN BE SET
27	REINFORCED CONCRETE FOUNDATION WALL; REFER TO FOUND. PLANS AND SECTIONS AND SCHEDULES.
28	TOP OF FOUNDATION, FOUNDATION PLAN FOR ELEV.
29	BOTTOM OF FOUNDATION; REFER TO FOUNDATION PLAN FOR ELEV.
30	HOLLOW METAL DOOR, SEE DOOR COLOR PAINTED TO MATCH MASONRY
31	WALL PACK BRONZE COLOR, REFER TO LIGHTING PLAN
32	DUMPSTER WALL; REFER TO WALL SECTION No.3
33	COMPOSITE MATERIAL, SCRATCH AND DENT RESISTANT, TREX COLOR "ROPE SWING"
34	OPENING IN DUMPSTER FOR MAN DOOR
35	ALUMINUM DOWNSPOUT; REFER TO THE SECTION PAGE WITH DETAILS AND ALSO REFER TO ROOF PLAN.
36	ALUMINUM CONDUCTOR HEAD; REFER TO THE SECTION PAGE WITH DETAILS AND ALSO REFER TO ROOF PLAN.
37	MEMBRANE LINED SCUPPER OPENING ATOP THE CONDUCTOR HEAD AND ALSO TO SERVE AS AN EMERG. OVERFLOW. ALSO REFER TO ROOF PLAN.
38	MEMBRANE LINED PARAPET OPENING IN THE LOCATION AS SHOWN FOR ROOF ACCESS; ALSO REFER TO THE ROOF PLAN.
39	BACKSIDE OF THE ENTRY STRUCTURE; LINE WITH MEMBRANE.
40	LIMESTONE SILL. REFER TO WALL SECT.
41	OIL FILL & WASTE OIL PORTS PER MFG.; ONE FOR FILL AND ONE FOR WASTE
42	PARAPET OPENING FOR FIXED LADDER. FIXED LADDER w/TOP GRAB RAILS AND SECURITY PANEL AT BOTTOM (TO PREVENT UNAUTHORIZED USE)

**REFER TO FLOOR PLAN AND WINDOW SCHEDULE FOR OPAQUE WINDOWS

BUILDING MATERIAL LISTING

BUILDING MATERIAL COLORS
ALL EIFS MATERIALS EIFS COLOR: 3'-8" BAND DRYVIT COLOR 481 CLAY
ALL FINISH ALUMINUM (except window frames) FASCIA, SOFFIT, COPING, DOWNSPOUT AND CONDUCTOR HEAD, & MISC. TRIM TO BE DARK BRONZE, SUBMIT SAMPLE TO LINDSAY LYDEN.
THROUGH THE WALL BRICK 12" HALF COURSE HIGH (4"nominal or 3 5/8" actual height) (16" stretcher). QUIK-BRIK IN COLOR MESABA CALM. IF MANUFACTURER NOT AVAILABLE IN AREA, PLEASE SUBMIT SAMPLE TO LINDSAY LYDEN AT TRUENORTH.
STONE ON ENTRY ELDORADO STACKED STONE IN DRY CREEK STONE 4" H AND LENGTHS VARYING IN 8", 12", 20"
DECORATIVE WALL SCONCE LIGHTS TERON SCONCE LIGHTING; DIECAST ALUMINUM OIL RUBBED BRONZE POWDER COATED FINISH w/GLASS 4.5" W X 24" H X 6.7"D
WALL PACK LIGHT (& OTHER) BRONZE COLOR
WINDOW / DOOR FRAME DOUBLE THERMALLY BROKEN BRONZE ANODIZED FRAMES (or bronze Kynar coating) w/1" INSULATED GLASS WITH LOW EMMISIVITY COATING ON THE NUMBER 2 SURFACE, KAWNEER No. 40 DARK BRONZE PANES THAT ARE OPAQUE, COLOR BLACK TO MATCH APPEARANCE OF VIEWABLE GLASS
ROOF ROOF MEMBRANE EPDM FULLY ADHERED ROOF, COPING TO MATCH ADJACENT BRONZE METAL COLOR.
WINDOW AWNING SIZE ABOVE WINDOWS SHALL HAVE A VERTICAL HEIGHT OF 36" AND A HORIZONTAL PROJECTION FROM THE WALL OF 36" (The awning above the door entry projects 48" from the wall) 36" 36" SNOW PROTECTION ALL AWNINGS SHALL HAVE BRONZE COLOR SNOW GUARD. AWNING COLORS STANDING SEAM SLOPED METAL AWNING ABOVE WINDOWS IN MATCHING DARK BRONZE COLOR, FRAMES IN SAME COLOR CURVED AWNING ABOVE ENTRY DOOR IN DARK BRONZE COLOR, FRAMES IN SAME COLOR AWNINGS BY OTHERS GENERAL CONTRACTOR MUST MAIL A COLOR CHIP OF DARK BRONZE COLOR TO AWNING CO. FOR A COLOR MATCH.
REAR DOOR AND FRAME PAINT COLOR TO MATCH MASONRY UNITS COLOR
DUMPSTER GATE COMPOSITE MATERIAL, SCRATCH AND DENT RESISTANT, TREX DECKING COLOR "ROPE SWING"
SIGNAGE ABOVE THE DOOR THE SIGNAGE COLOR AND GRAPHICS WILL BE SUBMITTED TO THE LOCAL AUTHORITIES IN THE PROCESS OF SUMBITTING FOR A SIGN PERMIT. SIGNAGE COMPASS LOGO, 2'-6" H X 2'-3 5/8" W FOLLOWED BY TEXT LETTERS TRUENORTH, 8 1/4" X 1'1" H X 5'-10 1/2" WIDE LOGO TO HAVE SATIN ACRYLIC POLYURETHANE FINISH WITH LETTER FACES/RETURNS TO BE PMS#334 GREEN. LOGO FACE DIGITALLY PRINTED APPLIED FIRST SURFACE WITH PROTECTIVE CLEAR COAT

FRANK A. ROSS 21587 STATE OF ILLINOIS REGISTERED ARCHITECT

expires:* 11-30-2026*
signature:

*subject to renewal in accordance with the Illinois Architecture Practice Act of 1989 (225 ILCS 305 16)
expiration date as listed references the current expiration date

The information contained on these drawings is the property of Frank A. Ross architects These drawings may not in any manner without the express written consent of Frank A. Ross. Frank A. Ross is a sole prop. of Frank A. Ross arch.

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drawing: Material coded notes and misc. information

project: Truenorth 8226 Cass Ave Darien, Illinois 60561

date: 10/10/2024
project number: TN xxx
sheet: A-404

ATTACHMENT 7 - ARCHITECTURAL RENDERINGS


truenorth

Traffic Impact Study
Fuel Center Redevelopment

Darien, Illinois

Prepared For:

rtm

KLOA

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

February 14, 2025

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 redevelopment of the existing fuel center located in Darien, Illinois. The site is located in the northwest corner of the intersection of Cass Avenue with the Frontage Road/Hinswood Drive. As proposed, the existing fuel center with 12 fueling positions will be redeveloped to include a larger convenience store totaling approximately 5,400 square feet. Access to the fuel center will be provided via the existing access drives off Cass Avenue and the east-west access road (Access Road) that serves the fuel center and Alpine Banquets and connects to the Frontage Road (access road).

The purpose of this study was to examine background traffic conditions, assess the impact that the proposed redevelopment 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 redevelopment. **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:

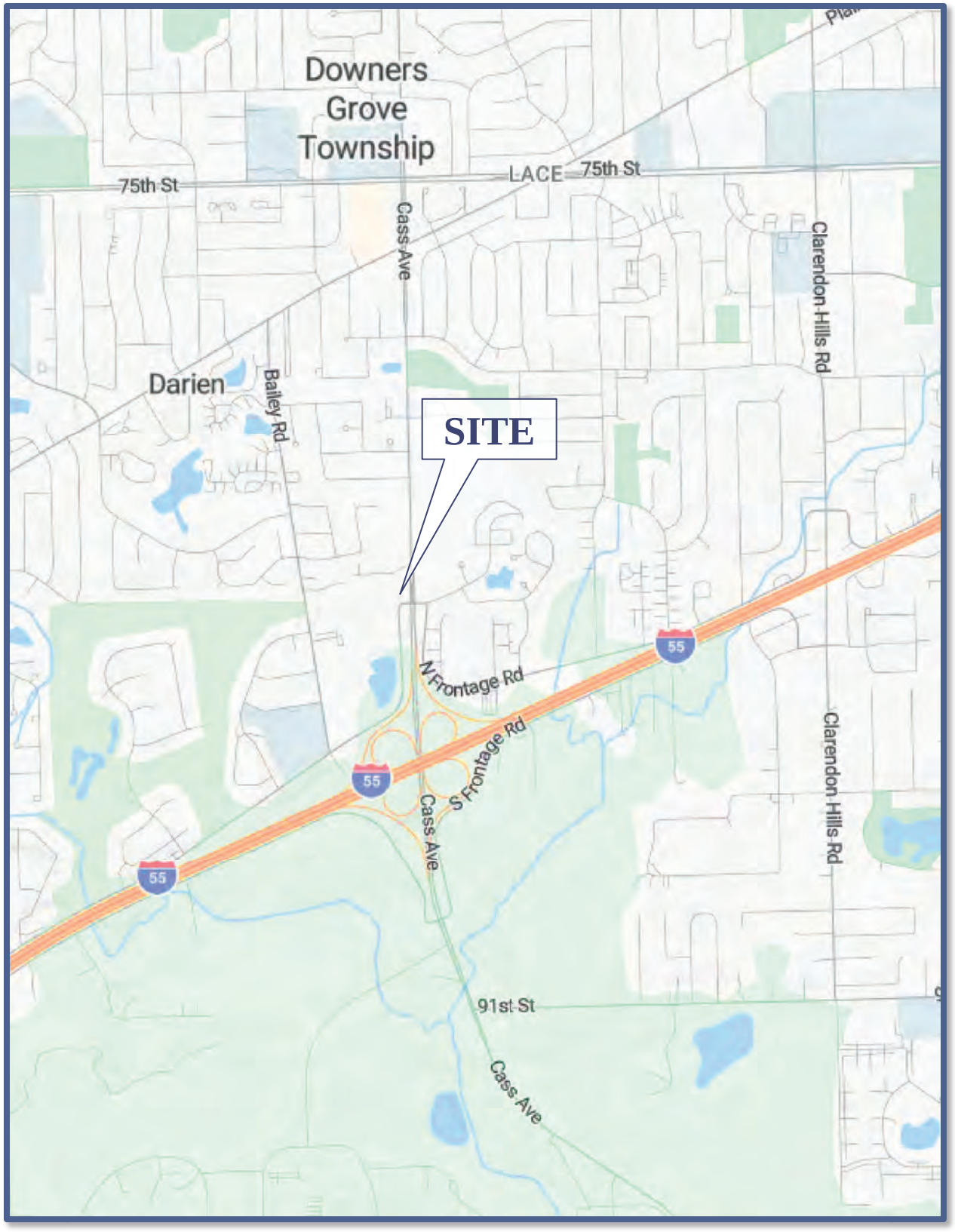
- Existing roadway conditions
- A description of the proposed redevelopment
- Directional distribution of the redevelopment traffic
- Vehicle trip generation for the redevelopment
- Future traffic conditions including access to the redevelopment
- Traffic analyses for the weekday morning and weekday 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 evening 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. Year 2030 No-Build Conditions – Analyzes the capacity of the existing roadway system using existing traffic volumes increased by an ambient area growth factor not attributable to any particular development.

3. Projected Conditions – Analyzes the capacity of the future roadway system using the projected traffic volumes that include the existing traffic volumes, ambient area growth not attributable to any particular development, and the traffic estimated to be generated by the proposed redevelopment.



Site Location **Figure 1**

Aerial View of Site **Figure 2**

2. Existing Conditions

Existing transportation conditions in the vicinity of the site were 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

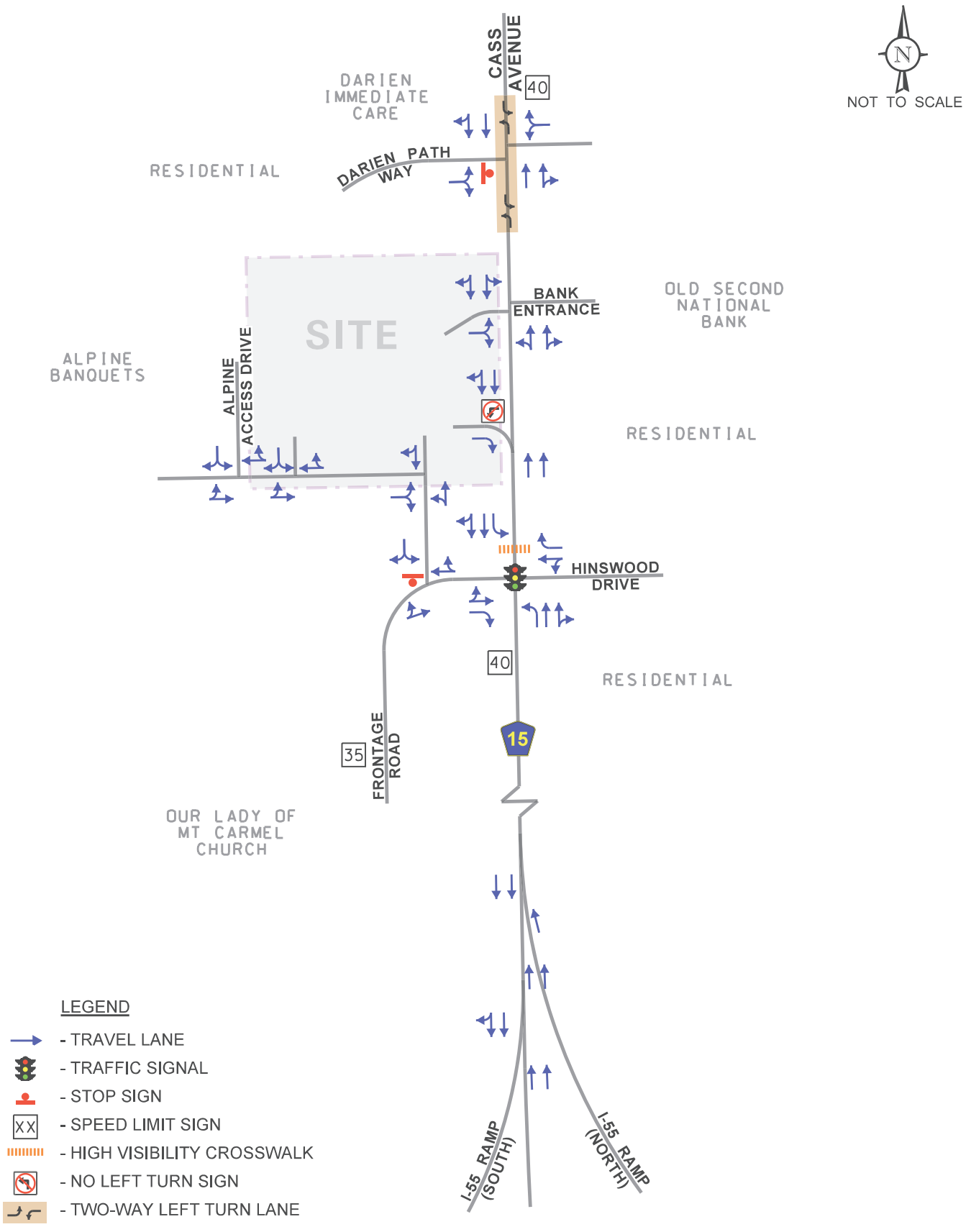
The site is located at 8226 South Cass Avenue in the northwest corner of Cass Avenue with the Frontage Road. The site is bordered by Cass Avenue on the east, the Frontage Road on the south, Alpine Banquets on the west, and Darien Path Way on the north. Land uses in the vicinity of the site include commercial uses along Cass Avenue and residential uses in all directions. It should be noted that Cass Avenue has a full interchange with Interstate 55 approximately 2,040 feet to the south (approximately 0.4 miles).

Existing Roadway System Characteristics

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

Cass Avenue is a north-south minor arterial roadway that provides two through lanes in each direction in the vicinity of the site. At its signalized intersection with the Frontage Road/Hinswood Drive, Cass Avenue provides a left-turn lane, a through lane, and a combined through/right-turn lane on the northbound and southbound approaches. A high-visibility crosswalk is provided on the north leg of the intersection. North of the Frontage Road intersection, Cass Road provides a two-way left-turn lane and no exclusive turn lanes are provided for any access drives or local roadways included in the study area. Cass Avenue carries an annual average daily traffic (AADT) volume of 21,100 vehicles north of the Frontage Road and 12,500 vehicles to the south (IDOT 2020). Cass Avenue is under the jurisdiction of the DuPage County Division of Transportation (DuDOT) and has a posted speed limit of 40 miles per hour.

Frontage Road/Hinswood Drive is an east-west roadway that is classified as a local roadway east of Cass Avenue and a minor collector roadway west of Cass Avenue. Hinswood Drive runs concurrently with the Frontage Road east of Cass Avenue for approximately 195 feet. At its signalized intersection with Cass Avenue, the Frontage Road provides a combined left-turn/through lane and a right-turn lane on the eastbound and westbound approaches. At its unsignalized intersection with the access road, the Frontage Road provides no separate turn lanes. The Frontage Road is under the jurisdiction of the Illinois Department of Transportation (IDOT) and has a posted speed limit of 35 miles per hour.



Fuel Center
Darien, Illinois

Existing Roadway Characteristics

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Job No: 24-298 Figure: 3

Darien Path Way is an east-west local roadway that provides one lane in each direction extending west from Cass Avenue. At its unsignalized intersection with Cass Avenue, Darien Path Way provides a combined left-turn/through/right-turn lane that is under stop sign control. The roadway is under the jurisdiction of the City of Darien.

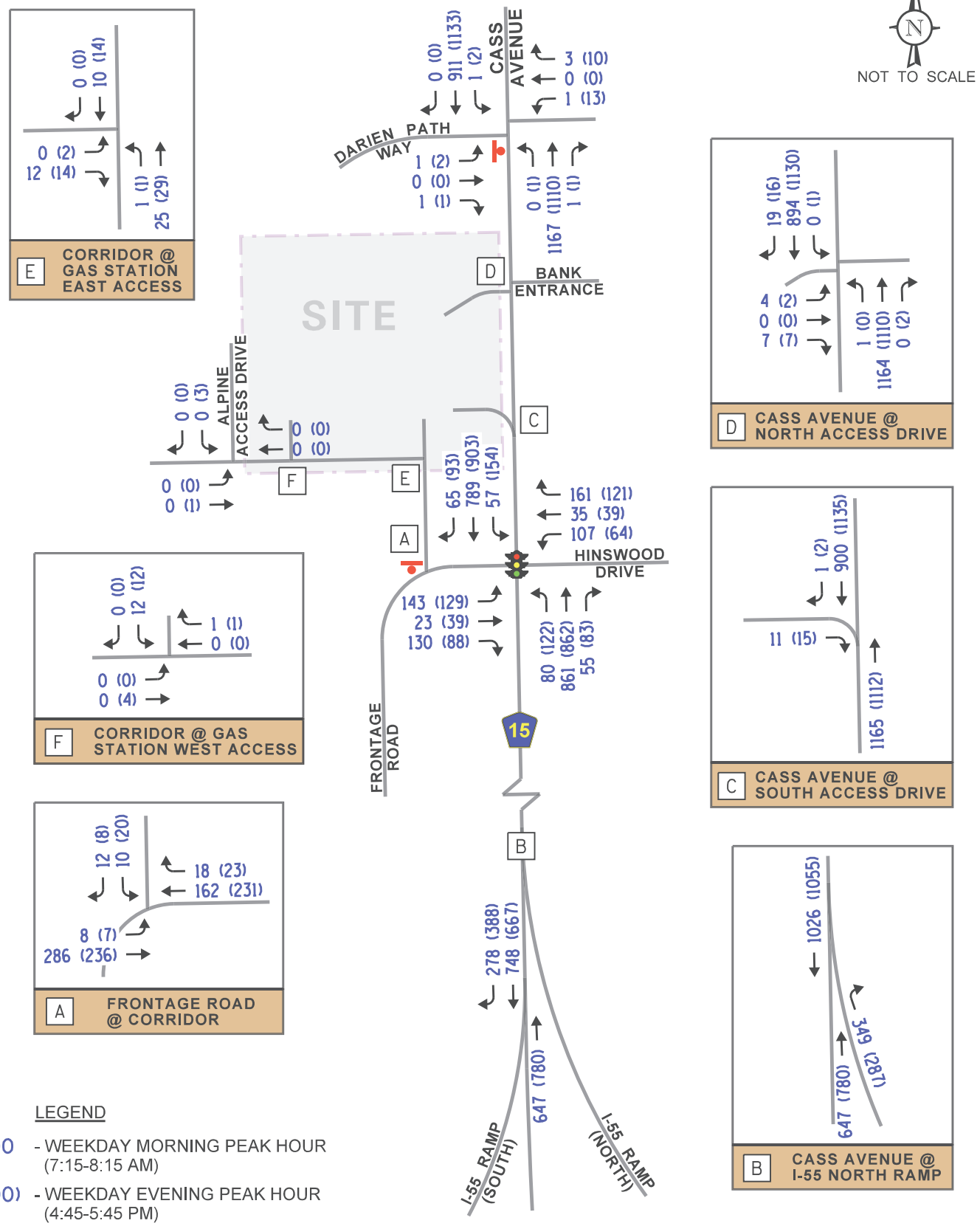
The *East-West Access Road (Access Road)* is a roadway that connects access drives for the existing fuel center and Alpine Banquets to the Frontage Road west of Cass Avenue. The access road provides one lane in each direction. At its unsignalized intersection with the Frontage Road, the access road provides a combined left-turn/right-turn lane on the southbound approach that is under stop sign control. The access road is under private jurisdiction.

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 traffic counts using Miovision Video Scout Collection Units on Wednesday, December 4, 2024, during the weekday morning (7:00 to 9:00 A.M.) and weekday evening (4:00 to 6:00 P.M.) peak periods at the following intersections:

- Cass Avenue with Frontage Road/Hinswood Drive
- Cass Avenue with South Site Access Drive
- Cass Avenue with North Site Access Drive
- Cass Avenue with Darien Path Way/North Bank Access Drive
- Frontage Road with Access Road
- Access Road with East Site Access Drive
- Access Road with West Site Access Drive
- Access Road with Alpine Banquets Access Drives
- Cass Avenue with Interstate 55 Southbound Exit Ramp
- Cass Avenue with Interstate 55 Southbound Entrance Ramp

From the count data, it was determined that the weekday morning peak hour generally occurs between 7:15 and 8:15 A.M. and the weekday evening peak hour generally occurs between 4:45 and 5:45 P.M. The existing peak hour traffic volumes are shown in **Figure 4**.



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Existing Traffic Volumes

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Job No: 24-298 Figure: 4

Crash Data Summary

KLOA, Inc. obtained crash data[1] from IDOT for the most recent available five years (2019 to 2023) for the intersections of Cass Avenue with Frontage Road, Darien Path Way, and the Interstate 55 southbound exit and entrance ramps. No crashes were reported at the Interstate 55 ramps during the review period. The crash data for the intersections are summarized in **Tables 1** and **2**. A review of the crash data indicated no fatalities were reported at the intersections during the review period.

Table 1
CASS AVENUE WITH FRONTAGE ROAD – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2019	0	0	0	3	0	7	0	10
2020	0	0	0	3	1	1	0	5
2021	0	0	0	1	0	2	0	3
2022	0	0	0	2	0	2	0	4
2023	0	0	0	2	1	3	0	6
Total	**0**	**0**	**0**	**11**	**2**	**15**	**0**	**23**
Average	**0.0**	**0.0**	**0.0**	**2.2**	**<1.0**	**3.0**	**0.0**	**4.6**

Table 2
CASS AVENUE WITH DARIEN PATH WAY – CRASH SUMMARY

Year	Type of Crash Frequency							
	Angle	Head On	Object	Rear End	Sideswipe	Turning	Other	Total
2019	0	0	0	0	0	0	0	0
2020	0	0	0	0	0	1	0	1
2021	0	0	0	0	0	0	0	0
2022	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**
Average	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**<1.0**	**0.0**	**<1.0**

[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).

3. Traffic Characteristics of the Proposed Redevelopment

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

Proposed Site and Redevelopment Plan

As proposed, the existing fuel center will be redeveloped to contain a larger convenience store, totaling approximately 5,400 square feet. The fuel center will continue to provide 12 fueling positions. Access to the fuel center will be provided via the following:

- The existing north access drive on Cass Avenue located approximately 175 feet south of Darien Path Way will remain and continue to provide access to the site. This access drive will provide one inbound lane and one outbound lane, with outbound movements under stop sign control.

- The existing south access drive on Cass Avenue located approximately 320 feet south of Darien Path Way will remain and continue to provide access to the site. This access drive will provide one inbound lane and one outbound lane, with outbound movement under stop sign control. Movements will continue to be restricted via posted signage to right-turns only based on the geometry of the access drive and its proximity to the traffic signal.

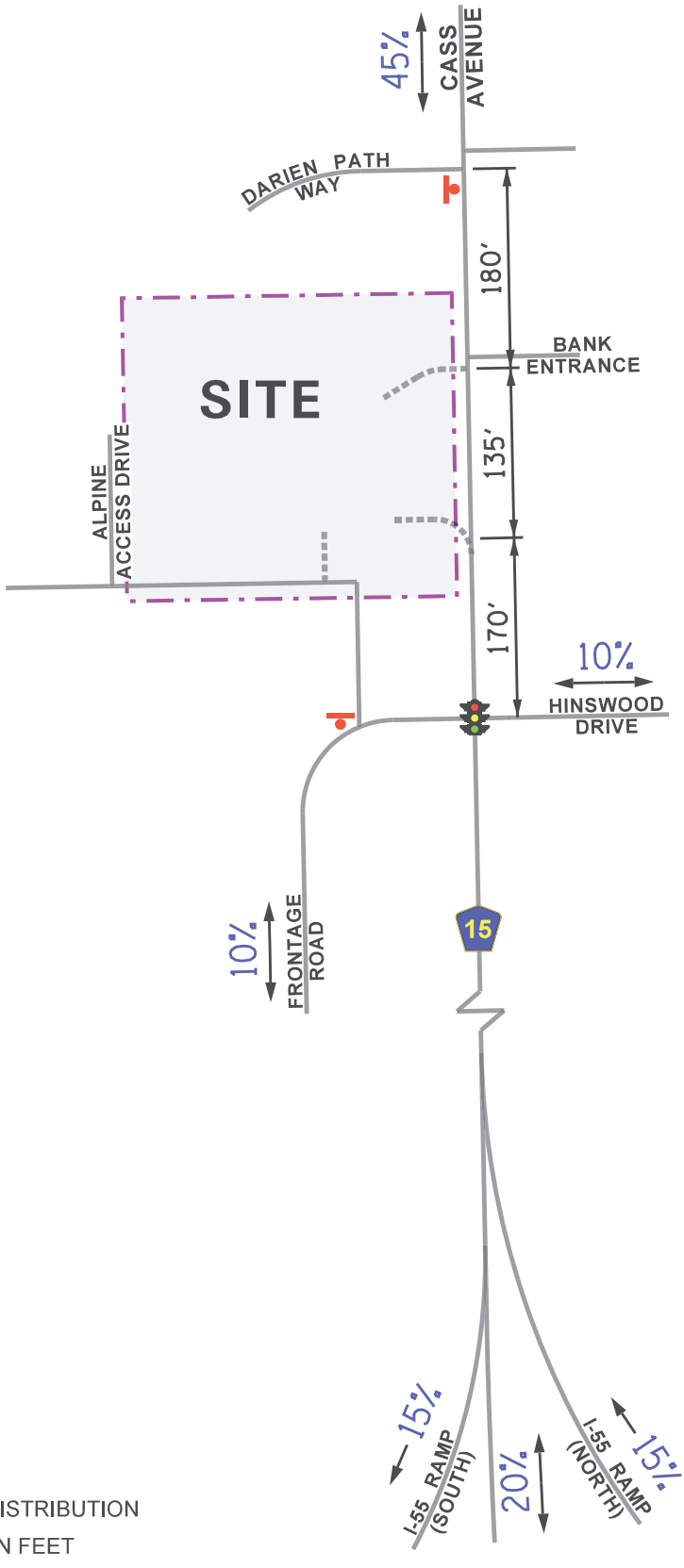
- The existing east access drive located off the east-west access road that serves the fuel center and Alpine Banquets and connects to the Frontage Road (access road), approximately 140 feet north of the intersection of the Frontage Road with the access road will remain and continue to provide access to the site. This access drive will be widened with outbound movements under stop sign control.

- As part of the redevelopment of the fuel center, the existing west access drive off the access road will be eliminated.

A site plan illustrating the proposed site and development plan is included in the Appendix.

Directional Distribution

The directional distribution of future site-generated trips on the roadway system is a function of several variables, including the operational characteristics of the roadway system, the ease with which drivers can travel over various sections of the roadway system, and the restrictions of the proposed access drive. This is particularly true for pass-by traffic. The directional distribution was based on these factors. The estimated directional distribution for the proposed development is illustrated in **Figure 5**.



Fuel Center Darien, Illinois	Directional Distribution	KLOA Kenig,Lindgren,O'Hara,Aboona,Inc. Job No: 24-298 Figure: 5

Peak Hour Traffic Volumes

The estimates of traffic to be generated by the proposed fuel center are based on the trip generation rates contained in the ITE *Trip Generation Manual*, 11th Edition for Land-Use Code 945 (Convenience Store/Gas Station).

As the site is currently operating as a fuel center with 12 fueling positions, the existing trips to the site were subtracted from the ITE rates for a proposed fuel center with 12 fueling positions to determine the total trips that will be made to the fuel center as a result of the redevelopment.

It is important to note that surveys conducted by ITE have shown that approximately 60 percent of trips are made to fuel centers are made up of existing traffic on the roadway system. This is particularly true during the weekday morning, evening peak hours when traffic is diverted from the home-to-work and work-to-home trips (pass-by traffic). As such, 60 percent of the traffic estimated to be generated by the redeveloped fuel center was assumed to be pass-by traffic.

Table 3 summarizes the trips projected to be generated by the proposed fuel center during the peak hours.

Table 3
PEAK HOUR SITE-GENERATED TRAFFIC VOLUMES

ITE Land-Use Code	Type/Size	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
		In	Out	Total	In	Out	Total
945	Proposed Convenience Store/Gas Station (12 fueling positions)	96	97	193	111	110	221
	Existing Convenience Store/Gas Station (12 fueling positions)	-47	-44	-91	-50	-50	-100
	Total Trips	**49**	**53**	**102**	**61**	**60**	**121**
	60% Pass-By	*-30*	*-30*	*-60*	*-36*	*-36*	*-72*
	Total New Trips	**19**	**23**	**42**	**25**	**24**	**49**

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 subject development.

Development Traffic Assignment

The peak hour traffic volumes projected to be generated by the proposed redevelopment were assigned to the area roadways based on the established directional distribution (Figure 5).

Figure 6 shows the assignment of the redevelopment-generated traffic volumes. The pass-by traffic assignment is illustrated in **Figure 7**.

Background Traffic Conditions

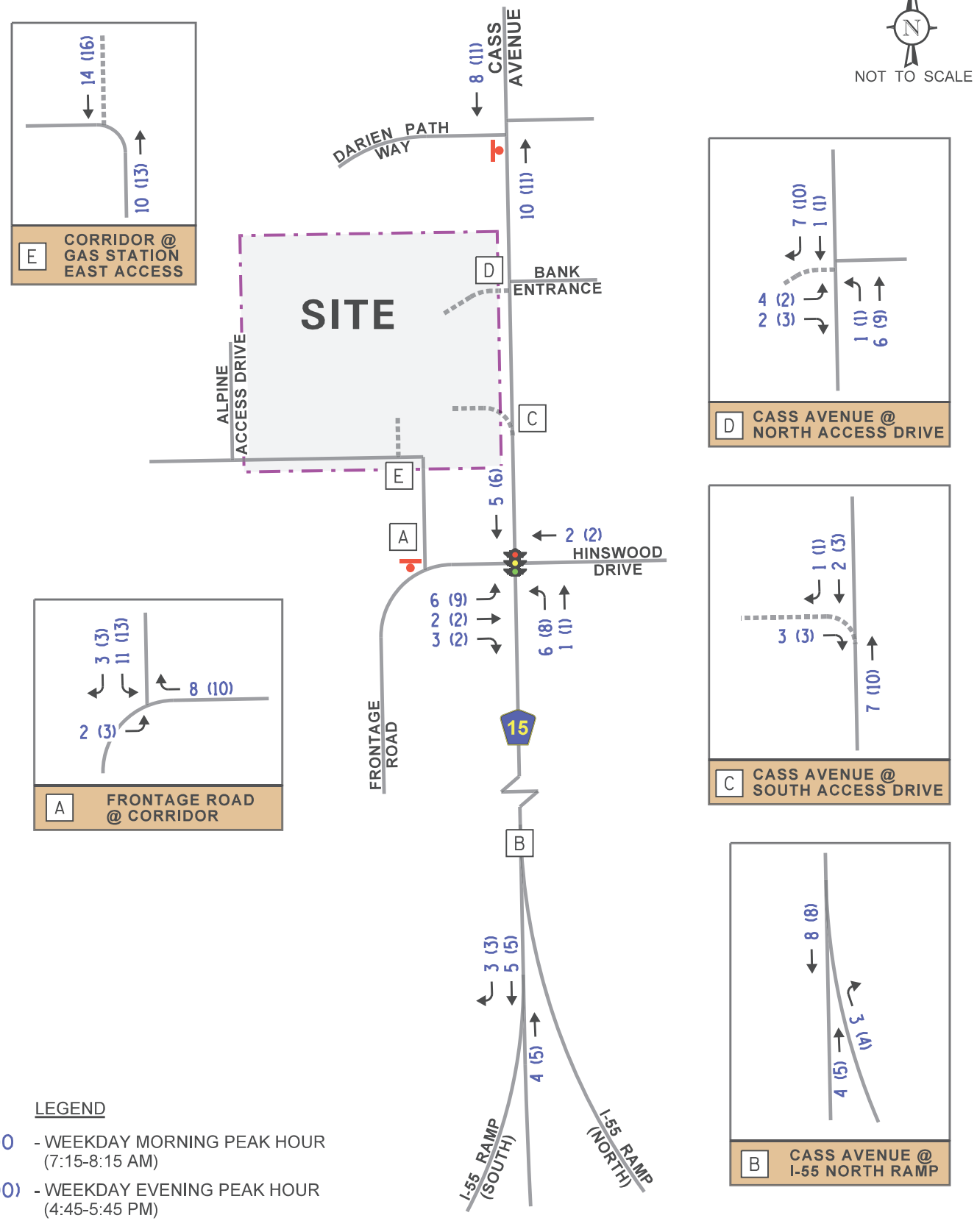
The existing traffic volumes (Figure 4) were increased by a regional growth factor to account for the increase in existing traffic related to regional growth in the area (i.e., not attributable to any particular planned development). Based on Year 2050 Annual Average Daily Traffic (AADT) projections provided by the Chicago Metropolitan Agency for Planning (CMAP) in a letter dated November 12, 2024, the existing traffic volumes were increased by an annually compounded growth rate of approximately 0.3 percent per year for six years (buildout year plus five years) for a total of approximately two percent to project Year 2030 background conditions. A copy of the CMAP 2050 projections letter is included in the Appendix.

Figure 8 shows the Year 2030 background traffic volumes. A copy of the CMAP 2050 projections letter is included in the Appendix.

Total Projected Traffic Volumes

Total projected traffic volumes include the Year 2030 background traffic volumes (Figure 8), and the traffic estimated to be generated by the proposed redevelopment (Figures 6 and 7).

Figure 9 shows the Year 2030 total projected traffic volume conditions.



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Site-Generated Traffic Volumes

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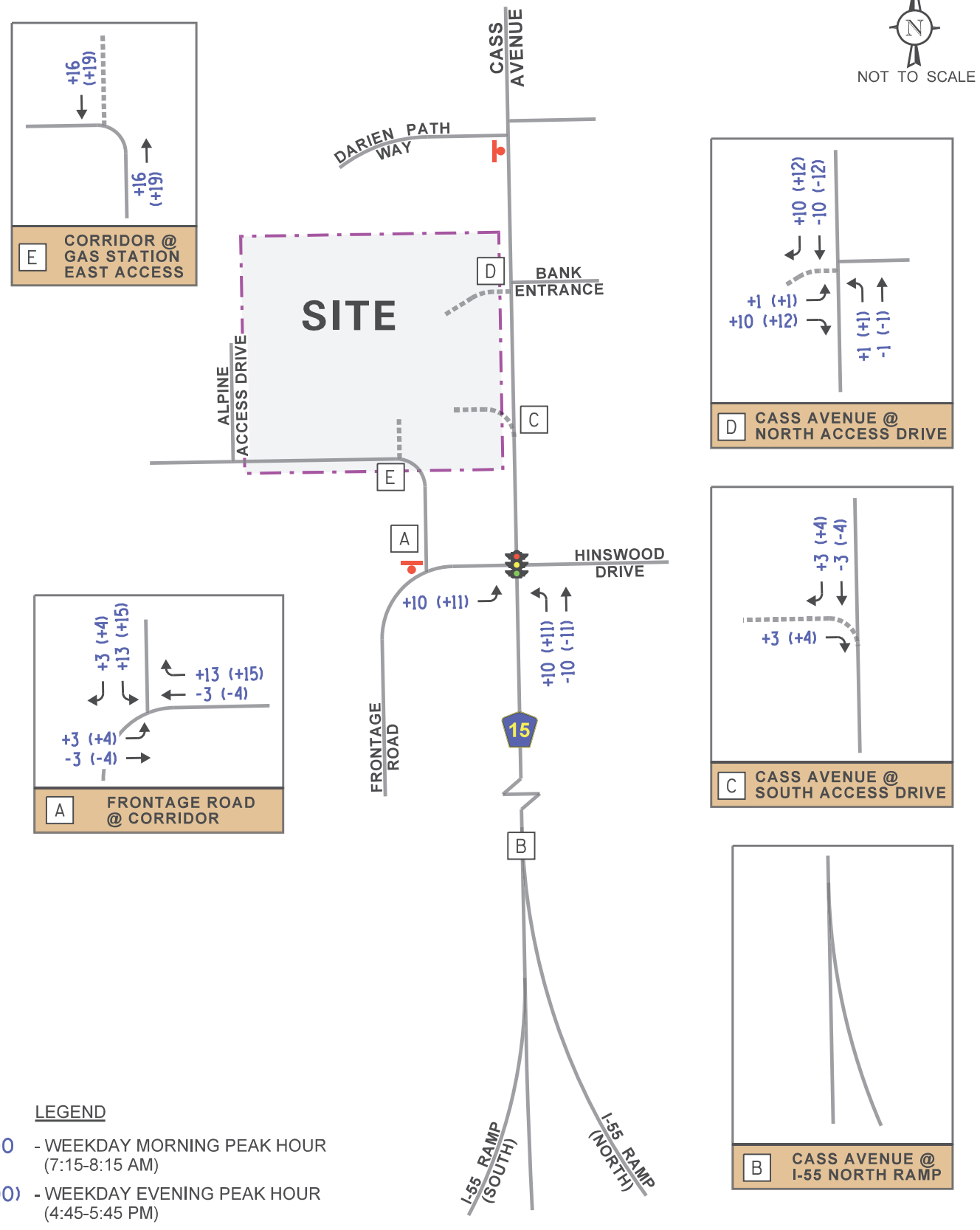

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Pass-By Traffic Volumes

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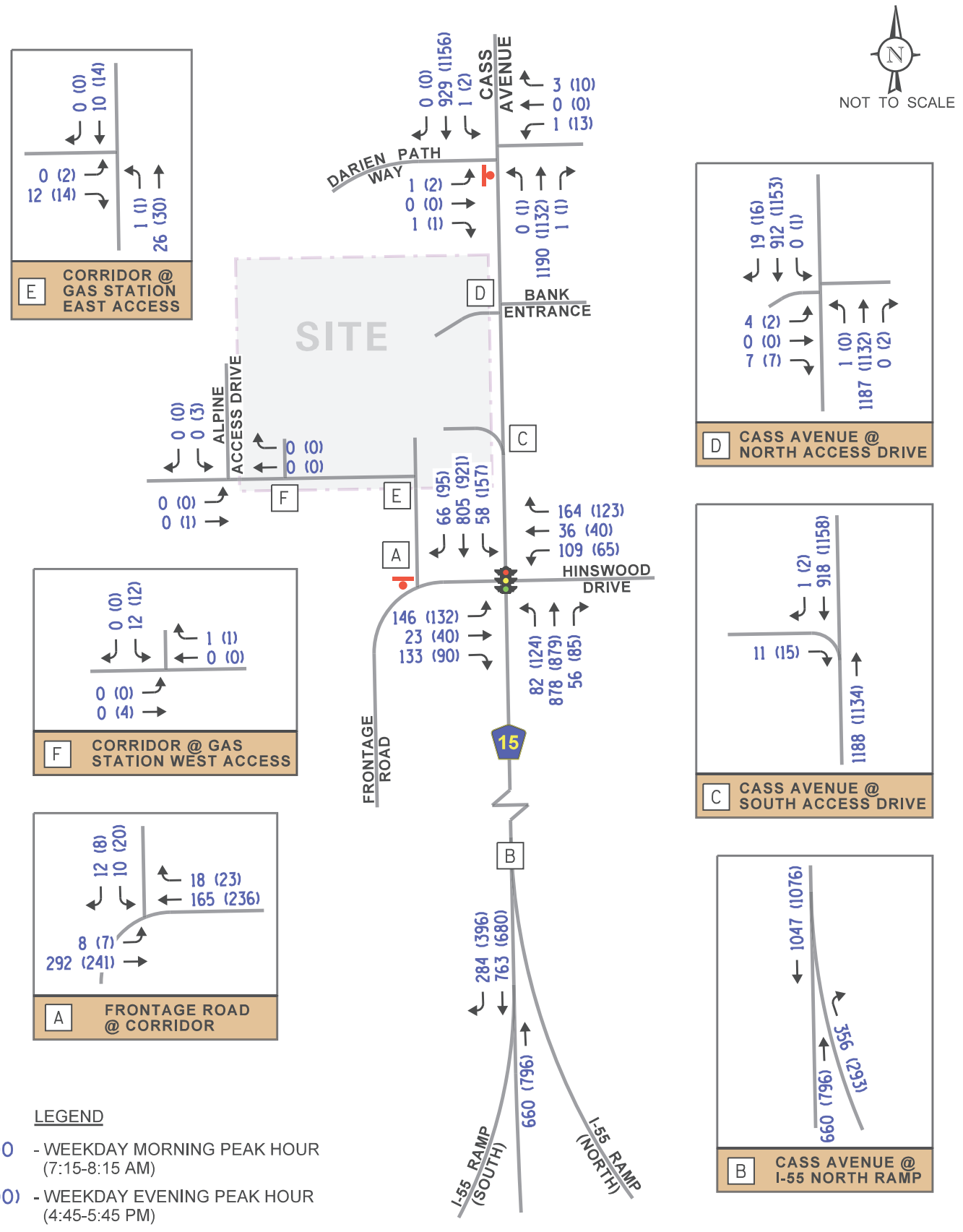
Job No: 24-298 Figure: 7



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Year 2030 No-Build Traffic Volumes

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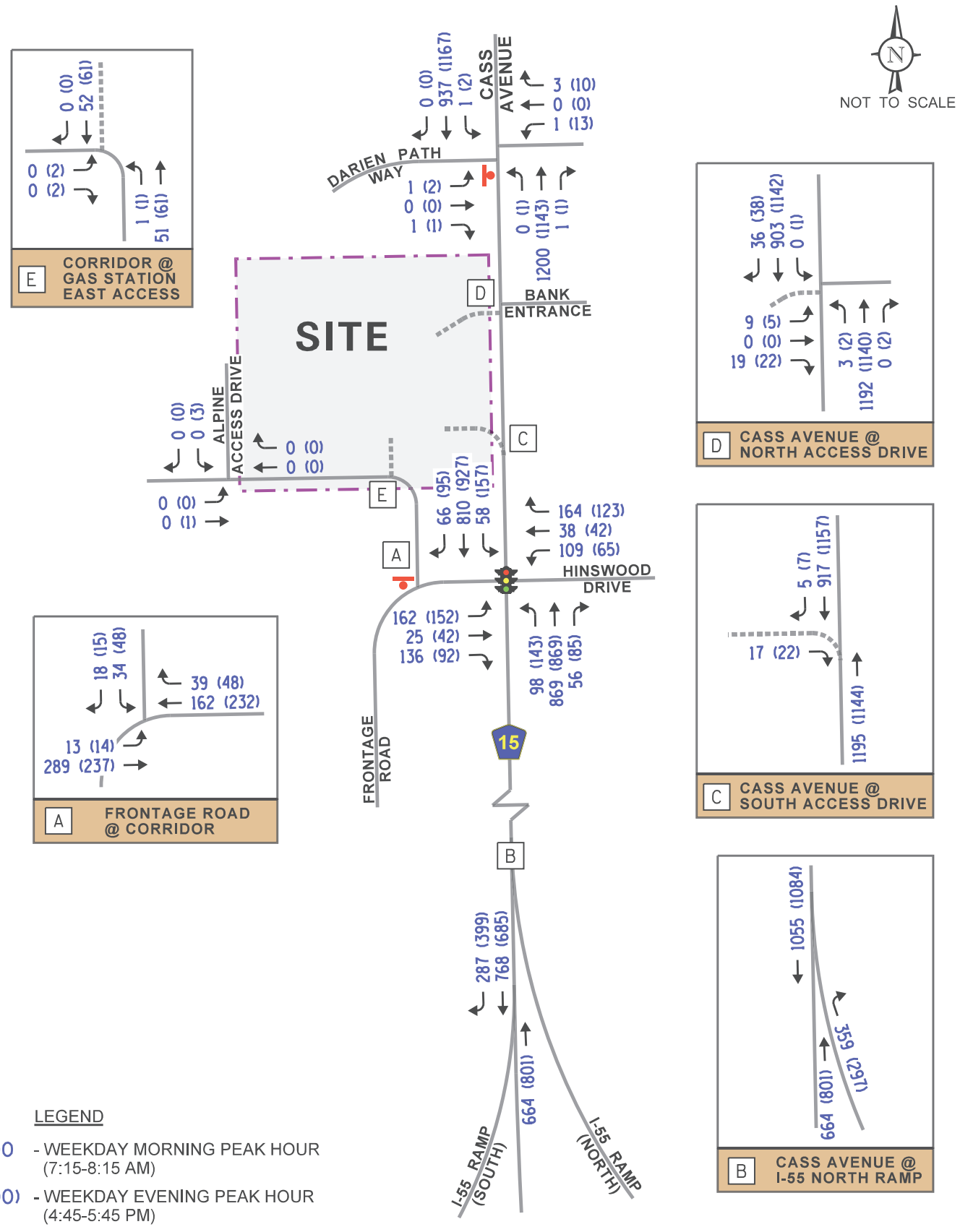
Job No: 24-298 Figure: 8



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Year 2030 Total Traffic Volumes

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Job No: 24-298 Figure: 9

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 drive 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 evening peak hours for the existing, no-build, and 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 intersections were accomplished using actual cycle lengths and phasings 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 projected existing, no-build, and total projected conditions are presented in **Tables 4** through **7**. A discussion of each intersection follows. Summary sheets for the capacity analyses are included in the Appendix.

Table 4
CASS AVENUE WITH FRONTAGE ROAD/HINSWOOD DRIVE – SIGNALIZED

	Peak Hour	Eastbound		Westbound		Northbound		Southbound		Overall
		L/T	R	L/T	R	L	T/R	L	T/R	
Existing Conditions	Weekday Morning	F 81.0	B 15.4	E 70.8	C 22.3	A 8.0	B 15.8	A 7.6	B 15.6	C 23.1
		D – 52.2		D – 45.0		B – 15.2		B – 15.1		
	Weekday Evening	E 64.0	B 10.5	E 55.4	B 12.9	A 7.5	B 13.9	A 7.9	B 13.8	B 17.8
		D – 45.6		C – 32.5		B – 13.1		B – 13.0		
No-Build Conditions	Weekday Morning	F 81.7	B 16.2	E 71.3	C 22.8	A 8.3	B 16.4	A 7.8	B 16.1	C 23.7
		D – 52.8		D – 45.6		B – 15.7		B – 15.5		
	Weekday Evening	E 64.8	B 11.6	E 55.9	B 13.7	A 7.8	B 14.3	A 8.3	B 14.2	B 18.3
		D – 46.6		C – 33.2		B – 13.6		B – 13.4		
Projected Conditions	Weekday Morning	F 83.8	B 16.0	E 70.6	C 21.8	A 9.4	B 17.1	A 8.2	B 17.3	C 24.8
		E – 55.3		D – 44.9		B – 16.4		B – 16.7		
	Weekday Evening	E 67.3	B 11.6	E 55.7	B 12.7	A 8.9	B 15.1	A 8.8	B 15.5	B 19.5
		D – 49.4		C – 32.7		B – 14.3		B – 14.6		

Letter denotes Level of Service L – Left Turn R – Right Turn
Delay is measured in seconds. T – Through

Table 5
UNSIGNALIZED – EXISTING CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Cass Avenue with South Site Access Drive[1]				
• Eastbound Approach	B	12.0	B	13.6
Cass Avenue with North Site Access Drive[1]				
• Eastbound Approach	D	29.0	D	29.2
• Northbound Left Turn	B	10.6	A	0.0
Cass Avenue with Darien Path Way/North Bank Access Drive[1]				
• Eastbound Approach	C	18.1	C	21.3
• Westbound Approach	B	13.0	B	14.9
• Northbound Left Turn	--	--	B	11.0
• Southbound Left Turn	A	9.6	A	9.7
Frontage Road with Access Road[1]				
• Southbound Approach	B	10.7	B	11.8
• Eastbound Left Turn	A	7.6	A	7.8
Access Road with East Site Access Drive[2]				
• ICU	A	13.3%	A	13.3%

LOS = Level of Service
Delay is measured in seconds.
1 – Two-way stop control
2 – Intersection Capacity Utilization (ICU)

Table 6
UNSIGNALIZED – YEAR 2030 NO-BUILD CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Cass Avenue with South Site Access Drive[1]				
• Eastbound Approach	B	12.1	B	13.7
Cass Avenue with North Site Access Drive[1]				
• Eastbound Approach	D	30.4	D	30.6
• Northbound Left Turn	B	10.7	A	0.0
Cass Avenue with Darien Path Way/North Bank Access Drive[1]				
• Eastbound Approach	C	18.4	C	22.0
• Westbound Approach	B	13.2	C	15.1
• Northbound Left Turn	--	--	B	11.1
• Southbound Left Turn	A	9.5	A	9.7
Frontage Road with Access Road[1]				
• Southbound Approach	B	10.7	B	11.9
• Eastbound Left Turn	A	7.6	A	7.8
Access Road with East Site Access Drive[2]				
• ICU	A	13.3%	A	13.3%

LOS = Level of Service
Delay is measured in seconds.
1 – Two-way stop control
2 – Intersection Capacity Utilization (ICU)

Table 7
UNSIGNALIZED – YEAR 2030 TOTAL CONDITIONS

Intersection	Weekday Morning Peak Hour		Weekday Evening Peak Hour	
	LOS	Delay	LOS	Delay
Cass Avenue with South Site Access Drive[1]				
• Eastbound Approach	B	12.2	B	13.9
Cass Avenue with North Site Access Drive[1]				
• Eastbound Approach	D	32.3	D	31.5
• Northbound Left Turn	B	10.7	B	11.2
Cass Avenue with Darien Path Way/North Bank Access Drive[1]				
• Eastbound Approach	C	18.6	C	22.0
• Westbound Approach	B	13.3	D	25.6
• Northbound Left Turn	--	--	B	11.2
• Southbound Left Turn	A	9.6	A	9.7
Frontage Road with Access Road[1]				
• Southbound Approach	B	11.9	B	12.8
• Eastbound Left Turn	A	7.7	A	7.9
Access Road with East Site Access Drive[2]				
• ICU	A	6.8%	A	14.0%

LOS = Level of Service
Delay is measured in seconds.
1 – Two-way stop control
2 – Intersection Capacity Utilization (ICU)

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 redevelopment-generated traffic.

Cass Avenue with Frontage Road/Hinswood Drive

The results of the capacity analysis indicate that overall this intersection currently operates at Level of Service (LOS) C during the weekday morning peak hour and at LOS B during the weekday evening peak hour. The northbound and southbound approaches on Cass Avenue currently operate at LOS B during the peak hours. The eastbound and westbound approaches on the Frontage Road currently operate at LOS D or better during the peak hours. Under Year 2030 no-build conditions, the intersection and its approaches are projected to continue operating at the current levels of service during the peak hours, with increases in delay of approximately one second or less over the existing conditions.

Under Year 2030 total projected conditions, the intersection is projected to continue to operate at LOS C during the weekday morning peak hour and at LOS B during the weekday evening peak hour, with increases in delay of approximately one second over the no-build conditions. All approaches are projected to operate at an acceptable LOS D or better during the peak hours, with the exception of the eastbound approach, which during the weekday morning peak hour, is projected to operate at LOS E. Observations and a review of the traffic simulation indicate that the queues at the approach clear the intersection every cycle. Further, the volume to capacity ratio (v/c) is less than 1.0. It should be noted that the queue for the right-turn movement is projected to be 90 feet during the weekday morning peak hour and 52 feet during the weekday evening peak hour, which can be fully contained within the 100 feet of storage that the right-turn lane provides.

Overall, the proposed fuel center is only projected to increase the volume of traffic traversing this intersection by approximately one percent during the peak hours. As such, the intersection has sufficient reserve capacity to accommodate the traffic estimated to be generated by the fuel center redevelopment, and no roadway or traffic signal modifications are required.

Cass Avenue with South Site Access Drive

The results of the capacity analysis indicate that the eastbound approach, which is restricted to right turns only, currently operates at LOS B during the weekday morning and weekday evening peak hours. Under Year 2030 no-build and total projected conditions, the eastbound approach is projected to continue to operate at the current levels of service, with increases in delays of less than one second over the existing conditions. As such, this access drive is projected to accommodate the increase in traffic generated by the fuel center redevelopment, and no additional roadway or traffic control modifications are required.

Cass Road with North Site Access Drive/South Bank Access Drive

The results of the capacity analysis indicate that the eastbound approach from the north site access drive currently operates at LOS D during the weekday morning and weekday evening peak hours. The northbound left-turn movement currently operates at LOS B or better during the peak hours. Under Year 2030 no-build and total projected conditions, the critical movements and approaches are projected to continue to operate at the current levels of service, with increases in delay of approximately three seconds or less over the existing conditions. It should be noted that the southbound queues on Cass Avenue extending from the Frontage Road occasionally extend to this access drive, impacting the eastbound left-turn movement and the northbound left-turn movement. Queues typically clear within one signal cycle. Additionally, gaps in the traffic flow allow for left-turn movements due to the platooning from traffic signal to the north on Cass Avenue. As such, this access drive is projected to accommodate the increase in traffic generated by the fuel center redevelopment, and no additional roadway or traffic control modifications are required.

Cass Avenue with Darien Path Way/North Bank Access Drive

The results of the capacity analysis indicate that the eastbound approach from Darien Path Way and the westbound approach from the north bank access drive currently operate at LOS C or better during the weekday morning and weekday evening peak hours. The northbound and southbound left-turn movements currently operate at LOS B or better during the peak hours. Under Year 2030 no-build and total projected conditions, the critical movements and approaches are projected to operate at LOS C or better during the peak hours. As such, no roadway or traffic control modifications are required at this intersection in conjunction with the proposed fuel center redevelopment.

Frontage Road with Access Road

The results of the capacity analysis indicate that the southbound approach from the access road currently operates at LOS B during the weekday morning and weekday evening peak hours. The eastbound left-turn movement currently operates at LOS A during both peak hours. Under Year 2030 no-build and total projected conditions, the critical approaches and movements are projected to continue to operate at the current levels of service, with increases in delay of approximately one second over the existing conditions. It should be noted that the westbound queues on the Frontage Road extending from Cass Avenue occasionally extend to this intersection, specifically the left-turn/through movements which have a projected 95th percentile queue of approximately 290 feet during the weekday morning peak hour and 230 feet during the weekday evening peak hour. However, the queues typically clear within one signal cycle. This was confirmed based on a review of the traffic simulation, which was consistent with existing operations at the intersection. As such, this intersection is projected to continue to operate well and accommodate the traffic projected to be generated by the proposed fuel center redevelopment.

Access Road with East Site Access Drive

As this intersection is atypical with the northbound and eastbound approaches uncontrolled and the southbound approach from the access drive being under stop sign control, the intersection was evaluated using the Intersection Capacity Utilization (ICU) method. The results of the capacity analysis indicate that the intersection currently operates at ICU A with minimal queues during the weekday morning and weekday evening peak hours. Under Year 2030 no-build conditions, the intersection is projected to continue to operate at ICU A during the peak hours.

Under Year 2030 total projected conditions, this intersection will be widened. It is projected to operate at ICU A during both peak hours with minimal queues. However, it is recommended that the proposed width of the driveway be reduced while still accommodating traffic movements at this access drive. As such, given the reduction in the proposed access drive width, this access drive is projected to provide flexible and efficient access to the redeveloped fuel center and no additional roadway or traffic control modifications are required.

6. Conclusion

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

- The existing fuel center on the site will be redeveloped to have a larger convenience store and continue to have 12 fueling positions.

- The proposed fuel center redevelopment is only projected to increase the volume of traffic traversing the intersection of Cass Avenue with the Frontage Road by approximately one percent during the peak hours.

- The results of the capacity analysis indicate that the roadway system generally has sufficient reserve capacity to accommodate the redevelopment-generated traffic and no roadway or traffic control improvements are required at the study area intersections.

- Access to the site will be provided via two existing access drives off Cass Avenue and one access drive off the east-west access road that serves the fuel center and Alpine Banquets and connects to the Frontage Road

- The proposed access system that will serve the site will be adequate in accommodating the traffic estimated to be generated by the proposed redevelopment of the fuel center and will ensure flexible access is provided.

Appendix

Traffic Count Summary Sheets
Site Plan
ITE Trip Generation Sheets
CMAP 2050 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 mmendoza@kloainc.com

Count Name: Cass Avenue with Hinswood Drive
TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Frontage Road Eastbound						Frontage Road Westbound						Cass Avenue Northbound						Cass Avenue Southbound						
	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	7	2	28	0	37	0	34	7	19	0	60	0	8	157	20	0	185	0	17	180	8	0	205	487
7:15 AM	0	29	8	33	0	70	0	22	10	30	0	62	0	19	195	8	0	222	0	10	180	5	0	195	549
7:30 AM	0	52	7	35	0	94	0	29	5	41	0	75	1	14	246	17	0	278	0	15	202	7	0	224	671
7:45 AM	0	47	2	38	0	87	0	30	5	59	0	94	0	20	247	19	0	286	0	14	218	26	0	258	725
Hourly Total	0	135	19	134	0	288	0	115	27	149	0	291	1	61	845	64	0	971	0	56	780	46	0	882	2432
8:00 AM	0	15	6	24	0	45	0	26	7	31	0	64	0	27	173	11	0	211	0	18	189	20	0	227	547
8:15 AM	0	13	7	36	0	56	0	34	15	21	0	70	0	24	192	8	0	224	0	8	185	17	0	210	560
8:30 AM	0	23	18	36	0	77	0	19	12	27	0	58	0	26	186	10	0	222	0	15	170	9	0	194	551
8:45 AM	0	18	3	22	0	43	0	20	10	28	0	58	2	18	241	16	0	277	0	11	167	25	0	203	581
Hourly Total	0	69	34	118	0	221	0	99	44	107	0	250	2	95	792	45	0	934	0	52	711	71	0	834	2239
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	17	8	27	0	52	0	23	5	26	0	54	1	33	162	29	0	225	0	42	216	20	1	278	609
4:15 PM	0	23	13	31	0	67	0	20	7	32	0	59	0	37	209	15	0	261	0	33	224	17	0	274	661
4:30 PM	0	20	12	26	0	58	0	17	9	27	0	53	0	26	202	12	0	240	0	30	205	18	0	253	604
4:45 PM	0	40	11	23	0	74	0	16	12	25	0	53	0	30	208	22	0	260	0	34	226	21	0	281	668
Hourly Total	0	100	44	107	0	251	0	76	33	110	0	219	1	126	781	78	0	986	0	139	871	76	1	1086	2542
5:00 PM	0	25	12	24	0	61	0	20	13	30	0	63	2	27	211	13	0	253	0	40	228	20	0	288	665
5:15 PM	0	32	9	24	0	65	0	13	9	34	0	56	1	33	227	20	0	281	0	45	212	24	0	281	683
5:30 PM	0	32	5	17	0	54	0	15	5	32	0	52	3	32	201	17	0	253	0	28	197	23	0	248	607
5:45 PM	0	20	8	21	0	49	0	13	6	16	0	35	0	31	227	18	0	276	0	32	200	13	0	245	605
Hourly Total	0	109	34	86	0	229	0	61	33	112	0	206	6	123	866	68	0	1063	0	145	837	80	0	1062	2560
Grand Total	0	413	131	445	0	989	0	351	137	478	0	966	10	405	3284	255	0	3954	0	392	3199	273	1	3864	9773
Approach %	0.0	41.8	13.2	45.0	-	-	0.0	36.3	14.2	49.5	-	-	0.3	10.2	83.1	6.4	-	-	0.0	10.1	82.8	7.1	-	-	-
Total %	0.0	4.2	1.3	4.6	-	10.1	0.0	3.6	1.4	4.9	-	9.9	0.1	4.1	33.6	2.6	-	40.5	0.0	4.0	32.7	2.8	-	39.5	-
Lights	0	407	125	439	-	971	0	340	132	468	-	940	10	393	3195	242	-	3840	0	388	3119	263	-	3770	9521
% Lights	-	98.5	95.4	98.7	-	98.2	-	96.9	96.4	97.9	-	97.3	100.0	97.0	97.3	94.9	-	97.1	-	99.0	97.5	96.3	-	97.6	97.4
Buses	0	6	4	1	-	11	0	1	2	2	-	5	0	3	18	4	-	25	0	1	14	7	-	22	63
% Buses	-	1.5	3.1	0.2	-	1.1	-	0.3	1.5	0.4	-	0.5	0.0	0.7	0.5	1.6	-	0.6	-	0.3	0.4	2.6	-	0.6	0.6
Single-Unit Trucks	0	0	1	5	-	6	0	9	3	6	-	18	0	7	50	8	-	65	0	3	45	2	-	50	139
% Single-Unit Trucks	-	0.0	0.8	1.1	-	0.6	-	2.6	2.2	1.3	-	1.9	0.0	1.7	1.5	3.1	-	1.6	-	0.8	1.4	0.7	-	1.3	1.4
Articulated Trucks	0	0	0	0	-	0	0	1	0	2	-	3	0	2	21	1	-	24	0	0	21	1	-	22	49
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.3	0.0	0.4	-	0.3	0.0	0.5	0.6	0.4	-	0.6	-	0.0	0.7	0.4	-	0.6	0.5
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1

% Bicycles on Road	-	0.0	0.8	0.0	-	0.1	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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

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

Count Name: Cass Avenue with Hinswood Drive
TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Frontage Road Eastbound						Frontage Road Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	29	8	33	0	70	0	22	10	30	0	62	0	19	195	8	0	222	0	10	180	5	0	195	549
7:30 AM	0	52	7	35	0	94	0	29	5	41	0	75	1	14	246	17	0	278	0	15	202	7	0	224	671
7:45 AM	0	47	2	38	0	87	0	30	5	59	0	94	0	20	247	19	0	286	0	14	218	26	0	258	725
8:00 AM	0	15	6	24	0	45	0	26	7	31	0	64	0	27	173	11	0	211	0	18	189	20	0	227	547
Total	0	143	23	130	0	296	0	107	27	161	0	295	1	80	861	55	0	997	0	57	789	58	0	904	2492
Approach %	0.0	48.3	7.8	43.9	-	-	0.0	36.3	9.2	54.6	-	-	0.1	8.0	86.4	5.5	-	-	0.0	6.3	87.3	6.4	-	-	-
Total %	0.0	5.7	0.9	5.2	-	11.9	0.0	4.3	1.1	6.5	-	11.8	0.0	3.2	34.6	2.2	-	40.0	0.0	2.3	31.7	2.3	-	36.3	-
PHF	0.000	0.688	0.719	0.855	-	0.787	0.000	0.892	0.675	0.682	-	0.785	0.250	0.741	0.871	0.724	-	0.872	0.000	0.792	0.905	0.558	-	0.876	0.859
Lights	0	140	19	128	-	287	0	102	27	155	-	284	1	75	823	50	-	949	0	56	769	55	-	880	2400
% Lights	-	97.9	82.6	98.5	-	97.0	-	95.3	100.0	96.3	-	96.3	100.0	93.8	95.6	90.9	-	95.2	-	98.2	97.5	94.8	-	97.3	96.3
Buses	0	3	4	0	-	7	0	0	0	1	-	1	0	0	10	1	-	11	0	1	4	2	-	7	26
% Buses	-	2.1	17.4	0.0	-	2.4	-	0.0	0.0	0.6	-	0.3	0.0	0.0	1.2	1.8	-	1.1	-	1.8	0.5	3.4	-	0.8	1.0
Single-Unit Trucks	0	0	0	2	-	2	0	4	0	4	-	8	0	4	17	4	-	25	0	0	10	1	-	11	46
% Single-Unit Trucks	-	0.0	0.0	1.5	-	0.7	-	3.7	0.0	2.5	-	2.7	0.0	5.0	2.0	7.3	-	2.5	-	0.0	1.3	1.7	-	1.2	1.8
Articulated Trucks	0	0	0	0	-	0	0	1	0	1	-	2	0	1	11	0	-	12	0	0	6	0	-	6	20
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.9	0.0	0.6	-	0.7	0.0	1.3	1.3	0.0	-	1.2	-	0.0	0.8	0.0	-	0.7	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kenig Lindgren O'Hara Aboona, Inc.
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Count Name: Cass Avenue with Hinswood Drive TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Frontage Road Eastbound						Frontage Road Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
4:45 PM	0	40	11	23	0	74	0	16	12	25	0	53	0	30	208	22	0	260	0	34	226	21	0	281	668
5:00 PM	0	25	12	24	0	61	0	20	13	30	0	63	2	27	211	13	0	253	0	40	228	20	0	288	665
5:15 PM	0	32	9	24	0	65	0	13	9	34	0	56	1	33	227	20	0	281	0	45	212	24	0	281	683
5:30 PM	0	32	5	17	0	54	0	15	5	32	0	52	3	32	201	17	0	253	0	28	197	23	0	248	607
Total	0	129	37	88	0	254	0	64	39	121	0	224	6	122	847	72	0	1047	0	147	863	88	0	1098	2623
Approach %	0.0	50.8	14.6	34.6	-	-	0.0	28.6	17.4	54.0	-	-	0.6	11.7	80.9	6.9	-	-	0.0	13.4	78.6	8.0	-	-	-
Total %	0.0	4.9	1.4	3.4	-	9.7	0.0	2.4	1.5	4.6	-	8.5	0.2	4.7	32.3	2.7	-	39.9	0.0	5.6	32.9	3.4	-	41.9	-
PHF	0.000	0.806	0.771	0.917	-	0.858	0.000	0.800	0.750	0.890	-	0.889	0.500	0.924	0.933	0.818	-	0.931	0.000	0.817	0.946	0.917	-	0.953	0.960
Lights	0	129	37	86	-	252	0	64	39	121	-	224	6	121	839	71	-	1037	0	145	847	87	-	1079	2592
% Lights	-	100.0	100.0	97.7	-	99.2	-	100.0	100.0	100.0	-	100.0	100.0	99.2	99.1	98.6	-	99.0	-	98.6	98.1	98.9	-	98.3	98.8
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	1	-	2	0	0	2	0	-	2	4
% Buses	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1	1.4	-	0.2	-	0.0	0.2	0.0	-	0.2	0.2
Single-Unit Trucks	0	0	0	2	-	2	0	0	0	0	-	0	0	1	5	0	-	6	0	2	10	1	-	13	21
% Single-Unit Trucks	-	0.0	0.0	2.3	-	0.8	-	0.0	0.0	0.0	-	0.0	0.0	0.8	0.6	0.0	-	0.6	-	1.4	1.2	1.1	-	1.2	0.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	4	0	-	4	6
% Articulated Trucks	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.2	0.0	-	0.2	-	0.0	0.5	0.0	-	0.4	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Cass Avenue with Shell Access Drive (south)

		Eastbound			Westbound			Northbound			Southbound			
Time Period	Class.	L	T	R	L	T	R	L	T	R	L	T	R	Total
Peak 1														
Specified Period														
7:15 AM - 8:15 AM														
One Hour Peak														
7:15 AM - 8:15 AM	**Total**	**1**	**0**	**11**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**13**
Peak 2														
Specified Period														
4:45 PM - 5:45 PM														
One Hour Peak														
4:45 PM - 5:45 PM	**Total**	**0**	**0**	**15**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**17**

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

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

Count Name: Cass Avenue with Shell Gas Station Access Drive (north) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Shell Access Drive Eastbound						Access Drive Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	2	0	1	0	3	0	0	0	0	0	0	0	0	185	1	0	186	0	0	191	5	0	196	385
7:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	241	2	0	244	0	0	205	4	0	209	454
7:30 AM	0	1	0	3	0	4	0	0	0	0	0	0	0	0	327	3	0	330	0	0	210	1	0	211	545
7:45 AM	0	2	0	1	0	3	0	0	0	0	0	0	0	0	350	6	0	356	0	0	248	9	0	257	616
Hourly Total	0	6	0	5	0	11	0	0	0	0	0	0	0	1	1103	12	0	1116	0	0	854	19	0	873	2000
8:00 AM	0	0	0	3	0	3	0	0	0	0	0	0	0	0	221	3	0	224	0	0	231	5	0	236	463
8:15 AM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	222	3	0	225	0	2	203	3	0	208	435
8:30 AM	0	1	0	1	0	2	0	0	0	0	1	0	0	0	230	2	0	232	0	0	200	2	0	202	436
8:45 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	1	283	4	0	288	0	0	205	2	0	207	496
Hourly Total	0	3	0	5	0	8	0	0	0	0	1	0	0	1	956	12	0	969	0	2	839	12	0	853	1830
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	192	3	0	195	0	0	273	4	0	277	474
4:15 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	261	2	0	264	0	1	278	5	0	284	549
4:30 PM	0	2	0	0	0	2	0	0	0	0	0	0	0	0	244	2	0	246	0	0	257	4	0	261	509
4:45 PM	0	0	0	3	0	3	0	0	0	0	0	0	0	0	276	1	0	277	0	0	279	8	0	287	567
Hourly Total	0	3	0	5	0	8	0	0	0	0	0	0	0	1	973	8	0	982	0	1	1087	21	0	1109	2099
5:00 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	275	1	0	276	1	0	291	2	0	294	572
5:15 PM	0	1	0	2	0	3	0	0	0	0	0	0	0	0	269	0	0	269	0	1	299	3	0	303	575
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	267	0	0	267	0	0	261	3	0	264	532
5:45 PM	0	1	0	1	0	2	0	0	0	0	0	0	0	0	271	0	0	271	0	1	236	6	0	243	516
Hourly Total	0	3	0	5	0	8	0	0	0	0	0	0	0	0	1082	1	0	1083	1	2	1087	14	0	1104	2195
Grand Total	0	15	0	20	0	35	0	0	0	0	1	0	0	3	4114	33	0	4150	1	5	3867	66	0	3939	8124
Approach %	0.0	42.9	0.0	57.1	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1	99.1	0.8	-	-	0.0	0.1	98.2	1.7	-	-	-
Total %	0.0	0.2	0.0	0.2	-	0.4	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	50.6	0.4	-	51.1	0.0	0.1	47.6	0.8	-	48.5	-
Lights	0	13	0	20	-	33	0	0	0	0	-	0	0	3	4018	33	-	4054	1	5	3780	65	-	3851	7938
% Lights	-	86.7	-	100.0	-	94.3	-	-	-	-	-	-	-	100.0	97.7	100.0	-	97.7	100.0	100.0	97.8	98.5	-	97.8	97.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	28	0	-	28	0	0	23	1	-	24	52
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	0.7	0.0	-	0.7	0.0	0.0	0.6	1.5	-	0.6	0.6
Single-Unit Trucks	0	2	0	0	-	2	0	0	0	0	-	0	0	0	49	0	-	49	0	0	49	0	-	49	100
% Single-Unit Trucks	-	13.3	-	0.0	-	5.7	-	-	-	-	-	-	-	0.0	1.2	0.0	-	1.2	0.0	0.0	1.3	0.0	-	1.2	1.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	19	0	-	19	0	0	15	0	-	15	34
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	0.5	0.0	-	0.5	0.0	0.0	0.4	0.0	-	0.4	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0

% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

Count Name: Cass Avenue with Shell Gas Station Access Drive (north) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Shell Access Drive Eastbound						Access Drive Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	1	0	0	0	1	0	0	0	0	0	0	0	1	241	2	0	244	0	0	205	4	0	209	454
7:30 AM	0	1	0	3	0	4	0	0	0	0	0	0	0	0	327	3	0	330	0	0	210	1	0	211	545
7:45 AM	0	2	0	1	0	3	0	0	0	0	0	0	0	0	350	6	0	356	0	0	248	9	0	257	616
8:00 AM	0	0	0	3	0	3	0	0	0	0	0	0	0	0	221	3	0	224	0	0	231	5	0	236	463
Total	0	4	0	7	0	11	0	0	0	0	0	0	0	1	1139	14	0	1154	0	0	894	19	0	913	2078
Approach %	0.0	36.4	0.0	63.6	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1	98.7	1.2	-	-	0.0	0.0	97.9	2.1	-	-	-
Total %	0.0	0.2	0.0	0.3	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	54.8	0.7	-	55.5	0.0	0.0	43.0	0.9	-	43.9	-
PHF	0.000	0.500	0.000	0.583	-	0.688	0.000	0.000	0.000	0.000	-	0.000	0.000	0.250	0.814	0.583	-	0.810	0.000	0.000	0.901	0.528	-	0.888	0.843
Lights	0	4	0	7	-	11	0	0	0	0	-	0	0	1	1098	14	-	1113	0	0	871	18	-	889	2013
% Lights	-	100.0	-	100.0	-	100.0	-	-	-	-	-	-	-	100.0	96.4	100.0	-	96.4	-	-	97.4	94.7	-	97.4	96.9
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	14	0	-	14	0	0	7	1	-	8	22
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	1.2	0.0	-	1.2	-	-	0.8	5.3	-	0.9	1.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	18	0	-	18	0	0	10	0	-	10	28
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	1.6	0.0	-	1.6	-	-	1.1	0.0	-	1.1	1.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	9	0	-	9	0	0	6	0	-	6	15
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	0.8	0.0	-	0.8	-	-	0.7	0.0	-	0.7	0.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	0.0	0.0	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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9575 W. Higgins Rd., Suite 400

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

Count Name: Cass Avenue with Shell Gas Station Access Drive (north) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Shell Access Drive Eastbound						Access Drive Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
4:45 PM	0	0	0	3	0	3	0	0	0	0	0	0	0	0	276	1	0	277	0	0	279	8	0	287	567
5:00 PM	0	0	0	2	0	2	0	0	0	0	0	0	0	0	275	1	0	276	1	0	291	2	0	294	572
5:15 PM	0	1	0	2	0	3	0	0	0	0	0	0	0	0	269	0	0	269	0	1	299	3	0	303	575
5:30 PM	0	1	0	0	0	1	0	0	0	0	0	0	0	0	267	0	0	267	0	0	261	3	0	264	532
Total	0	2	0	7	0	9	0	0	0	0	0	0	0	0	1087	2	0	1089	1	1	1130	16	0	1148	2246
Approach %	0.0	22.2	0.0	77.8	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	99.8	0.2	-	-	0.1	0.1	98.4	1.4	-	-	-
Total %	0.0	0.1	0.0	0.3	-	0.4	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	48.4	0.1	-	48.5	0.0	0.0	50.3	0.7	-	51.1	-
PHF	0.000	0.500	0.000	0.583	-	0.750	0.000	0.000	0.000	0.000	-	0.000	0.000	0.000	0.985	0.500	-	0.983	0.250	0.250	0.945	0.500	-	0.947	0.977
Lights	0	1	0	7	-	8	0	0	0	0	-	0	0	0	1080	2	-	1082	1	1	1116	16	-	1134	2224
% Lights	-	50.0	-	100.0	-	88.9	-	-	-	-	-	-	-	-	99.4	100.0	-	99.4	100.0	100.0	98.8	100.0	-	98.8	99.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	1	0	-	1	2
% Buses	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	-	0.1	0.0	-	0.1	0.0	0.0	0.1	0.0	-	0.1	0.1
Single-Unit Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	4	0	-	4	0	0	11	0	-	11	16
% Single-Unit Trucks	-	50.0	-	0.0	-	11.1	-	-	-	-	-	-	-	-	0.4	0.0	-	0.4	0.0	0.0	1.0	0.0	-	1.0	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	2	0	-	2	4
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	-	-	-	-	-	-	-	0.2	0.0	-	0.2	0.0	0.0	0.2	0.0	-	0.2	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% 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	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Darien Path wat with Cass Avenue
TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Darien Path Way Eastbound						Access Drive Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
7:00 AM	0	2	0	0	0	2	0	1	0	0	0	1	0	0	191	0	0	191	0	0	201	0	0	201	395
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	245	0	0	245	0	0	212	0	0	212	458
7:30 AM	0	1	0	0	0	1	0	0	0	2	0	2	0	0	327	0	0	327	0	0	208	0	0	208	538
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	357	0	0	357	0	0	264	0	0	264	622
Hourly Total	0	3	0	0	0	3	0	2	0	3	0	5	0	0	1120	0	0	1120	0	0	885	0	0	885	2013
8:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	221	1	0	222	0	1	221	0	0	222	445
8:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	228	0	0	228	0	0	201	0	0	201	430
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	226	0	0	227	0	1	189	1	0	191	418
8:45 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	282	0	0	282	0	1	198	0	0	199	482
Hourly Total	0	0	0	2	0	2	0	1	0	0	0	1	1	0	957	1	0	959	0	3	809	1	0	813	1775
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	1	0	0	0	1	0	5	0	1	0	6	0	1	198	0	0	199	0	0	273	0	0	273	479
4:15 PM	0	0	0	0	0	0	0	3	0	3	0	6	0	0	259	0	0	259	0	2	275	0	0	277	542
4:30 PM	0	0	0	0	0	0	0	1	0	1	0	2	0	0	249	0	0	249	0	0	257	0	0	257	508
4:45 PM	0	1	0	0	0	1	0	3	0	2	0	5	0	0	275	0	0	275	0	1	268	0	0	269	550
Hourly Total	0	2	0	0	0	2	0	12	0	7	0	19	0	1	981	0	0	982	0	3	1073	0	0	1076	2079
5:00 PM	0	1	0	0	0	1	0	4	0	2	0	6	0	0	283	1	0	284	0	0	282	0	0	282	573
5:15 PM	0	0	0	0	0	0	0	3	0	5	0	8	0	1	266	0	0	267	0	1	286	0	0	287	562
5:30 PM	0	0	0	1	0	1	0	3	0	1	0	4	0	0	267	0	0	267	0	0	243	0	0	243	515
5:45 PM	0	0	0	1	0	1	0	1	0	1	0	2	0	0	264	0	0	264	0	0	234	2	0	236	503
Hourly Total	0	1	0	2	0	3	0	11	0	9	0	20	0	1	1080	1	0	1082	0	1	1045	2	0	1048	2153
Grand Total	0	6	0	4	0	10	0	26	0	19	0	45	1	2	4138	2	0	4143	0	7	3812	3	0	3822	8020
Approach %	0.0	60.0	0.0	40.0	-	-	0.0	57.8	0.0	42.2	-	-	0.0	0.0	99.9	0.0	-	-	0.0	0.2	99.7	0.1	-	-	-
Total %	0.0	0.1	0.0	0.0	-	0.1	0.0	0.3	0.0	0.2	-	0.6	0.0	0.0	51.6	0.0	-	51.7	0.0	0.1	47.5	0.0	-	47.7	-
Lights	0	6	0	4	-	10	0	26	0	19	-	45	1	2	4029	2	-	4034	0	6	3721	3	-	3730	7819
% Lights	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	100.0	100.0	97.4	100.0	-	97.4	-	85.7	97.6	100.0	-	97.6	97.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	30	0	-	30	0	0	22	0	-	22	52
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.7	0.0	-	0.7	-	0.0	0.6	0.0	-	0.6	0.6
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	57	0	-	57	0	1	50	0	-	51	108
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	1.4	0.0	-	1.4	-	14.3	1.3	0.0	-	1.3	1.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	22	0	-	22	0	0	19	0	-	19	41
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.5	0.0	-	0.5	-	0.0	0.5	0.0	-	0.5	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0

% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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

Count Name: Darien Path wat with Cass Avenue
TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Darien Path Way Eastbound						Access Drive Westbound						Cass Avenue Northbound						Cass Avenue Southbound						Int. 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	U-Turn	Left	Thru	Right	Peds	App. Total	
7:15 AM	0	0	0	0	0	0	0	1	0	0	0	1	0	0	245	0	0	245	0	0	212	0	0	212	458
7:30 AM	0	1	0	0	0	1	0	0	0	2	0	2	0	0	327	0	0	327	0	0	208	0	0	208	538
7:45 AM	0	0	0	0	0	0	0	0	0	1	0	1	0	0	357	0	0	357	0	0	264	0	0	264	622
8:00 AM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	221	1	0	222	0	1	221	0	0	222	445
Total	0	1	0	1	0	2	0	1	0	3	0	4	0	0	1150	1	0	1151	0	1	905	0	0	906	2063
Approach %	0.0	50.0	0.0	50.0	-	-	0.0	25.0	0.0	75.0	-	-	0.0	0.0	99.9	0.1	-	-	0.0	0.1	99.9	0.0	-	-	-
Total %	0.0	0.0	0.0	0.0	-	0.1	0.0	0.0	0.0	0.1	-	0.2	0.0	0.0	55.7	0.0	-	55.8	0.0	0.0	43.9	0.0	-	43.9	-
PHF	0.000	0.250	0.000	0.250	-	0.500	0.000	0.250	0.000	0.375	-	0.500	0.000	0.000	0.805	0.250	-	0.806	0.000	0.250	0.857	0.000	-	0.858	0.829
Lights	0	1	0	1	-	2	0	1	0	3	-	4	0	0	1103	1	-	1104	0	1	879	0	-	880	1990
% Lights	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	-	95.9	100.0	-	95.9	-	100.0	97.1	-	-	97.1	96.5
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	16	0	-	16	0	0	8	0	-	8	24
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	-	1.4	0.0	-	1.4	-	0.0	0.9	-	-	0.9	1.2
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	20	0	-	20	0	0	12	0	-	12	32
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	-	1.7	0.0	-	1.7	-	0.0	1.3	-	-	1.3	1.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	11	0	-	11	0	0	6	0	-	6	17
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	-	1.0	0.0	-	1.0	-	0.0	0.7	-	-	0.7	0.8
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Darien Path wat with Cass Avenue
TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Darien Path Way Eastbound						Access Drive Westbound						Cass Avenue Northbound						Cass Avenue 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
4:45 PM	0	1	0	0	0	1	0	3	0	2	0	5	0	0	275	0	0	275	0	1	268	0	0	269	550
5:00 PM	0	1	0	0	0	1	0	4	0	2	0	6	0	0	283	1	0	284	0	0	282	0	0	282	573
5:15 PM	0	0	0	0	0	0	0	3	0	5	0	8	0	1	266	0	0	267	0	1	286	0	0	287	562
5:30 PM	0	0	0	1	0	1	0	3	0	1	0	4	0	0	267	0	0	267	0	0	243	0	0	243	515
Total	0	2	0	1	0	3	0	13	0	10	0	23	0	1	1091	1	0	1093	0	2	1079	0	0	1081	2200
Approach %	0.0	66.7	0.0	33.3	-	-	0.0	56.5	0.0	43.5	-	-	0.0	0.1	99.8	0.1	-	-	0.0	0.2	99.8	0.0	-	-	-
Total %	0.0	0.1	0.0	0.0	-	0.1	0.0	0.6	0.0	0.5	-	1.0	0.0	0.0	49.6	0.0	-	49.7	0.0	0.1	49.0	0.0	-	49.1	-
PHF	0.000	0.500	0.000	0.250	-	0.750	0.000	0.813	0.000	0.500	-	0.719	0.000	0.250	0.964	0.250	-	0.962	0.000	0.500	0.943	0.000	-	0.942	0.960
Lights	0	2	0	1	-	3	0	13	0	10	-	23	0	1	1082	1	-	1084	0	1	1066	0	-	1067	2177
% Lights	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	-	100.0	99.2	100.0	-	99.2	-	50.0	98.8	-	-	98.7	99.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	0	0	2	0	-	2	3
% Buses	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.1	0.0	-	0.1	-	0.0	0.2	-	-	0.2	0.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	6	0	-	6	0	1	9	0	-	10	16
% Single-Unit Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.5	0.0	-	0.5	-	50.0	0.8	-	-	0.9	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	2	0	-	2	0	0	2	0	-	2	4
% Articulated Trucks	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.2	0.0	-	0.2	-	0.0	0.2	-	-	0.2	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Frontage RD with Corridor

		Eastbound			Westbound			Northbound			Southbound			
Time Period	Class.	L	T	R	L	T	R	L	T	R	L	T	R	Total
Peak 1														
Specified Period														
7:15 AM - 8:15 AM														
One Hour Peak														
7:15 AM - 8:15 AM	**Total**	**7**	**282**	**0**	**0**	**162**	**18**	**0**	**0**	**0**	**10**	**0**	**11**	**490**
Peak 2														
Specified Period														
4:45 PM - 5:45 PM														
One Hour Peak														
4:45 PM - 5:45 PM	**Total**	**3**	**236**	**0**	**0**	**231**	**23**	**0**	**0**	**0**	**20**	**0**	**8**	**521**

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(847)518-9990 mmendoza@kloainc.com

Count Name: Frontage Road with Shell Gas Station (east) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Frontage Road Eastbound					Frontage Road Northbound					Access Drive Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	0	4	0	4	0	0	6	0	6	0	4	0	0	4	14
7:15 AM	0	0	3	0	3	0	0	7	0	7	0	2	0	0	2	12
7:30 AM	0	0	1	0	1	0	0	6	0	6	0	3	0	0	3	10
7:45 AM	0	0	5	0	5	0	1	6	0	7	0	3	0	0	3	15
Hourly Total	0	0	13	0	13	0	1	25	0	26	0	12	0	0	12	51
8:00 AM	0	0	3	0	3	0	0	6	0	6	0	2	0	0	2	11
8:15 AM	0	0	1	0	1	0	0	5	0	5	0	3	0	0	3	9
8:30 AM	0	0	3	0	3	1	0	11	0	12	0	3	0	1	3	18
8:45 AM	0	0	1	0	1	0	0	4	0	4	0	2	0	0	2	7
Hourly Total	0	0	8	0	8	1	0	26	0	27	0	10	0	1	10	45
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	3	0	3	0	0	10	0	10	0	5	1	0	6	19
4:15 PM	0	0	3	0	3	0	1	9	0	10	0	9	0	0	9	22
4:30 PM	0	0	10	0	10	0	1	12	0	13	0	1	0	0	1	24
4:45 PM	0	2	4	0	6	0	1	5	0	6	0	2	0	0	2	14
Hourly Total	0	2	20	0	22	0	3	36	0	39	0	17	1	0	18	79
5:00 PM	0	0	2	0	2	0	0	7	0	7	0	2	0	0	2	11
5:15 PM	0	0	5	0	5	0	0	8	0	8	0	4	0	0	4	17
5:30 PM	0	0	2	0	2	0	0	9	0	9	0	6	0	0	6	17
5:45 PM	0	0	5	0	5	0	2	5	0	7	0	4	0	0	4	16
Hourly Total	0	0	14	0	14	0	2	29	0	31	0	16	0	0	16	61
Grand Total	0	2	55	0	57	1	6	116	0	123	0	55	1	1	56	236
Approach %	0.0	3.5	96.5	-	-	0.8	4.9	94.3	-	-	0.0	98.2	1.8	-	-	-
Total %	0.0	0.8	23.3	-	24.2	0.4	2.5	49.2	-	52.1	0.0	23.3	0.4	-	23.7	-
Lights	0	2	51	-	53	1	6	111	-	118	0	52	1	-	53	224
% Lights	-	100.0	92.7	-	93.0	100.0	100.0	95.7	-	95.9	-	94.5	100.0	-	94.6	94.9
Buses	0	0	2	-	2	0	0	0	-	0	0	2	0	-	2	4
% Buses	-	0.0	3.6	-	3.5	0.0	0.0	0.0	-	0.0	-	3.6	0.0	-	3.6	1.7
Single-Unit Trucks	0	0	2	-	2	0	0	5	-	5	0	1	0	-	1	8
% Single-Unit Trucks	-	0.0	3.6	-	3.5	0.0	0.0	4.3	-	4.1	-	1.8	0.0	-	1.8	3.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	0.0
Bicycles on Road	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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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Count Name: Frontage Road with Shell Gas Station (east) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Frontage Road Eastbound					Frontage Road Northbound					Access Drive Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:15 AM	0	0	3	0	3	0	0	7	0	7	0	2	0	0	2	12
7:30 AM	0	0	1	0	1	0	0	6	0	6	0	3	0	0	3	10
7:45 AM	0	0	5	0	5	0	1	6	0	7	0	3	0	0	3	15
8:00 AM	0	0	3	0	3	0	0	6	0	6	0	2	0	0	2	11
Total	0	0	12	0	12	0	1	25	0	26	0	10	0	0	10	48
Approach %	0.0	0.0	100.0	-	-	0.0	3.8	96.2	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	0.0	25.0	-	25.0	0.0	2.1	52.1	-	54.2	0.0	20.8	0.0	-	20.8	-
PHF	0.000	0.000	0.600	-	0.600	0.000	0.250	0.893	-	0.929	0.000	0.833	0.000	-	0.833	0.800
Lights	0	0	8	-	8	0	1	24	-	25	0	10	0	-	10	43
% Lights	-	-	66.7	-	66.7	-	100.0	96.0	-	96.2	-	100.0	-	-	100.0	89.6
Buses	0	0	2	-	2	0	0	0	-	0	0	0	0	-	0	2
% Buses	-	-	16.7	-	16.7	-	0.0	0.0	-	0.0	-	0.0	-	-	0.0	4.2
Single-Unit Trucks	0	0	2	-	2	0	0	1	-	1	0	0	0	-	0	3
% Single-Unit Trucks	-	-	16.7	-	16.7	-	0.0	4.0	-	3.8	-	0.0	-	-	0.0	6.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	-	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Road	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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Frontage Road with Shell Gas Station (east) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Frontage Road Eastbound					Frontage Road Northbound					Access Drive Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
4:45 PM	0	2	4	0	6	0	1	5	0	6	0	2	0	0	2	14
5:00 PM	0	0	2	0	2	0	0	7	0	7	0	2	0	0	2	11
5:15 PM	0	0	5	0	5	0	0	8	0	8	0	4	0	0	4	17
5:30 PM	0	0	2	0	2	0	0	9	0	9	0	6	0	0	6	17
Total	0	2	13	0	15	0	1	29	0	30	0	14	0	0	14	59
Approach %	0.0	13.3	86.7	-	-	0.0	3.3	96.7	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	3.4	22.0	-	25.4	0.0	1.7	49.2	-	50.8	0.0	23.7	0.0	-	23.7	-
PHF	0.000	0.250	0.650	-	0.625	0.000	0.250	0.806	-	0.833	0.000	0.583	0.000	-	0.583	0.868
Lights	0	2	13	-	15	0	1	28	-	29	0	13	0	-	13	57
% Lights	-	100.0	100.0	-	100.0	-	100.0	96.6	-	96.7	-	92.9	-	-	92.9	96.6
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	1	-	1	0	1	0	-	1	2
% Single-Unit Trucks	-	0.0	0.0	-	0.0	-	0.0	3.4	-	3.3	-	7.1	-	-	7.1	3.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	0.0	0.0	-	0.0	-	0.0	0.0	-	0.0	-	0.0	-	-	0.0	0.0
Bicycles on Road	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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Corridor with Shell Access Drive (west)

		Eastbound			Westbound			Northbound			Southbound			
Time Period	**Class.**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**L**	**T**	**R**	**Total**
Peak 1 Specified Period 7:15 AM - 8:15 AM One Hour Peak														
7:15 AM - 8:15 AM	**Total**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Peak 2 Specified Period 4:45 PM - 5:45 PM One Hour Peak														
4:45 PM - 5:45 PM	**Total**	**0**	**4**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**11**	**0**	**0**	**16**

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

Count Name: Frontage Road with Alpine Banquets Access Drive TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Alpine Banquets Access Drive Eastbound					Frontage Road Westbound					Alpine Banquets Access Drive Southbound					Int. Total
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	
7:00 AM	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	1	0	0	0	0	0	0	1	0	0	1	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
Hourly Total	0	0	1	0	1	0	1	0	0	1	0	2	0	1	2	4
5:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	1
Hourly Total	0	0	1	0	1	1	0	0	0	1	0	2	0	0	2	4
Grand Total	0	0	4	0	4	1	1	0	0	2	0	4	0	1	4	10
Approach %	0.0	0.0	100.0	-	-	50.0	50.0	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	0.0	40.0	-	40.0	10.0	10.0	0.0	-	20.0	0.0	40.0	0.0	-	40.0	-
Lights	0	0	4	-	4	1	1	0	-	2	0	4	0	-	4	10
% Lights	-	-	100.0	-	100.0	100.0	100.0	-	-	100.0	-	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	-	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	-	-	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	-	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
% Bicycles on Road	-	-	0.0	-	0.0	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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9575 W. Higgins Rd., Suite 400

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

Count Name: Frontage Road with Alpine Banquets Access Drive TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Alpine Banquets Access Drive Eastbound					Frontage Road Westbound					Alpine Banquets Access Drive Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	0.000
Lights	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Lights	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Kenig Lindgren O'Hara Aboona, Inc.
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Count Name: Frontage Road with Alpine Banquets Access Drive TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Alpine Banquets Access Drive Eastbound					Frontage Road Westbound					Alpine Banquets Access Drive Southbound					
	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Right	Peds	App. Total	Int. Total
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1
5:00 PM	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	1	0	0	0	0	0	0	3	0	1	3	4
Approach %	0.0	0.0	100.0	-	-	0.0	0.0	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	0.0	25.0	-	25.0	0.0	0.0	0.0	-	0.0	0.0	75.0	0.0	-	75.0	-
PHF	0.000	0.000	0.250	-	0.250	0.000	0.000	0.000	-	0.000	0.000	0.375	0.000	-	0.375	0.500
Lights	0	0	1	-	1	0	0	0	-	0	0	3	0	-	3	4
% Lights	-	-	100.0	-	100.0	-	-	-	-	-	-	100.0	-	-	100.0	100.0
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	-	-	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
% Bicycles on Road	-	-	0.0	-	0.0	-	-	-	-	-	-	0.0	-	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

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

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

Count Name: Cass Avenue with 1-55 Ramp (north) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Westbound Approach Westbound					I-55 Ramp Northbound					Cass Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:00 AM	0	0	47	0	47	0	144	0	0	144	0	0	0	0	0	191
7:15 AM	0	0	69	0	69	0	156	0	0	156	0	0	0	0	0	225
7:30 AM	0	0	89	0	89	0	193	0	0	193	0	0	0	0	0	282
7:45 AM	0	0	117	0	117	0	162	0	0	162	0	0	0	0	0	279
Hourly Total	0	0	322	0	322	0	655	0	0	655	0	0	0	0	0	977
8:00 AM	0	0	74	0	74	0	124	0	0	124	0	0	0	0	0	198
8:15 AM	0	0	71	0	71	0	164	0	0	164	0	0	0	0	0	235
8:30 AM	0	0	70	0	70	0	155	0	0	155	0	0	0	0	0	225
8:45 AM	0	0	85	0	85	0	185	0	0	185	0	0	0	0	0	270
Hourly Total	0	0	300	0	300	0	628	0	0	628	0	0	0	0	0	928
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	57	0	57	0	158	0	0	158	0	0	0	0	0	215
4:15 PM	0	0	66	0	66	0	184	0	0	184	0	0	0	0	0	250
4:30 PM	0	0	61	0	61	0	179	0	0	179	0	0	0	0	0	240
4:45 PM	0	0	76	0	76	0	186	0	0	186	0	0	0	0	0	262
Hourly Total	0	0	260	0	260	0	707	0	0	707	0	0	0	0	0	967
5:00 PM	0	0	79	0	79	0	191	0	0	191	0	0	0	0	0	270
5:15 PM	0	0	64	0	64	0	212	0	0	212	0	0	0	0	0	276
5:30 PM	0	0	68	0	68	0	191	0	0	191	0	0	0	0	0	259
5:45 PM	0	0	95	0	95	0	168	0	0	168	0	0	0	0	0	263
Hourly Total	0	0	306	0	306	0	762	0	0	762	0	0	0	0	0	1068
Grand Total	0	0	1188	0	1188	0	2752	0	0	2752	0	0	0	0	0	3940
Approach %	0.0	0.0	100.0	-	-	0.0	100.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	0.0	30.2	-	30.2	0.0	69.8	0.0	-	69.8	0.0	0.0	0.0	-	0.0	-
Lights	0	0	1151	-	1151	0	2677	0	-	2677	0	0	0	-	0	3828
% Lights	-	-	96.9	-	96.9	-	97.3	-	-	97.3	-	-	-	-	-	97.2
Buses	0	0	2	-	2	0	24	0	-	24	0	0	0	-	0	26
% Buses	-	-	0.2	-	0.2	-	0.9	-	-	0.9	-	-	-	-	-	0.7
Single-Unit Trucks	0	0	30	-	30	0	34	0	-	34	0	0	0	-	0	64
% Single-Unit Trucks	-	-	2.5	-	2.5	-	1.2	-	-	1.2	-	-	-	-	-	1.6
Articulated Trucks	0	0	5	-	5	0	17	0	-	17	0	0	0	-	0	22
% Articulated Trucks	-	-	0.4	-	0.4	-	0.6	-	-	0.6	-	-	-	-	-	0.6
Bicycles on Road	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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Cass Avenue with 1-55 Ramp (north) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Westbound Approach Westbound					I-55 Ramp Northbound					Cass Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
7:15 AM	0	0	69	0	69	0	156	0	0	156	0	0	0	0	0	225
7:30 AM	0	0	89	0	89	0	193	0	0	193	0	0	0	0	0	282
7:45 AM	0	0	117	0	117	0	162	0	0	162	0	0	0	0	0	279
8:00 AM	0	0	74	0	74	0	124	0	0	124	0	0	0	0	0	198
Total	0	0	349	0	349	0	635	0	0	635	0	0	0	0	0	984
Approach %	0.0	0.0	100.0	-	-	0.0	100.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	0.0	35.5	-	35.5	0.0	64.5	0.0	-	64.5	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.000	0.746	-	0.746	0.000	0.823	0.000	-	0.823	0.000	0.000	0.000	-	0.000	0.872
Lights	0	0	334	-	334	0	604	0	-	604	0	0	0	-	0	938
% Lights	-	-	95.7	-	95.7	-	95.1	-	-	95.1	-	-	-	-	-	95.3
Buses	0	0	0	-	0	0	11	0	-	11	0	0	0	-	0	11
% Buses	-	-	0.0	-	0.0	-	1.7	-	-	1.7	-	-	-	-	-	1.1
Single-Unit Trucks	0	0	12	-	12	0	13	0	-	13	0	0	0	-	0	25
% Single-Unit Trucks	-	-	3.4	-	3.4	-	2.0	-	-	2.0	-	-	-	-	-	2.5
Articulated Trucks	0	0	3	-	3	0	7	0	-	7	0	0	0	-	0	10
% Articulated Trucks	-	-	0.9	-	0.9	-	1.1	-	-	1.1	-	-	-	-	-	1.0
Bicycles on Road	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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Count Name: Cass Avenue with 1-55 Ramp (north) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Westbound Approach Westbound					I-55 Ramp Northbound					Cass Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	Int. Total
4:45 PM	0	0	76	0	76	0	186	0	0	186	0	0	0	0	0	262
5:00 PM	0	0	79	0	79	0	191	0	0	191	0	0	0	0	0	270
5:15 PM	0	0	64	0	64	0	212	0	0	212	0	0	0	0	0	276
5:30 PM	0	0	68	0	68	0	191	0	0	191	0	0	0	0	0	259
Total	0	0	287	0	287	0	780	0	0	780	0	0	0	0	0	1067
Approach %	0.0	0.0	100.0	-	-	0.0	100.0	0.0	-	-	0.0	0.0	0.0	-	-	-
Total %	0.0	0.0	26.9	-	26.9	0.0	73.1	0.0	-	73.1	0.0	0.0	0.0	-	0.0	-
PHF	0.000	0.000	0.908	-	0.908	0.000	0.920	0.000	-	0.920	0.000	0.000	0.000	-	0.000	0.966
Lights	0	0	283	-	283	0	775	0	-	775	0	0	0	-	0	1058
% Lights	-	-	98.6	-	98.6	-	99.4	-	-	99.4	-	-	-	-	-	99.2
Buses	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Buses	-	-	0.0	-	0.0	-	0.3	-	-	0.3	-	-	-	-	-	0.2
Single-Unit Trucks	0	0	4	-	4	0	1	0	-	1	0	0	0	-	0	5
% Single-Unit Trucks	-	-	1.4	-	1.4	-	0.1	-	-	0.1	-	-	-	-	-	0.5
Articulated Trucks	0	0	0	-	0	0	2	0	-	2	0	0	0	-	0	2
% Articulated Trucks	-	-	0.0	-	0.0	-	0.3	-	-	0.3	-	-	-	-	-	0.2
Bicycles on Road	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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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(847)518-9990 mmendoza@kloainc.com

Count Name: Cass Avenue with I-55 Ramp (south) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Data

Start Time	Eastbound Approach Eastbound					I-55 Ramp Northbound					Cass Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:00 AM	0	0	0	0	0	0	1	0	0	1	0	155	88	0	243	244
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	150	73	0	223	223
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	180	73	0	253	253
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	212	73	0	285	285
Hourly Total	0	0	0	0	0	0	1	0	0	1	0	697	307	0	1004	1005
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	181	50	0	231	231
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	184	68	0	252	252
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	168	59	0	227	227
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	156	56	0	212	212
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	689	233	0	922	922
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	182	100	0	282	282
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	167	114	0	281	281
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	171	83	0	254	254
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	166	96	0	262	262
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	686	393	0	1079	1079
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	168	111	0	279	279
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	154	94	0	248	248
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	149	79	0	228	228
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	143	80	0	223	223
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	614	364	0	978	978
Grand Total	0	0	0	0	0	0	1	0	0	1	0	2686	1297	0	3983	3984
Approach %	0.0	0.0	0.0	-	-	0.0	100.0	0.0	-	-	0.0	67.4	32.6	-	-	-
Total %	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	67.4	32.6	-	100.0	-
Lights	0	0	0	-	0	0	1	0	-	1	0	2636	1260	-	3896	3897
% Lights	-	-	-	-	-	-	100.0	-	-	100.0	-	98.1	97.1	-	97.8	97.8
Buses	0	0	0	-	0	0	0	0	-	0	0	14	1	-	15	15
% Buses	-	-	-	-	-	-	0.0	-	-	0.0	-	0.5	0.1	-	0.4	0.4
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	30	31	-	61	61
% Single-Unit Trucks	-	-	-	-	-	-	0.0	-	-	0.0	-	1.1	2.4	-	1.5	1.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	6	5	-	11	11
% Articulated Trucks	-	-	-	-	-	-	0.0	-	-	0.0	-	0.2	0.4	-	0.3	0.3
Bicycles on Road	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
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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

Count Name: Cass Avenue with I-55 Ramp (south) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (7:15 AM)

Start Time	Eastbound Approach Eastbound					I-55 Ramp Northbound					Cass Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	150	73	0	223	223
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	180	73	0	253	253
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	212	73	0	285	285
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	181	50	0	231	231
Total	0	0	0	0	0	0	0	0	0	0	0	723	269	0	992	992
Approach %	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	72.9	27.1	-	-	-
Total %	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	72.9	27.1	-	100.0	-
PHF	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	0.000	0.853	0.921	-	0.870	0.870
Lights	0	0	0	-	0	0	0	0	-	0	0	704	259	-	963	963
% Lights	-	-	-	-	-	-	-	-	-	-	-	97.4	96.3	-	97.1	97.1
Buses	0	0	0	-	0	0	0	0	-	0	0	5	0	-	5	5
% Buses	-	-	-	-	-	-	-	-	-	-	-	0.7	0.0	-	0.5	0.5
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	11	8	-	19	19
% Single-Unit Trucks	-	-	-	-	-	-	-	-	-	-	-	1.5	3.0	-	1.9	1.9
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	3	2	-	5	5
% Articulated Trucks	-	-	-	-	-	-	-	-	-	-	-	0.4	0.7	-	0.5	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

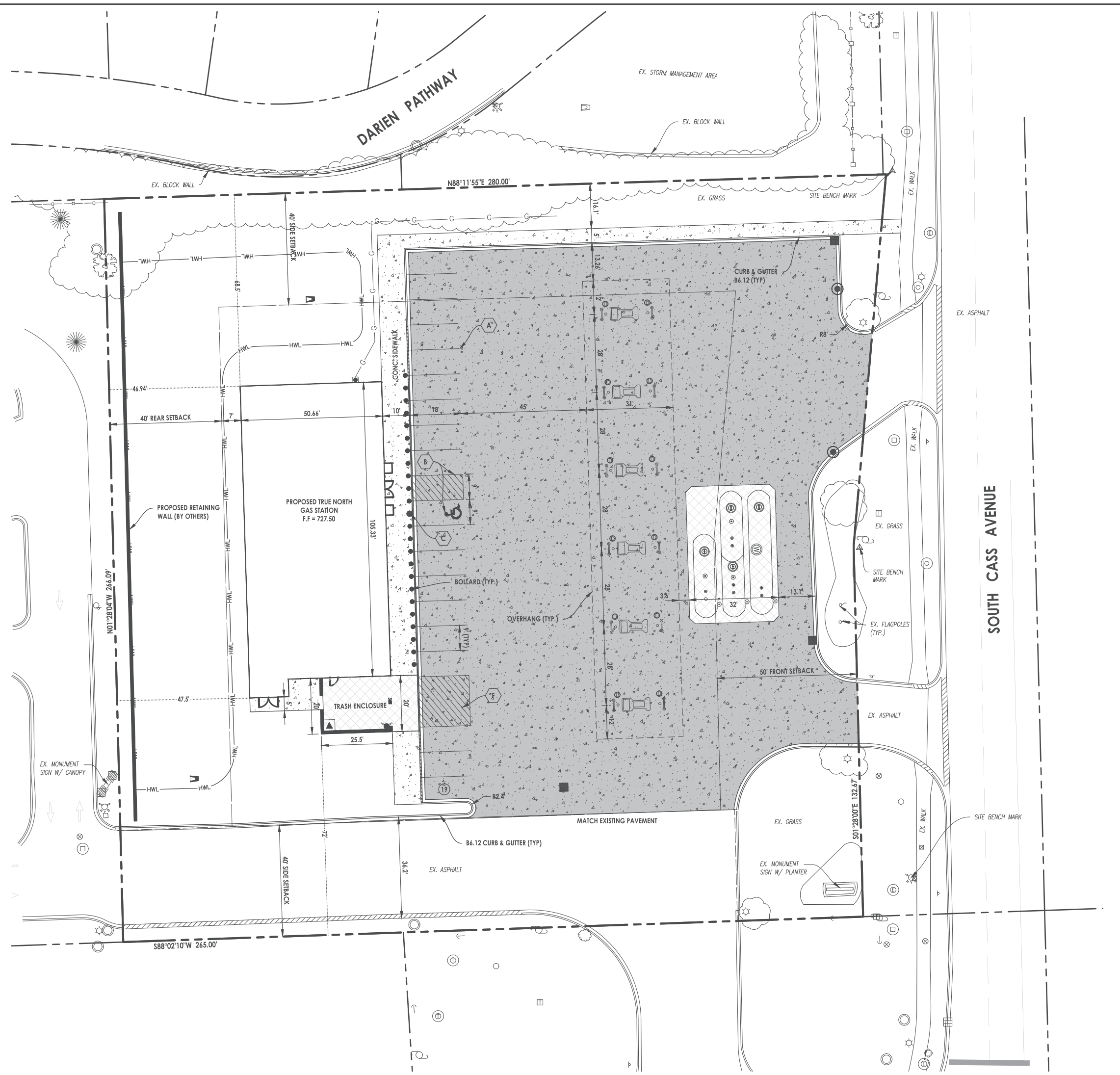
Rosemont, Illinois, United States 60018
(847)518-9990 mmendoza@kloainc.com

Count Name: Cass Avenue with I-55 Ramp (south) TMC
Site Code:
Start Date: 12/04/2024

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Eastbound Approach Eastbound					I-55 Ramp Northbound					Cass Avenue Southbound					
	U-Turn	Left	Right	Peds	App. Total	U-Turn	Left	Thru	Peds	App. Total	U-Turn	Thru	Right	Peds	App. Total	Int. Total
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	166	96	0	262	262
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	168	111	0	279	279
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	154	94	0	248	248
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	149	79	0	228	228
Total	0	0	0	0	0	0	0	0	0	0	0	637	380	0	1017	1017
Approach %	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	62.6	37.4	-	-	-
Total %	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	62.6	37.4	-	100.0	-
PHF	0.000	0.000	0.000	-	0.000	0.000	0.000	0.000	-	0.000	0.000	0.948	0.856	-	0.911	0.911
Lights	0	0	0	-	0	0	0	0	-	0	0	634	373	-	1007	1007
% Lights	-	-	-	-	-	-	-	-	-	-	-	99.5	98.2	-	99.0	99.0
Buses	0	0	0	-	0	0	0	0	-	0	0	1	1	-	2	2
% Buses	-	-	-	-	-	-	-	-	-	-	-	0.2	0.3	-	0.2	0.2
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	1	4	-	5	5
% Single-Unit Trucks	-	-	-	-	-	-	-	-	-	-	-	0.2	1.1	-	0.5	0.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	2	-	3	3
% Articulated Trucks	-	-	-	-	-	-	-	-	-	-	-	0.2	0.5	-	0.3	0.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	-	-	-	-	-	-	-	-	-	-	-	0.0	0.0	-	0.0	0.0
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Site Plan



NOTES:

1. ALL DIMENSIONS ALONG CURB LINES ARE TO FACE OF CURB, UNLESS NOTED OTHERWISE.
2. BUILDINGS AND ADJACENT TO BUILDING IMPROVEMENTS SHOWN ON THESE PLANS ARE BASED UPON THE BUILDING PLANS PROVIDED BY OTHERS AT THE DATE OF THESE PLANS BEING PREPARED. BUILDING PLANS NORMALLY CONTINUE TO CHANGE AFTER SITE PLANS HAVE BEEN APPROVED. THEREFORE THE CONTRACTOR SHALL USE THE BUILDING PLANS FOR FINAL BUILDING IMPROVEMENTS, AND VERIFY THAT ALL ADJACENT IMPROVEMENTS ARE CONSISTENT WITH THE DESIGN INTENT AND REQUIREMENTS OF THE SITE PLANS. THE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY IF CLARIFICATION IS NEEDED, OR IF CONFLICTS OR INCONSISTENCIES EXIST.
3. ADA DETECTIBLE WARNING STRIPS SHALL BE CAST IRON TILES, WET SET INTO CONCRETE SURFACE, PER MANUFACTURERS INSTALLATION RECOMMENDATIONS.
4. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY SIGHT ON SOLUTIONS, INC.

(X) SIGNING AND STRIPING SCHEDULE

A. 4" YELLOW STRIPING
B. YELLOW HANDICAP PARKING STRIPING (SEE DETAIL)
C. "ACCESSIBLE" PARKING STALL SIGN ASSEMBLY ($250 FINE)
D. "STOP" SIGN R1-1 (30"X30")
E. 24" WHITE THERMOPLASTIC STOP BAR
F. 4" PAINTED CROSS STRIPING 4' C-C
G. DIRECTIONAL ARROW
H. RIGHT TURN ONLY R3-5 (24"X30")
I. THERMOPLASTIC RIGHT TURN ONLY STRIPING
J. 4" YELLOW LINES, 5.5" C-C SKIP-DASH AND SOLID
K. 6" SOLID WHITE THERMOPLASTIC.
L. "NO LEFT TURN" SIGN (30"X30")
M. 6" WHITE THERMOPLASTIC 6' SKIP 2' DASH

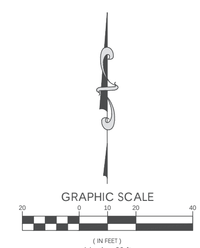
STRIPING NOTE: ON-SITE PAVEMENT MARKINGS AND GRAPHICS SHALL CONSIST OF TWO (2) COATS OF TRAFFIC-RATED PAINT APPLIED A MINIMUM OF 30 DAYS APART. STRIPING AND GRAPHICS AT ENTRY DRIVES SHALL BE THERMOPLASTIC AS NOTED. MATERIALS SHALL MEET ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARDS.

(X) PARKING SUMMARY

	PROPOSED
REGULAR STALLS (9'x18')	18
ACCESSIBLE STALLS (16'x18')	1
TOTAL STALL COUNT	19

LEGEND:

- ADA TRUNCATED DOMES
- EXISTING BARRIER CURB
- EXISTING CURB AND GUTTER
- EXISTING CURB AND GUTTER - DEPRESSED
- B6.12 CURB AND GUTTER UNLESS NOTED OTHERWISE
- B6.12 CURB AND GUTTER - DEPRESSED
- B6.12 CURB AND GUTTER - TRANSITION (ZERO TO FULL HEIGHT)
- BARRIER CURB AND GUTTER UNLESS NOTED OTHERWISE
- BARRIER CURB AND GUTTER - DEPRESSED
- B6.12 CURB AND GUTTER - TRANSITION (ZERO TO FULL HEIGHT)
- SAWCUT LINE
- CONCRETE PAVEMENT FOR TANK PAD, DUMPSTER ENCLOSURE, AND APRONS: 8" P.C. CONCRETE (CLASS PV) W/ 6x6 WWF EACH WAY; 6" AGGREGATE BASE COURSE, TYPE B, CA-6
- CONCRETE PAVEMENT FOR FUEL AND ISLAND PARKING: 6" P.C. CONCRETE (CLASS PV) W/ #4 REBAR @12" O.C. EACH WAY; 6" AGGREGATE BASE COURSE, TYPE B, CA-6
- CONCRETE SIDEWALK: 5" P.C. CONCRETE (CLASS SI); 4" AGGREGATE BASE COURSE, TYPE B, CA-6



No.	DATE	DESCRIPTION
0	04/26/19	INTERNAL REVIEW

No.	DATE	DESCRIPTION

rtm engineering consultants
650 E. Algonquin Road
Suite 250
Schaumburg, IL 60173
Telephone: (847) 756-4180
www.rtmec.com
IL Design Firm: 184006777-0002

SHEET NAME: SITE GEOMETRIC PLAN

PROJECT NAME: TRUENORTH
8226 CASS AVE.
DARIEN, IL

PROJECT No. TN 984
SHEET No. C2.0
OF 13 SHEETS

ITE Trip Generation Sheets

Convenience Store/Gas Station - GFA (2-4k) (945)

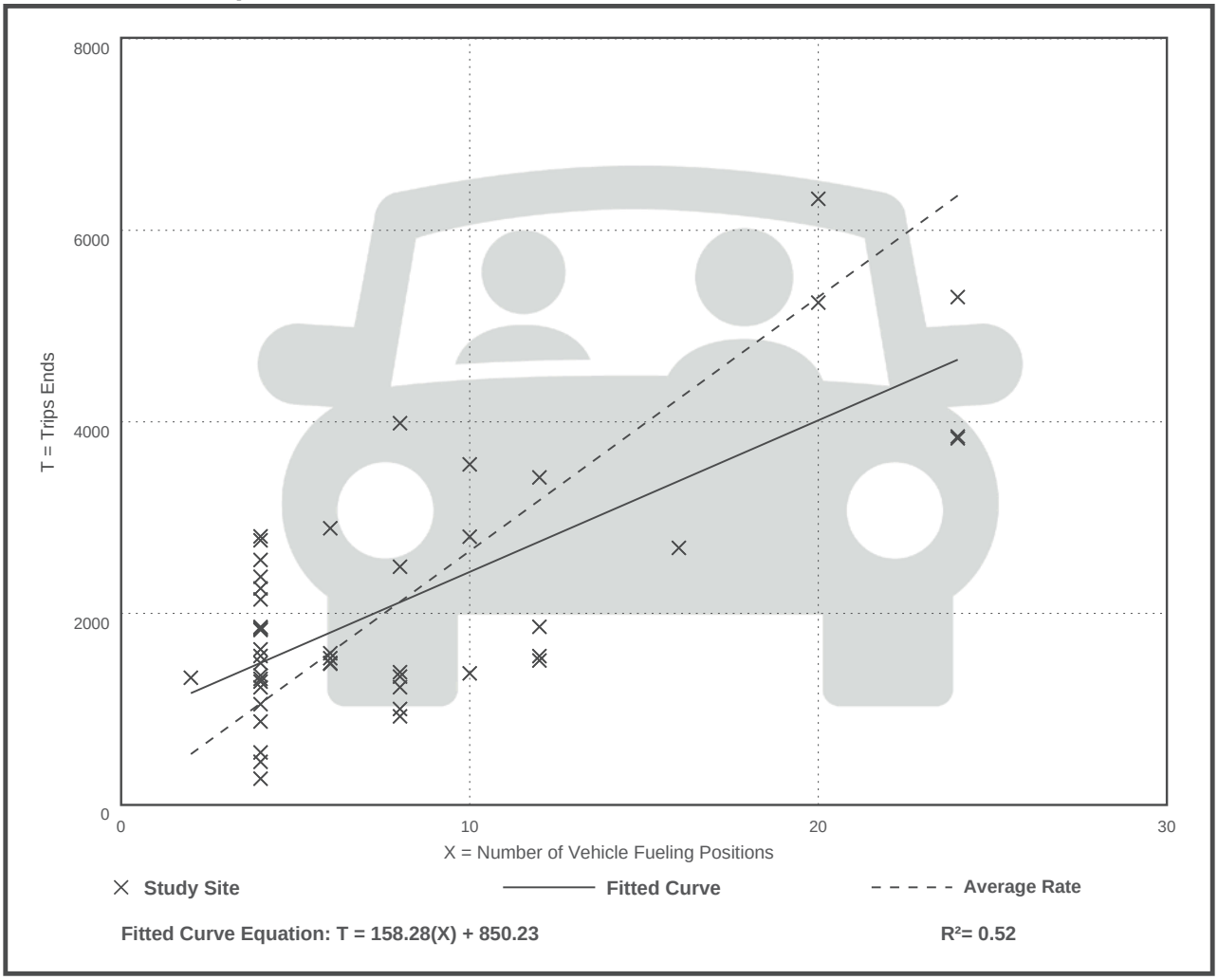
Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 48
Avg. Num. of Vehicle Fueling Positions: 8
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
265.12	68.50 - 701.00	142.37

Data Plot and Equation



Fitted Curve Equation: T = 158.28(X) + 850.23

R^2= 0.52

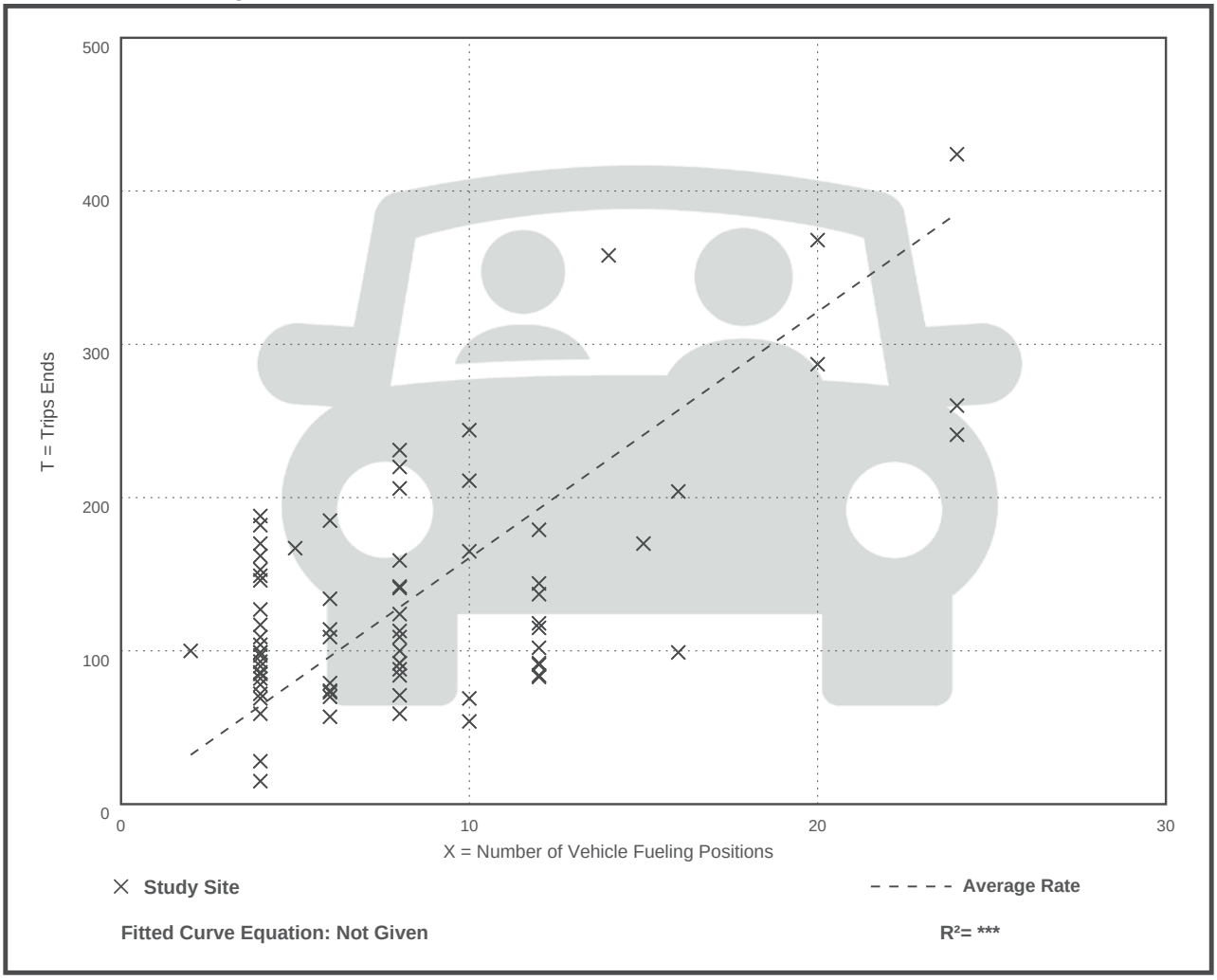
Convenience Store/Gas Station - GFA (2-4k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 76
Avg. Num. of Vehicle Fueling Positions: 8
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
16.06	3.75 - 50.00	8.79

Data Plot and Equation



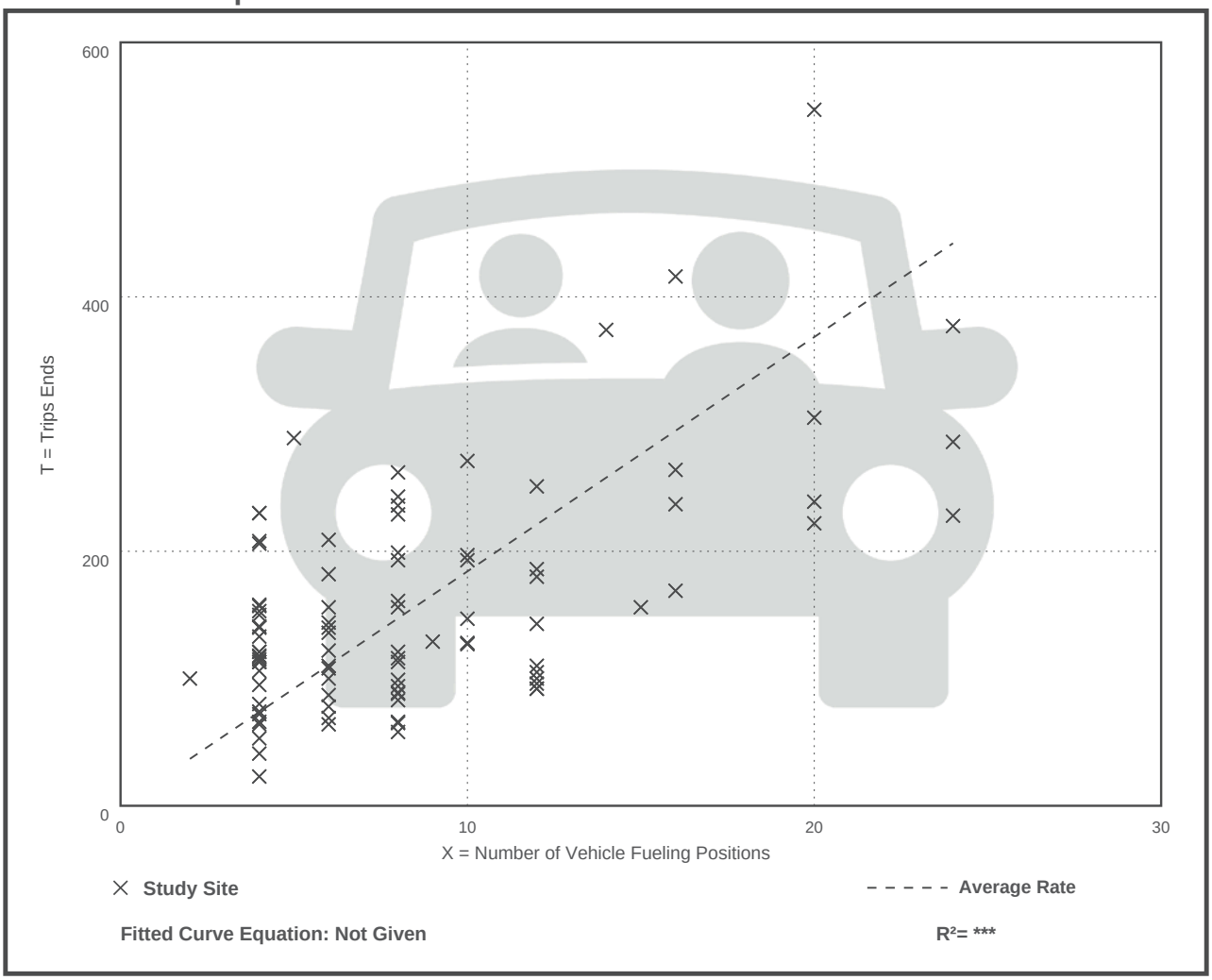
Convenience Store/Gas Station - GFA (2-4k) (945)

Vehicle Trip Ends vs: Vehicle Fueling Positions
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 93
Avg. Num. of Vehicle Fueling Positions: 8
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
18.42	5.75 - 57.80	10.16

Data Plot and Equation



CMAP 2050 Projections Letter

Chicago Metropolitan Agency for Planning

433 West Van Buren Street, Suite 450
Chicago, IL 60607
cmap.illinois.gov | 312-454-0400

November 12, 2024

Ryan May
Project Coordinator
Kenig, Lindgren, O'Hara and Aboona, Inc.
9575 West Higgins Road
Suite 400
Rosemont, IL 60018

Subject: Cass Avenue with Frontage Road
IDOT

Dear Ms. May:

In response to a request made on your behalf and dated November 11, 2024, we have developed year 2050 average daily traffic (ADT) projections for the subject location.

ROAD SEGMENT	Current ADT	Year 2050 ADT
Cass Ave north of Frontage Rd	21,100	23,000
Cass Ave south of Frontage Rd	12,500	13,600

Traffic projections are developed using existing ADT data provided in the request letter and the results from the June 2024 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 or email me at jrodriguez@cmap.illinois.gov

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

cc: Rios (IDOT)
2024_TrafficForecasts\Darien\du-54-24\du-54-24.docx

Level of Service Criteria

LEVEL OF SERVICE CRITERIA

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

Unsignalized Intersections	
Level of Service	**Average Total Delay (sec/veh)**
A	0 - 10
B	> 10 - 15
C	> 15 - 25
D	> 25 - 35
E	> 35 - 50
F	> 50

Source: *Highway Capacity Manual*, 6th Edition.

Capacity Analysis Summary Sheets

Existing Weekday Morning Peak Hour

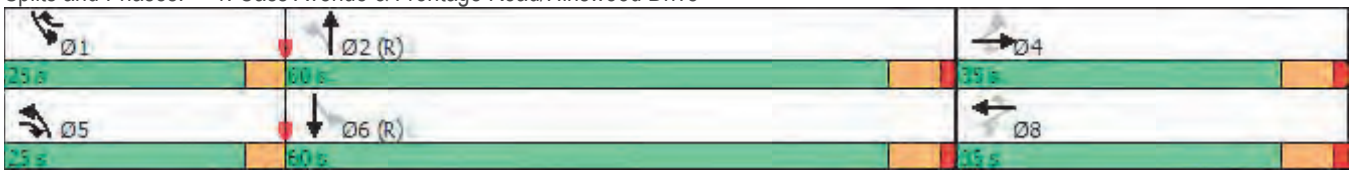
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	143	23	130	107	35	161	80	861	55	57	789	65
Future Volume (vph)	143	23	130	107	35	161	80	861	55	57	789	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		100	0		95	185		0	210		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	100			25			165			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.991			0.989	
Flt Protected		0.959			0.964		0.950			0.950		
Satd. Flow (prot)	0	1750	1583	0	1765	1553	1703	3430	0	1770	3492	0
Flt Permitted		0.559			0.525		0.229			0.212		
Satd. Flow (perm)	0	1020	1583	0	961	1553	410	3430	0	395	3492	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			72			55		7			9	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		130			179			615			208	
Travel Time (s)		3.0			4.1			10.5			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	17%	2%	5%	0%	4%	6%	4%	9%	2%	2%	5%
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)	0	193	151	0	165	187	93	1065	0	66	993	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0	3.0	3.0	15.0		3.0	15.0	
Minimum Split (s)	24.0	24.0	9.5	35.0	35.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	35.0	35.0	25.0	35.0	35.0	25.0	25.0	60.0		25.0	60.0	
Total Split (%)	29.2%	29.2%	20.8%	29.2%	29.2%	20.8%	20.8%	50.0%		20.8%	50.0%	
Yellow Time (s)	4.5	4.5	3.5	4.5	4.5	3.5	3.5	4.5		3.5	4.5	
All-Red Time (s)	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5		0.0	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		25.9	39.6		25.9	38.9	81.8	71.6		80.3	70.9	
Actuated g/C Ratio		0.22	0.33		0.22	0.32	0.68	0.60		0.67	0.59	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.88	0.26		0.80	0.35	0.26	0.52		0.19	0.48	
Control Delay		81.0	15.4		70.8	22.3	8.0	15.8		7.6	15.6	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		81.0	15.4		70.8	22.3	8.0	15.8		7.6	15.6	
LOS		F	B		E	C	A	B		A	B	
Approach Delay		52.2			45.0			15.2			15.1	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)		141	41		118	73	22	253		15	232	
Queue Length 95th (ft)		#241	83		#203	123	39	301		29	278	
Internal Link Dist (ft)		50			99			535			128	
Turn Bay Length (ft)			100			95	185			210		
Base Capacity (vph)		246	745		232	722	520	2050		524	2066	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.78	0.20		0.71	0.26	0.18	0.52		0.13	0.48	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 23.1 Intersection LOS: C
Intersection Capacity Utilization 58.0% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Cass Avenue & Frontage Road/Hinswood Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	12	1	25	10	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	12	0	0	26	10	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1615	0	0	1896	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1223	1900	
Reference Time A (s)	13.4		0.0	2.6	0.6	
Adj Saturation B (vph	NA		0	0	1900	
Reference Time B (s)	NA		8.1	9.6	0.6	
Reference Time (s)				2.6	0.6	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	0.9		0.0	1.6	0.6	
Ref Time Seperate (s)	0.0		0.1	1.6	0.6	
Reference Time (s)	0.9		1.6	1.6	0.6	
Adj Reference Time (s)	8.0		8.0	8.0	8.0	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	8.0	
Split Option (s)	8.0	16.0	
Minimum (s)	8.0	8.0	16.0

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	11	0	1165	900	1
Future Vol, veh/h	0	11	0	1165	900	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	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	0	0	0	0
Mvmt Flow	0	12	0	1266	978	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	490	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	529	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	529	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	529	-	-
HCM Lane V/C Ratio	-	0.023	-	-
HCM Control Delay (s)	-	12	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

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	4	0	7	0	0	0	1	1164	0	0	894	19
Future Vol, veh/h	4	0	7	0	0	0	1	1164	0	0	894	19
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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	5
Mvmt Flow	5	0	8	0	0	0	1	1386	0	0	1064	23

Major/Minor	Minor2					Major1			Major2		
Conflicting Flow All	1771	2464	544			1087	0	0	1386	0	0
Stage 1	1076	1076	-			-	-	-	-	-	-
Stage 2	695	1388	-			-	-	-	-	-	-
Critical Hdwy	6.8	6.5	6.9			4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.8	5.5	-			-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	5.5	-			-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3			2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	76	31	488			649	-	-	500	-	-
Stage 1	293	298	-			-	-	-	-	-	-
Stage 2	462	212	-			-	-	-	-	-	-
Platoon blocked, %							-	-		-	-
Mov Cap-1 Maneuver	75	0	488			649	-	-	500	-	-
Mov Cap-2 Maneuver	75	0	-			-	-	-	-	-	-
Stage 1	291	0	-			-	-	-	-	-	-
Stage 2	462	0	-			-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	649	-	-	163	500	-	-
HCM Lane V/C Ratio	0.002	-	-	0.08	-	-	-
HCM Control Delay (s)	10.6	0	-	29	0	-	-
HCM Lane LOS	B	A	-	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	1	0	3	0	1167	1	1	911	0
Future Vol, veh/h	1	0	1	1	0	3	0	1167	1	1	911	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	0
Mvmt Flow	1	0	1	1	0	4	0	1406	1	1	1098	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1803	2507	549	1958	2507	704	-	0	0	1407	0	0
Stage 1	1100	1100	-	1407	1407	-	-	-	-	-	-	-
Stage 2	703	1407	-	551	1100	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	-	-	-	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	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	*134	29	485	85	29	*622	0	-	-	783	-	-
Stage 1	*230	290	-	444	418	-	0	-	-	-	-	-
Stage 2	*586	418	-	491	290	-	0	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*133	28	485	85	28	*622	-	-	-	783	-	-
Mov Cap-2 Maneuver	*194	168	-	251	168	-	-	-	-	-	-	-
Stage 1	*230	289	-	444	418	-	-	-	-	-	-	-
Stage 2	*583	418	-	488	289	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	13	0	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	277	454	783	-	-
HCM Lane V/C Ratio	-	-	0.009	0.011	0.002	-	-
HCM Control Delay (s)	-	-	18.1	13	9.6	-	-
HCM Lane LOS	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	286	162	18	10	12
Future Vol, veh/h	8	286	162	18	10	12
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	311	176	20	11	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	196	0	-	0	515	186
Stage 1	-	-	-	-	186	-
Stage 2	-	-	-	-	329	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1377	-	-	-	520	856
Stage 1	-	-	-	-	846	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1377	-	-	-	516	856
Mov Cap-2 Maneuver	-	-	-	-	516	-
Stage 1	-	-	-	-	839	-
Stage 2	-	-	-	-	729	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1377	-	-	-	659
HCM Lane V/C Ratio	0.006	-	-	-	0.036
HCM Control Delay (s)	7.6	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Capacity Analysis Summary Sheets

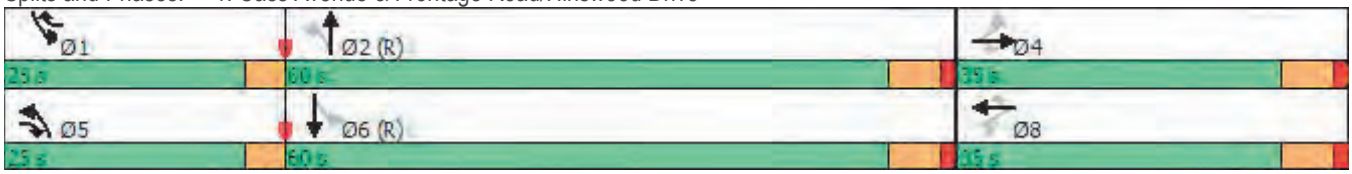
Existing Weekday Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	39	88	64	39	121	122	862	83	154	903	93
Future Volume (vph)	129	39	88	64	39	121	122	862	83	154	903	93
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		100	0		95	185		0	210		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	100			25			165			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.987			0.986	
Flt Protected		0.963			0.970		0.950			0.950		
Satd. Flow (prot)	0	1830	1583	0	1843	1615	1787	3528	0	1787	3493	0
Flt Permitted		0.697			0.560		0.228			0.239		
Satd. Flow (perm)	0	1324	1583	0	1064	1615	429	3528	0	450	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			67			76		11			12	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		130			179			615			208	
Travel Time (s)		3.0			4.1			10.5			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	1%	1%	1%	2%	1%
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)	0	175	92	0	108	126	127	984	0	160	1038	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0	3.0	3.0	15.0		3.0	15.0	
Minimum Split (s)	24.0	24.0	9.5	35.0	35.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	35.0	35.0	25.0	35.0	35.0	25.0	25.0	60.0		25.0	60.0	
Total Split (%)	29.2%	29.2%	20.8%	29.2%	29.2%	20.8%	20.8%	50.0%		20.8%	50.0%	
Yellow Time (s)	4.5	4.5	3.5	4.5	4.5	3.5	3.5	4.5		3.5	4.5	
All-Red Time (s)	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5		0.0	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		21.6	35.6		21.6	36.3	84.7	74.2		86.2	74.9	
Actuated g/C Ratio		0.18	0.30		0.18	0.30	0.71	0.62		0.72	0.62	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.74	0.18		0.57	0.23	0.32	0.45		0.38	0.48	
Control Delay		64.0	10.5		55.4	12.9	7.5	13.9		7.9	13.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		64.0	10.5		55.4	12.9	7.5	13.9		7.9	13.8	
LOS		E	B		E	B	A	B		A	B	
Approach Delay		45.6			32.5			13.1			13.0	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		129	14		77	28	24	196		31	208	
Queue Length 95th (ft)		196	47		130	65	53	305		65	322	
Internal Link Dist (ft)		50			99			535			128	
Turn Bay Length (ft)			100			95	185			210		
Base Capacity (vph)		319	686		257	705	561	2184		573	2184	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.55	0.13		0.42	0.18	0.23	0.45		0.28	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 17.8		Intersection LOS: B	
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Cass Avenue & Frontage Road/Hinswood Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	2	14	1	29	14	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	16	0	0	30	14	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1640	0	0	1897	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	109		0	1285	1900	
Reference Time A (s)	17.6		0.0	2.8	0.9	
Adj Saturation B (vph	NA		0	0	1900	
Reference Time B (s)	NA		8.1	9.9	0.9	
Reference Time (s)				2.8	0.9	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	1.2		0.0	1.9	0.9	
Ref Time Seperate (s)	0.1		0.1	1.8	0.9	
Reference Time (s)	1.2		1.9	1.9	0.9	
Adj Reference Time (s)	8.0		8.0	8.0	8.0	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	8.0	
Split Option (s)	8.0	16.0	
Minimum (s)	8.0	8.0	16.0

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	0	1112	1135	2
Future Vol, veh/h	0	15	0	1112	1135	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	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	0	0	0	0
Mvmt Flow	0	16	0	1209	1234	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	618	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	437	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	437	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	437	-	-
HCM Lane V/C Ratio	-	0.037	-	-
HCM Control Delay (s)	-	13.6	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	7	0	0	0	0	1110	2	1	1130	16
Future Vol, veh/h	2	0	7	0	0	0	0	1110	2	1	1130	16
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	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	50	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	2	0	7	0	0	0	0	1133	2	1	1153	16

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1730	2298	585	1169	0	0	1135	0	0
Stage 1	1163	1163	-	-	-	-	-	-	-
Stage 2	567	1135	-	-	-	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	48	39	459	605	-	-	623	-	-
Stage 1	178	271	-	-	-	-	-	-	-
Stage 2	416	280	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	48	0	459	605	-	-	623	-	-
Mov Cap-2 Maneuver	48	0	-	-	-	-	-	-	-
Stage 1	178	0	-	-	-	-	-	-	-
Stage 2	414	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	29.2	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	605	-	-	158	623	-	-
HCM Lane V/C Ratio	-	-	-	0.058	0.002	-	-
HCM Control Delay (s)	0	-	-	29.2	10.8	0	-
HCM Lane LOS	A	-	-	D	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	13	0	10	1	1110	1	2	1133	0
Future Vol, veh/h	2	0	1	13	0	10	1	1110	1	2	1133	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	50	1	0
Mvmt Flow	2	0	1	14	0	10	1	1156	1	2	1180	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1764	2343	590	1753	2343	579	1180	0	0	1157	0	0
Stage 1	1184	1184	-	1159	1159	-	-	-	-	-	-	-
Stage 2	580	1159	-	594	1184	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	5.1	-	-
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	3.3	3.5	4	3.3	2.2	-	-	2.7	-	-
Pot Cap-1 Maneuver	*150	*43	456	*155	*43	*622	599	-	-	*761	-	-
Stage 1	*204	*265	-	*586	*513	-	-	-	-	-	-	-
Stage 2	*586	*513	-	*463	*265	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*146	*42	456	*153	*42	*622	599	-	-	*761	-	-
Mov Cap-2 Maneuver	*179	*175	-	*302	*175	-	-	-	-	-	-	-
Stage 1	*203	*263	-	*584	*511	-	-	-	-	-	-	-
Stage 2	*574	*511	-	*458	*263	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.3	14.9	0	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	599	-	-	224	389	* 761	-	-
HCM Lane V/C Ratio	0.002	-	-	0.014	0.062	0.003	-	-
HCM Control Delay (s)	11	-	-	21.3	14.9	9.7	-	-
HCM Lane LOS	B	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

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

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	236	231	23	20	8
Future Vol, veh/h	7	236	231	23	20	8
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	257	251	25	22	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	276	0	-	0	537	264
Stage 1	-	-	-	-	264	-
Stage 2	-	-	-	-	273	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1299	-	-	-	508	780
Stage 1	-	-	-	-	785	-
Stage 2	-	-	-	-	778	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1299	-	-	-	504	780
Mov Cap-2 Maneuver	-	-	-	-	504	-
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	778	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1299	-	-	-	561
HCM Lane V/C Ratio	0.006	-	-	-	0.054
HCM Control Delay (s)	7.8	0	-	-	11.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Capacity Analysis Summary Sheets

Year 2030 No-Build Weekday Morning Peak Hour

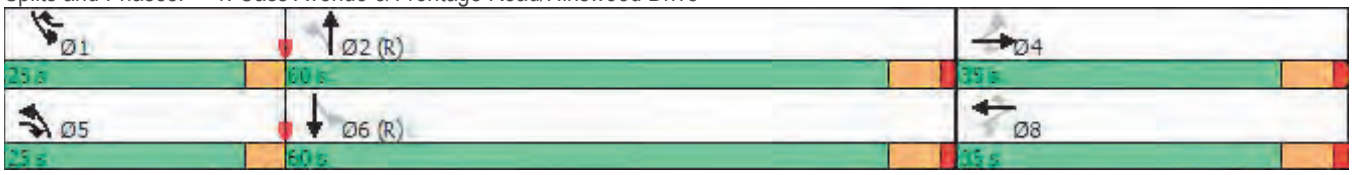
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	146	23	133	109	36	164	82	878	56	58	805	66
Future Volume (vph)	146	23	133	109	36	164	82	878	56	58	805	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		100	0		95	185		0	210		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	100			25			165			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.991			0.989	
Flt Protected		0.959			0.964		0.950			0.950		
Satd. Flow (prot)	0	1751	1583	0	1765	1553	1703	3430	0	1770	3492	0
Flt Permitted		0.553			0.521		0.221			0.203		
Satd. Flow (perm)	0	1010	1583	0	954	1553	396	3430	0	378	3492	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			68			52		7			9	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		130			179			615			208	
Travel Time (s)		3.0			4.1			10.5			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	17%	2%	5%	0%	4%	6%	4%	9%	2%	2%	5%
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)	0	197	155	0	169	191	95	1086	0	67	1013	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0	3.0	3.0	15.0		3.0	15.0	
Minimum Split (s)	24.0	24.0	9.5	35.0	35.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	35.0	35.0	25.0	35.0	35.0	25.0	25.0	60.0		25.0	60.0	
Total Split (%)	29.2%	29.2%	20.8%	29.2%	29.2%	20.8%	20.8%	50.0%		20.8%	50.0%	
Yellow Time (s)	4.5	4.5	3.5	4.5	4.5	3.5	3.5	4.5		3.5	4.5	
All-Red Time (s)	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5		0.0	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		26.5	40.2		26.5	39.5	81.2	71.0		79.8	70.3	
Actuated g/C Ratio		0.22	0.34		0.22	0.33	0.68	0.59		0.66	0.59	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.88	0.27		0.80	0.35	0.27	0.53		0.20	0.49	
Control Delay		81.7	16.2		71.3	22.8	8.3	16.4		7.8	16.1	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		81.7	16.2		71.3	22.8	8.3	16.4		7.8	16.1	
LOS		F	B		E	C	A	B		A	B	
Approach Delay		52.8			45.6			15.7			15.5	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)		143	45		120	76	24	268		16	245	
Queue Length 95th (ft)		#251	88		#211	128	39	310		29	286	
Internal Link Dist (ft)		50			99			535			128	
Turn Bay Length (ft)			100			95	185			210		
Base Capacity (vph)		246	749		232	727	511	2033		514	2049	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.80	0.21		0.73	0.26	0.19	0.53		0.13	0.49	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 23.7 Intersection LOS: C
Intersection Capacity Utilization 58.8% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Cass Avenue & Frontage Road/Hinswood Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	12	1	26	10	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	12	0	0	27	10	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.85	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1615	0	0	1896	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	108		0	1240	1900	
Reference Time A (s)	13.4		0.0	2.6	0.6	
Adj Saturation B (vph	NA		0	0	1900	
Reference Time B (s)	NA		8.1	9.7	0.6	
Reference Time (s)				2.6	0.6	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	0.9		0.0	1.7	0.6	
Ref Time Seperate (s)	0.0		0.1	1.6	0.6	
Reference Time (s)	0.9		1.7	1.7	0.6	
Adj Reference Time (s)	8.0		8.0	8.0	8.0	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	8.0	
Split Option (s)	8.0	16.0	
Minimum (s)	8.0	8.0	16.0

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	11	0	1188	918	1
Future Vol, veh/h	0	11	0	1188	918	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	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	0	0	0	0
Mvmt Flow	0	12	0	1291	998	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	500	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	522	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	522	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	522	-	-
HCM Lane V/C Ratio	-	0.023	-	-
HCM Control Delay (s)	-	12.1	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

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	4	0	7	0	0	0	1	1187	0	0	912	19
Future Vol, veh/h	4	0	7	0	0	0	1	1187	0	0	912	19
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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	5
Mvmt Flow	5	0	8	0	0	0	1	1413	0	0	1086	23

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1807	2513	555	1109	0	0	1413	0	0
Stage 1	1098	1098	-	-	-	-	-	-	-
Stage 2	709	1415	-	-	-	-	-	-	-
Critical Hdwy	6.8	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	72	29	480	637	-	-	489	-	-
Stage 1	285	291	-	-	-	-	-	-	-
Stage 2	454	206	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	71	0	480	637	-	-	489	-	-
Mov Cap-2 Maneuver	71	0	-	-	-	-	-	-	-
Stage 1	283	0	-	-	-	-	-	-	-
Stage 2	454	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.4	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	637	-	-	155	489	-	-
HCM Lane V/C Ratio	0.002	-	-	0.084	-	-	-
HCM Control Delay (s)	10.7	0	-	30.4	0	-	-
HCM Lane LOS	B	A	-	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	1	0	3	0	1190	1	1	929	0
Future Vol, veh/h	1	0	1	1	0	3	0	1190	1	1	929	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	0
Mvmt Flow	1	0	1	1	0	4	0	1434	1	1	1119	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1838	2556	560	1997	2556	718	-	0	0	1435	0	0
Stage 1	1121	1121	-	1435	1435	-	-	-	-	-	-	-
Stage 2	717	1435	-	562	1121	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	-	-	-	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	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	*135	25	477	83	25	*596	0	-	-	796	-	-
Stage 1	*223	284	-	467	429	-	0	-	-	-	-	-
Stage 2	*562	429	-	484	284	-	0	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*134	25	477	82	25	*596	-	-	-	796	-	-
Mov Cap-2 Maneuver	*189	166	-	254	167	-	-	-	-	-	-	-
Stage 1	*223	283	-	467	429	-	-	-	-	-	-	-
Stage 2	*559	429	-	481	283	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.4	13.2	0	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	271	446	796	-	-
HCM Lane V/C Ratio	-	-	0.009	0.011	0.002	-	-
HCM Control Delay (s)	-	-	18.4	13.2	9.5	-	-
HCM Lane LOS	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-	-

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	292	165	18	10	12
Future Vol, veh/h	8	292	165	18	10	12
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	317	179	20	11	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	199	0	-	0	524	189
Stage 1	-	-	-	-	189	-
Stage 2	-	-	-	-	335	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1373	-	-	-	514	853
Stage 1	-	-	-	-	843	-
Stage 2	-	-	-	-	725	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1373	-	-	-	510	853
Mov Cap-2 Maneuver	-	-	-	-	510	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	725	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1373	-	-	-	653
HCM Lane V/C Ratio	0.006	-	-	-	0.037
HCM Control Delay (s)	7.6	0	-	-	10.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Capacity Analysis Summary Sheets

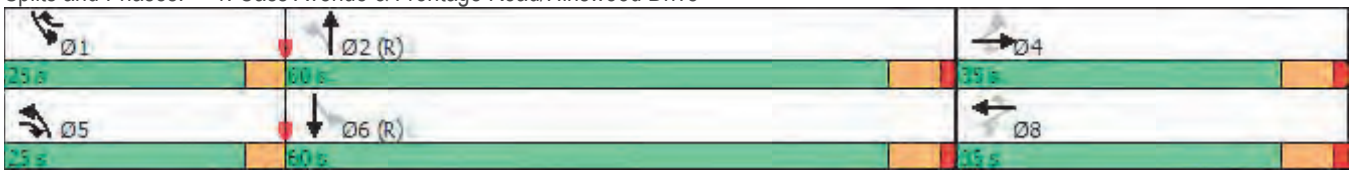
Year 2030 No-Build Weekday Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	40	90	65	40	123	124	879	85	157	921	95
Future Volume (vph)	132	40	90	65	40	123	124	879	85	157	921	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		100	0		95	185		0	210		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	100			25			165			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.987			0.986	
Flt Protected		0.963			0.970		0.950			0.950		
Satd. Flow (prot)	0	1830	1583	0	1843	1615	1787	3528	0	1787	3493	0
Flt Permitted		0.693			0.550		0.221			0.231		
Satd. Flow (perm)	0	1317	1583	0	1045	1615	416	3528	0	435	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			63			72		11			12	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		130			179			615			208	
Travel Time (s)		3.0			4.1			10.5			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	1%	1%	1%	2%	1%
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)	0	180	94	0	110	128	129	1005	0	164	1058	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0	3.0	3.0	15.0		3.0	15.0	
Minimum Split (s)	24.0	24.0	9.5	35.0	35.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	35.0	35.0	25.0	35.0	35.0	25.0	25.0	60.0		25.0	60.0	
Total Split (%)	29.2%	29.2%	20.8%	29.2%	29.2%	20.8%	20.8%	50.0%		20.8%	50.0%	
Yellow Time (s)	4.5	4.5	3.5	4.5	4.5	3.5	3.5	4.5		3.5	4.5	
All-Red Time (s)	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5		0.0	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		21.9	36.0		21.9	36.8	84.3	73.7		85.9	74.5	
Actuated g/C Ratio		0.18	0.30		0.18	0.31	0.70	0.61		0.72	0.62	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.75	0.18		0.58	0.23	0.34	0.46		0.40	0.49	
Control Delay		64.8	11.6		55.9	13.7	7.8	14.3		8.3	14.2	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		64.8	11.6		55.9	13.7	7.8	14.3		8.3	14.2	
LOS		E	B		E	B	A	B		A	B	
Approach Delay		46.6			33.2			13.6			13.4	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		133	17		78	31	25	205		32	216	
Queue Length 95th (ft)		202	51		132	69	53	316		66	330	
Internal Link Dist (ft)		50			99			535			128	
Turn Bay Length (ft)			100			95	185			210		
Base Capacity (vph)		318	688		252	707	552	2169		563	2172	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.57	0.14		0.44	0.18	0.23	0.46		0.29	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Cass Avenue & Frontage Road/Hinswood Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	2	14	1	30	14	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	16	0	0	31	14	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.86	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1640	0	0	1897	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	109		0	1299	1900	
Reference Time A (s)	17.6		0.0	2.9	0.9	
Adj Saturation B (vph	NA		0	0	1900	
Reference Time B (s)	NA		8.1	10.0	0.9	
Reference Time (s)				2.9	0.9	
Adj Reference Time (s)				8.0	8.0	
Split Option						
Ref Time Combined (s)	1.2		0.0	2.0	0.9	
Ref Time Seperate (s)	0.1		0.1	1.9	0.9	
Reference Time (s)	1.2		2.0	2.0	0.9	
Adj Reference Time (s)	8.0		8.0	8.0	8.0	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	8.0	
Split Option (s)	8.0	16.0	
Minimum (s)	8.0	8.0	16.0

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	13.3%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	15	0	1134	1158	2
Future Vol, veh/h	0	15	0	1134	1158	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	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	0	0	0	0
Mvmt Flow	0	16	0	1233	1259	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	631	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	429	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	429	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	429	-	-
HCM Lane V/C Ratio	-	0.038	-	-
HCM Control Delay (s)	-	13.7	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	7	0	0	0	0	1132	2	1	1153	16
Future Vol, veh/h	2	0	7	0	0	0	0	1132	2	1	1153	16
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	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	50	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	2	0	7	0	0	0	0	1155	2	1	1177	16

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1765	2344	597	1193	0	0	1157	0	0
Stage 1	1187	1187	-	-	-	-	-	-	-
Stage 2	578	1157	-	-	-	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	45	37	451	592	-	-	611	-	-
Stage 1	172	264	-	-	-	-	-	-	-
Stage 2	409	273	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	45	0	451	592	-	-	611	-	-
Mov Cap-2 Maneuver	45	0	-	-	-	-	-	-	-
Stage 1	172	0	-	-	-	-	-	-	-
Stage 2	407	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.6	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	592	-	-	150	611	-	-
HCM Lane V/C Ratio	-	-	-	0.061	0.002	-	-
HCM Control Delay (s)	0	-	-	30.6	10.9	0	-
HCM Lane LOS	A	-	-	D	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	13	0	10	1	1132	1	2	1156	0
Future Vol, veh/h	2	0	1	13	0	10	1	1132	1	2	1156	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	50	1	0
Mvmt Flow	2	0	1	14	0	10	1	1179	1	2	1204	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1800	2390	602	1788	2390	590	1204	0	0	1180	0	0
Stage 1	1208	1208	-	1182	1182	-	-	-	-	-	-	-
Stage 2	592	1182	-	606	1208	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	5.1	-	-
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	3.3	3.5	4	3.3	2.2	-	-	2.7	-	-
Pot Cap-1 Maneuver	*135	*38	448	*140	*38	*622	587	-	-	*761	-	-
Stage 1	*197	*258	-	*586	*513	-	-	-	-	-	-	-
Stage 2	*586	*513	-	*456	*258	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*132	*38	448	*139	*38	*622	587	-	-	*761	-	-
Mov Cap-2 Maneuver	*171	*171	-	*294	*170	-	-	-	-	-	-	-
Stage 1	*196	*256	-	*584	*511	-	-	-	-	-	-	-
Stage 2	*574	*511	-	*451	*256	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22	15.1	0	0
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	587	-	-	215	381	* 761	-	-
HCM Lane V/C Ratio	0.002	-	-	0.015	0.063	0.003	-	-
HCM Control Delay (s)	11.1	-	-	22	15.1	9.7	-	-
HCM Lane LOS	B	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

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

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	241	236	23	20	8
Future Vol, veh/h	7	241	236	23	20	8
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	8	262	257	25	22	9

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	282	0	-	0	548	270
Stage 1	-	-	-	-	270	-
Stage 2	-	-	-	-	278	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1292	-	-	-	501	774
Stage 1	-	-	-	-	780	-
Stage 2	-	-	-	-	774	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1292	-	-	-	497	774
Mov Cap-2 Maneuver	-	-	-	-	497	-
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	774	-

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1292	-	-	-	554
HCM Lane V/C Ratio	0.006	-	-	-	0.055
HCM Control Delay (s)	7.8	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Capacity Analysis Summary Sheets

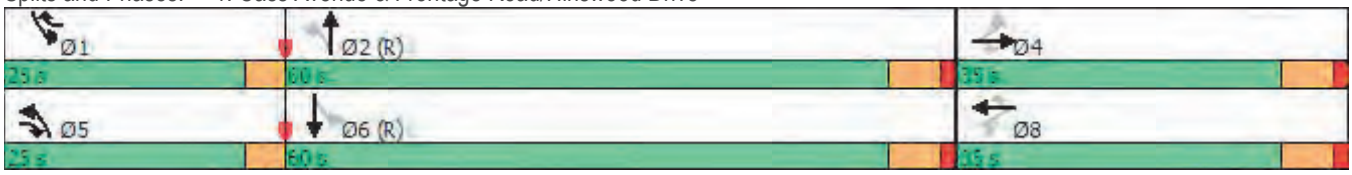
Year 2030 Total Projected Weekday Morning Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	162	25	136	109	38	164	98	869	56	58	810	66
Future Volume (vph)	162	25	136	109	38	164	98	869	56	58	810	66
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		100	0		95	185		0	210		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	100			25			165			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.991			0.989	
Flt Protected		0.958			0.964		0.950			0.950		
Satd. Flow (prot)	0	1750	1583	0	1766	1553	1703	3430	0	1770	3493	0
Flt Permitted		0.558			0.497		0.211			0.204		
Satd. Flow (perm)	0	1019	1583	0	910	1553	378	3430	0	380	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			67			54		7			9	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		130			179			615			208	
Travel Time (s)		3.0			4.1			10.5			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	17%	2%	5%	0%	4%	6%	4%	9%	2%	2%	5%
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)	0	217	158	0	171	191	114	1075	0	67	1019	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0	3.0	3.0	15.0		3.0	15.0	
Minimum Split (s)	24.0	24.0	9.5	35.0	35.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	35.0	35.0	25.0	35.0	35.0	25.0	25.0	60.0		25.0	60.0	
Total Split (%)	29.2%	29.2%	20.8%	29.2%	29.2%	20.8%	20.8%	50.0%		20.8%	50.0%	
Yellow Time (s)	4.5	4.5	3.5	4.5	4.5	3.5	3.5	4.5		3.5	4.5	
All-Red Time (s)	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5		0.0	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		28.2	42.4		28.2	41.1	80.1	69.4		77.6	68.1	
Actuated g/C Ratio		0.24	0.35		0.24	0.34	0.67	0.58		0.65	0.57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.91	0.26		0.80	0.34	0.33	0.54		0.21	0.51	
Control Delay		83.8	16.0		70.6	21.8	9.4	17.1		8.2	17.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		83.8	16.0		70.6	21.8	9.4	17.1		8.2	17.3	
LOS		F	B		E	C	A	B		A	B	
Approach Delay		55.3			44.9			16.4			16.7	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)		159	46		121	73	29	270		17	254	
Queue Length 95th (ft)		#287	90		#224	127	46	305		29	293	
Internal Link Dist (ft)		50			99			535			128	
Turn Bay Length (ft)			100			95	185			210		
Base Capacity (vph)		250	770		222	749	496	1985		510	1985	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.87	0.21		0.77	0.26	0.23	0.54		0.13	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 24.8		Intersection LOS: C	
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Cass Avenue & Frontage Road/Hinswood Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	1	51	52	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	0	0	0	52	52	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.95	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1805	0	0	1898	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	120		0	1492	1900	
Reference Time A (s)	0.0		0.0	4.2	3.3	
Adj Saturation B (vph	NA		0	0	1900	
Reference Time B (s)	NA		8.1	11.3	3.3	
Reference Time (s)				4.2	3.3	
Adj Reference Time (s)				8.2	8.0	
Split Option						
Ref Time Combined (s)	0.0		0.0	3.3	3.3	
Ref Time Seperate (s)	0.0		0.1	3.2	3.3	
Reference Time (s)	0.0		3.3	3.3	3.3	
Adj Reference Time (s)	0.0		8.0	8.0	8.0	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	8.2	
Split Option (s)	0.0	16.0	
Minimum (s)	0.0	8.2	8.2

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	6.8%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	17	0	1195	917	5
Future Vol, veh/h	0	17	0	1195	917	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	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	0	0	0	0
Mvmt Flow	0	18	0	1299	997	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	501	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	521	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	521	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	521	-	-
HCM Lane V/C Ratio	-	0.035	-	-
HCM Control Delay (s)	-	12.2	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	0	19	0	0	0	3	1192	0	0	903	36
Future Vol, veh/h	9	0	19	0	0	0	3	1192	0	0	903	36
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	84	84	84	84	84	84	84	84	84	84	84	84
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	5
Mvmt Flow	11	0	23	0	0	0	4	1419	0	0	1075	43

Major/Minor	Minor2					Major1			Major2		
Conflicting Flow All	1815	2524	559			1118	0	0	1419	0	0
Stage 1	1097	1097	-			-	-	-	-	-	-
Stage 2	718	1427	-			-	-	-	-	-	-
Critical Hdwy	6.8	6.5	6.9			4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	5.8	5.5	-			-	-	-	-	-	-
Critical Hdwy Stg 2	5.8	5.5	-			-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.3			2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	71	28	478			632	-	-	486	-	-
Stage 1	286	291	-			-	-	-	-	-	-
Stage 2	449	203	-			-	-	-	-	-	-
Platoon blocked, %							-	-		-	-
Mov Cap-1 Maneuver	69	0	478			632	-	-	486	-	-
Mov Cap-2 Maneuver	69	0	-			-	-	-	-	-	-
Stage 1	277	0	-			-	-	-	-	-	-
Stage 2	449	0	-			-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32.3	0.2	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	632	-	-	165	486	-	-
HCM Lane V/C Ratio	0.006	-	-	0.202	-	-	-
HCM Control Delay (s)	10.7	0.2	-	32.3	0	-	-
HCM Lane LOS	B	A	-	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	0	1	1	0	3	0	1200	1	1	937	0
Future Vol, veh/h	1	0	1	1	0	3	0	1200	1	1	937	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	1	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	0	0	0	0	0	0	0	4	0	0	3	0
Mvmt Flow	1	0	1	1	0	4	0	1446	1	1	1129	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1854	2578	565	2014	2578	724	-	0	0	1447	0	0
Stage 1	1131	1131	-	1447	1447	-	-	-	-	-	-	-
Stage 2	723	1447	-	567	1131	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	-	-	-	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	3.3	3.5	4	3.3	-	-	-	2.2	-	-
Pot Cap-1 Maneuver	*128	24	473	78	24	*596	0	-	-	781	-	-
Stage 1	*220	281	-	453	420	-	0	-	-	-	-	-
Stage 2	*562	420	-	481	281	-	0	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*127	23	473	78	23	*596	-	-	-	781	-	-
Mov Cap-2 Maneuver	*186	163	-	248	163	-	-	-	-	-	-	-
Stage 1	*220	280	-	453	420	-	-	-	-	-	-	-
Stage 2	*559	420	-	478	280	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.6	13.3	0	0
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	-	-	267	441	781	-	-
HCM Lane V/C Ratio	-	-	0.009	0.011	0.002	-	-
HCM Control Delay (s)	-	-	18.6	13.3	9.6	-	-
HCM Lane LOS	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	-	-	0	0	0	-	-

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	13	289	162	39	34	18
Future Vol, veh/h	13	289	162	39	34	18
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	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	314	176	42	37	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	218	0	-	0	539	197
Stage 1	-	-	-	-	197	-
Stage 2	-	-	-	-	342	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1352	-	-	-	503	844
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	719	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1352	-	-	-	496	844
Mov Cap-2 Maneuver	-	-	-	-	496	-
Stage 1	-	-	-	-	825	-
Stage 2	-	-	-	-	719	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1352	-	-	-	579
HCM Lane V/C Ratio	0.01	-	-	-	0.098
HCM Control Delay (s)	7.7	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Capacity Analysis Summary Sheets

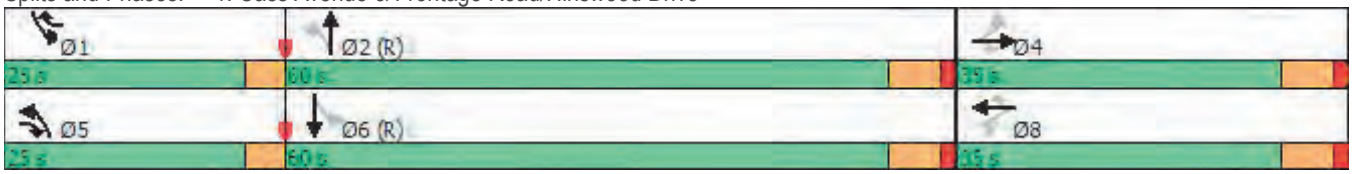
Year 2030 Total Projected Weekday Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	42	92	65	42	123	143	869	85	157	927	95
Future Volume (vph)	152	42	92	65	42	123	143	869	85	157	927	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		100	0		95	185		0	210		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	100			25			165			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt			0.850			0.850		0.987			0.986	
Flt Protected		0.962			0.971		0.950			0.950		
Satd. Flow (prot)	0	1828	1583	0	1845	1615	1787	3528	0	1787	3493	0
Flt Permitted		0.687			0.515		0.212			0.233		
Satd. Flow (perm)	0	1305	1583	0	978	1615	399	3528	0	438	3493	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			62			75		11			12	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		130			179			615			208	
Travel Time (s)		3.0			4.1			10.5			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	1%	1%	1%	1%	2%	1%
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)	0	202	96	0	112	128	149	994	0	164	1065	0
Turn Type	Perm	NA	pm+ov	Perm	NA	pm+ov	pm+pt	NA		pm+pt	NA	
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	5	8	8	1	5	2		1	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0	3.0	8.0	8.0	3.0	3.0	15.0		3.0	15.0	
Minimum Split (s)	24.0	24.0	9.5	35.0	35.0	9.5	9.5	24.0		9.5	24.0	
Total Split (s)	35.0	35.0	25.0	35.0	35.0	25.0	25.0	60.0		25.0	60.0	
Total Split (%)	29.2%	29.2%	20.8%	29.2%	29.2%	20.8%	20.8%	50.0%		20.8%	50.0%	
Yellow Time (s)	4.5	4.5	3.5	4.5	4.5	3.5	3.5	4.5		3.5	4.5	
All-Red Time (s)	1.5	1.5	0.0	1.5	1.5	0.0	0.0	1.5		0.0	1.5	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.0	3.5		6.0	3.5	3.5	6.0		3.5	6.0	
Lead/Lag			Lead			Lead	Lead	Lag		Lead	Lag	
Lead-Lag Optimize?			Yes			Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	None	None	None	None	None	None	C-Min		None	C-Min	
Act Effct Green (s)		23.4	38.1		23.4	38.5	83.2	72.0		83.9	72.4	
Actuated g/C Ratio		0.20	0.32		0.20	0.32	0.69	0.60		0.70	0.60	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
v/c Ratio		0.79	0.18		0.59	0.23	0.40	0.47		0.40	0.50	
Control Delay		67.3	11.6		55.7	12.7	8.9	15.1		8.8	15.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		67.3	11.6		55.7	12.7	8.9	15.1		8.8	15.5	
LOS		E	B		E	B	A	B		A	B	
Approach Delay		49.4			32.7			14.3			14.6	
Approach LOS		D			C			B			B	
Queue Length 50th (ft)		149	18		79	28	31	213		35	234	
Queue Length 95th (ft)		227	52		136	67	60	310		66	338	
Internal Link Dist (ft)		50			99			535			128	
Turn Bay Length (ft)			100			95	185			210		
Base Capacity (vph)		315	707		236	728	538	2121		559	2111	
Starvation Cap Reductn		0	0		0	0	0	0		0	0	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.64	0.14		0.47	0.18	0.28	0.47		0.29	0.50	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 25 (21%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 19.5		Intersection LOS: B	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 1: Cass Avenue & Frontage Road/Hinswood Drive



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	2	2	1	61	61	0
Pedestrians						
Ped Button						
Pedestrian Timing (s)						
Free Right		No				No
Ideal Flow	1900	1900	1900	1900	1900	1900
Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Green (s)	4.0	4.0	4.0	4.0	4.0	4.0
Refr Cycle Length (s)	120	120	120	120	120	120
Volume Combined (vph)	4	0	0	62	61	0
Lane Utilization Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Factor (vph)	0.90	0.85	0.95	1.00	1.00	0.85
Saturated Flow (vph)	1714	0	0	1898	1900	0
Ped Intf Time (s)	0.0	0.0	0.0	0.0	0.0	0.0
Pedestrian Frequency (%)	0.00			0.00	0.00	
Protected Option Allowed	No			No	No	
Reference Time (s)		0.0				0.0
Adj Reference Time (s)		0.0				0.0
Permitted Option						
Adj Saturation A (vph)	114		0	1546	1900	
Reference Time A (s)	4.2		0.0	4.8	3.9	
Adj Saturation B (vph	NA		0	0	1900	
Reference Time B (s)	NA		8.1	11.9	3.9	
Reference Time (s)				4.8	3.9	
Adj Reference Time (s)				8.8	8.0	
Split Option						
Ref Time Combined (s)	0.3		0.0	3.9	3.9	
Ref Time Seperate (s)	0.1		0.1	3.9	3.9	
Reference Time (s)	0.3		3.9	3.9	3.9	
Adj Reference Time (s)	8.0		8.0	8.0	8.0	

Summary	EB	NB SB	Combined
Protected Option (s)	NA	NA	
Permitted Option (s)	Err	8.8	
Split Option (s)	8.0	16.0	
Minimum (s)	8.0	8.8	16.8

Right Turns
Adj Reference Time (s)
Cross Thru Ref Time (s)
Oncoming Left Ref Time (s)
Combined (s)

Intersection Summary			
Intersection Capacity Utilization	14.0%	ICU Level of Service	A

Reference Times and Phasing Options do not represent an optimized timing plan.

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	22	0	1144	1157	7
Future Vol, veh/h	0	22	0	1144	1157	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	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	0	0	0	0
Mvmt Flow	0	24	0	1243	1258	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	633	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.9	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.3	-	-	-	-
Pot Cap-1 Maneuver	0	427	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	427	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	427	-	-
HCM Lane V/C Ratio	-	0.056	-	-
HCM Control Delay (s)	-	13.9	-	-
HCM Lane LOS	-	B	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	22	0	0	0	2	1140	2	1	1142	38
Future Vol, veh/h	5	0	22	0	0	0	2	1140	2	1	1142	38
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	98	98	98	98	98	98	98	98	98	98	98	98
Heavy Vehicles, %	50	0	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	5	0	22	0	0	0	2	1163	2	1	1165	39

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	1773	2356	602	1204	0	0	1165	0	0
Stage 1	1187	1187	-	-	-	-	-	-	-
Stage 2	586	1169	-	-	-	-	-	-	-
Critical Hdwy	7.8	6.5	6.9	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.8	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.8	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	4	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	44	36	448	587	-	-	607	-	-
Stage 1	172	264	-	-	-	-	-	-	-
Stage 2	405	269	-	-	-	-	-	-	-
Platoon blocked, %					-	-		-	-
Mov Cap-1 Maneuver	43	0	448	587	-	-	607	-	-
Mov Cap-2 Maneuver	43	0	-	-	-	-	-	-	-
Stage 1	170	0	-	-	-	-	-	-	-
Stage 2	403	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.5	0.1	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBL	SBT	SBR
Capacity (veh/h)	587	-	-	163	607	-	-
HCM Lane V/C Ratio	0.003	-	-	0.169	0.002	-	-
HCM Control Delay (s)	11.2	0.1	-	31.5	10.9	0	-
HCM Lane LOS	B	A	-	D	B	A	-
HCM 95th %tile Q(veh)	0	-	-	0.6	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	1	13	0	10	1	1143	1	2	1167	0
Future Vol, veh/h	2	0	1	13	0	10	1	1143	1	2	1167	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	1	-	-	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	0	0	0	0	0	1	0	50	1	0
Mvmt Flow	2	0	1	14	0	10	1	1191	1	2	1216	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1818	2414	608	1806	2414	596	1216	0	0	1192	0	0
Stage 1	1220	1220	-	1194	1194	-	-	-	-	-	-	-
Stage 2	598	1194	-	612	1220	-	-	-	-	-	-	-
Critical Hdwy	7.5	6.5	6.9	7.5	6.5	6.9	4.1	-	-	5.1	-	-
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	3.3	3.5	4	3.3	2.2	-	-	2.7	-	-
Pot Cap-1 Maneuver	*128	*36	444	*133	*36	*622	581	-	-	*761	-	-
Stage 1	*194	*255	-	*586	*513	-	-	-	-	-	-	-
Stage 2	*586	*513	-	*452	*255	-	-	-	-	-	-	-
Platoon blocked, %	1	1		1	1	1		-	-	1	-	-
Mov Cap-1 Maneuver	*125	*36	444	*131	*36	*622	581	-	-	*761	-	-
Mov Cap-2 Maneuver	*168	*169	-	*131	*36	-	-	-	-	-	-	-
Stage 1	*193	*253	-	*584	*511	-	-	-	-	-	-	-
Stage 2	*574	*511	-	*447	*253	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.2	25.6	0	0
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	581	-	-	212	199	* 761	-	-
HCM Lane V/C Ratio	0.002	-	-	0.015	0.12	0.003	-	-
HCM Control Delay (s)	11.2	-	-	22.2	25.6	9.7	-	-
HCM Lane LOS	B	-	-	C	D	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0	-	-

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

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	14	237	232	48	48	15
Future Vol, veh/h	14	237	232	48	48	15
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	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	15	258	252	52	52	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	304	0	-	0	566	278
Stage 1	-	-	-	-	278	-
Stage 2	-	-	-	-	288	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	1268	-	-	-	489	766
Stage 1	-	-	-	-	774	-
Stage 2	-	-	-	-	766	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1268	-	-	-	482	766
Mov Cap-2 Maneuver	-	-	-	-	482	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	766	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	12.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1268	-	-	-	529
HCM Lane V/C Ratio	0.012	-	-	-	0.129
HCM Control Delay (s)	7.9	0	-	-	12.8
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

CHRISTOPHER B. BURKE ENGINEERING, LTD.
9575 W Higgins Road, Suite 600 Rosemont, Illinois 60018-4920 Tel (847) 823-0500 Fax (847) 823-0520

January 22, 2025

City of Darian
1702 Plainfield Road
Darien, Illinois

Attention: Ryan Murphy

Subject: 8226 S. Cass Road – True North Energy LLC
(CBBEL Project No. 950323.H0266)

Dear Ryan:
As requested on January 21, 2025, we have reviewed the Preliminary Plans for a proposed gas station prepared by RTM Engineering Consultants and dated April 26, 2019. Previously, the site consisted of a separate drive through car wash and mini mart. The proposed project will eliminate the car wash and relocate the mini mart into a larger store where the car wash was originally located.

Preliminary Plans

All previous comments have been addressed, and we believe the preliminary engineering plans are now in general compliance with County stormwater management requirements and City code.

As the preliminary final engineering plans were also submitted, the following comments shall be addressed during the Final Engineering Plan Review process upon approval from the Planning and Zoning Commission:

Final Engineering Plans

Sheet C0.0

1. The owner's contact information shall be added to the cover sheet.
2. Under NOTES, note 2, revise note to state that the contractor shall notify all utility companies at minimum 2 business days before the beginning of construction.
3. The design engineer's stamp and stormwater certification shall be added to the sheet.

Sheet C1.0

4. Under GENERAL NOTES AND CONDITIONS, notes 11 and 12, the 48 hours shall be changed to 2 business days.
5. The existing water service line size shall be specified on the drawing, if known.

Sheet C2.0

6. Specify the distance between bollards for ADA access to the storefront walkway, ensuring sufficient spacing to allow for wheelchair passage.

Sheet C3.0

7. Provide the vertical crossing elevations for all proposed utility crossings.
8. The proposed 42 LF 12” RCP storm sewer when measured is only 16 LF. This typo should be revised to the correct length.
9. The slope for the 58 LF RCP storm sewer is calculated to be 0.78% instead of 0.74%. Verify and revise accordingly.
10. The slope for the 134 LF RCP storm sewer is calculated to be 0.37% instead of 0.45%. Verify and revise accordingly.
11. Provide the proposed rim and invert elevations, the proposed slopes, and connect invert to the proposed 18” storm sewer.
12. We note that an existing telecommunications line is located within the footprint of the proposed underground storage tanks and will likely need to be removed and relocated.
13. Callout the relocated water service from the connection point to the building. Also provide the material and size of the water service.

Sheet C4-0

14. Provide grading cross-section details of the ADA parking stall and the accessible route to the entrance, ensuring full ADA compliance.
15. The proposed 727 contour at the southern entrance along S. Cass Avenue should end at the back of the curb. The contour also extends beyond the existing 727 contour within the grass area south of the entrance, disrupting the existing 726 and 725 contours. The grading in this area must be revised accordingly to allow adequate drainage.
16. Provide details regarding the trickle channel and proposed grades along the channel.
17. The proposed contour lines at the south end of the detention pond are missing their elevation callout.
18. The proposed 727 contour line shown passing through the building shall terminate at the building’s edge.
19. The proposed 726.76 spot elevation appears to have a typo, the elevation would create a high point, disrupting the flow line towards the northeast storm inlet.

Sheet C5.0

20. The construction fencing shall be shown to block access from the joint drive to the south.
21. Provide silt fencing or a ditch check within the proposed detention basins near the south inflow and outflow culvert.
22. If soil stockpiles will be utilized, then a location shall be specified.
23. The site’s portable toilet location shall be specified.

General Comments

24. Provide manufacturer details for the proposed 6’ Dia restrictor manhole specifying elevations and flow rates.
25. We note that the only lighting proposed consists of the existing fixtures and those associated with the gas pump canopy. If additional lighting is to be proposed, it shall be depicted on the plans and a photometric plan shall be added to the plan set.

26. Provide details regarding the proposed retaining wall with structural calculations.
27. An oil and grease interceptor shall be considered before stormwater enters the restrictor or detention basins as “good practice”.
28. The Preliminary Stormwater Narrative indicates that the proposed net new impervious area is approximately 6340 SF. The stormwater ordinance requires Best Management Practices (BMPs) for all new impervious areas if the net new impervious area is 2500 SF or greater. This can be addressed in the final stormwater report.

If you have any questions, please contact me.

Sincerely,

Daniel L. Lynch, PE, CFM
Vice President, Head Municipal Engineering Department

Cc Dan Gombac, City of Darien

PLANT SCHEDULE

CODE	BOTANICAL / COMMON NAME	CONT	SIZE	QTY	REMARKS
TREES					
ACE AR6	Acer x freemanii `Armstrong` / Armstrong Freeman Maple	B & B	2.5"Cal	7	
AME AU3	Amelanchier canadensis `Autumn Brilliance` / Autumn Brilliance Serviceberry	B & B	6` H.	2	Multi-Stem
BET HE2	Betula nigra `Heritage` / Heritage River Birch	B & B	6` H.	5	Multi-Stem
CAT SPE	Catalpa speciosa / Northern Catalpa	B & B	2.5"Cal	1	
PIN STR	Pinus strobus / White Pine	B & B	6` H.	8	
PLA MO3	Platanus x acerifolia 'Morton Circle' / Exclamation!™ London Plane Tree	B & B	2.5"Cal	1	
TAX DIS	Taxodium distichum / Bald Cypress	B & B	2.5"Cal	3	
ULM PRI	Ulmus americana `Princeton` / American Elm	B & B	2.5"Cal	2	
ZEL GRE	Zelkova serrata 'Green Vase' / Green Vase Sawleaf Zelkova	B & B	2.5"Cal	1	
SHRUBS					
ARO LSC	Aronia melanocarpa 'UCONNAM165' / Low Scape Mound® Black Chokeberry	3 gal	12" H.	32	
ARO MOR	Aronia melanocarpa `Morton` TM / Iroquis Beauty Black Chokeberry	3 gal	12" H.	39	
COR ISA	Cornus sericea 'Isanti' / Isanti Red Twig Dogwood	3 gal	12" H.	24	
COR ART	Cornus sericea `Artic Fire` / Artic Fire Dogwood	3 gal	12" H.	3	
FOT BLS	Fothergilla x intermedia 'Blue Shadow' / Blue Shadow Fothergilla	3 gal	12" H.	7	
ILE SHA	Ilex glabra `Shamrock` / Inkberry	3 gal	12" H.	10	
PHY DIA	Physocarpus opulifolius `Monlo` TM / Diabolo Purple Ninebark	5 gal	4`H	7	
RIB GRE	Ribes alpinum `Green Mound` / Green Mound Alpine Currant	3 gal	12" H.	8	
SYR BL2	Syringa x `Bloomerang` / Bloomerang Series Lilac	3 gal	12" H.	7	
THU SMA	Thuja occidentalis `Smaragd` / Emerald Green Arborvitae	B & B	4`H	5	
VIB AM2	Viburnum trilobum / American Cranberrybush	3 gal	12" H.	3	
VIB XBU	Viburnum x burkwoodii 'Duvone' / American Spice™ Viburnum	3 gal	12" H.	9	

GROUND COVERS

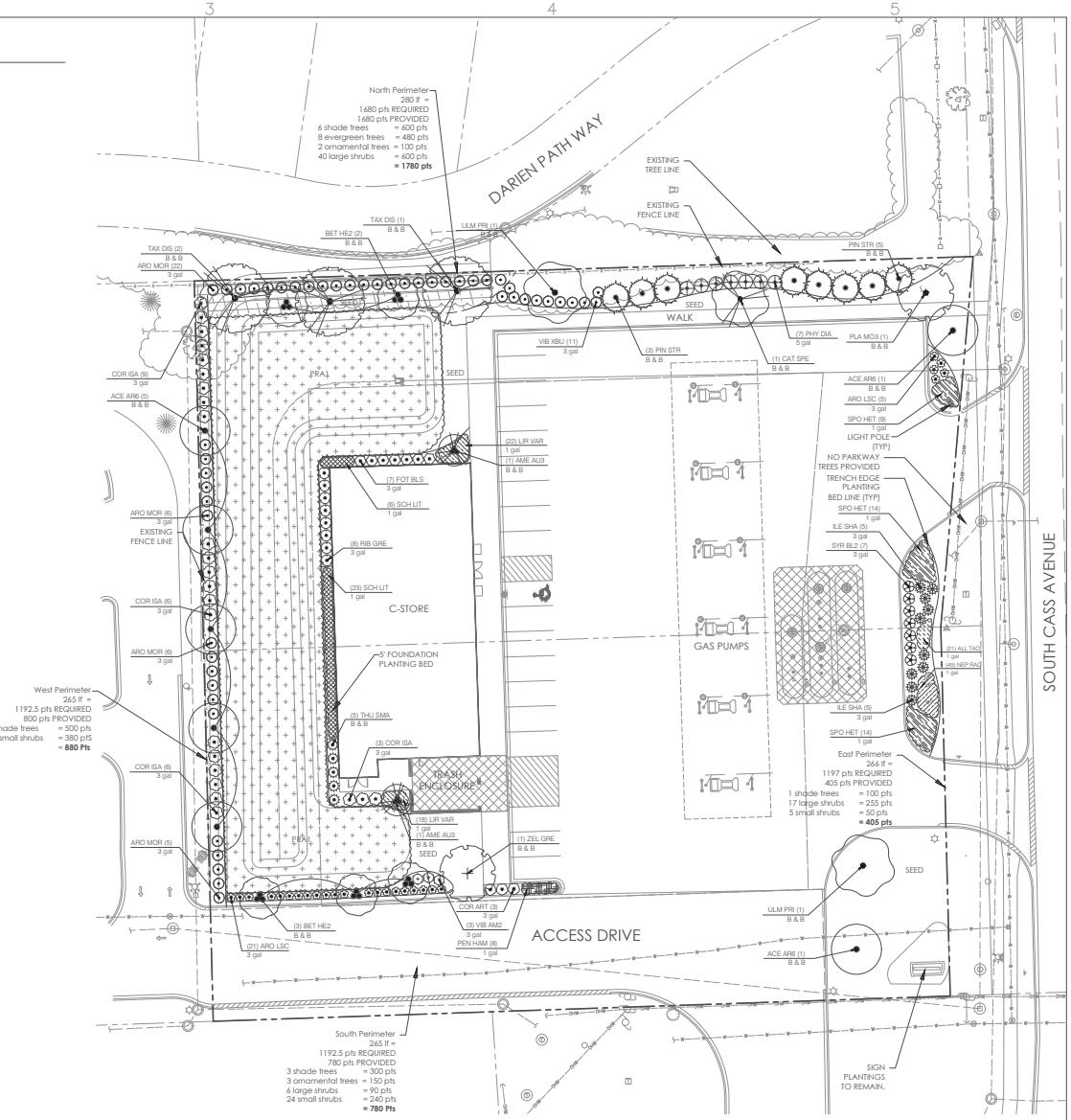
CODE	BOTANICAL / COMMON NAME	CONT	SPACING	QTY	REMARKS
ALL TAO	Allium x `Millenium` / Millenium Ornamental Onion	1 gal	18" o.c.	21	
LIR VAR	Liriope muscari 'Variegata' / Variegated Lilyturf	1 gal	24" o.c.	40	
NEP RAC	Nepeta racemosa 'Walker's Low' / Walker's Low Catmint	1 gal	18" o.c.	45	
PEN HAM	Pennisetum alopecuroides `Hameln` / Hameln Dwarf Fountain Grass	1 gal	30" o.c.	8	
SCH LIT	Schizachyrium scoparium / Little Bluestem	1 gal	36" o.c.	29	
SPO HET	Sporobolus heterolepis / Prairie Dropseed	1 gal	36" o.c.	37	
SEED	Bluegrass, Fescue & Ryegrass Mix with Lightweight Erosion Control Blanket			5000 SF	
SEED1	No Mow Fescue with Lightweight Erosion Control Blanket			800 SF	
PRA1	Stormwater Seed Mix with Lightweight Erosion Control Blanket			11000 SF	

SEED1 (WITH BLANKET):

PRA1 (WITH BLANKET):

Stormwater Seed Mixture

IDOT Specs / Acre	PLS lb. Per Acre
Permanent Grasses/Sedges	
SCIRPUS FLUVIATILIS (RIVER BULRUSH)	0.063
CAREX CRISTATELLA (CRESTED OVAL SEDGE)	0.031
CAREX LURIDA (LURID SEDGE)	0.188
CAREX VULPINOIDEA (FOX SEDGE)	0.125
ELYMUS VIRGINICUS (VIRGINIA WILD RYE)	1.500
GLYCERIA STRIATA (FOWL MANNA GRASS)	0.063
JUNCUS EFFUSUS (COMMON RUSH)	0.063
LEERSIA ORYZOIDES (RICE CUT GRASS)	0.063
PANICUM VIRGATUM (SWITCHGRASS)	0.125
SCIRPUS VALIDUS (SOFT STEM BULRUSH)	0.188
SCIRPUS ATROVIRENS (DARK GREEN BULRUSH)	0.125
SCIRPUS CYPERINUS (WOOL GRASS)	0.063
Forbs	
ALISMA SUBCORDATUM (MUD PLANTAIN)	0.156
ASCLEPIAS INCARNATA (SWAMP MILKWEED)	0.125
ALLIUM CERNUUM (NODDING WILD ONION)	0.125
BAPTISIA AUSTRALIS (BLUE FALSE INDIGO)	0.125
COREOPSIS TRIPTERIS (TALL COREOPSIS)	0.125
DESMODIUM CANADENSE (SHOWY TICK TREFOIL)	0.063
EUPATORIUM PERFOLIATUM (BONESET)	0.063
HELENIUM AUTUMNALE (SNEEZEWEED)	0.125
HELIOPSIS HELIANTHOIDES (OX-EYE SUNFLOWER)	0.125
IRIS VIRGINICA (BLUE FLAG IRIS)	0.250
LIATRIS PYCNOSTACHYA (PRAIRIE BLAZINGSTAR)	0.063
LIATRIS SPICATA (MARSH BLAZINGSTAR)	0.125
LYCOPUS AMERICANUS (WATER HOREHOUND)	0.031
MIMULUS RINGENS (MONKEY FLOWER)	0.063
PENTHORUM SEDOIDES (DITCH STONECROP)	0.031
POLYGONUM SPP. (SMARTWEED)	0.125
RUDBECKIA SUBTOMENTOSA (SWEET BLACK-EYED SUSAN)	0.063
RUDBECKIA TRILOBA (BROWN-EYED SUSAN)	0.094
SAGITTARIA LATIFOLIA (ARROWHEAD-DUCK POTATO)	0.063
SENNA (CASSIA) HEBECARPA (WILD SENNA)	0.125
ASTER LAEVIS (SMOOTH BLUE ASTER)	0.063
ASTER (SYMPHYOTRICHUM) NOVAE-ANGLIAE (NEW ENGLAND ASTER)	0.031
THALICTRUM DASYCARPUM (PURPLE MEADOW RUE)	0.125
Cover Crop	
Annual Ryegrass	6.250
Oats	22.500



ANY AND ALL EXISTING LANDSCAPE PLANTINGS, EXCEPT TREES NOTED TO REMAIN WITHIN THE PROJECT LIMITS FOR THE SITE SHALL BE REMOVED. (TYPICAL.)

SURVEY INFORMATION PROVIDED BY OTHERS.

NORTH

20 0 20 40 60

SCALE: 1" = 20'

TRUE NORTH
8226 South Cass Avenue
Darien, Illinois 60561

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Encounter In Creativity
1167 Hobson Mill Drive
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Telephone: (630) 606-0776
www.design-perspectives.net

In association with

rtm engineering consultants
650 E. Algonquin Road
Suite 250
Schaumburg, IL 60173
Telephone: (847) 756 - 4180
www.rtmec.com
Design Firm: 184006777-0002

REV.	COMMENT	DATE

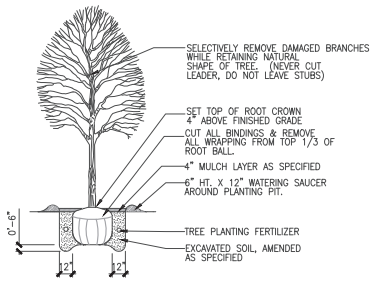
SEAL:

Tod J. Stanton
057-001070
LANDSCAPE ARCHITECT
STATE OF ILLINOIS

DATE: 1/17/2025
JOB NO.: 24-3711J
DRAWN BY: TS
CHECKED BY: TS

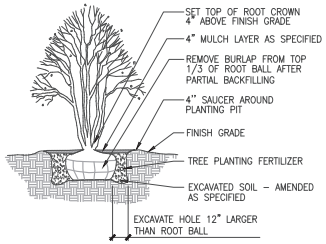
DRAWING TITLE:
LANDSCAPE PLAN

SHEET NO.:
LP-100



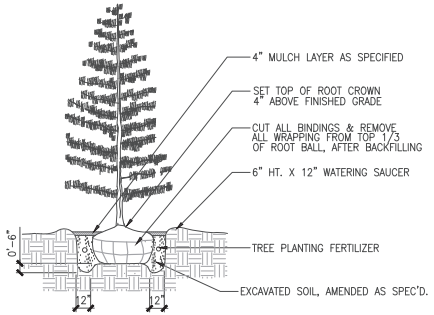
SHADE TREE PLANTING

SCALE: NTS



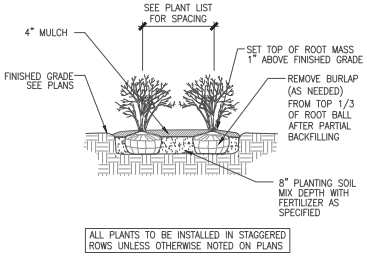
ORNAMENTAL TREE PLANTING

SCALE: 1/4"=1'-0" DT-ornamentaltree-gyn



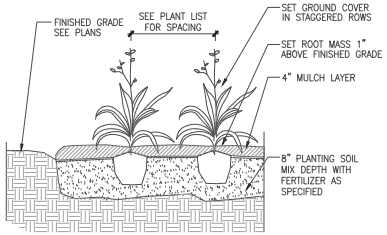
EVERGREEN TREE PLANTING

SCALE: 1/4"=1'-0" DT-evergreen-gyn



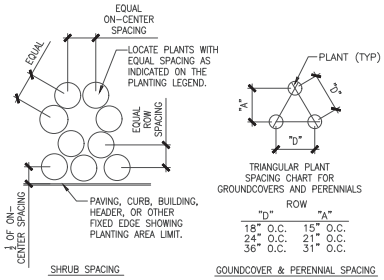
SHRUB PLANTING

SCALE: 1/2"=1'-0" DT-shrub-gyn



GROUNDCOVER PLANTING

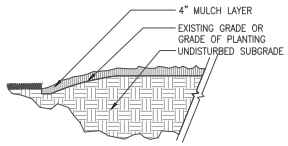
SCALE: 1"-1'-0" DT-groundcover-gyn



PLANT SPACING DETAIL

SCALE: 1/2"=1'-0" DT-plantspace-gyn

NOTES:
1. TRENCH EDGE DETAIL SHALL BE USED AT ALL LAWN EDGES AND AT EDGES OF MULCHED AREAS (FOR CONTAINMENT)
2. TRENCH EDGE SHALL CREATE A CLEAN SEPARATION BETWEEN AREAS, AND SHALL CREATE SMOOTH AND EVEN LINES (AS INDICATED ON PLANS)



TRENCH EDGE DETAIL

SCALE: 1"-1'-0" DT-ls-trench-gyn

1. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING HIMSELF FAMILIAR WITH ALL UNDERGROUND UTILITIES AND STRUCTURES. SEE CONSTRUCTION NOTES.

2. DO NOT WILLFULLY PROCEED WITH PLANTINGS AS DESIGNED WHEN IT IS OBVIOUS THAT OBSTRUCTIONS AND/OR GRADE DIFFERENCES EXIST THAT MAY NOT HAVE BEEN KNOWN DURING THE DESIGN PROCESS. SUCH CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER. THE LANDSCAPE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ANY NECESSARY REVISIONS AND COSTS DUE TO FAILURE TO GIVE SUCH NOTIFICATION.

3. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY COORDINATION WITH SUBCONTRACTORS AND/OR SUPPLIERS AS REQUIRED TO ACCOMPLISH PLANTING OPERATIONS.

4. THE LANDSCAPE CONTRACTOR IS TO RECEIVE THE SITE AT +/- 1/10TH OF AN INCH. THE LANDSCAPE CONTRACTOR SHALL OBTAIN A LETTER OF GRADE FROM THE GENERAL CONTRACTOR PRIOR TO BEGINNING WORK.

5. REFER TO SPECIFICATIONS FOR PLANTING REQUIREMENTS, MATERIALS, AND EXECUTION.

6. ALL TREES SHALL BE TAGGED BY THE PROJECT MANAGER AT A NURSERY SELECTED BY THE LANDSCAPE CONTRACTOR OR AT THE DISCRETION OF THE PROJECT MANAGER.

7. FINAL LOCATION OF ALL PLANT MATERIAL SHALL BE SUBJECT TO APPROVAL OF THE PROJECT MANAGER PRIOR TO DIGGING ANY HOLES. THE LANDSCAPE CONTRACTOR IS RESPONSIBLE FOR PROVIDING PROJECT MANAGER ADEQUATE ADVANCE NOTICE FOR ON-SITE APPROVALS. THE LANDSCAPE CONTRACTOR IS TO THE FOLLOWING BEFORE BEGINNING INSTALLING PLANTINGS:

SHRUBS - LAY OUT THE ACTUAL CONTAINERS ON-SITE BEFORE DIGGING HOLES.

TREES - STAKE THE LOCATIONS BEFORE DIGGING HOLES. ANY TREE PLANTED WITHOUT ITS FINAL LOCATION APPROVED BY THE PROJECT MANAGER MAY BE REQUESTED TO BE RELOCATED AT THE SOLE EXPENSE OF THE LANDSCAPE CONTRACTOR.

8. THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE PROJECT MANAGER AT LEAST 48 HOURS IN ADVANCE PRIOR TO COMMENCEMENT OF WORK TO COORDINATE PROJECT OBSERVATION SCHEDULES.

9. IF CONFLICTS ARISE BETWEEN THE ACTUAL SIZE OF AREAS ON THE SITE AND THE DRAWINGS, CONTACT THE PROJECT MANAGER FOR RESOLUTION.

10. IT IS THE LANDSCAPE CONTRACTOR'S RESPONSIBILITY TO FURNISH PLANTS FREE OF PESTS AND/OR DISEASES. PRE-SELECTED OR "PROJECT MANAGER TAGGED" PLANT MATERIAL MUST BE INSPECTED BY THE LANDSCAPE CONTRACTOR AND CERTIFIED PEST AND DISEASE FREE. IT IS THE LANDSCAPE CONTRACTOR'S OBLIGATION TO WARRANTY ALL PLANT MATERIAL PER THE SPECIFICATIONS.

11. GROUNDCOVERS AND SHRUBS ARE TO BE TRIANGULARLY SPACED UNLESS INDICATED ON THE PLANS.

12. ALL TREES WITHIN A SPECIES SHALL HAVE MATCHING FORM, UNLESS OTHERWISE NOTED.

13. ALL TREES, SHRUB AND GROUNDCOVER AREAS (EXCLUDING TURF AND SLOPE AREAS) ARE TO BE MULCHED PER DETAILS.

14. ALL MULCH TO BE DOUBLE SHREDDED HARDWOOD MULCH, BROWN IN COLOR MINIMUM 4" THICK.

15. TREES SHALL BE SET BACK A MINIMUM OF TEN FEET (10') HORIZONTALLY FROM UTILITY STRUCTURES, INCLUDING, BUT NOT LIMITED TO, MANHOLES, VALVE VAULTS, VALVE BOXES, FIRE HYDRANTS, TRANSFORMERS AND SWITCH CANS. TREES SHALL BE SET BACK A MINIMUM OF FIVE (5') HORIZONTALLY FROM SANITARY SEWER AND WATER SERVICES. CONTRACTOR TO MAKE NECESSARY ADJUSTMENTS UNDER THE APPROVAL OF OWNER.

16. PLANTING RESTRICTIONS: PLANT DURING ONE OF THE FOLLOWING PERIODS. COORDINATE PLANTING PERIODS WITH MAINTENANCE PERIODS TO PROVIDE REQUIRED MAINTENANCE FROM DATE OF SUBSTANTIAL COMPLETION.

1. SPRING PLANTING: 5/1 - 6/15
2. FALL PLANTING: 9/15 - 12/1

PLANTING NOTES

SCALE: NTS DT-plantnote-gyn

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Schaumburg, IL 60173
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Design Firm: 184006777-0002

REV.	COMMENT	DATE

SEAL:

DATE: 1/17/2025
JOB NO.: 24-3711J
DRAWN BY: TS
CHECKED BY: TS

DRAWING TITLE:
LANDSCAPE DETAILS

SHEET NO.:
LP-500

December 4, 2024

Mr. Ryan Murphy
Senior Planner
City of Darien
1702 Plainfield Rd.
Darien, IL 60561

RE: 8226 Cass Avenue – BP Gas Stations Renovation
Zoning Variation Justification Narrative

Dear Mr. Murphy,

Thank you for providing clarity and information regarding the zoning review process. On behalf of True North Energy LLC. We have prepared a justification narrative of zoning variation requests for the proposed renovation of the fueling station and car wash on the subject property.

The intent of the owner is to perform a full tear down and renovation of the property which includes a new servicing island and canopy for six pumps and a new convenience storefront that is a hallmark of True North's unique touch to the latest in fueling stations. The car wash facility will not be returned in this renovation.

The following Variances are requested from O-31-85:

General Conditions

3. No alcoholic beverages shall be sold from the facility.
Request to amend to allow Alcohol sales.

Landscaping and Fencing

1. The owner shall install an eight foot (8') high stockade-type fence along the north two-hundred twenty-five feet (225') of the western perimeter of the subject property.
Request to amend to defer to the proposed landscaping plan.

2. A fence shall be constructed along the west two-hundred forty feet (240') of the northern property line with the first two-hundred twenty feel (220') being eight feet (8') in height, and the next ten feet (10') being six feet (6') in height, with the next ten feet (10') being four feet (4'), or such other acceptable method of constructl.ng the fence as the city and shell may agree. The remaining portion of the north property line shall be landscaped with 1ow-line vegetation. However, in the event it is determined that the-eastern building line of the residence to the immediate north of the subject property is set back less than sixty feet (60') from the property line along Cass Avenue, the owner shall

extend the fence along the northern property line of the subject property so that said fence extends at least ten feet (I0') east of said building Iine.
The referenced residence to the north is no longer present. Request to amend to defer to the proposed landscape plan.

In accordance with Section 5A-2-2-3 of the City Code the new design will impact the following items of Special Use Ordinance O-31-85. **Responses will be in bold**:

Decision Criteria (See City Code Section 5A-2-2-3)

- 2a. The property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulations in the zone.
  A significant component of the viability of True North's convenience stores features the sale of Alcohol. Three of the four other gas stations within Darien currently serve alcohol. A copy of True North's alcohol training and enforcement policy is also attached for your benefit. If alcohol is not permitted True North has indicated that the cost to update is not viable. Considering the site is currently a fueling station anticipated impacts would be minimal considering the use is being retained.

- 2b. The plight of the owner is due to unique circumstances.
  N/A

- 2c. The variation if granted will not alter the essential character of the locality.
  The intended use as a fueling station will remain.

- 3a. Essential Need? The owner would suffer substantial difficulty or hardship and not mere inconvenience or a decrease in financial gain if the variation is not granted.
  Regarding landscaping, the physical constraints of the site affect the density of allowable plantings to the updated ordinance. The neighboring property to the north is a detention basin. The east property is along Cass (DuDOT) and is subject to DuDOT provisions. The southern property is an access road for the banquet hall to the west. The west boundary has a fence outlined in the special use ordinance and is bounded by the detention basin. The proposed landscaping would not be visible with the fence in place. What is proposed has more density than the requirements of O-31-85.

- 3b. Problem with Property? There is a feature of the property such as slope or shape or change made to the property, which does not exist on neighboring properties, which makes it unreasonable for the owner to make the proposed improvement in compliance with the Zoning Code. Such feature or change was not made by the current owner and was not known to the current buyer at the time of purchase.
  N/A

- 3c. Smallest Solution? There is no suitable or reasonable way to redesign the proposed improvements without incurring substantial difficulty or hardship or reduce the amount of variation required to make such improvements.
  Regarding landscaping the maximum attainable density is provided on the plan. Additional efforts would have impacts on the engineering design elements of the site

and could potentially alter the number of pumps available for use. This in turn would affect the financial feasibility of the project.

- 3d. Create Neighbor Problem? The variation, if granted, will not cause a substantial difficulty, undue hardship, unreasonable burden, or loss of value to the neighboring properties.
  With regard to landscaping and the removal of the car wash this design would be an improvement along neighboring properties that would be a benefit.

- 3e. Create Community Problem? The variation, if granted, may result in the same or similar requests from other property owners within the community, but will not cause an unreasonable burden or undesirable result within the community.
  N/A

- 3f. Net Benefit? The positive impacts to the community outweigh the negative impacts.
  The new aesthetic features of the convenience store, landscaping, and improved stormwater storage would be an improvement to the area. In addition, the removal of the car wash would also benefit with less noise.

- 3g. Sacrifice Basic Protections? The variation, if granted, will comply with the purposes and intent of the Zoning Code set forth in Section 5A-1-2(A) and summarized as follows; to lessen congestion, to avoid overcrowding, to prevent blight, to facilitate public services, to conserve land values, to protect from incompatible uses, to avoid nuisances, to enhance aesthetic values, to ensure an adequate supply of light and air, and to protect public health, safety, and welfare.
  It is our position that the proposed variations meet the intent of the Zoning Code.

We appreciate your time and consideration in reviewing the enclosed documents. Please do not hesitate to contact us with any additional questions or concerns you may have.

Sincerely,
RTM Engineering Consultants, LLC.

Christopher J. Palmer, P.E. – Senior Civil Engineer

Special Use and Variation Criteria

The criteria that the Planning, Zoning and Economic Development Commission and City Council must consider when acting on a request for a Special Use and Variation are included below.

Special Use Criteria:
No special use shall be recommended to the City Council by the Plan Commission, nor approved by the City Council, unless findings of fact have been made on those of the following factors which relate to the special use being sought:

1. *That the special use is deemed necessary for the public convenience at the location specified.*
2. *That the establishment, maintenance, or operation of the special use will not be detrimental to, or endanger the public health, safety, or general welfare.*
3. *That the special use will not be injurious to the use and enjoyment of other property in the immediate vicinity for the purposes already permitted, nor substantially diminish and impair property values within the neighborhood.*
4. *That the establishment of the special use will not impede the normal and orderly development and improvement of the surrounding property for uses permitted in the district.*
5. *That the exterior architectural design, landscape treatment, and functional plan of any proposed structure will not be at variation with either the exterior architectural design, landscape treatment, and functional plan of the structures already constructed or in the course of construction in the immediate neighborhood or the character of the applicable district, as to cause a substantial depreciation in the property values within the neighborhood.*
6. *That adequate utilities, access roads, drainage, and/or necessary facilities have been or are being provided.*
7. *That adequate measures have been or will be taken to provide ingress and egress so designed as to minimize traffic congestion in the public streets.*
8. *That the special use shall, in all other respects, conform to the applicable regulations of the district in which it is located, except as such regulations may, in each instance, be modified by the City Council pursuant to the recommendations of the Plan Commission and Planning and Development Committee.*

Variation Criteria:
The City may grant variations based on the finding-of-fact that supports the following criteria outlined below by the City to be the most relevant to the subject property situation.

a) *The property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the regulations in the zone.*
b) *The plight of the owner is due to unique circumstances.*
c) *The variation if granted will not alter the essential character of the locality.*
d) *Essential Need: The owner would suffer substantial difficulty or hardship and not mere inconvenience or a decrease in financial gain if the variation is not granted.*
e) *Problem with Property: There is a feature of the property such as slope or shape or change made to the property, which does not exist on neighboring properties, which makes it unreasonable for the owner to make the proposed improvement in compliance with this*

title. Such feature or change was not made by the current owner and was not known to the current buyer at the time of purchase.

f) *Smallest Solution: There is no suitable or reasonable way to redesign the proposed improvements without incurring substantial difficulty or hardship or reduce the amount of variation required to make such improvements.*

g) *Create Neighbor Problem: The variation, if granted, will not cause a substantial difficulty, undue hardship, unreasonable burden, or loss of value to the neighboring properties.*

h) *Create Community Problem: The variation, if granted, may result in the same or similar requests from other property owners within the community, but will not cause an unreasonable burden or undesirable result within the community.*

i) *Net Benefit: The positive impacts to the community outweigh the negative impacts.*

j) *Sacrifice Basic Protections: The variation, if granted, will comply with the purposes and intent of this title set forth in subsection 5A-1-2(A) of this title and summarized as follows: to lessen congestion, to avoid overcrowding, to prevent blight, to facilitate public services, to conserve land values, to protect from incompatible uses, to avoid nuisances, to enhance aesthetic values, to ensure an adequate supply of light and air, and to protect public health, safety, and welfare.*

MEMO

CITY OF DARIEN

DU PAGE COUNTY, ILLINOIS

ORDINANCE NO. _____

AN ORDINANCE APPROVING A SPECIAL USE AMENDMENT AND VARIATIONS FROM THE DARIEN ZONING ORDINANCE

(PZC 2024-14: 8226 Cass Avenue, True North Energy, LLC)

ADOPTED BY THE

MAYOR AND CITY COUNCIL

OF THE

CITY OF DARIEN

THIS _____ DAY OF _____, 2025

Published in pamphlet form by authority of the Mayor and City Council of the City of Darien, DuPage County, Illinois, this _____ day of _____, 2025.

ORDINANCE NO._____

AN ORDINANCE APPROVING A SPECIAL USE AMENDMENT AND VARIATIONS FROM THE DARIEN ZONING ORDINANCE

(PZC 2024-14: 8226 Cass Avenue, True North Energy, LLC)

WHEREAS, the City of Darien is a home rule unit of local government pursuant to the provisions of Article VII, Section 6 of the Illinois Constitution of 1970; and

WHEREAS, as a home rule unit of local government, the City may exercise any power and perform any function pertaining to its government except as limited by Article VII, Section 6; and

WHEREAS, the property described in Section 1 of this Ordinance (the "Subject Property") is currently zoned General Business District (B-3); and

WHEREAS, the City received a petition requesting a Special Use Amendment for an amendment to the Special Use Permit which previously permitted the construction and operation of an automobile service station, drive-through car wash, and mini-mart, to allow for the demolition of the existing car wash and mini-mart, and the relocation/expansion of the mini-mart, along with variations from the Zoning Ordinance (the "Petition"); and

WHEREAS, pursuant to notice as required by the Illinois Municipal Code and the Darien Zoning Ordinance, a public hearing was conducted by the Planning, Zoning and Economic Commission on March 5, 2025 to consider the Petition; and

WHEREAS, based upon the evidence, testimony, and exhibits presented at the March 5, 2025 public hearing, the Planning, Zoning and Economic Commission voted 7-0 to recommend approval of the Petition to the Municipal Services Committee and City Council; and

ORDINANCE NO._____

WHEREAS, based upon the evidence, testimony, and exhibits presented at the March 5, 2025 Municipal Services Committee meeting, the Committee unanimously recommended approval of the Petition; and

WHEREAS, the City Council has reviewed the findings and recommendations described above and hereby determines to grant the petition subject to the terms, conditions, and limitations described herein below.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DUPAGE COUNTY, ILLINOIS, IN THE EXERCISE OF ITS HOME RULE POWERS, as follows:

SECTION 1: Subject Property. The property which is the subject of this Ordinance is generally located at 8226 Cass Avenue and legally described as follows ("Subject Property"):

THE EAST 280.0 FEET OF LOT 1 (EXCEPT THE EAST 15 FEET THEREOF) AND ALSO THE EAST 280.0 FEET OF LOT 2, (EXCEPT THAT PART THEREOF LYING EAST OF A LINE DRAWN FROM THE NORTHEAST CORNER OF LOT 2 TO A POINT 15 FEET WEST OF THE SOUTHWEST CORNER OF LOT 2), IN SMART ACRES, BEING A SUBDIVISION OF THE SOUTH ½ OF THE NORTHEAST ¼ OF SECTION 33, TOWNSHIP 38 NORTH, RANGE 11, EAST OF THE THIRD PRINCIPAL MERIDIAN, ACCORDING TO THE PLAT THEREOF RECORDED OCTOBER 21, 1947 AS DOCUMENT 532141, IN DUPAGE COUNTY, ILLINOIS.

PIN: 09-33-205-036-0000

SECTION 2: Special Use Amendment Approved. The City Council hereby approves an amendment to the special use for the Subject Property to permit the demolition of the existing car wash and mini-mart, and the relocation/expansion of the mini-mart.

SECTION 3: Variations Approved. The City Council hereby approves the following variations from the Zoning Ordinance and Sign Code:

A. A variation from Section 5A-8-4-8(B)(2) of the City Zoning Code to allow for parking areas near the northern property line to be located within the 30-foot parking setback.
B. A variation from Section 5A-10-6 of the City Zoning Code to allow for no landscape islands to be provided in the parking area directly in front of the mini-mart.
C. A variation from Section 5A-10-5 of the City Zoning Code to allow for less perimeter landscaping than would otherwise be required at the eastern, western, and southern property lines, in lieu of the proposed landscaping.

SECTION 4: Conditions. Approval is subject to the following conditions:

1. Prior to issuance of a certificate of occupancy, the petitioner shall complete pavement rehabilitation or resurfacing of those portions of the shared access drive that are located on the subject property that are generally in disrepair to the satisfaction of the Director of Community Development.
2. The developer/petitioner shall comply with the comments and requirements within the letter from Christopher B. Burke Engineering, LTE dated January 22, 2025.
3. Comply with all requirements of the original ordinance, including fencing, but excluding landscaping as amended herein.
4. Replace or provide signage to clarify existing right-in and right-out access on Cass Avenue.

SECTION 5: Superseding Clause. All code provisions, ordinances, resolutions, rules and orders, or parts thereof, in conflict herewith are, to the extent of such conflict, hereby superseded.

SECTION 6: This ordinance and each of its terms shall be the effective legislative act of a home rule municipality without regard to whether such ordinance should (a) contain terms contrary to the provisions of current or subsequent non-preemptive state law. It is the intent of the corporate authorities of the City of Darien that to the extent that the terms of this ordinance should be inconsistent with any non-preemptive state law, that this ordinance shall supercede state law in that regard within its jurisdiction.

SECTION 7: Effective Date. This Ordinance shall be in full force and effect from and after its passage and approval, and shall subsequently be published in pamphlet form as provided by law.

ORDINANCE NO. _____

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DUPAGE COUNTY, ILLINOIS, this _____ day of _____, 2025.

AYES: _____

_____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DUPAGE COUNTY, ILLINOIS, this _____ day of _____, 2025.

ATTEST: _____
JOSEPH A. MARCHESE, MAYOR

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

AGENDA MEMO
MUNICIPAL SERVICES COMMITTEE
MARCH 24, 2025

CASE
PZC2025-02 Short-Term Rentals – Zoning Text Amendment

ORDINANCE

ISSUE STATEMENT
Petition from the City of Darien to amend Title 5A (Zoning Regulations) to add "the offering of a short-term rental" as a prohibited action under the existing short-term rental prohibition contained in Section 5A-5-16 of the City Code.

ATTACHMENTS
1) **PROPOSED ORDINANCE REVISIONS (SHORT-TERM RENTALS)**

BACKGROUND/OVERVIEW
On June 19, 2023, the City Council adopted Ordinance No. O-11-23, defining "Short-Term Rentals" as a rental period of less than 30 consecutive days, and prohibiting them in all zones throughout the City.

While the City has had success in enforcing the ordinance, additional clarification is needed in the Code so that the City can adequately and comprehensively enforce the prohibition on short-term rentals, including the *offering* of short-term rentals. This will allow the City to compel property owners to remove listings of short-term rentals, as defined, on websites such as Airbnb, VRBO, etc. and aid the City in receiving compliance from property owners who may claim that they did not actually book a short-term rental, but rather only had offered a short-term rental, thereby avoiding enforcement action.

Attached to this memo are the proposed ordinance revisions, which includes the established definition of a short-term rental, and shows the added prohibited activity of offering a short-term rental.

PZC MEETING UPDATE – 03/05/2025
The Planning and Zoning Commission reviewed this petition at its March 5, 2025 meeting. Staff introduced the case and answered questions.

Based on testimony and discussion at the meeting, the Planning and Zoning Commission made a motion to forward the case with a favorable recommendation to the Municipal Services Committee and City Council. The motion passed with a unanimous 7-0 vote.

DECISION MODE
The Municipal Services Committee will consider this item at is meeting on March 24, 2025.

MEETING SCHEDULE
City Council April 7, 2025

PROPOSED ORDINANCE REVISIONS

(Red text = added text; ~~Strikethrough text~~ = deleted text)

5A-5-16: SHORT-TERM RENTALS PROHIBITED:

(A) Short-Term Rentals are prohibited in the City of Darien.

(B) The offering of a Short-Term Rental in the City of Darien is prohibited.

~~(B)~~(C) The prohibition on short-term rental units shall not apply when the immediately preceding owner of a property maintains possession of the dwelling unit after closing on a real estate transaction for the sale thereof and leases said property back from the successor owner for a period of time pursuant to a written agreement.

~~(C)~~(D) Any person who violates, disobeys, omits, neglects, or refuses to comply with, or who resists enforcement of any provisions of this section, shall be subject to a fine of not less than one thousand dollars ($1,000.00) nor more than two thousand five hundred dollars ($2,500.00) for each offense. A separate offense shall be deemed committed on each day that such violation occurs or continues.

~~(D)~~(E) The owner or tenant of any building, structure, or land, and any other person, who commits, participates assists in, or maintains such violation may each be found guilty of a separate offense and be subject to the penalties herein provided.

MEMO

CITY OF DARIEN

DU PAGE COUNTY, ILLINOIS

ORDINANCE NO. _____

AN ORDINANCE AMENDING TITLE 5A, ZONING REGULATIONS, OF THE DARIEN CITY CODE

(PZC2025-02: SHORT-TERM RENTAL ORDINANCE UPDATE)

ADOPTED BY THE

MAYOR AND CITY COUNCIL

OF THE

CITY OF DARIEN

THIS ____ DAY OF _____, 2025

Published in pamphlet form by authority of the Mayor and City Council of the City of Darien, DuPage County, Illinois, this _____ day of _____, 2025.

AN ORDINANCE AMENDING TITLE 5A, ZONING REGULATIONS, OF THE DARIEN CITY CODE

(PZC2025-02: SHORT-TERM RENTAL ORDINANCE UPDATE)

WHEREAS, the City of Darien is a home rule unit of local government pursuant to the provisions of Article VII, Section 6 of the Illinois Constitution of 1970; and

WHEREAS, as a home rule unit of local government, the City may exercise any power and perform any function pertaining to its government except as limited by Article VII, Section 6; and

WHEREAS, the City of Darien has adopted Zoning Regulations set forth in the Darien City Code Title 5A ("Zoning Ordinance"); and

WHEREAS, on June 19th, 2023, the City Council adopted Ordinance No. O-11-23 amending the Zoning Ordinance, defining and prohibiting "short-term rentals"; and

WHEREAS, City Council deems it reasonable to periodically review the Zoning Ordinance and make necessary changes thereto; and

WHEREAS, the City Council has studied the efforts of staff in enforcing the prohibition on "short-term rentals" and determined that the offering of short-term rentals is not compatible with the quiet use and enjoyment of residential properties throughout the City; and

WHEREAS, pursuant to notice as required by law, the City's Planning and Zoning Commission conducted a public hearing on March 5, 2025, and has forwarded its findings and recommendation of approval of this proposal to the City Council; and

WHEREAS, the City Council has reviewed the findings and recommendations described

above and now determines to amend the Zoning Ordinance as provided herein below;

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, IN THE EXERCISE OF ITS HOME RULE POWERS, ILLINOIS, as follows:

SECTION 1: Title 5A of the City Code of Darien, Section 5A-5-16 "Short-Term Rentals Prohibited" is hereby amended in its entirety to read as follows:

5A-5-16: Short-Term Rentals Prohibited

(A) Short-Term Rentals are prohibited in the City of Darien.

(B) The offering of a Short-Term Rental in the City of Darien is prohibited.

(C) The prohibition on short-term rental units shall not apply when the immediately preceding owner of a property maintains possession of the dwelling unit after closing on a real estate transaction for the sale thereof and leases said property back from the successor owner for a period of time pursuant to a written agreement.

(D) Any person who violates, disobeys, omits, neglects, or refuses to comply with, or who resists enforcement of any provisions of this section, shall be subject to a fine of not less than one thousand dollars ($1,000.00) nor more than two thousand five hundred dollars ($2,500.00) for each offense. A separate offense shall be deemed committed on each day that such violation occurs or continues.

(E) The owner or tenant of any building, structure, or land, and any other person, who commits, participates assists in, or maintains such violation may each be found guilty of a separate offense and be subject to the penalties herein provided.

SECTION 2: Home Rule. This ordinance and each of its terms shall be the effective legislative act of a home rule municipality without regard to whether such ordinance should (a) contain terms contrary to the provisions of current or subsequent non-preemptive state law, or (b) legislate in a manner or regarding a matter no delegated to municipalities by state law. It is the intent of the corporate authorities of the City of Darien that to the extent of the terms of this ordinance should be inconsistent with any non-preemptive state law, that this ordinance shall

supercede state law in that regard within its jurisdiction.

SECTION 4: Effective Date. The Zoning Ordinance amendment provided for in this Ordinance shall be in full force and effect upon its passage, approval, and publication as required by law.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this ____ day of _____, 2023.

AYES _____

NAYS: _____

ABSENT: _____

APPROVED BY THE MAYOR OF THE CITY OF DARIEN, DU PAGE COUNTY, ILLINOIS, this ____ day of _____, 2023.

_____
JOSEPH A. MARCHESE, MAYOR

ATTEST:

_____
JOANNE E. RAGONA, CITY CLERK

APPROVED AS TO FORM:

_____
CITY ATTORNEY

AGENDA MEMO
Municipal Services Committee
March 24, 2025

ISSUE STATEMENT

Preliminary approval of an ordinance for a licensing agreement between the City of Darien and Metronet for a City-wide fiber optic infrastructure implementation.

BACKGROUND/HISTORY

In recent years, public demand for reliable, high-speed internet has grown significantly as people become increasingly connected through a vast array of communication devices. Currently there are only two entities licensed in the City of Darien that provide internet to businesses and residents; AT&T and Xfinity. While these corporations deliver high speed internet through a coaxial cable, Metronet delivers internet through a fiber optic cable. The main difference between cable and fiber optic is the way they transmit data. Fiber optic uses light to transmit data, while cable uses electricity. Fiber optic is generally faster and more reliable than cable. Metronet will be providing fiber services for internet and telephone.

Entering into franchise agreements with additional service providers will create competition in the marketplace. Residents and business owners may realize benefits of increased competition in the form of improved service and lower cost. Further, Metronet is currently working with our adjacent communities for the deployment of fiber infrastructure.

Attached and labeled are the following:

Attachment A is an introduction letter for fiber development in the City of Darien

Attachment B is a general overview and field methodologies for Metronet

A main focal point regarding infrastructure and placement was vetted by the City Attorney and by teaming up with Downers Grove Counsel and Staff. The issues were regarding Easements and Right of Ways. While utilty easements are incorporated as a portion of private property, the City has no oversight or permitting ability regarding regulated utilities. The City only has oversight in respect to easements that are utilized for drainage and are typically dedicated to the City for maintenance and or construction. Easement language is provided through a plat of subdivision. Court cases have cited telecommunications have the right to be within utilty easements, regardless of the language naming certain entities and/or their successors. Staff has concluded that all work within easements shall be communicated between Metronet and the property owner in amicable fashion regarding placement of infrastructure, utility boxes and restoration.

Right-of-Ways, also referred to as parkways, are typically the area between the sidewalk and the curb and in rural areas the limits are approximately 10-15 feet from the road edge. Telecommunications and other utilty companies may utilize public right-of-ways for installing, operating, and maintaining lines. All utilty companies are required to obtain necessary permits.

Attached and labeled as **Attachment C** is a memo from the City Attorney regarding telecommunication rights and limited municipality regulations.

By entering into a franchise agreement, the City agrees to allow Metronet to construct, maintain and operate a fiber system within the City. In return, the City will receive payment from Metronet in the form of a franchise fee. The Franchise Agreement is under final review with the City Attorney and will be forwarded to City Council for approval on April 7, 2025. Staff has further requested Metronet to present a 15-minute overview at the City Council meeting during the Department Information and Updates.

STAFF RECOMMENDATION

Staff recommends approval of an ordinance for a licensing agreement between the City of Darien and Metronet for a City-wide fiber optic infrastructure implementation.

ALTERNATE CONSIDERATION

Modifying the Ordinance.

DECISION MODE

This item will be placed on the April 7, 2025 City Council agenda for formal consideration.

Dear Mayor Marchese and Members of the City Council,

I am writing today with some exciting news for the City of Darien. My name is Ben Ruzick, and I am a vice president of new market development for Metronet, the 100% fiber internet service provider named the fastest in the country by *PCMag* for 2023 and 2024. Over the past several months we have had the pleasure of working with Dan Gombac as Metronet pursued the idea of investing in the City of Darien.

Today I am excited to share that we have received approval from our finance committee to bring our 100% fiber optic network to the City of Darien!

Here are some quick highlights of Metronet's fiber investment in the City of Darien:

- We plan to invest **roughly $6 million in private capital** in your community -- **without asking for public dollars** -- to complete the initial construction of a fiber-optic network;
- once built, **more than six thousand homes, business and institutions** within your municipal limits will have access to competitively priced, **multi-gigabit symmetrical internet** service;
- we anticipate completing our initial build in **12 to 18 months;**
- we have a five-point **communications plan for residents** throughout the construction process to prevent calls to local officials;
- we deploy a **construction and restoration approach** to mitigate the impact on municipal services and public infrastructure; and
- all telecommunications infrastructure placed will be **flush grade** to ensure that no unsightly pedestals will be placed throughout town.

Since 2004, Metronet has transformed **more than 300 communities in 19 states** by installing our high-speed fiber networks. We believe the City of Darien is the next great location to deploy this needed service! Our fiber infrastructure allows Metronet to deliver world-class broadband internet and phone services to both residents and businesses. Communities desire fiber because its reliable speed improves household quality of life. In addition, fiber infrastructure facilitates greater business efficiency and stimulates further private investment. Lastly, according to a recent Brattle Group study titled The Economic Benefits of Fiber Deployment, having direct access to fiber results in an average increase in home values between 14% to 17%.

Having a passion to serve is not something you often hear in our industry. But I am happy to share that Metronet's customer-service ratings are six times higher than the average cable company. Our commitment doesn't stop at bringing exciting new technology and best in class customer service. We are also committed to being a valuable member of the communities we serve through local sponsorships, events, and philanthropic endeavors.

As Metronet's journey in Darien begins, I just wanted to say that we are truly looking forward to getting to know the community better in the coming months. As Metronet services become available to residents and businesses alike, we hope that we can add to what makes you special and become part of the rhythm that makes the City of Darien such a dynamic place.

Sincerely,
Ben Ruzick

Economic Benefits of Fiber Deployment

THE BRATTLE GROUP

PREPARED BY

Paroma Sanyal
Coleman Bazelon
Yong Paek
Dan Beemon

PREPARED FOR

Fiber Broadband Association
Frontier Communications

November 20, 2024

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NOTICE

- This report was prepared for the Fiber Broadband Association and Frontier Communications in accordance with The Brattle Group's engagement terms and is intended to be read and used as a whole and not in parts.
- The report reflects the analyses and opinions of the authors and does not necessarily reflect those of The Brattle Group's clients or other consultants. However, we are grateful for the valuable contributions of Preetul Sen, Peter Christenson, Natasha Abrol and Natalie Selfie.
- There are no third-party beneficiaries with respect to this report, and The Brattle Group does not accept any liability to any third-party in respect of the contents of this report or any actions taken or decisions made as a consequence of the information set forth herein.

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Executive Summary

Currently, about 62 million Broadband Serviceable Locations (BSLs), which include at least 56 million households – *i.e.,* over half the BSLs and forty percent of the households in the United States, do not have fiber broadband. There is an ongoing debate about the existence and magnitude of economic benefits that would be realized if fiber was deployed to locations that are already served by high-speed broadband, but do not have fiber broadband.

Our study is the first to show that fiber deployment has significant incremental economic benefits even in the presence of other high-speed broadband technologies. The report also argues that because private actors will not capture all the benefits of fiber deployment the marketplace will not deploy enough fiber on its own. Based on these findings we suggest a few policy takeaways.

- First, because the social return on investment is higher for fiber, directing more of the existing public funds towards fiber deployment will generate greater economic returns compared to investment in other high-speed broadband technologies such as hybrid fiber-coaxial (HFC). Thus, the various public programs, such as the Rural Digital Opportunity Fund (RDOF), the Broadband Equity, Access, and Deployment (BEAD) program, ReConnect, Capital Projects Fund and the federal Broadband Infrastructure Program (BIP), which are prioritizing fiber builds are on the right policy path. This prioritization needs to continue if the gains from deploying fiber are to be realized.

- Second, based on available data, our research implies that even if fiber is deployed as an overbuild to existing high-speed technologies, the incremental benefits are sizeable. Thus, when the federal or local governments are measuring the underserved population, one important metric may be using a fiber-unserved metric and not just a speed-based metric. This will allow these entities to better target funding towards a fiber solution.

- Third, federal and local governments that promote fiber deployment, such as BIP, Louisiana's Granting Unserved Municipalities Broadband Opportunities (GUMBO) program and Maine's ConnectMaine fund, should be encouraged and expanded. Additionally, the focus on fiber that some of these programs have, should be supported, and used as a model for other private-public initiatives.

- Last, fiber is a future-proof solution and when the benefits and costs are evaluated on a long-run horizon, fiber becomes the optimal choice for delivering fixed high-speed broadband.

- We find that deploying fiber to the 56 million households that are in tracts unserved by fiber, has the potential to generate at least **$3.24 trillion** in terms of net present value (NPV) in incremental economic impact.

- Deploying fiber has the potential to increase **housing values** by **$1.64 trillion** (in NPV terms).

    - It could **increase average household values** between **14% - 17%** depending on non-urban versus urban areas.
    - This translates to an average increase of **$27,000 - $41,000 per house** per year.
    - The effect on housing values in non-urban areas is fives times greater than in urban areas and is driven by the greater number of unserved households in non-urban areas.
    - For the 56 million unserved households, in net present value (NPV) terms, this implies a **$1.4 trillion** total increase in house values for **non-urban areas** and **$242 billion** total increase for **urban** areas.

- Deploying fiber to all fiber-unserved locations can potentially lead to a one-time increase in **income by $1.6 trillion** (in NPV terms).

    - The income effect comes from non-urban areas. U.S. households in **non-urban areas** with new access to fiber will likely experience an **increase in their average income** by **$1,450** in one year.
    - This translates to a total increase of **$81 billion in one year**.

- Fiber deployment also has the potential to create **at least 380,000 new jobs** for the U.S. economy.

- Fiber deployment also has a significant impact on remote work, environmental benefits, and is best equipped to handle the increased connectivity needs in a 5G world and beyond. In addition, it improves educational outcomes, reduces health costs (thereby increasing health savings), and accelerates technology adoption.

- Additionally, a significant advantage of fiber is that it is a future-proof technology due to its ability to provide the critical broadband infrastructure required to deliver high speeds, scalability, reliability, and support for emerging applications and technologies. An optimal lower cost data network today will likely not meet the needs of tomorrow. Consequently, the least costly way of providing a given level of service today may create greater upgrade costs in the future. Fiber has the potential to handle all future capacity needs. Even if it is not the least-costly solution today, the government should target more current funding towards fiber deployment, with an eye towards the future.

I. Introduction

Investing in fiber is not just a technological upgrade; it is a strategic move that underpins long-term productivity and economic growth in the United States. The importance of high-quality broadband is beyond doubt, and the highest quality broadband is delivered over fiber optic cables. With the demand for high-definition content, low latency applications such as video conferencing, remote surgeries, industrial automation and millions of gigabytes of data being transferred, having a fast and reliable internet connection is essential for businesses and consumers.[1] As we build out our nation's critical broadband infrastructure, fiber is absolutely necessary to deliver the future-proof speed, capacity, and ultra-low latency that will enable future innovations. When data does not make its way to an end user (referred to as last mile) over a fiber optic cable, one of four technologies are typically used: cable (typically hybrid fiber-coaxial), copper (typically a digital subscriber line (DSL) connection, delivered over a twisted-pair telephone line), a terrestrial wireless link (fixed or mobile), or satellite (Low Earth Orbit (LEO) such as Starlink or geo-stationary orbit, such as Hughes or Viasat). All these technologies have advantages in certain circumstances, but network upgrades all point in the direction of pushing fiber further out into the network, which offers a range of technological, economic, and societal benefits, making it a strategic investment for improving overall connectivity and internet services.

So far, the speed of the transition to fiber-based network connections in the U.S. has been slower than is ideal. The United States lags many other developed nations in fiber penetration. Countries such as South Korea, Singapore, and China exhibit significantly higher overall fiber performance compared to the U.S.[2]

We find that private actors will not deploy fiber as fast as is socially optimal, because their investment decisions are based on their private profitability and do not consider social benefits, *i.e.*, the positive externalities or spillovers that they cannot capture in their profits.[3] For example,

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1 Neos Networks, "What is Low Latency and Why is it Needed?" January 24, 2024, https://neosnetworks.com/resources/blog/what-is-low-latency-why-is-it-needed/.

2 Ofcom, "International Broadband Scorecard 2023: Interactive Data – 1 – Fixed Broadband Coverage," last accessed August 5, 2024, https://www.ofcom.org.uk/research-and-data/telecoms-research/broadband-research/eu-bbroadand-scorecard/international-broadband-scorecard-2023-interactive-data.

3 Thomas Helbling, "Externalities: Prices Do Not Capture All Costs," International Monetary Fund, https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/Externalities, last accessed August 5, 2024, ("Externalities: Prices Do Not Capture All Costs"). Note, Arthur Pigou's seminal work in *The Economics of*

Continued on next page

in the wake of the Covid-19 pandemic, the positive side effects stemming from swift and dependable internet service have been driven by its capacity to mitigate the adverse effects of pandemic.[4] It is important to note that this represents only a fraction of the overall societal advantages derived from voice and broadband connectivity. Additional instances include the expansion of telemedicine,[5] enhanced equity in accessing education,[6] and an elevated standard of education.[7]

The remedy for this situation is well-established, and economic policy interventions are called for when a market will not provide the efficient level of a good or service. In the U.S., the government has partially recognized this and stepped in to provide added support for fiber deployment through its American Rescue Plan Act (ARPA), U.S. Department of Agriculture (USDA) Rural Utility Service (RUS) ReConnect Program, U.S. Department of Treasury Capital Projects Fund (CPF), NTIA's Broadband Infrastructure Program (BIP), Federal Communications Commission (FCC) Rural Digital Opportunity Fund (RDOF) and the NTIA Broadband Equity, Access, and Deployment

Welfare defines market failures and externalities, and he argues that governments should subsidize those who create positive externalities. *See*, Arthur Pigou, *The Economics of Welfare,* 1932, https://oll.libertyfund.org/titles/pigou-the-economics-of-welfare.

4 Canan Birimoglu Okuyan and Mehmet A. Begen, "Working from Home During the COVID-19 Pandemic, Its Effects on Health, and Recommendations: The Pandemic and Beyond," Perspectives in Psychiatric Care, 58(1) (2022): 173-179, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8242705/ ("Working from Home During the COVID-19 Pandemic").

5 Yosselin Turcios, "Digital Access: A Super Determinant of Health," Substance Abuse and Mental Health Services Administration, March 22, 2023, https://www.samhsa.gov/blog/digital-access-super-determinant-health; Ambrish A. Pandit, et al., "Association Between Broadband Capacity and Telehealth Utilization Among Medicare Fee-for-Service Beneficiaries During the COVID-19 Pandemic," Journal of Telemedicine and Telecare, (2023): 1-8, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10076155/; Adie Tomer, et al., "Digital Prosperity: How Broadband Can Deliver Health and Equity to All Communities," The Brookings Institution, February 27, 2020, https://www.brookings.edu/articles/digital-prosperity-how-broadband-can-deliver-health-and-equity-to-all-communities/.

6 Thomas McElroy, "Addressing The Digital Divide an Education: Technology and Internet Access for Students in Underserved Communities," Forbes, December 3, 2021, https://www.forbes.com/sites/forbestechcouncil/2021/12/03/addressing-the-digital-divide-in-education-technology-and-internet-access-for-students-in-underserved-communities/?sh=355949d25cec; Adie Tomer, et al., "Digital Prosperity: How Broadband can Deliver Health and Equity to All Communities," The Brookings Institution, February 27, 2020, https://www.brookings.edu/articles/digital-prosperity-how-broadband-can-deliver-health-and-equity-to-all-communities/.

7 Internet Society, "Internet Access and Education: Key Considerations for Policy Makers," November 20, 2017, last accessed March 11, 2024, https://www.internetsociety.org/resources/doc/2017/internet-access-and-education/; North Carolina Department of Information Technology, "Why Broadband is Important," last accessed August 5, 2024, https://www.ncbroadband.gov/digital-divide/why-broadband-important.

(BEAD) Program.[8] However, as we explain later in the report, there is a mismatch in where the funding is targeted and where it should be targeted. If policy makers appropriately assess economic spillovers from fiber investment relative to other broadband technologies, current funding efforts would be geared towards increased fiber deployment.

In this report we will discuss the market failure that leads to sub-optimal investment in fiber deployment and estimate the positive externalities generated by fiber deployment. In Section II, we discuss the status of fiber deployment in the U.S., including the evolution over the past few years, and benchmark the U.S. performance against other countries. In Section III, we briefly discuss the Economics literature on externalities and investment and show why there is a market failure in the fiber deployment market. In Section IV, we discuss the contemporaneous externalities associated with the deployment of fiber and estimate the effect of fiber deployment on various economic indicators. In Section V, we discuss current funding and why, in addition to the contemporaneous externalities, the existence of temporal externalities also push the needle in favor of increased fiber deployment today. Section VI concludes.

II. Fiber Broadband and U.S. Fiber Deployment

A. Fiber Optic Networks Perform Better Compared to Other Fixed Broadband Technologies and are Future-Proof

Comparing the performance characteristics of the fixed broadband technologies discussed above, fiber optic technology stands out from other fixed broadband technologies due to its

[8] The White House, "Fact Sheet: Biden-Harris Administration Announces Over $25 Billion in American Rescue Plan Funding to Help Ensure Every American Has Access to High Speed, Affordable Internet," June 7, 2022, https://www.whitehouse.gov/briefing-room/statements-releases/2022/06/07/fact-sheet-biden-harris-administration-announces-over-25-billion-in-american-rescue-plan-funding-to-help-ensure-every-american-has-access-to-high-speed-affordable-internet/; U.S. Department of Treasury, "Capital Projects Fund," last accessed August 27, 2024, https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/capital-projects-fund; USDA, "ReConnect Loan and Grant Program," last accessed August 27, 2024, https://www.usda.gov/reconnect; NTIA, "Broadband Infrastructure Program," last accessed August 27, 2024, https://broadbandusa.ntia.doc.gov/broadband-infrastructure-program; FCC, "Auction 904: Rural Digital Opportunity Fund," https://www.fcc.gov/auction/904; Broadband USA, "Broadband Equity Access and Deployment Program," https://broadbandusa.ntia.doc.gov/funding-programs/broadband-equity-access-and-deployment-bead-program.

superior speed, bandwidth, reliability, low latency, symmetrical speeds, longer transmission distances, and enhanced security features.[9]

- *Higher Speed and Bandwidth* Fiber has significantly higher data transfer speeds compared to cable broadband and can support symmetric gigabit and even multi-gigabit speeds, providing much greater bandwidth for data-intensive applications like video streaming, online gaming, and cloud computing.[10] Fiber optic technology has the potential to support future advancements in telecommunications technology for decades to come. This makes fiber optic infrastructure a long-term investment that can adapt to evolving technological requirements and consumer demands.

- *Lower Latency* Fiber optic networks offer ultra-low latency, which is crucial for real-time applications such as online gaming, video conferencing, and financial transactions.[11] As more low latency applications are developed, fiber will be able to meet their network needs without the need for expensive upgrades or replacement of the fiber optic cable.

- *Greater Reliability* Fiber optic cables are more reliable and can transmit data over longer distances without signal degradation.[12] This allows fiber optic networks to cover larger geographic areas with consistent high-speed connectivity, thus offering greater reliability and consistency in delivering high-quality internet connectivity.[13]

- *Greater Security* Fiber optic cables are inherently more secure than other broadband technologies because they do not emit electromagnetic signals that can be intercepted.[14]

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[9] Mobile broadband is not considered separately as its performance is constrained by the fixed broadband backhaul used by the mobile network.

[10] Rebecca Brill and Corinne Tynan, "DSL vs. Cable vs. Fiber Internet: Major Differences, Pros And Cons," Forbes, last updated April 4, 2024, https://www.forbes.com/home-improvement/home/dsl-vs-cable-vs-fiber/#which_internet_is_best_section.

[11] DCS Content Team, "How Fiber Optic Cables Improve Data Center Speed and Latency," Data Center Systems, April 4, 2023, https://blog.datacentersystems.com/how-fiber-optic-cables-improve-data-center-speed-and-latency.

[12] Gateway Fiber, "Why Fiber Internet is More Reliable," March 7, 2023, last accessed April 9, 2024, https://www.gatewayfiber.com/blog/why-fiber-internet-is-more-reliable; Genius Modules, "Is Fiber Optic Good for Long Distance?" January 5, 2024, https://www.genuinemodules.com/is-fiber-optic-good-for-long-distance_a3375.

[13] Ziply Fiber, "Fiber Internet and the Rise of Remote Work," February 16, 2024, https://ziplyfiber.com/blogs/article/fiber-and-the-rise-of-remote-work ("Fiber Internet and the Rise of Remote Work").

[14] PeakOptical A/S, "Why Fiber Optic Networks Are More Secure Than Copper Cable Networks For Businesses," LinkedIn, January 9, 2023, https://www.linkedin.com/pulse/why-fiber-optic-networks-more-secure-than-copper-cable-.

Fiber optic networks are more resistant to hacking and eavesdropping, enhancing data security for users, which is increasingly becoming a critical issue for broadband networks.

- *Greater Sustainability* Fiber optic cables significantly reduce the carbon footprint as it enables the deployment of Passive Optical Networks (PON), which eliminated the active (powered) network components, improving network reliability and reducing power consumption.

- *Greater Durability* Fiber broadband's inherent resilience, cost-efficiency, and repairability make it a superior choice for maintaining reliable internet connectivity, especially in the face of natural disasters. Fiber optic cables are made of glass or plastic, which are not susceptible to corrosion or electrical interference, and this makes them more resilient to extreme weather conditions such as floods, high winds, and lightning strikes compared to metal-based cables. Additionally, fiber optics do not conduct electricity, which means they are not affected by electrical surges and lightning strikes that can damage other broadband services.

These characteristics make fiber optic networks a *future-proof technology,* highly desirable for meeting the growing demands of modern high-speed internet applications. As discussed below, although fiber deployments in the U.S. have increased over the last decade, there are significant gaps in fiber connectivity.

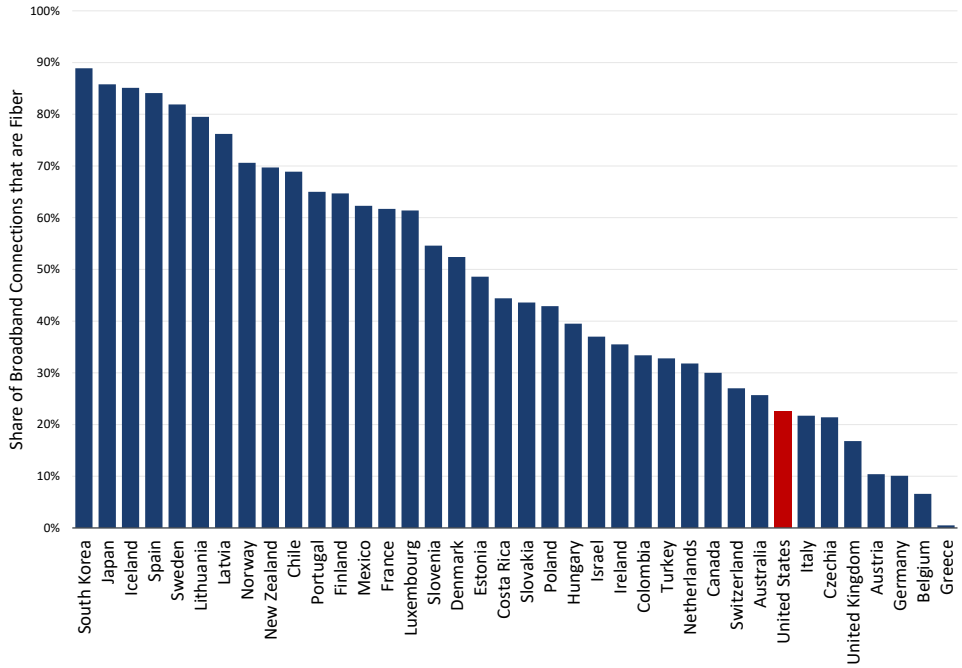
B. Despite Increases in Deployment Almost Half of the U.S. BSLs Lacks Access to Fiber

Over the past decade, access to fiber technology has increased in the U.S., making it more widely available now than it was in the past.[15] As shown in Figure 1, the U.S. is lagging behind most developed countries in terms of fiber deployment. In South Korea, Japan, Iceland, Spain and Sweden, fiber comprises of 80% or more of their broadband deployment. In the U.S. it is around 20%.[16]

[15] Fiber access refers to the availability of fiber lines at a specific location. Fiber penetration refers to the rate at which fiber is adopted by consumers.

[16] Petroc Taylor, "Fiber share of total broadband connections in OECD countries 2023," Statista, last accessed August 27, 2024, https://www.statista.com/statistics/604623/share-of-fibre-connections-in-broadband-oecd/.

FIGURE 1: FIBER SHARE OF TOTAL BROADBAND CONNECTIONS ACROSS COUNTRIES



Sources and Notes:
Petroc Taylor, "Fiber share of total broadband connections in OECD countries 2023," *Statista,* last accessed March 21, 2024, https://www.statista.com/statistics/604623/share-of-fibre-connections-in-broadband-oecd/.

According to the Fiber Broadband Association (FBA), as of 2023, fiber broadband passed nearly 69 million of the 132 million homes in the U.S., which reflected a 13% growth for that year.[17] Additionally, approximately 5.6 million new households have subscribed to fiber since December 2021.[18] However, even with all the progress, a little over half of the serviceable locations (an FCC metric that is a combination of homes and businesses) in the U.S. were unserved by fiber in 2023 as seen from Table 1 below. The table shows what percentage of broadband serviceable locations (BSLs) in the U.S. are served, unserved and underserved for two types of technology. As can be seen from the table, 63 million BSLs or 54.6% are still unserved by fiber. This implies that 56 million households (which are a sub-set of the BSLs) are unserved by fiber.[19]

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[17] Sean Buckley, "North American Fiber Broadband Industry Passed 9M Homes in 2023," December 14, 2023, https://www.lightwaveonline.com/home/article/55030843/north-american-fiber-broadband-industry-passed-9m-homes-in-2023. *See also*, Statista, "Number of Households in the U.S. from 1960 to 2023," last accessed May 30, 2024, https://www.statista.com/statistics/183635/number-of-households-in-the-us/.

[18] Tyler Cooper, "Over Half of America Now Has Access to Fiber," BroadbandNow Research, November 14, 2023, https://broadbandnow.com/research/fiber-penetration-trends ("Over Half of America Now Has Access to Fiber Article").

[19] We overlay the BDC shapefiles (fiber availability) with census shapefiles (tract boundaries) to estimate the number of households that are unserved by fiber.

TABLE 1: OVERVIEW OF SERVICE IN THE U.S. (2023)

	Total [1]	Cable [2]	**Fiber [3]**
Total Broadband Serviceable Locations (BSL)	115,342,228	115,342,228	**115,342,228**
Served BSL	105,089,107	94,935,898	**52,325,639**
% of Total	91.1%	82.3%	**45.4%**
Underserved BSL	3,041,565	475,618	**60,543**
% of Total	2.6%	0.4%	**0.1%**
Unserved BSL	7,211,556	19,930,712	**62,956,046**
% of Total	6.3%	17.3%	**54.6%**

Sources and Notes:
FCC Broadband Data Collection June 2023. The data was collected from https://www.arcgis.com/home/item.html?id=22ca3a8bb2ff46c1983fb45414157b08#overview and published by juliah_esri on March 12, 2023 and last updated January 3, 2024. We last accessed this data on March 28, 2024.
Served: low latency fiber, cable, copper or licensed terrestrial fixed wireless offering speeds greater than or equal to 100/20 Mbps.
Underserved: low latency fiber, cable, copper or terrestrial licensed fixed wireless offering speeds greater than or equal to 25/3 Mbps but less than 100/20 Mbps.
Unserved: all service that is not low-latency or less than 25/3 Mbps and all geostationary satellite, non-geostationary satellite, unlicensed terrestrial fixed wireless and other.

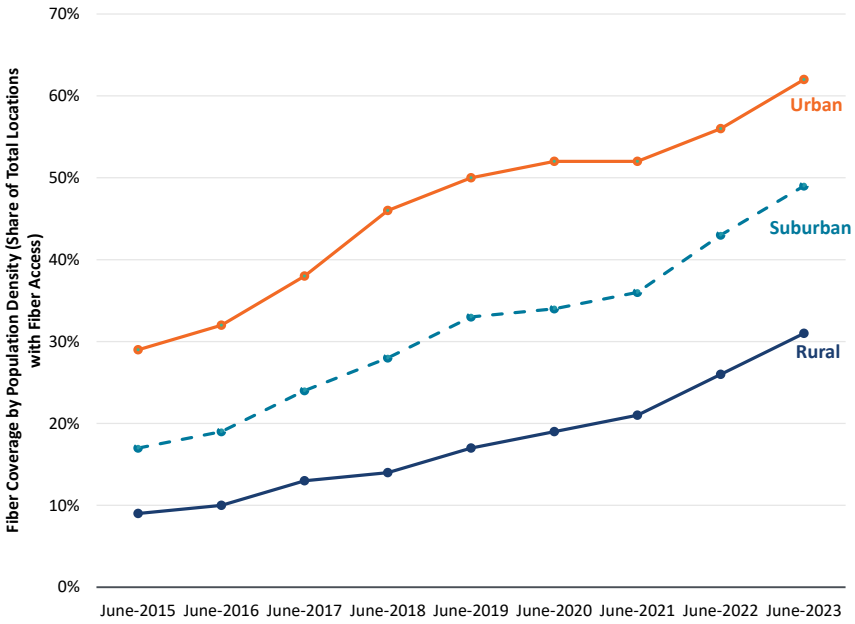
In addition, there is a large disparity in the percentage of households with fiber internet access between urban and rural states. In December 2021, the difference in average percent of households with fiber access between rural and urban areas was approximately 24.0%.[20] In June 2023, this difference grew to 25.1% even though access has grown in both urban and rural areas.[21] Figure 2 below shows fiber coverage by population density. The disparity between urban and rural areas is quite large and narrowing this gap is crucial to ensure that people living in rural areas can keep pace when it comes to technological advancements such as artificial intelligence, telemedicine, and education technology.[22]

[20] Tyler Cooper, "Over Half of America Now Has Access to Fiber," BroadbandNow Research, November 14, 2023, https://broadbandnow.com/research/fiber-penetration-trends ("Over Half of America Now Has Access to Fiber").

[21] *See*, Over Half of America Now Has Access to Fiber.

[22] *See,* Section IV.

FIGURE 2: FIBER COVERAGE BY POPULATION DENSITY



Sources and Notes:
Fiber Broadband Association, Fiber Deployment Annual Report 2023, https://fiberbroadband.org/wp-content/uploads/2024/01/Fiber-Deployment-Annual-Report-2023_FBA-and-Cartesian.pdf, p. 8.

III. Externalities, Market Failure and Sub-Optimal Fiber Investment and Deployment

Why is there a fiber connectivity gap? To understand this, we focus on the economic concept of market failures and how the presence of positive externalities leads to a socially sub-optimal level of investment in the fiber market.

A. The Theory of Externalities and Underinvestment

A market failure occurs when the price signals in a market do not reflect the underlying costs of the resources used. This leads to a situation where the choices made based on those price signals do not lead to the efficient use of resources. In general, in a well-functioning market where private actors fully capture the benefits from their investment decisions, the level of investment is both privately and socially optimal. In such a situation, the private benefit and the benefit to society as a whole (social benefit) are identical and fully captured by the entity incurring the cost of the decision. This has the benefit of market prices for goods and services reflecting the actual

cost of resources needed to produce those goods and services. Externalities occur when the actions of one party in a transaction affect the well-being of a third party, without compensation or consent. Externalities can be positive (beneficial) or negative (harmful), and they often lead to market failures because the prices of goods and services do not reflect the full social costs or benefits.[23] Positive externalities can result in a misallocation of resources, where resources are diverted away from activities that generate positive externalities towards activities with private benefits only. This misallocation leads to an inefficient allocation of resources and suboptimal social outcomes.[24]

Underinvestment can often be linked to externalities, particularly when positive externalities are present.[25] For instance, a firm might underinvest in research and development because it cannot fully capture the benefits (externalities) that spill over to other firms or society as a whole.[26] In this case, society corrects this market failure by creating patents and other intellectual property rights so that inventors are incentivized to invent more. Similarly, education generates positive externalities by enhancing the productivity of individuals and fostering innovation and economic growth. However, individuals may underinvest in education due to the inability to fully capture the societal benefits, leading to suboptimal levels of human capital accumulation.[27] Thus positive externalities create a situation where the social benefits from an economic decision such as investing in a particular technology or sector is greater than the private benefit captured by the entity incurring the costs of those investments.

Figure 3 below illustrates such a situation. Equilibrium is characterized by where the lines cross because at that point the incremental benefit is just offset by the incremental cost. Left to the private market, investment will be at I_1 where the private marginal cost (PMC) and private marginal benefit (PMB) curves intersect. The PMB curve shows the incremental benefit that a private investor can expect if they invest $1 extra. The social marginal benefit (SMB) curve shows how much society stands to gain from the $1 investment. The SMB curve is higher than the private benefit curve due to the positive externalities – that is, at each level of investment society benefits more than the private actor making the investment. Thus, if one factors in all the positive

[23] *See*, Externalities: Prices Do Not Capture All Costs.

[24] *See*, Externalities: Prices Do Not Capture All Costs.

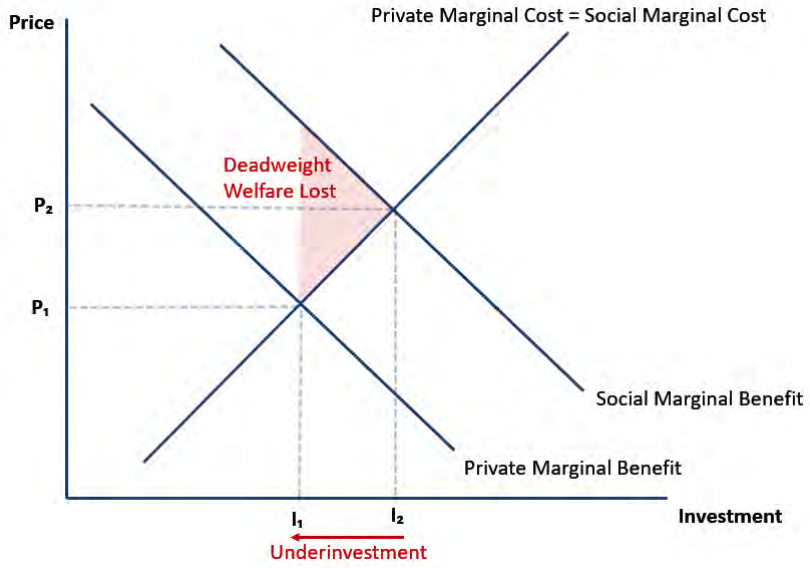
[25] Stiglitz, J. E. (1989). "The Economic Role of the State." Oxford Review of Economic Policy, 5(1), 1-20. Romer, P. M. (1990). "Endogenous Technological Change." Journal of Political Economy, 98(5), S71-S102.

[26] Griliches, Z. (1992). "The Search for R&D Spillovers." The Scandinavian Journal of Economics, 94(0), S29-S47. Jaffe, A. B. (1986). "Technological Opportunity and Spillovers of R&D: Evidence from Firms' Patents, Profits, and Market Value." The American Economic Review, 76(5), 984-1001.

[27] Heckman, J. J., Lochner, L. J., & Todd, P. E. (2006). "Earnings Functions, Rates of Return and Treatment Effects: The Mincer Equation and Beyond." Handbook of the Economics of Education, 1, 307-458.

externalities or spillovers, *i.e.,* social benefits, the optimal level of investment should be I_2. The private market equilibrium generates a sub-optimal level of investment. In the next section that follows, we are estimating the gap between the PMB and the SMB curve for fiber deployment. We will demonstrate that these significant positive externalities and spillovers are substantial, underscoring the need for increased investment in fiber infrastructure.

FIGURE 3: POSITIVE EXTERNATILITIES AND UNDERINVESTMENT



B. Estimating Positive Economic Spillovers from Fiber Deployment Even in the Presence of Other High-Speed Broadband Technologies

As discussed above, when examining where fiber is deployed and adopted, there exist economic externalities that suggest private market transactions alone will not create the optimal level of fiber investment. There are two types of externalities that are associated with fiber deployment – contemporaneous externalities and temporal externalities. Contemporaneous externalities, for example, imply that fiber expansion will lead to various economic gains for the area where fiber is deployed, such as increased income, more employment, higher housing values, improved 5G deployment in rural America, increased connectivity options for anchor institutions, such as hospitals and libraries, and increased health and social benefits – none of which is fully captured by the private broadband operator investing in the fiber. In this section we will focus on these contemporaneous externalities. Temporal externalities are tied to fiber providing the highest

quality connections but the benefits occurring far into the future and not being fully captured by the private actors who invest in fiber. These will be addressed in Section V.

The existence of externalities implies that increasing the current access to fiber broadband has spillover effects on economic activity, today and tomorrow.[28] Recognizing or internalizing these externalities would encourage more fiber investment. To do so requires quantifying these externalities. In this paper, we will estimate a sub-set for these positive externalities and their effect on economic metrics such as housing values, income, employment, and work patterns.

There are numerous studies that show the positive spillovers and economic benefits that occur when high speed broadband is deployed to a community.[29] This paper, in contrast, focuses on the incremental benefits of fiber deployment controlling for the presence of availability of other high-speed broadband. We find that fiber presence in a geography is linked to many positive economic spillovers. We define general economic spillovers as externalities which show up in high-level economic indicators such as housing values, income and unemployment, in contrast to benefits that accrue to a specific industry (say, healthcare and education).[30] We empirically quantify these spillovers with publicly available data and well-established econometric techniques which estimate causal effects.[31] In particular, we find a positive statistically significant relationship of varying magnitudes between fiber deployment and employment, housing value, household income, and rates of remote work, *i.e.*, fiber deployment is observed to increase these indicators.

To quantitatively assess the economic impact of expanded fiber access, we restrict our analysis to census tracts that had at least one HFC provider in all years and exclude tracts that already had fiber in 2014. We use broadband availability data from the FCC's 477 and Broadband Data Collection (BDC) data collection merged with economic indicators from the U.S. Census American Community Survey (ACS) to construct a difference in differences estimator at the census tract level. Difference in differences analysis uses a "treatment" group that is affected by the policy or

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[28] Speed Matters, "Economic Growth & Quality Jobs," accessed September 4, 2024, https://speedmatters.org/economicgrowthqualityjobs.

[29] Wolfgang Briglauer, Carlo Cambini, and Klaus Gugler, "Economic Benefits of High-Speed Broadband Network Coverage and Service Adoption: Evidence from OECD Member States," Research Paper, No. 23, 2023, EcoAustria – Institute for Economic Research, Vienna, https://www.econstor.eu/bitstream/10419/279415/1/186569830X.pdf.

[30] These industry specific spillovers are discussed in the subsections below.

[31] We use a difference in difference regression model to estimate the impact of fiber deployment on general economic indicators. *See,* Appendix A for a detailed description of the data and econometric methodology used.

event in question, and a "control" group that is unaffected (*i.e.*, untreated), and measures the difference in outcome between the two groups before and after the treatment. This is done in order to properly isolate the effect of the treatment from other confounding variables that might otherwise contribute to the difference in outcomes between the two groups. In our analysis, we define the control group as census tracts that do not have fiber access in any year of the sample, 2014 through 2021. Our treatment group is the subset of the sample that gained fiber access in either 2017 or 2018. Our estimates for fiber presence effects on economic indicators should be interpreted as the incremental effect conditional on having broadband of fiber over not having fiber, and accounts for any potential pre-existing trends, HFC deployment, and demographic similarities that fiber deployed geographies might have. We estimate this model separately for non-urban (rural and suburban) and urban census tracts where data variation allows such disaggregated estimation (*i.e.* for housing values and household income). Below we report and interpret our findings.

TABLE 2: GENERAL SPILLOVER EFFECTS OF FIBER PRESENCE

Impact on:		Sample Average without Fiber	Impact of Fiber Presence	Implied % Change
Median Housing Value	[1]			
Non-Urban		$192,827	$27,061	14.0%
Urban		$241,736	$41,201	17.0%
Household Income	[2]			
Non-Urban		$56,260	$1,613	2.9%
Urban		$52,354	-	-
Employment Rate	[3]	67.90%	+0.5%	0.74%
Work from Home Rate	[4]	5.34%	+1.2%	22.5%

Sources and Notes: *See,* Appendix A for details on data sources and econometric methodology.

[1]: Note that the employment rate in the American Community Survey is defined as the percent of employed people out of the population. In contrast to the commonly cited unemployment statistic which considers the percentage of people that are unemployed and out of the labor force. The U.S. Bureau of Labor Statistics defines the labor force as the number of people who are either working or actively looking for work. *See*, U.S. Bureau of Labor Statistics, "Labor Force Statistics from the Current Population Survey," https://www.bls.gov/cps/definitions.htm#laborforce.

[2]: Brattle analysis of Census and FCC 477 Data.

* Our econometric model for household income effects in urban tracts show that median income is on average higher in tracts that have fiber, however this difference between the tracts that do and do not have fiber is not statistically significant.

[3]: Brattle analysis of Census and FCC 477 Data

[4]: Brattle analysis of Census and FCC 477 Data

As shown in Table 2 we find that fiber deployment in a given census tract has different effects in urban and non-urban areas for housing value and household income. For urban and non-urban areas, housing values increase by 17% and 14% respectively. For non-urban areas household income increases by 2.9% but the income effect is not statistically significant in urban areas.[32] From the US-wide model we find that there is a 0.05% increase in the employment rate, and a 22.5% increase in the remote work rates. The relatively modest positive impacts on the employment rate and household income are unsurprising, as these economic indicators are more directly impacted by a plethora of macro-economic forces. In the following section we illustrate the significance of these impacts created by fiber over other broadband deployments.

IV. Access to Fiber Can Generate Billions of Dollars of Economic Impact

In this section, we explain the economic impacts found in our model by focusing on some illustrative small, medium and large cities. In addition, we also estimate a U.S.-wide effect. It is worth reiterating, that the model isolates the effect of fiber deployment and estimates the positive economic spillovers from that investment separately in urban and non-urban areas. This effect is incremental to any benefits that may occur when any high-speed broadband is deployed. By isolating the effect of fiber, we show that investing in fiber has large and significant added economic benefits to communities that are generated solely by fiber and not other technologies. From the FCC's 2023 BDC, we find that there are approximately 56 million households in census tracts that have no fiber broadband.[33] This constitutes of 50 million non-urban (rural and suburban) households and about 6 million urban households. This includes tracts that don't have fiber but have HFC or other non-fiber broadband options, as well as tracts that have no broadband at all. We do not consider tracts that are partially served by fiber, i.e. homes without fiber that are partially served are not in our 56 million estimate.

[32] When we estimated the econometric model, the income effect in urban areas couldnot be estimated with precision and was thus statistically indsignificant. In other words, this implies that the evidence is insufficient to conclude that there is a meaningful effect of fiber deployment (in areas with existing high-speed broadband) on urban income, in the context of the model being estimated.

[33] We overlay the BDC shapefiles (fiber availability) with census shapefiles (tract boundaries) to estimate the number of households that are unserved by fiber. *See,* Appendix A.

A. Housing Values

We find that with access to fiber broadband (where there was only non-fiber broadband before) the median housing values (which was approximately $200,000 in 2023) increase by around 14% or $29,000 on average.[34] This is a substantial impact because these are places where there was already high-speed non-fiber internet. Just the deployment of fiber is enough to show this significant increase in home values.

This increase in home values can positively impact the local economy through enhanced spending, investment, and tax revenues. Higher home values generally lead to increased property tax revenues for local governments leading to increased public spending. Homeowners with higher home equity often feel wealthier and more financially secure, which can lead to increased consumer spending. This boost in spending can stimulate local businesses and support job creation in retail, services, and other sectors. Also, with more valuable homes, homeowners might be more willing to invest in local businesses or start their own enterprises. This can spur entrepreneurship and economic diversification in the community.

- For example, for a city such as Detroit, with 311,291 housing units and $83,600 in median housing value, if say, 35% of the housing units are unserved by fiber, then deploying fiber to all the unserved households would increase housing value by $1.6 billion.[35]
- For example, for a small rural town such as Iron Mountain, Michigan, with 3,631 housing units and $112,600 in median housing value, if say, 31% of the housing units are unserved by fiber, then deploying fiber to all the unserved households would increase housing value by $18 million.[36]

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[34] These numbers are a weighted average of the urban and non-urban values. *See*, Appendix A.

[35] For households and housing values *see*, Census Reporter, "Iron Mountain, MI," accessed September 4, 2024, https://censusreporter.org/profiles/16000US2640960-iron-mountain-mi/ ("Census Reporter: Iron Mountain, MI"). *See also*, Census Reporter, "Detroit, MI," accessed September 4, 2024, https://censusreporter.org/profiles/16000US2622000-detroit-mi/ ("Census Reporter: Detroit, MI"). For fiber availability, *see*, United States Census Bureau, "American Community Survey S2801: Types of Computers and Internet Subscriptions Detroit," accessed September 4, 2024, https://data.census.gov/table?q=internet%20access%20in%20Detroit ("American Community Survey S2801: Types of Computers and Internet Subscriptions Detroit"). We calculate fiber unserved households as the total households minus those served by cable or fiber. Hence this is an underestimate.

[36] For households and housing values *see*, Census Reporter: Iron Mountain, MI. For fiber availability, *see*, American Community Survey S2801: Types of Computers and Internet Subscriptions Detroit. We calculate fiber unserved households as the total households minus those served by cable or fiber. Hence this is an underestimate.

- We find that deploying fiber to 56 million fiber-unserved households has the potential to generate at least these economic impacts in terms of housing values (expressed in NPV for a permanent one-time increase in housing value):
    - $1.4 trillion for rural and suburban areas and $242 billion for urban areas.
    - The aggregate U.S. impact in net present value terms (NPV) is $1.64 trillion.

B. Household Income and Employment

1. Household Income

From the econometric model, we have found that access to fiber broadband (where there was broadband, but no fiber) increases the median household income (which is $56,000 in 2023) by 3% or $1450 on average.[37] This is significant because these areas all had high-speed internet, but no fiber, and our estimate isolates the effect of fiber broadband from other high-speed internet. For a city this can have a tremendous economic impact, both in terms of direct and indirect effect. This income increase will have positive spillovers on other parts of a local economy.

- When we estimate the incremental effect of fiber deployment for urban and rural areas separately, for urban areas such as Detroit, our model predicts negligible incremental income effect of fiber. Note that this is an underestimate as this does not account for the effect of deploying fiber in areas that are unserved by any broadband.
- For example, for the small rural town such as Iron Mountain, Michigan, deploying fiber to all the unserved households would increase household income value by approximately $2 million annually.[38]

[37] The urban effects are not statistically significant. There the effect on urban households is considered to be zero. These numbers are a weighted average of the urban and non-urban values, where the urban increase is $0. See Table 2 and Appendix A.

[38] For households and income *see* Census Reporter: Iron Mountain, MI. For fiber availability, *see,* https://data.census.gov/table?q=internet%20access%20in%20iron%20mountain,%20MI. For fiber availability, *see*, United States Census Bureau, "American Community Survey S2801: Types of Computers and Internet Subscriptions Iron Mountain, Michigan," accessed September 4, 2024, https://data.census.gov/table?q=internet%20access%20in%20iron%20mountain,% ("American Community Survey S2801: Types of Computers and Internet Subscriptions Michigan"). We calculate fiber unserved households as the total households minus those served by cable or fiber. Hence this is an underestimate.

- For the U.S.-wide effect we find that deploying fiber to 56 million fiber-unserved households has the potential to generate at least these economic impacts in terms of income:
    - On an annual basis income will increase by:
        - $81 billion, which is approximately $1,450 per households with new fiber access if applied to all unserved U.S. households. [39]
    - On a perpetuity basis income will increase by:
        - $1.6 trillion (NPV)for non-urban areas and negligible impact for urban areas.
        - The aggregate U.S. impact is $1.6 trillion (NPV).

2. Employment

High-speed broadband is a critical infrastructure that supports modern economies. As part of his Budget Request for the $42 billion in BEAD funding, the Biden administration said that the installation of high-speed internet creates high-paying jobs and strengthens local economies.[40] Broadband can boost job creation in various ways. It initially creates jobs through construction and deployment programs, which act as short-term economic stimulants. It allows businesses to move functions to regions with lower costs, potentially shifting jobs from cities to rural areas, thus creating a more sustainable rural economy. Lastly, broadband expands market reach, enabling businesses to set up physical operations in remote locations, like satellite clinics in healthcare, which can create jobs in those underserved areas.

[39] When our model is estimated separately for rural and urban census tracts, we find that the income effect is not significant for urban areas. *See,* Appendix A for the estimated model.

[40] NTIA, "Broadband Equity, Access, and Deployment Program Notice of Funding Opportunity," last accessed August 5, 2024, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf. NTIA states that "[t]his program will lay critical groundwork for widespread access, affordability, equity, and adoption of broadband, create good-paying jobs; grow economic opportunities, including for local workers, provide increased access to healthcare services, enrich educational experiences of students, close long-standing equity gaps, and improve the overall quality of life across America."

There is extensive literature that documents the effects of increases in employment levels (both direct from the fiber construction and indirect from spillovers).[41] This literature shows that for every 1% increase in the broadband penetration rate, employment increases between 0.14% to 5.32%.[42] However, these estimates are calculating broadband's impact in the early 2000s, approximately 20 years ago. This time spans when broadband was first getting deployed, thus, the effects are likely larger than what we would expect today. In this paper, since we study the incremental effect of fiber broadband in areas that already have high-speed internet, one of the primary channels of fiber deployment on increases to employment levels is likely through the construction effect.[43] This can create jobs through several channels.[44] First, there will be a direct effect in employment growth during the network deployment phase. For instance, jobs may be created in roles related to telecommunications technicians, construction workers, and engineers. There are also additional jobs created through indirect channel. For instance, secondary economic activity, like employment opportunities for individuals with experience relating to metal products, electrical equipment, and professional services, are driven by the spending of businesses supporting the network rollout. Third, there will be an induced effect where jobs are generated by increased household spending from incomes earned through direct and indirect job effects. This includes roles in consumer goods, retail, and services.

Our analysis shows the incremental impact of fiber deployment on job creation beyond what occurs due to general high-speed broadband penetration. We estimate that:

- Access to fiber incrementally increases the employment rate by a small but measurable 0.74%. This is equivalent to a 0.5% increase in employment.[45]

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[41] Crandall, R., C. Jackson, and H. Singer, "The Effect of Ubiquitous Broadband Adoption on Investment, Jobs, and the U.S. Economy, 2003, Washington, DC: Criterion Economics. Atkinson, R., D. Castro, and S.J. Ezell, "The Digital Road to Recovery: A Stimulus Plan to Create Jobs, Boost Productivity and Revitalize America., 2009, Washington, DC: Te Information Technology and Innovation Foundation. Liebenau, J., R.D. Atkinson, P. Kärrberg, D. Castro, and S.J. Ezell, "The UK's Digital Road to Recovery, 2009, https://ssrn.com/abstract=1396687. Raul L. Katz, "The Impact of Broadband Internet on Employment," in Lorenzo Pupillo et al., Digitized Labor: The Impact of the Internet on Employment, (New York: Palgrave Macmillan, 2018), pp. 95-108, https://business.columbia.edu/sites/default/files-efs/imce-uploads/CITI/Articles/Katz%20Impact%20of%20Broadband%20Internet%20on%20Employment.pdf, ("Katz (2018)"

[42] *See*, Katz (2018).

[43] *See*, Katz (2018) p. 3.

[44] *See*, Katz (2018) p. 3.

[45] The jobs impact number is low because these places already have high-speed internet and this is only the incremental impact on jobs if fiber is deployed to these areas. The effect would be higher if these were unserved areas. *See* Appendix A.

- For a city such as Detroit, with a labor force of approximately 356,408 people, deploying fiber to all the unserved households would create 36 new jobs.[46]
- For a small rural town such as Iron Mountain, Michigan, with a labor force of approximately 4,363 people, deploying fiber to all the unserved households would create at least 14 new jobs.[47]

- For the U.S.-wide effect we find that deploying fiber to 56 million fiber-unserved households, or 77 million Americans in the workforce who are without fiber, has the potential to generate at least 380,000 new jobs.[48]

C. Remote Work

We also find a large positive impact on indicators that are more directly associated with access to reliable and high-speed internet. The incremental increase in the number of workers working from home in census tracts with fiber over tracts without fiber is expected and intuitive. The availability of a more reliable home broadband option should encourage more workers to choose to work from home. As more people consider fully remote or hybrid work as a long-term option for employment, housing demand in geographies with fiber access should increase. In fact, our findings suggest that more broadly funding fiber deployment may help even out housing value disparities across the nation. This may also help explain our high estimated impact on housing value.[49]

To investigate a possible contribution to the stark increase in remote work, we also conduct a separate analysis of the trend in work from home rates for census tracts with and without fiber access. In particular, we conduct another difference in differences analysis with our control group. Our control group is once again defined as census tracts never gaining fiber access, and our treatment group is now defined as any census tract with fiber access (according to our 15% threshold) by 2019. We then measure the differential effect of the Covid-19 pandemic as a

[46] For labor force data, *see*, United States Census Bureau, "Labor Force in Detroit, MI," last accessed August 7, 2024, https://data.census.gov/table?q=labor%20force%20in%20detroit,%20MI. We define labor force as population between 20 – 64 years.

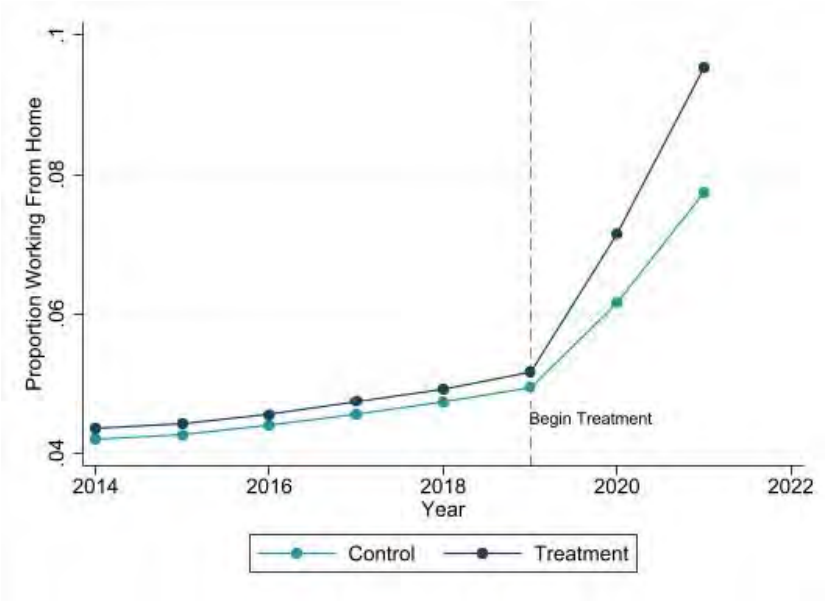
[47] For labor force data *see*, United States Census Bureau, "Labor Force in Iron Mountain, MI," last accessed August 7, 2024, https://data.census.gov/table?q=labor%20force%20in%20iron%20muntain,%20MI.

[48] *See*, Row [G] of Table 6 shows that the workforce without fiber is estimated to be approximately 77 million. 77 million multiplied by 0.5% equals approximately 380,000.

[49] *See*, Section IV.A.

substantial exogenous shock to work from home rates, defining our pre-treatment period as 2014 to2019 and using 2020 and 2021 as our post-treatment period. We find that work-from-home rates increased by 2.4 percentage points (a whopping 54% increase) for the control group, and the rate increased by an additional 1.2 percentage points (27%) in census tracts with fiber access prior to the pandemic. This is despite virtually identical work from home rates prior to the treatment. This effect can be clearly seen in Figure 4 below.

FIGURE 4: TRENDS IN WORK FROM HOME RATES FOR TRACTS WITH AND WITHOUT FIBER ACCESS PRIOR TO THE COVID-19 PANDEMIC



The onset of the COVID-19 pandemic shifted large swathes of workers to a work-from-home format. As of 2023, 12.7% of full-time employees were working from home while 28.2% had hybrid work models.[50] High-speed broadband access is critical for successful work-from-home arrangements and fiber has played a critical role in enabling this as we have shown in our econometric analyses.[51]

[50] Dr. John W. Mitchell, "The State of Hybrid Workplaces in 2024," Forbes, January 24, 2024, https://www.forbes.com/sites/forbesbooksauthors/2024/01/24/the-state-of-hybrid-workplaces-in-2024/#:~:text=Statistics%20That%20Tell%20the%20Story&text=As%20of%202023%2C%2012.7%25%20of,still%20work%20in%20an%20office.

[51] S&P Global, "U.S. Broadband Expansion: Bridging Access Gaps," April 6, 2023, https://www.spglobal.com/_assets/documents/ratings/research/101575133.pdf.

Precisely measuring the impact of remote work enabled by fiber deployment on the environment is an extremely complex empirical exercise which needs to account for a multitude of factors.[52] However, recent studies show that remote work can bring environmental benefits of working from home. For example, a 2023 study found the working remotely for 4 or more days a week can reduce people's carbon footprint by 54% when coupled with additional sustainable habits.[53]

D.Environmental Benefits That Should Be Considered When Deciding Between Investments in Fiber and Other Technologies

Fiber is considered a greener alternative to HFC cable deployment for several reasons. A recent FBA study finds that fiber significantly reduces the carbon footprint compared to HFC (DOCSIS 4.0).[54] For instance, the network operational carbon footprint of fiber is up to 96% less than HFC.[55] Similarly, fiber networks have a 60% lower carbon footprint associated with network component manufacturing compared to HFC.[56] The most significant benefit from an environmental perspective is that fiber has a much smaller carbon footprint than its alternatives. Fiber networks use "passive" (non-powered) devices such as optical splitters, whereas HFC cable use "active" (powered devices such as amplifiers and powered taps).[57] A 2017 European study found that at 50 Mbps, fiber networks emit 1.7 tons of carbon dioxide per year, while the most efficient copper networks emit 2.7 tons.[58] The study also noted that at higher speeds, the savings would be even greater since fiber-optic networks require less power for signal transmission over

[52] *See, for e.g.*, Ganga Shreedhar, Kate Laffan, and Laura M. Giurge, "Is Remote Work Actually Better for the Environment?" March 7, 2022, https://hbr.org/2022/03/is-remote-work-actually-better-for-the-environment.

[53] Cornell University, "Remote Work Can Slash Your Carbon Footprint — If Done Right," September 18, 2023, last https://www.eurekalert.org/news-releases/1001874.

[54] Fiber Broadband Association, "Fiber Broadband Deployment is Paramount To Achieving Zero Carbon Footprint," FBA Sustainability Working Group, July, 2024, https://fiberbroadband.org/wp-content/uploads/2024/07/FBA-059_Sustainability_WhitePaper_FIN.pdf, ("Fiber Broadband Deployment is Paramount To Achieving Zero Carbon Footprint").

[55] *See*, Fiber Broadband Deployment is Paramount To Achieving Zero Carbon Footprint.

[56] *See*, Fiber Broadband Deployment is Paramount To Achieving Zero Carbon Footprint.

[57] FS, "Environmental Consideration: Are Fiber Optic Cables More Sustainable?" December 18, 2023, https://community.fs.com/article/environmental-consideration-are-fiber-optic-cables-more-sustainable.html ("Environmental Consideration: Are Fiber Optic Cables More Sustainable?").

[58] European Commission, "Fibre is the Most Energy Efficient Broadband Technology," November 24, 2020, https://digital-strategy.ec.europa.eu/en/library/fibre-most-energy-efficient-broadband-technology ("European Commission: Fibre is the Most Energy Efficient Broadband Technology").

long distances.[59] The use of "active" devices in the non-fiber networks also imply that these active devices use energy (power) which generates carbon output and reduces reliability. As powered devices tend to fail over time, they drive up operating expenses of HFC when, compared to fiber, increases truck rolls required to maintain the non-fiber network. Thus, in the long run, fiber cables require less maintenance than alternatives.

Due to their ability to transmit larger amount of data, fiber optic cables require less plastic-based cladding materials than copper cables, which further reduces the amount of mining and extraction required for their production.[60] Second the installation of fiber optic cables is significantly less disruptive to the environment due to their lightweight and compact nature. This can support the preservation of delicate ecologies while ensuring expanded access.[61] Fiber is also considerably more resilient and are estimated to last up to 25 years or more.[62] Updates to fiber cables do not require replacing the cables themselves, which makes them more cost-effective and environmentally friendly.[63] Repairs are required much less frequently, and by some estimates, repair times are up to 67% faster than for other wired technologies.[64] Additionally, their overall energy efficiency benefits organizations and homes relying on them as well by passing on energy savings.[65]

E. Enhanced Wireless Connectivity with 5G and IoT

5G and the Internet of Things (IoT) are expected to be game changers for our time. The evolution of 5G networks is expected to facilitate the deployment of new applications including the IoT. IoT refers to the linking of and communication between physical objects, such as roadways and bridges communicating with cars, or agricultural sensors and farm management systems, using wired and wireless networks.[66] Ericsson estimates that worldwide, there could be 5.6 billion 5G

[59] *See*, European Commission: Fibre is the Most Energy Efficient Broadband Technology.

[60] Harry Guinness, "How Does Choosing Fiber Internet Benefit the Environment?" Frontier, September 30, 2022, https://blog.frontier.com/2022/09/how-does-choosing-fiber-internet-benefit-the-environment/.

[61] FiberMart, "4 Environmental Benefits of Fiber Optic Cables," May 19, 2023, https://www.fiber-mart.com/news/4-environmental-benefits-of-fiber-optic-cables-a-6194.html.

[62] STL, "Environmental Considerations for Sustainable Fibre Deployment," June 5, 2023, https://stl.tech/blog/environmental-considerations-for-sustainable-fibre-deployment/ ("Environmental Considerations for Sustainable Fibre Deployment").

[63] See, Environmental Consideration: Are Fiber Optic Cables More Sustainable.

[64] See, Environmental Considerations for Sustainable Fibre Deployment.

[65] See, Environmental Consideration: Are Fiber Optic Cables More Sustainable.

[66] Michael Chui, Markus Löffler, and Roger Roberts, "The Internet of Things," McKinsey Quarterly, March 2010, http://www.mckinsey.com/industries/high-tech/our-insights/the-internet-of-things.

mobile subscriptions by 2029.[67] By 2034, 5G is expected to generate $12.3 trillion of global economic activity, $2.2 trillion in GDP for the global economy and 22 million jobs by 2035.[68] For the United States, 5G is expected to result in $719 billion of gross output, and generate 3.4 million jobs by 2035.[69]

All of these benefits depend on high bandwidth and low latency services powered by fiber backhaul connectivity. For these wireless solutions to provide low latency, fiber needs to be deployed as close to the end user application as possible, getting the broadband signal "out of the air and into the ground" as the first available point.[70] For the latency-sensitive applications in the context of 5G, latency is an important component of gauging the quality of experience for broadband users. Many new technologies with the potential to greatly benefit society require the speed and capacity of 5G networks (fiber in particular). 5G is expected to decrease end-to-end latency by 10 times, thereby improving user experiences for current technologies and providing an opportunity for innovation.[71] In particular, IoT technologies, such as robotic surgery, autonomous vehicles, and drones will require extremely low latency. 5G will also enhance the online gaming experience as small lags can drastically alter a game. There are a fair number of applications that would benefit significantly from low latencies. Thus, the tradeoff should not be evaluated just in terms of current uses of broadband technology, but also with an eye towards building in potential capacity for future needs.

F. Other Economic Benefits

Fiber's demonstrated benefits over other fixed broadband alternatives very likely extend to many other areas. Here we examine several areas that are sensitive to the availability and, especially, quality of broadband connections. Although we do not have any incremental fiber benefits to

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[67] Ericsson, "Ericsson Mobility Report," June 2024, p. 3, https://www.ericsson.com/49ed78/assets/local/reports-papers/mobility-report/documents/2024/ericsson-mobility-report-june-2024.pdf.

[68] IHS Economics and IHS Technology, "The 5G Economy: How 5G Will Contribute to the Global Economy," January 2017, https://cdn.ihs.com/www/pdf/IHS-Technology-5G-Economic-Impact-Study.pdf ("The 5G Economy"), p. 4. For GDP estimate, *see*, GSMA, "Study on Socio-Economic Benefits of 5G Services Provided in mmWave Bands," The WRC Series, December 2018, https://www.gsma.com/spectrum/wp-content/uploads/2019/10/mmWave-5G-benefits.pdf, pp. 9, 21.

[69] *See*, The 5G Economy, p. 19.

[70] Asset Essentials, "Why Fiber Is the Key to Getting Faster 5G Everywhere," July 26, 2023, https://www.assetessentials.com/why-fiber-is-the-key-to-getting-faster-5g-everywhere/.

[71] Mohammed Al Khairy, "How 5G Low Latency Improves Your Mobile Experiences," Qualcomm, May 12, 2019, https://www.qualcomm.com/news/onq/2019/05/how-5g-low-latency-improves-your-mobile-experiences.

measure here, it is highly likely that the noted benefits from quality broadband connections would only be enhanced if that broadband was delivered over fiber.

1. Improved Health Benefits of Fiber Deployment

Internet provided over fiber is generally more reliable and lower latency than other high-speed broadband technologies (such as HFC cable internet).[72] Hence, it is the ideal technology on which various healthcare services can be provided on. In particular, telemedicine is well suited for patients who medically or socially find it difficult to see physicians in-person.[73] These patients likely have high marginal value for access to healthcare. Furthermore, advancements in technology now allow healthcare providers to monitor patients outside the traditional care environment. [74] This type of monitoring is especially beneficial for patients with chronic health conditions.[75] Remote patient monitoring (RPM) allows healthcare providers to access health data in real-time and based on this data, allow them to adjust prescriptions or change a diagnosis.[76] For chronic care management, 93% of surveyed physicians state that they would take advantage of telehealth services, including RPM.[77] RPM require internet and bad internet connectivity can cause obstacles to patient monitoring.[78] Accessibility and connectivity issues would be especially pronounced in rural areas where high speed internet is less frequently available.[79]

Additionally, from the healthcare provider's perspective, there are cost savings realized through reduced overhead expenses as less physical clinic space and administrative staff are needed to operate. [80] Telemedicine also increases the likelihood of early detection and treatment of

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[72] Lauren Hannula, "Cable vs. Fiber Internet," WhistleOut, last updated December 7, 2023, https://www.whistleout.com/Internet/Guides/cable-and-fiber-internet-differences.

[73] Michael X Jin, Sun Young Kim, Lauren J Miller, Gauri Behari and Ricardo Correa, "Telemedicine: Current Impact on the Future," Cureus, Vol. 12(8), August 20, 2020, last accessed March 22, 2024, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7502422/.

[74] Colton Hood, Neal Sikka, Cindy Manaoat Van, and Sarah R. Mossburg, "Remote Patient Monitoring,"PSNET, March 15, 2023, last accessed March 22, 2024, https://psnet.ahrq.gov/perspective/remote-patient-monitoring ("Remote Patient Monitoring").

[75] *See*, Remote Patient Monitoring.

[76] Prognocis, "Pros and Cons of Remote Patient Monitoring," last accessed March 22, 2024, https://prognocis.com/pros-and-cons-of-remote-patient-monitoring/ ("Pros and Cons of Remote Patient Monitoring").

[77] *See*, Pros and Cons of Remote Patient Monitoring.

[78] *See*, Pros and Cons of Remote Patient Monitoring.

[79] *See,* Section II.B.

[80] *See*¸ Smart Clinix, "How Does Telemedicine Reduce Costs," November 23, 2023, https://smartclinix.net/how-does-telemedicine-reduce-costs/ ("Smart Clinix: How Does Telemedicine Reduce Costs").

diseases, which can prevent the increased costs of treating more serious diseases.[81] Lastly, remote monitoring of diseases prevent readmission into the hospital which can be another source of cost savings for consumers.[82] When considering widening gaps in programs like Medicaid, the cost savings from early preventative care become even more pronounced.[83] This, once again, underscores the importance of universal availability for high speed two-way internet lines, which is best provided by fiber deployment.

2. Positive Educational Outcomes of Fiber Deployment

During the COVID-19 pandemic, 93% of parents reported that their children received online instruction of some form and 34% reported experiencing at least one technology-related obstacle related to schoolwork during this time.[84] These obstacles disproportionately affected children from rural and/or lower-income households. This phenomenon is known as the homework gap, which remains a persistent issue as the use of internet-based learning has increased.[85] During the COVID-19 pandemic, students worldwide that were unable to participate in remote learning due to lack of internet and reliable connectivity, risk losing $17 trillion in lifetime earnings.[86] Regional studies in various countries revealed substantial losses in math and reading and the learning losses were approximately proportional to the length of the closures.[87]

As of the fall of 2022, 6% of all U.S. college students attended primarily online institutions.[88] Over the 2021 to 2022 school year, these institutions enrolled over 560,000 full-time students and

[81] *See*¸ Smart Clinix: How Does Telemedicine Reduce Costs.

[82] *See*¸ Smart Clinix: How Does Telemedicine Reduce Costs.

[83] Center on Budget and Policy Priorities, "The Medicaid Coverage Gap: State Fact Sheets," April 3, 2024, last https://www.cbpp.org/research/health/the-medicaid-coverage-gap.

[84] Katherine Schaeffer, "What We Know About Online Learning and the Homework Gap Amid the Pandemic," Pew Research Center, October 1, 2021, https://www.pewresearch.org/short-reads/2021/10/01/what-we-know-about-online-learning-and-the-homework-gap-amid-the-pandemic/ ("What We Know About Online Learning and the Homework Gap Amid the Pandemic").

[85] Lauraine Langreo, "The 'Homework Gap' Persists. Tech Equity Is One Big Reason Why," EducationWeek, June 7, 2022, last accessed April 10, 2024, https://www.edweek.org/technology/the-homework-gap-persists-tech-equity-is-one-big-reason-why/2022/06.

[86] World Bank-UNESCO-UNICEF, "Learning Losses from COVID-19 Could Cost this Generation of Students Close to $17 Trillion in Lifetime Earnings," December 6, 2021, https://www.worldbank.org/en/news/press-release/2021/12/06/learning-losses-from-covid-19-could-cost-this-generation-of-students-close-to-17-trillion-in-lifetime-earnings ("World Bank-UNESCO-UNICEF: Leaning Losses from COVID-19").

[87] *See*, World Bank-UNESCO-UNICEF: Leaning Losses from COVID-19.

[88] Ilana Hamilton, Veronica Beagle, and David Clingenpeel, "By the Numbers: The Rise of Online Learning In the U.S.," March 22, 2024, https://www.forbes.com/advisor/education/online-colleges/online-learning-stats/ ("By

Continued on next page

559,000 part-time students and female students made up 66% of all students.[89] According to data collected across 10 states, virtual school enrollment rose to 170% compared to pre-pandemic levels in 2020-2021 and 176% in 2021-2022.[90] Even in traditional classroom settings, educators are incorporating technology more than before. Education technology (EdTech) has made it possible for educators to incorporate new tools and technologies in their teaching.[91] Lack of high-speed internet access is one of the major barriers to incorporating EdTech tools in classrooms.[92] And the substantial increase in the capacity and speeds requirements, and the expected increase in the future can be best addressed with fiber deployments.

We observe that, as shown in Figure 5, below, the share of students learning online amongst graduate and undergraduate students is considerably high. This effect is even more pronounced at lower levels of household income. Given that rural households will benefit greatly from online learning in the U.S., it is important to ensure that rural areas of the U.S. have sufficient fiber access to facilitate online learning. As we discussed earlier, rural areas of the U.S. still lack sufficient access to high-speed internet, and it is essential for regulators to narrow the gap in fiber access rates between urban and rural areas.

the Numbers: The Rise of Online Learning in the U.S."). Note, "NCES defines primarily online schools as those enrolling 90% or more of their student body in distance education.")

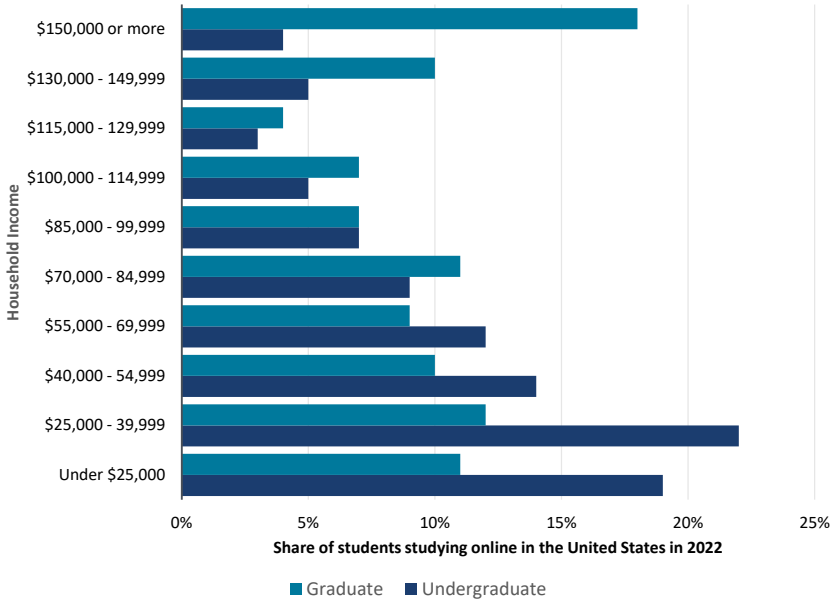
89 *See*, By the Numbers: The Rise of Online Learning in the U.S. For student enrollment, *see*, National Center for Education Statistics, "Table 311.33. Selected statistics for degree-granting postsecondary institutions that primarily offer online programs, by control of institution and selected characteristics: Fall 2022 and academic year 2021-22," accessed September 4, 2024, https://nces.ed.gov/programs/digest/d23/tables/dt23_311.33.asp.

90 Asher Lehrer-Small, "Virtual School Enrollment Kept Climbing Even As COVID Receded, New Data Reveal,", updated November 16, 2022, https://www.the74million.org/article/virtual-school-enrollment-kept-climbing-even-as-covid-receded-new-data-reveal/.

91 All Assignment Help, "Major Barriers Education Technology Faces in the Modern Times," November 28, 2022, https://www.allassignmenthelp.com/blog/major-barriers-education-technology-faces-in-the-modern-times/ ("Major Barriers Education Technology Faces in the Modern Times").

92 *See*, Major Barriers Education Technology Faces in the Modern Times.

FIGURE 5: SHARE OF STUDENTS STUDYING ONLINE IN THE U.S. (2022) BY TOTAL HOUSEHOLD INCOME



Sources and Notes:
Veera Korhonen, "Share of Students Studying Online in the U.S., by Income 2022," August 3, 2023, last accessed March 25, 2024, https://www.statista.com/statistics/956154/share-students-studying-online-income-education-level/.

3. Improved Adoption of Up-and-Coming Artificial Intelligence Technology

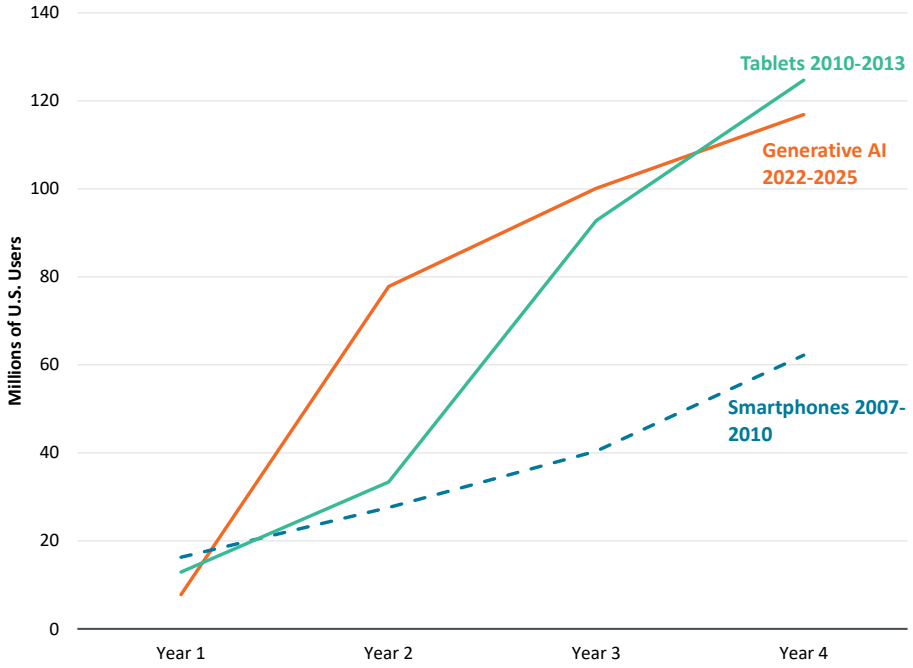
In recent years, there have been significant advancements in the field of artificial intelligence (A.I.) and looking ahead, we can expect these developments to continue pushing the frontier of A.I. technology. Especially for small businesses, AI can provide efficiency gains and cost savings.[93] According to a report by Small Business and Entrepreneurship Council (SBEC), 75% of all surveyed small businesses utilized AI tools in their operations and some of the most popular use cases included financial management tools, email marketing automation, cybersecurity and inventory management.[94] Furthermore, 54% of businesses have reported increased cost savings and efficiencies from A.I. implementation and 64% of businesses expect A.I. to improve

[93] Neil Hare, "How Small Businesses Are Using AI—And How Your Business Can Benefit Too," Forbes, November 17, 2023, https://www.forbes.com/sites/allbusiness/2023/11/17/how-small-businesses-are-using-ai-and-how-your-business-can-benefit-too/?sh=231fee142344.

[94] Small Business & Entrepreneurship Council, "Small Business A.I. Adoption Survey," October 2023, https://sbecouncil.org/wp-content/uploads/2023/10/SBE-Small-Business-AI-Survey-Oct-2023-FINAL.pdf, p. 4.

productivity.[95] Improving fiber access can lead to positive knock-on effects such as efficiency gains from greater adoption of A.I technology.

FIGURE 6: A.I. ADOPTION RATES COMPARED TO OTHER TECHNOLOGIES



Sources and Notes:
Sara Lebow, "Generative AI Adoption Climbed Faster Than Smartphones, Tablets," eMarketer, August 11, 2023, last accessed March 27, 2024, https://www.emarketer.com/content/generative-ai-adoption-climbed-faster-than-smartphones-tablets.

As shown in Figure 6, there is evidence that suggests that the rate of adoption for A.I. significantly exceeds the initial rates of adoption for smartphones.[96] For instance, in Year 2 (which in 2024 for A.I. and 2008 for smartphones) the adoption rate of A.I. is expected to be around 78% whereas smartphone adoption was around 30%.[97] A wide gap in internet access can contribute to wider gaps in A.I. adoption amongst rural and urban consumers. In the U.S., one in three people do not use internet at speeds high enough to support applications like Zoom, and as A.I. becomes more

[95] Susie Marino, "43 Insane AI Statistics & What They Mean for Your Business," July 21, 2023, https://localiq.com/blog/ai-statistics/.

[96] Jochai Ben-Avie, "Don't Let AI Become the Newest Digital Divide," January 18, 2024, Council on Foreign Relations, https://www.cfr.org/blog/dont-let-ai-become-newest-digital-divide ("Don't Let AI Become the Newest Digital Divide").

[97] Sara Lebow, "Generative AI Adoption Climbed Faster Than Smartphones, Tablets," eMarketer, August 11, 2023, last accessed March 27, 2024, https://www.emarketer.com/content/generative-ai-adoption-climbed-faster-than-smartphones-tablets.

sophisticated, these same consumers will face challenges in accessing the benefits of A.I. driven technology.[98] There are growing concerns that A.I. will become the "new digital divide."[99]

V. Government Funding and Temporal Externalities

As discussed, and demonstrated above, society as a whole benefits from the positive externalities of fiber deployment. However, no group of private investors can fully capture these benefits. As a result, a private market equilibrium that balances the marginal revenue and marginal cost of fiber deployment will lead to an under-provision of fiber resources, resulting in market failure..[100] The solution to this issue is well-established: economic policy interventions are necessary when the market fails to provide an efficient level of a good or service.[101] The U.S. government has acknowledged this underinvestment in broadband and has implemented several funding mechanisms to bridge this gap.

A. Existing Government Funding

There are several federal programs to fund the expansion of high-speed internet offered by the U.S. government. BEAD is the largest such program, offering over $42 billion to all 50 U.S. states, Washington, D.C., and all U.S. territories.[102] In October 2020, the FCC held the RDOF Phase I auction that provided subsidies around $20.4 billion for terrestrial broadband deployment.[103] Another major program focused on improving rural broadband connectivity is the USDA's ReConnect Program. Established in 2018 via the Consolidated Appropriations Act, the ReConnect

[98] *See*, Don't Let AI Become the Newest Digital Divide.

[99] *See*, Don't Let AI Become the Newest Digital Divide.

[100] Thomas Helbling, "Externalities: Prices Do Not Capture All Costs," International Monetary Fund, https://www.imf.org/en/Publications/fandd/issues/Series/Back-to-Basics/Externalities ("Externalities: Prices Do Not Capture All Costs").

[101] *See,* Externalities: Prices Do Not Capture All Costs.

[102] BroadbandUSA, "Broadband Equity Access and Deployment Program," BEAD, https://broadbandusa.ntia.doc.gov/funding-programs/broadband-equity-access-and-deployment-bead-program, accessed September 4, 2024.

[103] FCC, "Auction 904: Rural Digital Opportunity Fund," https://www.fcc.gov/auction/904 ("Auction 904: Rural Digital Opportunity Fund").

Program provides grants, loans, and loan-grant combinations.[104] ARPA and Treasury's $9.6 billion Capital Projects Fund (CPF) are also major sources of federal funding for broadband.[105] While some of these programs target fiber connectivity to some extent, these are not exclusively for funding fiber deployment.

Despite these programs, there still remains a significant gap between the amount of funding that is directed towards fiber deployment and the amount required to ensure ubiquitous fiber deployment nationwide. For instance, a 2023 study argued that the BEAD funding was insufficient to effectively fix the digital gap using FTTH networks.[106]

Given these results, what does the government need to consider if it has to focus its subsidies on fiber deployment over other types of broadband? The first consideration is that there are incremental positive spillovers (contemporaneous externalities discussed earlier) of fiber deployment over other technologies. Additionally, there is a need to articulate the existence of temporal externalities and why that too moves the needle in favor of fiber over other technologies. We explain this below.

B. Future Proofing

Temporal externalities play a significant role in economic analysis, particularly in understanding the dynamics of intertemporal decision-making and its implications for market outcomes and social welfare. It refers to the effects that the timing of economic activities or decisions of one party have on others, which are not reflected in the market prices. Temporal externalities can lead to inefficient outcomes in markets because market prices fail to fully capture the long-term costs or benefits associated with certain actions.

The existence of temporal externality implies that the low-cost solution today may not be the low-cost solution over time. It is important to recognize that an optimal data network today will likely not meet the needs of tomorrow. Consequently, what is the least costly way of providing

[104] USDA, "ReConnect Program: Funding to Facilitate Broadband Deployment in Underserved Rural Areas," last updated May 2024, https://www.rd.usda.gov/sites/default/files/usda-rd-rus-reconnect-factsheet-02212024.pdf ("ReConnect Program: Funding to Facilitate Broadband Deployment in Underserved Rural Areas"), p. 2.

[105] U.S. Department of Treasury, "Capital Projects Fund," last accessed May 30, 2024, https://home.treasury.gov/policy-issues/coronavirus/assistance-for-state-local-and-tribal-governments/capital-projects-fund.

[106] Light Reading, "BEAD Funding Falls Short for Fiber-Only Options – Study," April 26, 2023, https://www.lightreading.com/digital-divide/bead-funding-falls-short-for-fiber-only-options-study.

a given level of service today may create greater upgrade costs in the future, and thus one needs a longer time horizon, *i.e.*, longer than what private industry uses, to evaluate the deployment of fiber.

Decision-making based on short-term costs and benefits analysis can lead to the wrong outcome when considering longer-lived assets. A myopic cheaper solution today may not necessarily be the optimal outcome in the long run. This is true for broadband deployment. Fiber typically costs more to deploy than HFC or FWA, but investments in fiber last longer. As a consequence, the shorter your planning horizon, the more distorted your choice will be about which technology to deploy. This problem is exacerbated with fiber deployments because the outyear benefits that are ignored in a shorter planning horizon are even larger due to the externalities noted in previous sections. Thus, the government needs to step in to correct this market failure. Government policies and regulations on broadband funding priorities will significantly influence market outcomes. To address the market failure and increase fiber access, government funding should prioritize fiber. Thus, the various public programs, such as RDOF, BEAD, Reconnect, CFP and BIP, that are prioritizing fiber builds are on the right policy path. This prioritization needs to continue if the gains from deploying fiber are to be realized.

Take, for example, a program that provides subsidies to extend broadband coverage further into a rural area. It may take a lower subsidy to incentivize a FWA deployment than a fiber deployment because the initial capital expenditures are lower and deployment costs can be recovered over a shorter period of time. But a decade later, as broadband capabilities expand (higher bandwidths, lower latencies, etc.) the FWA deployment will likely need significant additional capital expenditures to meet those future needs. A fiber deployment, in contrast, will be able to meet those future needs with a much lower incremental investment. From this perspective, society would be better off initially subsidizing the fiber deployment both because it would cost less over the long run *and* because we would enjoy the incremental benefits of fiber over other broadband modes now and into the future.

The significant advantage of fiber is that it is relatively future-proof technology due to its ability to deliver high speeds, scalability, reliability, and support for emerging applications and technologies. It has the potential to handle increasing data demands as technology continues to advance and can ensure that the internet infrastructure remains relevant and capable of meeting the evolving needs of businesses, education, healthcare, and entertainment. Fiber optic infrastructure enables future technology innovations such as Quantum Networking, the Metaverse, and AI/Machine Learning which will accelerate a wide range of applications beyond traditional internet access, such as remote surgery, smart city initiatives, autonomous vehicles,

and more – *i.e.*, applications that may require functionality such as greater reliability and lower latency than can be handled by other high-speed broadband technologies. As new technologies and applications emerge, fiber optic networks provide the necessary infrastructure to support these innovations and drive economic growth.[107] Fiber optic cables have a longer expected lifespan compared to copper or coaxial cables, and this minimizes the need for frequent upgrades or replacements, reducing maintenance costs and ensuring the continued reliability of the network infrastructure over time.[108]

This particular externality, future-proofing the network, does not appear to be fully accounted for in the deployment subsidies given by the FCC or other government entities. The incremental nature of public broadband infrastructure investment over the last decade and the need for continual upgrades shows that the government may not be using the correct social benefit curve or discounting rate. Thus, government agencies and entities are not investing in a future-proof technology such as fiber, where the upfront costs would be larger, but longer-term upgrade costs would be minimal or nil. Even without accounting for the contemporaneous externalities, which would shift the benefits curve, if the government had internalized the temporal externalities, then we would potentially see larger fiber investment funding in the shorter term.

VI. Conclusion

Investing in fiber is not merely a technological upgrade, it's a strategic decision that bolsters long-term productivity and economic growth in the U.S. The critical role of high-quality broadband is indisputable, and the highest quality broadband is delivered via fiber optic cables. With the increasing demand for high-definition content, low-latency applications such as video conferencing, remote surgeries, and industrial automation, alongside the transfer of millions of gigabytes of data, a fast and reliable internet connection is essential for both businesses and consumers. As we expand our nation's critical broadband infrastructure, fiber is indispensable for providing the future-proof speed, capacity, and ultra-low latency necessary to drive future innovations.

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[107] CLTEL, "The Role of Fiber Internet in Fostering Community Growth," January 31, 2024, https://www.cltel.com/articles/the-role-of-fiber-internet-in-fostering-community-growth/.

[108] Hayden Beeson, "Fiber Broadband Association Research Explores Scalability and Longevity of Fiber Broadband," Broadband Technology Report, March 18, 2024, https://www.broadbandtechreport.com/fiber/article/14310423/fiber-broadband-association-research-explores-scalability-and-longevity-of-fiber-broadband.

Currently 55% of the BSLs, *i.e.*, about 63 million locations, which include at least 56 million households do not have fiber broadband. Why is there a fiber connectivity gap? To understand this, we focus on market failures in broadband marketplace and how the presence of positive externalities leads to a socially sub-optimal level of investment in the fiber market. As explored above, there are two types of externalities that are associated with fiber deployment: contemporaneous externalities and temporal externalities. These positive externalities drive a wedge between private decision-making and the socially optimal outcome, leading to socially sub-optimal investment.

Several federal programs fund the expansion of high-speed internet offered by the U.S. government. While some of these programs target fiber connectivity to some extent, these are not exclusively for funding fiber deployment.[109] This report shows that fiber deployment has incremental economic benefits compared to other high-speed broadband technologies and thus, directing more of the existing funds towards fiber deployment will generate greater economic spillovers compared to other high-speed broadband technologies such as HFC.

We find that:

- Deploying fiber to 56 million fiber-unserved households has the potential to generate at least $1.64 trillion of total value (NPV) in terms of increased housing values.
- We also find a similar impact on income of an increase of $1.6 trillion (NPV) in total household income in the U.S. This effect primarily comes from non-urban areas.
- Fiber deployment also has the potential to create at least 380,000 new jobs for the U.S. economy.

Additionally, fiber deployment has a significant impact on remote work and has significant environmental benefits and is the best equipped to handle the increased connectivity needs in a 5G world and beyond, increases educational outcomes and health cost savings, and increases technology adoption.

[109] What States Need to Know About Federal BEAD Funding; NTIA, "Broadband Equity, Access, and Deployment Program," Notice of Funding Opportunity, https://broadbandusa.ntia.doc.gov/sites/default/files/2022-05/BEAD%20NOFO.pdf, p. 7. Auction 904: Rural Digital Opportunity Fund. USDA, "ReConnect Program: Program Overview," https://www.usda.gov/reconnect/program-overview. USDA, "ReConnect Program FY 2023 Funding Opportunity Announcement Awardees," https://www.usda.gov/reconnect/round-four-awardees.

Another significant advantage of fiber is that it is relatively future-proof technology due to its ability to deliver high speeds, scalability, reliability, and support for emerging applications and technologies. It has the potential to handle increasing data demands as technology continues to advance and can ensure that the internet infrastructure remains relevant and capable of meeting the evolving needs of businesses, education, healthcare, and entertainment.

Key Policy Takeaways:

Our study is the first to show that fiber deployment has significant incremental economic benefits even in the presence of other high-speed broadband technologies. The report also argues that because private actors will not capture all the benefits of fiber deployment the marketplace will not deploy enough fiber on its own. Based on these findings we suggest a few policy takeaways.

- First, because the social return on investment is higher for fiber, directing more of the existing public funds towards fiber deployment will generate greater economic returns compared to investment in other high-speed broadband technologies such as HFC. Thus, the various public programs, such as RDOF, BEAD, ReConnect, Capital Projects Fund, and BIP funding, that are prioritizing fiber builds are on the right policy path. This prioritization needs to continue if the gains from deploying fiber are to be realized.

- Second, based on available data, our research implies that even if fiber is deployed as an overbuild to existing high-speed technologies, the incremental benefits are sizeable. Thus, when the federal or local governments are measuring the underserved population, one important metric may be using a fiber-unserved metric and not just a speed-based metric. This will allow them to better target funding towards a fiber solution.

- Third, federal and local governments that promote fiber deployment, such as the federal Broadband Infrastructure Program, Louisiana's GUMBO program and Maine's ConnectMaine, should be encouraged and expanded. Additionally, the focus on fiber, that some of these programs have should be supported, and used as a model for other private-public initiatives.
- Last, fiber is a future-proof solution and when the benefits and costs are evaluated on a long-run horizon, fiber becomes the optimal choice for delivering high-speed broadband.

Appendix A: Quantitative Analysis Methodology

To quantitatively assess the economic impact of expanded fiber access, we use internet availability data from the FCC's Form 477 merged with economic indicators from the U.S. Census American Community Survey (ACS) to construct a difference in differences estimator at the census tract level. Difference in differences analysis uses a "treatment" group that is affected by the policy or event in question, and a "control" group that is unaffected (*i.e.*, untreated), and measures the difference in outcome between the two groups before and after the treatment. This is done to properly isolate the effect of the treatment from other confounding variables that might otherwise contribute to the difference in outcomes between the two groups.

In our analysis, we define the control group as census tracts that do not have fiber access in any year of the sample, 2014 through 2021. Our treatment group is the subset of the sample that gained fiber access in either 2017 or 2018. This is done for several reasons. First, using these two years as our treatment period gives us a symmetric pre- and post-treatment period which allows us to properly analyze the trends. Using an earlier treatment period would limit our ability to assess the necessary assumption that the treatment and control groups have parallel trends before the treatment. Using a later treatment period would prevent us from seeing the full effect as we suspect that many of our outcome variables may take time to respond to a stimulus such as fiber expansion. Second, using these two years gives us a larger sample size than we could get from a single period or any other two-year period as the largest group of tracts (about 28% of our sample) gained fiber access in 2017 or 2018.

Finally, because fiber expansion happened in different years for different census tracts, we are concerned that combining all of the treatment groups in a two-way fixed effects model could suffer from bias introduced in the presence of heterogeneity in treatment effects across either time or groups, which frequently arises in cases of difference in differences with staggered treatments.[110] Restricting our analysis to a single treatment period ameliorates these issues.

Importantly, we define fiber access at the tract level as at least 15% of the blocks in the tract having fiber access in the FCC 477 data and BDC data. This is roughly the 50th percentile in terms of the percentage of blocks with access among tracts with at least one fiber enabled block and is just above the average rate of fiber access in rural areas signifying a significant access threshold.

[110] Seth M. Freedman, Alex Hollingsworth, Kosali I. Simon, Coady Wing, Madeline Yozwiak, "Designing Difference in Difference Studies with Staggered Treatment Adoption: Key Concepts and Practical Guidelines," NBER Working Paper 31842, https://www.nber.org/system/files/working_papers/w31842/w31842.pdf.

We restrict our analysis to census tracts that had at least one HFC provider in all years and exclude tracts that already had fiber in 2014. Because our data is annual, it is not possible to tell precisely when fiber access was gained and whether this was before or after our outcomes were measured in a given year, and so we exclude 2017 and 2018 from the analysis in order to isolate the pre-treatment and post-treatment outcomes.[111]

We analyzed four main economic indicators as our outcomes of interest: the percent of 20–64-year-olds employed (employment rate), the percentage of 18-24 year olds with a bachelor's degree or higher (educational attainment), median household income, and median house value. Results are presented in Table 3 below, where the coefficients on the interaction between the treatment group and time period indicator show the isolated treatment effect.

TABLE 3: DIFFERENCE IN DIFFERENCES REGRESSION RESULTS

	(1)	(2)	(3)
VARIABLES	Pct. Employed (20-64)	Median House Value	Median HH Income
Post-Treatment	0.0269**	48,752**	10,818**
	(0.00120)	(2,432)	(331.9)
Treatment Group	0.0208**	61,476**	726.0*
	(0.00122)	(2,483)	(338.2)
Treatment Group x Post-Treatment	0.00480**	46,874**	2,195**
	(0.00176)	(3,589)	(489.4)
Constant	0.678**	195,708**	56,020**
	(0.000826)	(1,678)	(229.1)
Observations	61,008	59,073	60,685
R-squared	0.029	0.062	0.038

Standard errors in parentheses
** p<0.01, * p<0.05

We also analyzed these same economic indicators separately for urban and non-urban census tracts. These results are presented in Table 4 and Table 5 below, respectively. Note that the employment effects are insignificant for both urban and non-urban populations when studied separately. We believe this is because the employment effects are driven primarily by urban census tracts, but on their own, urban tracts are too small a sample size with too few control tracts to get statistical significance given the small magnitude of the effect. As such, we use the pooled regression in Table 3 as our primary result for the marginal employment effects of increased fiber access.

[111] This leaves us with a sample size of over 60,000 observations, of which roughly 46% are in the treatment group.

Table 6 contains our estimate for the number of households and population with and without fiber. This is done by aggregating census blocks containing fiber technologies using the FCC National Broadband Map and the respective population and number of households in each census block.[112] To estimate the population of the workforce without fiber, we multiply the population without fiber by the percentage of population aged 20-64.[113]

[112] For the FCC's National Broadband Map, *see,* "FCC National Broadband Map," FCC, last accessed June 4, 2024, https://broadbandmap.fcc.gov/data-download. We use fixed broadband data from each state as of December 31, 2023. We separately use shapefiles containing the population and number of households in each census block in 2020 to estimate population and household totals. *See,* "TIGER/Line Shapefiles," United States Census Bureau, last accessed June 4, 2024, https://www.census.gov/geographies/mapping-files/2020/geo/tiger-line-file.html.

[113] We estimate the percentage of the population aged 20-64 to be 58%. *See*, "Age and Sex Composition in the United States: 2020," United States Census Bureau, last accessed June 4, 2024, https://www.census.gov/data/tables/2020/demo/age-and-sex/2020-age-sex-composition.html.

TABLE 4: DIFFERENCE IN DIFFERENCES REGRESSION RESULTS FOR URBAN CENSUS TRACTS

VARIABLES	(1) Pct. Employed (20-64)	(2) Median House Value	(3) Median HH Income
Post-Treatment	0.0404**	107,333**	13,097**
	(0.00461)	(12,283)	(1,284)
Treatment Group	0.0205**	81,339**	-4,113**
	(0.00362)	(9,616)	(1,007)
Treatment Group x Post-Treatment	0.00313	41,201**	2,050
	(0.00516)	(13,720)	(1,437)
Constant	0.656**	241,736**	52,354**
	(0.00324)	(8,609)	(900.5)
Observations	10,356	9,763	10,304
R-squared	0.046	0.083	0.062

Standard errors in parentheses
** p<0.01, * p<0.05

TABLE 5: DIFFERENCE IN DIFFERENCES REGRESSION RESULTS FOR NON-URBAN CENSUS TRACTS

VARIABLES	(1) Pct. Employed (20-64)	(2) Median House Value	(3) Median HH Income
Post-Treatment	0.0261**	44,660**	10,675**
	(0.00124)	(2,302)	(342.2)
Treatment Group	0.0284**	38,423**	3,953**
	(0.00137)	(2,539)	(377.3)
Treatment Group x Post-Treatment	0.00107	27,061**	1,613**
	(0.00198)	(3,683)	(547.6)
Constant	0.679**	192,827**	56,260**
	(0.000855)	(1,588)	(236.0)
Observations	50,652	49,310	50,381
R-squared	0.031	0.035	0.040

Standard errors in parentheses
** p<0.01, * p<0.05

TABLE 6: HOUSEHOLDS, POPULATION WITH FIBER

		Urban	Non-urban
Households	[A]	22,627,697	117,871,039
With fiber	[B]	16,751,576	67,809,402
Without fiber	[C]	5,876,121	50,061,637
Population	[D]	55,935,176	275,514,105
With fiber	[E]	40,484,114	158,368,358
Without fiber	[F]	15,451,062	117,145,747
Without fiber (in workforce)	[G]	8,954,323	67,889,240

Notes:
[A], [D]: Households and Population are estimated using 2020 census data provided at the census block level.
[B], [C], [E], [F]: The FCC's National Broadband Map is used to determine census blocks with fiber (as of December 31, 2023). *See,* https://broadbandmap.fcc.gov/data-download.
[G]: To estimate the population without fiber in the workforce, we use the percentage of the population aged 20-64 (approximately 58%) in 2020 multiplied by the population without fiber. *See,* https://www.census.gov/data/tables/2020/demo/age-and-sex/2020-age-sex-composition.html.


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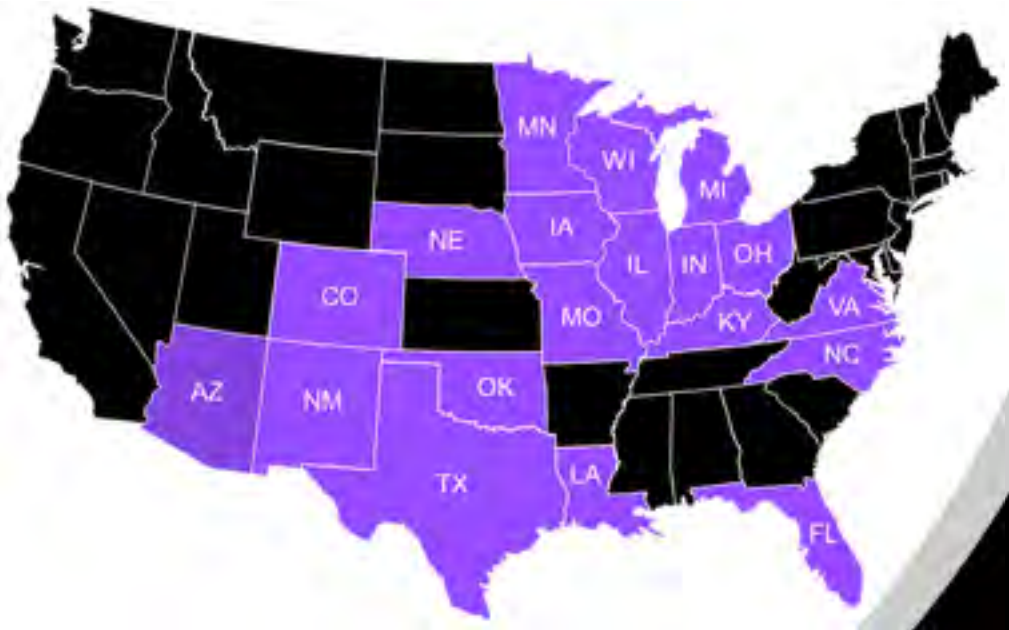

About Us

- Founded 2004 in Evansville, IN
- Nations largest independently owned,. 100% Fiber to the premise company in the U.S
- 100% fiber-optic internet and phone
- Serving 300+ communities in 19 states
- 2 million homes and business have access to Metronet

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THE FIBER CHOICE

» Quality of Life

Reliably-fast internet, allowing crystal clear streaming with no buffering, lag, or pixelation. And for phone, clear call quality.

» Future Proof

Fiber Optics is the fastest way to transmit information today. MetroNet provides this connection directly to homes and businesses so there is no barrier between you and a fast, reliable connection.

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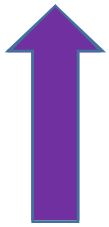
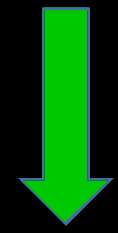
WHY ARE WE UNIQUE



Blazing-fast symmetrical internet

Upload AS FAST as you download!



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RECOGIZED BY INDUSTRY LEADERS

Metronet has been ranked the fastest internet service provider (ISP) in IA, IN and KY.

Based on analysis by Ookla® of Speedtest Intelligence® data for median download speeds in Q3 2021.

NETFLIX

Recognized Metronet as the Best Performer in its Internet Service Provider Speed Index

- Recognized as one of the Fastest Real-World Speeds
- Received Most Affordable Plans award
- Most significant fiber expansion award

**Regional Awards*

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COMMUNICATION

- 1st Notification - Letter mailed to residents 30-45 days prior to the start of construction
- 2nd notification - Postcards mailed 7-10 days prior
- 3rd notification. Yard signs placed 3-5 days prior
- 4th Notification Sign placed at entrance and exit of neighborhood

CONSTRUCTION

- Buildout is designed into manageable sized locations
- “Kick-off” meeting before construction begins
- Meet monthly with City team to review previous months work

FIELD CREW

- All Contractors and Metronet trucks will be clearly marked
- Construction Crew has branded vest with ID
- One Field Supervisor to every 3-5 Field Crews
- Metronet staff stays in the community, post City Build

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RESTORATION

- Restoration within 24-48 hours
- Restore as we build
- Responsive to Resident and City Restoration questions\needs
- 99% + Response rate within 24 hrs

POST CONSTRUCTION

Impacts of 100% Fiber Network

Brattle

Fiber Broadband ASSOCIATION

The Brattle Group Study "Economic Benefits of Fiber Deployment"

- First study to show that fiber deployment has significant incremental economic benefits even in the presence of other high-speed broadband technologies
- Fiber optic networks have a significantly reduced carbon footprint
- In urban areas without direct fiber access, housing values increase by 17% and in non-urban areas, by 14%.

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OUR COMMUNITY COMMITMENT

Industry-Leading Customer Service

» An average of **30%+ higher** customer satisfaction scores than peers

Local Presence

» **Community involvement and local event sponsorship:**

- HOA's
- YMCA
- Parades
- Park Districts
- Fairs
- Chamber of Commerce

» **Metronet hosted events:**

- Blood Drives
- Food Drives
- Electronic Recycling
- YMCA Volunteering
- Family Holiday events
- Coloring contests
- Humane Society Volunteering
- Metronet Movie nights

…and so much more!

MEMO

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3318 West 95th Street – Evergreen Park, Illinois 60805
Phone (708) 424-5678 ~ Fax (708) 741-5053
JBM Direct Dial (708) 634-0266
JBM e-mail: jmurphey@omfmlaw.com

Memorandum

VIA E-MAIL

To: Mayor and City Council

From: Dan Gombac and
John B. Murphey

Date: March 19, 2025

Re: Metronet Agreement

The Council will be asked to approve an agreement with Metronet. In essence, the agreement authorizes Metronet to utilize City rights-of-way to install high-speed fiber optics for ultimate delivery to the residents. The staff due diligence process has been a learning experience for us. We have been working together with the Village of Downers Grove to ensure both a coordinated approach to appropriate municipal regulation and also a solid agreement.

Background

Some of you may recall when cable TV came to municipalities. There were a number of companies competing; ultimately, Comcast – Xfinity became the sole provider of cable TV service.

New Technology

Of course, there has been an explosion in communications technology. One of the technology advancements for the delivery of high-speed internet services is through fiber optics installed by companies like Metronet. In simplest terms, companies like Metronet are the next generation providing the underground infrastructure for the delivery of high-speed internet services.

The Legal Landscape

Along with Downers Grove, we have had a number of conference calls with representatives of Metronet to work through the legal, logistical, and communication issues. The Metronet representatives have been responsive and cooperative. We now have a firm understanding of the plan. Beginning as soon as possible, Metronet plans on installing its system under the rights-of-way and then working with property owners to obtain access in easements to extend the improvements so they will become available to the owners should they decide to contract for services.

Here is the breakdown:

A. Metronet has a legal right to use City rights-of-way. Under the law, there are non-discrimination provisions preventing a municipality from limiting qualified technology companies from accessing City rights-of-way. Metronet is entitled to access City rights-of-way.

Therefore, the primary purposes of the Metronet agreement are to: (i) authorize Metronet access to City R-O-W; and (ii) provide protection to the City for matters like restoration and indemnification. Downers Grove has taken the lead with negotiating the agreement with Metronet. Our agreement models the Downers Grove agreement.

The R-O-W issue is complicated, because a number of our arterials are under the jurisdiction of DuPage County, and we still have a few roads which are under the jurisdiction of the Township. Metronet will need to obtain separate R-O-W agreements with these other governments.

B. The Private Property Access Issue. We spent a good deal of time working through the issue of private property easements. Metronet has taken the position that it has the legal right to access "utility easements" to install its improvements. The matter may be more complicated than that. As part of our due diligence, we took a look at one of the City's newer subdivisions. The typical easement provisions are part of the Plat. In terms of telecommunication services, the Plat is specific – the easement is granted to Comcast by name as opposed to being a broad telecommunications easement.

It is not the role of the City to provide hundreds of legal opinions as to whether Metronet has the right to utilize an existing easement on an homeowner's property. Accordingly, on a going-forward basis, we recommend that the City's position on this issue be one of neutrality – we will advise people that any easement disputes are between the homeowner and the company – no different than a potential dispute between a homeowner and Com Ed.

It may be that normal market dynamics will result in this issue taking care of itself in the great majority of cases. Allowing the installation of Metronet improvements on property will not cost a homeowner anything, nor will it obligate the homeowner to subscribe to any particular streaming service. Having this additional technology infrastructure in place would only improve property values, because of our collective desire for state-of-the art communication services and speed. In any event, the City's position on the private easement-access issue needs to be one of neutrality.

JBM/sml

Agenda

MINUTES

CITY OF DARIEN

MUNICIPAL SERVICES COMMITTEE

March 3, 2025

PRESENT: Alderman Thomas Belczak – Chairman, Alderman Ted Schauer, Alderman Ralph Stompanato

ABSENT: None

OTHERS: Mr. Dan Gombac – Director

Establish Quorum

Chairperson Thomas Belczak called the meeting to order at 6:15 p.m. at the City of Darien City Hall, 1702 Plainfield Road, Darien, Illinois. Chairperson Belczak declared a quorum present.

New Business

h. PZC2025-03 – 2305 Sokol Court – Level Development, LLC – A petition for a Minor Planned Unit Development (PUD) Amendment, to allow for the conversion of two existing model units for a 68-unit apartment complex, for a total unit count of 70 units. No new construction or site changes are proposed. The Property is zoned Planned Unit Development (PUD)/Multi-Family Residence District (R-3). Petition site comprises a total of 2.81 acres.

Mr. Dan Gombac, Director reported that the petition would be to convert the 2 existing model units into 70 sales units or units for rent. He reported that the petitioner had received a certificate of occupancy in the past 6 months and had achieved a successful 80% occupancy rate. He reported that with this success they would be ready to convert to units for sale.

Mr. Gombac reported that the petition would be a minor PUD that would not require a public hearing. He reported that this had been reviewed by Attorney Murphy and he had no objections.

Chairperson Tom Belczak questioned if the petitioner would still be using the 2 model units until 95% occupancy.

The petitioner stated that upon approval, he would lease out the 2 model units.

Alderman Stompanato made a motion, and it was seconded by Alderman Belczak approval of PZC2025-03 – 2305 Sokol Court – Level Development, LLC – A petition for a Minor Planned Unit Development (PUD) Amendment, to allow for the conversion of two existing model units

for a 68-unit apartment complex, for a total unit count of 70 units. No new construction or site changes are proposed. The Property is zoned Planned Unit Development (PUD)/Multi-Family Residence District (R-3). Petition site comprises a total of 2.81 acres.

Upon voice vote, the MOTION CARRIED UNANIMOUSLY 2-0.

Chairperson Belczak announced that the petition would move forward to City Council on March 3, 2025 at 7:00 p.m.

Mr. Gombac questioned if the petitioner would be taking a sign down that had been discussed previously.

The petitioner stated that he would take the sign down in March, as promised.

a. **Resolution – Authorizing the Mayor to enter into a contract with Schroeder Asphalt Services, Inc., for the 2025 Street Program as per the following schedule of pricing, pending 2025/26 Budget approval; Base bid - $1,367,166.34; Alternate 1 - $82,500.00; Alternate 2 - $27,024.41; Alternate 3 – patching $150,301.48; Contingency of $75,000.00 for Alternates 2 and 3; for a total amount not to exceed $1,701,992.23.**

Alderman Ted Schauer arrived at the meeting at 6:20 p.m., the start of this agenda item.

Mr. Dan Gombac, Director reported that the resolution would be for the annual road program. He reported that they would get started with concrete and asphalt early to not disrupt summer activities. Mr. Gombac reported that Schroeder Asphalt Services had provided the lowest competitive bid and that the fire districts had approved alternates 2 and 3. He reported that without fire district approval, Schroeder would not have been the choice for this contract.

Mr. Gombac reported that Schroeder has worked for the City in the past with very satisfactory services. He reported that their services included the base bid, base repair under alternate 1, which would cover areas around the City with necessary repairs and alternates 2 and 3, which would cover limited base repair and resurfacing for the fire districts on Manning and Lemont. He further reported that the contingency included would be used strictly for the fire departments due to the heavy equipment. He reported that the fire department had also included their own contingency of $175,000 which had been included in the IGA in the next agenda items.

Chairperson Tom Belczak pointed out some corrections to be made to the packet due to errors.

There was some discussion regarding the errors in question.

Mr. Gombac stated that he would call the consultant to amend and format correctly.

There was no one in the audience wishing to present public comment.

Alderman Stompanato made a motion, and it was seconded by Alderman Schauer, approval of a Resolution authorizing the Mayor to enter into a contract with Schroeder Asphalt

Services, Inc., for the 2025 Street Program as per the following schedule of pricing, pending 2025/26 Budget approval; Base bid - $1,367,166.34; Alternate 1 - $82,500.00; Alternate 2 - $27,024.41; Alternate 3 – patching $150,301.48; Contingency of $75,000.00 for Alternates 2 and 3; for a total amount not to exceed $1,701,992.23.

Upon voice vote, the MOTION CARRIED UNANIMOUSLY 3-0.

b. **Resolution – Authorizing the Mayor and City Clerk to execute an Intergovernmental Agreement with the Darien-Woodridge Fire Protection District, for the reimbursement of the parking lot paving maintenance at 8687 Lemont Rd. and 7550 Lyman Ave. through the City of Darien's 2025 Road Maintenance Contract with Schroeder Asphalt Services, Inc., as per the contract unit pricing and a contingency in an amount not to exceed $252,325.89.**

There was no discussion regarding the Resolution due to having discussed it with the previous agenda item.

There was no one in the audience wishing to present public comment.

Alderman Schauer made a motion, and it was seconded by Alderman Stompanato approval of a Resolution authorizing the Mayor and City Clerk to execute an Intergovernmental Agreement with the Darien-Woodridge Fire Protection District, for the reimbursement of the parking lot paving maintenance at 8687 Lemont Rd. and 7550 Lyman Ave. through the City of Darien's 2025 Road Maintenance Contract with Schroeder Asphalt Services, Inc., as per the contract unit pricing and a contingency in an amount not to exceed $252,325.89.

Upon voice vote, the MOTION CARRIED UNANIMOUSLY 3-0.

c. **Resolution – Authorizing the Mayor to execute a contract with SKC Construction, Inc., in an amount not to exceed $114,310 for the 2025 Crack Fill Program.**
d. **Motion – Authorizing a contingency in the amount of $3,000 for the unforeseen work that may be required for the Crack Fill Program.**

Mr. Dan Gombac, Director reported that this would be an ongoing joint venture with the Village of Woodridge which had been a very good co-op program. He reported that he would anticipate using the budgeted amount along with the contingency. Mr. Gombac reported that the crack sealing program would be done on every roadway every 3 years after its initial pavement and has extended the life of roads up to 15 years.

There was no one in the audience wishing to present public comment.

Alderman Schauer made a motion, and it was seconded by Alderman Stompanato approval of a Resolution authorizing the Mayor to execute a contract with SKC Construction, Inc., in an amount not to exceed $114,310 for the 2025 Crack Fill Program and approval of a Motion authorizing a contingency in the amount of $3,000 for the unforeseen work that may be required for the Crack Fill Program.

Upon voice vote, the MOTION CARRIED UNANIMOUSLY 3-0.

e. **Resolution – Accepting a proposal from Garland/DBS, Inc., Services for the metal restoration, flat re-roof or roof repair with additional soffit repair at the police department for the City Hall and Police Department in an amount not to exceed $410,318.**
f. **Motion – Authorizing a contingency in the amount of $10,000 for unforeseen repairs related to the roof refurbishment.**

Mr. Dan Gombac, Director reported that this would be an up and coming item to save $35,000 before a cost increase at the end of the month. He reported that Garland would provide a competitive quote, would vet everything on site and would be the supplier of the material.

Mr. Gombac reported that the work on the Police Department would consist of spot repair on existing metal, changing to a more neutral color, paint and protective coating, remove flat roof material and install new material, soffit sealing material replacement, gutter repair, and any wood decking or soil stacks that would need repair. He reported that the total cost for the Police Department would be $271,147 and that the budget would be adjusted accordingly.

Mr. Gombac reported that the work on City Hall would consist of spot repair, new paint and protective coating to match the Police Department, replace the flat roof, replace dampened insulation, install new coping, remove a limited number of gutters, and any wood decking or soil stacks that would need repair. He reported that the total cost for City Hall would be $149,171. He further reported that the total for the entire project would result in a reduction of $86,000 in the proposed budget.

There was some discussion regarding spot repair procedure.

There was no one in the audience wishing to present public comment.

Alderman Stompanato made a motion, and it was seconded by Alderman Schauer approval of a Resolution accepting a proposal from Garland/DBS, Inc., Services for the metal restoration, flat re-roof or roof repair with additional soffit repair at the police department for the City Hall and Police Department in an amount not to exceed $410,318 and approval of a Motion authorizing a contingency in the amount of $10,000 for unforeseen repairs related to the roof refurbishment.

Upon voice vote, the MOTION CARRIED UNANIMOUSLY 3-0.

g. **PZC2025-01 – 7409 Cass Avenue – Indvestia Darien, LLC – A petition for a one-year extension of time for a special use permit and variations for the construction of a quick service drive-through eating establishment offering retail food items for consumption. The Property is located within the B-2 Community Shopping Center Business District.**

Mr. Dan Gombac, Director reported that the item would be paperwork in order to renew a variation request without construction. He reported that the petition would be to allow an extension of time while they continue looking for a potential vendor.

There was no one in the audience wishing to present public comment.

Alderman Schauer made a motion, and it was seconded by Alderman Stompanato approval of PZC2025-01 – 7409 Cass Avenue – Indvestia Darien, LLC – A petition for a one-year extension of time for a special use permit and variations for the construction of a quick service drive-through eating establishment offering retail food items for consumption. The Property is located within the B-2 Community Shopping Center Business District.

Upon voice vote, the MOTION CARRIED UNANIMOUSLY 3-0.

i. Minutes – January 27, 2025 Municipal Services Committee.

There was no one in the audience wishing to present public comment.

Alderman Stompanato made a motion, and it was seconded by Alderman Schauer approval of the January 27, 2025 Municipal Services Committee Meeting Minutes.

Upon voice vote, the MOTION CARRIED with 2 in favor and 1 abstaining due to absence.

Director's Report

Mr. Dan Gombac, Director reported that he had confirmed that ADA curb flairs would be an option due to grade differential. He reported that the savings would be close to $160,000 and that he would show the reduction on the budget.

Mr. Gombac reported that they would be moving forward with the Plainfield/Cass wall. He reported that he had re-affirmed the deal with the homeowners and that all owners would be in favor of the project. He reported that Attorney Murphey would conduct a title search and sales contract over the next several weeks. Mr. Gombac reported that he had authorized Christopher Burke Engineering to conduct plat of surveys. He further reported that he would like to have an open house with the residents, Mayor and Aldermen to display full size drawings and show visuals of the project including the actual wall and landscaping.

There was much discussion regarding the mortgages of the affected homeowners.

Next Scheduled Meeting

Chairperson Tom Belczak announced that the next meeting is scheduled for Monday, March 24, 2025.

ADJOURNMENT

With no further business before the Committee, Alderman Stompanato made a motion, and it was seconded by Alderman Schauer to adjourn. Upon voice vote, the MOTION CARRIED UNANIMOUSLY, and the meeting adjourned at 6:55 p.m.

RESPECTFULLY SUBMITTED:

X

Thomas Belczak
Chairman

X

Ted Schauer
Alderman

X

Ralph Stompanato
Alderman