Board of Trustees Regular Meeting Agenda
Hartland Township Hall
Tuesday, February 07, 2023
7:00 PM

1. Call to Order
2. Pledge of Allegiance
3. Roll Call
4. Approval of the Agenda
5. Call to the Public
6. Approval of the Consent Agenda
    a. Approve Payment of Bills
    b. Approve Post Audit of Disbursements Between Board Meetings
    c. 01-17-2023 Hartland Township Board Regular Meeting Minutes
    d. Confirm Supervisor's Appointment - Cheryl Mara to Board of Review as alternate (01/01/2023-12/31/2024).
    e. 2023 Gen-X Winterfest Fireworks Permit
    f. HCS & LESA Summer Tax Collection Agreements
7. Pending & New Business
    a. Site Plan #23-001 M-59 Properties Planned Development (PD) Concept Plan
    b. Site Plan with Special Land Use Application #22-007 (Automobile wash within completely enclosed building at 10382 Highland Road) – REVISED PLANS dated November 9, 2022 (Architectural plans) and December 20, 2022 (Site and Landscape plans)
    c. 2023 Cundy Road Paving LCRC Agreement
8. Board Reports

[BRIEF RECESS]

9. Information / Discussion
    a. Manager's Report
    b. FY2023-2024 Employee Merit Pool Discussion
10. Adjournment

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Susan Case, Finance Clerk

Subject: Approve Payment of Bills

Date: January 31, 2023

Recommended Action
Move to approve the bills as presented for payment.

Discussion
Bills presented total $272,622.44. The bills are available in the Finance office for review.

Notable invoices include:
$10,099.50 – Classic Tent & Event – (2023 Winterfest)
$190,656.99 – Livingston County Drain Commission – (December 2022 Sewer O&M)
$31,393.00 – Spalding Dedecker – (Various engineering invoices)

Financial Impact
Is a Budget Amendment Required? ☐Yes ☒No
All expenses are covered under the amended FY23 budget.

Attachments
Bills for 02.07.2023

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
APPLIED	APPLIED INNOVATION	01/20/2023	2129959	FOA	10/21/22 - 1/20/23 - RICOH MPC5503	
48638	7718 SOLUTION CENTER	02/07/2023		N		576.82
01/20/2023	CHICAGO IL, 60677-7007	/ /	0.0000	N		0.00
		02/07/2023		N		576.82
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
101-172-930.000	REPAIRS & MAINTENANCE			576.82		
APPLIED	APPLIED INNOVATION	01/20/2023	2129960	FOA	12/23/22 - 1/22/23 - RICOH MP6055SP	
48639	7718 SOLUTION CENTER	02/07/2023		N		29.92
01/20/2023	CHICAGO IL, 60677-7007	/ /	0.0000	N		0.00
		02/07/2023		N		29.92
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
101-172-930.000	REPAIRS & MAINTENANCE			29.92		
					VENDOR TOTAL:	606.74
PLUMMER	BENJAMIN FRANKLIN PLUMBING	01/18/2023	91170947	FOA	SEPTIC TANK REPIPE - 11583 BROADVIEW	
48622	1150 N OLD US23	02/07/2023		N		6,650.00
01/18/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		Y		6,650.00
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
590-000-801.000	CONTRACTED SERVICES			6,650.00		
					VENDOR TOTAL:	6,650.00
1400	BS&A SOFTWARE	01/11/2023	144579	FOA	SENSUS SURCHARGE IMPORT FORMAT CUSTO	
48612	14965 ABBEY LANE	02/07/2023		N		1,000.00
11/28/2022	BATH MI, 48808	/ /	0.0000	N		0.00
		02/07/2023		N		1,000.00
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
536-000-801.000	CONTRACTED SERVICES			500.00		
590-000-801.000	CONTRACTED SERVICES			500.00		
				1,000.00		
1400	BS&A SOFTWARE	02/01/2023	145079	FOA	2/1/23 - 2/1/24 - DPP SERVICE/SUPPOR	
48640	14965 ABBEY LANE	02/07/2023		N		460.00
02/01/2023	BATH MI, 48808	/ /	0.0000	N		0.00
		02/07/2023		N		460.00
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
101-253-930.000	REPAIRS & MAINTENANCE			460.00		

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
					VENDOR TOTAL:	1,460.00
CINTAS	CINTAS CORPORATION	01/23/2023	4144290307	FOA	MATS	
48646	P.O. BOX 630910	02/07/2023		N		57.47
01/23/2023	CINCINNATI OH, 45263	/ /	0.0000	N		0.00
		02/07/2023		N		57.47
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-265-801.000	CONTRACTED SERVICES				57.47	
					VENDOR TOTAL:	57.47
CITY	CITY ELECTRIC SUPPLY - MI	01/03/2023	BRI/113149	FOA	LIGHTS	
48615	PO BOX 1006	02/07/2023		N		89.75
01/03/2023	WILBRAHAM MA, 01095	/ /	0.0000	N		0.00
		02/07/2023		N		89.75
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-265-930.000	REPAIRS & MAINTENANCE				89.75	
					VENDOR TOTAL:	89.75
CLASSIC	CLASSIC TENT AND EVENT	01/19/2023	2023	FOA	2023 WINTERFEST	
48628	800 RICKETT RD	02/07/2023		N		10,099.50
01/19/2023	BRIGHTON MI, 48116	/ /	0.0000	N		0.00
		02/07/2023		N		10,099.50
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-751-955.000	PARKS - SPECIAL EVENTS				10,099.50	
					VENDOR TOTAL:	10,099.50
D&D	D & D INVESTMENT LLC	01/31/2023	013023	FOA	RELEASE OF DEVELOPER ACCT FUNDS	
48661	HCC PHASE II-B	02/07/2023		N		5,449.00
	955 PEARSON DRIVE					
01/31/2023	MILFORD MI, 48381	/ /	0.0000	N		0.00
		02/07/2023		N		5,449.00
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
702-000-290.058	WIL-PRO DEV - PH 2 HARTLAND COMMERCE CTR				5,449.00	
					VENDOR TOTAL:	5,449.00
ETNA	ETNA SUPPLY COMPANY	01/27/2023	S104904022.002	FOA	GEL CAP CONNECTORS	
48657	P.O. BOX 772107	02/07/2023		N		124.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
01/27/2023	DETROIT MI, 48277-2107	/ /	0.0000	N		0.00
		02/07/2023		N		124.00

Open

GL NUMBER	DESCRIPTION	AMOUNT
536-000-741.000	METER COSTS	124.00

VENDOR TOTAL: 124.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
ROADFUND	HARTLAND ROAD FUND	01/10/2023	011023	FOA	TO PREVENT DORMANCY AT HURON VALLEY	
48601		02/07/2023		N		50.00
01/10/2023	,	/ /	0.0000	N		0.00
		02/07/2023		N		50.00

Open

GL NUMBER	DESCRIPTION	AMOUNT
204-000-003.001	ROAD MILLAGE - HURON VALLEY STATE BANK	50.00

VENDOR TOTAL: 50.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
0001	HARTLAND TOWNSHIP GENERAL FUND	01/23/2023	012323	FOA	DEC 2022 MOBILE HOME TAX DISBURSEMEN	
48645		02/07/2023		N		280.50
01/23/2023	,	/ /	0.0000	N		0.00
		02/07/2023		N		280.50

Open

GL NUMBER	DESCRIPTION	AMOUNT
701-000-290.300	MOBILE HOME FEES ESCROW	280.50

VENDOR TOTAL: 280.50

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
HTM59	HARTLAND TOWNSHIP M-59 SAVINGS	01/10/2023	011023	FOA	TO PREVENT DORMANCY AT THE STATE BAN	
48603		02/07/2023		N		50.00
01/10/2023	,	/ /	0.0000	N		0.00
		02/07/2023		N		50.00

Open

GL NUMBER	DESCRIPTION	AMOUNT
354-000-003.001	M59 SAVINGS @ THE STATE BANK	50.00

VENDOR TOTAL: 50.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
2838	HARTLAND TOWNSHIP SEWER FUND	01/10/2023	01102023	FOA	TO PREVENT DORMANCY AT BANK OF ANN A	
48604		02/07/2023		N		50.00
01/10/2023	,	/ /	0.0000	Y		0.00
		02/07/2023		N		50.00

Open

GL NUMBER	DESCRIPTION	AMOUNT
590-000-003.008	FIRST NATIONAL BANK	50.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
2838	HARTLAND TOWNSHIP SEWER FUND	01/10/2023	011023	FOA	TO PREVENT DORMANCY AT MACATAWA BANK	
48602		02/07/2023		N		50.00
01/10/2023	,	/ /	0.0000	Y		0.00
		02/07/2023		N		50.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
590-000-003.004	SEWER - MACATAWA BANK	50.00

VENDOR TOTAL: 100.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
WATERO&M	HARTLAND TOWNSHIP WATER O & M	01/11/2023	011123	FOA	NOV/DEC 2022 OUT OF DEPT COSTS	
48613	2655 CLARK RD	02/07/2023		N		4,154.78
01/11/2023	HARTLAND MI, 48353	/ /	0.0000	N		0.00
		02/07/2023		N		4,154.78
Open						

GL NUMBER	DESCRIPTION	AMOUNT
101-751-801.009	CONTRACT SERVICES - WATER SYSTEM	2,100.96
101-265-801.009	CONTRACT SERVICES - WATER SYSTEM	1,054.53
101-567-801.009	CONTRACT SERVICES - WATER SYSTEM	999.29
		4,154.78

VENDOR TOTAL: 4,154.78

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
HRTWTRR&RF	HARTLAND WATER REPAIR/RPLCMNT FUND	01/10/2023	011023	FOA	TO PREVENT DORMANCY AT BANK OF ANN A	
48605	2655 CLARK RD	02/07/2023		N		50.00
01/10/2023	HARTLAND MI, 48353	/ /	0.0000	N		0.00
		02/07/2023		N		50.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
539-000-003.001	WTRRR FIRST NATIONAL BANK	50.00

VENDOR TOTAL: 50.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
K&J	K & J ELECTRIC, INC	01/11/2023	10331	FOA	REPLACEMENT OF ITEMS AT HERO TEEN CE	
48616	7219 EAST HIGHLAND RD	02/07/2023		N		1,350.00
01/11/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		Y		1,350.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
101-265-930.001	REPAIRS & MAINT - HERO TEEN CTR	1,350.00

VENDOR TOTAL: 1,350.00

Vendor Code	Vendor name	Post Date	Invoice	Bank	Invoice Description
KNOCKERBAL	KNOCKERBALLMICHIGAN.COM	01/19/2023	000368	FOA	2023 WINTERFEST

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
48627	38741 ANN ARBOR RD	02/07/2023		N		1,200.00
01/19/2023	LIVONIA MI, 48150	/ /	0.0000	N		0.00
		02/07/2023		N		1,200.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
101-751-955.000	PARKS - SPECIAL EVENTS	1,200.00

VENDOR TOTAL: 1,200.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
KOSINS	KOSIN'S GLASS	01/27/2023	64334	FOA	PELLA WINDOW	
48659	222 WEST GRAND RIVER AVE	02/07/2023		N		1,167.92
01/27/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		N		1,167.92
Open						

GL NUMBER	DESCRIPTION	AMOUNT
206-000-930.003	REPAIRS & MAINTENANCE BLD&GRDS	1,167.92

VENDOR TOTAL: 1,167.92

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
0220	LIVINGSTON COUNTY TREASURER	01/23/2023	012323	FOA	DEC 2022 MOBILE HOME TAX DISBURSEMEN	
48644	200 E. GRAND RIVER	02/07/2023		N		1,402.50
01/23/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		N		1,402.50
Open						

GL NUMBER	DESCRIPTION	AMOUNT
701-000-290.300	MOBILE HOME FEES ESCROW	1,402.50

VENDOR TOTAL: 1,402.50

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
2909	LIVINGSTON CTY.DRAIN COMMISSIO	12/31/2022	3607	FOA	DECEMBER 2022 SEWER SYSTEM O&M	
48606	2300 E. GRAND RIVER STE. 105	02/07/2023		N		190,656.99
01/11/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		N		190,656.99
Open						

GL NUMBER	DESCRIPTION	AMOUNT
590-000-801.008	LCDC CONTRACT SERVICES	190,656.99

VENDOR TOTAL: 190,656.99

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
MRC	MICHIGAN RECREATIONAL CONSTRUCTION	01/19/2023	222557A	FOA	2023 WINTERFEST ICE RINK	
48629	1091 VICTORY DR	02/07/2023		N		1,900.00
01/19/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		N		1,900.00
Open						

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
GL NUMBER	DESCRIPTION				AMOUNT	
101-751-955.000	PARKS - SPECIAL EVENTS				1,900.00	
					VENDOR TOTAL:	1,900.00
MD811	MISS DIG 811	01/06/2023	20231187	FOA	2023 FEES	
48648	3212 SJOQUIST DR	02/07/2023		N		1,759.83
01/06/2023	GLADSTONE MI, 49837-2822	/ /	0.0000	N		0.00
		02/07/2023		N		1,759.83
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
536-000-922.000	MISS DIG				1,759.83	
					VENDOR TOTAL:	1,759.83
1180	PETER'S TRUE VALUE HARDWARE	01/11/2023	K65860	FOA	BOLTS, BARB INSERT, PLUG, AIR HOSE	
48607	3455 W. HIGHLAND ROAD	02/07/2023		N		33.66
01/11/2023	MILFORD MI, 48380	/ /	0.0000	N		0.00
		02/07/2023		N		33.66
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
536-000-740.000	OPERATING SUPPLIES				33.66	
					VENDOR TOTAL:	33.66
PIVOTPOINT	PIVOT POINT PARTNERS LLC	01/23/2023	1594	FOA	2023 LICENSE FEE FOR ASSESSING SOFTW	
48649	4235 SCIOTO PKWY	02/07/2023		N		2,040.85
01/23/2023	POWELL OH, 43065	/ /	0.0000	N		0.00
		02/07/2023		Y		2,040.85
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-209-930.000	REPAIRS & MAINTENANCE				2,040.85	
					VENDOR TOTAL:	2,040.85
PREISS	PREISS COMPANIES LLC	01/23/2023	14914	FOA	11583 BROADVIEW DESTROY SEPTIC	
48651	8211 CLYDE ROAD	02/07/2023		N		2,945.00
01/23/2023	FENTON MI, 48430	/ /	0.0000	N		0.00
		02/07/2023		N		2,945.00
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
590-000-801.000	CONTRACTED SERVICES				2,945.00	
					VENDOR TOTAL:	2,945.00
SPALDING	SPALDING DEDECKER	01/26/2023	93040	FOA	HARTLAND PLAZA THRU 11/27/22	

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
48652	905 SOUTH BLVD EAST	02/07/2023		N		750.00
12/16/2022	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		N		750.00
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-400-801.100-0028	HARTLAND PLAZA - DAIRY QUEEN				750.00	
SPALDING	SPALDING DEDECKER	01/26/2023	93041	FOA	HARTLAND TOWNE SQUARE THRU 11/27/22	
48653	905 SOUTH BLVD EAST	02/07/2023		N		172.50
12/16/2022	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		N		172.50
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-400-801.100-0030	AFFINITY II INVEST DEVELP EXP				172.50	
SPALDING	SPALDING DEDECKER	01/26/2023	93042	FOA	REDWOOD LIVING THRU 11/27/22	
48654	905 SOUTH BLVD EAST	02/07/2023		N		395.00
12/16/2022	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		N		395.00
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-400-801.100-0026	REDWOOD USA LLC				395.00	
SPALDING	SPALDING DEDECKER	01/26/2023	93043	FOA	YATOOMA OIL THRU 11/27/22	
48655	905 SOUTH BLVD EAST	02/07/2023		N		1,350.00
12/16/2022	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		N		1,350.00
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-400-801.100-0033	YATOOMA OIL				1,350.00	
SPALDING	SPALDING DEDECKER	01/26/2023	93044	FOA	SENIOR LIVING FACILITY THRU 11/27/22	
48656	905 SOUTH BLVD EAST	02/07/2023		N		1,252.00
12/16/2022	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		N		1,252.00
Open						
GL NUMBER	DESCRIPTION				AMOUNT	
101-400-801.100-0027	PIRHL				1,252.00	
SPALDING	SPALDING DEDECKER	01/13/2023	93230	FOA	M-59 WATER MAIN THRU 1/1/23	
48618	905 SOUTH BLVD EAST	02/07/2023		N		25,658.00
01/13/2023	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		Y		25,658.00
Open						

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
GL NUMBER	DESCRIPTION			AMOUNT		
539-000-150.000	WATER CONSTRUCT IN PROGRESS			25,658.00		
SPALDING	SPALDING DEDECKER	01/19/2023	93341	FOA	M-59 SIDEWALK GAP	
48626	905 SOUTH BLVD EAST	02/07/2023		N		1,815.50
01/19/2023	ROCHESTER HILLS MI, 48307	/ /	0.0000	N		0.00
		02/07/2023		Y		1,815.50
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
401-444-969.005	SIDEWALKS			1,815.50		
					VENDOR TOTAL:	31,393.00
STAPLES	STAPLES	01/14/2023	8068922324	FOA	MISC SUPPLIES	
48619	PO BOX 660409	02/07/2023		N		157.23
01/14/2023	DALLAS TX, 75266-0409	/ /	0.0000	N		0.00
		02/07/2023		N		157.23
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
101-215-727.000	SUPPLIES & POSTAGE			13.70		
101-253-727.000	SUPPLIES & POSTAGE			56.28		
101-172-727.000	SUPPLIES & POSTAGE			87.25		
				157.23		
STAPLES	STAPLES	01/28/2023	8069084698	FOA	CHAIR	
48658	PO BOX 660409	02/07/2023		N		229.99
01/28/2023	DALLAS TX, 75266-0409	/ /	0.0000	N		0.00
		02/07/2023		N		229.99
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
536-000-740.000	OPERATING SUPPLIES			229.99		
					VENDOR TOTAL:	387.22
TOSHIBA	TOSHIBA AMERICA BUSINESS SOLUTIONS	01/18/2023	5947365	FOA	12/25/22 - 1/24/23 - ESTUDIO2830C	
48641	PO BOX 927	02/07/2023		N		1.48
01/18/2023	BUFFALO NY, 14240-0927	/ /	0.0000	N		0.00
		02/07/2023		N		1.48
Open						
GL NUMBER	DESCRIPTION			AMOUNT		
101-172-930.000	REPAIRS & MAINTENANCE			1.48		
					VENDOR TOTAL:	1.48
TY-RY	TY-RY ENTERPRISES LLC	01/31/2023	013023	FOA	RELEASE OF DEVELOPER ACCT FUNDS	
48662	1150 N OLD US23	02/07/2023		N		3,942.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
01/31/2023	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		N		3,942.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
702-000-290.089	WOODSTREAM BLDG CO/BEN FRANKLIN PLUMBING	3,942.00

VENDOR TOTAL: 3,942.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
SCADA	UTILITIES INSTRUMENTATION SERVICE	01/13/2023	530369537	FOA	2023 CRUISE SUBSCRIPTION FEES	
48620	2290 BISHOP CIRCLE EAST	02/07/2023		N		2,319.00
01/13/2023	DEXTER MI, 48130	/ /	0.0000	N		0.00
		02/07/2023		N		2,319.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
536-000-930.000	SOFTWARE MAINTENANCE	2,319.00

VENDOR TOTAL: 2,319.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
WATERTECH	WATER TECH	12/31/2022	55864	FOA	DECEMBER 2022 SAMPLES	
48614	718 S MICHIGAN	02/07/2023		N		44.00
12/31/2022	HOWELL MI, 48843	/ /	0.0000	N		0.00
		02/07/2023		N		44.00
Open						

GL NUMBER	DESCRIPTION	AMOUNT
536-000-740.000	OPERATING SUPPLIES	44.00

VENDOR TOTAL: 44.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
WSP	WSP USA ENVIRONMENT	01/30/2023	H19220798	FOA	WWTP LTM REPORTING THRU 1/13/23	
48660	P.O. BOX 74008618	02/07/2023		N		857.25
01/30/2023	CHICAGO IL, 60674-8618	/ /	0.0000	N		0.00
		02/07/2023		N		857.25
Open						

GL NUMBER	DESCRIPTION	AMOUNT
101-441-801.007	TREATMENT PLANT SAMPLING	857.25

VENDOR TOTAL: 857.25

TOTAL - ALL VENDORS: 272,622.44

FUND TOTALS:

Fund 101 - GENERAL FUND	26,894.55
Fund 204 - MUNICIPAL STREET FUND	50.00
Fund 206 - FIRE OPERATING	1,167.92
Fund 354 - 2009 M-59 ROAD IMPROVEMENTS BOND	50.00

Vendor Code / Ref # / Invoice Date	Vendor name / Address / City/State/Zip	Post Date / CK Run Date / Disc. Date / Due Date	Invoice / PO / Disc. %	Bank / Hold / Sep CK / 1099	Invoice Description	Gross Amount / Discount / Net Amount
Fund 401 - CAPITAL PROJECTS FUND						1,815.50
Fund 536 - WATER SYSTEM FUND						5,010.48
Fund 539 - WATER REPLACEMENT FUND						25,708.00
Fund 590 - SEWER OPERATIONS & MAINTENANCE FUND						200,851.99
Fund 701 - TRUST AND AGENCY						1,683.00
Fund 702 - TRUST & AGENCY - NEW						9,391.00

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Susan Case, Finance Clerk

Subject: Approve Post Audit of Disbursements Between Board Meetings

Date: January 31, 2023

Recommended Action
Move to approve the presented disbursements under the post-audit resolution.

Discussion
The following disbursements have been made since the last board meeting:

Accounts Payable – $33,139.06

January 31, 2023 Payroll - $80,866.88

Financial Impact
Is a Budget Amendment Required? ☐Yes ☒No
All expenses are covered under the amended FY23 budget.

Attachments
Post Audit Bills List 01.19.2023
Post Audit Bills List 01.23.2023
Post Audit Bills List 01.26.2023
Payroll for 01.31.2023

CHECK DISBURSEMENT REPORT FOR HARTLAND TOWNSHIP
CHECK DATE FROM 01/19/2023 - 01/19/2023

Check Date	Bank	Check #	Payee	Description	GL #	Amount
01/19/2023	FOA	43384	CONSUMERS ENERGY	UTILITIES - GAS	101-265-920.001	1,489.58
		43384		UTILITIES - GAS	536-000-920.001	478.26
						1,967.84
01/19/2023	FOA	43385	DTE ENERGY	UTILITIES - ELECTRIC	536-000-920.002	107.25
01/19/2023	FOA	43386	LIVINGSTON DAILY PRESS & ARGUS	PRINTING & PUBLICATIONS	101-215-900.000	330.00
			TOTAL - ALL FUNDS	TOTAL OF 3 CHECKS		2,405.09

--- GL TOTALS ---

101-215-900.000	PRINTING & PUBLICATIONS	330.00
101-265-920.001	UTILITIES - GAS	1,489.58
536-000-920.001	UTILITIES - GAS	478.26
536-000-920.002	UTILITIES - ELECTRIC	107.25
	TOTAL	2,405.09

CHECK DISBURSEMENT REPORT FOR HARTLAND TOWNSHIP
CHECK DATE FROM 01/23/2023 - 01/23/2023

Check Date	Bank	Check #	Payee	Description	GL #	Amount
01/23/2023	FOA	43387	DAVENPORT JANE & DANIEL M	4708-21-304-023 SADREFUND	537-000-404.100	62.56
01/23/2023	FOA	43388	RANDOLPH JOANNE & WALTERS CARR	4708-21-101-028 SADREFUND	537-000-404.100	11.55
01/23/2023	FOA	43389	SHANNON MONICA S	4708-21-101-006 SADREFUND	537-000-404.100	11.55
01/23/2023	FOA	43390	WALDEN & ASSOCIATES LLC	4708-20-400-008 SADREFUND	537-000-404.100	967.35
		43390		4708-21-300-013 SADREFUND	537-000-404.100	1,051.46
						2,018.81
01/23/2023	FOA	43391	WALDEN & ASSOCIATES LLC	4708-20-400-015 SADREFUND	537-000-404.100	233.05
		43391		4708-21-300-029 SADREFUND	537-000-404.100	695.43
						928.48
01/23/2023	FOA	43392	WALDEN & ASSOCIATES LLC	4708-20-400-016 SADREFUND	537-000-404.100	38.84
		43392		4708-20-400-018 SADREFUND	537-000-404.100	6,672.35
						6,711.19
			TOTAL - ALL FUNDS	TOTAL OF 6 CHECKS		9,744.14

--- GL TOTALS ---

537-000-404.100	SPECIAL ASSESSMENT REFUNDS	9,744.14
	TOTAL	9,744.14

Check Date	Bank	Check #	Payee	Description	GL #	Amount
01/26/2023	FOA	43393	DELTA DENTAL	ACCRUED DENTAL BENEFITS	001-000-257.101	226.74
		43393		EMPLOYMENT EXPENSE	101-192-716.000	64.06
		43393		EMPLOYMENT EXPENSE	101-209-716.000	60.52
		43393		EMPLOYMENT EXPENSE	101-215-716.000	92.55
		43393		EMPLOYMENT EXPENSE	101-253-716.000	121.04
		43393		EMPLOYMENT EXPENSE	101-400-716.000	171.57
		43393		EMPLOYMENT EXPENSE	101-441-716.000	222.10
		43393		EMPLOYMENT EXPENSE	536-000-716.000	175.11
						1,133.69
01/26/2023	FOA	43394	DTE ENERGY	UTILITIES - ELECTRIC	101-265-920.002	1,145.77
		43394		STREET LIGHTS	101-448-921.000	39.34
		43394		UTILITIES	101-567-920.000	14.79
		43394		UTILITIES - ELECTRIC	101-751-920.002	309.25
		43394		UTILITIES - ELECTRIC	536-000-920.002	2,982.58
						4,491.73
01/26/2023	FOA	43395	LOWES BUSINESS ACCT/SYNCB	OPERATING SUPPLIES	536-000-740.000	402.67
01/26/2023	FOA	43396	MUTUAL OF OMAHA	ACCRUED STD/LTD BENEFITS	001-000-257.103	155.51
		43396		EMPLOYMENT EXPENSE	101-192-716.000	94.06
		43396		EMPLOYMENT EXPENSE	101-209-716.000	91.50
		43396		EMPLOYMENT EXPENSE	101-215-716.000	62.89
		43396		EMPLOYMENT EXPENSE	101-253-716.000	68.84
		43396		EMPLOYMENT EXPENSE	101-400-716.000	108.78
		43396		EMPLOYMENT EXPENSE	101-441-716.000	79.40
		43396		EMPLOYMENT EXPENSE	536-000-716.000	116.56
						777.54
01/26/2023	FOA	43397	PRIORITY HEALTH	ACCRUED MEDICAL BENEFITS	001-000-257.100	2,565.68
		43397		EMPLOYMENT EXPENSE	101-192-716.000	1,162.90
		43397		EMPLOYMENT EXPENSE	101-209-716.000	1,279.20
		43397		EMPLOYMENT EXPENSE	101-215-716.000	1,860.65
		43397		EMPLOYMENT EXPENSE	101-253-716.000	581.45
		43397		EMPLOYMENT EXPENSE	101-441-716.000	3,198.04
		43397		EMPLOYMENT EXPENSE	536-000-716.000	2,180.47
						12,828.39
01/26/2023	FOA	43398	VERIZON WIRELESS	DUE TO EMPLOYEES	101-000-232.000	40.27
		43398		REPAIRS & MAINTENANCE	101-209-930.000	80.02
		43398		TELEPHONE	101-265-851.000	760.25
		43398		TELEPHONE	536-000-851.000	190.34
		43398		CONTRACTED SERVICES & RENTALS	577-000-801.000	40.01

Check Date	Bank	Check #	Payee	Description	GL #	Amount
						1,110.89
01/26/2023	FOA	43399	VSP INSURANCE CO. (CT)	DECEMBER 2022 PREMIUMS	001-000-257.102	48.97
		43399		DECEMBER 2022 PREMIUMS	101-192-716.000	15.54
		43399		DECEMBER 2022 PREMIUMS	101-209-716.000	13.08
		43399		DECEMBER 2022 PREMIUMS	101-215-716.000	26.43
		43399		DECEMBER 2022 PREMIUMS	101-253-716.000	26.16
		43399		DECEMBER 2022 PREMIUMS	101-400-716.000	34.61
		43399		DECEMBER 2022 PREMIUMS	101-441-716.000	43.06
		43399		DECEMBER 2022 PREMIUMS	536-000-716.000	37.07
						244.92
			TOTAL - ALL FUNDS	TOTAL OF 7 CHECKS		20,989.83

--- GL TOTALS ---

001-000-257.100	ACCRUED MEDICAL BENEFITS	2,565.68
001-000-257.101	ACCRUED DENTAL BENEFITS	226.74
001-000-257.102	ACCRUED VISION BENEFITS	48.97
001-000-257.103	ACCRUED STD/LTD BENEFITS	155.51
101-000-232.000	DUE TO EMPLOYEES	40.27
101-192-716.000	EMPLOYMENT EXPENSE	1,336.56
101-209-716.000	EMPLOYMENT EXPENSE	1,444.30
101-209-930.000	REPAIRS & MAINTENANCE	80.02
101-215-716.000	EMPLOYMENT EXPENSE	2,042.52
101-253-716.000	EMPLOYMENT EXPENSE	797.49
101-265-851.000	TELEPHONE	760.25
101-265-920.002	UTILITIES - ELECTRIC	1,145.77
101-400-716.000	EMPLOYMENT EXPENSE	314.96
101-441-716.000	EMPLOYMENT EXPENSE	3,542.60
101-448-921.000	STREET LIGHTS	39.34
101-567-920.000	UTILITIES	14.79
101-751-920.002	UTILITIES - ELECTRIC	309.25
536-000-716.000	EMPLOYMENT EXPENSE	2,509.21
536-000-740.000	OPERATING SUPPLIES	402.67
536-000-851.000	TELEPHONE	190.34
536-000-920.002	UTILITIES - ELECTRIC	2,982.58
577-000-801.000	CONTRACTED SERVICES & RENTALS	40.01
	TOTAL	20,989.83

Check Date	Bank	Check Number	Name	Check Gross	Physical Check Amount	Direct Deposit	Status
01/31/2023	FOA	17345	PETRUCCI, JOSEPH M	525.00	438.59	0.00	Open
01/31/2023	FOA	17346	MISSION SQUARE	2,325.89	2,325.89	0.00	Open
01/31/2023	FOA	17347	MISSION SQUARE	3,835.46	3,835.46	0.00	Open
01/31/2023	FOA	17348	MISSION SQUARE	1,800.02	1,800.02	0.00	Open
01/31/2023	FOA	17349	MISSION SQUARE	200.00	200.00	0.00	Open
01/31/2023	FOA	DD8289	BEDUHN, TIMOTHY L.A.	1,691.00	0.00	1,280.89	Cleared
01/31/2023	FOA	DD8290	BERNARDI, MELYNDA A	1,792.94	0.00	1,398.70	Cleared
01/31/2023	FOA	DD8291	BROOKS, TYLER J	2,349.27	0.00	1,683.90	Cleared
01/31/2023	FOA	DD8292	CASE, SUSAN E	1,756.44	0.00	1,105.40	Cleared
01/31/2023	FOA	DD8293	CIOFU, LARRY N	2,746.24	0.00	1,990.97	Cleared
01/31/2023	FOA	DD8294	DRYDEN-HOGAN, SUSAN A	3,601.41	0.00	2,576.94	Cleared
01/31/2023	FOA	DD8295	ECKMAN, MATTHEW A	90.00	0.00	79.28	Cleared
01/31/2023	FOA	DD8296	FOUNTAIN, WILLIAM J	2,746.24	0.00	2,313.75	Cleared
01/31/2023	FOA	DD8297	FOX, LAWRENCE E	428.25	0.00	377.29	Cleared
01/31/2023	FOA	DD8298	GERMANE, MATTHEW J	525.00	0.00	459.84	Cleared
01/31/2023	FOA	DD8299	GRISSIM, SUSAN L	90.00	0.00	83.11	Cleared
01/31/2023	FOA	DD8300	HAASETH, GWYN M	476.88	0.00	429.70	Cleared
01/31/2023	FOA	DD8301	HEASLIP, JAMES B	3,211.94	0.00	1,614.86	Cleared
01/31/2023	FOA	DD8302	HORNING, KATHLEEN A	2,996.24	0.00	2,190.62	Cleared
01/31/2023	FOA	DD8303	HUBBARD, TONYA S	1,574.88	0.00	1,134.22	Cleared
01/31/2023	FOA	DD8304	JOHNSON, LISA	2,284.50	0.00	1,461.31	Cleared
01/31/2023	FOA	DD8305	KENDALL, ANTHONY S	96.00	0.00	88.66	Cleared
01/31/2023	FOA	DD8306	LANGER, TROY D	3,842.16	0.00	2,722.87	Cleared
01/31/2023	FOA	DD8307	LOFTUS, DANIEL M	703.89	0.00	607.44	Cleared
01/31/2023	FOA	DD8308	LOUIS, CASEY	944.59	0.00	619.67	Cleared
01/31/2023	FOA	DD8309	LUCE, MICHAEL T	3,446.80	0.00	2,533.83	Cleared
01/31/2023	FOA	DD8310	MAYER, JAMES L	142.50	0.00	125.53	Cleared
01/31/2023	FOA	DD8311	MCMULLEN, SUMMER L	615.00	0.00	517.87	Cleared
01/31/2023	FOA	DD8312	MITCHELL, MICHAEL E	90.00	0.00	83.11	Cleared
01/31/2023	FOA	DD8313	MORGANROTH, CAROL L	2,104.92	0.00	1,634.66	Cleared
01/31/2023	FOA	DD8314	MURPHY, THOMAS A	100.00	0.00	88.10	Cleared
01/31/2023	FOA	DD8315	NIXON, MITCHELL A	1,827.00	0.00	1,426.36	Cleared
01/31/2023	FOA	DD8316	O'CONNELL, DENISE	525.00	0.00	368.59	Cleared
01/31/2023	FOA	DD8317	SHOLLACK, DONNA M	2,052.17	0.00	1,564.96	Cleared

Check Date	Bank	Check Number	Name	Check Gross	Physical Check Amount	Direct Deposit	Status
01/31/2023	FOA	DD8318	SOSNOWSKI, SHERI R	1,811.25	0.00	1,405.01	Cleared
01/31/2023	FOA	DD8319	VERMILLION, KAREN L	1,776.60	0.00	1,284.25	Cleared
01/31/2023	FOA	DD8320	WEST, ROBERT M	4,466.67	0.00	2,723.75	Cleared
01/31/2023	FOA	DD8321	WYATT, MARTHA K	2,980.51	0.00	1,937.25	Cleared
01/31/2023	FOA	EFT664	FEDERAL TAX DEPOSIT	12,612.77	12,612.77	0.00	Cleared
01/31/2023	FOA	EFT665	MI DEPT OF TREASURY	3,681.45	3,681.45	0.00	Cleared
Totals:			Number of Checks: 040	80,866.88	24,894.18	39,912.69	

Total Physical Checks: 5
Total Check Stubs: 35

DRAFT

1. **Call to Order**

   The meeting was called to order by Supervisor Fountain at 7:00 p.m.

2. **Pledge of Allegiance**

3. **Roll Call**

   PRESENT: Supervisor Fountain, Clerk Ciofu, Treasurer Horning, Trustee Germane, Trustee McMullen, Trustee O'Connell, Trustee Petrucci
   ABSENT: None

   Also present were Township Manager Bob West (via video conference) and Public Works Director Mike Luce.

4. **Approval of the Agenda**

   Move to approve the agenda for the January 17, 2023, Hartland Township Board meeting as presented.
   Motion made by Trustee Petrucci, Seconded by Trustee O'Connell.
   Voting Yea: Supervisor Fountain, Clerk Ciofu, Treasurer Horning, Trustee Germane, Trustee McMullen, Trustee O'Connell, Trustee Petrucci
   Voting Nay: None
   Absent: None

5. **Call to the Public**

   No one came forward.

6. **Approval of the Consent Agenda**

   Move to approve the consent agenda for the January 17, 2023, Hartland Township Board meeting as presented.
   Motion made by Treasurer Horning, Seconded by Trustee McMullen.
   Voting Yea: Supervisor Fountain, Clerk Ciofu, Treasurer Horning, Trustee Germane, Trustee McMullen, Trustee O'Connell, Trustee Petrucci
   Voting Nay: None
   Absent: None

   a. Approve Payment of Bills
   b. Approve Post Audit of Disbursements Between Board Meetings
   c. 01-03-23 Hartland Township Board Regular Meeting Minutes
   d. 01-03-23 Hartland Township Board Closed Session Meeting Minutes
   e. 2023 Hartland Township Strategic Plan

7. **Pending & New Business**

   a. Resolution - 2023 Poverty Income Guidelines

Supervisor Fountain stated that this Resolution is a requirement of the State of Michigan to establish Income Poverty Guidelines for the Board of Review. He stated there is a State standard but each community has the ability to adjust these standards based on various factors. Manager West stated that the resolution authorizes Hartland Township to adjust each family unit size poverty guideline by an additional 25%. This is very common in the Livingston County municipalities and needs to be adopted on an annual basis.

Move to approve the resolution adopting the 2023 Hartland Township Poverty Income Guidelines as presented.

Motion made by Clerk Ciofu, Seconded by Trustee Germane. Roll call vote taken.
Voting Yea: Supervisor Fountain, Clerk Ciofu, Treasurer Horning, Trustee Germane, Trustee McMullen, Trustee O'Connell, Trustee Petrucci
Voting Nay: None
Absent: None Motion passes: 7 – 0 – 0.

b. Hartland Deerfield Fire Authority Budget Presentation FY2023-24

Hartland Deerfield Fire Authority (HDFA) Chief Adam Carroll presented the proposed HDFA Operational Budget for the fiscal year 2023-2024 for Township Board approval. Chief Carroll presented a brief overview of expenses regarding staffing, health care, and utilities. Chief Carroll then briefly reviewed the three year rolling average allocation schedule for Hartland Township and Deerfield Township. Treasurer Horning inquired as to the increase in the 2022-2023 Amended Budget for training and the subsequent decrease for the 2023-2024 budget. Chief Carroll stated that a new training project, Rescue Task Force for active assailant events, was conducted in conjunction with the Livingston County Sheriff's Department and other local law enforcement agencies which required additional training and equipment for this year. This training will not be conducted next year.

Move to approve the proposed Hartland Deerfield Fire Authority FY2023-24 Budget as presented.

Motion made by Treasurer Horning, Seconded by Trustee O'Connell.
Voting Yea: Supervisor Fountain, Clerk Ciofu, Treasurer Horning, Trustee Germane, Trustee McMullen, Trustee O'Connell, Trustee Petrucci
Voting Nay: None
Absent: None

Chief Carroll stated that the ESCI fire study document is going to the printer, and it will be distributed as soon as it is available for the January 26, 2023 meeting at the Hartland Fire Station at 7:00 p.m. and that the meeting will be captured on video.

8. Board Reports

Treasurer Horning – Stated the Corelogic checks finally did arrive at the Township on January 11th, and were 2600 payments out of the tax roll. She stated the utility billing is out, taxes have a few more weeks, and the Treasurer's Report and Septage Receiving Report were emailed to the Board today.
Trustee Germane - No report.
Trustee O'Connell - No report.
Trustee McMullen - No report.
Trustee Petrucci - No report.

Clerk Ciofu - Winterfest is proceeding on schedule. The tent order is being finalized and the ice-skating rink will go up January 18, 2023. Hopefully, this will freeze before Winterfest. Winterfest takes place Saturday February 11, starting at 1:00 p.m. until dusk, closing with Fireworks in the evening.
Supervisor Fountain - A Chamber meeting was held this morning and on February 23, at 9:00 a.m. there will be a community collaborative event with Manager West, Supervisor Fountain, and Chamber members. It will be an open forum for anyone in the community that has any questions, ideas or feedback. He stated a Partners in Progress meeting will take place on February 20, 2023 at 5:30 p.m. at the Old Hartland High School.

[BRIEF RECESS]

9. Information / Discussion

a) Manager's Report

Manager West stated that there will be a meeting at the Hartland Fire Station 61 to discuss the ESCI Fire Study on January 26, 2023 at 7:00 p.m. He also confirmed the February 20, 2023, Partner's in Progress meeting at 5:30 p.m. Manager West informed the Board that the Township's main computer server is now outdated and is no longer supported by IT Right. It is still functional, but he may be coming to the Board for approval to purchase a replacement server. Generally, servers last for 10-12 years and a replacement server would cost around $12,000 which would be paid for with PEG funds. He will also be bringing forward a proposal for Board room upgrades for a second projector and for lowering the monitors. A brief discussion was held on the monitors and the need for, and potential solutions, to be able to individually scroll through the Board package. Manager West stated that the draft FY2023-2024 Budget is almost complete, and he feels we will be able to review the entire budget at the February 7, 2023 Board Meeting. Manager West stated that he is working on some preliminary discussions with the Planning Commission and legal counsel regarding solar panels. He stated the Planning Commission is meeting this Thursday to discuss a proposed project at M-59 and Old US-23 and the revised Mister Cash Wash project. Supervisor Fountain inquired as to whether a response was received from the County on the Septage Receiving station issue and Manager West stated he has not received any response at this time. Public Works Director Mike Luce stated there is a Livingston Regional meeting tomorrow and that he thought that this may be brought up. Trustee Germane inquired as to the recent e-mail sent to the Board regarding the quarterly financial statements and whether there were any issues for the Board that needed further discussion at this time. Manager West responded that there are no issues at this time as we are usually at around 85% to 89% usage of the budget at this time and we are on target.

10. Adjournment

Move to adjourn the meeting at 7:40 p.m.
Motion made by Trustee O'Connell, Seconded by Clerk Ciofu.

Voting Yea:	Supervisor Fountain, Clerk Ciofu, Treasurer Horning, Trustee Germane, Trustee McMullen, Trustee O'Connell, Trustee Petrucci
Voting Nay:	None
Absent:	None

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Larry Ciofu, Clerk

Subject: 01-17-2023 Hartland Township Board Regular Meeting Minutes

Date: January 26, 2023

Recommended Action
Move to approve the Hartland Township Board Regular Meeting Minutes for January 17, 2023.

Discussion
Draft minutes are attached for review.

Financial Impact
None

Attachments
1-17-23 HTB Minutes - DRAFT

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Larry Ciofu, Clerk

Subject: Confirm Supervisor's Appointment - Cheryl Mara to Board of Review as alternate (01/01/2023-12/31/2024)

Date: January 25, 2023

Recommended Action
Move to re-affirm Supervisor's Appointment - Cheryl Mara to Board of Review as alternate (01/01/2023-12/31/2024)

Discussion
Township Supervisor has recommended the appointment of Cheryl Mara to fill the current vacant Board of Review alternate position effective immediately through December 31, 2024. This was originally confirmed at the November 29, 2022 Board meeting but due to schedule conflicts we could not complete the Oath of Office within the 10-day requirement for Board of Review members,

Approval of this agenda item will confirm the Township Supervisor’s appointment.

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Larry Ciofu, Clerk

Subject: Winterfest 2023 Fireworks Contract

Date: January 19, 2023

Recommended Action
Move to authorize the Clerk to sign the contract with Gen-X Pyrotechnics for a Winterfest fireworks show on February 11, 2023.

Discussion
The funds for the fireworks display are fully covered by sponsorship donations.

Financial Impact
Is a Budget Amendment Required? ☐Yes ☒No
The fireworks are funded using Winterfest sponsorship dollars and charged to account 101-751-955.000 Parks – Special Events ($5,000.00)

Attachments
Gen-X – Winterfest – 2-11-23

2023 Permit for Fireworks Other than Consumer or Low Impact

Authority: 2011 PA 256	The **LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD** will not discriminate against any individual or group because of race, sex, religion, age, national origin,color, marital status, disability, or political beliefs. If you need assistance with reading, writing, hearing, etc., under the Americans with Disabilities Act, you may make your needs known to this Legislative Body of City, Village or Township Board.

This permit is not transferable. Possession of this permit authorizes the herein named person to possess, transport and display fireworks in the amounts, for the purpose of and at the place listed below only through permit expiration date.

TYPE OF PERMIT(S) (Select all applicable boxes)

☐ Agricultural or Wildlife Fireworks ☐ Articles Pyrotechnic ☒ Display Fireworks

☐ Public Display ☐ Private Display

☐ Special Effects Manufactured for Outdoor Pest Control or Agricultural Purposes

FOR USE BY LEGISLATIVE BODY OF CITY, VILLAGE OR TOWNSHIP BOARD ONLY.

PERMIT(S) EXPIRATION DATE
(ENTER DATE OF EXPIRATION)

NAME OF PERSON PERMIT ISSUED TO: Jason Trudeau, Gen-X Pyrotechnics

AGE (18 YEARS OR OLDER): ☒ YES ☐ NO

ADDRESS OF PERSON PERMIT ISSUED TO: 2906 Pine Needle Dr, White Lake, MI 48383

NAME OF ORGANIZATION, GROUP, FIRM OR CORPORATION: Hartland Winterfest

ADDRESS: Hartland Heritage Park 12439 Highland Rd, Hartland, MI 48353

NUMBER AND TYPES OF FIREWORKS (Please attach additional pages if necessary)

15+ Multishot Boxes

EXACT LOCATION OF DISPLAY OR USE: Heritage Park Field

CITY, VILLAGE, TOWNSHIP	DATE	TIME
Hartland Michigan	2/11/2023	DUSK

BOND OR INSURANCE FILED	AMOUNT
☒ YES ☐ NO	5,000,000.00

Issued by action of the Legislative Body of a

☐ City ☐ Village ☐ Township of _____ on the _____ day of

_____
(Signature and Title of Legislative Body Representative)

THIS FORM IS VALID UNTIL THE DATE OF EXPIRATION OF PERMIT

HARTLAND DEERFIELD FIRE AUTHORITY

HARTLAND AREA FIRE DEPT.

3205 Hartland Road
Hartland, MI. 48353-1825

Voice: (810) 632-7676
E-Mail: firemarshal@hartlandareafire.com

January 19, 2023

To: Hartland Township Board
RE: Fireworks for Winterfest (February 11, 2023)

Hartland Deerfield Fire Authority approves the application for fireworks during the Winterfest Event on February 11, 2023. Applicable codes and standards apply. Contact the Fire Department with any questions and / or concerns.

Jon Dehanke

Jon Dehanke, Captain/Fire Inspector
Hartland Area Fire Department

GEN-X PYROTECHNICS

Gen-X Pyrotechnics offers the highest quality custom pyrotechnics designed specifically to meet the needs of our clients. We are a local company that markets on word of mouth advertising and now on the web. We specialize in one of a kind shows.

In this constantly changing world of pyrotechnics we strive to learn the most up-to-date innovations so we can continue to hone our craft.

We take pride in being trained in all the local and federal safety regulations and guidelines.

Jason Trudeau

248.252.0029

genxpyro@comcast.net
info@genxpyrotechnics.com

www.genxpyrotechnics.com

This contract is between Gen-X Pyrotechnics (herein referred to as "Gen-X"), a Michigan based company operating at 2906 Pine Needle Drive, White Lake, Michigan. 48383.

Name of Sponsoring Organization:_____
(Herein referred to as "Sponsor")

Sponsor Contact Name:_____

Mailing Address of Sponsor:_____

Email Address of Sponsor: _____ Phone:_____

Billing Contact Name:_____
(If different from above)

Billing Address:_____
(If different from above)

Billing Email Address:_____
(If different from above)

Email Address of Sponsor:_____ Phone:_____
(If different from above) (If different from above)

Gen-X will supply the professional fireworks display(s) listed below including all necessary fireworks materials, equipment and personnel in accordance with the specifications agreed to by the parties.

1. **Displays:**

Display Date	Rain Date	Total Budget	Deposit Amount	Deposit Due Date
2-11-2023	TBD	$ 5,000.00	$5,000.00	With Contract

*Deposit includes hold the date fee

(See Exhibit A for Display description)

2. **Contract Period:**

This contract is for the 2023 fireworks display.

3. **Budget:**

If a budget larger than that listed under section 1 is available; additional fireworks will be added to increase the size and dramatic impact of the display.

4. **Payment(s):**

Deposit(s) of 50% are due upon entering this contract. If the contract is entered into less than 120 days prior to the display, a deposit of 75% is due upon entering into this contract. Full payment is due 5 day prior to each display date. This display shall not be fired until payment in full is made, or other arrangements confirmed. Displays $7,000.00 or less are to be paid in full at time of contract signing. Permit fees are separate and not included in show budget.

5. Licenses and Insurance:
Gen-X shall carry and maintain applicable licenses, permits and insurance policies including general liability, auto and workers' compensation as required by law to conduct professional fireworks displays Gen-X shall supply a certificate of general liability insurance (occurrence based) in the amount of $5,000,000.00 The liability insurance provided by Gen-X shall state that it is primary in coverage to any other insurance which may be available to Sponsor and shall require at least thirty (30) days' prior written notice to Sponsor of cancellation, modification, or material change to the policy.

6. Inclement Weather:
Gen-X will make every attempt to execute all fireworks displays as schedule. Gen-X reserves the right to postpone a display for safety hazards caused by inclement weather. The sponsor shall cover the additional cost reasonably incurred by shooting the display on a mutually agreed upon alternate date. The additional cost for shooting the display: (i) on an alternate date (other than "rain date" shall not exceed 10% of the display budget if Gen-X is required to tear down the whole show and set it up again on another date; or (ii) shall not exceed $500.00 if the alternate date is "rain date" or another date which does not require Gen-X to tear down the whole show and set it up again on another date. The alternate date must fall within 90 days of the original display date or the display is subject to permanent cancellation.

7. Cancellation:
The following fees schedule will apply should the Sponsor elect to cancel a display included in this contract. Cancellation 120 or more days prior to display date shall result in loss of deposit(s). Cancellation within 120 days of the display date shall result in loss of deposit(s) and an additional cancellation fee of 25% of the show budget to be payed by the sponsor. Cancellation within 5 days of the display date shall result in loss of deposit(s) and an additional cancellation fee of 50% of the show budget to be payed by the sponsor. Displays postponed due to inclement weather not rescheduled for a date within 90 days following the original display date are subject to loss of deposit(s) and a cancellation fee of 25% of the show budget to be payed by the sponsor.

8. Display Location:
The display will be fired from land on a field in Heritage Park (see Exhibit A).

9. Safety and Workflow:
NFPA 1123: Code for fireworks display shall be followed at all times. All work shall be performed in a thoroughly workmanlike manner and in accordance with the highest standards of quality for such work. Gen-X personnel shall wear identifying shirts while working on site. Under no circumstances shall any person under the influence of drugs or alcohol be allowed within the setup area. Following the display Gen-X will inspect the fallout area for unexploded items or other hazards resulting from the fireworks display.

10. Security:
Gen-X shall be responsible for ensuring that no unauthorized person enters the display setup area unless the person is escorted, and supervised, by a member of the fireworks setup crew. During the display, Gen-X will secure a perimeter encompassing the fireworks being used for the Hartland Winterfest/Icefest Fireworks. All the necessary beacons and LED safety flashers to ensure that spectators are aware of a perimeter enforcement is in effect. This perimeter will be held during the entire show. If perimeter is breached, Gen-X reserves the right to pause the show until the vessel(s) have cleared the area. Then show will resume. If needed, the Fire Department of Hartland Township will be present on site during the entire show.

11. Marketing:
Gen-X may use public displays for promotional use, including but not limited to videotaping and providing invitations to current and/or potential customers to view the display setup sit and the fireworks display. For private displays, Gen-X will seek approval from Sponsor before making such invitations. In return for marketing privileges Gen-X may donate products and services to enhance the display.

12. Force Majeure:
Gen-X will take all reasonable steps to complete its obligation under this contract. However, Gen-X shall not be held responsible for failure to perform its obligations under this contract if such failure is a result of an act of God including extreme weather, natural disaster, terrorism, war, or any extraordinary circumstance beyond its control.

13. Hold Harmless:
Gen-X agrees to indemnify, defend, and hold harmless the Sponsor, its agents, owners, managers, and employees, against any and all liability claims, damages, losses, expenses and costs, including attorney fees that arise out of the display(s) which are subject of this agreement. The Sponsor agrees to give Gen-X prompt notice of any claims or demands and to cooperate with Gen-X, its insurance carrier, or its successors in interest or assigns, if any, in the defense of any such claims and/or demands. The Sponsor agrees to indemnify and hold Gen-X harmless against any and all liability claims, damages, losses, expenses and costs, including attorney fees that arise out of the display(s) which is subject of this agreement which is caused by the Sponsor and/or its agents, servants or employee's negligence or failure to adhere to its responsibilities under this agreement.

14. Terms and Conditions:
This agreement shall by governed by and construed in accordance with the laws of the state of Michigan. This agreement is non-binding irrespective or endorsement until a deposit (as per section 4) has been satisfied and notice presented by Gen-X. Gen-X is only responsible for pyrotechnics related to the Hartland Winterfest Fireworks

Display Coordination Contract

Please Provide information for a primary contact person who can be reached on the date of your event. This will help to ensure smooth and accurate execution of your display.

_____
Name

_____
Title

_____
Work Phone

_____
Email Address

_____
Name

Contract accepted on behalf of Sponsor:

_____
Signature

_____
Please Print Name

_____
Please Print Title

_____
Date

Contract accepted on behalf of Gen-X:

_____
Signature

_____
Please Print Name

_____
Please Print Title

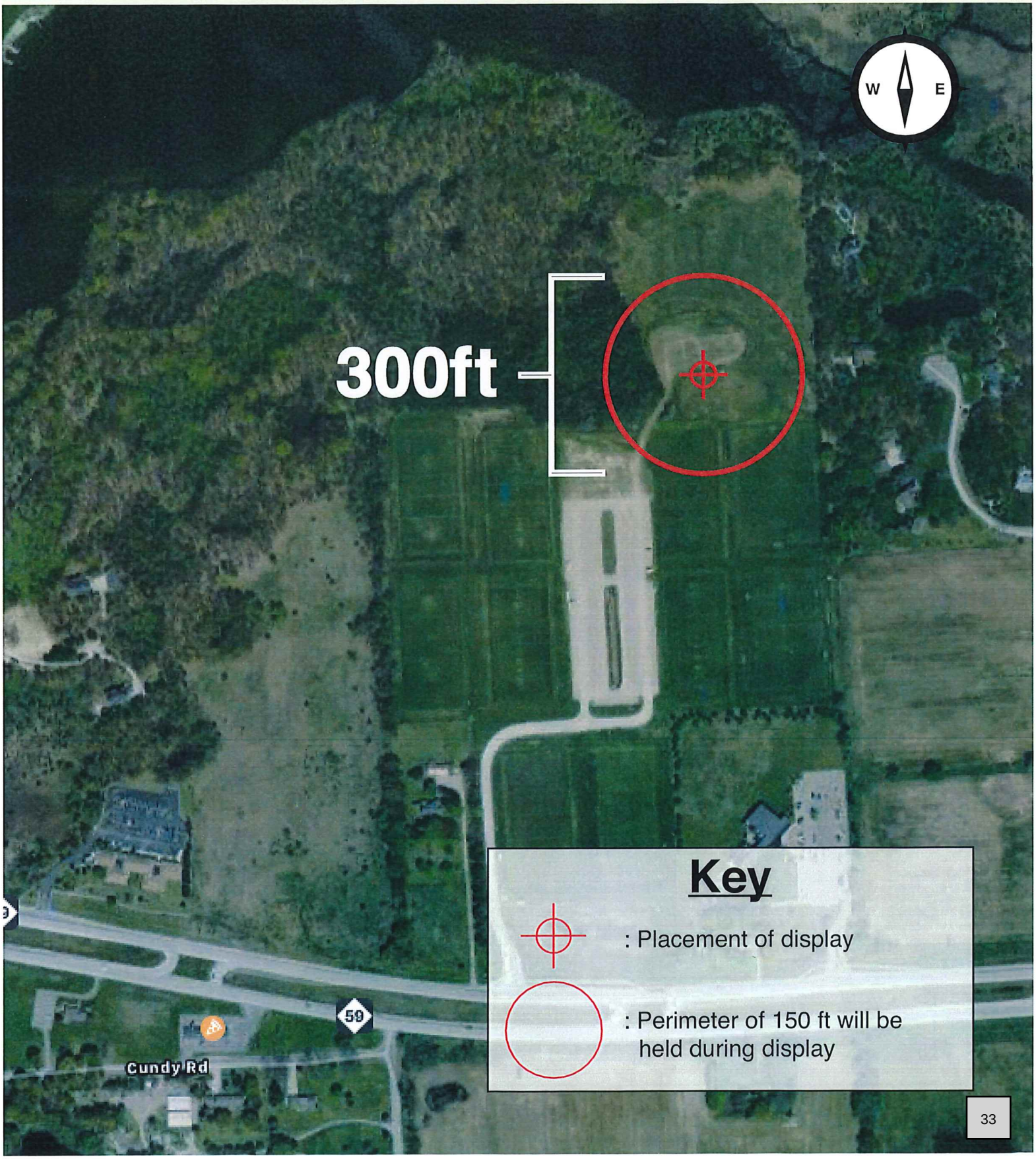
_____
Date

Gen-X Pyrotechnics is a turn key operation

Hartland Winterfest

Exhibit A

Distance- 300 ft diameter(NFPA regulation)



Certificate of Insurance

34690 **Issue Date:** 1/4/2023

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
Professional Program Insurance Brokerage Division of SPG Insurance Solutions LLC 1304 Southpoint Blvd., Suite 101 Petaluma, CA 94954	INSURERS AFFORDING COVERAGE
INSURED	INSURER A:Certain Underwriter's at Lloyd's, London - AA-1128623
Gen-X Pyrotechnics, Inc. 2906 Pine Needle Dr White Lake, MI 48383	INSURER B:
	INSURER C:
	INSURER D:

COVERAGES:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE NAMED INSURED ABOVE FOR THE PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (DD/MM/YY)	POLICY EXPIRATION DATE (DD/MM/YY)	LIMITS	
A	GENERAL LIABILITY CLAIMS MADE	PY/22-0084	4/28/2022	4/28/2023	EACH ACCIDENT	$5,000,000
					MEDICAL EXP (any one person)	
					FIRE LEGAL LIABILITY	$50,000
					GENERAL AGGREGATE	$5,000,000
					PRODUCTS-COMP/ OPS AGG	

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS
Certificate holder is additional insured as respects the following:

Date(s) of Display:	2/11/2023
Location:	HERITAGE PARK HARTLAND (SOCCER FIELD)
Additional Insured:	HARTLAND TOWNSHIP 2655 CLARK ROAD HARTLAND MI 48353 HARTLAND WINTERFEST
Rain Date(s):	
Type of Display:	Aerial Fireworks Display

CERTIFICATE HOLDER	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXIPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER,ITS AGENTS OR REPRESENTATIVES.
HARTLAND TOWNSHIP 2655 CLARK ROAD HARTLAND MI 48353	Susan Etter AUTHORIZED REPRESENTATIVE

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Kathie Horning, Treasurer

Subject: HCS & LESA Summer Tax Collection Agreements

Date: January 23, 2023

Recommended Action
Move to approve the Supervisor signing the Summer Tax agreements with LESA and Hartland Consolidated Schools for 2023, allowing the Treasurer to collect taxes on their behalf during the summer collection period.

Discussion
Each year for the summer tax collection period we sign an agreement for the Treasurer to collect on the tax roll. The 2023 agreements will allow the Treasurer to collect for $3.00 per parcel.

Financial Impact
Is a Budget Amendment Required? ☐Yes ☒No
.

Attachments
2023 LESA Summer Tax Collection Agreement
2023 Hartland Consolidated Schools Summer Tax Collection Agreement

SUMMER TAX COLLECTION AGREEMENT

The Township of Hartland with offices located at 2655 Clark Rd., Hartland, Michigan (the "township") pursuant to 1976 PA 451, as amended, for the purposes of providing for the collection by the Township of a summer levy of Livingston Educational Service Agency, Michigan (the "Agency") property taxes for the year 2023 and hereafter as provided below:

The Agency and the Township agree as follows:

1. The Township agrees to collect 100% of the total school millage in the summer as certified by the Agency for levy on all taxable property in addition to and not within the K-12 school district summer tax collection, including principal residence and other exempt property not subject to the 18 mill levy within the Hartland Consolidated School district.

2. All interest and penalties, other than collection fees, that are imposed prior to the date the taxes are returned delinquent and that are attributable to school taxes, shall belong to the Agency.

3. The Agency agrees to pay the Township costs of assessment and collection at $3.00 per parcel which represents reasonable expenses incurred by the Township in assessing and collecting Agency taxes, to the extent that the expenses are in addition to the expenses of assessing and collecting other taxes at the same time.

4. The Agency shall certify to the Township Treasurer the school millage to be levied on property for summer collection to the Township via a signed L-4029 within 3 weeks of Livingston County Equalization delivering their tax roll information to the Agency, or by June 15, whichever is earlier.

5. The Township Treasurer shall account for and deliver summer school tax collections to the Agency within ten (10) business days from the 1st and 15th of each month via electronic transfer, if and when possible.

6. In the event that state law is amended necessitating changes to this Agreement, the parties agree to negotiate changes to the Agreement in good faith to conform the Agreement to state law. Collection of summer taxes and payment for said collection shall not be disrupted or delayed due to the negotiation of or revision to this Agreement.

7. By execution of this Agreement, both parties certify and represent that the Agreement is authorized by the laws of the State of Michigan, that the individuals responsible for collecting the Agency taxes are and will be in compliance with all laws pertaining to their duties and responsibilities as a tax collecting agent, and that the signors are authorized by their respective governing bodies to execute this Agreement.

8. This Agreement is effective on the date of its execution and shall expire twelve months from the effective date.

IN WITNESS WHEREOF, the parties have executed this Agreement on the respective dates indicated below.

LIVINGSTON EDUCATIONAL SERVICE AGENCY, MICHIGAN

By Stephanie Weese Digitally signed by Stephanie Weese Date: 2022.11.10 11:36:55 -05'00'

Stephanie L. Weese

Its: Assistant Superintendent for Administrative Services

Dated: November 9, 2022

TOWNSHIP OF HARTLAND: _____

By_____

Its_____

Dated_____

AGREEMENT FOR COLLECTION OF SUMMER SCHOOL PROPERTY TAXES

AGREEMENT made this 14th day of November 2022 by and between Hartland Consolidated Schools, with offices located at 9525 E. Highland Road, Howell MI 48843 (hereinafter "School District") and Hartland Township, with offices located at 2655 Clark Road, Hartland, MI 48353 (hereinafter "Township"), pursuant to 1976 PA 451, as amended for the purposes of providing for the collection by the Township of a Summer levy of School District property taxes for the year 2023.

The parties agree as follows:

1. The Township agrees to collect 100% of the total school non-homestead property taxes as certified by the School District for levy on July 1, 2023, on property located within the Township. Interest earned on said taxes will be retained by the township.

2. The School District agrees to pay Township costs of assessment and collection as follows:

   $ 3.00 per parcel

3. No later than June 15, 2023, the School District shall certify to the Township Supervisor the school millage to be levied on property for summer collection in 2023.

4. Summer Tax collection shall be paid to the School District within ten (10) business days from the 1st and 15th of each month, except in October, November, December, January, and March.

School District

Rachel Bois, Chief Financial Officer, Designee

Signature authorized by Board of Education Resolution of November 14, 2022

Township

Supervisor

Signature authorized by Board of Trustees Resolution of _____, 2022

Clerk

Hartland Township Board of Trustees Agenda Memorandum

Submitted By: Troy Langer, Planning Director

Subject: Site Plan #23-001 M-59 Properties Planned Development (PD) Concept Plan

Date: January 31, 2023

Recommended Action
No formal action shall be taken by the Township Board as part of a Planned Development Concept Plan review. The Township Board should provide comments to the applicant about the proposed M-59 Properties PD Concept Plan and whether it is indicative of a plan that can and will meet the intent, design standards, and eligibility criteria of the Planned Development process.

Discussion

Applicant: Kevin Bahnam

Site Description
The proposed planned development (PD) property is located at the southwest corner of Highland Road and Old US-23. The approximate 29.85-acre parcel is undeveloped (Parcel ID #4708-28-100-014) and zoned GC (General Commercial).

The subject parcel was previously designated as Commercial on the 2015 Future Land Use Map (FLUM); however, in 2020-2021 several amendments were made to the 2015 FLUM and Comprehensive Development Plan. The amendments were approved by the Township Board on May 18, 2021. One of the areas that was amended is the subject property, which is now designated as Special Planning Area (SPA).

The parcel south of the subject site is the location of the former Tag Sports Center (1535 Old US-23) consisting of ball fields with batting cage, concession stand, clubhouse and locker rooms, putt-putt golf course, restroom facilities, and parking. The parcel is zoned GC (Parcel ID #4708-28-100-018). Per the 2021 amendment to the FLUM and Comprehensive Plan, this parcel is now designated as SPA (formerly designated as Commercial on the 2015 FLUM).

Land to the west includes LAG Development at 9990 Highland Road (Parcel ID #4708-29-200-017) and Charyl Stockwell Academy at 9758 Highland Road (Parcel ID #4708-29-200-015). Both parcels are zoned GC and designated as Commercial on the 2015 FLUM and the 2021 FLUM Amendment.

North of the site, on the north side of Highland Road is the Shops at Waldenwoods complex which includes Kroger Grocery, Huntington Bank (formerly TCF Bank), CVS Pharmacy, and a mix of smaller commercial establishments. This commercial complex is zoned Planned Development (PD) and designated as Commercial on the 2021 FLUM Amendment.

To the east, across Old US-23, are Fountain Square Shopping Center, Hartland Town Center, and Speedway Fuel Station. All said properties are zoned GC and designated as Commercial on the 2021 FLUM Amendment.

Municipal water and sanitary sewer will be required for this development.

An environmental analysis was not provided by the applicant however it appears there are several wetland areas on the site based on air photos. In particular, a wetland area exists on the south which generally runs east to west, with an upland area in the middle. This may be a regulated wetland under the State of Michigan/EGLE (Michigan Department of Environment, Great Lakes and Energy). An environmental analysis of the land, including a hydrology study, analysis of the soil conditions, and analysis of other significant environmental features, such as wetland areas, water drainage areas, and tree stands is required as part of the Preliminary Site Plan application.

The Planning Commission discussed this project at the January 26, 2023, regular meeting.

Site History

Historically it appears that the property has been used for agricultural purposes.

Planned Development Procedure

Section 3.1.18 of the Township's Zoning Ordinance provides standards and approval procedures for a Planned Development (PD). Approval of a Planned Development is a three-step process. A Concept Plan, Preliminary Plan, and Final Plan are all reviewed by the Planning Commission and the Township Board, with the Planning Commission making a recommendation and the Board having final approval at each step. The process usually requires a rezoning from the existing zoning district to the Planned Development (PD) zoning district. As part of the rezoning, a public hearing is held before the Planning Commission consistent with the Michigan Zoning Enabling Act; this public hearing is held at the same meeting during which the Planning Commission reviews and makes a recommendation on the Preliminary Plan. Approval of the Final Plan by the Township Board usually constitutes a rezoning of the subject property to PD.

Proposed Concept Plan

A. General

The applicant has submitted a Concept Plan for a mixed use planned development with commercial and residential uses. The commercial sector is situated along the frontage of both Highland Road and Old US-23. The residential portion of the development is internal to the site, south and west of the commercial areas. An internal roadway runs east-west and includes a round-about, which together provide the circulatory network for the development, as well as being a defining boundary of the commercial and residential areas. Additionally, the internal roadway affords vehicular movement from Old US-23 to the internal drive associated with Cheryl Stockwell Academy and LAG Development on the west.

Additional access points to the development are found along Highland Road with two (2) proposed entrances. The western entrance drive from Highland Road transitions into a boulevard and travels south to connect to the round-about. The boulevard drive extends south of the round-about and into the residential portion on the development, creating the main entrance to the residential area.

Three (3) development entrances are shown on Old US-23 and provide access to commercial sites on the north and along Old US-23. A bank/credit union building is shown with access from the most northern entrance drive off Old US-23. The internal roadway is the middle entrance drive. A hotel is shown at the southern end of the site, with access from Old US-23.

The plan shows five (5) conceptual outlots along the frontage of Highland Road The following businesses/uses are shown, as possible options: two (2) fast food restaurants each with drive-through service; one (1) multi-tenant building (sit-down restaurant and retail); one car wash; and one (1) automobile fueling station. Along Old US-23, a bank/credit union building with drive-through service and a hotel are shown as possible businesses.

The outlots shown are meant to be place holders for future businesses. The plan is not intended to be the final site plan for the commercial portion of the site. Other uses may be proposed once the project is further along in the PD process.

The multi-family/residential component of the PD occupies the central area of the site. A total of seven (7) residential apartment buildings are shown, with each building being three-stories. The first floor has a garage, and the second and third floors are apartments. Building type A has 22 apartment units; building type B was 18 apartment units; and building type C has 40 apartment units. A total of 168 apartment units are proposed.

Garage parking is included in each apartment building. Off-street parking is shown around each apartment building. Although not shown on the plans, the applicant has mentioned an interest in having carports as part of the project.

A clubhouse is to be integrated into one of the apartment buildings. An in-ground pool, pond, and walking path are shown in the center of the apartment complex.

Conceptual building elevations of the residential and commercial/retail buildings are provided. The architectural renderings show a mix of building materials however the materials are not identified.

All proposed uses in the commercial or residential areas of the PD must be compliant with those permitted under the GC-General Commercial zoning standards.

Section 3.1.18.E has specific requirements for information to be included within a planned development Concept Plan submittal. Given the size of the subject property (29.85 acres) and the scale of the proposed development (retail and residential buildings), the Planning Department feels the information provided in the submittal is sufficient to consider complete.

B. Proposed Density

Section 3.1.18.C. of the Zoning Ordinance states the residential density in a planned development shall be consistent with the density designation within the Township's Comprehensive Plan. The subject property is designated Special Planning Area (SPA) on the recently adopted 2021 Comprehensive Plan and FLUM Amendment.

The SPA designation for this site envisions a base density of up to four (4) dwellings per acre. Using the project area of 29.85 acres for density calculations and allowing a maximum density of four (4) dwellings per acre, a maximum of 120 dwelling units could be permitted.

Per Section 3.1.18.C.iv., the Planning Commission may agree to recommend up to a forty (40%) percent increase in dwellings on a site in recognition of outstanding attributes as listed in this section. The Township Board in its sole discretion shall have the ability to approve such density increase up to forty percent (40%) subsequent to an affirmative recommendation from the Planning Commission.

In this case if the planned development land area could accommodate up to 120 dwellings (29.85 total acres x 4 units per acre), in accordance with the Comprehensive Plan, the planned development plan could include up to 168 dwellings (120 + 48 additional dwellings) if a maximum bonus of 40% was awarded by the Planning Commission and Township Board. The PD plan shows 168 dwelling units and thus aligns with the maximum density if the bonus was granted.

The 2020-2021 Amended FLUM provides the following designations for properties adjacent to the subject site:

North: Commercial (north side of Highland Road)
South: Special Planning Area
East: Commercial (east side of Old US-23)
West: Commercial

C. Public Road Access
As noted previously, public access to the development is via Highland Road and Old US-23 which are public roads. Three (3) access points are provided from Old US-23 and two (2) access points from Highland Road. Approvals from the Michigan Department of Transportation (MDOT) and Livingston County Road Commission (LCRC) will be required as part of the Preliminary Site Plan review.

D. Traffic Generation
The applicant has not submitted a traffic impact analysis as part of the Concept Plan submittal; this is one of the requirements for Preliminary Site Plan submittal.

E. Internal Vehicular/Pedestrian Circulation
Internally the development is served by a system of access drives, providing circulation to the commercial and residential buildings. An east-west roadway runs through the site from Old US-23 to the private drive associated with the Cheryl Stockwell Academy and LAG (LaFontaine Automotive Group) Development. The internal roadway is accessed from the middle entrance drive on Old US-23, with a round-about near the western end of the roadway. Commercial businesses and residential buildings can be accessed from the roadway, with the exception of the bank/credit union building and hotel. Those businesses are accessed directly from Old US-23.

The existing sidewalk along Highland Road is shown. A proposed sidewalk is shown along the frontage of Old US-23, which ends at the hotel site. Internally, sidewalks are shown along the southern side of the roadway, around the round-about, and within the residential areas. Two (2) sidewalks are shown (one with crosswalk striping) that connect from the residential area to the commercial sites on Highland Road.

F. Utilities
The applicant will need to work with the Livingston County Drain Commissioner's office on public water and sanitary sewer. They will also need to work with the Hartland Township Public Works Department to acquire the necessary Residential Equivalent Units (REU)'s for this development.

G. Design Details
A Pattern Book with specific design details was not submitted with the Concept Plan, although conceptual elevation drawings for the commercial and residential buildings were submitted. For a project such as this, additional design details should be provided as part of the Preliminary Site Plan application, such as detailed plans for all commercial and residential buildings, building material options (products, colors, percentage of materials), landscaping, streetlights (if proposed), entry feature, common space amenities, etc.

Minimum design details are outlined in Section 3.1.18.C. and include minimum yard requirements and distance between buildings.

H. Open Space
Section 3.1.18.C requires a Planned Development to include open space; at a minimum that open space should meet the requirements of the site's previous zoning district. Historically in other mixed use or residential planned developments, the following formula was applied: a minimum of 25% (of total area of

site) should be provided as open space, and of that 25%, 10% must be usable open space. An Open Space plan was not provided but will be required as part of the Preliminary Site Plan submittal.

The Open Space plan should show open space areas (open space and usable open space) and provide information on the size of each category of open space, percentage of open space (for each category), and a summary of what amenities are offered.

I. Landscaping
The site plan shows some general landscaping, but a landscape plan was not submitted. The Preliminary Site Plan will be reviewed for compliance with the landscaping/screening requirements of a planned development and applicable sections of the Landscaping Ordinance (Section 5.11).

J. Exterior Lighting
No exterior lighting plan was provided as part of the Concept Plan. The Preliminary Site Plan and/or pattern book should include the design and location of streetlights if proposed.

Recognizable Benefits
One of the eligibility criteria for a planned development is that it "shall result in a recognizable and substantial benefit to the ultimate users of the project and to the community and shall result in a higher quality of development than could be achieved under conventional zoning." It is not clear based on the Concept Plan whether the proposed development satisfies these criteria. It will be ultimately up to the applicant, Planning Commission, and Township Board to come to an agreement on the extent to which a recognizable benefit shall be provided for the proposed development.

Other
The Preliminary Site Plan will include significantly more detail with respect to design and engineering, landscaping, lighting, traffic impacts, wetland determinations, common space features, etc. It would be in the Applicant's best interest to provide a summary of design details (entryway feature, landscaping, amenities, common area features, etc.) as part of the Preliminary Site Plan.

Hartland Township DPW Review
Comments from the Township DPW Director are summarized in the letter dated January 18, 2023.

Hartland Township Engineer's Review (SDA)
Comments from the Township Engineer (SDA) are summarized in the review letter dated November 27, 2022.

Hartland Deerfield Fire Authority Review
No comments at this time.

Attachments:
1. PD Concept Plans dated 12.07.2022 – *PDF version*
2. PD Concept Amenities 01.26.2023 – *PDF version*
3. PD Concept Elevations Floor Plans 01.26.2023 – *PDF version*
4. Hartland Township DPW review letter dated 01.18.2023 – *PDF version*
5. Township Engineer (SDA) review letter dated 11.27.2022 – *PDF version*
6. Applicant's Summary dated 12.07.2022 – *PDF version*

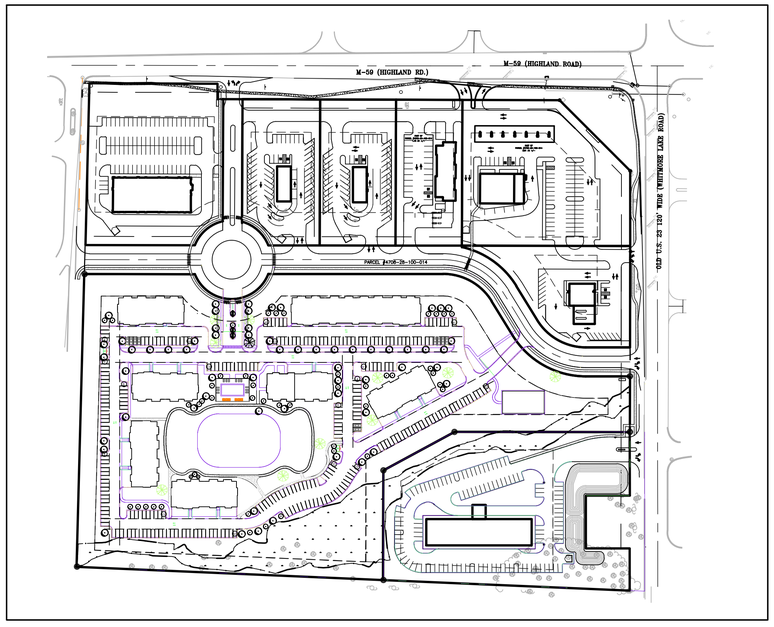
CONCEPTUAL REVIEW DRAWING SET
FOR
M-59 / OLD US-23 PLANNED DEVELOPMENT
PART OF THE NORTHWEST QUARTER, SECTION 28
HARTLAND TOWNSHIP, LIVINGSTON COUNTY, MI

LOCATION MAP
NO SCALE

PROPERTY DESCRIPTION:

PROPERTY DESCRIPTION AS SUPPLIED BY LIVINGSTON COUNTY GIS 12/06/22:

Parcel # 4708-28-100-014
SEC 28 T3N R6E COMM AT NW COR, S 02*W 48.23 FT FOR POB, TH S 89*E 725.37 FT, S 15 FT, S 89*E 506.65 FT, S 920.19 FT, N 89*W 100 FT, S 120 FT, S 89*E 100 FT, S 96.27 FT, N 86*W 1260.75 FT, N 02*E 1101.77 FT TO POB, EXC THAT PART LYING N OF A LINE COMM AT NW COR S 2*E 3.40 FT, N 86*E 1290.90 FT TO POB, TH S 3*E 300 FT, N 48*W 424.75 FT, N 86*E TO BEG, ALSO EXC LYING N OF A LINE COMM AT NW TH S 2*E 3.40 FT, N 86*E 290.90 FT TO POB, TH S 3*E 80 FT, N 86*E TO C.V. COR, DESC ABOVE, 29.85AC M/L, FROM 28-100-012



OVERALL SITE MAP
NO SCALE

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	NATURAL FEATURES PLAN
3	ZONING DESIGNATIONS
4	CONCEPTUAL LAND USE PLAN
SHEET NO.	DRAWINGS BY KRIEGER KLATT ARCHITECTS, INC.
C.101	CONCEPT RENDERINGS

INDEMNIFICATION STATEMENT

THE CONTRACTOR SHALL HOLD HARMLESS THE DESIGN PROFESSIONAL, MUNICIPALITY, COUNTY, STATE AND ALL OF ITS SUB CONSULTANTS, PUBLIC AND PRIVATE UTILITY COMPANIES, AND LANDOWNERS FOR DAMAGES TO INDIVIDUALS AND PROPERTY, REAL OR OTHERWISE, DUE TO THE OPERATIONS OF THE CONTRACTOR AND/OR THEIR SUBCONTRACTORS.

PROJECT TEAM:

KRIEGER KLATT ARCHITECTS, INC.
2120 EAST ELEVEN ROAD
ROYAL OAK, MI 48067
CONTACT: JEFF KLATT, A.I.A.
248-414-9270

MARK KASSAB, CONSULTANT
M. SHAPIRO REAL ESTATE GROUP
31550 NORTHWESTERN HWY., SUITE 220
FARMINGTON HILLS, MI 48334
248-865-0066

BURT KASSAB, ATTORNEY
KULLEN & KASSAB
31000 NORTHWESTERN HWY., SUITE 100
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248-538-2200

PREPARED FOR:

USA 2 GO QUICK STORES
29592 WIXOM ROAD
WIXOM, MI 48393
CONTACT: KEVIN BAHNAM
248-767-5337

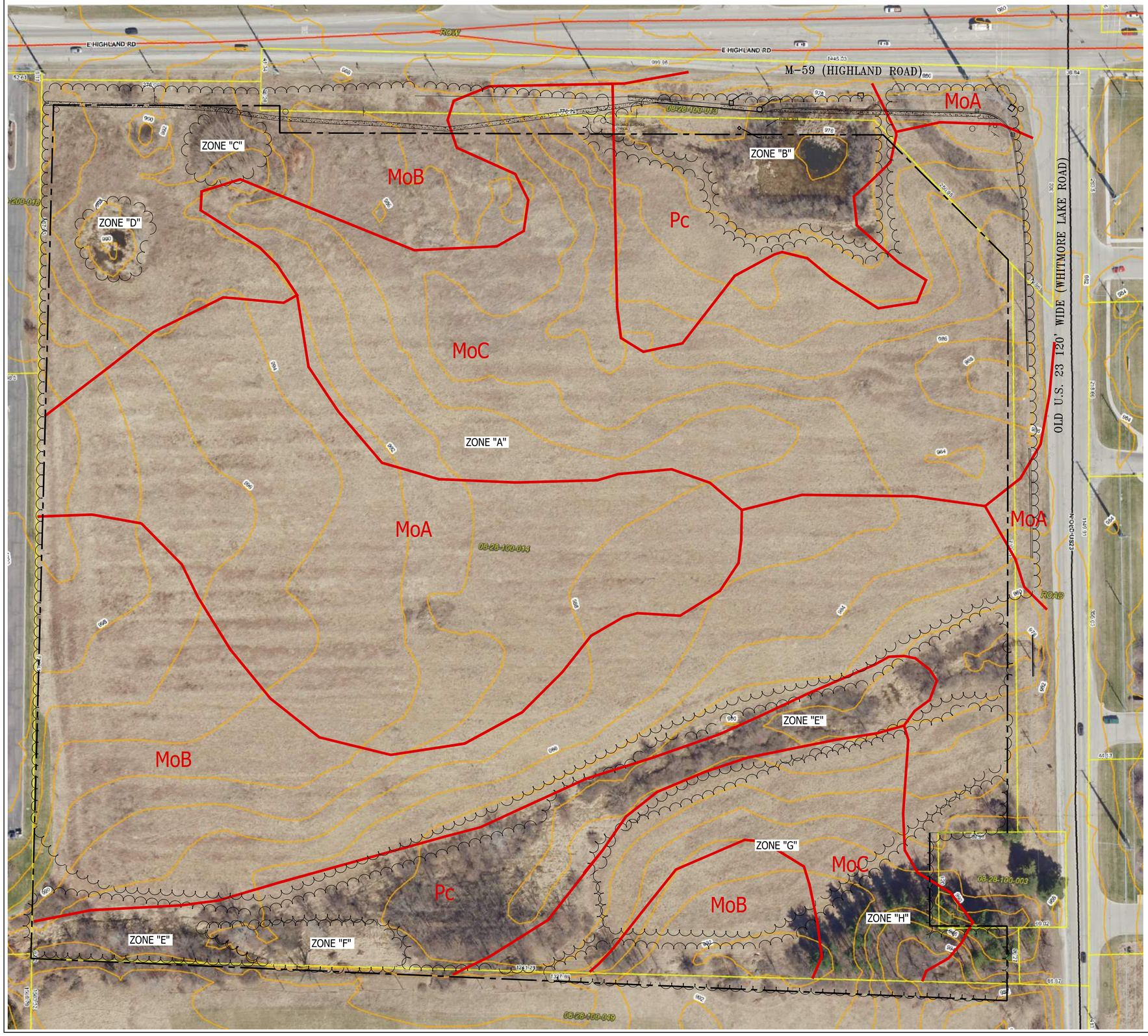
PREPARED BY:

BEBOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

FOR SITE PLAN APPROVAL ONLY!
NOT FOR CONSTRUCTION

NO	BY	CK	REVISION	DATE

1
ISSUE DATE: 12/07/22
JOB NO: 21-461-2



N

SCALE: 1 INCH = 50 FEET

LEGEND

PROPOSED (PR)	EXISTING (EX)	
900	900	CONTOUR
T/C XXX.XX	922.08	SPOT ELEVATION
FF	FF	FINISHED FLOOR ELEVATION
FG	FG	FINISHED GRADE ELEVATION
T/A	T/A	TOP OF ASPHALT
T/C	T/C	TOP OF CURB / CONCRETE
T/W	T/W	TOP OF WALK
F/L	F/L	FLOW LINE
T/P	T/P	TOP OF PIPE
B/P	B/P	BOTTOM OF PIPE
RIM	RIM	RIM ELEVATION
INV	INV	INVERT ELEVATION
MH	MH	MANHOLE STRUCTURE
IN	IN	INLET STRUCTURE
CB	CB	CATCHBASIN STRUCTURE
RY	RY	REARYARD STRUCTURE
ES	ES	END-SECTION
GV	GV	GATEVALVE STRUCTURE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER
SL	SL	SANITARY LEAD
FM	FM	FORCE MAIN
PS	PS	PRESSURE SEWER
ST	ST	STORM SEWER
WM	WM	WATER MAIN
WL	WL	WATER LEAD
FO	FO	FIBER OPTIC
OH	OH	OVERHEAD WIRE
C	C	CABLE
E	E	ELECTRIC
G	G	GAS
T	T	TELEPHONE
X	X	FENCE
		SILT FENCE
		WETLAND BOUNDARY
		LIMITS OF GRADING/CLEARING
		MANHOLE
		INLET / CATCHBASIN
		FLARED END-SECTION
		GATE VALVE
		HYDRANT
		UTILITY POLE
		SIGN
TBR	NFV	NOT FIELD VERIFIED TO BE REMOVED
SAN #1		SANITARY SEWER LABEL
STR 01		STORM SEWER LABEL
GV 12		WATER MAIN LABEL
547		SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
		CONCRETE
		ASPHALT
		MODIFIED CURB

SOIL NOTES:

THE PROJECT SITE IS COMPRISED OF THE FOLLOWING SOIL TYPE ACCORDING TO THE USDA NATURAL RESOURCES CONSERVATION SERVICE:

MoA -- MIAMI LOAM, 0 TO 2 % SLOPES
MoB -- MIAMI LOAM, 2 TO 6 % SLOPES
MoC -- MIAMI LOAM, 6 TO 12 % SLOPES
Pc -- PEWAMO CLAY LOAM

NATURAL FEATURES NARRATIVE:

SEVERAL NATURAL FEATURES WERE IDENTIFIED DURING AN ON-SITE VISIT TO THE PROPERTY ON JUNE 14, 2022 THAT INCLUDE WETLAND AND WOODLAND STANDS. SLOPES VARY ACROSS THE SITE WITH HIGHER GRADES AT THE MIDDLE OF THE WEST PROPERTY LINE. GRADES SLOPE DOWN FROM THERE TOWARDS A COPSE OF HONEY LOCUST TO THE NORTH, A DETENTION BASIN TO THE NORTHEAST AND A DRAIN AND WETLAND TO THE SOUTH. THE GRADE FROM TO THE EAST IS GRADUAL AT 1.5%. BELOW IS A BRIEF DESCRIPTION OF EACH NATURAL FEATURE LABELED AS ZONES "A-H", ALTHOUGH THE TOTAL SITE IS MEASURED AT 29.88 ACRES, THE ZONES DESCRIBED BELOW ARE APPROXIMATELY 31.2 ACRES WHEN ADDED TOGETHER. NOTE THAT EACH ZONE IS MEASURED TO AN APPROXIMATE SIZE.

ZONE "A"
APPROXIMATELY 24.14 ACRES OF THIS PARCEL IS COVERED BY GRASSES AND FORBS INCLUDING MILKWEED, POISON IVY, OXEYE DAISY, CANADA AND LATE GOLDENROD, CREEPING THISTLE AND RUSH SPP. THIS ZONE IS COMPOSED OF MIAMI LOAM AND PEWAMO CLAY LOAM WITH VARIABLE SLOPES UP TO 16%.

ZONE "B"
AT APPROXIMATELY 1.0 ACRES IN SIZE, THIS ZONE IS COMPOSED OF PEWAMO CLAY LOAM WHICH, ACCORDING TO THE USDA NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY, HAS A HYDRIC RATING OF 97%. ACCORDINGLY, THIS AREA CONTAINS AN EXISTING DETENTION BASIN. THE NATIONAL WETLANDS INVENTORY CLASSIFIES THE 0.50 ACRE BASIN AREA AS A FRESHWATER EMERGENT WETLAND/HABITAT. A MIX OF TREE AND SHRUB SPECIES SURROUND THE BASIN INCLUDING GREEN ASH, HONEY LOCUST, COTTONWOOD IN SIZES RANGING FROM SAPLING TO 10". PLANTS TYPICALLY FOUND AMONG WETLAND AREAS LIKE BROAD-LEAVED CATTAIL, BLACK WILLOW, HORSETAIL AND RED OSIER DOGWOOD ALSO SURROUND OR ARE WITHIN THE BASIN. PLANTS THEN TRANSITION TO UPLAND PLANTS SUCH AS BIRDFOOT TREFOIL, SUMAC AND BLACKBERRY.

ZONE "C"
ZONE "C" IS A SMALL WOODLAND POCKET APPROXIMATELY 0.16 ACRES IN SIZE COMPOSED OF HONEY LOCUST, SUMAC, CRANBERRYBUSH VIBURNUM AND WALNUT. THIS POCKET IS IN A LOWER AREA AT THE NORTHWEST CORNER OF THE SITE AND CONTAINS MIAMI LOAM WITH 2 TO 6 % SLOPES.

ZONE "D"
ZONE "D" IS A SMALL WETLAND APPROXIMATELY 0.15 ACRES IN SIZE AND SURROUNDED BY CANADA GOLDENROD. VEGETATION WITHIN THE WETLAND AREA INCLUDE CATTAILS, GRAY DOGWOOD, WILLOW AND HONEYSUCKLE. THE SOIL HERE IS MIAMI LOAM WITH 2 TO 6 % SLOPES.

ZONE "E"
ZONE "E" IS A DITCH CROSSING FROM SOUTHWEST TO EAST DIAGONAL ACROSS THE LOWER PORTION OF THE SITE AND IS CLASSIFIED BY THE NATIONAL WETLANDS INVENTORY AS RIVERINE HABITAT EXCAVATED BY HUMANS . SOIL IN THIS AREA IS PEWAMO CLAY LOAM AND WAS DRY AT THE TIME OF THE FIELD VISIT. TREES AND SHRUBS BORDERING THE NORTH AND SOUTH SIDES OF THE DITCH INCLUDE BOXELDER, AMUR MAPLE, RIVERBANK GRAPE, REED CANARY GRASS AND GRAY DOGWOOD. THIS DITCH WAS OBSERVED DRY AT THE TIME OF ASSESSMENT. APPROXIMATELY 2.5 AC.

ZONE "F"
ZONE "F" IS A WETLAND AT THE SOUTH END OF THE DITCH THAT CROSSES THE SITE IN ZONE "E". SOILS ARE PEWAMO CLAY LOAM AND SLOPE FROM THE SOUTHWEST IN ZONE "E". SURFACE WATER AND WATER-STAINED LEAVES WERE OBSERVED ON SITE ON DAY OF FIELD VISIT. APPROXIMATELY 0.25 AC.

ZONE "G"
ZONE "G" IS ANOTHER AREA OF GRASSES AND FORBS POPULATED WITH PLANTS MUCH LIKE ZONE "A" ON 2-16% SLOPES OF MIAMI LOAM. APPROXIMATELY 1.73 AC.

ZONE "H"
ZONE "H" CONSISTS OF MIAMI LOAM WITH 6-12% SLOPES AND FEATURES A WOODED AREA WITH LARGE BLACK CHERRY TREES RANGING IN SIZE FROM 16" TO 22" D.B.H., AND NORTHERN WHITE PINES AND RED PINES 35' TO 50' TALL. AMUR MAPLE, TARTARIAN AND MORROW'S HONEYSUCKLE AND MULTIFLORA ROSE BORDER THE UPLAND AREA TO THE NORTH OF THE WOODS. APPROXIMATELY 1.10 AC.

THE LOCATION AND ELEVATION OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE PLANS ARE NOT GUARANTEED TO BE ACCURATE OR COMPLETE AND NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE FOR HIMSELF THE EXACT LOCATION AND ELEVATION OF EXISTING UTILITIES AND PROPOSED UTILITIES SHOWN ON THESE PLANS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF ANY CONFLICTS ARE FOUND TO EXIST BETWEEN THE PLANS AND THE LOCATION OR DEPTH OF UTILITIES AS SHOWN ON THE PLANS. IF THE LOCATION OR DEPTH DIFFERS SIGNIFICANTLY FROM THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY.

3 WORKING DAYS
BEFORE YOU DIG
1-800-482-7171
MISS DIG

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: 30 ACRE PLANNED DEVELOPMENT
USA 2 GO QUICK STORES
2597 WIXOM ROAD
WIXOM, MI. 48393
248-767-5337

PREPARED FOR:

TITLE: NATURAL FEATURES PLAN

NO	BY	REVISION PER	DATE
		-	-

DESIGNED BY: JA
DRAWN BY: JA
CHECKED BY: BL
SCALE: 1" = 80'
JOB NO: 21-461-2
DATE: 12/07/2022
SHEET NO. 2

N

LEGEND

PROPOSED (PR)	EXISTING (EX)	
900	900	CONTOUR
T/C XXX.XX	+ 922.08	SPOT ELEVATION
FF	FF	FINISHED FLOOR ELEVATION
FG	FG	FINISHED GRADE ELEVATION
T/A	T/A	TOP OF ASPHALT
T/C	T/C	TOP OF CURB / CONCRETE
T/W	T/W	TOP OF WALK
F/L	F/L	FLOW LINE
T/P	T/P	TOP OF PIPE
B/P	B/P	BOTTOM OF PIPE
RIM	RIM	RIM ELEVATION
INV	INV	INVERT ELEVATION
MH	MH	MANHOLE STRUCTURE
IN	IN	INLET STRUCTURE
CB	CB	CATCHBASIN STRUCTURE
RY	RY	REARYARD STRUCTURE
ES	ES	END–SECTION
GV	GV	GATEVALVE STRUCTURE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER
SL	SL	SANITARY LEAD
FM	FM	FORCE MAIN
PS	PS	PRESSURE SEWER
ST	ST	STORM SEWER
WM	WM	WATER MAIN
WL	WL	WATER LEAD
FO	FO	FIBER OPTIC
OH	OH	OVERHEAD WIRE
C	C	CABLE
E	E	ELECTRIC
G	G	GAS
T	T	TELEPHONE
X	X	FENCE
		SILT FENCE
		WETLAND BOUNDARY
		LIMITS OF GRADING/CLEARING
		MANHOLE
		INLET / CATCHBASIN
		FLARED END–SECTION
		GATE VALVE
		HYDRANT
		UTILITY POLE
		SIGN
	NFV	NOT FIELD VERIFIED
TBR		TO BE REMOVED
SAN #1		SANITARY SEWER LABEL
CB 01		STORM SEWER LABEL
GV 12		WATER MAIN LABEL
54T		SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
		CONCRETE
		ASPHALT
		MODIFIED CURB

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3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
(TOLL FREE)
FOR THE LOCATION OF UNDERGROUND FACILITIES

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT
30 ACRE PLANNED DEVELOPMENT

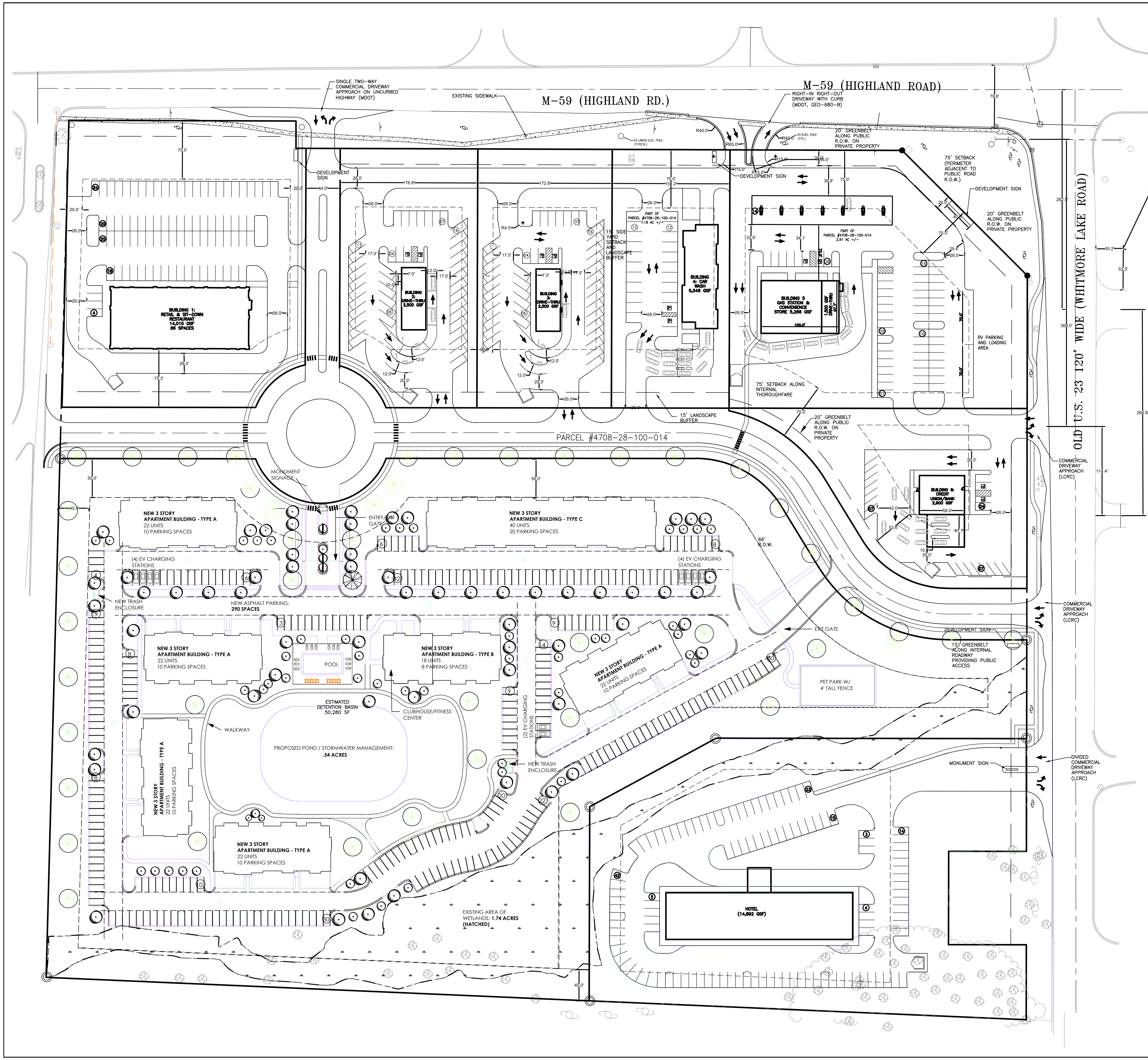
PREPARED FOR
USA 2 GO QUICK STORES
29592 WIXOM ROAD
WIXOM, MI 48393
248-767-5337

TITLE
EXISTING ZONING DESIGNATIONS WITHIN 1/4 MILE

NO	BY	REVISION PER	DATE
–	–	–	–

DESIGNED BY: JA
DRAWN BY: JA
CHECKED BY: BL
SCALE: NTS
JOB NO: 21–461–2
DATE: 12/07/2022
SHEET NO. 3

BOSS Engineering



LEGEND

PROPOSED (PR) — EXISTING (EX)

PROPOSED	EXISTING	
900	900	CONTOUR
	× 922.08	SPOT ELEVATION
FF	FF	FINISHED FLOOR ELEVATION
FG	FG	FINISHED GRADE ELEVATION
T/A	T/A	TOP OF ASPHALT
T/C	T/C	TOP OF CURB / CONCRETE
T/W	T/W	TOP OF WALK
F/L	F/L	FLOW LINE
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RIM	RIM	RIM ELEVATION
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MH	MH	MANHOLE STRUCTURE
IN	IN	INLET STRUCTURE
CB	CB	CATCHBASIN STRUCTURE
RY	RY	REARYARD STRUCTURE
ES	ES	END-SECTION
GV	GV	GATEVALVE STRUCTURE
HY	HY	HYDRANT
UP	UP	UTILITY POLE
SN	SN	SANITARY SEWER
SL	SL	SANITARY LEAD
FM	FM	FORCE MAIN
PS	PS	PRESSURE SEWER
ST	ST	STORM SEWER
WM	WM	WATER MAIN
WL	WL	WATER LEAD
FO	FO	FIBER OPTIC
OH	OH	OVERHEAD WIRE
C	C	CABLE
E	E	ELECTRIC
G	G	GAS
T	T	TELEPHONE
X	X	FENCE
		SILT FENCE
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		GATE VALVE
		HYDRANT
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		SIGN
	NFV	NOT FIELD VERIFIED
TBR		TO BE REMOVED
		SANITARY SEWER LABEL
		STORM SEWER LABEL
GV 12		WATER MAIN LABEL
		SOIL EROSION CONTROL MEASURE (P=PERMANENT, T=TEMPORARY)
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3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171

SITE DATA

PARCEL # 4708-28-100-014
0 E HIGHLAND RD
HARTLAND TOWNSHIP
29.88 AC +/-

PROPOSED ZONING: PD (PLANNED DEVELOPMENT)
UNDERLYING ZONING: GENERAL COMMERCIAL (GC)

PROPOSED USES:
AUTO FUELING STATION & CONVENIENCE STORE/CARRYOUT DRIVE-THRU 113,986 SF (2.62 AC +/-)
PROPOSED AUTO WASH 50,223 SF (1.15 AC +/-)
PROPOSED FAST FOOD DRIVE-THROUGH (BLDG 3) 57,542 SF (1.32 AC +/-)
PROPOSED FAST FOOD DRIVE-THROUGH (BLDG 2) 56,727 SF (1.30 AC +/-)
PROPOSED RETAIL 110,923 SF (2.55 AC +/-)
PROPOSED BANKING INSTITUTION 55,036 SF (1.26 AC +/-)
PROPOSED HOTEL 177,026 SF (4.06 AC +/-)
PROPOSED MULTI-FAMILY HOUSING 620,754 SF (14.2 AC +/-)

SETBACK INFORMATION:	RESIDENTIAL, NON-RESIDENTIAL	RESIDENTIAL/NON-RESIDENTIAL
1. ADJACENT TO PUBLIC ROAD:	50 FT, 75 FT	PROPOSED: 50 FT, 75 FT
2. ALONG PERIMETER NOT PUBLIC ROAD:	40 FT, 40 FT	PROPOSED: 40 FT, 40 FT
3. ALONG INTERNAL COLLECTOR OR LOCAL ROAD:	40 FT, 50 FT	PROPOSED: 40 FT, 50 FT
4. ALONG AN INTERNAL THOROUGHFARE ROAD:	50 FT, 75 FT	PROPOSED: 50 FT, 75 FT
5. BTWN PARKING LOT & PROP LINE & ADJACENT RD:	40 FT, 20 FT	PROPOSED: 40 FT, 20 FT
6. BTWN PARKING LOT & PROP LINE BUT NOT ADJACENT TO RD:	50 FT, 20 FT	PROPOSED: 50 FT, 20 FT

MIN SETBACKS FOR GAS STATION
PUMP ISLANDS 40 FT FROM ROW/LOT LINE
TANKS, PROPANE, AND PETROLEUM PRODUCTS 15 FT FROM LOT LINE
OVERHEAD CANOPIES 20 FT FROM ROW
PROPOSED CLEARANCE TO BE NOTED ON SITE PLAN

NUMBER OF PARKING SPACES REQUIRED FOR EACH COMMERCIAL BUILDING USE (PARKING SPACE DIMENSIONS 10' x 20', AISLE WIDTH = 24'):

BUILDING 1 (14,015 GSF) -- TOTAL 86 SPACES REQUIRED, 86 SPACES PROVIDED
RETAIL STORES (9,015 SF) = 1 SPACE FOR EACH 300 SFGFA
9,015 / 300 = 30 SPACES REQUIRED

RESTAURANT, FAMILY SIT-DOWN (5,000 SF) = 14 SPACES PER 1,000 SF USEABLE FLOOR AREA OR 0.5 SPACES PER SEAT PLUS ANY SPACES REQUIRED FOR BANQUET OR MEETING ROOMS.
5,000 x 80% = 4,000 SF / 1000 = 4 x 14 = 56 SPACES REQUIRED

BUILDING 2 (2,500 GSF) -- TOTAL 50 SPACES REQUIRED, 44 SPACES PROVIDED
FAST FOOD WITH DRIVE-THROUGH = 22 SPACES PER 1,000 SF OF USEABLE FLOOR AREA PLUS SPACES FOR EMPLOYEES AT PEAK SHIFT, PLUS 10 STACKING
2,500 x 80% = 2,000 SF USEABLE FLOOR AREA / 1.000 = 2 x 22 = 44 SPACES PLUS 6 SPACES FOR EMPLOYEES

BUILDING 3 (2,500 GSF) -- TOTAL 50 SPACES REQUIRED, 44 SPACES PROVIDED
FAST FOOD WITH DRIVE-THROUGH = 22 SPACES PER 1,000 SF OF USEABLE FLOOR AREA PLUS SPACES FOR EMPLOYEES AT PEAK SHIFT, PLUS 10 STACKING
2,500 x 80% = 2,000 SF USEABLE FLOOR AREA / 1.000 = 2 x 22 = 44 SPACES PLUS 6 SPACES FOR EMPLOYEES

BUILDING 4 (5,546 GSF) -- TOTAL 6 SPACES PLUS 12 STACKING REQUIRED, 24 SPACES PLUS 12 STACKING PROVIDED
AUTO WASH, AUTO RECONDITIONING, AUTO CLEANING = 2 SPACES, PLUS 1 DESIGNATED SPACE PER EACH EMPLOYEE ON PEAK SHIFT (4 EMPLOYEES), PLUS 12 STACKING SPACES PER BAY FOR A FULLY AUTOMATIC CAR WASH.

BUILDING 5 (6,766 GSF) -- TOTAL 42 SPACES REQ'D, 56 SPACES PROVIDED + 10 STACKING, 14 PUMP SPACES , 2 LARGE SPACES
FUELING & CONVENIENCE STATIONS (5,266 GFA) = 2 SPACES PER EACH PUMP (14), PLUS 1 PER EACH 200 GFA DEVOTED TO RETAIL (5,266/200 = 26), PLUS 1 PER EACH EMPLOYEE (4)

DRIVE-THRU = 10 STACKING SPACES (5 OF WHICH MUST BE IN ADVANCE OF ORDER STATION AND WHICH DO NOT CONFLICT WITH ACCESS TO REQUIRED PARKING SPACES)

CARRY-OUT RESTAURANT (1,500 GFA) = (6) SPACES PLUS 1 PER EACH EMPLOYEE (6)

BUILDING 6 (2,900 GSF) -- TOTAL 19 SPACES REQ'D, 18 SPACES PROVIDED + 12 STACKING SPACES
BANKS, SAVINGS & LOAN OFFICES = 1 FOR EACH 200 SFGFA PLUS 2 SPACES FOR EACH 24 HOUR TELLER, PLUS 4 STACKING SPACES FOR EACH DRIVE THROUGH WINDOW.
2,900 GSF / 200 = 14.5 SPACES PLUS 2 x 2 ATM = 18.5 SPACES PLUS
4 SPACES x 3 DRIVE-THROUGH WINDOWS = 12 STACKING SPACES

BUILDING 7 (14,892 GSF) -- TOTAL 106 SPACES PROVIDED
HOTEL = ONE (1) FOR EACH ONE (1) OCCUPANCY UNIT PLUS ONE (1) FOR EACH ONE (1) EMPLOYEE, PLUS EXTRA SPACES FOR DINING ROOMS, BALLROOMS, OR MEETING ROOMS BASED UPON ONE SPACE FOR EVERY TWO OCCUPANTS BASED ON MAXIMUM OCCUPANCY LOAD. TYPICAL STANDARD ROOM IS 400 SF. 25% OF HOTEL SPACE DEDICATED TO COMMON AREAS

PROPOSED MULTI-FAMILY RESIDENTIAL USE:
LOT AREA: 620,754 SQ. FT. 14.2 ACRES
MAXIMUM LOT COVERAGE ALLOWED: N/A

LOT COVERAGE (FOOTPRINTS)
- SQ. FT.

HEIGHT
MAXIMUM BUILDING HEIGHT: 35.00'
- PROPOSED 40.00'

PARKING INFORMATION: 5.8.4.H
REQUIRED SPACES
(2) SPACE PER DWELLING UNIT
(1) ADDITIONAL SPACE PER (4) DWELLING UNITS

168 UNITS X 2 SPACES = 336 PARKING SPACES
168 UNITS / 4 DWELLING UNITS = 42 PARKING SPACES
336 + 42 = 378 PARKING SPACES REQUIRED

PROVIDED PARKING SPACES
OFF STREET PARKING:
(78) ENCLOSED PARKING SPACES PROVIDED
(278) OFF-STREET PARKING SPACES PROVIDED
(356) TOTAL SPACES PROVIDED

UNIT SCHEDULE: 168 TOTAL UNITS
TYPE A:
(14) ONE BEDROOM UNITS / PER BUILDING
(6) TWO BEDROOM UNITS / PER BUILDING
(22) TOTAL UNITS PER BUILDING
(22) UNITS X (5) TYPE A BUILDING = (110) UNITS

TYPE B:
(14) ONE BEDROOM UNITS / PER BUILDING
(5) TWO BEDROOM UNITS / PER BUILDING
(19) TOTAL UNITS PER BUILDING
(19) UNITS X (1) TYPE B BUILDING = (19) UNITS

TYPE C:
(28) ONE BEDROOM UNITS / PER BUILDING
(12) TWO BEDROOM UNITS / PER BUILDING
(40) TOTAL UNITS PER BUILDING
(40) UNITS X (1) TYPE C BUILDING = (40) UNITS

BOSS Engineering
Engineers Surveyors Planners Landscape Architects
3121 E. GRAND RIVER AVE.
HOWELL, MI. 48843
517.546.4836 FAX 517.548.1670

PROJECT: 30 ACRE PLANNED DEVELOPMENT

PREPARED FOR: USA 2 GO QUICK STORES
29592 WIXOM ROAD
WIXOM, MI 48393
248-767-5337

TITLE: CONCEPTUAL LAND USE PLAN

NO	BY	REVISION PER	DATE
-	-	-	-

DESIGNED BY: BL/JA
DRAWN BY: JA
CHECKED BY: BL
SCALE: 1" = 60'
JOB NO: 21-461-2
DATE: 12/07/2022
SHEET NO. 4

G:\21-461\DWG\SP\21-461-2 Res and Comm Combo.dwg, 12/7/2022 1:49:59 PM, AutoCAD PDF (Smallest File).pc3

Aerial View Towards North

Scale: N.T.S.

Aerial View Towards Northeast

Scale: N.T.S.

Aerial View Towards Southwest

Scale: N.T.S.

Aerial View of Clubhouse & Wetland

Scale: N.T.S.

krieger klatt ARCHITECTS
architecture interiors consulting
1412 E. 11 Mile Rd. | Royal Oak, MI 48067
P: 248.414.9270 F: 248.414.9275
www.kriegerklatt.com

Client:
Group 10 Management
29200 Northwest Hwy Suite 450
Southfield, MI 48034

Project:
Hartland Site Plan
M-59 & U.S. 23
Hartland Twp, MI

Issued	Description	By

PRELIMINARY NOT FOR CONSTRUCTION

Seal:

Note:
Do not scale drawings. Use calculated dimensions only. Verify existing conditions in field.

North Arrow:

Sheet Title:
Site Renderings

Project Number:
22-098

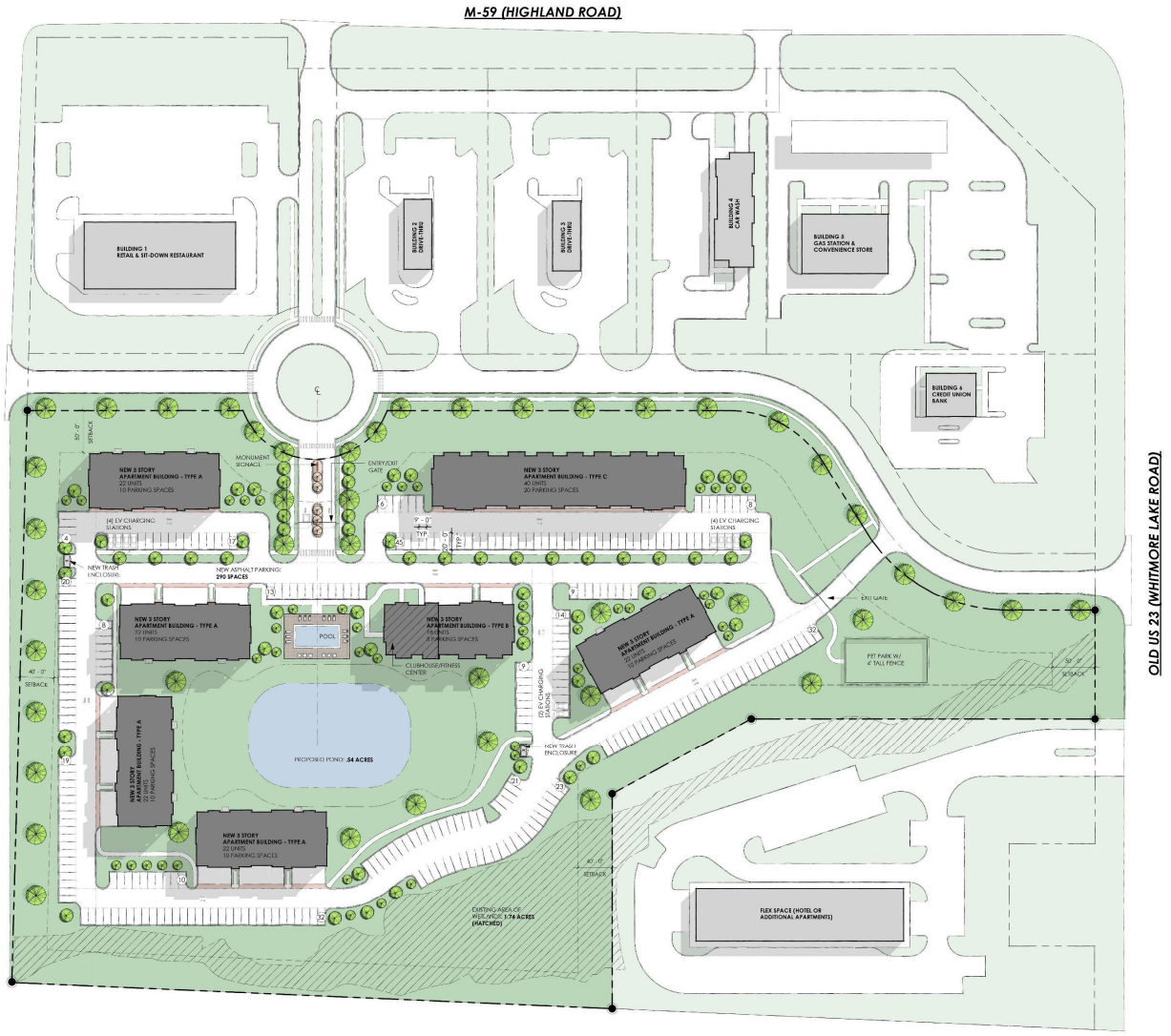
Sheet Number:
C.101

Hartland Twp. Development

Hartland Twp, Michigan

APARTMENT / AMENITIES
LOOK BOOK

KRIEGER KLATT
ARCHITECTS



Apartment Interiors

Clubhouse & Gymnasium

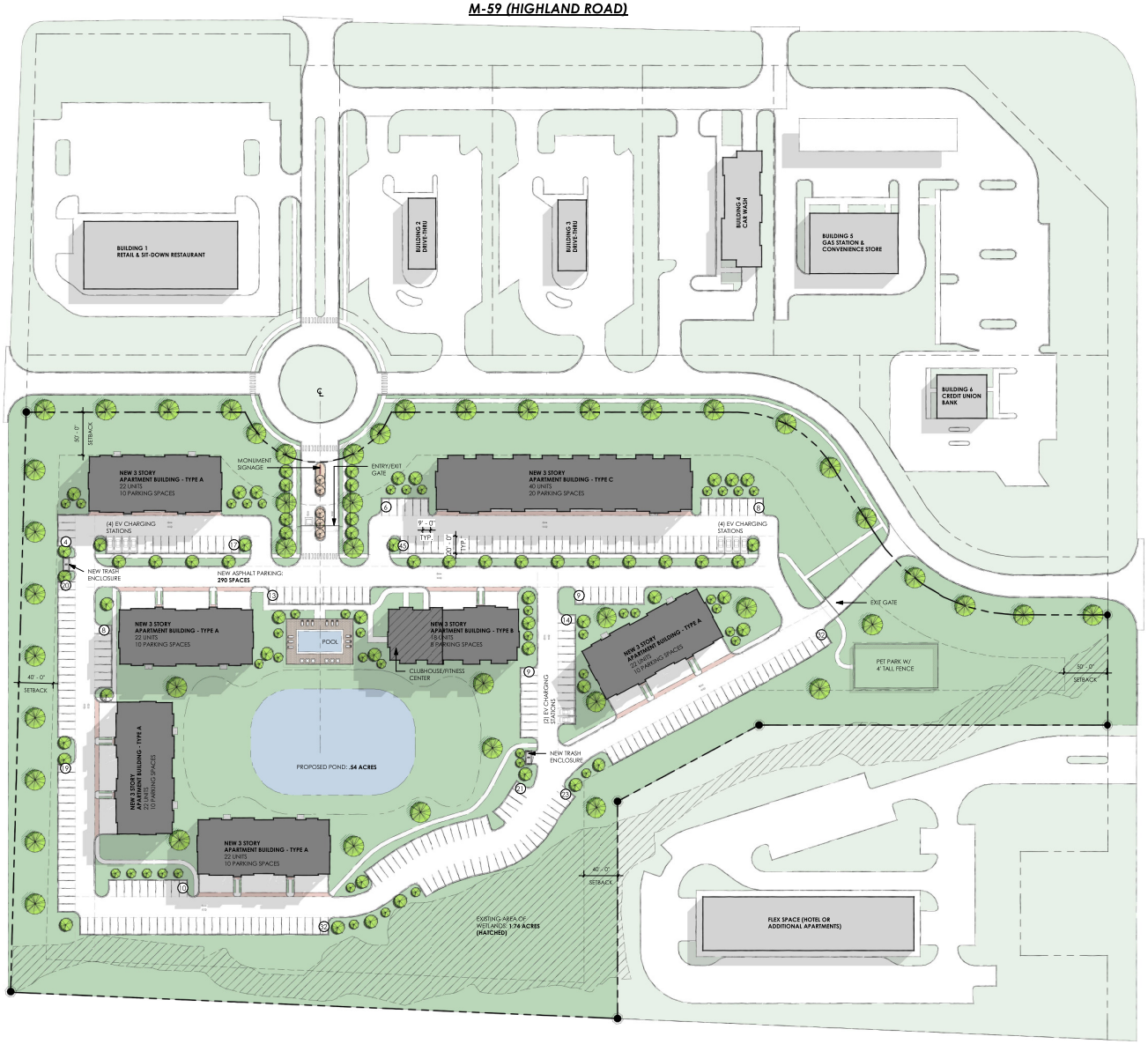
KRIEGER KLATT ARCHITECTS

Clubhouse & Gymnasium

Clubhouse & Gymnasium

Pool Area

Site Lighting, Trash Receptacles, and Seating



Architectural Site Plan

1" = 60'-0"

Zoning Information (Hartland Twp.)

Parcel Identification Number: 4708-28-100-014
Zoned: GC - General Commercial
Proposed Zoning: PD Planned Development
Lot Area: 620,754 SQ. FT. 14.2 Acres
Maximum Lot Coverage Allowed: N/A

Lot Coverage (Footprints)
- SQ. FT.

Height
Maximum Building Height: 35.00'
- Proposed 40.00'

Setback Information
1. Adjacent to Public Road: 50.00'
   Proposed: 50.00'
2. Along Perimeter Not Public Road: 40.00'
   Proposed: 40.00'
3. Along Internal Collector or Local Road: 40.00'
   Proposed: 40.00'
4. Along an Internal Thoroughfare Road: 50.00'
   Proposed: 50.00'
5. Between Parking Lot & Property Line & Adjacent Road: 40.00'
   Proposed: 40.00'
6. Between Parking Lot and Property Line but not Adjacent to Road: 50.00'
   Proposed: 50.00'

Parking Information: 5.8.4.H

Required Spaces
(2) Space per Dwelling Unit
(1) Additional Space per (4) Dwelling Units

168 Units X 2 Spaces = 336 Parking Spaces
168 Units / 4 Dwelling Units = 42 Parking Spaces
336 + 42 = **378 Parking Spaces Required**

Provided Spaces
Off Street Parking:
(78) Enclosed Parking Spaces Provided
(290) Off-Street Parking Spaces Provided
(368) Total Spaces Provided

Unit Schedule:

Type A:
(14) One Bedroom Units / per Building
(8) Two Bedroom Units / per Building
(22) Total Units per Building

(22) Units X (5) **Type A** Building = **(110) Units**

Type B:
(14) One Bedroom Units / per Building
(5) Two Bedroom Units / per Building
(19) Total Units per Building

(19) Units X (1) **Type B** Building = **(19) Units**

Type C:
(28) One Bedroom Units / per Building
(12) Two Bedroom Units / per Building
(40) Total Units per Building

(40) Units X (1) **Type C** Building = **(40) Units**

168 TOTAL UNITS

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architecture interiors consulting
1412 E. 11 Mile Rd. | Royal Oak, MI 48067
P: 248.414.9270 F: 248.414.9275
www.kriegerklatt.com

Client:
Group 10 Management
29200 Northwest Hwy Suite 450
Southfield, MI 48034

Project:
Hartland Site Plan
M-59 & U.S. 23
Hartland Twp, MI

Issued	Description	By
01.26.2023	Conceptual Review	

PRELIMINARY NOT FOR CONSTRUCTION

Seal:

Note:
Do not scale drawings. Use calculated dimensions only. Verify existing conditions in field.

North Arrow:

Sheet Title:
Site Plan

Project Number:
22-098

Sheet Number:
C.100

Aerial View Towards North

Scale: N.T.S.

Aerial View Towards Northeast

Scale: N.T.S.

Aerial View Towards Southwest

Scale: N.T.S.

Aerial View of Clubhouse & Wetland

Scale: N.T.S.

PRELIMINARY NOT FOR CONSTRUCTION

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Hartland Twp, MI

Issued	Description	By
01.26.2023	Conceptual Review	

Seal:

Note:
Do not scale drawings. Use calculated dimensions only. Verify existing conditions in field.

North Arrow:

Sheet Title:
Site Renderings

Project Number:
22-098

Sheet Number:
C.101

View Towards West @ Pond & Wetland

Scale: N.T.S.

View Towards Northwest @ Pond & Wetland

Scale: N.T.S.

View Towards Southeast

Scale: N.T.S.

View Towards Northeast @ Pool

Scale: N.T.S.

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ARCHITECTS
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Client:
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M-59 & U.S. 23
Hartland Twp. MI

Issued	Description	By
01.26.2023	Conceptual Review	

Seal:

Note:
Do not scale drawings. Use calculated dimensions only. Verify existing conditions in field.

North Arrow:

Sheet Title:
3D Renderings

Project Number:
22-098

Sheet Number:
C.102

PRELIMINARY NOT FOR CONSTRUCTION

First Floor Plan

3/32" = 1'-0"

Second - Third Floor Plan

3/32" = 1'-0"

UNIT MIX (STANDARD)			
UNIT TYPE	1 BEDROOM	2 BEDROOM	TOTAL
FIRST FLOOR	06	00	06
SECOND FLOOR	04	04	08
THIRD FLOOR	04	04	08
TOTAL	14	08	22
RATIO	82%	36%	100%

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Client:

Group 10 Management
29200 Northwest Hwy Suite 450
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Project:

Hartland Site Plan
M-59 & U.S. 23
Hartland Twp, MI

Issued	Description	By
01.26.2023	Conceptual Review	

PRELIMINARY NOT FOR CONSTRUCTION

Seal:

Note:

Do not scale drawings. Use calculated dimensions only. Verify existing conditions in field.

North Arrow:

Sheet Title:

Apartment Building - 22 Units

Project Number:

Project Number

Sheet Number:

A.100

DEPARTMENT OF PUBLIC WORKS

Michael Luce, Public Works Director
2655 Clark Road
Hartland MI 48353
Phone: (810) 632-7498

TO:	Planning Department
DATE:	1/18/2023
DEVELOPMENT NAME:	M59 Properties Mixed Use
PIN#:	
APPLICATION #:	SP/PD-C #23-001
REVIEW TYPE:	Concept Plan

Concept plans for this development depict a wide variety of uses and development. Currently there are 82 water REU's and 30.57 Sewer REU's owned on the property. With such a mixed use the REU calculations will vairy depending on the final site plan and total REU's needed for the development can be calculated with a final plan, but from what is depicted in the concept plan the REU allocations will be as follows.

- **Sit Down Restaurant = 2.5 per 1000 sq.ft. / Retail .15 per 1000 sq.ft.**
- **Drive through Fast Food = 7**
- **Car Wash = (Minimum) 85**
- **Gas Station = 1 per premise plus .15 per nozzle**
- **Credit Union / Bank = .40 per 1000 sq.ft.**
- **Multi Family Dwelling = .70 (2 bedroom) 1 (3 bedroom)**
- **Hotel = .20 per room (Bar/Restaurant/Pool) will require additional**

Hartland Township Public Works approves the M59 Properties Mixed Use concept plan subject to inclusion of the following details on the construction plans:

1. Sanitary sewer material and sizes and connection detail sheet
2. Monitoring manhole for sewer connection and location if required
3. Utility easements noted as public or private.
4. Approval of the Livingston County Drain Commission.
5. A capacity study may need to be preformed by the Livingston County Drain Commission.
6. Obtaining additional REU's needed

Please feel free to contact me with any further questions or comments regarding this matter.

Michael Luce
Public Works Director

November 17, 2022

Mr. Troy Langer
Planning Director
Hartland Township
2655 Clark Road
Hartland, Michigan 48353

Re: Concept Review for Planned Unit Development at SW Corner of M-59 and Old US 23
SD Job# HL22123

Dear Mr. Langer:

We have reviewed the concept plan for the above referenced project prepared by Boss Engineering, dated 10/28/2022 and received by our office on 11/14/2022. We offer the following comments to assist with the project:

A. General
1. The proposed mixed-use development site is located at an existing vacant lot south of Highland Road (M-59) and west side of N Old US 23 Hwy. The Parcel ID is 08-28-100-014 and the approximate area is 29.88 acres.
2. The proposed plan shows the current parcel being split into several sub-parcels of various sizes and land uses. Any lot splits or combinations need to be reviewed, executed, and recorded.

B. Water Main
1. Township records show that there is an existing 12-inch diameter water main along the southerly right-of-way (ROW) line of M-59 and along the westerly side of the N Old US Hwy 23 ROW extending approximately 500 feet south of M-59 where it then crosses N Old US Hwy 23 to the east side and continues south along the N Old US Hwy 23 ROW.
2. Multiple family residential and commercial developments are to have a minimum watermain diameter of 12 inches and there are several options for a proposed looped system to serve the new development.

C. Sanitary Sewer
1. Township records show that the site lies within the sanitary sewer service area. There is an existing 8-inch diameter sanitary sewer (flowing east) along the south side of the M-59 ROW and an existing 12-inch diameter sanitary sewer (flowing north) within an easement east of the N Old US Hwy 23 ROW. The capacity of the existing sewers, if used, will need to be sufficient to handle the proposed REU's produced by the proposed developments.
2. All sanitary sewer improvements will need to be reviewed and approved by Livingston County Drain Commissioner's (LCDC) office.

D. Storm Drainage
The site plan shows one proposed detention basin near the southwest corner of the site which it is assumed will capture all storm water drainage for the sub-parcels within the site development. A

stormwater control system and outlet will be required. The storm drainage system will be subject to the Township's review and approval and a storm drain agreement from the township will be required. Hartland Township follows the current version of the LCDC Detetion design Standards except where modified by the township engineering manual.

E. Site Paving

1. The site plan shows a private road, approximately 1,400 feet long and 30 ft wide between N. Old US Hwy 23 and the existing Charyl Stockwell Academy (CSA) private access road which is located just west of the site and connects to Highland Road (M-59). The developer will need to enter into a shared-use agreement with the CSA property owner to use their existing private road for access and egress to the new development.

2. The proposed private right-of-way for the new roadway is scaled as 66 feet. Both the roadway and ROW widths meet Hartland Township standards.

3. The site plan shows two proposed driveway approaches along M-59 which will be subject to approval by the Michigan Department of Transportation (MDOT).

4. The site plan shows three proposed driveway approaches (one for the new private road) along N. Old US Hwy 23 which will be subject to approval by the LCRC.

F. Miscellaneous

The Michigan Department of Environment, Great Lakes & Energy (MDEGLE) is the final authority for the location of any wetland boundaries and the determination of their regulatory status.

Permits Required

The following permits may be required and will need to be provided to the Township:

1. Copy of Grading Permit from the LCDC.

2. Copy of LCDC sanitary review confirmation.

3. Copy of Soil Erosion and Sedimentation permit from LCDC.

4. All necessary easements. Easements must be on Hartland Township Standard Easement document and include a sketch. A current title policy for ownership verification shall be provided with all executed easement submittals, if applicable.

5. NPDES Notice of Coverage Documentation (site is larger than 5 acres).

6. MDEGLE Water Supply System Permit for the proposed water main.

7. MDEGLE Part 41 Wastewater Construction Permit for the proposed sanitary sewer system.

8. MDEGLE Permit for all proposed work within the state-regulated wetlands, if applicable.

9. Township Storm Water Agreement (for the stormwater system improvement on the site).

10. Maintenance bond and insurance for the sanitary sewer and water main to be dedicated to the township, if applicable.

11. Genesee County Drain Commissioner's Office IPP Discharge Permit approval.

Please be aware that additional comments may arise with the submittal of the requested revisions and/or additional information.

RECOMMENDATION

Overall, there are no evident issues with the concept plan from an engineering perspective. Future reviews will provide detailed analysis of the proposed improvements.

The comments are not necessarily conclusive. The final engineering plans for this development are to be prepared in accordance with the Hartland Township Engineering Design Standards and 2008 Hartland Township Standard Details.

If you have any questions regarding this matter, please contact our office at your convenience.

Sincerely,

Al Loebach, PE
Senior Municipal Engineer

Information Required for Conceptual Review of Proposed PD at Parcel # 08-28-100-014 HARTLAND TOWNSHIP LIVINGSTON COUNTY, MICHIGAN

Prepared for:

Applicant / Owner

M-59 Property Ventures, LLC

29592 Wixom Road
Wixom, Michigan 48393

Prepared by:

BOSS Engineering
3121 E. Grand River Howell, MI 48843
517.546.4836 fax 517.548.1670
www.bosseng.com

Jennifer M. Austin, PLA
Boss Engineering
3121 E Grand River
Howell, MI 48843

December 7, 2022

a. Name(s), address(es), and telephone number(s) of:

All persons with an ownership interest in the land on which the planned development project will be located together with a description of the nature of each entity's interest (for example, fee owner, optionee, lessee, or land contract vendee).

Applicants, Developers and Owners:
M59 Property Ventures, LLC owned by
Mike Koza and Kevin Bahnam
29592 Wixom Road
Wixom, MI 48393
248-767-5337

Project Team

Engineer: Boss Engineering, Brent LaVanway, P.E.
3121 E. Grand River Ave.
Howell, MI 48843
517-586-4836

Architect: Krieger Klatt Architects, Inc., Jeff Klatt, A.I.A
2120 East Eleven Road
Royal Oak, MI 48067
248-414-9270

Consultant: Mark Kassab, M. Shapiro Real Estate Group
31550 Northwestern Hwy., Suite 220
Farmington Hills, MI 48334
248-865-0066

Attorney: Burt Kassab, Kullen & Kassab
31000 Northwestern Hwy., Suite 100
Farmington Hills, MI 48334
248-538-2200

b. Legal description of the land on which the planned development project will be developed together with appropriate tax identification numbers.

Parcel # 4708-28-100-014
SEC 28 T3N R6E COMM AT NW COR, S 02*W 48.23 FT FOR POB, TH S 89*E 725.37 FT, S 15 FT, S 89*E 506.65 FT, S 920.19 FT, N 89*W 100 FT, S 120 FT, S 89*E 100 FT, S 96.27 FT, N 86*W 1260.75 FT, N 02*E 1101.77 FT TO POB, EXC THAT PART LYING N OF A LINE COMM AT NW COR S 2*E 3.40 FT, N 86*E 1290.90 FT TO POB, TH S 3*E 300 FT, N 48*W 424.75 FT, N 86*E TO BEG, ALSO EXC LYING N OF A LINE COMM AT NW TH S 2*E 3.40 FT, N 86*E 290.90 FT TO POB, TH S 3*E 80 FT, N 86*E TO C.V. COR, DESC ABOVE, 29.85AC M/L, FROM 28-100-012

c. Area of the land (in acres) on which the planned development project will be developed.

29.88 +/- acres to be developed

d. An overall conceptual land use plan for the planned development, drawn to scale.

See Conceptual Land Use Plan Sheet 4. Color conceptual renderings of the commercial uses created by Kreiger Klatt Architects, INC. are attached at the end of this report.

e. The conceptual land use plan shall also show the following information:

(1) A general location map (see drawing set Cover Sheet)
(2) The vehicular circulation system planned for the proposed development.
(3) The location of existing private and public streets adjacent to the proposed development with an indication of how they will connect with the proposed circulation system for the new development.
(4) The approximate layout of dwelling units, parking open space, and recreation/park areas.

See drawing set.

f. Approximate number of non-residential buildings and residential units to be developed on the subject parcel.

6 non-residential buildings and 7 residential buildings (168 total multi-family units) are planned.

g. Topographic survey and soils inventory based on the Livingston County Soils Survey.

See the Natural Features Plan Sheet 2.

h. General locations and approximate dimensions of wetland areas and significant site features such as tree stands, unusual slopes, streams and water drainage areas.

See Natural Features Plan Sheet 2.

i. A description of the proposed sewage treatment and water supply systems.

Connections to public sewer and water are planned.

j. A map showing existing zoning designations for the subject property an all land within one quarter mile.

See Sheet 3 of drawing set.

k. A map and written explanation of the relationship of the proposed planned development to the Township's Master Plan for Future Land Use.

The future land use designation for this parcel is commercial. This proposed PUD provides for commercial uses at the northern edge of the site along M-59. In addition, a multiple-family residential community is planned for the southern half of the site. According to the Master Plan Amendment document adopted April 19, 2011, Intended Land Uses for Multiple Family Residential-designated sites are appropriate for transitional use between high intensity uses and single family uses. This project site is situated between existing nonresidential uses to the east (gas station/retail) and lower intensity uses (Charyl Stockwood Academy school, single family subdivision) designations to the west. The mix of uses on this parcel establish a transitional space between the differing adjacent intensities.

The project will have many of the desired characteristics for both uses listed in the Amendment (page 14) including access to paved primary roads, paved internal streets, sidewalks and landscape buffer areas. Joint access drives have been incorporated into the concept as well as pedestrian access routes and landscaping. The project meets and will expand upon many of the future land use design objectives for both residential and nonresidential uses. As a PUD, the project is consistent with the goals and objectives and development principles presented in the Master Plan.

l. ***A map and written explanation of the relationship of the significant natural, cultural, and geographic feature of and near the site.***

See Natural Features Plan on Sheet 2.

m. ***Documentation indicating the applicant's development experience.***

A listing of development projects by Kevin Bahnam can be found on the next page.

USA 2 Go Holdings	Address	Municipality	Description	Developed By:
Oceola Village Market Inc.	1900 Latson Road, Howell, MI 48843	Oceola Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
Oceola Car Wash LLC	1900 Latson Road, Howell, MI 48843	Oceola Township	Full Tunnel Car Wash	Karam Bahnam/Majid Koza
Commerce LLC	40300 W 14 Mile Rd, Commerce, MI 48390	Charter Township of Commerce	C-Store/Gas Station	Karam Bahnam/Majid Koza
RTA Ventures LLC	47300 Citygate, Novi, MI 48374	City of Novi	C-Store/Gas Station	Karam Bahnam/Majid Koza
Z & M Holdings LLC	2770 Eaton Rapids, Lansing, MI 48911	Delhi Charter Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
T & H East LLC	30560 Milford Road, New Hudson, MI 48165	Lyon Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
S & J Convenience LLC	3990 Grand Oaks, Howell, MI 48843	Genoa Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
Carpenter Convenience Inc	4000 Washtenaw Ave, Ann Arbor, MI 48108	Pittsfield Charter Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
Holt Convenience Inc	4495 Holt Rd, Holt, MI 48842	Delhi Charter Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
New Hudson Petroleum LLC	30465 Milford Rd, New Hudson, MI 48165	Lyon Township	C-Store/Gas Station	Karam Bahnam/Majid Koza
Durand Business Holdings, LLC	8544 Lansing Road, Durand, MI 48429	City of Durand	C-Store/Gas Station	Karam Bahnam/Majid Koza

Tim Hortons	Address	Municipality	Description	Developed By:
West Coffee LLC	30465 Milford Rd, New Hudson, MI 48165	Lyon Township	Fast Food Restaurant	Karam Bahnam/Majid Koza
Perfect Bean LLC	3980 Grand Oaks, Howell, MI 48843	Genoa Township	Fast Food Restaurant	Karam Bahnam/Majid Koza
Lyon Coffee LLC	21725 Pontiac Trail, South Lyon, MI 48178	Lyon Township	Fast Food Restaurant	Karam Bahnam/Majid Koza
Fresh Brew LLC	1924 Latson Rd, Howell, MI 48843	Oceola Township	Fast Food Restaurant	Karam Bahnam/Majid Koza
Dark Roast LLC	2774 Eaton Rapids, Lansing, MI 48911	Delhi Charter Township	Fast Food Restaurant	Karam Bahnam/Majid Koza
Coffee Mocha Ventures LLC	6891 Sashabaw, Clarkston, MI 48348	Charter Township of Independence	Fast Food Restaurant	Karam Bahnam/Majid Koza
1st Step LLC	47296 Citygate, Novi, MI 48374	City of Novi	Fast Food Restaurant	Karam Bahnam/Majid Koza

Hotels	Address	Municipality	Description	Developed By:
Holiday Inn Hotel	33103 Hamilton Ct, Farmington Hills, MI 48334	City of Farmington Hills	Holiday Inn Hotel	Majid Koza & Family
Residence Inn Hotel	33163 Hamilton Ct, Farmington Hills, MI 48334	City of Farmington Hills	Residence Inn Hotel	Majid Koza & Family
Courtyard Marriot Hotel	33043 Hamilton Ct, Farmington Hills, MI 48334	City of Farmington Hills	Courtyard Marriot Hotel	Majid Koza & Family

Apartments	Address	Municipality	Description	Developed By:
			257 Units	Karam Bahnam/Majid Koza/
Fountain Circle	3500 Fountain Ln, Auburn Hills, MI 48326	City of Auburn Hills	Apartment Complex	Francis Boji/Jacob Bacall


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COFFEE shop

Hartland Township Board of Trustees Agenda Memorandum

Submitted By: Troy Langer, Planning Director

Subject: Site Plan with Special Land Use Application #22-007 (Automobile wash within completely enclosed building at 10382 Highland Road) – REVISED PLANS dated November 9, 2022 (Architectural plans) and December 20, 2022 (Site and Landscape plans)

Date: January 31, 2023

Recommended Action

Move to Approve Special Land Use Permit #22-015, as outlined in the Staff Memorandum, dated January 31, 2023.

Approval of the request is based on the following:

Move to approve Special Land Use Permit and approve Site Plan Application #22-007, a request to redevelop a commercial site and construct an approximate 5,425 square foot automobile wash, within a completely enclosed building, at 10382 Highland Road, in Section 28 of the Township (Tax Parcel ID #4708-28-201-061). The recommendation for approval is based on the following findings:

1. The proposed special land use, automobile wash within a completely enclosed building, meets the intent and purposes of the Ordinance as well as the specific standards outlined in Section 6.6 (Special Uses).

2. The proposed special land use is permitted in the GC (General Commercial), as outlined in Section 3.1.14.D.iii, and the proposed use is compatible with the existing uses in the vicinity.

3. The proposed use will be served by public water and sanitary sewer, by existing essential facilities and public services, and the Fire Department has no objection.

4. The proposed use will be served by public roads with direct access to Highland Road and Blaine Road.

5. The proposed use will not create additional requirements at public cost for public facilities as the proposed site will be served by public water and sanitary sewer.

6. The Planning Commission recommended approval of the Special Land Use Permit at their January 26, 2023, regular meeting.

Approval is subject to the following conditions:

1. The proposed special land use, automobile wash within a completely enclosed building.

2. The applicant shall adequately address the outstanding items noted in the Planning Department's memorandums, dated September 1, 2022, October 13, 2022, January 19, 2023, and January 31, 2023, on the Construction Plan set, subject to an administrative review by the Planning staff prior to the issuance of a land use permit.

3. A land use permit is required after approval of the Site Plan and Special Use Permit and prior to construction.

4. Applicant complies with any requirements of the Department of Public Works Director, Township Engineering Consultant (SDA), Hartland Deerfield Fire Authority, and all other government agencies, as applicable.

5. (Any other conditions the Township Board deems necessary)

Discussion

Applicant: Evanthia Bardwell

Site Description
The subject property is located south of Highland Road, east of Blaine Road, and north of Hartland Marketplace Planned Development in Section 28 of the Township. It was formerly occupied by Burger King, since 1986. Burger King closed sometime in 2020. The existing Burger King building will be removed, and the parking lot will undergo some layout changes as part of the proposed automobile wash project. The site is zoned GC (General Commercial) and is 1.66 acres (Tax Parcel ID #4708-28-201-061). This property is considered a corner lot with approximately 120 lineal feet along Highland Road and approximately 382 lineal feet along Blaine Road.

The Future Land Use Map (FLUM) designates the subject site and adjacent properties to the south, east, and west as Commercial.

Proposed Use
The applicant is requesting to demolish the existing Burger King building and construct an approximate 5,425 square foot building for a fully automated automobile wash, within a completely enclosed building (Mister Car Wash). The parking lot will be renovated as well to accommodate the building and circulation patterns.

Per Section 3.1.14.D.iii., an automobile wash, when within a completely enclosed building, is considered a special land use in the GC (General Commercial) zoning district. Additional standards for this special land use are provided in Section 4.17 of the Zoning Ordinance (Automobile Wash Establishment).

The proposed project also requires site plan approval thus there are two application elements: special land use and site plan approval for an automobile fueling and convenience station. Although there are technically two elements, all are incorporated into one combined site plan which will be reviewed and approved concurrently.

Per the Hartland Township Zoning Ordinance and the State Enabling Act, a public hearing is required for the special land use application. Given the requirements for publishing a notice for the special land use, the public hearing was held at the September 8, 2022, Planning Commission meeting.

Request and Project Summary – Revised Plans dated December 20, 2022 (site and landscape) and November 9, 2022 (Architectural)
The applicant is requesting site plan with special land use approval to redevelop a commercial site and construct a fully automated automobile wash, which is within the building. On September 8, 2022, the Planning Commission held a public hearing on SP/SUP #22-007, however the Planning Commission did not make a recommendation at that time. Based on comments at the public hearing the applicant submitted revised plans, dated October 6, 2022. The revised plans were reviewed at the October 20, 2022 Planning Commission meeting. Please refer to the staff memorandums dated September 1, 2022 and October 13, 2022 for the complete review.

On October 20, 2022, the Planning Commission discussed the location of the vacuuming equipment, which was shown in the front yard, between the car wash building (west elevation) and the street right-of-way line of Blaine Road. Per Section 4.17 of the Zoning Ordinance, vacuuming activities are permitted in the side or rear yard only. Although the number of vacuuming devices had been reduced on the plans dated October 6, 2022, all vacuuming devices were located in the front yard. It was the consensus of the Planning Commission that vacuuming devices are not permitted in the front yard per the Ordinance, no matter what style of equipment, thus the Planning Commission could not approve the plan as presented. The Planning Commission offered an option to the applicant to revise the plans and come back to the Planning Commission, which is what the applicant chose to do.

The revised plans, dated December 20, 2022 (site and landscape plans) and November 9, 2022 (architectural plans) will be reviewed in this memorandum, using applicable sections of the Zoning Ordinance. Other topics are covered in the staff memorandum dated September 1, 2022 and October 13, 2022, which are provided as attachments. A brief summary of the changes is listed below, followed by a detailed review of applicable standards.

Revisions to the plans include the following changes:

- Relocation/reorientation of the car wash building, as well as parking, vacuum equipment, vehicular canopy (POS- point of service), and attendant shelter.
- Vacuum equipment is on the east side of the building, in the side yard.
- Parking is shown on the east side of the building, and the number of parking spaces has been reduced from 20 spaces to 13 spaces. All parking spaces have vacuum equipment.
- Three (3) employee parking spaces shown near the Blaine Road entrance drive.
- On-site circulation has changed so that the entrance to the car wash tunnel is on the south side of the building and the exit is on the north side of the building.
- Vehicular canopy (POS-point of service) and stacking lanes are on the west side of the building.
- Car wash tunnel reduced in length from 160 feet to 130 feet.
- Building size reduced from 6,500 square feet to 5,425 square feet.
- One (1) combined trash/vacuum enclosure is proposed, versus two (2) enclosures on the previous plans.
- Revised landscape plan with changes due to the reorientation of the building and parking. Additional landscape screening is provided on the west side of the site.
- Revised building elevations due to the reduction in the building size. Façade materials and building design are similar to the building elevations reviewed on September 8, 2022.

The Planning Commission recommended approval of the Special Land Use Permit request at the January 26, 2023 regular meeting. There was a resident that spoke under public comment at the end of the meeting. The resident expressed concern over traffic. She had previously submitted traffic information about a car wash and wanted to make sure that information was shared with the Township Board. A copy of the traffic information is attached.

Approval Procedure

The proposed use, automobile wash within a completely enclosed building, requires approval from the Township Board for the special land use. The Planning Commission will review the special land use and make a recommendation to the Township Board.

The project also requires the site plan to be reviewed by the Planning Commission who will make a final decision on the site plan. The plans will be reviewed using the development standards of the GC (General Commercial) zoning district (Section 3.1.14.), standards associated with Automobile Wash Establishment (Section 4.17), and all applicable zoning standards in the Zoning Ordinance.

SPECIAL LAND USE REVIEW – General Standards

In accordance with Section 6.6, Special Uses, of the Hartland Township Zoning Ordinance, the following standards shall serve the Planning Commission and Township Board as the basis for decisions involving such uses. The standards are provided below, and the applicant has submitted a letter, as a separate attachment, which addresses the special use criteria.

A. Be harmonious and in accordance with the objectives, intent, and purposes of this Ordinance.
B. Be compatible with the natural environment and existing and future land uses in the vicinity.
C. Be compatible with the Hartland Township Comprehensive Plan.
D. Be served adequately by essential facilities and public services, such as highways, streets, police and fire protection, drainage ways and structures, refuse disposal, or that the persons or agencies responsible for the establishment of the proposed use shall be able to adequately provide any such service.
E. Not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, person, property, or the public welfare.
F. Not create additional requirements at public cost for public facilities and services that will be detrimental to the economic welfare of the community.

The Planning Department believes the proposed use can and will meet the criteria listed above for the special land use request. The applicant has provided responses to the special land use general standards as an attachment, in the email dated August 30, 2022. The applicant will be responsible for all applicable approvals and permits from other agencies and departments for the proposed use. The plans have been sent to the Livingston County Road Commission and Michigan Department of Transportation (MDOT) for review and comment. The County Road Commission has indicated there is no need for additional traffic evaluation.

SPECIAL LAND USE REVIEW – Applicable Site Standards

In addition to a finding by the Planning Commission and Township Board that the criteria above have been satisfied, standards outlined in Section 4.17 (Automobile Wash Establishment), will apply. Those standards are listed below, followed by staff's findings on each standard.

Automobile Wash Establishment (Section 4.17)

1. Layout. All washing activities shall be carried on within a completely enclosed, roofed building. Vacuuming activities shall be permitted in the side or rear yard only, provided such activities are located at least fifty (50) feet from adjacent residentially zoned property. Entrances and exits shall not face abutting residentially zoned or used property.

   The proposed automobile wash is within a completely enclosed building, with entrances to the site that face Blaine Road or Highland Road. Adjacent properties (south and east) are zoned PD (Planned Development) and residentially zoned properties or uses are farther than fifty (50) feet from the subject site. Vacuum equipment is in the side yard (east of the car wash building) and complies.

2. Entrances and Exits. Sufficient space shall be provided on the lot so that vehicles do not enter or exit the wash building directly from an adjacent street or alley. All maneuvering areas, stacking lanes, and exit aprons shall be located on the car wash parcel itself. Streets and alleys shall not be used for maneuvering or parking by vehicles to be serviced by the automobile wash.

   The proposed plan meets these standards.

3. Orientation of Open Bays. Buildings should be oriented so that open bays, particularly for self-serve

automobile washes, do not face onto any thoroughfares unless screened by landscaping.

This standard does not apply as open bays are not proposed.

4. Exit Lane Drainage. Exit lanes shall be sloped to drain water back to the wash building to drainage grates

The plans do not have this level of detail, but the applicant has been advised.

5. Truck Washes. Truck washes must be at least one hundred (100) feet from all property lines and entirely screened from residential uses. The screening shall include both a wall and landscaping.

This standard does not apply to the proposed project.

SITE PLAN REVIEW – Applicable Site Standards
The applicable site standards include those standards related to the proposed use, automobile wash within a completely enclosed building, as outlined in Section 3.1.14 (GC-General Commercial); Section 4.17 of the Zoning Ordinance, as discussed above; and all applicable zoning standards in the Zoning Ordinance.

In this case the applicant is requesting site plan with special land use approval to construct an approximate 5,425 square foot building for a fully automated automobile wash.

Impact Assessment
An impact assessment was not provided.

Traffic Generation
Traffic generation information was provided previously in the trip generation memo dated September 23, 2022.

Dimensional Requirements (GC-General Commercial; Section 3.1.14)

Lot Size (Sec. 3.1.14)
- Required – 40,000 sq. ft. w/o sewer; or 20,000 sq. ft. with public sanitary sewer
- Proposed – 1.66 acres (72,310 sq. ft.) with public sanitary sewer
- Meets Requirement? Yes
- Comment – (none)

Frontage (Sec. 3.1.14)
- Required – Minimum lot width of 120 feet
- Proposed – 120 lineal feet along Highland Road and approximately 382 lineal feet along Blaine Road
- Meets Requirement? – Yes
- Comment – (none)

Building Setbacks (Sec. 3.1.14)

Car Wash Building

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (north) - Highland Road	80’	82’	Yes
Front (west) - Blaine Road	80’	122’	Yes
Rear (south) w/sewer	40’	117’	Yes
Side (east)	15’	62’	Yes

Vehicular Canopy (POS)

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (north) - Highland Road	80’	175’	Yes
Front (west) - Blaine Road*	80’	80’	Yes
Rear (south) w/sewer	40’	131’	Yes
Side (east)	15’	NA	NA

* The vehicular canopy is located in the front yard associated with Blaine Road. The vehicular canopy is considered to be similar to an automobile fueling station canopy which is permitted in the front yard in GC (General Commercial) unless the Planning Commission decides differently.

Combined Trash and Vacuum Enclosure

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (north) - Highland Road	80’	90’	Yes
Front (west) - Blaine Road	80’	118’	Yes
Rear (south) w/sewer	40’	235’	Yes
Side (east)	15’	35’	Yes

Building Height (Sec. 3.1.14)

- Required – 35 feet or 2½ stories, whichever is less
- Proposed – 35 feet
- Meets Requirement? – Yes
- Comment – (none)

Lot Coverage (Sec. 3.1.14)

- Required – Principal structure: 75% max.
- Proposed – 7.5% (5,425 sq. ft. bldg.÷ 1.66 acres)
- Meets Requirement? – Yes
- Comment – (none)

Site Requirements

Dumpster Enclosure (Sec. 5.7)

- Required – Dumpster designed, enclosed, and screened per requirements; dumpster materials must match the building. enclosure height sufficient to screen dumpsters; minimum height is 6 feet.
- Proposed – One (1) combined enclosure to screen dumpster and mechanical equipment for the vacuums. Screen walls are comprised of brick veneer to match the building; walls are 8’-4” in height; solid gates shown, but product not listed.

- Meets Requirement? – Yes
- Comment – The product used for the gates should be stated on the Construction Plan set.

Off-Street Parking (Sec. 5.8.4.H – Auto Wash – fully automatic car wash)

- Required – 2 spaces; PLUS 1 designated space for each employee on a peak shift; PLUS 12 stacking spaces per bay for a fully automatic car wash.
  EQUATES TO: 17 parking spaces REQUIRED TOTAL (using 3 employees)
- Proposed – 51 spaces TOTAL. 12 parking spaces each with vacuum equipment (13' X 20' in dimension); 1 barrier-free parking space with vacuum equipment (21' X 20', includes 8-ft wide access aisle); 3 spaces for employees (10'X 20'); and 35 stacking spaces.
- Meets Requirement? – Yes
- Comment – (none)

Barrier-Free Parking

- Required – 1 barrier-free space in a location most accessible to the building entrance, with at least 1 space van-accessible (1 barrier-free space required per 25 parking spaces)
- Proposed – 1 barrier-free space, van-accessible with 8-ft. wide access aisle, southeast of the building, near building entrance.
- Meets Requirement? – Yes
- Comment – (none)

Parking Lot / Driveway / Internal Roads Setbacks (Sec. 5.8.3.)

- Required – Off-street parking in commercial districts may only be located in a side or rear yard or non-required front yard; may not be permitted within 20' of a single-family district, nor within 10' of a road ROW, or 25' from a front lot line, nor 10' from a side or rear lot line.

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (north) – Highland Road	25'	NA	Parking not proposed
Front (west) Blaine Road	25'	25'	Yes
Rear (south)	10'	NA	Parking not proposed
Side (east)	10'	32'	Yes

- Meets Requirement? – Yes
- Comment – (none)

Loading (Sec. 5.9)

- Required – 1 loading space (10' X 50') required for up to 10,000 sq. ft. of floor area (for industrial use)
- Proposed – Loading zone not shown
- Meets Requirement? – Yes
- Comment – Typically this has not been required to be shown on a plan. There appears to be sufficient room in the parking lot to accommodate loading activities, generally on the west side of the building.

Access Management and Non-Residential Driveway Standards (Sec. 5.10)

- Required – Per Sec. 5.10.5.C., the minimum access spacing between commercial driveways on a street with a posted speed limit of 50 MPH or greater is 330 feet.
- Proposed – Existing commercial driveways on Highland Road and Blaine Road are to remain in

their current locations.

- Meets Requirement? – NA
- Comment – (none)

Landscaping and Screening (Sec. 5.11)

A. Greenbelt Landscaping (Sec. 5.11.C.)

Calculations for Greenbelt along Highland Road

- Required – Within the first 30 feet of the property, 1 canopy tree for every 30 ft of lineal of frontage; 3 small deciduous ornamental trees or large deciduous or evergreen shrubs for the initial 40 ft., and 1 per 20 ft. thereafter, for 120' of frontage along Highland Road. EQUATES TO: 4 canopy trees and 7 additional ornamental trees, or large deciduous or evergreen shrubs REQUIRED
- Proposed – 3 canopy trees within first 30 feet; 10 large deciduous shrubs; and a mix of perennial grasses and plants.
- Meets Requirement? – **No, for number of canopy trees**
- Comment – Planning Commission to determine if this is a sufficient number of trees, given that the existing driveway into the site from Highland Road occupies about 50% of the frontage and thus the planting area is limited. There may be sufficient room for shrubs in the greenbelt area.

Calculations for Greenbelt along Blaine Road

- Required – Within the first 30 feet of the property, 1 canopy tree for every 30 ft of lineal of frontage; 3 small deciduous ornamental trees or large deciduous or evergreen shrubs for the initial 40 ft. and 1 per 20 ft. thereafter, for 382' of frontage along Blaine Road. EQUATES TO: 13 canopy trees and 17 additional ornamental trees, or large deciduous or evergreen shrubs REQUIRED
- Proposed – 10 canopy trees and 6 evergreen trees within first 30 feet; 7 additional evergreen trees scattered within lawn area, further than 30 feet from property line.
- Meets Requirement? – **TBD, see notes below**
- Comment – A portion of this space may also serve as a detention area. The proposed 10 canopy trees and 13 evergreen trees seem to be sufficient given the spatial constraints. Evergreen trees provide screening of the stacking lanes could be counted as the shrub requirement. Planning Commission to determine if the proposed plan meets the intent of the Greenbelt Landscaping requirements.

B. Foundation Landscaping (Sec. 5.11.2.D.)

- Required – Must equal 60% of the front and sides of the proposed building where facing road or adjacent to parking lot; must be 8-10 ft. in width, and consist of 1 ornamental or columnar tree, and 6 medium or 8 small shrubs for every 30 ft. Building perimeter = 174 feet (used west (130 ft.) and north (44 ft.) sides of building for dimensions). Foundation perimeter 174 ft. X 60% = 105 ft.
  EQUATES TO: 4 ornamental/columnar trees; PLUS 32 small shrubs or 24 medium shrubs REQUIRED
- Proposed –
  North: 9 large evergreen shrubs, 2 evergreen trees, and perennial plants/ornamental grasses lawn areas, on north side of the building (not in a foundation bed by the building)
  West (facing stacking lanes): 2 ornamental trees; 14 medium shrubs; 12 large shrubs; mix of perennial flowers and ornamental grasses. Planting area ranges in width from 6 feet to 8 feet.
  East *(facing parking spaces)**:*** No landscaping proposed
- Meets Requirement? – Yes – see comments below on trees
- Comment – The total plant count exceeds the required number of shrubs. Two (2) canopy trees

are located south of the building in lawn areas and could be counted toward the ornamental tree requirement, bringing the tree count to four (4) trees.

C. Parking Lot Landscaping (Sec. 5.11.2.E.i.)
   - Required – Landscaped end caps for parking areas of 10 or more spaces; 1 canopy tree per 180 sq. ft. of interior area, with 50% of the interior area covered with small and medium evergreen and deciduous shrubs. The remaining landscape area may include a combination of groundcover, perennials, annuals, lawn, and mulch. Approximate square footage of 4 endcaps & using each area as 200 sq. ft, each = 800 sq. ft. (used areas directly adjacent to parking spaces, at end of row of parking, for parking next to building and employee parking). EQUATES TO: 4 canopy trees with a mix of shrubs, lawn, groundcover, perennial/annual plants.
   - Proposed – Endcaps by row of parking next to building (2 endcap areas): 1 canopy tree (south end of row of parking) plus mix of shrubs and ornamental grasses. North endcap area is occupied with combined vacuum and trash enclosure; 0 tree. Endcaps by employee parking (2 endcaps): 1 canopy tree, west of parking spaces that is counted as part of the Greenbelt landscaping requirements; and 1 canopy tree east of the parking spaces, in a linear median that also has a combination of shrubs and perennial plants.
   - Meets Requirement? – Yes, generally.
   - Comment – The combined enclosure for trash and vacuum equipment occupies the endcap area. A canopy tree is shown nearby in the lawn area northwest of the enclosure and could be counted as a parking lot tree. Planning Commission to determine if the proposed plan meets the intent of the Parking Lot Landscaping requirements.

D. Perimeter Landscaping – For areas visible from a public road (facing Highland Road and Blaine Road; Sec. 5.11.2.E.ii.a.)

   Calculations for Perimeter Landscaping – employee parking area facing Blaine Road
   - Required – Landscape berm planted with a combination of evergreen and deciduous shrubs to effectively screen parking lot; or evergreen hedge row a minimum 3 ft. in height; or decorative screen wall
   - Proposed – Evergreen shrub screen shown with 18 large shrubs
   - Meets Requirement – Yes
   - Comment – Minimum shrub height at the time of planting is 30 inches.

E. Perimeter Landscaping – For areas not visible from a public road (Sec. 5.11.2.E.ii.b.) – along east and south sides of the property
   - Required –1 canopy or evergreen tree for every 30 ft., along with understory shrubs for screening purposes for perimeter areas not visible from a ROW. South: 110 ft. (used landscape median south of building); East: 165 ft. (length of planting area shown on plan).
     EQUATES TO: 4 trees on the south; 6 trees on the east, and understory shrubs for screening REQUIRED.
   - Proposed – South (median): 1 canopy tree; 25 shrubs; and mix of perennial plants and ornamental grasses.
   - Proposed – East: 4 canopy trees and 50 shrubs.
   - Meets Requirement? – **TBD – see notes below regarding tree count**
   - Comment – Landscaping appears to be sufficient in both areas given that the adjacent properties on the south and east are commercial sites/uses and are zoned PD (Planned Development), and are part of the Hartland Marketplace PD. An entrance drive from Highland Road to Hartland Marketplace PD is adjacent to the east property line of the car wash site; as result extra trees may not be necessary on the east.

F. Buffering or Screening (Sec. 5.11.2.G.i.) – screening between land uses – NA as adjacent properties to the south and east are commercial sites/uses and zoned PD (Planned Development).

G. Screening of Ground Mounted Equipment (Sec. 5.11.2.G.iii.)
- Required – Screening on three sides for utility cabinets (if 30 inches or more in height)
- Proposed – 1 brick enclosure is provided to screen dumpsters and mechanical equipment for vacuums.
- Meets Requirement? – Yes
- Comment – (none)

H. Detention/Retention Area Landscaping (Sec. 5.11.2.H.)
Per older plans for this site, a detention area exists in the open area between Blaine Road and the western edge of the proposed parking lot. The current plans do not show the detention area thus comments are not provided at this time. Lawn and canopy trees are proposed, plus an evergreen shrub hedgerow by the parking spaces. Additional details on the stormwater plans may be forthcoming on the Construction Plan set.

Other comments on landscaping – as listed below

- The Plant Schedule shall be revised on the Construction Plan set to list the height of each shrub, at the time of planting. Shrubs used for required screening must be a minimum height of 30 inches. Currently the container size of each shrub is listed, but not the plant height.
- The minimum caliper size for a deciduous tree is three (3) inches and the listed size for the Imperial Honeylocust is 2.5 inches. The size shall be revised on the Construction Plan set.

Sidewalks and Pathways (Sec. 5.12)
- Required – the Planning Commission may require sidewalks or safety paths as a condition of site plan approval
- Existing – 7-foot wide sidewalk is in place along the Highland Road frontage.
- Meets Requirement? – Yes
- Comment – (none)

Lighting (Sec. 5.13)
A photometric plan was not submitted but will be required as part of the Construction Plan set. Based on the plans reviewed by the Planning Commission on September 9, 2022, the light fixtures and photometric plan complied except that the average footcandle value under the vehicular canopy measured 7.6 footcandles and the maximum allowed is an average of 5 footcandles. The plan should be revised to comply and be submitted with the Construction Plan set.

Water Supply and Wastewater Disposal (Sec. 5.16)
The site is served by municipal water and sanitary sewer.

Architecture / Building Materials (Sec. 5.24)
Architecture Comments:
- Façade Materials Calculation – façade materials must comply with the specifications for Façade Materials Group #1; percentages for the car wash building are proposed as follows:

Materials Group #1: Proposed Façade Materials by Percentage by Elevation – Car Wash Building

Elevation	Clay Brick (30% min.) Brick veneer prop.	Siding (Alumaboard proposed) (10% max.)	Standing seam metal roof (20% max.)	Glass (50% max.)	E.I.F.S. trim (15% max.)	Awnings (10% max.)	Split-faced block (25% max.)
North	66.9%	9.8%	0.0%	0.0%	0.0%	0.9%	0.0 %
West	39.7%	6.1%	12%	8.2%	3.4%	0.8%	24.6%
South	63.2%	10.0%	0.0%	8.0%	0.0%	0.9%	0.0%
East	77.0%	9.5%	0.0%	4.0%	3.5%	0.4%	0.0%

- Colors: 3-D color renderings of the building and canopy are provided. Specific product information for each façade material is stated on the building elevations. Earthtone colors are proposed for all products.
- Materials: percentages are listed for each elevation side as indicated by the table; specifications on all materials are provided.
- Meets Requirement? – Yes
- Comment – (none)

Other buildings

Attendant Shelter

The free-standing attendant shelter is for the employee working the POS lanes during inclement weather. The building dimensions are approximately 5'-2½" by 6'-9", and height of 10'-2". Façade material percentages were not provided. Staff estimates that the upper one-half of the building is comprised of E.I.F.S. which is painted black. The lower one- half is comprised of brick veneer to match the main building. Windows are shown on three (3) sides and a glass door on the south side of the building.

Vehicular Canopy (POS)

The vehicular canopy is on the east side of the building and the canopy is not attached to the main building. The canopy is 15'-2" in height and the support posts are faced with brick veneer to match the building. The vertical surfaces of the canopy are black metal.

Other Requirements-Zoning Ordinance Standards/Comments

No comments at this time.

Hartland Township DPW Review

A review letter is provided from the Hartland Township DPW Director, dated January 18, 2023.

Hartland Township Engineer's Review (SDA)

The Township Engineer (SDA) has reviewed the plans and recommends approval subject to items being addressed in the letter dated November 15, 2022.

Hartland Deerfield Fire Authority Review

No comments at this time.

Attachments:

1. Site and Landscape Plans dated 12.20.2022 – *PDF version*
2. Building Elevations dated 11.09.2022 – *PDF version*
3. Image of Vacuum Arch – *PDF version*
4. SUP #22-007 PC Staff Report 09.01.2022 – *PDF version*
5. SUP #22-007 PC Staff Report 10.13. 2022 – *PDF version*
6. Township Engineer (SDA) review letter dated 11.09.2022 – *PDF version*
7. Hartland Township DPW review letter dated 01.18.2023 – *PDF version*
8. Trip Generation Memo 09.23.2020 – *PDF version*
9. Email from Tonni Hall 10.17.2022 – *PDF version*
10. Tonni Hall Traffic Study – 2020 06.26 – *PDF version*
11. PC Minutes 09.08.2022 – *PDF version*
12. PC Minutes 10.20.2022 – *PDF version*

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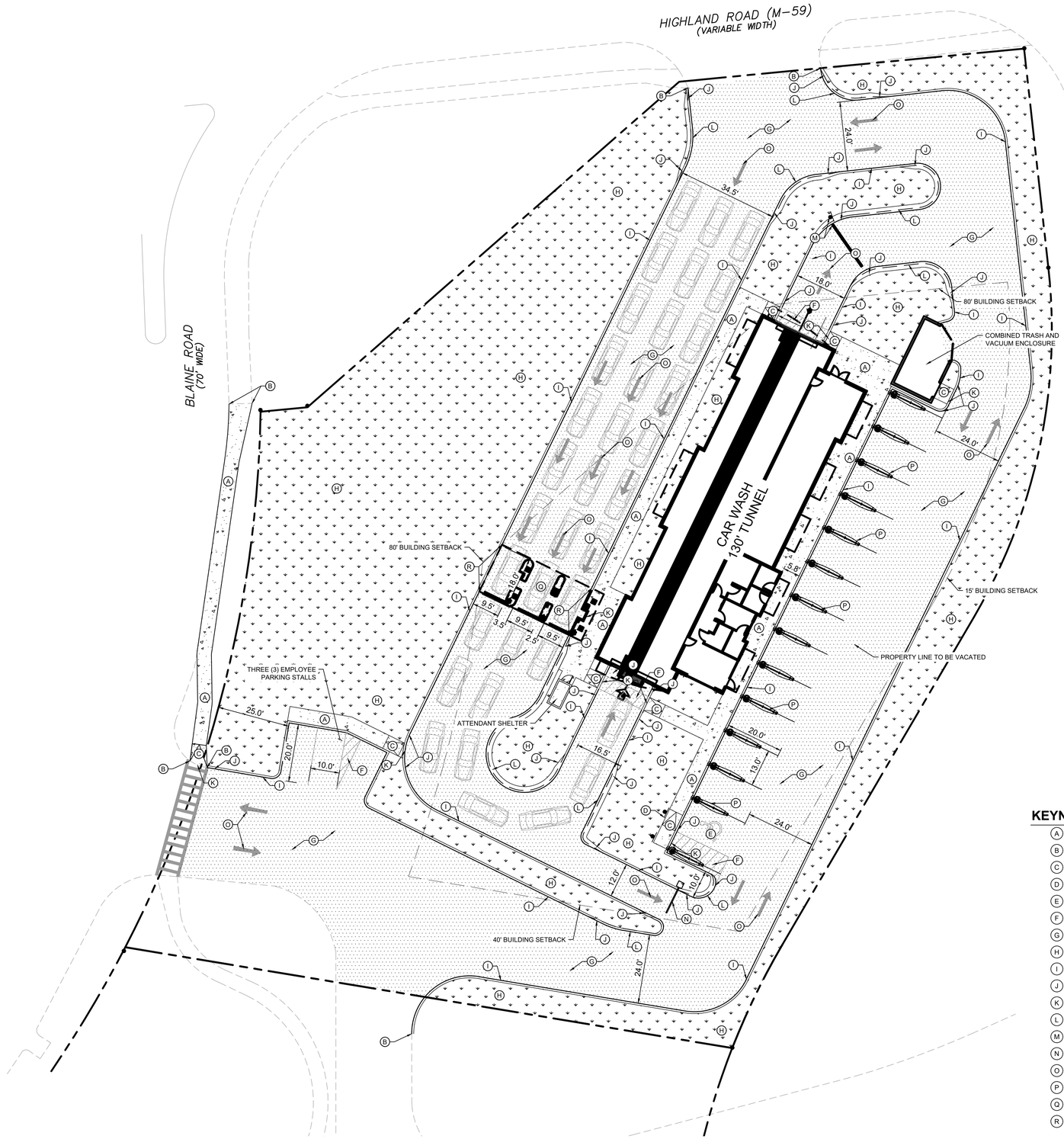


LEGEND

- PROPERTY LINE
- PROPOSED FENCE
- SETBACK LINE
- PROPOSED CURB AND GUTTER
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

PROPERTY SUMMARY	
SPRING LAKE PARK, MN MISTER CAR WASH	
TOTAL PROPERTY AREA	±1.66 AC
ZONING SUMMARY	
EXISTING ZONING	GC - GENERAL COMMERCIAL
PROPOSED ZONING	GC - GENERAL COMMERCIAL
BUILDING SETBACKS	FRONT: 80' SIDE: 15' REAR: 40'

BUILDING DATA SUMMARY	
AREAS	
PROPOSED PROPERTY	±1.66 AC
BUILDING AREA	±5,425 SF
PARKING	
FULLY AUTOMATIC CAR WASH - REQUIRED PARKING	2 PARKING SPACES 3 EMPLOYEE SPACES 12 STACKING SPACES = **17 SPACES TOTAL**
PROPOSED PARKING	13 PARKING SPACES 3 EMPLOYEE SPACES 35 STACKING SPACES **= 51 SPACES TOTAL**
ADA STALLS REQ'D / PROVIDED	1 STALLS / 1 STALLS

* 3 EMPLOYEES ON PEAK SHIFT

KEYNOTE LEGEND

A	CONCRETE SIDEWALK
B	MATCH EXISTING EDGE OF PAVEMENT/ CURB & GUTTER
C	ACCESSIBLE CURB RAMP
D	ACCESSIBLE PARKING SIGN
E	ACCESSIBLE PARKING STALL
F	AREA STRIPED WITH 4" SYSL @ 45° 2' O.C.
G	CONCRETE PAVEMENT PER MISTER CARWASH STANDARDS AND SPECIFICATIONS
H	LANDSCAPE AREA
I	VERTICAL CURB (TYP.)
J	TRANSITION CURB
K	FLUSH CURB
L	ROLLED CURB
M	TRENCH DRAIN WITH EXIT SIGN PER MISTER CAR WASH STANDARDS AND SPECIFICATIONS
N	BYPASS GATE PER MISTER CAR WASH STANDARDS AND SPECIFICATIONS
O	DIRECTIONAL TRAFFIC ARROW. PER GREENBOOK STANDARDS
P	VACUUM EQUIPMENT: REF. ARCHITECTURAL PLANS
Q	POS CANOPY AND EQUIPMENT: REF. ARCHITECTURAL PLANS
R	TAPERED CURB PER MISTER CAR WASH STANDARDS

SITE PLAN NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY/COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
2. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULES, SLOPE PAVING, SIDEWALKS, EXIT PORCHES, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
3. ALL INNER CURBED RADII ARE TO BE 3' AND OUTER CURBED RADII ARE TO BE 10' UNLESS OTHERWISE NOTED. STRIPED RADII ARE TO BE 5'.
4. ALL DIMENSIONS AND RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
5. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE ABANDONED, REMOVED OR RELOCATED AS NECESSARY. ALL COST SHALL BE INCLUDED IN BASE BID.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, (UNLESS OTHERWISE NOTED ON PLANS) INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC, AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES REQUIREMENTS AND PROJECT SITE WORK SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COST SHALL BE INCLUDED IN BASE BID.
7. SITE BOUNDARY, TOPOGRAPHY, UTILITY AND ROAD INFORMATION TAKEN FROM A SURVEY BY MERIDIAN LAND SURVEYING, DATED 5/4/2022.

   KIMLEY-HORN ASSUMES NO LIABILITY FOR ANY ERRORS, INACCURACIES, OR OMISSIONS CONTAINED THEREIN.
8. TOTAL LAND AREA IS 1.66 ACRES.
9. PYLON / MONUMENT SIGNS SHALL BE CONSTRUCTED BY OTHERS. SIGNS ARE SHOWN FOR GRAPHICAL & INFORMATIONAL PURPOSES ONLY. CONTRACTOR TO VERIFY SIZE, LOCATION AND ANY REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE PYLON / MONUMENT SIGN.
10. CONTRACTOR SHALL REFERENCE ARCH / MEP PLANS FOR SITE LIGHTING AND ELECTRICAL PLAN.
11. NO PROPOSED LANDSCAPING SUCH AS TREES OR SHRUBS, ABOVE AND UNDERGROUND STRUCTURES, OR OTHER OBSTRUCTIONS SHALL BE LOCATED WITHIN EXISTING OR PROPOSED UTILITY EASEMENTS AND RIGHTS OF WAY UNLESS SPECIFICALLY NOTED ON PLANS OTHERWISE.
12. REFERENCE ARCHITECTURAL PLANS FOR DUMPSTER ENCLOSURE DETAILS.
13. REFER TO FINAL PLAT OR ALTA SURVEY FOR EXACT LOT AND PROPERTY BOUNDARY DIMENSIONS.
14. ALL AREAS ARE ROUNDED TO THE NEAREST SQUARE FOOT.
15. ALL DIMENSIONS ARE ROUNDED TO THE NEAREST TENTH FOOT.
16. ALL PARKING STALLS TO BE 9' IN WIDTH AND 18' IN LENGTH UNLESS OTHERWISE INDICATED.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

PRELIMINARY - NOT FOR CONSTRUCTION

No.	REVISIONS	DATE	BY

Kimley»Horn

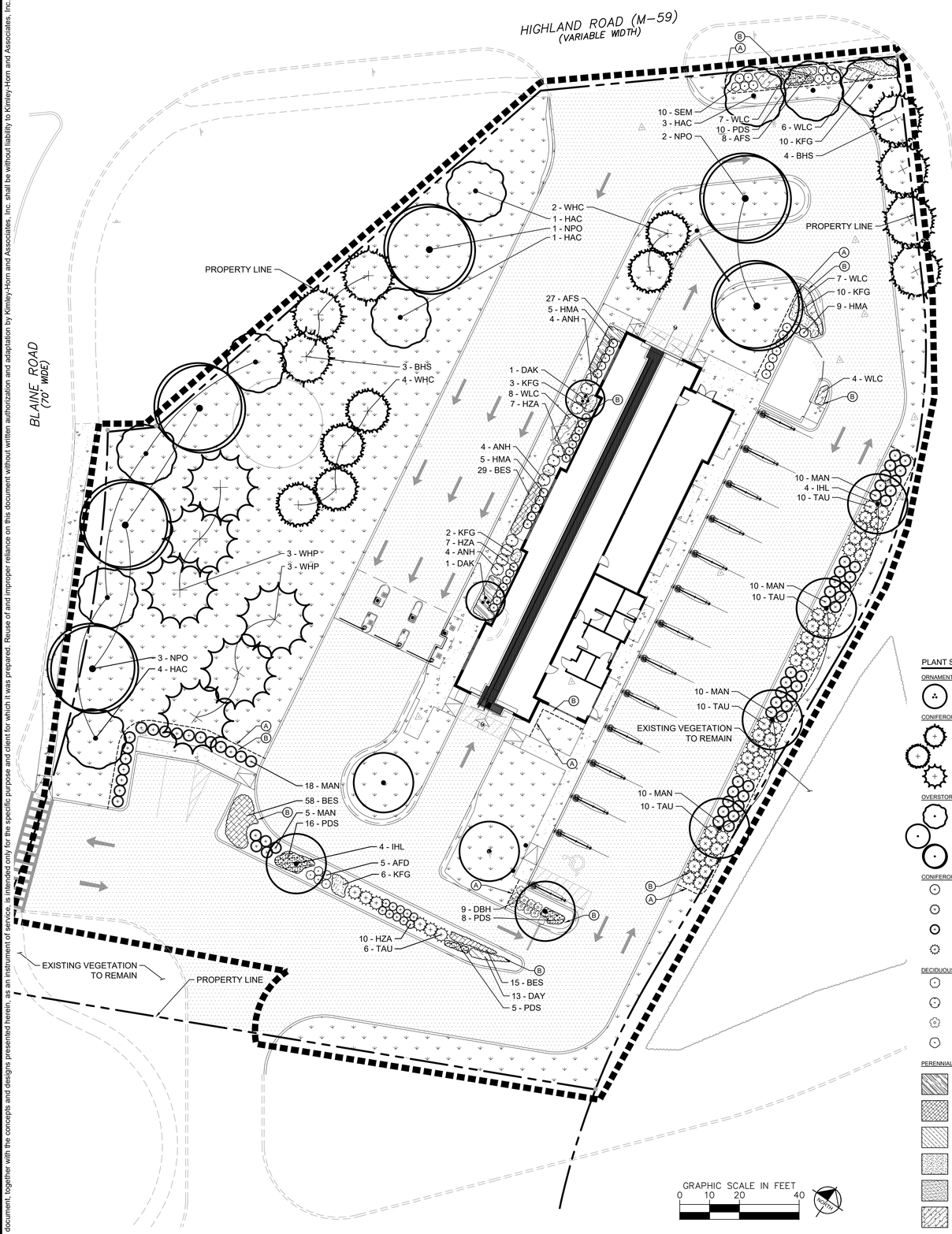
PHONE: 651-645-4197
WWW.KIMLEY-HORN.COM

KHA PROJECT 160284008
DATE 12/20/2022
SCALE AS SHOWN
DESIGNED BY ACL
DRAWN BY ACL
CHECKED BY WDM

SITE PLAN

MCW - HARTLAND, MI
PREPARED FOR
MISTER CAR WASH
HARTLAND MICHIGAN

SHEET NUMBER
C400



LANDSCAPE LEGEND

- EXISTING VEGETATION (TYP.)
- EDGER (TYP.)
- APPROXIMATE LIMITS OF SOD / IRRIGATION, SOD ALL DISTURBED AREAS (TYP.)
- SEED/ SOD EDGE (TYP.)
- KENTUCKY BLUEGRASS SEED MIX (TYP.)

LANDSCAPE KEYNOTES (A)

- (A) EDGER (TYP.)
- (B) DOUBLE SHREDDED HARDWOOD MULCH (TYP.)

LANDSCAPE SUMMARY

REQUIRED TREES	15 = 1 CANOPY OR EVERGREEN TREE PER 30 FT. OF BUILDING FRONTAGE
PROPOSED TREES	44 = 23 CANOPY TREES, 19 EVERGREEN TREES, 2 ORNAMENTAL TREES AT ROUGHLY 450 FT. OF BUILDING FRONTAGE

PLANT SCHEDULE

ORNAMENTAL TREES	CODE	BOTANICAL NAME	COMMON NAME	CONT	CAL
	DAK	BETULA PLATYPHYLLA `FARGO`	DAKOTA PINNACLE BIRCH	B & B	1.5" CAL
CONIFEROUS TREE	**CODE**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	**CAL**
	BHS	PICEA GLAUCA `DENSATA`	BLACK HILLS WHITE SPRUCE	B & B	8` HT.
	WHC	THUJA OCCIDENTALIS `WHITE CEDAR`	WHITE CEDAR	B & B	6` HT.
	WHP	PINUS STROBUS	WHITE PINE	B & B	8` HT.
OVERSTORY TREE	**CODE**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	**CAL**
	HAC	CELTIS OCCIDENTALIS	COMMON HACKBERRY	B & B	3" CAL.
	IHL	GLEDITSIA TRIACANTHOS VAR. INERMIS `IMPERIAL`	IMPERIAL HONEYLOCUST	B & B	2.5" CAL.
	NPO	QUERCUS ELLIPSOIDALIS `BAILSKIES` TM	MAJESTIC SKIES PIN OAK	B & B	3" CAL.
CONIFEROUS SHRUBS	**CODE**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	**SPACING**
	HMA	THUJA OCCIDENTALIS `HOLMSTRUP`	HOLMSTRUP ARBORVITAE	#5 CONT.	3` O.C.
	HZA	THUJA OCCIDENTALIS `HETZ MIDGET`	HETZ MIDGET ARBORVITAE	#5 CONT.	3` O.C.
	MAN	JUNIPERUS CHINENSIS `MANEYI`	MANEY JUNIPER	#5 CONT.	4` O.C.
	TAU	TAXUS X MEDIA `TAUNTONII`	TAUTON YEW	#5 CONT.	5` O.C.
DECIDUOUS SHRUBS	**CODE**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	**SPACING**
	AFD	CORNUS SERICEA `ARTIC FIRE`	ARTIC FIRE DOGWOOD	#5 CONT.	3` O.C.
	ANH	HYDRANGEA ARBORESCENS `ANNABELLE`	ANNABELLE HYDRANGEA	#5 CONT.	4` O.C.
	DBH	DIERVILLA LONICERA	DWARF BUSH HONEYSUCKLE	#5 CONT.	3` O.C.
	SEM	SORBARIA SORBIFOLIA `SEM`	SEM FALSESPIREA	#5 CONT.	3` O.C.
PERENNIALS	**CODE**	**BOTANICAL NAME**	**COMMON NAME**	**CONT**	**SIZE**
	AFS	SEDUM X `AUTUMN FIRE`	AUTUMN FIRE SEDUM	#1 CONT	18" O.C.
	BES	RUDBECKIA FULGIDA `GOLDSTURM`	BLACK-EYED SUSAN	#1 CONT	18" OC
	DAY	HEMEROCALLIS X `APRICOT SPARKLES`	APRICOT SPARKLES DAYLILY	#1 CONT.	15" OC
	KFG	CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER`	KARL FOERSTER FEATHER REED GRASS	#1 CONT	30" OC
	PDS	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	#1 CONT	24" OC
	WLC	NEPETA X FAASSENII `WALKERS LOW`	WALKERS LOW CATMINT	#1 CONT	30" OC

LANDSCAPE NOTES

1. CONTRACTOR SHALL CONTACT COMMON GROUND ALLIANCE AT 811 OR CALL811.COM TO VERIFY LOCATIONS OF ALL UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF ANY PLANTS OR LANDSCAPE MATERIAL.
2. ACTUAL LOCATION OF PLANT MATERIAL IS SUBJECT TO FIELD AND SITE CONDITIONS.
3. NO PLANTING WILL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
4. ALL SUBSTITUTIONS MUST BE APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO SUBMISSION OF ANY BID AND/OR QUOTE BY THE LANDSCAPE CONTRACTOR.
5. CONTRACTOR SHALL PROVIDE TWO YEAR GUARANTEE OF ALL PLANT MATERIALS. THE GUARANTEE BEGINS ON THE DATE OF THE LANDSCAPE ARCHITECT'S OR OWNER'S WRITTEN ACCEPTANCE OF THE INITIAL PLANTING. REPLACEMENT PLANT MATERIAL SHALL HAVE A ONE YEAR GUARANTEE COMMENCING UPON PLANTING.
6. ALL PLANTS TO BE SPECIMEN GRADE, MICHIGAN-GROWN AND/OR HARDY. SPECIMEN GRADE SHALL ADHERE TO, BUT IS NOT LIMITED BY, THE FOLLOWING STANDARDS:
   ALL PLANTS SHALL BE FREE FROM DISEASE, PESTS, WOUNDS, SCARS, ETC.
   ALL PLANTS SHALL BE FREE FROM NOTICEABLE GAPS, HOLES, OR DEFORMITIES.
   ALL PLANTS SHALL BE FREE FROM BROKEN OR DEAD BRANCHES.
   ALL PLANTS SHALL HAVE HEAVY, HEALTHY BRANCHING AND LEAFING.
   CONIFEROUS TREES SHALL HAVE AN ESTABLISHED MAIN LEADER AND A HEIGHT TO WIDTH RATIO OF NO LESS THAN 5:3.
7. PLANTS TO MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-2014 OR MOST CURRENT VERSION) REQUIREMENTS FOR SIZE AND TYPE SPECIFIED.
8. PLANTS TO BE INSTALLED AS PER MILA & ANSI STANDARD PLANTING PRACTICES.
9. PLANTS SHALL BE IMMEDIATELY PLANTED UPON ARRIVAL AT SITE. PROPERLY HEEL-IN MATERIALS IF NECESSARY; TEMPORARY ONLY.
10. PRIOR TO PLANTING, FIELD VERIFY THAT THE ROOT COLLAR/ROOT FLAIR IS LOCATED AT THE TOP OF THE BALLED & BURLAP TREE. IF THIS IS NOT THE CASE, SOIL SHALL BE REMOVED DOWN TO THE ROOT COLLAR/ROOT FLAIR. WHEN THE BALLED & BURLAP TREE IS PLANTED, THE ROOT COLLAR/ROOT FLAIR SHALL BE EVEN OR SLIGHTLY ABOVE FINISHED GRADE.
11. OPEN TOP OF BURLAP ON BB MATERIALS; REMOVE POT ON POTTED PLANTS; SPLIT AND BREAK APART PEAT POTS.
12. PRUNE PLANTS AS NECESSARY - PER STANDARD NURSERY PRACTICE AND TO CORRECT POOR BRANCHING OF EXISTING AND PROPOSED TREES.
13. WRAP ALL SMOOTH-BARKED TREES - FASTEN TOP AND BOTTOM. REMOVE BY APRIL 1ST.
14. STAKING OF TREES AS REQUIRED; REPOSITION, PLUMB AND STAKE IF NOT PLUMB AFTER ONE YEAR.
15. THE NEED FOR SOIL AMENDMENTS SHALL BE DETERMINED UPON SITE SOIL CONDITIONS PRIOR TO PLANTING. LANDSCAPE CONTRACTOR SHALL NOTIFY LANDSCAPE ARCHITECT FOR THE NEED OF ANY SOIL AMENDMENTS.
16. BACKFILL SOIL AND TOPSOIL TO ADHERE TO MDOT STANDARD SPECIFICATION (SELECT TOPSOIL BORROW) AND TO BE EXISTING TOP SOIL FROM SITE FREE OF ROOTS, ROCKS LARGER THAN ONE INCH, SUBSOIL DEBRIS, AND LARGE WEEDS UNLESS SPECIFIED OTHERWISE. MINIMUM 4" DEPTH TOPSOIL FOR ALL LAWN GRASS AREAS AND 12" DEPTH TOPSOIL FOR TREE, SHRUBS, AND PERENNIALS.
17. MULCH TO BE AT ALL TREE, SHRUB, PERENNIAL, AND MAINTENANCE AREAS. TREE AND SHRUB PLANTING BEDS SHALL HAVE 3" DEPTH OF DOUBLE SHREDDED HARDWOOD MULCH. DOUBLE SHREDDED HARDWOOD MULCH TO BE USED AROUND ALL PLANTS WITHIN TURF AREAS. PERENNIAL AND ORNAMENTAL GRASS BEDS SHALL HAVE 2" DEPTH DOUBLE SHREDDED HARDWOOD MULCH. MULCH TO BE FREE OF DELETERIOUS MATERIAL AND COLORED RED, OR APPROVED EQUAL. MULCH AND FABRIC TO BE APPROVED BY OWNER PRIOR TO INSTALLATION. MULCH TO MATCH EXISTING CONDITIONS (WHERE APPLICABLE).
18. EDGING TO BE COMMERCIAL GRADE STEEL (OR EQUAL) EDGING OR SPADED EDGE, AS INDICATED. POLY EDGING SHALL BE PLACED WITH SMOOTH CURVES AND STAKED WITH METAL SPIKES NO GREATER THAN 4 FOOT ON CENTER WITH BASE OF TOP BEAD AT GRADE, FOR MOWERS TO CUT ABOVE WITHOUT DAMAGE. UTILIZE CURBS AND SIDEWALKS FOR EDGING WHERE POSSIBLE. SPADED EDGE TO PROVIDE V-SHAPED DEPTH AND WIDTH TO CREATE SEPARATION BETWEEN MULCH AND GRASS. INDIVIDUAL TREE, SHRUB, OR RAIN-GARDEN BEDS TO BE SPADED EDGE, UNLESS NOTED OTHERWISE. EDGING TO MATCH EXISTING CONDITIONS (WHERE APPLICABLE).
19. ALL DISTURBED AREAS TO BE SODDED OR SEEDED, UNLESS OTHERWISE NOTED. PARKING LOT ISLANDS TO BE SODDED WITH SHREDDED HARDWOOD MULCH AROUND ALL TREES AND SHRUBS. SOD TO BE STANDARD MINNESOTA GROWN AND HARDY BLUEGRASS MIX, FREE OF LAWN WEEDS. ALL TOPSOIL AREAS TO BE RAKED TO REMOVE DEBRIS AND ENSURE DRAINAGE. SLOPES OF 3:1 OR GREATER SHALL BE STAKED. SEED AS SPECIFIED AND PER MN/DOT SPECIFICATIONS. IF NOT INDICATED ON LANDSCAPE PLAN, SEE EROSION CONTROL PLAN.
20. PROVIDE IRRIGATION TO ALL PLANTED AREAS ON SITE. IRRIGATION SYSTEM TO BE DESIGN/BUILD BY LANDSCAPE CONTRACTOR. LANDSCAPE CONTRACTOR TO PROVIDE SHOP DRAWINGS TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION OF IRRIGATION SYSTEM. CONTRACTOR TO PROVIDE OPERATION MANUALS, AS-BUILT PLANS, AND NORMAL PROGRAMMING. SYSTEM SHALL BE WINTERIZED AND HAVE SPRING STARTUP DURING FIRST YEAR OF OPERATION. SYSTEM SHALL HAVE ONE-YEAR WARRANTY ON ALL PARTS AND LABOR. ALL INFORMATION ABOUT INSTALLATION AND SCHEDULING CAN BE OBTAINED FROM THE GENERAL CONTRACTOR.
21. CONTRACTOR SHALL PROVIDE NECESSARY WATERING OF PLANT MATERIALS UNTIL THE PLANT IS FULLY ESTABLISHED OR IRRIGATION SYSTEM IS OPERATIONAL. OWNER WILL NOT PROVIDE WATER FOR CONTRACTOR.
22. REPAIR, REPLACE, OR PROVIDE SOD/SEED AS REQUIRED FOR ANY ROADWAY BOULEVARD AREAS ADJACENT TO THE SITE DISTURBED DURING CONSTRUCTION.
23. REPAIR ALL DAMAGE TO PROPERTY FROM PLANTING OPERATIONS AT NO COST TO OWNER.
24. MAINTAIN TREES, SHRUBS, AND OTHER PLANTS UNTIL PROJECT COMPLETION, BUT IN NO CASE, LESS THAN FOLLOWING PERIOD; 1 YEAR AFTER PROJECT COMPLETION. MAINTAIN TREES, SHRUBS, AND OTHER PLANTS BY PRUNING, CULTIVATING, AND WEEDING AS REQUIRED FOR HEALTHY GROWTH. RESTORE PLANTING SAUCERS. TIGHTEN AND REPAIR STAKE AND GUY SUPPORTS AND RESET TREES AND SHRUBS TO PROPER GRADES OR VERTICAL POSITION AS REQUIRED. RESTORE OR REPLACE DAMAGED WRAPPINGS. SPRAY AS REQUIRED TO KEEP TREES AND SHRUBS FREE OF INSECTS AND DISEASE. REPLENISH MULCH TO THE REQUIRED DEPTH. MAINTAIN LAWNS FOR 45 DAYS AFTER INSTALLING SOD INCLUDING MOWING WHEN SOD RECITES 4" IN HEIGHT. WEED PLANTING BEDS AND MULCH SAUCERS AT MINIMUM ONCE A MONTH DURING THE GROWING SEASON. PROVIDE A MONTHLY REPORT TO THE OWNER ON WEEDING AND OTHER MAINTENANCE RESPONSIBILITIES.

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2022 KIMLEY-HORN OF MICHIGAN, INC.
PHONE: 651-645-4197
WWW.KIMLEY-HORN.COM

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND ME OR I AM A DULY LICENSED PROFESSIONAL LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF MICHIGAN.

MITCHELL G. COOKAS
MN
LIC. NO. 53828
DATE: 12/20/2022

KHA PROJECT	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
160284008	AS SHOWN	BPS	BPS	MGC
DATE				
12/20/2022				

LANDSCAPE PLAN

MCW - HARTLAND, MI

PREPARED FOR
MISTER CAR WASH

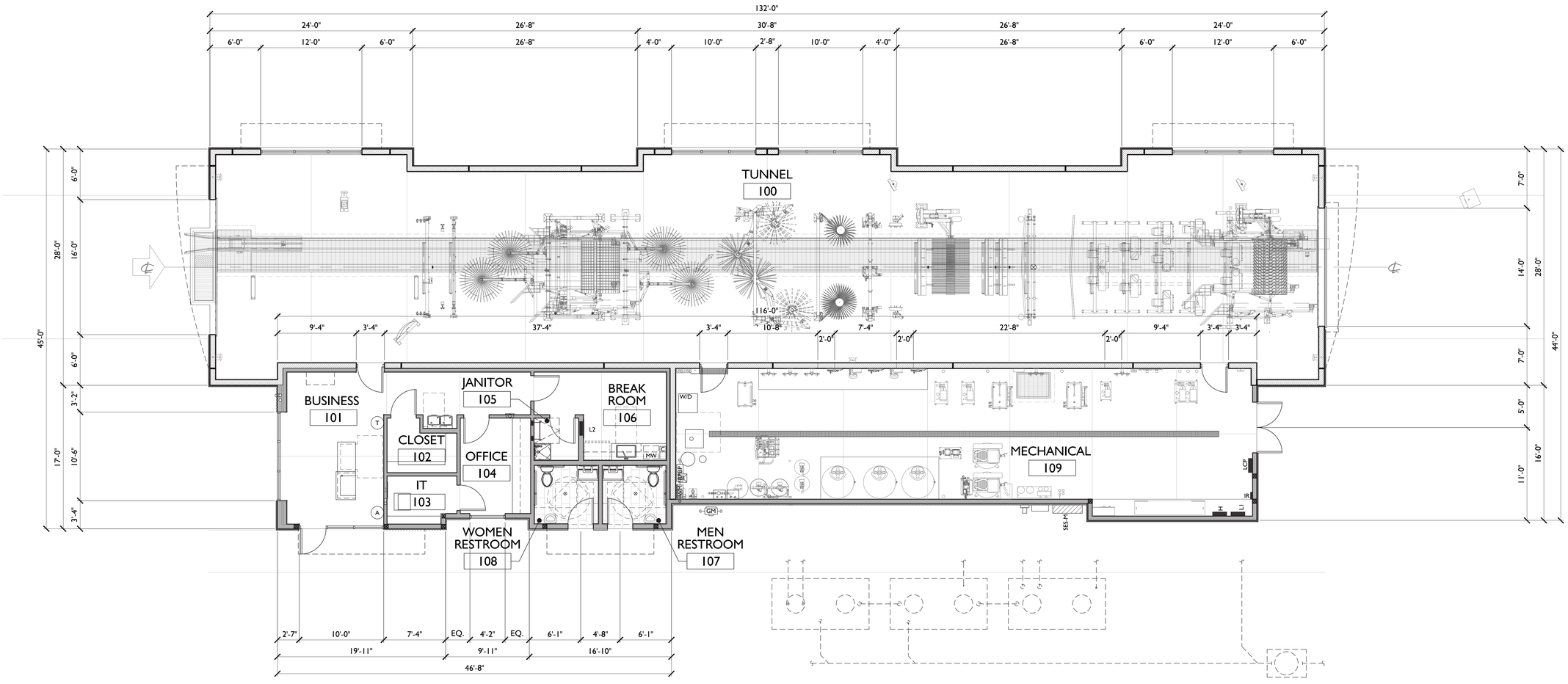
HARTLAND MICHIGAN

SHEET NUMBER
L100

PRELIMINARY - NOT FOR CONSTRUCTION

November 9, 2022

Mister Car Wash MI 1482, 130C1 M
Elevations and Materials
A23 Studios #22109

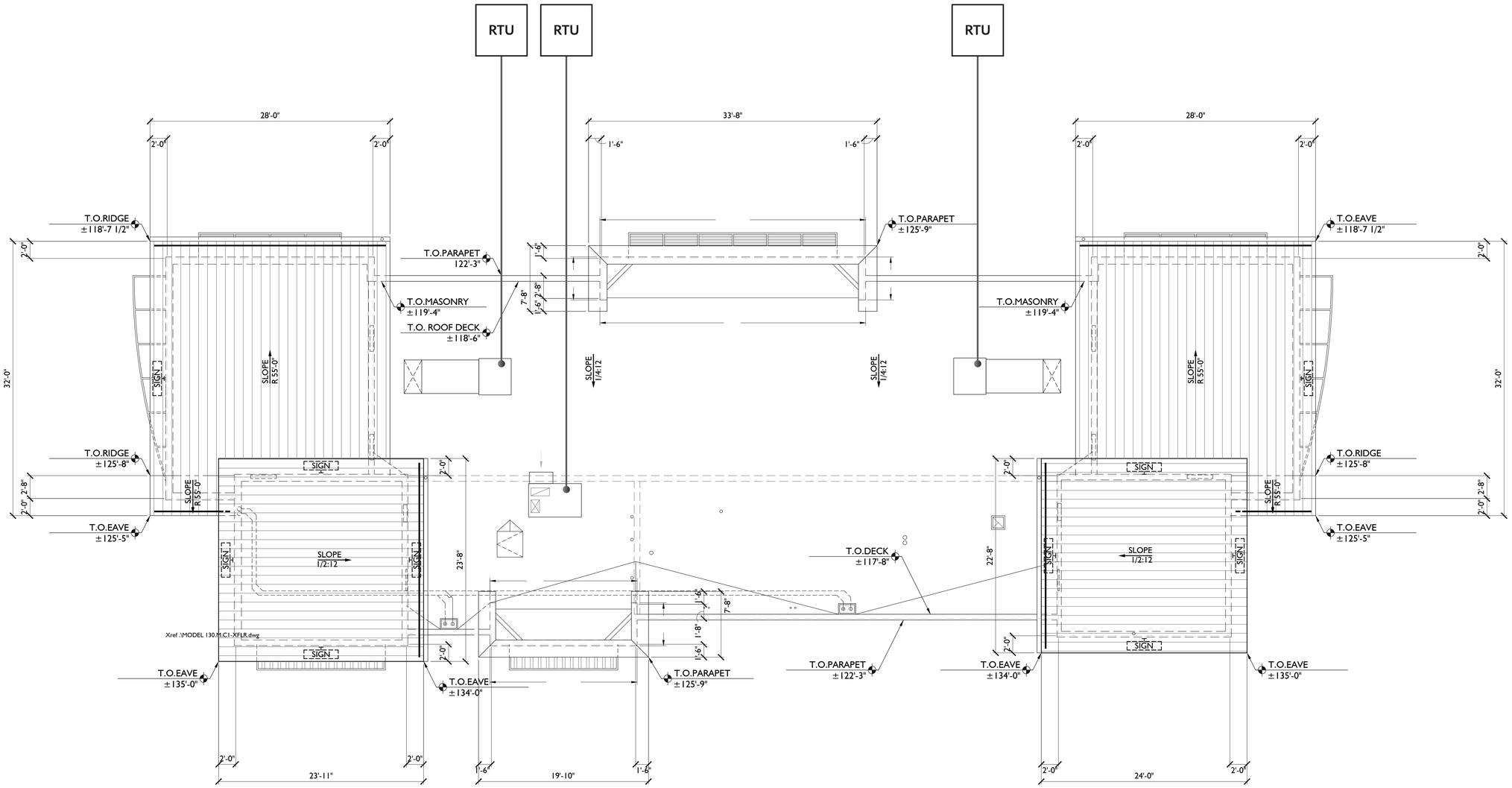


1

North

FLOOR PLAN

3/16" = 1'

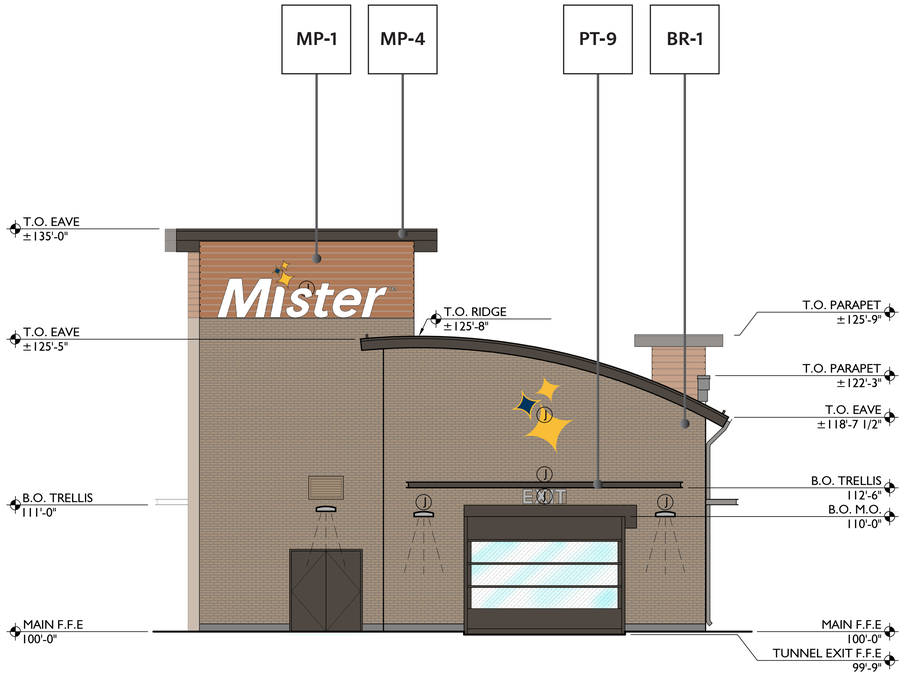


2

North

ROOF PLAN

3/16" = 1'



NORTH - CAR WASH TUNNEL EXIT ELEVATION

3/16" = 1'

MATERIAL TAKE OFF

Exterior Building Finishes - 1,264 sqft - 100%

A. (BR-1) Brick (Veneer) - 845 sqft - 66.9%

B. (MP-1) Alumaboard - 123 sqft - 9.8%

C. (MP-5) Metal Flat Facia - 56 sqft - 4.4%

D. Awnings - 12 sqft - 0.9%

E. Other - 228 sqft - 18.0%

FINISH LEGEND

MP-1 — METAL PANEL - ALUMABOARD / PRE-FINISHED METAL SCREEN SYSTEM / HAZELNUT BROWN

MP-4 — METAL PANEL - CTRMS / PRE-FINISHED STANDING SEAM METAL ROOF - COLOR TO MATCH BLACK FOX SW7020

BR-1 — BRICK VENEER - BRICK-IT / RICHMOND WIRECUT

ALU — WINDOWS & DOORS - THERMALLY BROKEN ANODIZED ALUMINUM / CLEAR

EIFS — EXTERIOR INSULATION FINISHING SYSTEM

CU-1 — CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO FOLK STONE SW6005

CU-2 — CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO VERSATILE GRAY SW 6072

PT-6 — EXTERIOR PAINT - SHERWIN-WILLIAMS / VERSATILE GRAY SW6072

PT-7 — EXTERIOR PAINT - SHERWIN-WILLIAMS / IRON ORE SW7069

PT-9 — EXTERIOR PAINT - SHERWIN-WILLIAMS / BLACK FOX SW7020

MATERIAL TAKE OFF

Exterior Building Finishes - 3,257 sqft - 100%

A. (BR-1) Brick (Veneer) - 1,289 sqft - 39.7%

B. (ALU) Store Front / Glass - 264 sqft - 8.2%

C. (EIFS) EIFS Cornice - 112 sqft - 3.4%

D. (CU-1/2) CMU - 804 sqft - 24.6%

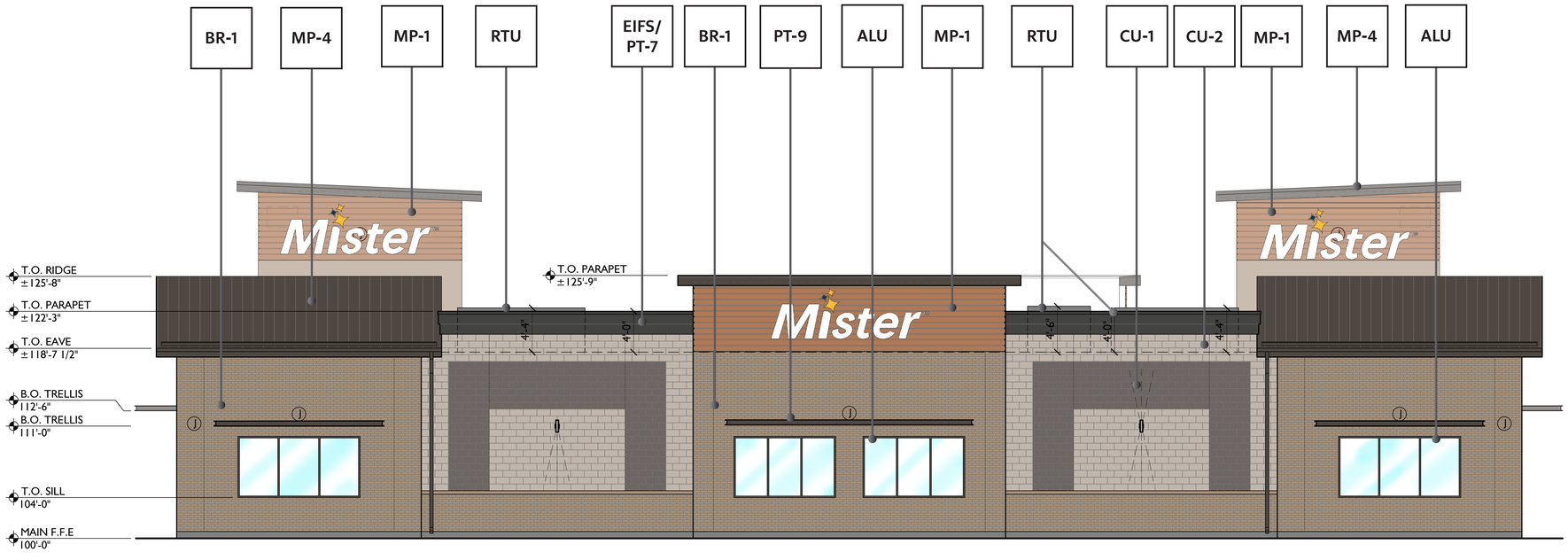
E. (MP-1) Alumaboard - 198 sqft - 6.1%

F. (MP-4) Metal Roof Panel - 392 sqft - 12%

G. (MP-5) Metal Flat Facia - 82 sqft - 2.5%

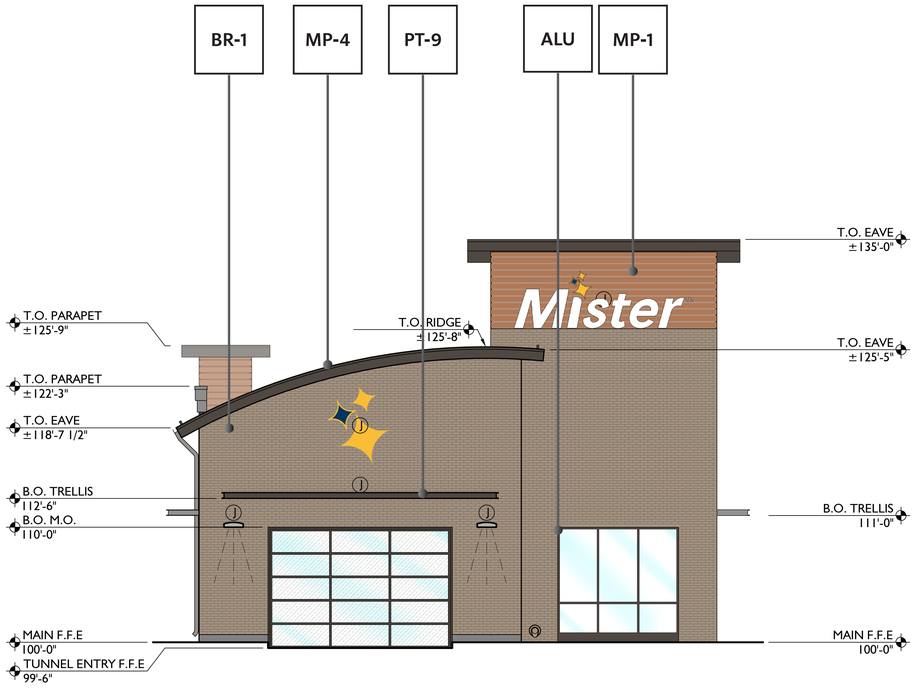
H. Awnings - 28 sqft - 0.8%

I. Other - 88 sqft - 2.7%



DIRECTION - CAR WASH TUNNEL WALL ELEVATION

3/16" = 1'



SOUTH - CAR WASH TUNNEL ENTRANCE

3/16" = 1'

5

MATERIAL TAKE OFF

Exterior Building Finishes - 1,304 sqft - 100%

A. (BR-1) Brick (Veneer) - 824 sqft - 63.2%

B. (ALU) Store Front / Glass - 105 sqft - 8.0%

C. (MP-1) Alumaboard - 130 sqft - 10.0%

D. (MP-5) Metal Facia - 57 sqft - 4.4%

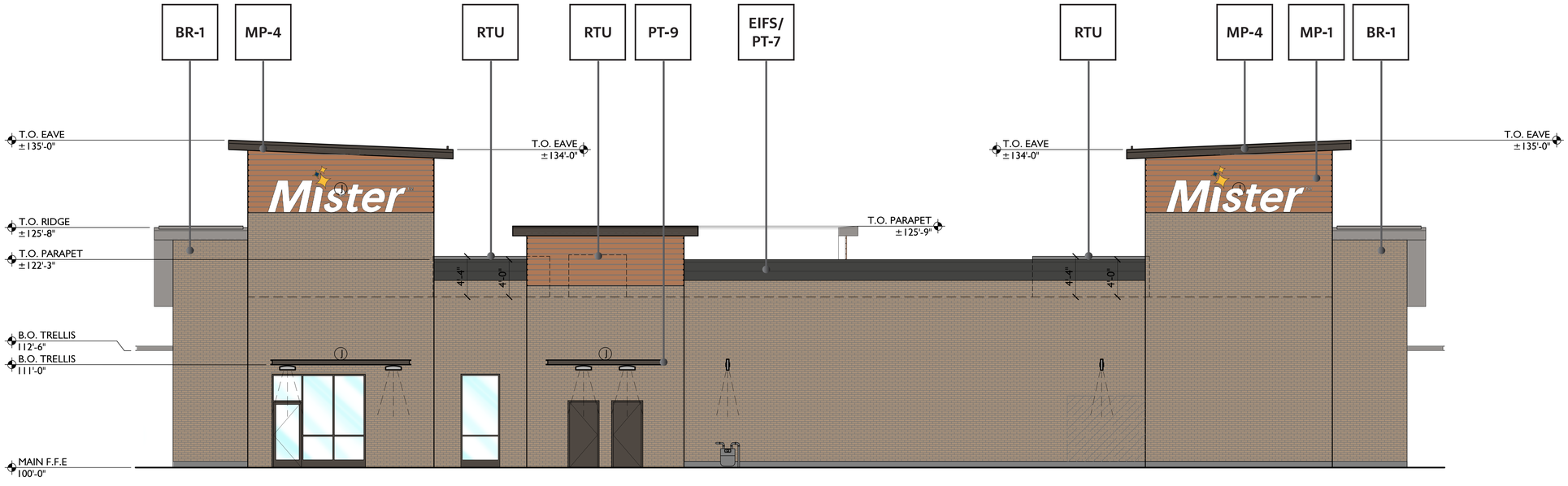
E. Awnings - 12 sqft - 0.9%

F. Other - 176 sqft - 13.5%

FINISH LEGEND

MP-1		METAL PANEL - ALUMABOARD / PRE-FINISHED METAL SCREEN SYSTEM / HAZELNUT BROWN
MP-4		METAL PANEL - CTRMS / PRE-FINISHED STANDING SEAM METAL ROOF - COLOR TO MATCH BLACK FOX SW7020
BR-1		BRICK VENEER - BRICK-IT / RICHMOND WIRECUT
ALU		WINDOWS & DOORS - THERMALLY BROKEN ANODIZED ALUMINUM / CLEAR
EIFS		EXTERIOR INSULATION FINISHING SYSTEM

CU-1		CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO FOLK STONE SW6005
CU-2		CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO VERSATILE GRAY SW 6072
PT-6		EXTERIOR PAINT - SHERWIN-WILLIAMS / VERSATILE GRAY SW6072
PT-7		EXTERIOR PAINT - SHERWIN-WILLIAMS / IRON ORE SW7069
PT-9		EXTERIOR PAINT - SHERWIN-WILLIAMS / BLACK FOX SW7020



MATERIAL TAKE OFF

Exterior Building Finishes - 3,557 sqft - 100%

A. (BR-1) Brick (Veneer) - 2,740 sqft - 77.0%

B. (ALU) Store Front / Glass - 142 sqft - 4.0%

C. (EIFS) EIFS Cornice - 123 sqft - 3.5%

D. (MP-1) Alumaboard - 339 sqft - 9.5%

E. (MP-5) Metal Facia - 95 sqft - 2.7%

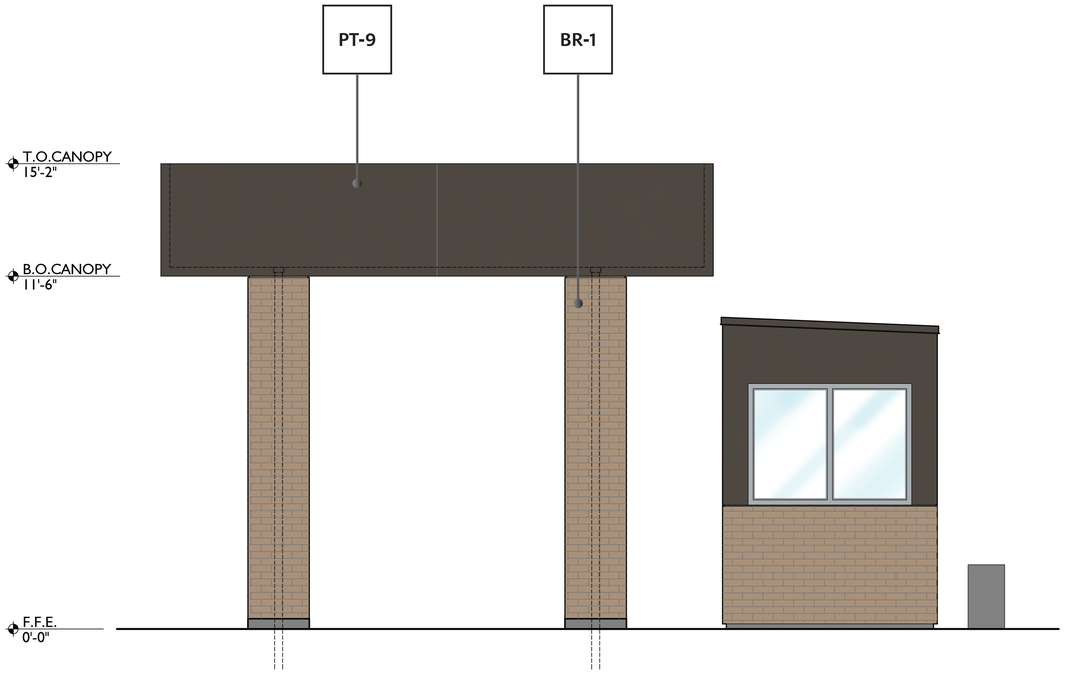
F. Awnings - 13 sqft - 0.4%

G. Other - 105 sqft - 2.9%

6

DIRECTION - BUSINESS/ MECHANICAL ELEVATION

3/16" = 1'

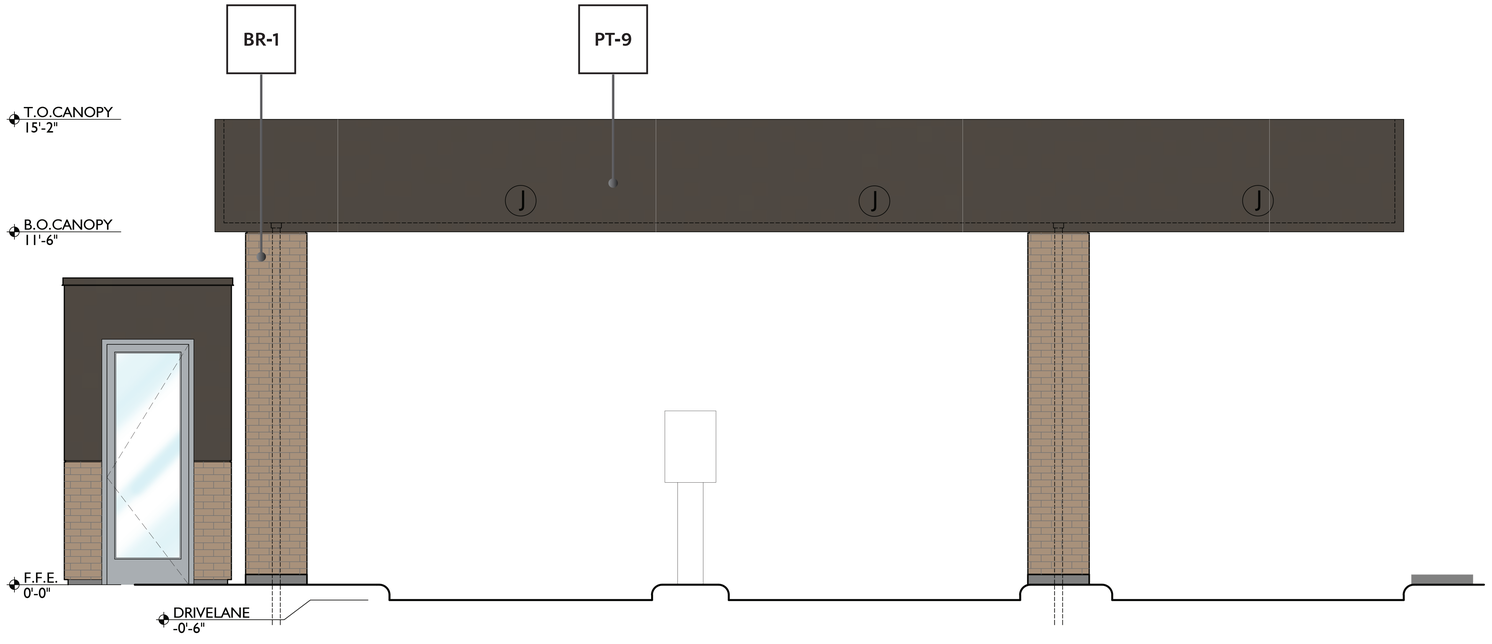


7 **POS CANOPY SIDE ELEVATION**

1/2" = 1'

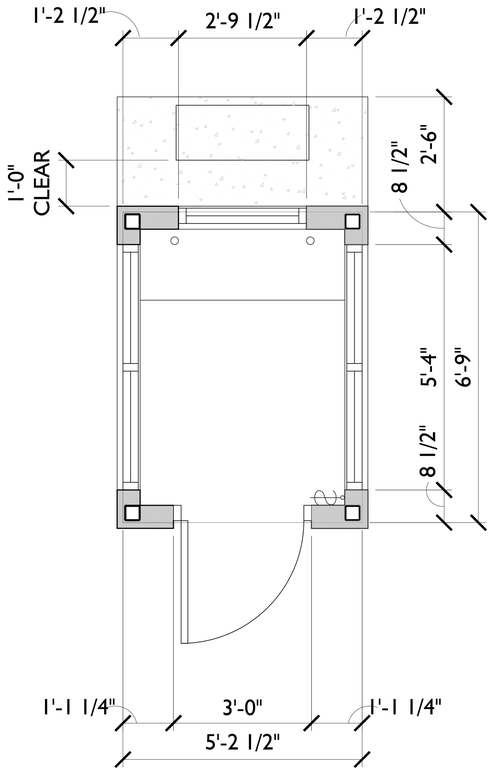
FINISH LEGEND

MP-1	METAL PANEL - ALUMABOARD / PRE-FINISHED METAL SCREEN SYSTEM / HAZELNUT BROWN	
MP-4	METAL PANEL - CTRMS / PRE-FINISHED STANDING SEAM METAL ROOF - COLOR TO MATCH BLACK FOX SW7020	
BR-1	BRICK VENEER - BRICK-IT / RICHMOND WIRECUT	
ALU	WINDOWS & DOORS - THERMALLY BROKEN ANODIZED ALUMINUM / CLEAR	
EIFS	EXTERIOR INSULATION FINISHING SYSTEM	
CU-1	CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO FOLK STONE SW6005	
CU-2	CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO VERSATILE GRAY SW 6072	
PT-6	EXTERIOR PAINT - SHERWIN-WILLIAMS / VERSATILE GRAY SW6072	
PT-7	EXTERIOR PAINT - SHERWIN-WILLIAMS / IRON ORE SW7069	
PT-9	EXTERIOR PAINT - SHERWIN-WILLIAMS / BLACK FOX SW7020	



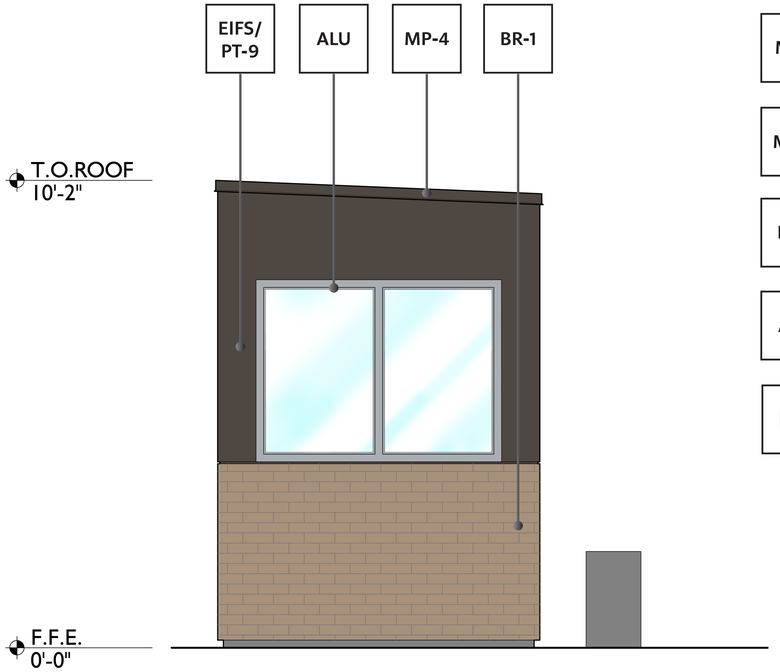
8 **POS CANOPY FRONT ELEVATION**

1/2" = 1'



9 ATTENDANT SHELTER PLAN

3/4" = 1'

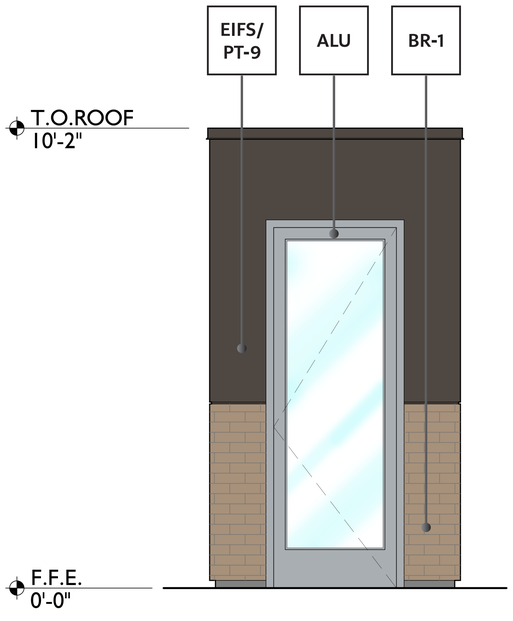


10 ATTENDANT SHELTER SIDE ELEVATION

3/4" = 1'

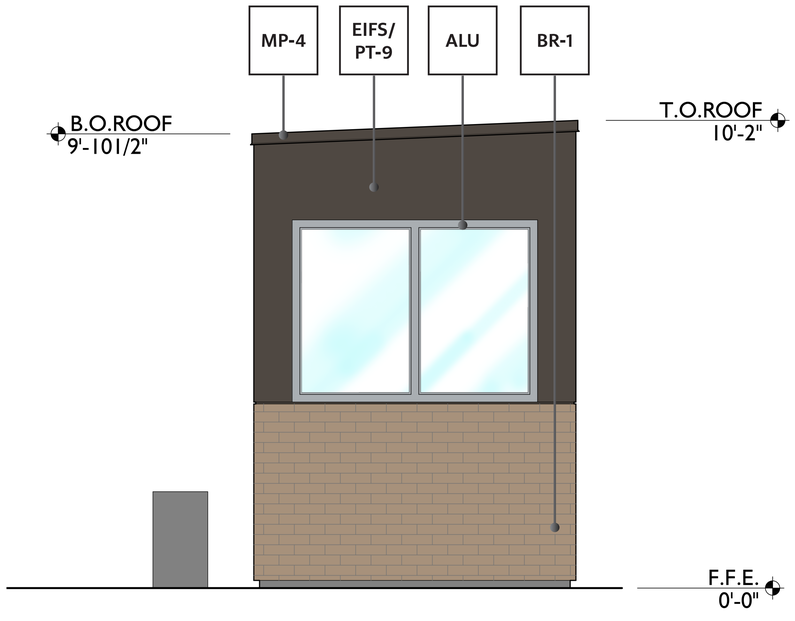
FINISH LEGEND

MP-1	METAL PANEL - ALUMABOARD / PRE-FINISHED METAL SCREEN SYSTEM / HAZELNUT BROWN	CU-1 CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO FOLK STONE SW6005
MP-4	METAL PANEL - CTRMS / PRE-FINISHED STANDING SEAM METAL ROOF - COLOR TO MATCH BLACK FOX SW7020	CU-2 CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO VERSATILE GRAY SW 6072
BR-1	BRICK VENEER - BRICK-IT / RICHMOND WIRECUT	PT-6 EXTERIOR PAINT - SHERWIN-WILLIAMS / VERSATILE GRAY SW6072
ALU	WINDOWS & DOORS - THERMALLY BROKEN ANODIZED ALUMINUM / CLEAR	PT-7 EXTERIOR PAINT - SHERWIN-WILLIAMS / IRON ORE SW7069
EIFS	EXTERIOR INSULATION FINISHING SYSTEM	PT-9 EXTERIOR PAINT - SHERWIN-WILLIAMS / BLACK FOX SW7020



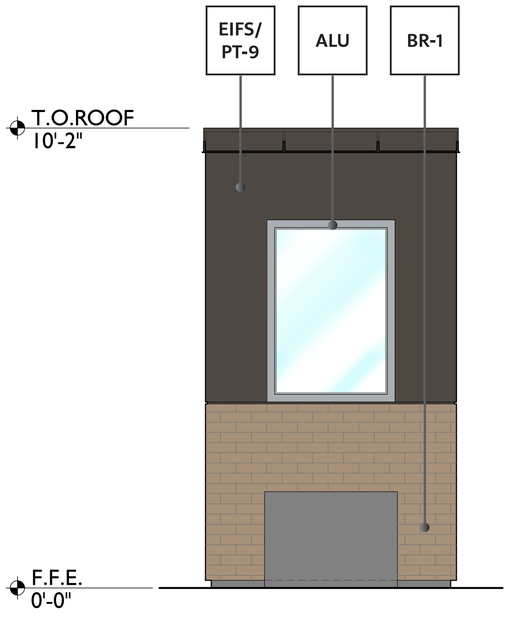
11 ATTENDANT SHELTER FRONT ELEVATION

3/4" = 1'



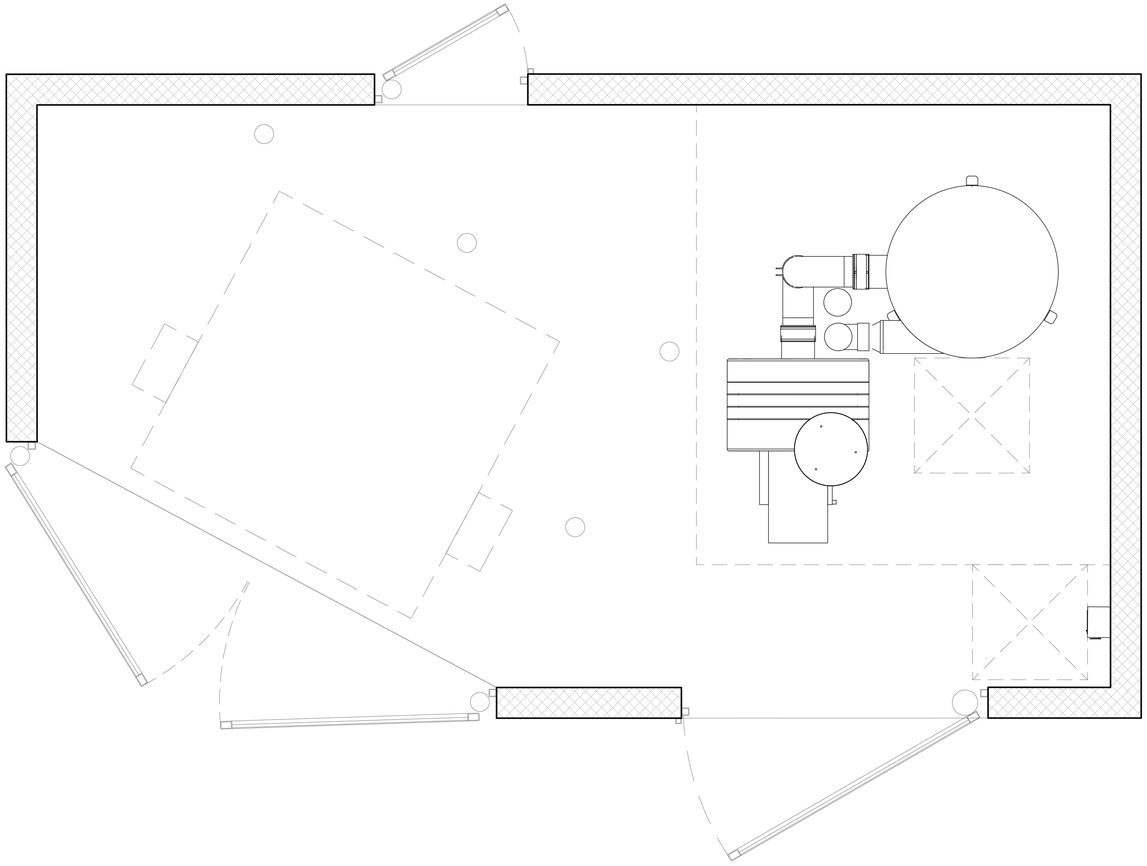
12 ATTENDANT SHELTER SIDE ELEVATION

3/4" = 1'



13 ATTENDANT SHELTER READ ELEVATION

3/4" = 1'



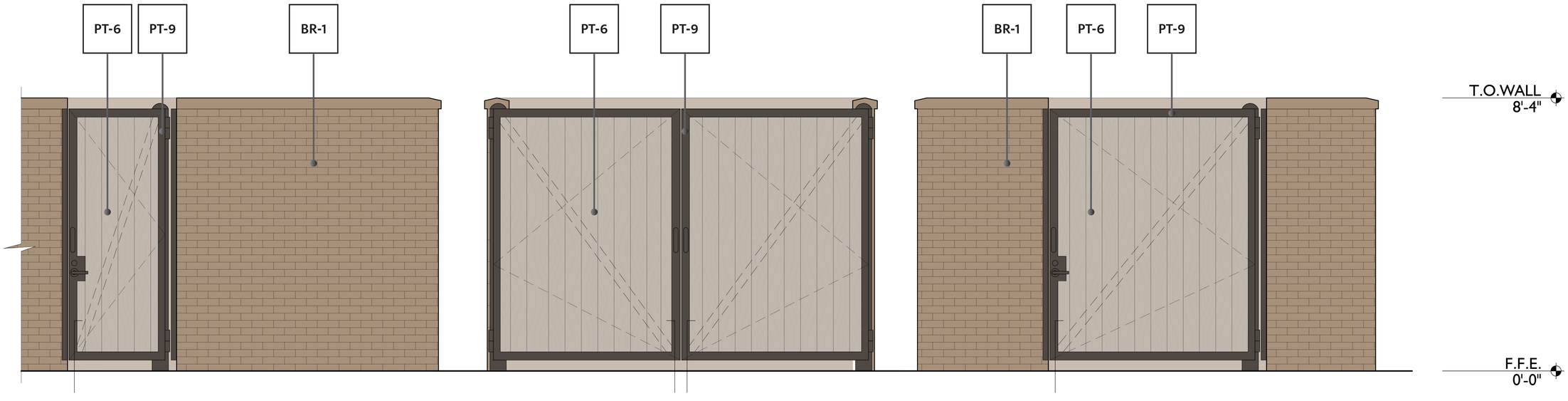
FINISH LEGEND

MP-1	METAL PANEL - ALUMABOARD / PRE-FINISHED METAL SCREEN SYSTEM / HAZELNUT BROWN	**CU-1** CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO FOLK STONE SW6005
MP-4	METAL PANEL - CTRMS / PRE-FINISHED STANDING SEAM METAL ROOF - COLOR TO MATCH BLACK FOX SW7020	**CU-2** CMU (SPLIT FACE) - INTEGRAL COLOR TO BE CLOSE TO VERSATILE GRAY SW 6072
BR-1	BRICK VENEER - BRICK-IT / RICHMOND WIRECUT	**PT-6** EXTERIOR PAINT - SHERWIN-WILLIAMS / VERSATILE GRAY SW6072
ALU	WINDOWS & DOORS - THERMALLY BROKEN ANODIZED ALUMINUM / CLEAR	**PT-7** EXTERIOR PAINT - SHERWIN-WILLIAMS / IRON ORE SW7069
EIFS	EXTERIOR INSULATION FINISHING SYSTEM	**PT-9** EXTERIOR PAINT - SHERWIN-WILLIAMS / BLACK FOX SW7020

14

DUMPSTER AND VACUUM ENCLOSURE PLAN

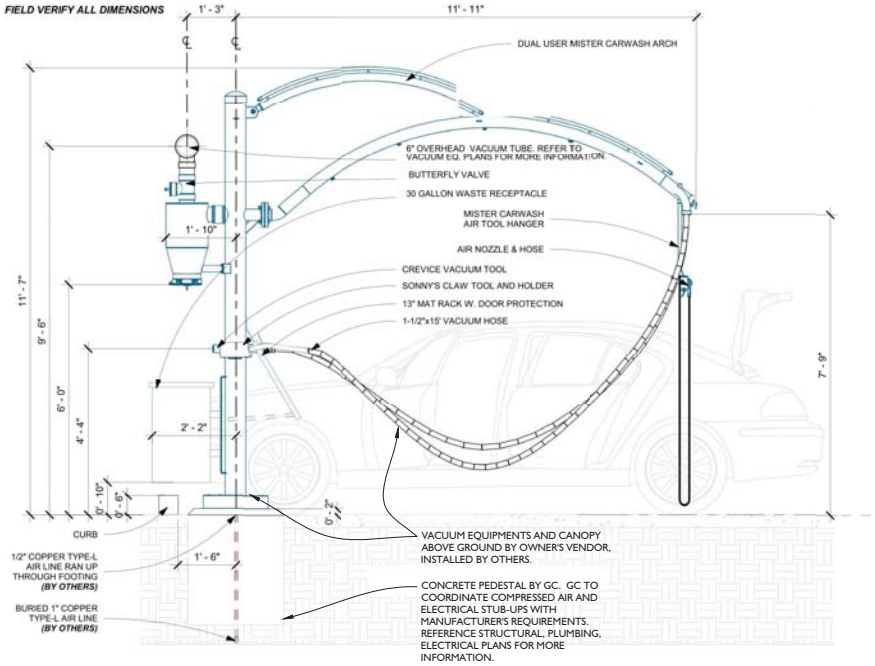
3/4" = 1'-0"



15

DUMPSTER AND VACUUM ENCLOSURE ELEVATIONS

3/4" = 1'-0"



15 **VACUUM ARCH DETAIL**

NOT TO SCALE

16 **IMAGE OF VACUUM ARCH**

NOT TO SCALE

Hartland Township Planning Commission Meeting Agenda Memorandum

Submitted By: Troy Langer, Planning Director

Subject: Site Plan with Special Land Use Application #22-007 (Automobile wash within completely enclosed building at 10382 Highland Road)

Date: September 1, 2022

Recommended Action

Move to recommend approval of Special Land Use Permit and approve Site Plan Application #22-007, a request to redevelop a commercial site and construct an approximate 6,500 square foot automobile wash, within a completely enclosed building, at 10382 Highland Road, in Section 28 of the Township (Tax Parcel ID #4708-28-201-061). The recommendation for approval is based on the following findings:

1. The proposed special land use, automobile wash within a completely enclosed building, meets the intent and purposes of the Ordinance as well as the specific standards outlined in Section 6.6 (Special Uses).

2. The proposed special land use is permitted in the GC (General Commercial), as outlined in Section 3.1.14.D.iii, and the proposed use is compatible with the existing uses in the vicinity.

3. The proposed use will be served by public water and sanitary sewer, by existing essential facilities and public services, and the Fire Department has no objection.

4. The proposed use will be served by public roads with direct access to Highland Road and Blaine Road.

5. The proposed use will not create additional requirements at public cost for public facilities as the proposed site will be served by public water and sanitary sewer.

Approval is subject to the following conditions:

1. The proposed special land use, automobile wash within a completely enclosed building, is subject to approval by the Township Board.

2. The applicant shall adequately address the outstanding items noted in the Planning Department's memorandum, dated September 1, 2022, on the Construction Plan set, subject to an administrative review by the Planning staff prior to the issuance of a land use permit.

3. A land use permit is required after approval of the Site Plan and Special Use Permit and prior to construction.

4. Applicant complies with any requirements of the Department of Public Works Director, Township Engineering Consultant (SDA), Hartland Deerfield Fire Authority, and all other government agencies, as applicable.

5. (Any other conditions the Planning Commission deems necessary)

Discussion

Applicant: Evanthia Bardwell

Site Description

The subject property is located south of Highland Road, east of Blaine Road, and north of Hartland Marketplace Planned Development in Section 28 of the Township. It was formerly occupied by Burger King, since 1986. Burger King closed sometime in 2020. The existing Burger King building will be removed, and the parking lot will undergo some layout changes as part of the proposed automobile wash project. The site is zoned GC (General Commercial) and is 1.66 acres (Tax Parcel ID #4708-28-201-061). This property is considered a corner lot with approximately 120 lineal feet along Highland Road and approximately 382 lineal feet along Blaine Road.

The Future Land Use Map (FLUM) designates the subject site and adjacent properties to the south, east, and west as Commercial.

Overview and Background Information

Site Plan Applications #22 and #25; Special Use Application #134

Plans for a Burger King restaurant were reviewed under Site Plan Application #22 (1981), Site Plan Application #25 (1981), and Special Use Application #134 (1982). Each application was denied.

ZBA Application #159

On April 14, 1981, the Zoning Board of Appeals denied a request for variances to locate parking (for Burger King) within the required setbacks; and also denied a variance to install a pylon sign (80 feet in height) that exceeded the maximum allowed sign height.

Sign Permit Application #109

A pylon sign was approved for Burger King on September 9, 1982, under Sign Permit Application #109. The sign dimensions are listed as 8 feet in width by 8 feet in length (64 sq. ft.) and the overall height of the pylon sign as 25 feet. Sign drawings were not found in the file information. The site plan approved for Burger King under SP #58 shows a pylon sign on the north side of the building.

Site Plan Application #41

This was a request to construct a gas station and convenience store on the subject site. The Planning Commission recommended approval on February 21, 1984; however, the project was deemed null and void on August 21, 1984, as the required permits were not obtained; thus, the project did not move forward.

Site Plan Application #58

On January 9, 1986, the Planning Commission recommended approval of Site Plan Application #58 for the construction of an approximate 3,300 square foot Burger King restaurant with drive-through service. The project was approved by the Township Board on January 21, 1986. The site plan shows an area on the north side of the building that is labeled as “greenhouse” (12 feet by 29 feet in size). Building elevations were not included with the site plans.

Site Plan Application #59

On February 13, 1986, the Planning Commission approved Site Plan Application #59, a minor amendment to the plans approved under SP #58. The changes included moving the coolers outside, behind the building, constructing a wall around them, and moving the dumpster enclosure 10 feet to the south. The Burger King restaurant was constructed in 1986 under Land Use Permit #1536.

Fourth Amendment to Hartland Marketplace Planned Development Agreement (2008)
The Hartland Marketplace Planned Development (PD) was approved by the Township in 2007 under SP #424. Four amendments to the PD Agreement occurred between 2007 and 2008. As part of the overall plan for the PD, off-site road improvements to Highland Road (M-59) were proposed. The Fourth Amendment to Hartland Marketplace Planned Development amended Section 12 of the original PD Agreement (entitled "Off-site Road Improvements for M-59"), "to conform with the proposed M-59 improvements and to reflect the change in the cost related thereto." In addition, the Fourth Amendment amended Section 6.7, "Signs" of the Agreement, to add subsection 6.7.6. regarding the existing Burger King pylon sign.

Based on notes found in the site plan file, the Burger King pylon sign was moved in 2008 to its current location, however the land use permit was not found in the file. The pylon sign will be removed as part of the current project for the car wash. All new signs will be reviewed under a separate sign permit reviewed administratively by staff.

Site Plan Application #19-009
On November 7, 2019, the Planning Commission approved Site Plan Application #19-009, which was a request to remodel the existing Burger King building. The improvements included removal of the greenhouse portion of the building, new façade finishes on the building's exterior, interior remodeling, and installation of new landscaping on the site. The remodeling project did not commence, and Burger King closed in 2020.

Proposed Use
The applicant is requesting to demolish the existing Burger King building and construct an approximate 6,500 square foot building for a fully automated automobile wash (Mister Car Wash). The parking lot will be renovated as well to accommodate the building and circulation patterns.

Per Section 3.1.14.D.iii., an automobile wash, when within a completely enclosed building, is considered a special land use in the GC (General Commercial) zoning district. Additional standards for this special land use are provided in Section 4.17 of the Zoning Ordinance (Automobile Wash Establishment).

The proposed project also requires site plan approval thus there are two application elements: special land use and site plan approval for an automobile fueling and convenience station. Although there are technically two elements, all are incorporated into one combined site plan which will be reviewed and approved concurrently.

Per the Hartland Township Zoning Ordinance and the State Enabling Act, a public hearing is required for the special land use application. Given the requirements for publishing a notice for the special land use, the public hearing has been scheduled for the September 8, 2022, Planning Commission meeting.

Request and Project Summary
The applicant is requesting site plan with special land use approval to redevelop a commercial site and construct a fully automated automobile wash, which is within the building. The existing Burger King building will be demolished. The site is accessed via existing driveways on Blaine Road and Highland Road.

The proposed 6,500 square foot car wash building is situated on the east side of the site, with parking spaces on the west side of the building. The car wash tunnel is approximately 160 feet in length. Parking spaces with vacuuming equipment are shown on the west side of the proposed car wash building. Vacuuming equipment is provided in 22 of 27 parking spaces.

To access the car wash tunnel, patrons enter the site and drive to the east side of the building, where there are three (3) one-way stacking lanes (one-way circulation). Thirty-eight (38) stacking spaces are shown. Payment for the car wash occurs under the vehicular canopy (POS- Point of Sales). The entrance to the car wash is on the north side of the building. The patron remains in the car and exits the car wash at the south end of the building.

A free-standing attendant building is shown east of the main building and northwest of the POS canopy. The attendant shelter is for the employee to use when working the POS lanes during inclement weather.

There are two (2) unroofed enclosures in the parking lot. One is labeled as the vacuum enclosure (southwest of the building). The second enclosure is on the west side of the parking lot and is labeled as combined trash and vacuum enclosure. These structures house the mechanical equipment for the vacuums.

Approval Procedure

The proposed use, automobile wash within a completely enclosed building, requires approval from the Township Board for the special land use. The Planning Commission will review the special land use and make a recommendation to the Township Board.

The project also requires the site plan to be reviewed by the Planning Commission who will make a final decision on the site plan. The plans will be reviewed using the development standards of the GC (General Commercial) zoning district (Section 3.1.14.), standards associated with Automobile Wash Establishment (Section 4.17), and all applicable zoning standards in the Zoning Ordinance.

SPECIAL LAND USE REVIEW – General Standards

In accordance with Section 6.6, Special Uses, of the Hartland Township Zoning Ordinance, the following standards shall serve the Planning Commission and Township Board as the basis for decisions involving such uses. The standards are provided below, and the applicant has submitted a letter, as a separate attachment, which addresses the special use criteria.

A. Be harmonious and in accordance with the objectives, intent, and purposes of this Ordinance.
B. Be compatible with the natural environment and existing and future land uses in the vicinity.
C. Be compatible with the Hartland Township Comprehensive Plan.
D. Be served adequately by essential facilities and public services, such as highways, streets, police and fire protection, drainage ways and structures, refuse disposal, or that the persons or agencies responsible for the establishment of the proposed use shall be able to adequately provide any such service.
E. Not be detrimental, hazardous, or disturbing to the existing or future neighboring uses, person, property, or the public welfare.
F. Not create additional requirements at public cost for public facilities and services that will be detrimental to the economic welfare of the community.

The Planning Department believes the proposed use can and will meet the criteria listed above for the special land use request. The applicant has provided responses to the special land use general standards as an attachment, in the email dated August 30, 2022. The applicant will be responsible for all applicable approvals and permits from other agencies and departments for the proposed use.

SPECIAL LAND USE REVIEW – Applicable Site Standards

In addition to a finding by the Planning Commission and Township Board that the criteria above have been satisfied, standards outlined in Section 4.17 (Automobile Wash Establishment), will apply. Those standards are listed below, followed by staff's findings on each standard.

Automobile Wash Establishment (Section 4.17)

1. Layout. All washing activities shall be carried on within a completely enclosed, roofed building. Vacuuming activities shall be permitted in the side or rear yard only, provided such activities are located at least fifty (50) feet from adjacent residentially zoned property. Entrances and exits shall not face abutting residentially zoned or used property.

   The proposed automobile wash is within a completely enclosed building, with entrances to the site that face Blaine Road or Highland Road. Adjacent properties (south and east) are zoned PD (Planned Development) and residentially zoned properties or uses are farther than fifty (50) feet from the subject site. Vacuuming equipment is in the front yard, which is the area between the leading edge of the building (west elevation) and the right-of-way line of Blaine Road. With regard to the proposed vacuums; at the time the ordinance was drafted, automobile vacuums were designed to contain a tall metal canister style system with a vacuum tube or in some cases, two (2) vacuum tubes. As a result, this older style vacuum system would contain many different tall metal canisters. In general, these were deemed something that would be better served to be screened behind a building. However, the applicant is proposing a different vacuum style system. This system has the mechanical equipment in an enclosure area and the vacuum hoses do not require their own motor or vacuum device. In the proposed vacuum system, no mechanical system is visible. The only item visible is the hoses. Since this is a completely different vacuum system, staff has raised this issue as a matter for the Planning Commission to determine if the proposed design is acceptable. Given the site design, and location on roadways, re-locating the vacuum system to not be in the front yard will create difficulties in traffic flow on this particular site.

2. Entrances and Exits. Sufficient space shall be provided on the lot so that vehicles do not enter or exit the wash building directly from an adjacent street or alley. All maneuvering areas, stacking lanes, and exit aprons shall be located on the car wash parcel itself. Streets and alleys shall not be used for maneuvering or parking by vehicles to be serviced by the automobile wash.

   The proposed plan meets these standards.

3. Orientation of Open Bays. Buildings should be oriented so that open bays, particularly for self-serve automobile washes, do not face onto any thoroughfares unless screened by landscaping.

   This standard does not apply as open bays are not proposed.

4. Exit Lane Drainage. Exit lanes shall be sloped to drain water back to the wash building to drainage grates

   The plans do not have this level of detail, but the applicant has been advised.

5. Truck Washes. Truck washes must be at least one hundred (100) feet from all property lines and entirely screened from residential uses. The screening shall include both a wall and landscaping.

   This standard does not apply to the proposed project.

SITE PLAN REVIEW – Applicable Site Standards
The applicable site standards include those standards related to the proposed use, automobile wash within a completely enclosed building, as outlined in Section 3.1.14 (GC-General Commercial); Section 4.17 of the Zoning Ordinance, as discussed above; and all applicable zoning standards in the Zoning Ordinance.

In this case the applicant is requesting site plan with special land use approval to construct an approximate 6,500 square foot building for a fully automated automobile wash.

Impact Assessment
An impact assessment was not provided.

Traffic Generation
A traffic impact assessment was not provided

Dimensional Requirements (GC-General Commercial; Section 3.1.14)

Lot Size (Sec. 3.1.14)
- Required – 40,000 sq. ft. w/o sewer; or 20,000 sq. ft. with public sanitary sewer
- Proposed – 1.66 acres (72,310 sq. ft.) with public sanitary sewer
- Meets Requirement? Yes
- Comment – (none)

Frontage (Sec. 3.1.14)
- Required – Minimum lot width of 120 feet
- Proposed – 120 lineal feet along Highland Road and approximately 382 lineal feet along Blaine Road
- Meets Requirement? – Yes
- Comment – (none)

Building Setbacks (Sec. 3.1.14)

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (north) Highland Road - Car wash bldg.	80’	80’	Yes
Front (west) Blaine Road	80’	80’	Yes
Front (west) Blaine Road Trash/vacuum enclosure	80’	30’ from Blaine Road ROW	**TBD***
Rear (south) w/ sewer Car wash bldg.	40’	87’	Yes
Rear (south) w/ sewer Vacuum enclosure	40’	77’	Yes
Side (east) Car wash bldg.	15’	48’	Yes
Side (east) POS canopy	15’	15’	Yes

*Historically the Planning Commission has allowed off-street parking in the front yard for several commercial sites and have used a 25-foot setback for off-street parking. Additionally, dumpster enclosures on several commercial sites are located in the front yard. In this case, the trash/vacuum enclosure is approximately thirty (30) feet from the Blaine Road right-of-way line and is in the front yard, and meets the 25-foot off-street parking setback, should the Planning Commission choose to apply this standard. The enclosure is used to also house the vacuum equipment. Relocation of this area away from the vacuums is not easy to do and would require a redesign of the entire site.

Building Height (Sec. 3.1.14)

- Required – 35 feet or 2½ stories, whichever is less
- Proposed – 35 feet
- Meets Requirement? – Yes
- Comment – (none)

Lot Coverage (Sec. 3.1.14)

- Required – Principal structure: 75% max.
- Proposed – 9% (6,500 sq. ft. bldg.÷ 1.66 acres)
- Meets Requirement? – Yes
- Comment – (none)

Site Requirements

Dumpster Enclosure (Sec. 5.7)

- Required – Dumpster designed, enclosed, and screened per requirements; dumpster materials must match the building. enclosure height sufficient to screen dumpsters; minimum height is 6 feet.
- Proposed – dumpster enclosure provide with screen walls comprised of brick veneer to match the building.; 8'-4" in height, with solid gates.
- Meets Requirement? – Yes
- Comment – (none)

Off-Street Parking (Sec. 5.8.4.H – Auto Wash – fully automatic car wash)

- Required – 2 spaces; PLUS 1 designated space for each employee on a peak shift; PLUS 12 stacking spaces per bay for a fully automatic car wash.
  EQUATES TO: 14 parking spaces REQUIRED TOTAL (using 3 employees)
- Proposed – 65 parking spaces, 10' X 20' in dimension. 3 spaces for employees; 2 barrier-free spaces; 22 spaces with vacuum equipment; and 38 stacking spaces.
- Meets Requirement? – Yes
- Comment – *Although the site contains sufficient off-street parking spaces, many of these are related to spaces also dedicated for vacuum services. Section 5.8.4.H.i. indicates that the Planning Commission may modify the numerical number of off-street parking spaces, based on evidence that another standard would be more reasonable. In the event that the Planning Commission determines the spaces dedicated for vacuum services should not be counted toward the required off-street, then consideration should be given toward testimony from the applicant on the number of spaces they believe would be necessary for the proposed auto wash facility.*

Barrier-Free Parking

- Required – 2 barrier-free spaces in a location most accessible to the building entrance, with at least 1 space van-accessible (1 barrier-free space required per 25 parking spaces)

- Proposed – 2 barrier-free spaces, both van accessible, nearest the building entrance (west side of building)
- Meets Requirement? – Yes
- Comment – (none)

Parking Lot / Driveway / Internal Roads Setbacks (Sec. 5.8.3.)

- Required – Off-street parking in commercial districts may only be located in a side or rear yard or non-required front yard; may not be permitted within 20' of a single-family district, nor within 10' of a road ROW, or 25' from a front lot line, nor 10' from a side or rear lot line.

Setback	Required	Proposed	Meets Requirements? (Y / N)
Front (north) – Highland Road	25'	45'	Yes
Front (west) Blaine Road	25'	10' to closest point of northern pkg space	**TBD** (3 spaces less than 25' from ROW line)
Rear (south)	10'	NA	Parking not proposed
Side (east)	10'	NA	Parking not proposed

- Meets Requirement? – Yes
- Comment – Although Section 5.8.3 states off-street parking in commercial districts may only be located in a side or rear or non-required front yard, it appears that for similar automobile uses such as fueling station projects (Mugg and Bopps, Speedway, and Clyde Road gas station), a 25-foot setback from a front line was applied for off-street parking, even though off-street parking or a portion of was located within the required front yard. For this project, approximately 18 parking spaces are within the required front yard. In order to be consistent with prior applications of this ordinance standard, staff has applied the same 25-foot setback from the front lot line for this plan, for off-street parking facing Blaine Road. That said, three (3) parking spaces do not meet the 25-foot setback from the Blaine Road right-of-way line.

Loading (Sec. 5.9)

- Required – 1 loading space (10' X 50') required for up to 10,000 sq. ft. of floor area (for industrial use)
- Proposed – Loading zone not shown
- Meets Requirement? – Yes
- Comment – Typically this has not been required to be shown on a plan. There appears to be sufficient room in the parking lot to accommodate loading activities.

Access Management and Non-Residential Driveway Standards (Sec. 5.10)

- Required – Per Sec. 5.10.5.C., the minimum access spacing between commercial driveways on a street with a posted speed limit of 50 MPH or greater is 330 feet.
- Proposed – Existing commercial driveways on Highland Road and Blaine Road are to remain in their current locations.
- Meets Requirement? – NA
- Comment – (none)

Landscaping and Screening (Sec. 5.11)

A. Greenbelt Landscaping (Sec. 5.11.C.)
Calculations for Greenbelt along Highland Road

- Required – within the first 30 feet of the property, 1 canopy tree for every 30 ft of lineal of frontage; 3 small deciduous ornamental trees or large deciduous or evergreen shrubs for the initial 40 ft., and 1 per 20 ft. thereafter, for 120' of frontage along Highland Road. EQUATES TO: 4 canopy trees and 7 additional ornamental trees, or large deciduous or evergreen shrubs REQUIRED
- Proposed – 3 canopy trees within first 30 feet; shrubs not proposed
- Meets Requirement? – **TBD**
- Comment – Planning Commission to determine if this is a sufficient number of trees, given that the existing driveway into the site from Highland Road occupies about 50% of the frontage and thus the planting area is limited. There may be sufficient room for shrubs in the greenbelt area.

Calculations for Greenbelt along Blaine Road

- Required – within the first 30 feet of the property, 1 canopy tree for every 30 ft of lineal of frontage; 3 small deciduous ornamental trees or large deciduous or evergreen shrubs for the initial 40 ft. and 1 per 20 ft. thereafter, for 382' of frontage along Blaine Road. EQUATES TO: 13 canopy trees and 17 additional ornamental trees, or large deciduous or evergreen shrubs REQUIRED
- Proposed – 8 canopy trees within first 30 feet; an evergreen shrub screen (3-foot height) shown with 47 medium shrubs, along the parking lot which could be counted for the Greenbelt requirement as well as for the Perimeter Landscaping requirement (screening of the parking lot).
- Meets Requirement? – No, for number of canopy trees, however a portion of this space also serves as an existing detention area and 8 canopy trees seem be sufficient given the spatial constraints. Evergreen shrub screen along the parking area could be counted as the shrub requirement - see notes below.
- Comment – An evergreen shrub screen could be counted for the Greenbelt requirement as well as for the Perimeter Landscaping requirement (screening of the parking lot), which has been applied in similar commercial settings. Planning Commission to determine if the evergreen shrubs in the Greenbelt can be also counted for the Perimeter Landscaping (screening of parking lot).

B. Foundation Landscaping (Sec. 5.11.2.D.)

- Required – Must equal 60% of the front and sides of the proposed building where facing road or adjacent to parking lot; must be 8-10 ft. in width, and consist of 1 ornamental or columnar tree, and 6 medium or 8 small shrubs for every 30 ft. Building perimeter = 205 feet (used west (160 ft.) and north (45 ft.) sides of building for dimensions). Foundation perimeter 205 ft. X 60% = 123 ft.
  EQUATES TO: 4 ornamental/columnar trees; PLUS 33 small shrubs or 25 medium shrubs REQUIRED
- Proposed –
  North: 10 medium shrubs in a 15-foot wide planting bed, and showing rock mulch.
  West: no landscaping proposed
  East: 30 medium shrubs and perennial flowers in 10-foot wide planting area.
- Meets Requirement? – Yes for shrub count; no for ornamental trees.
- Comment – The total plant count exceeds the required number of shrubs. Awnings on the building on the east somewhat restrict the area for ornamental trees.

C. Parking Lot Landscaping (Sec. 5.11.2.E.i.)
- Required – Landscaped end caps for parking areas of 10 or more spaces; 1 canopy tree per 180 sq. ft. of interior area, with 50% of the interior area covered with small and medium evergreen and deciduous shrubs. The remaining landscape area may include a combination of groundcover, perennials, annuals, lawn, and mulch. Approximate square footage of 4 endcaps & using each area as 200 sq. ft, each = 800 sq. ft. EQUATES TO: 5 canopy trees with a mix of shrubs, lawn, groundcover, perennial/annual plants.
- Proposed – 2 canopy trees (north and south of west parking area) plus lawn and evergreen shrub screen; 1 conifer tree and lawn on north; and mix of shrubs and perennial plants at south endcap by enclosure near building.
- Meets Requirement? – Yes, generally.
- Comment – the 2 enclosures (for vacuum equipment and dumpster) occupy some of the endcap areas so trees could not be planted immediately next to a parking space. Trees that were counted are not located directly next to the parking lot/endcap.

D. Perimeter Landscaping – For areas visible from a public road (facing Highland Road and Blaine Road; Sec. 5.11.2.E.ii.a.)

Calculations for Perimeter Landscaping – parking lot facing Highland Road
- Required – Landscape berm planted with a combination of evergreen and deciduous shrubs to effectively screen parking lot; or evergreen hedge row a minimum 3 ft. in height; or decorative screen wall
- Proposed – Landscape bed with perennial flowers and ornamental grasses in a planting bed by sidewalk next to parking area.
- Meets Requirement – evergreen hedge row should be added next to barrier-free parking spaces to shield view of parking.
- Comment – Plan to be revised to add evergreen hedgerow on Construction plan set.

Calculations for Perimeter Landscaping – parking lot facing Blaine Road
- Required – Landscape berm planted with a combination of evergreen and deciduous shrubs to effectively screen parking lot; or evergreen hedge row a minimum 3 ft. in height; or decorative screen wall
- Proposed – evergreen shrub screen (3-foot height) shown with 47 medium shrubs, along the parking lot which could be counted for the Perimeter Landscaping requirement as well as for the Greenbelt Landscaping requirement.
- Meets Requirement – Yes; see note below
- Comment – The evergreen shrub screen could be counted for the Perimeter Landscaping requirement (screening of the parking lot) as well as Greenbelt requirement, subject to approval by the Planning Commission.

E. Perimeter Landscaping – For areas not visible from a public road (Sec. 5.11.2.E.ii.b.) – along east and south sides of the property
- Required –1 canopy or evergreen tree for every 30 ft., along with understory shrubs for screening purposes for perimeter areas not visible from a ROW. South: 90 ft.; East: 160 ft. EQUATES TO: 3 trees on the south; 5 trees on the east, and understory shrubs for screening REQUIRED.
- Proposed – South: 3 evergreen trees on the south and 2 planting areas with shrubs, plus lawn; East: 4 evergreen trees and 3 planting areas with shrubs plus lawn.
- Meets Requirement? – Yes, for the number of required trees on the south; no for the number of trees on the east.

- Comment – Landscaping appears to be sufficient given that the adjacent properties on the south and east are commercial sites/uses and are zoned PD (Planned Development), and are part of the Hartland Marketplace PD. An entrance drive from Highland Road to Hartland Marketplace PD is adjacent to the east property line of the car wash site. Extra trees may not be necessary on the east.

F. Buffering or Screening (Sec. 5.11.2.G.i.) – screening between land uses – NA as adjacent properties to the south and east are commercial sites/uses and zoned PD (Planned Development).

G. Screening of Ground Mounted Equipment (Sec. 5.11.2.G.iii.)
- Required – screening on three sides for utility cabinets (if 30 inches or more in height)
- Proposed – 2 brick enclosures are provided to screen dumpsters and vacuum equipment.
- Meets Requirement? – Yes
- Comment – (none)

H. Detention/Retention Area Landscaping (Sec. 5.11.2.H.)
Per older plans for this site, a detention area exists in the open area between Blaine Road and the western edge of the proposed parking lot. The current plans do not show the detention area thus comments are not provided at this time. Lawn and canopy trees are proposed, plus an evergreen shrub hedgerow by the parking spaces. Additional details on the stormwater plans may be forthcoming on the Construction plan set.

<u>Other comments on landscaping</u>
Rock mulch is shown in several planting beds which is not permitted. Plan is to be revised to show shredded hardwood mulch in all planting areas on the Construction set of plans.

Sidewalks and Pathways (Sec. 5.12)
- Required – the Planning Commission may require sidewalks or safety paths as a condition of site plan approval
- Existing – 7-foot wide sidewalk is in place along the Highland Road frontage.
- Meets Requirement? – Yes
- Comment – (none)

Lighting (Sec. 5.13)

A. Intensity
- Required – max. 0.5 fc along property line adjacent to residential; or max.1.0 fc along property line adjacent to non-residential; average fc between 2.4 and 3.6 in main parking area and an average of 5.0 fc at main building entrance and at exit/entry drive; may not exceed 10 fc on site; average lighting under vehicular canopy shall not exceed 5 fc and canopy light fixtures shall be installed so that the lens is recessed and adequately shielded.
- Proposed – photometric plan indicates an average of 0.1 fc along property lines; average of 2.9 fc in the parking area and exit/entry drives; average of 5.0 fc at building entrance; average of 7.0 fc under POS canopy. Footcandle value less than 10 fc throughout the site.
- Meets Requirement? – **No -**Average footcandle under vehicular canopy exceeds the maximum of 5 fc allowed (average fc).
- Comment – Photometric plan to be revised to meet the lighting standards for lighting under the vehicular canopy on the Construction plan set.

B. Fixture Height
- Required – 25' or the height of the principal building, whichever is less, measured from the ground level to the centerline of the light source
- Proposed – 20' pole plus 30" base
- Meets Requirement? – Yes
- Comment – (none)

C. Fixture Type
- Required – details of all lighting fixtures needed including specifications for shielding, wattage, and illumination
- Proposed – specifications for proposed LED light fixtures are shown on the photometric plan for light pole fixtures, wall mounted light fixtures, and lighting on the vacuuming apparatus.
- Meets Requirement? – Yes
- Comment – (none)

Water Supply and Wastewater Disposal (Sec. 5.16)
The site is served by municipal water and sanitary sewer.

Architecture / Building Materials (Sec. 5.24)

Architecture Comments:
- Façade Materials Calculation – façade materials must comply with the specifications for Façade Materials Group #1; percentages for the car wash building are proposed as follows:

Materials Group #1: Proposed Façade Materials by Percentage by Elevation – Car Wash Building

Elevation	Clay Brick (30% min.) Brick veneer prop.	Siding (Alumaboard proposed) (10% max.)	Standing seam metal roof (20% max.)	Glass (50% max.)	E.I.F.S trim (15% max.)	Awnings (10% max.)	Split-faced block (25% max.)
North	62.8%	10.0%	0.0%	8.0%	0.0%	0.9%	0.0 %
East	78.2%	8.1%	0.0%	3.4%	4.7%	0.0%	0.0%
South	66.6%	10.0%	0.0%	9.7%	0.0%	0.9%	0.0%
West	39.9%	8.6%	9.9%	9.7%	4.3%	1.0%	24.5%

- Colors: 3-D color renderings of the building and canopy are provided. Specific product information for each façade material is stated on the building elevations. Earthtone colors are proposed for all products.
- Materials: percentages are listed for each elevation side as indicated by the table; specifications on all materials are provided.
- Meets Requirement? – Yes
- Comment – (none)

Other buildings

Attendant Shelter
The free-standing attendant shelter is for the employee working the POS lanes during inclement weather. The building dimensions are approximately 5'-2 ½" by 6'9", and height of 10'-2". Façade material

percentages were not provided. Staff estimates that the upper one-half of the building is comprised of E.I.F.S. which is painted black. The lower one- half is comprised of brick veneer to match the main building. Windows are shown on three (3) sides and a glass door on the south side of the building.

Vehicular Canopy (POS)
The vehicular canopy is on the east side of the building and the canopy is not attached to the main building. The canopy is 15'-2" in height and the support posts are faced with brick veneer to match the building. The vertical surfaces of the canopy are black metal.

Other Requirements-Zoning Ordinance Standards/Comments
No comments at this time.

Hartland Township DPW Review
A review letter is provided from the Hartland Township DPW Director, dated August 22, 2022.

Hartland Township Engineer's Review (SDA)
The Township Engineer (SDA) has reviewed the plans and recommends approval subject to items being addressed in the letter dated July 18, 2022.

Hartland Deerfield Fire Authority Review
The Hartland Deerfield Fire Authority has reviewed the plans and provided comments in the letter dated August 25, 2022. Approval is subject to the contingencies being addressed as outlined in the letter.

Attachments:
1. Hartland Township DPW review letter, dated 08.22.2022 – *PDF version only*
2. Township Engineer (SDA) review letter dated 07.18.2022 – *PDF version only*
3. Hartland Deerfield Fire Authority review letter, dated 08.25.2022 – *PDF version only*
4. Applicant's summary dated 08.30.2022 – *PDF version only*
5. Architectural plans dated 08.30.2022
6. Photometric plans dated 07.01.2022
7. Landscape Plan dated 08.15.2022
8. Site Plan dated 07.26.2022

CC:
SDA, Twp Engineer (via email)
M. Luce, Twp DPW Director (via email)
A. Carroll, Hartland FD Fire Chief (via email)

Hartland Township Planning Commission Meeting Agenda Memorandum

Submitted By: Troy Langer, Planning Director

Subject: Site Plan with Special Land Use Application #22-007 (Automobile wash within completely enclosed building at 10382 Highland Road)

Date: October 13, 2022

Recommended Action

Move to recommend approval of Special Land Use Permit and approve Site Plan Application #22-007, a request to redevelop a commercial site and construct an approximate 6,500 square foot automobile wash, within a completely enclosed building, at 10382 Highland Road, in Section 28 of the Township (Tax Parcel ID #4708-28-201-061). The recommendation for approval is based on the following findings:

1. The proposed special land use, automobile wash within a completely enclosed building, meets the intent and purposes of the Ordinance as well as the specific standards outlined in Section 6.6 (Special Uses).

2. The proposed special land use is permitted in the GC (General Commercial), as outlined in Section 3.1.14.D.iii, and the proposed use is compatible with the existing uses in the vicinity.

3. The proposed use will be served by public water and sanitary sewer, by existing essential facilities and public services, and the Fire Department has no objection.

4. The proposed use will be served by public roads with direct access to Highland Road and Blaine Road.

5. The proposed use will not create additional requirements at public cost for public facilities as the proposed site will be served by public water and sanitary sewer.

Approval is subject to the following conditions:

1. The proposed special land use, automobile wash within a completely enclosed building, is subject to approval by the Township Board.

2. The applicant shall adequately address the outstanding items noted in the Planning Department's memorandums, dated September 1, 2022 and October 13, 2022, on the Construction Plan set, subject to an administrative review by the Planning staff prior to the issuance of a land use permit.

3. A land use permit is required after approval of the Site Plan and Special Use Permit and prior to construction.

4. Applicant complies with any requirements of the Department of Public Works Director, Township Engineering Consultant (SDA), Hartland Deerfield Fire Authority, and all other government agencies, as applicable.

5. (Any other conditions the Planning Commission deems necessary)

Discussion

Applicant: Evanthia Bardwell

Site Description
The subject property is located south of Highland Road, east of Blaine Road, and north of Hartland Marketplace Planned Development in Section 28 of the Township. It was formerly occupied by Burger King, since 1986. Burger King closed sometime in 2020. The existing Burger King building will be removed, and the parking lot will undergo some layout changes as part of the proposed automobile wash project. The site is zoned GC (General Commercial) and is 1.66 acres (Tax Parcel ID #4708-28-201-061). This property is considered a corner lot with approximately 120 lineal feet along Highland Road and approximately 382 lineal feet along Blaine Road.

The Future Land Use Map (FLUM) designates the subject site and adjacent properties to the south, east, and west as Commercial.

Proposed Use
The applicant is requesting to demolish the existing Burger King building and construct an approximate 6,500 square foot building for a fully automated automobile wash (Mister Car Wash). The parking lot will be renovated as well to accommodate the building and circulation patterns.

Per Section 3.1.14.D.iii., an automobile wash, when within a completely enclosed building, is considered a special land use in the GC (General Commercial) zoning district. Additional standards for this special land use are provided in Section 4.17 of the Zoning Ordinance (Automobile Wash Establishment).

The proposed project also requires site plan approval thus there are two application elements: special land use and site plan approval for an automobile fueling and convenience station. Although there are technically two elements, all are incorporated into one combined site plan which will be reviewed and approved concurrently.

Per the Hartland Township Zoning Ordinance and the State Enabling Act, a public hearing is required for the special land use application. Given the requirements for publishing a notice for the special land use, the public hearing was held at the September 8, 2022, Planning Commission meeting.

Request and Project Summary – Revised Site Plan dated October 6, 2022
The applicant is requesting site plan with special land use approval to redevelop a commercial site and construct a fully automated automobile wash, which is within the building. On September 8, 2022, the Planning Commission held a public hearing on SP/SUP #22-007. Based on comments at the public hearing the applicant submitted revised plans, dated October 6, 2022. The plans include a site plan and landscape plan. A brief discussion of the revised plan is provided below. Please refer to the staff memorandum dated September 1, 2022, for additional details on the project. The building elevations presented as part of the staff memorandum dated September 1, 2022 remain unchanged.

The revised site plan shows the same layout for the building location, building size, vehicular canopy, parking, circulation, and two (2) vacuum enclosures.

Revisions to the site plan include the following changes:

- Reduction in the maneuvering lane width, in the parking area, from thirty-two (32) feet to twenty-six (26) feet.

- The row of parking spaces on the west side of the parking area has been shifted to the east, and parking is approximately 28.7 feet from the Blaine Road right-of-way (west property line), at its closest point. The required setback is twenty-five (25) feet.

- Twenty-five (25) parking spaces are provided in the parking area as follows:
    - 3 spaces for employees (10' by 20')
    - 20 parking spaces (13' by 20') – each with vacuuming equipment
    - 2 barrier-free parking spaces (13' by 20') – each with vacuuming equipment

Two (2) parking spaces (each with vacuuming equipment) were eliminated along the western row of parking when compared with the site plan dated July 26, 2022. Parking along the west side of the building remains the same as does the 38 stacking spaces on the east side of the building.

The applicant has submitted a revised landscape plan to address comments at the public hearing on September 8, 2022.

With regard to the applicable site standards, please review the prior staff memorandum, which outlines all of the applicable standards. However, below is a standard that remains unresolved by the Planning Commission:

1. The Planning Commission will need to make a determination on Section 4.17 of the Zoning Ordinance, which requires that all washing activities shall be carried on within a completely enclosed, roofed building. Vacuuming activities shall be permitted in the side or rear yard only, provided such activities are located at least fifty (50) feet from adjacent residentially zoned property. Entrances and exits shall not face abutting residentially zoned or used property.

   The proposed automobile wash is within a completely enclosed building, with entrances to the site that face Blaine Road or Highland Road. Adjacent properties (south and east) are zoned PD (Planned Development) and residentially zoned properties or uses are farther than fifty (50) feet from the subject site. Vacuuming equipment is in the front yard, which is the area between the leading edge of the building (west elevation) and the right-of-way line of Blaine Road. With regard to the proposed vacuums; at the time the ordinance was drafted, automobile vacuums were designed to contain a tall metal canister style system with a vacuum tube or in some cases, two (2) vacuum tubes. As a result, this older style vacuum system would contain many different tall metal canisters. In general, these were deemed something that would be better served to be screened behind a building. However, the applicant is proposing a different vacuum style system. This system has the mechanical equipment in an enclosure area and the vacuum hoses do not require their own motor or vacuum device. In the proposed vacuum system, no mechanical system is visible. The only item visible is the hoses. Since this is a completely different vacuum system, staff has raised this issue as a matter for the Planning Commission to determine if the proposed design is acceptable. Given the site design, and location on roadways, re-locating the vacuum system to not be in the front yard will create difficulties in traffic flow on this particular site. Essentially, the Planning Commission will have to determine if the vacuum hoses, as proposed would be permitted in the front yard area.

Traffic Generation

At the September 8, 2022 public hearing of the Planning Commission, there were questions raised about the amount of traffic that could be generated from the proposed car wash development. The applicant has provided some trip generation estimates comparing the proposed car wash with a fast foot restaurant with

a drive-through, since the property was previously a Burger King restaurant. The traffic information focused primarily on the PM Peak Hour traffic data, since the car wash is not projected to have much, if any traffic, in the AM Peak Hour. Essentially, the car wash would generate a total of 78 trip ends in the PM Peak Hour, and a fast food restaurant, with a drive through would generate 107 trip ends in the PM Peak Hour. As a result, the proposed car wash would actually be a reduction in trip ends compared to a fast food restaurant with a drive through.

Approval Procedure

The proposed use, automobile wash within a completely enclosed building, requires approval from the Township Board for the special land use. The Planning Commission will review the special land use and make a recommendation to the Township Board.

The project also requires the site plan to be reviewed by the Planning Commission who will make a final decision on the site plan. The plans will be reviewed using the development standards of the GC (General Commercial) zoning district (Section 3.1.14.), standards associated with Automobile Wash Establishment (Section 4.17), and all applicable zoning standards in the Zoning Ordinance. Please refer to the staff memorandum dated September 1, 2022 for the full site plan review.

Other Requirements-Zoning Ordinance Standards/Comments

No comments at this time.

Attachments:

1. Trip Generation Memo dated 09.23.2022 – PDF version
2. DPW Email REU 10.03.2022 – PDF version
3. SUP #22-007 PC Staff Report 09.01.2022 – PDF version
4. Site Plan dated 07.26.2022 – PDF version
5. Revised Site Plan dated 10.06.2022 – PDF version
6. Revised Landscape Plan dated 10.06.2022 – PDF version

CC:
SDA, Twp Engineer (via email)
M. Luce, Twp DPW Director (via email)
A. Carroll, Hartland FD Fire Chief (via email)

T:\PLANNING DEPARTMENT\PLANNING COMMISSION\2022 Planning Commission Activity\Site Plan Applications\SUP #22-007 Mister Car Wash\Staff reports\Planning Commission\SUP #22-007 PC staff report 10.13.2022.docx

November 15, 2022

Troy Langer
Planning Director
Hartland Township, MI

Re: Mister Car Wash – Site Plan Review #2
SDA Review No. HL22-115

Dear Troy:

We have received the preliminary site plan submittal for the above referenced project prepared by Kimley-Horn of Michigan, Inc. dated November 10, 2022 and were received by our office on November 14, 2022. The plans were reviewed in accordance with Hartland Township Engineering Standards and the following comments are our observations.

A. General
   a) The site is located along the south side of Highland Road (M-59), east of Blaine Road. It is noted as 1.66 acres total area. The site is currently occupied with 1-story building (former Burger King) with the associated parking lot and drive-thru. The proposed development includes construction of a new express car wash facility including sidewalks, parking, landscaping, utilities, stormwater management, retaining walls, signage, and lighting to support the proposed redevelopment.
   b) At this time, a preliminary utility plan was not submitted for review.
   c) Documentation showing the land combination of all separate parcels will be required prior to final site plan approval.

B. Water Main
   Township records show an existing 12" diameter water main located along the western property line within an existing 10-foot easement. At this time, the site plan does not show any proposed connection to the existing water main. All connections to the existing water main shall follow Hartland Township standards and details.

C. Storm Drainage
   Our records indicate that the proposed site is not accounted for in the Hartland Marketplace detention basin calculations. If other record drawings show otherwise, a copy of the drainage plan and calculations shall be provided for review along with a comparison of the existing and proposed runoff coefficients for the site. All storm water design calculations are to follow Hartland Township and Livingston County Drain Commissioner standards and details. Offsite surface runoff shall not be trapped along the development perimeter.

D. Paving
   a) The site plan shows access to be maintained via existing driveways off Highland Road (M-59), Blaine Road, and the Hartland Marketplace parking lot. The proposed plans show resurfacing up to the property limits to all three access points. An MDOT permit will be required for any work located within the Right-of-Way for Highland Road (M-59) and a Livingston County permit will be required for any work within the Blaine Road ROW.
   b) The circulation layout must be reviewed and approved by the Hartland Fire Marshall.
   c) No parking for employees or customers is shown on current plan.

E. Sanitary Sewer
   The site is located within the sanitary sewer district for Hartland Township. Township records show an existing 8" sanitary sewer located south of the proposed site. All sanitary sewer design requirements are to follow current Livingston County Drain Commissioner's (LCDC) standards and details. LCDC sanitary sewer detail sheets shall be attached to the proposed plans when applicable.

Preliminary Engineering Review

Our preliminary engineering review comments are provided as follows. These comments are to assist in plan preparation in anticipation of your engineering review submittal and are not required at this time for site plan approval.

1. Plans must include a location or vicinity map showing the site location in relationship to streets, major thoroughfares, drainage courses or bodies of water, railroad lines, section lines, etc. The vicinity map shall include the existing zoning and land use within the boundaries of the site and properties abutting the site.

2. No proposed utilities were shown at this time, a utility sheet will be required and reviewed prior to final site plan approval.

3. Provide the cost estimate for construction of all the underground utilities, paving, and grading to be installed with this project. The engineering review and construction inspection fees that we will compute based on the said estimate must be submitted to the Township prior to engineering plan review and approval.

4. Applicable Livingston County Standards details must be included on the plans.

5. The 2008 Hartland Township standard notes and details must be included on the plans.

6. On site pavement, water main, sanitary sewer and storm sewer and quantities must be shown on the plans.

7. Water main, storm sewer, and sanitary sewer layouts and profiles must be included on the plans.

8. A removal, drainage and grading sheet must be included on the plans.

9. Slope grades are to be provided on the grading plan.

10. Provide a general description of method of storm detention.

11. There shall be no proposed landscaping or hardscape within the water main or sanitary sewer easements.

Permits Required

At this time, there is not enough information provided to accurately know what permits will be required. Additional permits may be required once a full site plan is submitted. Based on the improvements shown, the following permits could be required and will need to be provided to the Township once available. Any changes to the approved site plan from the following agencies that impact the design may require reapproval.

Hartland Township:

1. A Land Use Permit will be granted after the pre-construction meeting.

2. Storm Water Agreement (for the storm water improvements on the site).

Livingston County:

1. Copy of Livingston County Drain Commissioner approval and permit.

2. Copy of a Soil Erosion and Sedimentation permit from Livingston County Drain Commissioner (if applicable).

3. County sanitary review confirmation.

4. Copy of Livingston County Road Commission approval and permit for any work within the Blaine Road ROW, if applicable.

Michigan Department of Transportation:

1. Copy of the MDOT approval and permit for any work within the Highland Road (M-59) ROW, if applicable.

Please be aware that additional comments may arise with the submittal of the requested revisions and/or additional information.

RECOMMENDATION

Based on the plans provided, we recommend that the applicant move forward and submit a full site plan package for review. Final engineering approval is not recommended at this time due to the number and nature of the comments.

The comments are not to be construed as approvals and are not necessarily conclusive. The final engineering plans for this development are to be prepared in accordance with the Hartland Township Engineering Design Standards and 2008 Hartland Township Standard Details. Sanitary sewer and water benefit fees may be applicable for this project.

If you have any questions regarding this matter, please contact our office at your convenience.

Sincerely,

SPALDING DEDECKER

Alan P Loebach, P.E.
Senior Municipal Engineer

cc: Jeremy Schrot, Hartland Township Engineer (via email)

DEPARTMENT OF PUBLIC WORKS

Michael Luce, Public Works Director
2655 Clark Road
Hartland MI 48353
Phone: (810) 632-7498

TO:	Planning Department
DATE:	1/18/2023
DEVELOPMENT NAME:	Mister Car Wash
PIN#:	4708-28-201-061
APPLICATION #:	SUP# 22-007
REVIEW TYPE:	Site Plan

Site Plans for the proposed Mister Car Wash proposes a single lane car wash with vacuum area. According to this site plan multiple lanes will condense into one lane to enter the wash bay only having one car at a time entering. Subsequently this site plan depicts a water recycler for the wash line, this will need to be verified on the construction plans along with the connection points and material to the wash. Currently the parcel has 3.86 Sewer REU's and 7.9 Water REU's. Flow info has been requested from the applicant depicting the usage of their car washes in other communities but none has been provided. Moving forward a minimum of 85 REU's in water and sewer will be required for this project based upon data from other locations. Public Works still requires flow data projections for the proposed site plan to move forward.

	Sewer REUs	Water REUs
Owned	3.86	7.9
Required	85	85
# REUs Needed	81.14	77.1
Cost Each	$9,439.20	$5,816.01
Total Due Each	$765,896.68	$448,414.37
TOTAL REU COST	**$1,214,311.05**	

Hartland Township Public Works approves the Mister Car Wash site plan subject to inclusion of the following details on the construction plans:

1. Sanitary sewer material and sizes and connection detail sheet
2. Monitoring manhole for sewer connection and location if required
3. Utility easements noted as public.
4. Approval of the Livingston County Drain Commission.
5. Obtaining REU's

Please feel free to contact me with any further questions or comments regarding this matter.

Michael Luce
Public Works Director

Kimley»Horn

MEMORANDUM

To: Township of Hartland, Michigan

From: Will Matzek, PE
Kimley-Horn and Associates, Inc.

Date: September 22, 2022

Subject: Mister Car Wash – Trip Generation

INTRODUCTION

The proposed site is located on the southwest corner of the intersection of Highway 59 & Blaine Road in Hartland, Michigan. The proposed approximately 1.66-acre site is currently occupied by other retail uses, and the proposed development includes a single car wash tunnel that is served by 3 inbound lanes and the site will also have 24 vacuum stalls. The proposed site plan is attached.

TRIP GENERATION

The trip generation for the development was calculated based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. **Table 1** provides the PM peak hour trips for the proposed development based on ITE data. The Hartland Mister Car Wash is expected to generate approximately 78 PM peak hour trips. There is not ITE data for the daily or AM peak hours.

Table 1 – Trip Generation

Land Use Description	ITE Code	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Automated Car Wash	948	1 car wash tunnel	-	-	-	-	39	39	78

TRIP GENERATION COMPARISON

The trip generation for the existing site was calculated based on the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*. For the existing land use, ITE Land Use Code LUC 934 (Fast Food Restaurant with Drive Through) was used to calculate the trip generation. **Table 2** provides the trip generation of the existing land uses. The existing site generated an estimated 145 trip in the AM peak hour, 107 trips in the PM peak hour and 1,519 daily trips.

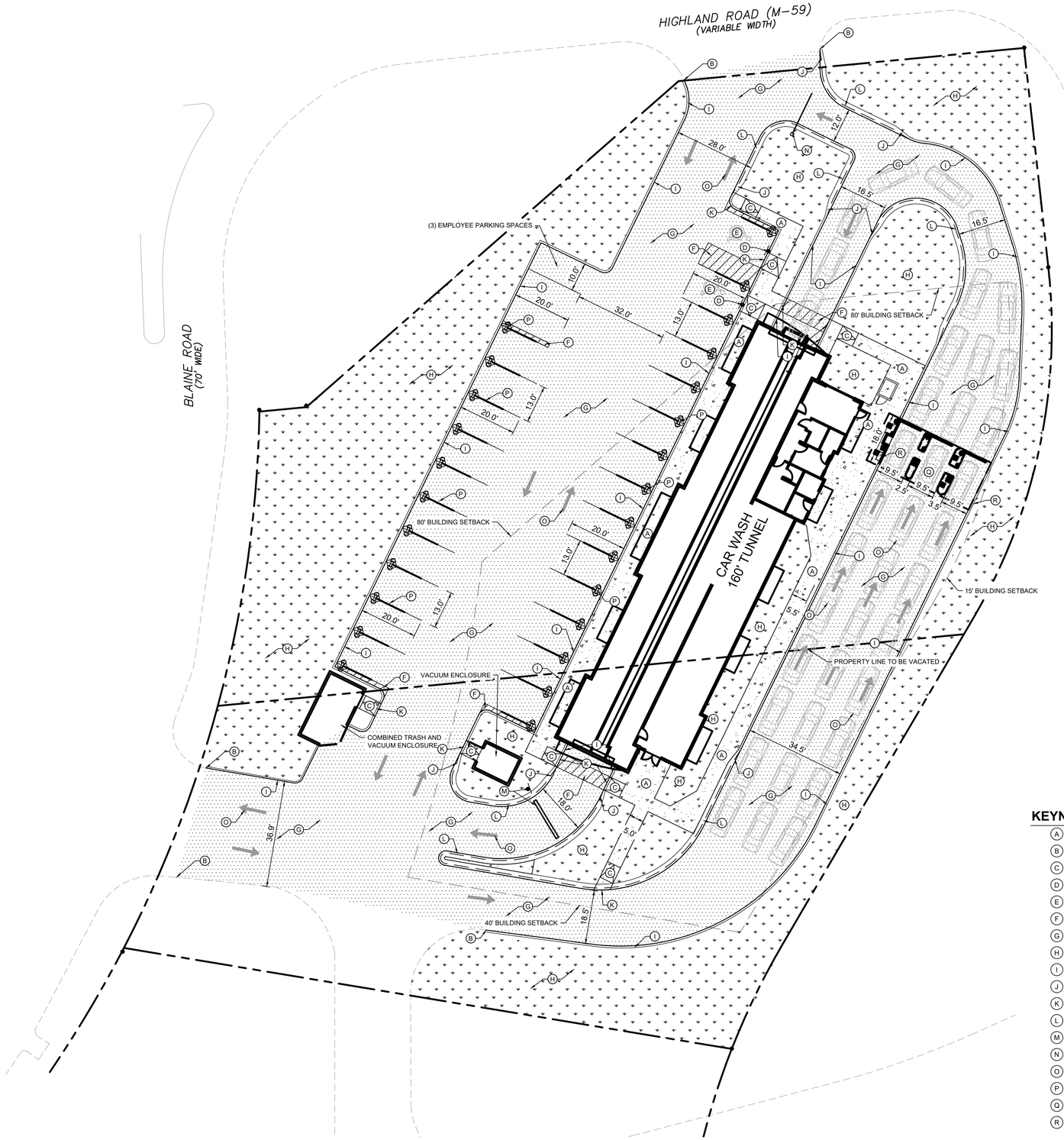
Table 2 – Existing Site Trip Generation

Land Use Description	ITE Code	Intensity / Units	Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Burger King	934	3,250 Sq. Ft.	1,519	74	71	145	55	52	107

Comparing the trip generation results in Tables 1 & 2, it is anticipated that the redevelopment of the site to Mister Car Wash will generate 29 less trips in the PM peak hour.

CONCLUSION

The proposed car wash is anticipated to generate 78 trips generated during the PM peak hour. It is anticipated that the redevelopment of the site to Mister Car Wash will generate 29 less trips in the PM peak hour than the previous land uses and will not result in a significant difference in traffic generated in the area.



KEYNOTE LEGEND

A	CONCRETE SIDEWALK
B	MATCH EXISTING EDGE OF PAVEMENT/ CURB & GUTTER
C	ACCESSIBLE CURB RAMP
D	ACCESSIBLE PARKING SIGN
E	ACCESSIBLE PARKING STALL
F	AREA STRIPED WITH 4" SYSL @ 45° 2' O.C.
G	CONCRETE PAVEMENT PER MISTER CARWASH STANDARDS AND SPECIFICATIONS
H	LANDSCAPE AREA
I	VERTICAL CURB (TYP.)
J	TRANSITION CURB
K	FLUSH CURB
L	ROLLED CURB
M	TRENCH DRAIN WITH EXIT SIGN PER MISTER CAR WASH STANDARDS AND SPECIFICATIONS
N	BYPASS GATE PER MISTER CAR WASH STANDARDS AND SPECIFICATIONS
O	DIRECTIONAL TRAFFIC ARROW. PER GREENBOOK STANDARDS
P	VACUUM EQUIPMENT: REF. ARCHITECTURAL PLANS
Q	POS CANOPY AND EQUIPMENT: REF. ARCHITECTURAL PLANS
R	TAPERED CURB PER MISTER CAR WASH STANDARDS

LEGEND

- PROPERTY LINE
- PROPOSED FENCE
- SETBACK LINE
- PROPOSED CURB AND GUTTER
- PROPOSED CONCRETE PAVEMENT
- PROPOSED CONCRETE SIDEWALK

PROPERTY SUMMARY	
SPRING LAKE PARK, MN MISTER CAR WASH	
TOTAL PROPERTY AREA	±1.66 AC
ZONING SUMMARY	
EXISTING ZONING	GC - GENERAL COMMERCIAL
PROPOSED ZONING	GC - GENERAL COMMERCIAL
BUILDING SETBACKS	FRONT: 80' SIDE: 15' REAR: 40'

BUILDING DATA SUMMARY	
AREAS	
PROPOSED PROPERTY	±1.66 AC
BUILDING AREA	±6,500 SF
PARKING	
FULLY AUTOMATIC CAR WASH - REQUIRED PARKING	2 PARKING SPACES 3 EMPLOYEE SPACES 12 STACKING SPACES **= 17 SPACES TOTAL**
PROPOSED PARKING	24 PARKING SPACES 3 EMPLOYEE SPACES 38 STACKING SPACES **= 65 SPACES TOTAL**
ADA STALLS REQ'D / PROVIDED	2 STALLS / 2 STALLS

* 3 EMPLOYEES ON PEAK SHIFT

SITE PLAN NOTES

1. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL CITY/COUNTY REGULATIONS AND CODES AND O.S.H.A. STANDARDS.
2. CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF VESTIBULES, SLOPE PAVING, SIDEWALKS, EXIT PORCHES, TRUCK DOCKS, PRECISE BUILDING DIMENSIONS AND EXACT BUILDING UTILITY ENTRANCE LOCATIONS.
3. ALL INNER CURBED RADII ARE TO BE 3' AND OUTER CURBED RADII ARE TO BE 10' UNLESS OTHERWISE NOTED. STRIPED RADII ARE TO BE 5'.
4. ALL DIMENSIONS AND RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
5. EXISTING STRUCTURES WITHIN CONSTRUCTION LIMITS ARE TO BE ABANDONED, REMOVED OR RELOCATED AS NECESSARY. ALL COST SHALL BE INCLUDED IN BASE BID.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL RELOCATIONS, (UNLESS OTHERWISE NOTED ON PLANS) INCLUDING BUT NOT LIMITED TO, ALL UTILITIES, STORM DRAINAGE, SIGNS, TRAFFIC SIGNALS & POLES, ETC. AS REQUIRED. ALL WORK SHALL BE IN ACCORDANCE WITH GOVERNING AUTHORITIES REQUIREMENTS AND PROJECT SITE WORK SPECIFICATIONS AND SHALL BE APPROVED BY SUCH. ALL COST SHALL BE INCLUDED IN BASE BID.
7. SITE BOUNDARY, TOPOGRAPHY, UTILITY AND ROAD INFORMATION TAKEN FROM A SURVEY BY MERIDIAN LAND SURVEYING, DATED 5/4/2022.

   KIMLEY-HORN ASSUMES NO LIABILITY FOR ANY ERRORS, INACCURACIES, OR OMISSIONS CONTAINED THEREIN.
8. TOTAL LAND AREA IS 1.66 ACRES.
9. PYLON / MONUMENT SIGNS SHALL BE CONSTRUCTED BY OTHERS. SIGNS ARE SHOWN FOR GRAPHICAL & INFORMATIONAL PURPOSES ONLY. CONTRACTOR TO VERIFY SIZE, LOCATION AND ANY REQUIRED PERMITS NECESSARY FOR THE CONSTRUCTION OF THE PYLON / MONUMENT SIGN.
10. CONTRACTOR SHALL REFERENCE ARCH / MEP PLANS FOR SITE LIGHTING AND ELECTRICAL PLAN.
11. NO PROPOSED LANDSCAPING SUCH AS TREES OR SHRUBS, ABOVE AND UNDERGROUND STRUCTURES, OR OTHER OBSTRUCTIONS SHALL BE LOCATED WITHIN EXISTING OR PROPOSED UTILITY EASEMENTS AND RIGHTS OF WAY UNLESS SPECIFICALLY NOTED ON PLANS OTHERWISE.
12. REFERENCE ARCHITECTURAL PLANS FOR DUMPSTER ENCLOSURE DETAILS.
13. REFER TO FINAL PLAT OR ALTA SURVEY FOR EXACT LOT AND PROPERTY BOUNDARY DIMENSIONS.
14. ALL AREAS ARE ROUNDED TO THE NEAREST SQUARE FOOT.
15. ALL DIMENSIONS ARE ROUNDED TO THE NEAREST TENTH FOOT.
16. ALL PARKING STALLS TO BE 9' IN WIDTH AND 18' IN LENGTH UNLESS OTHERWISE INDICATED.

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40

PRELIMINARY - NOT FOR CONSTRUCTION

No.	REVISIONS	DATE	BY

Kimley»Horn

PHONE: 651-645-4197
WWW.KIMLEY-HORN.COM

KHA PROJECT	162284008
DATE	07/26/2022
SCALE	AS SHOWN
DESIGNED BY	ACL
DRAWN BY	ACL
CHECKED BY	WDM

SITE PLAN

MCW - HARTLAND, MI

PREPARED FOR
MISTER CAR WASH

HARTLAND MICHIGAN

SHEET NUMBER
C400

Troy Langer

From: Troy Langer
Sent: Tuesday, January 31, 2023 10:11 AM
To: Troy Langer
Subject: FW: Traffic study
Attachments: Traffic Study-2020 06-26 tommys.pdf

Hey Troy and Bob-

I just read the agenda for Thursday and I need you guys to see this traffic study I found for a Tommy's auto wash that uses a Michigan car wash somewhat along the same lines as Mister as a reference that they are trying to lie to you guys again. I know for a fact that the traffic survey they submitted is a bunch of bull. This attachment is a recent and about as accurate as you are going to get for a comparison of the amount of cars this car wash is going to produce at that corner. Now I am not sure if I should bring this on Thursday or not but I wanted you two to be able to analyze it for yourself before, so you guys do not think that I am making this up. I literally just googled car wash traffic impact surveys and I believe this was the 3rd one down. It is for a Colorado location however they do use a Michigan location as a comparison which is HUGE. Pages 1-3 say it all but it does go down all the way to page 21 with facts that are quite accurate to the amount of cars they will run. And as far as not having any AM impact is complete and utter bullshit because we are the most busy in the morning at our location and start to actually slow down just after rush hour and I would be more than happy to prove that to you if you would like as well.

Thank you both for your time! Again I am not saying or doing any of this because of my business but for the future of Hartland township and the already insane traffic that we have right in this tiny little 5 miles on 59.

Take care,

Tonni Hall

TRAFFIC IMPACT STUDY

Proposed Tommy's Express Car Wash
W County Line Road & S Erickson Boulevard

City of Littleton, Colorado

August 23, 2019
Updated: November 8, 2019

20180016

Prepared by:

CivTrans Engineering Inc.
PO Box 150335
Lakewood, CO 80215
(303) 653-9200

This report has been prepared by the staff of CivTrans Engineering Inc. on behalf of Martin / Martin Inc. under the direction of the undersigned professional engineer whose seal and signature appears hereon.

Craig A. MacPhee, P.E

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TECHNICAL APPENDIX

Raw Traffic Counts; Trip Generation Calculations; Background Projects Traffic Information; Level of Service Calculations; Queuing Calculations

EXECUTIVE SUMMARY

This Traffic Impact Study (TIS) document has been prepared to supplement development plans for a proposed car wash within the City of Littleton, Colorado. The following is a summary of the traffic information and findings included in this report.

1. An automated car wash, Tommy's Express Car Wash, is proposed at the southwest corner of W County Line Road & S Erickson Boulevard within the City of Littleton. The car wash will include a single "tunnel" automatic washer, 18 vacuum bays and three on-site queue lanes of approximately 150' each prior to the automatic washer. A vicinity map is included as **Exhibit 1**.

2. The car wash will be accessed via Road A, a private roadway that serves several commercial developments south of County Line Road and west of Erickson Boulevard. Road A provides access to County Line Road with a ¾ movement intersection (right-turn only from Road A) and access to Erickson Boulevard with a full-movement intersection. Parking will be provided on the site for employees. The current project site plan has been provided and is shown on **Exhibit 2**, herein. An aerial of the study area is included as **Exhibit 3**.

3. The site is currently vacant and zoned B-2, Community Business District.

4. The proposed project is anticipated to generate 2,258 daily trips, with 116 of those trips occurring during the AM peak hour and 272 during the PM peak hour.

5. The study area was identified to include the followings intersections.

    - Southpark Circle (W) / Road A & W County Line Road
    - Southpark Circle (E) / S Erickson Boulevard & W County Line Road
    - S Erickson Boulevard & Road A
    - Site Access & Road A (future only)

    These intersections were analyzed for the weekday AM and PM peak hour.

6. The analysis horizons considered and evaluated in this report include:

    - Existing Conditions (Year 2018)
    - Short-Term No Project Conditions (Year 2021)
    - Short-Term with Project Conditions (Year 2021)
    - Long-Range No Project Conditions (Year 2040)
    - Long-Range with Project Conditions (Year 2040)

    Each of these analysis horizons included intersection capacity and queuing analysis. The short-term project analysis horizons also included a sight distance evaluation for the site access.

7. The City of Littleton has established a minimum level of service D (LOS D) for acceptable operations at signalized intersections and unsignalized (stop-controlled) approaches. The analysis results indicate all the study area

intersections are currently operating at acceptable levels of service except the southbound approach at Southpark Circle (W) & County Line Road. This approach is currently operating at LOS F during the PM peak hour.

The southbound approach at Southpark Circle (W) & County Line Road has a raised concrete median that directs traffic slightly to make a right-turn at the intersection. However, left turns from this approach are not restricted and are still able to be completed despite the median. The City of Littleton should consider modifying the southbound approach median and install "right-turn only" signing to more forcibly restrict this approach to right turns only. The development along Southpark Circle has the opportunity to use the eastern intersection, which is signalized and has sufficient capacity to accommodate additional left turning traffic. It appears this intersection had a larger median in 2008 to restrict southbound movements to right-turn only. However, the median was modified prior to 2010 to allow for crossing maneuvers and left-turns from this approach.

8. The existing 95th percentile queues exceed the available storage for the southbound left during the PM peak hour at the intersection of Southpark Circle (E) / Erickson Blvd & County Line Road. This is not much of an issue except for when the protected left turn phase leads and left-turning vehicles end up blocking the through-right lane. During observations, this queue did not extend beyond the turn lane storage area. With the ability to have the left-turn protected phase lag with a flashing arrow signal head, the City should consider implementing a lag sequence for the southbound protected left turn phase at this intersection.

9. The study area intersections are anticipated to continue to operate at acceptable levels of service for the short-term conditions without the proposed project.

10. The 95th percentile left and right turn queues at the study area intersection are anticipated to mostly be accommodated within the available storage for the short-term no project condition. In addition to the southbound left turn storage deficiency at Southpark Circle (E) & County Line Road (identified for the existing condition), the northbound left turn queue at this intersection is anticipated to spill back to the adjacent intersection. There is space to restripe this approach to provide a second left turn lane for 140', which would address the anticipated queuing issue and provide additional capacity for the intersection.

11. The study area intersections are anticipated to continue to operate at acceptable levels of service for the short-term conditions <u>with</u> the proposed project

12. The 95th percentile left and right turn queues at the study area intersection are anticipated to be accommodated within the available storage for the short-term with project condition assuming improvements required for the "no-project" condition are completed. Vehicles are anticipated to queue on the site prior to the car wash. Three 150' queue lanes will be provided. The automated wash takes approximately 2 minutes from start to finish and the "tunnel" can accommodate up to 8 vehicles at a time, which corresponds to a service rate of 240 vehicles per hour when operating at capacity.

Hourly volume data for the month of April 2018 was provided for other existing Tommy's Express Car Wash sites. The busiest site was in Grandville, Michigan, which had almost 50,000 vehicles go through its automated wash in a month. Hourly volumes of vehicles visiting this site ranged from 4 vehicles to 273 vehicles in an hour. 96% of the hours of operation during the month for this site had volumes of 240 vehicles or less and an average hourly volume of 117 vehicles per hour. Data provided for the other five sites was significantly less than the Grandville site with very few hourly volumes exceeding the 240 vehicle per hour service rate. The three lanes of 150' has adequately accommodated the on-site queues at all of these sites with rare occurrences where the queue storage reaches capacity. Therefore, the proposed queue storage for this site is anticipated to be adequate.

13. A Policy on Geometric Design of Highways and Streets, 7th Ed. (2018), published by the American Association of State Highway and Transportation Officials (AASHTO) was consulted for determining the required sight distance for vehicles turning from the site access driveway. Road A does not have a posted speed limit, but was assumed to be 25 mph. From tables 9-7 and 9-9, the required sight distance is 280' for left turning vehicles (looking west) and 240' for right turning vehicles (looking east). The driveway is anticipated to be approximately 120' west of Erickson Boulevard. This intersection should be visible from the driveway. Vehicles turning at Erickson Boulevard & Road A will slow to 10-15 mph before accelerating to 25 mph. Therefore, the 120' should be an adequate distance for the line of sight and allow vehicles on Road A and vehicles exiting the site to react to any potential conflict. When developing construction plans for this access, the line of sight (sight triangles) should be shown on the plans and any plantings or other visual obstructions within this triangle area should not exceed 3.5 feet in height.

14. For the long-range condition, the intersection of Southpark Circle (E) / Erickson Boulevard & County Line Road is anticipated to fall to LOS D during the PM peak hour. Furthermore, the northbound left turn is anticipated to fall to LOS F with lengthy queues spilling back to the next intersection. There is enough space to restripe the northbound approach to accommodate dual left turns for 140'. With this restripe and retiming of the traffic signal, the intersection would improve to LOS B and the northbound approach would operate within acceptable levels.

15. For the long-range condition with the project, all of the intersections within the study area are anticipated to continue to operate within acceptable levels of service, except the eastbound approach on Road A at Erickson Boulevard. Due to ambient traffic growth, this approach is anticipated to eventually fall to LOS F. If this approach reaches this amount of delay, a shift of trips may occur to the right-out access to County Line Road. If the ambient traffic growth comes to fruition and excessive delays occur at this driveway where driver safety becomes a concern, the City may restrict left-turn egress movements from this driveway. This intersection should be monitored in the long-range future to determine if this becomes an issue.

Based upon the analysis, field observations, assumptions, methodologies and results which are provided in the body of this document, this project has no significant impacts to the transportation system that warrant offsite mitigation as presented within this study. Therefore, the recommendation to the City of Littleton staff is that the proposed car wash development and its proposed access to Road A be approved.

INTRODUCTION

Project Overview

A Tommy's Express Car Wash, which is an automated car washing facility, is proposed at the southwest corner of W County Line Road & S Erickson Boulevard within Littleton, Colorado. The car wash will include a single "tunnel" automatic washer, 18 vacuum bays and three on-site queue lanes of approximately 150' each prior to the automatic washer. Construction is anticipated to begin spring 2020 with approximately a 6-month construction schedule and completion by fall 2020.

The property that will accommodate the proposed car wash is currently vacant. The project site is surrounded by a mix of commercial, hotel and residential uses. A private, local access roadway (Road A) provides access for the site along with a Residence Inn by Marriot (hotel) directly to the west, a Courtyard by Marriot (hotel) directly to the south and a future car dealership site (currently vacant) to the west. The project site is bordered by W County Line Road to the north and S Erickson Boulevard to the east. Road A connects to both of these public roadways.

Regional access to the area is accommodated primarily by W County Line Road, US Highway 85 and C-470 freeway. W County Line Road is an east-west arterial that extends along the southern Denver metro area serving the cities of Littleton, Centennial, Lone Tree and Highlands Ranch. US 85 provides a north-south connection between Littleton and communities to the north and south including Denver and Castle Rock. C-470 provides a freeway connection to I-25 near Lone Tree and I-70 near Golden. C-470 continues as a toll freeway (E-470) east of I-25 providing a route to Parker, east Aurora and the Denver International Airport.

Purpose of Report

The purpose of this study is to review, assess and identify potential traffic related impacts that the proposed project may have on the transportation network and recommend mitigation to minimize these impacts where necessary and possible. **Exhibit 1** shows the general vicinity of the project in the City of Littleton. The current site plan is included as **Exhibit 2**, which shows the general layout of the proposed site as well as locations of driveway access. **Exhibit 3** shows an aerial view of the study area.

The assumptions utilized in conducting the traffic analysis are based on coordination with the City of Littleton Traffic Engineering Department. The TIS was completed in accordance with the standard traffic engineering practices. The City of Littleton is currently updating their standards to include traffic impact study guidelines, but none were available at the time of this study.

This report includes an evaluation and assessment of the study area for the existing conditions, short-term conditions, and the long-range conditions. The short-term condition considers the transportation network shortly after the opening of the proposed project.

The long-range conditions considered the potential growth in traffic within the study area and how the existing transportation system will handle those volumes with and without the proposed project approximately 20 years into the future (Year 2040). Weekday AM and PM peak hours of traffic operations were used as the basis of this study.

Resources

The key resources referenced in this TIS included the following:

1. Denver Regional Council of Governments' (DRCOG) 2015 and 2040 traffic models, which include traffic volumes and projected traffic volumes for the Denver Metropolitan area. These models are developed based on anticipated growth and development. Therefore, they were utilized to establish ambient growth rates anticipated along the study area roadways. The 2015 and 2040 traffic volume models can be found on the DRCOG website.
2. The *Trip Generation Manual, 10th Edition (2017)* published by the Institute of Transportation Engineers. This reference may be used to determine the number of trips generated by the proposed land use.
3. *A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)* published by the American Association of State Highway and Transportation Officials (AASHTO), which sight distance requirements for sight triangles at two-way stop-controlled intersections.
4. *Alpine Buick Project, Revised Traffic Impact Analysis Report* (September 5, 2018), prepared by DB Enterprise, which includes information about the Alpine Buick car dealership development west of the site along Road A.
5. *Caliber Collision Trip Generation Estimate Letter* prepared by LSC Transportation Consultants on June 14, 2018, which includes traffic information for a planned development along Southpark Circle north of County Line Road.
6. *Traffic Generation Report for HCI Office Building* prepared by Aldridge Transportation Consultants, LLC on December 18, 2018, which includes traffic information for a planned office development along Southpark Circle north of County Line Road.

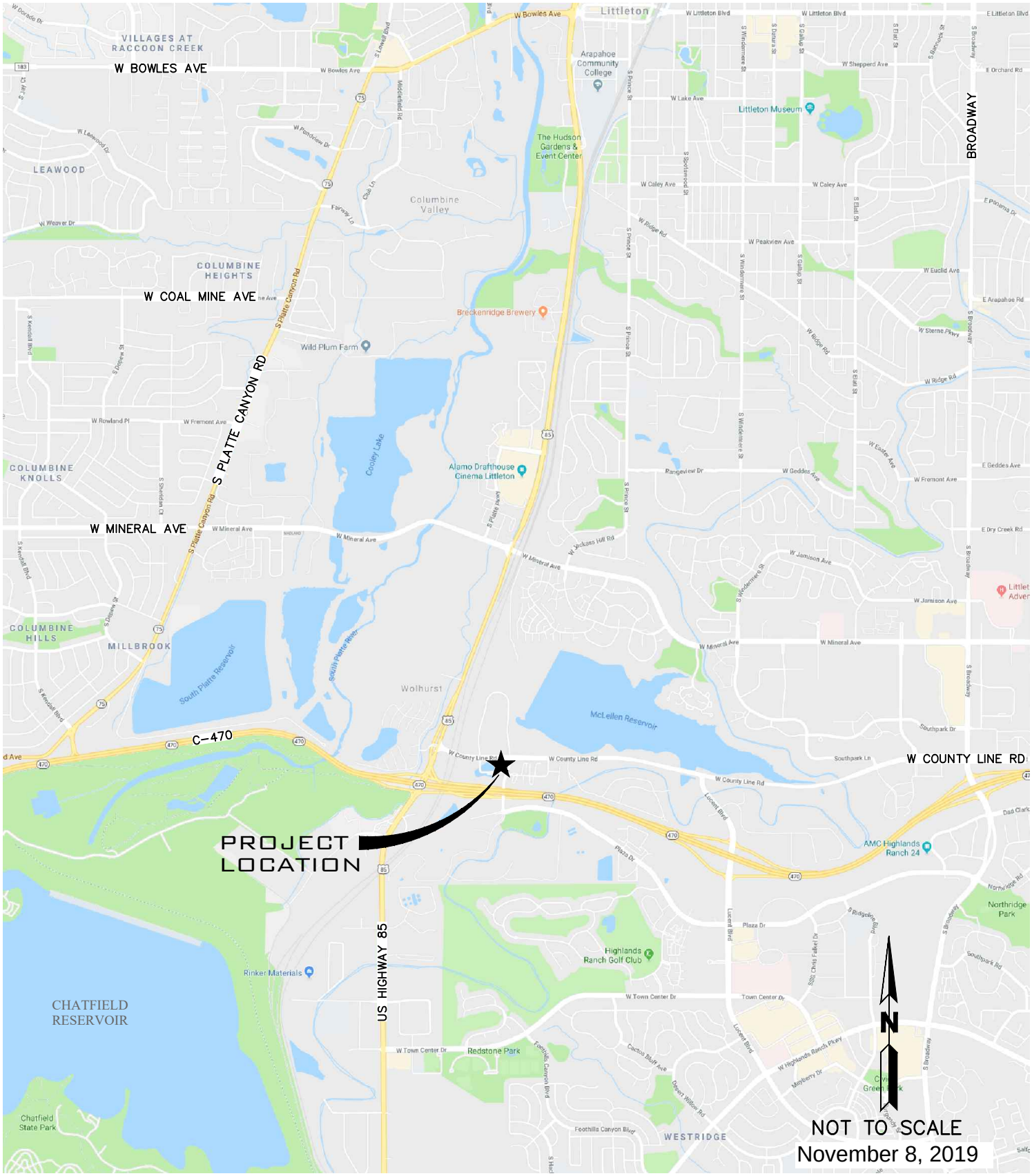
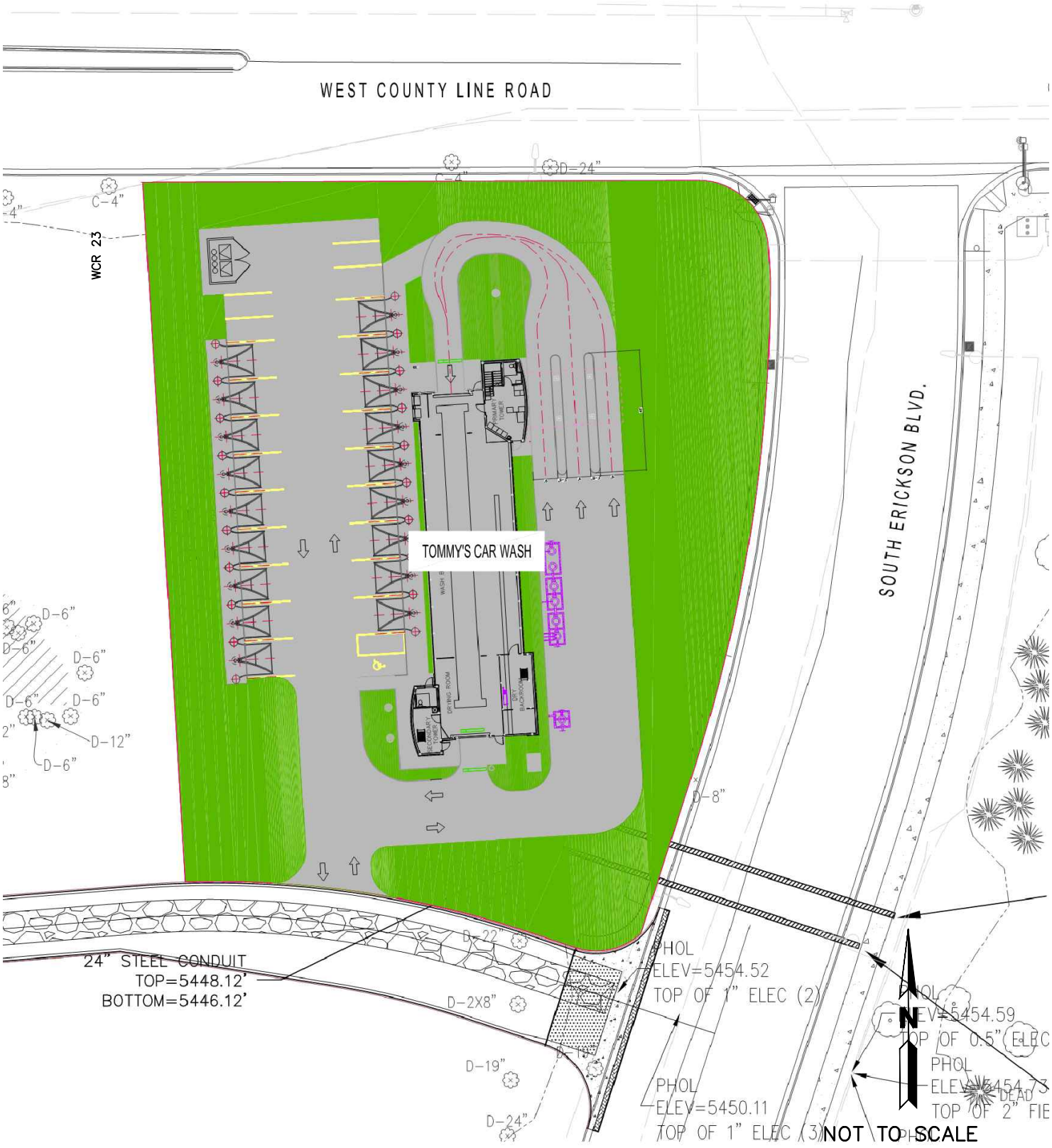


EXHIBIT 1

VICINITY MAP

CivTRANS Engineering Inc.

P.O. BOX 150335 • LAKEWOOD, CO 80215 • 303-653



November 8, 2019

EXHIBIT 2

CONCEPTUAL SITE PLAN

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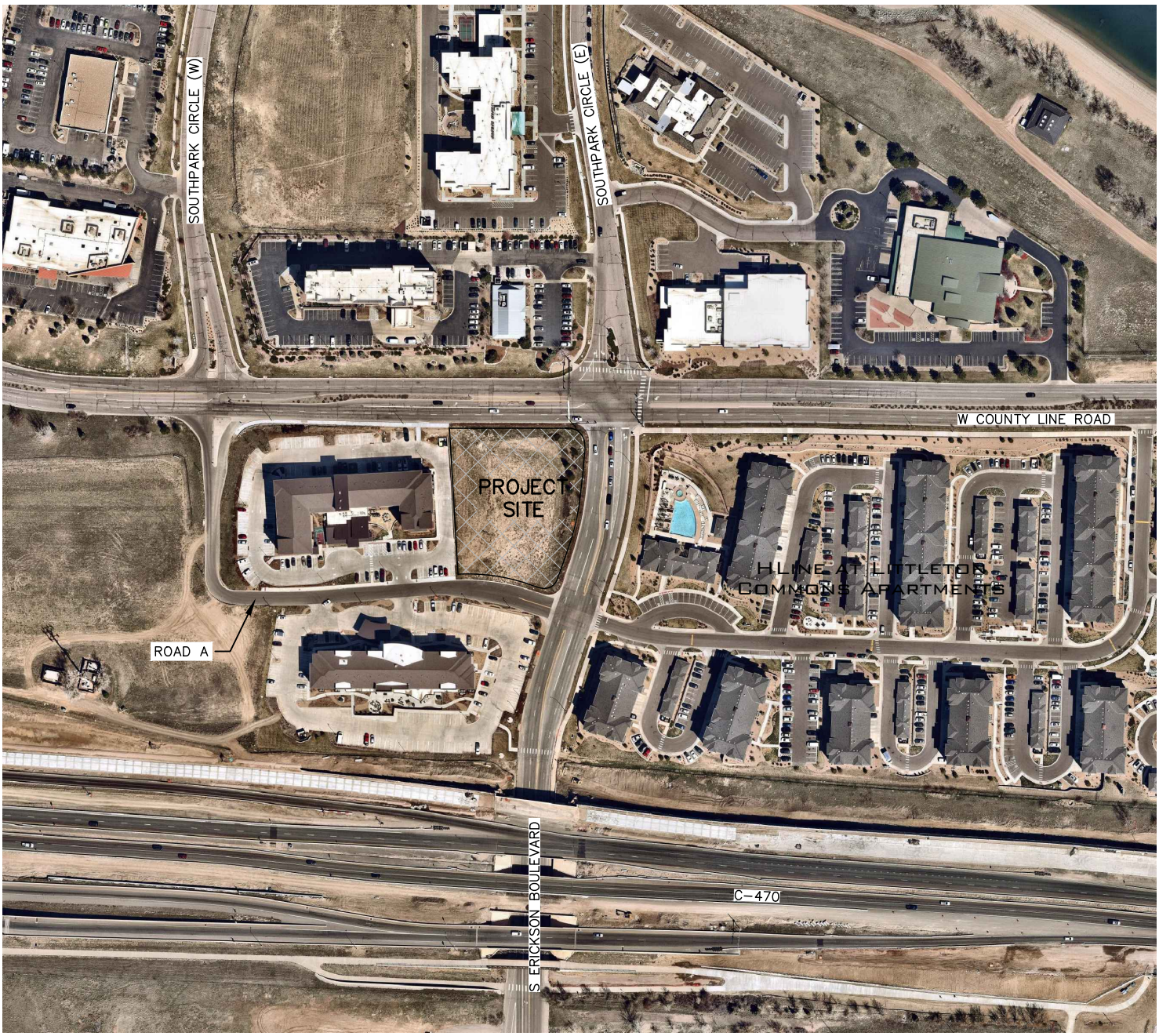

November 8, 2019

EXHIBIT 3

EXISTING AERIAL

NOT TO SCALE

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ANALYSIS METHODOLOGY

The various analyses conducted and reported in this document include intersection capacity analysis, sight distance evaluation, and queuing analysis.

Capacity Analysis

The analyses described in this report were performed in accordance with the procedures in the *Highway Capacity Manual* (HCM) and as described below. The analyses and procedures conducted are based upon the worst-case conditions that occur during a typical weekday. Therefore, most of each weekday and the weekends will experience traffic conditions better than those described within this document, which represent the peak hours of operation only.

Level of Service (LOS) is an empirical premise developed by the transportation profession to quantify driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles afforded to drivers who utilize the transportation network. LOS has been defined by the Transportation Research Board in the *2010 Highway Capacity Manual*. This document has quantified level of service into a range from “A” which indicates little, if any, vehicle delay, to “F” which indicates significant vehicle delay and traffic congestion that may lead to system breakdown due to volumes that may far exceed capacity.

The *Highway Capacity Manual* defines the level of service for a signalized intersection as the average delay per vehicle (amount of time a vehicle must spend at the intersection) for the overall intersection. For unsignalized intersections that include both stop-controlled and uncontrolled approaches (known as through/stop-controlled), the *Highway Capacity Manual* defines the level of service as the average delay per vehicle for the worst approach, not the overall intersection.

The level of service letter grades as defined by the Transportation Research Board and the associated amount of delay in seconds per vehicle, as well as a brief description of the operating condition, for both signalized and unsignalized intersections are included for reference in **Table 1** on the next page.

The City of Littleton has established level of service D as the minimum acceptable intersection operating condition. Analysis results indicating operations worse than the minimum acceptable level were considered for mitigation measures. In the cases where existing conditions currently operate at or future background conditions are projected to operate at states poorer than the minimum acceptable level, the future with project conditions will be evaluated to maintain the current or projected operating conditions.

Table 1. Intersection Analysis Criteria

Signalized Intersection Level of Service Criteria

Level of Service	Delay Range (seconds/vehicle)	Expected Delay at Intersection
A	≤ 10	Very low delay. Most vehicles do not stop.
B	> 10 and ≤ 20	Generally good progression of vehicles. Slight delays.
C	> 20 and ≤ 35	Fair progression. Increased number of stopped vehicles.
D	> 35 and ≤ 55	Noticeable congestion. Large portion of vehicles stopped.
E	> 55 and ≤ 80	Poor progression. High delays and frequent cycle failure.
F	> 80	Oversaturation. Forced flow. Extensive queuing.

Unsignalized Intersection Level of Service Criteria

Level of Service	Delay Range (seconds/vehicle)	Expected Delay to Minor Street Traffic
A	≤ 10	Little or no conflicting traffic for minor street approach.
B	> 10 and ≤ 15	Minor street approach begins to notice absence of available gaps.
C	> 15 and ≤ 25	Minor street approach begins experiencing delays for available gaps.
D	> 25 and ≤ 35	Minor street approach experiences queuing due to a reduction in available gaps.
E	> 35 and ≤ 50	Extensive minor street queuing due to insufficient gaps.
F	> 50	Insufficient gaps of suitable size to allow minor street traffic demand to cross safely through a major traffic stream.

Source: Highway Capacity Manual (Transportation Research Board, 2000).

Sight Distance Analysis

The American Association of State Highway Transportation Officials (AASHTO) has published *A Policy on Geometric Design of Highways and Streets, 7th Edition (2018),* which provides sight distance requirements for intersecting roadways based on intersection control, geometry, speed, grade, and maneuver being completed. For two-way stop-controlled intersections, required sight distance for left and right turning maneuvers from stop are shown in Tables 9.7 and 9.9. The resulting distance should allow a vehicle to safely make a turn from the minor street. Sight obscuring objects within the line of sight (sight triangle) should meet City of Littleton criteria for height, diameter and transparency.

Queuing Analysis

The queuing analyses in this traffic study were reported as the 95th percentile calculated length in feet. The analysis was performed using Synchro methodologies and results. The calculated lengths were then compared to the available actual storage length for each movement at the study area intersections. Mitigation measures were considered for the analysis results and indicated queue lengths for turn lanes that exceed the available storage lengths and queue lengths that extend back through adjacent intersections.

Analysis Horizons

The following four scenarios were analyzed as part of this study during both the AM and PM peak hours, with the corresponding volume and network configurations as indicated:

1. Existing Conditions

   Analysis of the existing conditions at the study area intersections was based on the turning movement volumes collected in October 2018 and the intersection geometry and traffic control as observed in the field. Traffic signal timing information was provided by the City of Littleton.

2. Short-term with Project Conditions

   The short-term future year analysis includes the same roadway geometry as for the existing conditions. The forecast volumes were calculated by increasing the existing volumes by the annual ambient growth rate and adding the background project trips and proposed project trips.

3. Long-range No Project Conditions

   The Long-range conditions included the best available information for projecting the traffic volumes approximately 20 years into the future for the study area to the Year 2040. A Long-range No Project condition analysis, without the proposed land use and associated trip additions, was performed as a comparison for the condition with the project (build). There are no known planned improvements to the transportation infrastructure within the study area for the long-range.

4. Long-range With Project Conditions

   The long-range future year analysis included the same roadway geometry as for the Long-range No Project conditions. The forecast volumes were calculated by combining the Long-range No Project volumes with the site-generated trips related to the proposed project.

EXISTING CONDITIONS

Existing Conditions within the Study Area

The purpose of this section is to document the existing conditions within the study area for the proposed project.

Land Use

The 1.3-acre site is currently vacant. The area surrounding the site is primarily commercial with multi-family residential uses to the east and south (across C-470). The site will be access from Road A, which is a private local access roadway along the south side of the site. The site is bound by W County Line Road to the north, Road A to the south, and Erickson Boulevard to the east. To the west is the existing hotel, Residence Inn by Marriot. US highway 85 lies to the west, which also provides the closest access to C-470.

Existing Roadways

As shown on the vicinity map, the site will be directly accessed from Road A, which connects to a ¾ movement intersection with W County Line Road and a full-movement intersection with Erickson Boulevard. The following is a list of the surrounding streets, their functional classification, and general geometry.

West County Line Road is an east-west major arterial with two through lanes in each direction along the site frontage. It extends from US 85 to I-25, terminating in the Inverness development. As stated in its name, County Line Road forms the boundary between Arapahoe and Douglas Counties. It also forms the boundary between the Cities of Littleton, Highlands Ranch, Centennial and Lone Tree. In the vicinity of the site, it primarily serves commercial uses with access limited primarily to public roadways and very few private driveways. The roadway has a raised median which limits the rare driveway access to right-in / right-out movements. The roadway is signed at 40 mph within the study.

South Erickson Boulevard is a north-south collector providing a connection between Plaza Drive (south of C-470) and County Line Road (north of C-470). Its entire length is approximately ¼ mile providing access for the HiLine at Littleton Common Apartments and Road A for the project site. At County Line Road, it aligns with Southpark Circle to the north. At Plaza Drive, it aligns with Mill Vista Road to the south. The roadway is posted at 30 mph within the study area.

Southpark Circle is a two-lane, north-south local-access loop roadway providing access for the multiple commercial and office uses north of County Line Road. It intersects County Line Road at two locations, one (east) aligned with Erickson Boulevard and the other (west) aligned with Road A. Southpark Circle is signed at 30 mph within the study area.

Road A is a two-lane, two-way, private access roadway. It provides access for the proposed site and two existing hotels. It connects to County Line Road west of Erickson Boulevard and to Erickson Boulevard south of County Line Road. It does not have a posted speed limit.

Study Area Intersections

The project study area intersections were identified through coordination with the City of Littleton Traffic Engineering staff. The study area includes the following intersections:

- Southpark Circle (W) / Road A & W County Line Road
- Southpark Circle (E) / S Erickson Boulevard & W County Line Road
- S Erickson Boulevard & Road A
- Site Access & Road A (future only)

These intersections have been analyzed for level of service (LOS) for the weekday AM & PM peak hours and form the basis of this document.

Traffic Control and Descriptions

Southpark Circle (W) / Road A & W County Line Road is an unsignalized intersection with stop-control on the northbound and southbound approaches, Road A and Southpark Circle (W) respectively. The northbound approach, Road A, has one lane in each direction with a raised median to restrict the northbound movement to right turns only. The southbound approach, Southpark Circle, has one lane in each direction with a raised median to slightly direct vehicles into a right-turn movement. However, unlike the northbound approach, there is no signing or physical barrier to restrict this approach to only right turns. County Line Road forms the eastbound and westbound approaches with two through lanes and a left-turn lane in each direction.

Southpark Circle (E) / S Erickson Boulevard & W County Line Road is a signalized intersection with the following lane configuration: Southpark Circle (E) forms the southbound approach with one left-turn lane and one shared through-right lane. Erickson Boulevard forms the northbound approach with one left-turn lane and one shared through-right lane. County Line Road forms the westbound and eastbound approaches with one left turn lane and two through lanes in each direction. Right turns are made from the curbside through lane. Signalized pedestrian crossings with activation push buttons are present on just the north and east legs. Left turns on all of the approaches each have a four-section signal head to allow for permissive-protected phasing with a flashing yellow indication for the permissive phase. There are no right-turn-on-red restrictions. The intersection has vehicle detection to allow the signal to operate with actuated control.

S Erickson Boulevard & Road A / HiLine driveway is an unsignalized, full-movement intersection with stop-control on the eastbound and westbound approaches, Road A and HiLine apartments driveway respectively. Each of these stop-controlled approaches has

one lane in each direction. Erickson Boulevard forms the northbound and southbound approaches with two through lanes and a left-turn lane in each direction.

The existing geometry at each of the study area intersections is depicted in **Exhibit 4**, which follows.

Traffic Volumes and Peak Hours of Operation

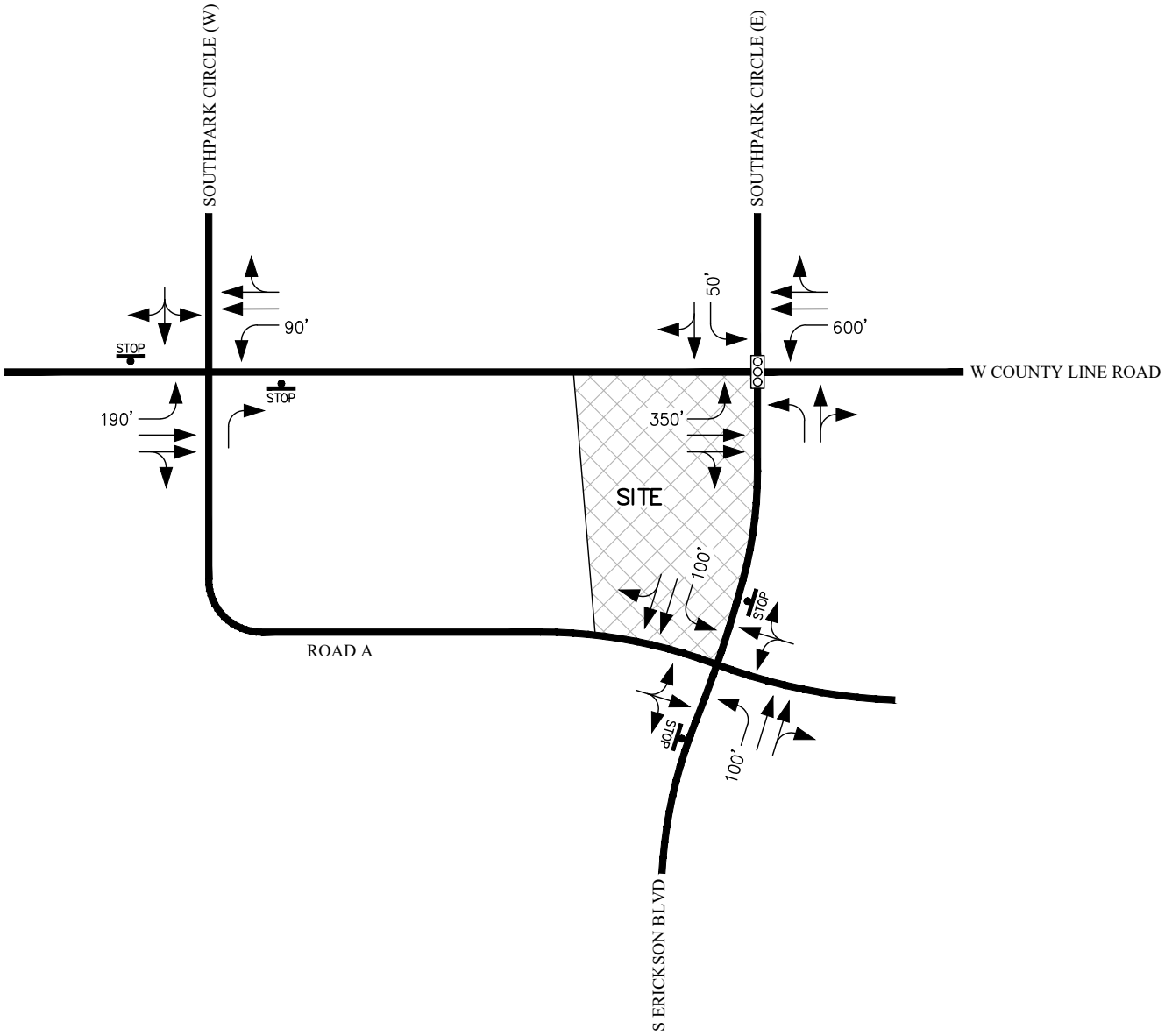
Turning movement counts were collected by All Traffic Data at the study area intersections during the morning (7:00 AM – 9:00 PM) and afternoon (4:00 – 6:00 PM) peak periods on October 3, 2018, a Wednesday, under the direction of CivTrans Engineering. The peak hour volumes from these counts are shown in **Exhibit 5**. The raw count data is provided in the Technical Appendix.

Background Projects

Three background projects were identified for inclusion in this study, Alpine Buick Car Dealership, Caliber Collision, and the HCI Office Building. The Alpine Buick Car Dealership is a proposed 47,100 square foot car sales development on 4.9 acres located west of the site along Road A, immediately west of Courtyard by Marriot. The Caliber Collision project is a proposed 16,000 square foot automobile collision repair center located along Southpark Circle north of County Line Road. The HCI office building project is located at the north end of the Southpark Circle and will contain 16,000 square feet of office space. Information for developments are found within their respective traffic letters or studies, which have been provided by the City of Littleton for reference. The anticipated traffic from these projects was included in future year analyses and is shown within **Exhibit 6**.

Ambient Traffic Growth

Based on a review of the Denver Regional Council of Governments (DRCOG) year 2015 and 2040 traffic models for the roadways within the study area, County Line Road is shown to increase at a rate of 0.6% per year during the 25-year span. Erickson Boulevard is shown to increase at a rate of 2.8% per year. Therefore, these growth rates were applied to the existing traffic counts for future year analysis.



N

NOT TO SCALE

November 8, 2019

– Signalized intersection

STOP – Stop controlled intersection

XXX' – Approximate storage length of turn lane without transition taper

AUX – Auxiliary lane where through lane from previous intersection becomes a turn lane

EXHIBIT 4

YEAR 2019 LANE GEOMETRY

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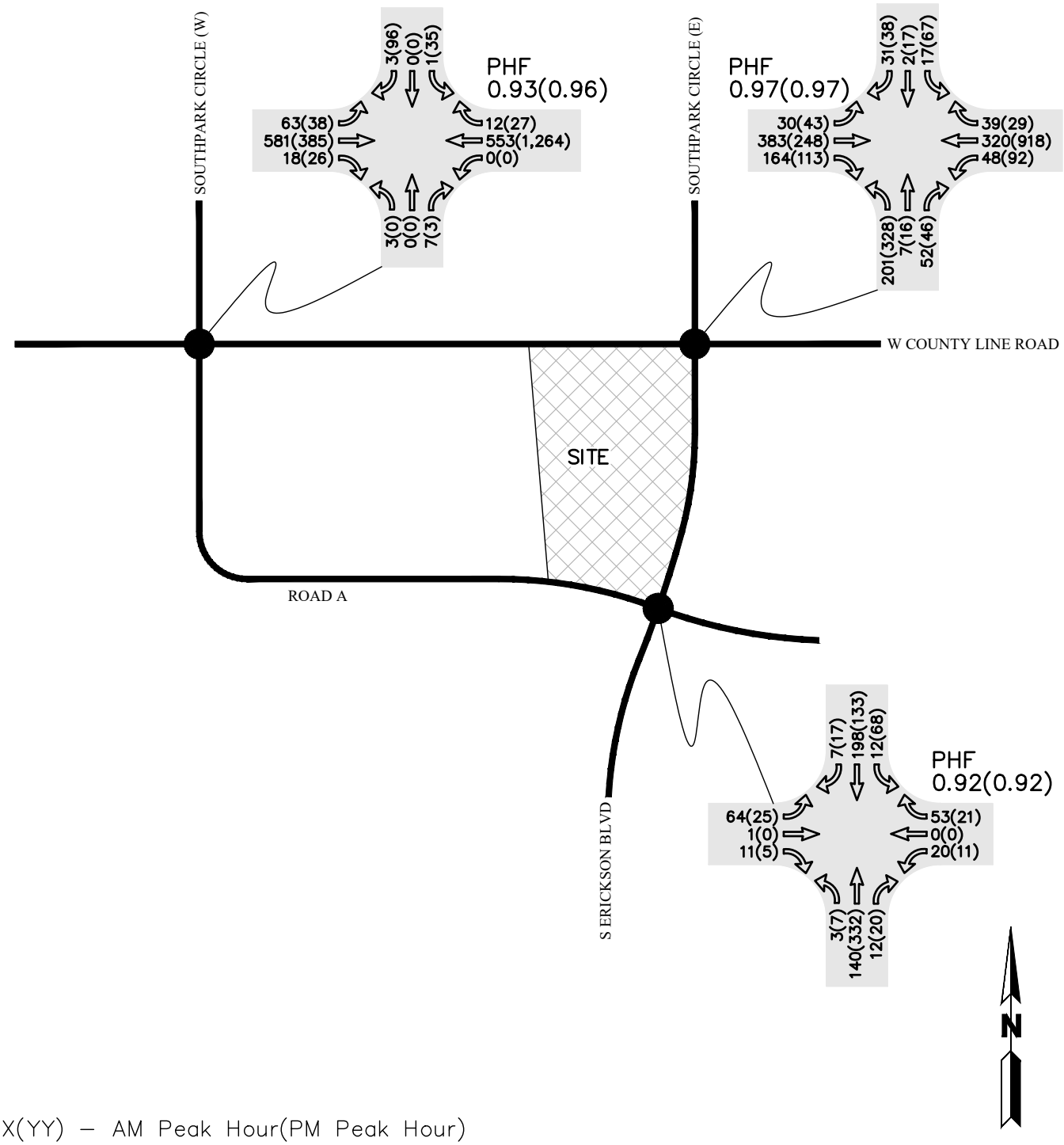

XX(YY) – AM Peak Hour(PM Peak Hour)

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November 8, 2019

Source: Traffic counts collected by All Traffic Data Inc. on October 3, 2018 under the direction of CivTrans Engineering Inc.

EXHIBIT 5

EXISTING (2018) TRAFFIC VOLUMES

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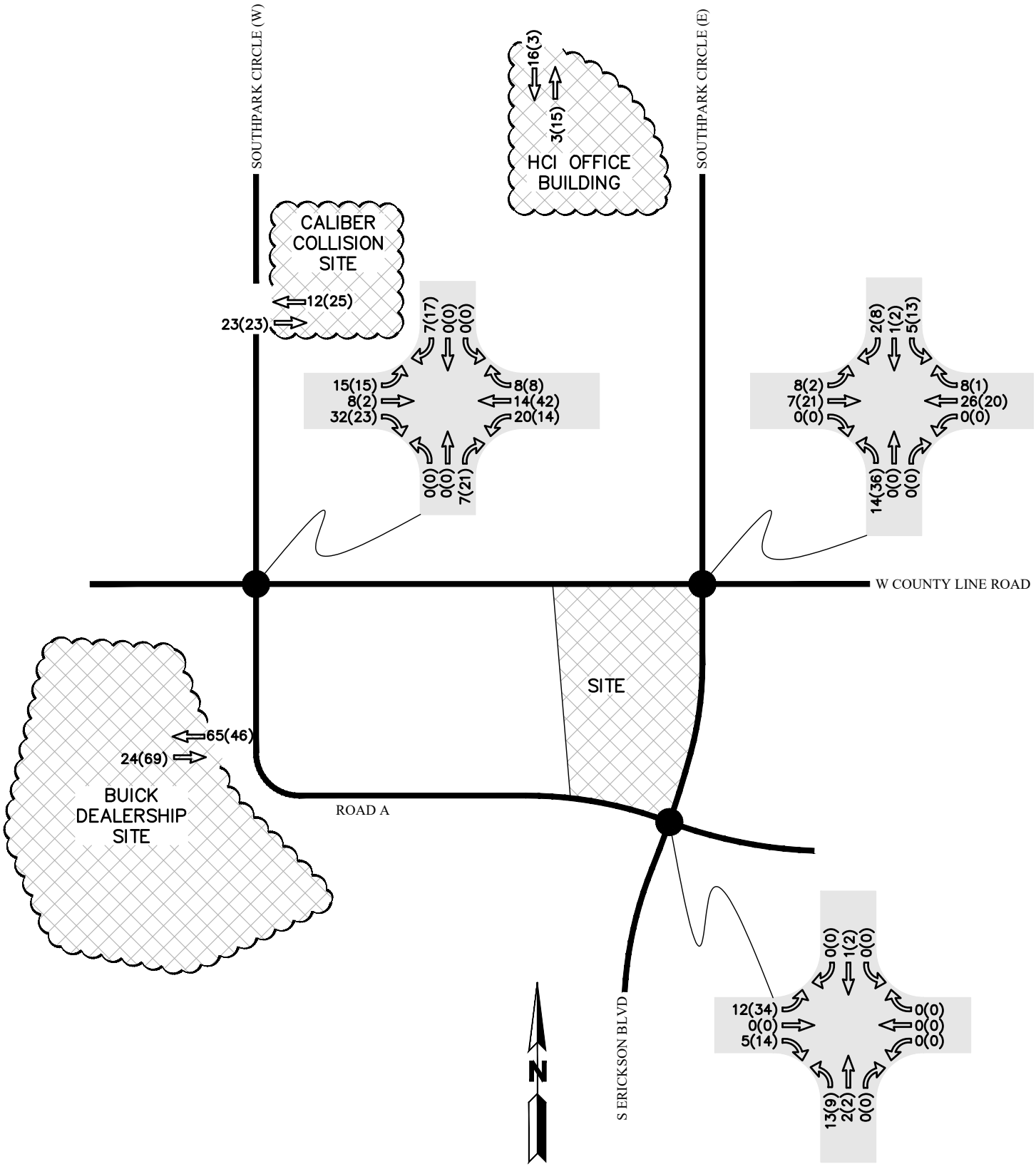

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Note: These trips represent the combined traffic from the three identified background projects, which are anticipated to be present by the year 2021.

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EXHIBIT 6

COMPILED BACKGROUND PROJECTS TRIPS

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EXISTING LEVEL OF SERVICE AND TRAFFIC ANALYSIS

Level of Service

The existing levels of service at the subject intersections were calculated using the methods from the *2010 Highway Capacity Manual* as implemented in Synchro*, Version 10*. The existing levels of service (LOS) for the intersections within the study area are summarized on the following table. The existing traffic volumes used for this report are shown on Exhibit 5.

Table 2 -2018 Existing Intersections Levels of Service

INTERSECTION (S)ignalized (U)nsignalized		Approach Or Overall	AM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
Southpark Cir (W) / Road A & County Line Rd	U	NB SB	10.4 14.3	B B	9.6 82.3	A F
Southpark Cir (E) / Erickson Blvd & County Line Rd	S	Ovr	13.6	B	17.4	B
Erickson Blvd & Road A / HiLine Driveway	U	EB WB	12.0 9.8	B A	13.4 11.8	B B

According to the City of Littleton, a level of service (LOS) D should be used as a guideline to maintain for overall intersection operations. Mitigation measures should be considered for overall signalized intersections or unsignalized approaches reported to be operating at LOS E or F. All of the existing study area intersections are currently operating at acceptable levels during both the AM and PM peak hours except the southbound approach at Southpark Circle (W) & County Line Road. This approach is currently operating at LOS F during the PM peak hour.

The southbound approach at Southpark Circle (W) & County Line Road has a raised concrete median that directs traffic slightly to make a right-turn at the intersection. However, left turns from this approach are not restricted and are still able to be completed despite the median. The City of Littleton should consider modifying the southbound approach median and install “right-turn only” signing to more forcibly restrict this approach to right turns only. The development along Southpark Circle has the opportunity to use the eastern intersection, which is signalized and has sufficient capacity to accommodate additional left turning traffic. It appears this intersection had a larger median in 2008 to restrict southbound movements to right-turn only. However, the median was modified prior to 2010 to allow for crossing maneuvers and left-turns from this approach.

The level of service reports for the existing conditions are provided in the Technical Appendix.

Sight Distance

Based on site observations conducted in September 2018, there do not appear to be any sight distance issues for the existing intersections within the study area.

Queuing

Vehicle queuing at the study area intersections are based on Synchro 95th percentile queue results. Unsignalized intersection queues are based on the HCM output, which shows the queue in number of vehicles. These have been converted to a length in feet by multiplying the number of vehicles by 25'. The following table shows the existing calculated queues for the study area intersections.

Table 3 - Existing (Year 2018) Queuing Results

Intersection		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Southpark Cir (W) & County Line Rd	AM	5	-	-	0	-	-	-	-	0	-	0	-
	PM	8			0					0		135	
Storage Available		190			90							300	
Southpark Cir (E) & County Line Rd	AM	19	142	-	27	98	-	106	29	-	16	25	-
	PM	25	91		45	307		277	44		**60**	47	
Storage Available		350	530		600	680		310	310		50	160	
Erickson Blvd & Road A	AM	-	13	-	-	8	-	0	-	-	0	-	-
	PM		5			5		0			5		
Storage Available								100			100		

*bold values shown above represent calculated 95th percentile queues that currently exceed available storage

As shown in the table above, the existing 95th percentile queues exceed the available storage for the southbound left during the PM peak hour at the intersection of Southpark Circle (E) / Erickson Blvd & County Line Road. This is not much of an issue except for when the protected left turn phase leads and left-turning vehicles end up blocking the through-right lane. During observations, this queue did not extend beyond the turn lane storage area. With the ability to have the left-turn protected phase lag with a flashing arrow signal head, the City should consider implementing a lag sequence for the southbound protected left turn phase at this intersection.

TRIP GENERATION AND DISTRIBUTION

Trip Generation

The proposed project is anticipated to include a single-tunnel automated car wash with three queuing lanes of approximately 150' each and approximately 18 vacuum bays. The current site plan, shown in **Exhibit 2**, shows one full-movement access to Road A, which provides a full-movement access to S Erickson Boulevard and a ¾ movement access to County Line Road. Off-street parking will be provided for patrons, employees and visitors to the site.

The *Trip Generation Manual, 10th Edition* published by the Institute of Transportation Engineers (ITE) is typically used to determine the number of trips generated by a proposed land use. The purpose of the Trip Generation Manual (TGM) is to compile and quantify empirical trip generation rates for specific land uses within the US, UK and Canada. The TGM provides land use categories that closely match the proposed project, 948 "Automated Car Wash" and 949 "Car Wash and Detail Center." However, both of these land use categories have only one sample site to base trip generation estimates upon. Therefore, traffic data for other Tommy's Express Car Wash sites was obtained from the project proponent. Sites in Grandville, Michigan and Joplin, Missouri have been open for over a year. Hourly traffic volumes for the month of April 2018 were provided for these two sites. Traffic for Tuesdays, Wednesdays and Thursdays during the 7 AM, 8 AM, 4 PM and 5 PM hours were evaluated to determine the average AM and PM peak hour vehicle volumes. These volumes only included vehicles going through the car wash and did not account for employee traffic, patrons only using vacuum facilities, or other visitors to the site (i.e. deliveries, postal service, etc.). The sites operate from 7 AM to 9 PM, which will also be the hours of operation for the Littleton site. Typically, the facility operates with three employees at a time with two shifts (open AM to 2 PM; 2 PM to close). Employee shift times do not coincide with peak commuting hours. Other vehicles not accounted for are anticipated to be nominal. Very few patrons only come to the site to use the vacuum facilities and deliveries generally occur off peak. Directional distribution was assumed to be even. The trip generation for the proposed project, based on the two sites described above, is shown in the table below.

Table 4 - Project Trip Generation

Daily Trips	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
2,258	58	58	116	136	136	272

As shown in the table above, the proposed project is anticipated to generate 116 AM peak hour trips, 272 PM peak hour trips, and 2,258 average daily trips.

Trip Types

Nearly all developments are made up of the following six trip types: new (destination) trips, pass-by trips, diverted trips, shared (internal) trips, multi-modal (non-vehicular) trips, and transit oriented trips. In order to better understand the trip types available for land access and how they relate to this project, a description of each specific type follows.

New (Destination) Trips – These types of trips occur to access a specific land use such as a new retail development or a new residential subdivision. These types of trips will travel to and from the new site and a single other destination such as home or work. This is the only trip type that will result in a net increase in the total amount of traffic within the study area. The reason primarily is that these trips represent planned trips to a specific destination that never took trips to that part of the City prior to the development being constructed and occupied. This project will develop new trips.

Pass-by Trips – These trips represent vehicles which currently use adjacent roadways providing primary access to new land uses or projects. These trips, however, have an ultimate destination other than the project in question. They should be viewed as drop-in customers who stop in on their way home from work. A good example is a quick stop at the grocery store to pick up an ingredient for dinner on the way home from work or at a latte stand to grab a coffee on the way to work. This can make this trip pre-determined, but the stop is still on the way by. Another example would be on payday, where an individual generally drives by their bank every day without stopping, except on payday. On that day, this driver would drive into the bank, perform the prerequisite banking and then continue home. In this example, the trip started from work with a destination of home, however on the way, the driver stopped at the grocery store/latte stand and/or bank directly adjacent to their path. Pass-by trips are most always associated with commercial/retail and restaurant types of developments. Therefore, pass-by trips are anticipated to occur for this project as the development relies heavily on this type of trip. ITE's *Trip Generation Handbook* provides pass-by trip data for various land uses. However, the car wash land use is not included in this reference. Other service-type land uses (banks, fast-food restaurants, gas stations) experience a high amount of pass-by trips ranging from 40% to 80% of the total trips generated. Since there is no justification to use a pass-by percentage of 40%, 10% seems very likely. Therefore, a 10% pass-by trip reduction was applied.

Diverted (Linked) Trips - Diverted trips are like pass-by trips, but diverted trips occur from roadways that do not provide direct access to the site. Instead, one or more streets must be utilized to get to and from the site. Similar to pass-by trips, diverted trips are most always associated with commercial/retail type developments. Diverted trips will occur for this project from County Line Road and may occur from US Highway 85. The US 85 trips would be difficult to verify and do not impact the study area anyway. The County Line Road diverted trips will be shown as an extended pass-by trip as a part of the 10% reduction described above.

Shared Trips - Internal trips are the portion of trips generated by a mixed-use development that both begin and end within the development. When estimating trip generation for a development with several uses, each use will generate its own trips. If those trips occur between two of the onsite uses without using the external roadway system, it is considered a shared or internal trip. This trip type reduces the number of new trips generated on the public road system and is most commonly used for commercial or mix-use developments. Determining these trip types is more difficult to quantify and without specific guidance are usually determined by engineering judgment on a project by project basis. For this project, the car wash will be the only use on the site. Therefore, no internal trips will occur for this project.

Multi-Modal Trips - These are non-vehicular trips to and from the site, mostly comprised of pedestrian and bicycle trips. Generally, they are local trips from the surrounding neighborhood or adjacent businesses. If a development is in an area with a high amount of bicycle and pedestrian activity, such as a downtown setting or college campus, a reduction of vehicular trips would be anticipated. For a car wash facility, it is highly unlikely that any of the trips will be pedestrian or bicycle except for possibly the employees, which are anticipated to occur outside of the peak hour.

Transit Trip - The Denver Metro area is served by Regional Transportation District (RTD) with public bus and light rail. The nearest bus routes to the site are along County Line Road with eastbound and westbound stops immediately east of Erickson Boulevard. The nearest light rail station is approximately 1.5 miles to the north at the Littleton/Mineral Station (US 85 & Mineral Avenue). Similar to multi-modal trips, transit trips are only likely to occur by employees.

Based on the various trip types depicted above and the nature of the proposed project, a reduction to account for pass-by and diverted trips of 10% was applied to the trip generation estimates shown in Table 4. This results in the following estimated new (destination) trip generation for the site.

Table 5 - Project Trip Generation with Reductions

Trip Type	Daily Trips	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Total	2,258	58	58	116	136	136	272
Pass-by / Diverted Trips	226	6	6	12	14	14	28
New (destination) Trips	2,026	52	52	104	122	122	244

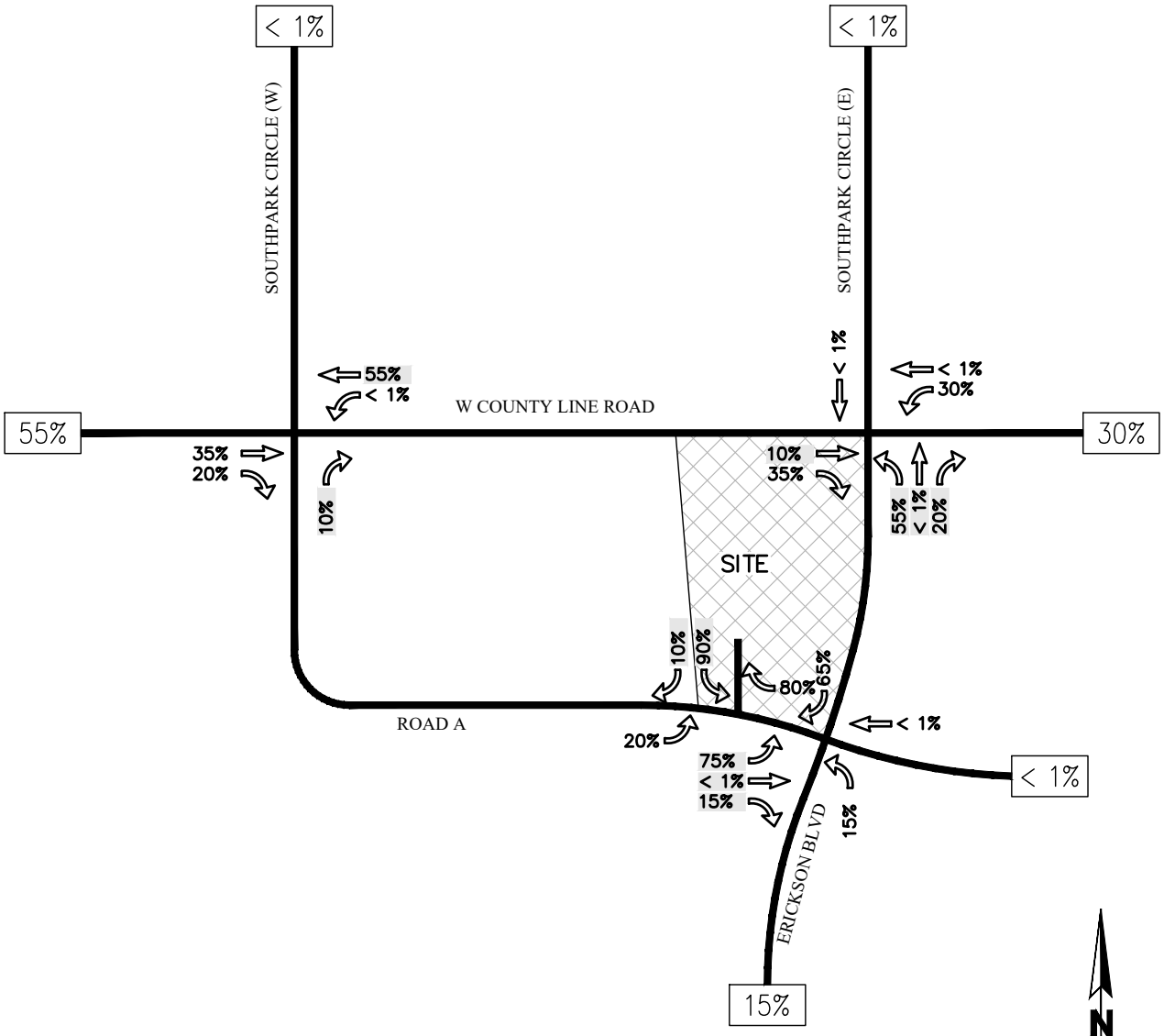
Trip Distribution

The proposed project is a car wash, which tends to attract local (not regional) trips to and from the site. Existing travel patterns, the surrounding roadway network, locations of residential population and employment areas were reviewed to determine the anticipated trip distribution for the proposed project. The resulting trip distribution follows:

Distribution

- County Line Road west of the site – 55%
- County Line Road east of the site – 30%
- Erickson Boulevard south of the site - 15%

These trip distribution percentages are illustrated in **Exhibit 7**. The project generated new (destination) and pass-by trips distributed to the study area intersections are provided in **Exhibits 8 and 9**, respectively.



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XX% – REGIONAL DISTRIBUTION

– DISTRIBUTION AT INTERSECTION
X% – PERCENTAGE OF INGRESS
X% – PERCENTAGE OF EGRESS

EXHIBIT 7

PROJECT TRIP DISTRIBUTION

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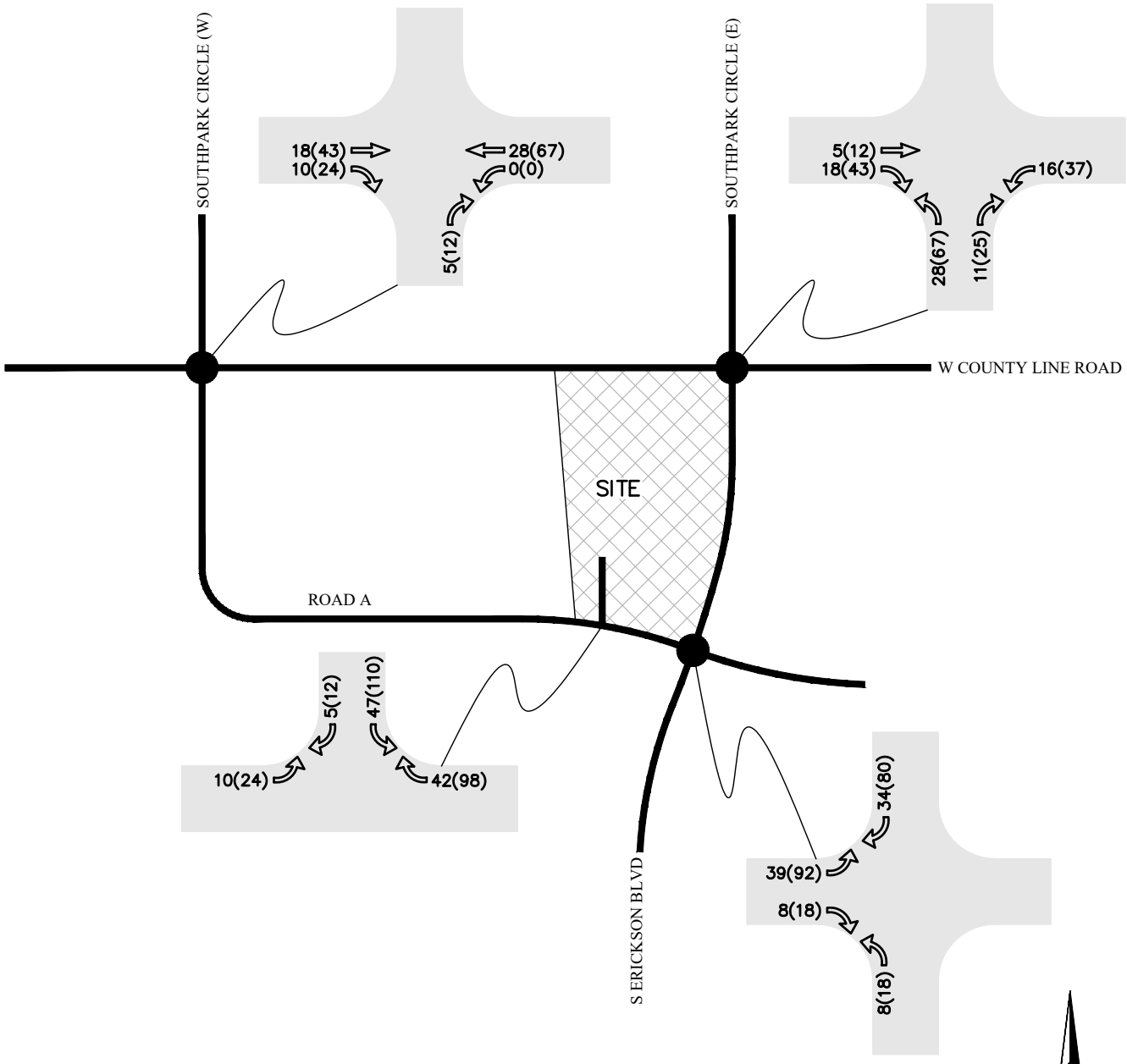

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EXHIBIT 8

SITE-GENERATED NEW TRIPS

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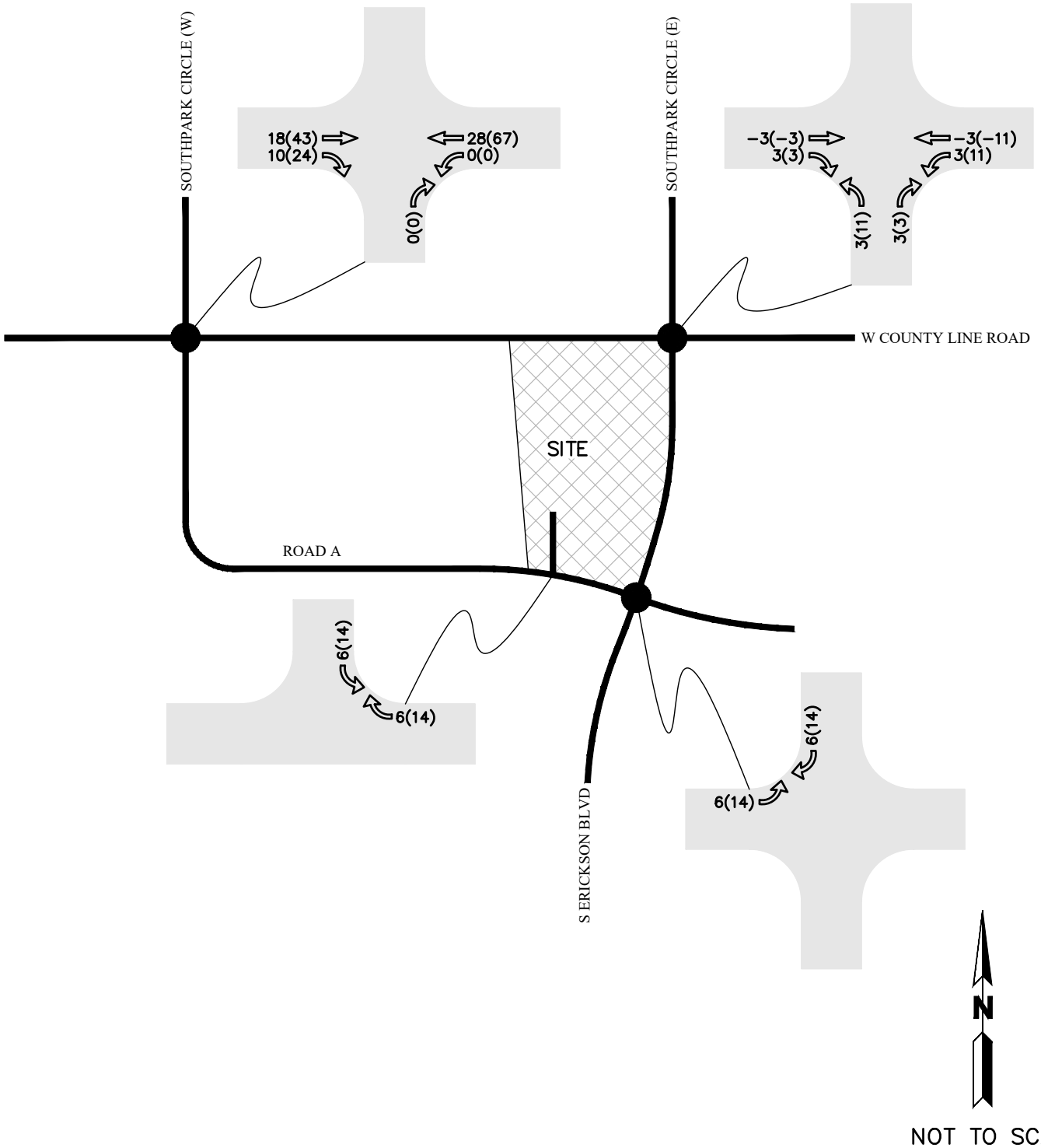

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EXHIBIT 9

SITE-GENERATED PASS-BY TRIPS

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FUTURE YEAR TRAFFIC IMPACT ANALYSIS

Level of service calculations for the Short-Term (Year 2021) and Long-range (Year 2040) conditions assumed that the existing traffic volumes as shown on Exhibit 5 experience a background increase above the 2018 volumes as specified within the “Ambient Traffic Growth” section of this report. Additionally, three background projects were identified for inclusion in the study. It is not clear if these projects are anticipated to be completed prior to 2021, but were assumed to be so, and were therefore included in all future volume projections. Two scenarios were examined for the each of the future conditions, one without the project and one with the project completed. A list of the future scenarios follows.

- Short-term Condition (Year 2021) without the Project
- Short-term Condition (Year 2021) with the Project
- Long-range Condition (Year 2040) without the project
- Long-range Condition (Year 2040) with the Project

These scenarios will allow a specific comparison of impacts to the study area intersections and allow a determination to be made as to the extent of the project’s impact and if any mitigation measures will be required.

Additionally, for the future scenarios, it is assumed that the southbound approach of the intersection of Southpark Circle (W) & County Line Road has been modified to right-turn only as shown to be needed in the existing conditions analysis. Southbound left-turning traffic at this intersection is reallocated to Southpark Circle (E), where there is a traffic signal.

Short-term Condition (Year 2021) without the Project

This section focuses on the short-term scenario without traffic from the project. This scenario assumes that the proposed project has not developed, but ambient growth along the study area roadways has occurred over the next three years and the three background projects have been constructed. This analysis will show how the traffic volumes will be handled by the transportation facilities and what impacts the proposed project will have on the overall operations. The traffic volumes for this condition include the existing traffic, as shown on Exhibit 5 with three years of ambient background growth and the traffic volumes from the background projects as shown on Exhibit 6. Please see Exhibit 10 for the traffic volumes used for this scenario. A summary of the level of service results are shown in Table 6, which follows

Table 6 - Year 2021 Levels of Service without Project

INTERSECTION (S)ignalized (U)nsignalized		Approach Or Overall	AM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
Southpark Cir (W) / Road A & County Line Road	U	NB SB	10.7 10.4	B B	9.8 18.9	A C
Southpark Cir (E) / Erickson Blvd & County Line Road	S	Ovr	14.2	B	19.7	B
Erickson Boulevard & Road A / HiLine Driveway	U	EB WB	13.0 10.0	B B	14.9 12.4	B B

For the short-term condition without the project, all of the intersections within the study area are anticipated to continue to operate within acceptable levels of service. The southbound approach at Southpark Circle (W) / Road A & County Line Road is assumed to have been modified to a right-turn only condition, which will allow this approach to operate at LOS C during the PM peak hour.

Queuing

Vehicle queuing at the study area intersections are based on Synchro 95th percentile queue results. The following table shows the anticipated queues for the study area intersections for the short-term without project scenario and assuming a median modification has been completed for the southbound approach on Southpark Circle (W).

Table 7 – Short-term without Project (Year 2021) Queuing Results

Intersection		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Southpark Cir (W) & County Line Rd	AM	8	-	-	3	-	-	-	-	3	-	-	0
	PM	10			0					3			33
Storage Available		190			90								300
Southpark Cir (E) & County Line Rd	AM	23	150	-	29	110	-	125	31	-	19	27	-
	PM	26	102		49	326		**345**	48		**97**	52	
Storage Available		350	530		600	680		310	310		50	160	
Erickson Blvd & Road A	AM	-	18	-	-	8	-	0	-	-	0	-	-
	PM		18			5		0			5		
Storage Available								100			100		

*bold values shown above represent calculated 95th percentile queues that currently exceed available storage

As shown in the table above, the calculated 95th percentile queues for the study area intersections are anticipated to be accommodate with the available storage except the southbound left turn at Southpark Circle (E) & County Line Road. The northbound left turn at this intersection also may start to reach the next intersection, Road A / HiLine driveway. If the northbound left turn queue becomes a problem, modifications to the signal timing or conversion of the existing striping to accommodate dual left turns may be required.

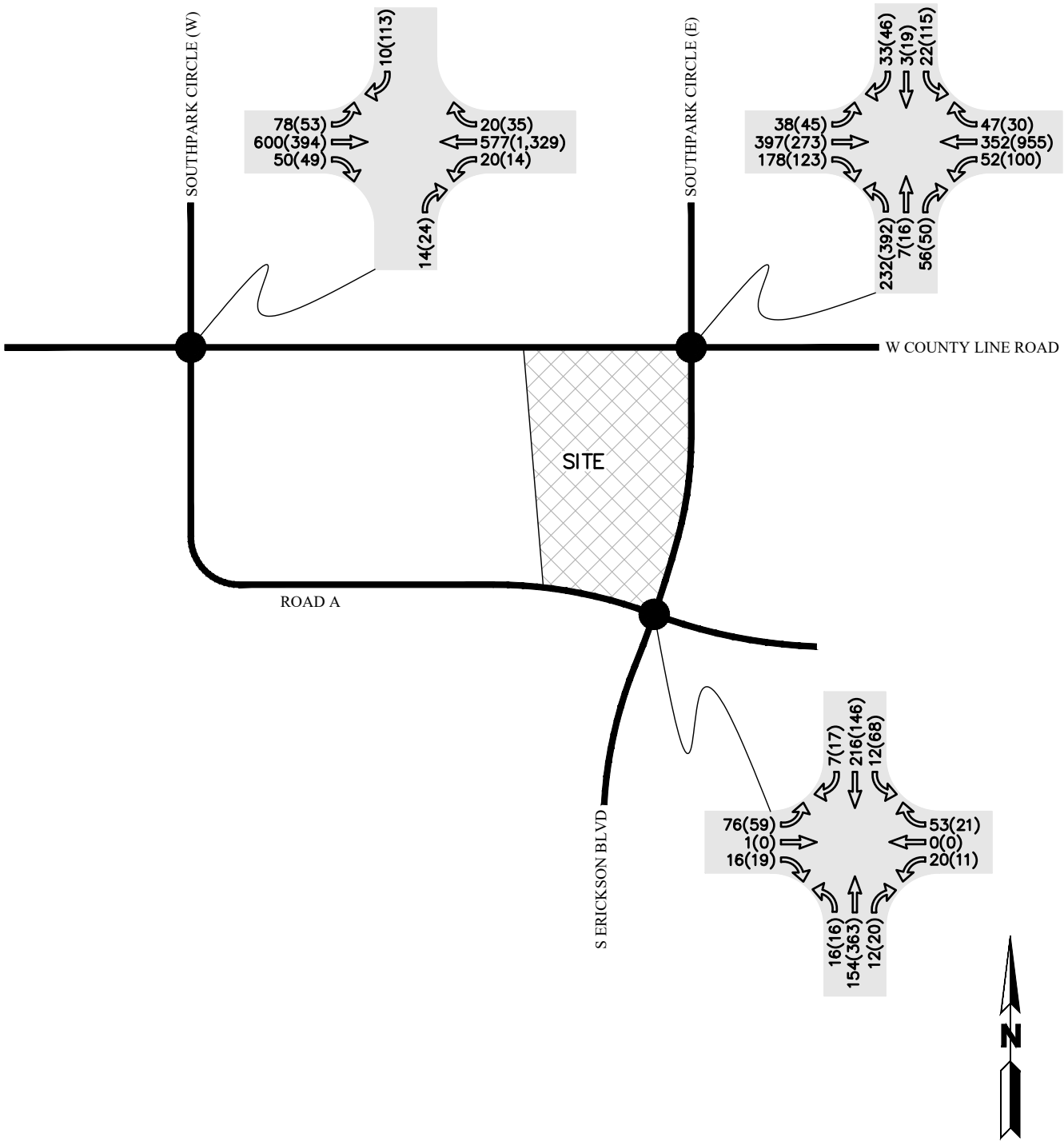

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EXHIBIT 10

SHORT-TERM (2021) NO-PROJECT TRAFFIC VOLUMES

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Short-term Condition (Year 2021) with the Project

This section focuses on the short-term scenario of the year 2021 with traffic from the project. The traffic volumes for this condition include the short-term no-project traffic, as shown on Exhibit 10, with the traffic from the project as shown on Exhibits 8 and 9. Please see Exhibit 11 for the traffic volumes used for this scenario. A summary of the level of service results are shown in Table 8, which follows

Table 8 - Year 2021 Levels of Service with Project

INTERSECTION (S)ignalized (U)nsignalized		Approach Or Overall	AM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
Southpark Cir (W) / Road A & County Line Road	U	NB SB	10.9 10.6	B B	10.2 20.0	B C
Southpark Cir (E) / Erickson Blvd & County Line Road	S	Ovr	14.8	B	22.0	C
Erickson Boulevard & Road A / HiLine Driveway	U	EB WB	15.2 10.1	C B	28.3 12.8	D B
Site Access & Road A	U	SB	9.7	A	10.9	B

For the short-term condition with the project, all of the intersections within the study area are anticipated to continue to operate within acceptable levels of service.

Queuing

Vehicle queuing at the study area intersections are based on Synchro 95th percentile queue results. The following table shows the anticipated queues for the study area intersections for the short-term with the project scenario. Queues reported assume the anticipated conversion of Southpark Circle (W) to right-turn only is completed.

Table 9 – Short-term with Project (Year 2021) Queuing Results

Intersection		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Southpark Cir (W) & County Line Rd	AM PM	8 10	-	-	3 0	-	-	-	-	3 5	-	-	3 35
Storage Available		190			90								300
Southpark Cir (E) & County Line Rd	AM PM	22 26	155 108	-	36 68	108 321	-	149 **458**	35 55	-	20 **96**	27 52	-
Storage Available		350	530		600	680		310	310		50	160	
Erickson Blvd & Road A	AM PM	-	33 93	-	-	8 5	-	3 3	-	-	0 5	-	-
Storage Available			120					100			100		
Site Access & Road A	AM PM	0 3	-	-	-	-	-	-	-	-	5 18	-	-
Storage Available													

*bold values shown above represent calculated 95th percentile queues that currently exceed available storage

As shown in the table above, the short-term build 95th percentile queues are mostly accommodated by the available storage at turn lanes during the AM and PM peak hour. The southbound queue at the intersection of Southpark Circle (E) & County Line Road is shown to exceed the 50' storage for this lane. Additionally, the northbound left turn at this intersection is anticipated to reach the next intersection, Road A / HiLine driveway, during the PM peak hour. A reduction of the cycle length to 90 seconds from the current 120-second cycle would reduce the queuing at this intersection and maintain level of service for all movements.

As shown in the table above, the site access is anticipated to have 95th percentile queues less than 25' (1 vehicle). Queuing results can be found within the technical appendix.

Vehicles are anticipated to queue on the site prior to the car wash. Three 150' queue lanes will be provided. The automated wash takes approximately 2 minutes from start to finish and the "tunnel" can accommodate up to 8 vehicles at a time, which corresponds to a maximum service rate of 240 vehicles per hour when operating at full capacity.

Hourly volume data for the month of April 2018 was provided for other existing Tommy's Express Car Wash sites. The busiest site was in Grandville, Michigan, which had almost 50,000 vehicles go through its automated wash in a month. Hourly volumes of vehicles visiting this site ranged from 4 vehicles to 273 vehicles in an hour. 95% of the hours of operation for this site had volumes of 237 vehicles or less and an average hourly volume of 117 vehicles per hour. Data provided for the other five sites was significantly less than the Grandville site with very few hourly volumes exceeding the 240 vehicle per hour service rate. The three lanes of 150' has adequately accommodated the on-site queues at all of these sites with rare occurrences where the queue storage reaches capacity. Therefore, the proposed queue storage for this site is anticipated to be adequate.

Sight Distance

A Policy on Geometric Design of Highways and Streets, 7th Ed. (2018), published by the American Association of State Highway and Transportation Officials (AASHTO) was consulted for determining the required sight distance for vehicles turning from the site access driveway. Road A does not have a posted speed limit, but was assumed to be 25 mph. From tables 9-7 and 9-9, the required sight distance is 280' for left turning vehicles (looking west) and 240' for right turning vehicles (looking east). The driveway is anticipated to be approximately 120' west of Erickson Boulevard. This intersection should be visible from the driveway. Vehicles turning at Erickson Boulevard & Road A will slow to 10-15 mph before accelerating to 25 mph. Therefore, the 120' should be an adequate distance for the line of sight and allow vehicles on Road A and vehicles exiting the site to react to any potential conflict. When developing construction plans for this access, the line of sight (sight triangles) should be shown on the plans and any plantings or other visual obstructions within this triangle area should not exceed 3.5 feet in height.

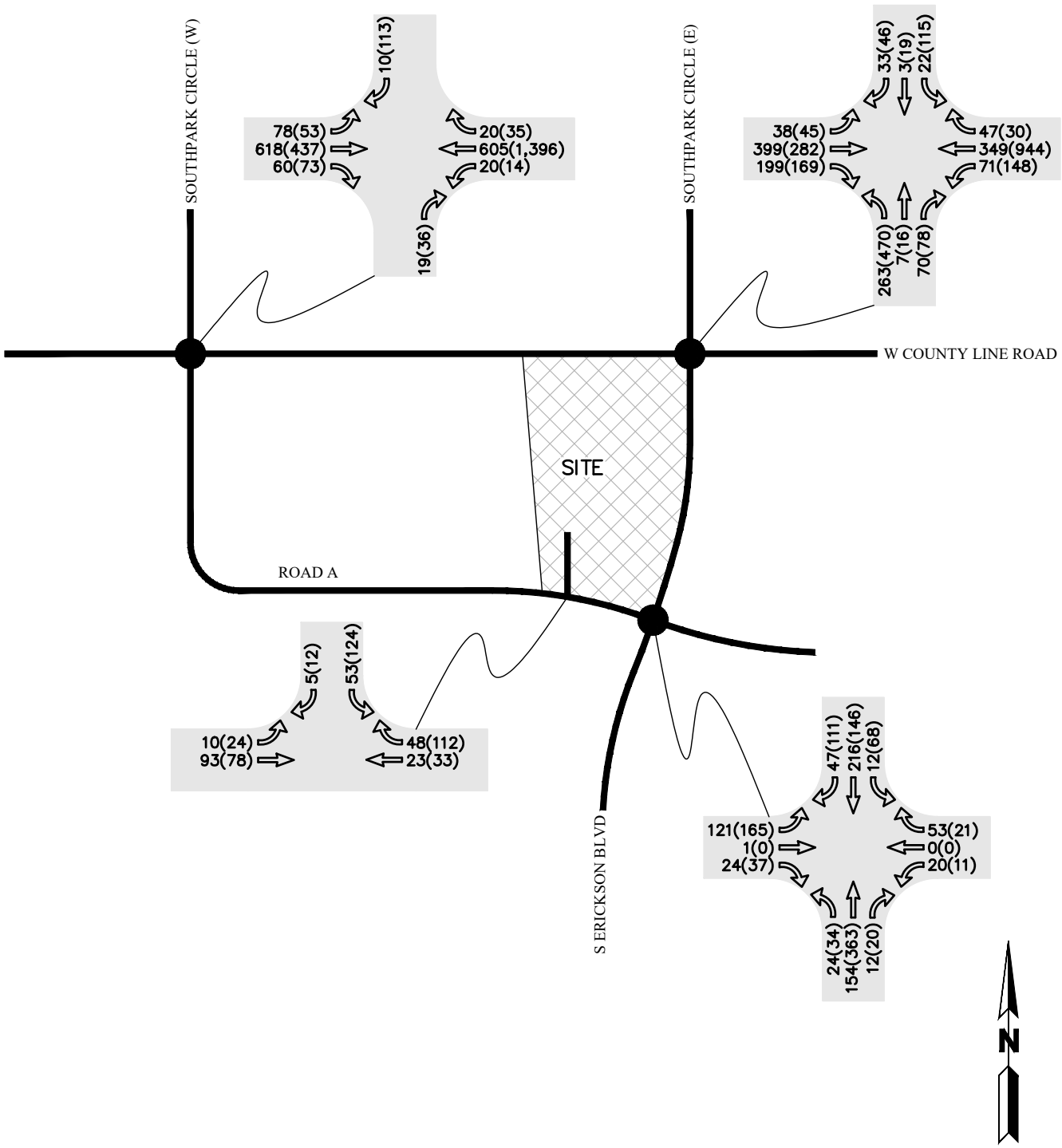

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EXHIBIT 11

SHORT-TERM (2021) BUILD TRAFFIC VOLUMES

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Long-range Condition (Year 2040) without the Project

This section focuses on the Long-range scenario of the year 2040 without traffic from the project. This scenario assumes that the proposed project has not developed, but ambient growth along the study area roadways has occurred over the next twenty years and the three background projects have been completed.

This analysis will show how the traffic volumes will be handled by the transportation facilities and what impacts the proposed project will have on the overall operations. The traffic volumes for this condition include the existing traffic, as shown on Exhibit 5 with twenty years of ambient background growth and the background project traffic as shown on Exhibit 6. Please see Exhibit 12 for the traffic volumes used for this scenario. A summary of the level of service results are shown in Table 10, which follows.

Table 10 - Year 2040 Levels of Service Without the Project

INTERSECTION (S)ignalized (U)nsignalized		Approach Or Overall	AM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
Southpark Cir (W) / Road A & County Line Road	U	NB SB	11.0 10.7	B B	10.0 21.7	B C
Southpark Cir (E) / Erickson Blvd & County Line Road • Restripe NB for dual lefts	S	Ovr	17.9 (15.0)	B (B)	44.5* (19.8)	D* (B)
Erickson Boulevard & Road A / HiLine Driveway	U	EB WB	17.5 11.2	C B	21.4 16.6	C C

For the long-range condition, the intersection of Southpark Circle (E) / Erickson Boulevard & County Line Road is anticipated to fall to LOS D during the PM peak hour. Furthermore, the northbound left turn is anticipated to fall to LOS F with lengthy queues spilling back to the next intersection. There is enough space to restripe the northbound approach to accommodate dual left turns for 140'. With this restripe and retiming of the traffic signal, the intersection would improve to LOS B and the northbound approach would operate within acceptable levels.

Queuing

Vehicle queuing at the study area intersections are based on Synchro 95th percentile queue results. The following table shows the anticipated queues for the study area intersections for the long-range without project scenario assuming the necessary improvements are completed, dual northbound lefts on Erickson Blvd at County Line Road.

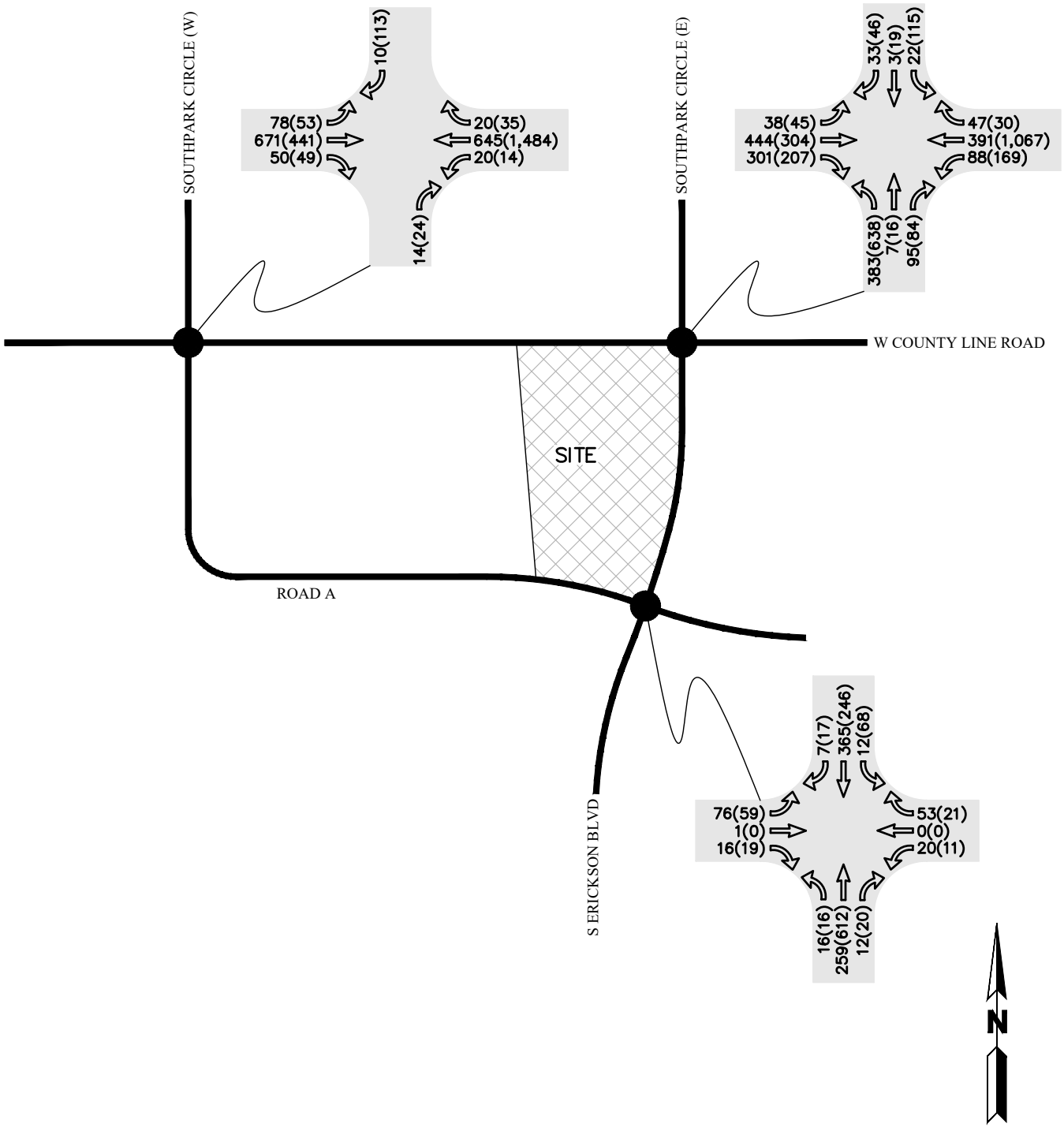
Table 11 – Long-range without Project (Year 2040) Queuing

Intersection		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Southpark Cir (W) & County Line Rd	AM	8	-	-	3	-	-	-	-	3	-	-	3
	PM	13			0					3			40
Storage Available		190			90								300
Southpark Cir (E) & County Line Rd	AM	22	182	-	41	109	-	105	40	-	22	29	-
	PM	30	130		89	388		247	53		**102**	57	
Storage Available		350	530		600	680		450[a]	310		50	160	
Erickson Blvd & Road A	AM	-	25	-	-	10	-	0	-	-	0	-	-
	PM		28			8		0			8		
Storage Available			120					100			100		

*bold values shown above represent calculated 95th percentile queues that currently exceed available storage

[a]Northbound left turn assumes two lanes, one at 140' and one at 310', for a combined length of 450'

As shown in the table above, the calculated 95th percentile queues for the study area intersections are anticipated to accommodate the calculated queues.



NOT TO SCALE

November 8, 2019

EXHIBIT 12

LONG-RANGE (2040) NO-PROJECT TRAFFIC VOLUMES

CivTRANS Engineering Inc.

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Long-range Conditions (Year 2040) with the Project

For the Long-range Build conditions, it is assumed that all mitigation measures required and described in the Long-range Without Project conditions have been completed. The traffic volumes included in this scenario include the Long-range (Year 2040) traffic volumes as shown on Exhibit 12, and the additional traffic from the built-out development, as shown on Exhibits 8 and 9. The total traffic volumes anticipated under this condition are shown on Exhibit 13. A summary of the results is shown in Table 12, which follows.

Table 12 - Year 2040 Levels of Service with the Project

INTERSECTION (S)ignalized (U)nsignalized		Approach Or Overall	AM Peak		PM Peak	
			Delay (sec)	LOS	Delay (sec)	LOS
Southpark Cir (W) / Road A & County Line Road	U	NB SB	11.2 10.9	B B	10.4 23.1	B C
Southpark Cir (E) / Erickson Blvd & County Line Road	S	Ovr	15.6	B	21.3	C
Erickson Boulevard & Road A / HiLine Driveway	U	EB WB	22.6 11.4	C B	76.8 17.6	F C
Site Access & Road A	U	SB	9.7	A	10.9	B

For the long-range condition with the project, all of the intersections within the study area are anticipated to continue to operate within acceptable levels of service, except the eastbound approach on Road A at Erickson Boulevard. Due to ambient traffic growth and the additional traffic from the project, this approach is anticipated to eventually fall to LOS F. If this approach reaches this amount of delay, a shift of trips may occur to the right-out access to County Line Road. If the ambient traffic growth comes to fruition and excessive delays occur at this approach (Road A) where driver safety becomes a concern, the City may restrict left-turn egress movements from Road A onto Erickson Boulevard. This intersection should be monitored in the long-range future to determine if this becomes an issue.

Queuing

Vehicle queuing at the study area intersections are based on Synchro 95th percentile queue results. The following table shows the anticipated queues for the study area intersections for the long-range with project scenario.

Table 13 – Long-range with Project (Year 2040) Queuing Results

Intersection		Eastbound			Westbound			Northbound			Southbound		
		L	T	R	L	T	R	L	T	R	L	T	R
Southpark Cir (W) & County Line Rd	AM	8	-	-	3	-	-	-	-	3	-	-	3
	PM	13			0					5			43
Storage Available		190			90								300
Southpark Cir (E) & County Line Rd	AM	22	192	-	49	110	-	118	43	-	23	29	-
	PM	32	164		122	404		283	57		**102**	58	
Storage Available		350	530		600	680		450[a]	310		50	160	
Erickson Blvd & Road A	AM	-	55	-	-	10	-	3	-	-	0	-	-
	PM		**190**			10		3			8		
Storage Available			120					100			100		
Site Access & Road A	AM	0	-	-	-	-	-	-	-	-	5	-	-
	PM	3									18		
Storage Available													

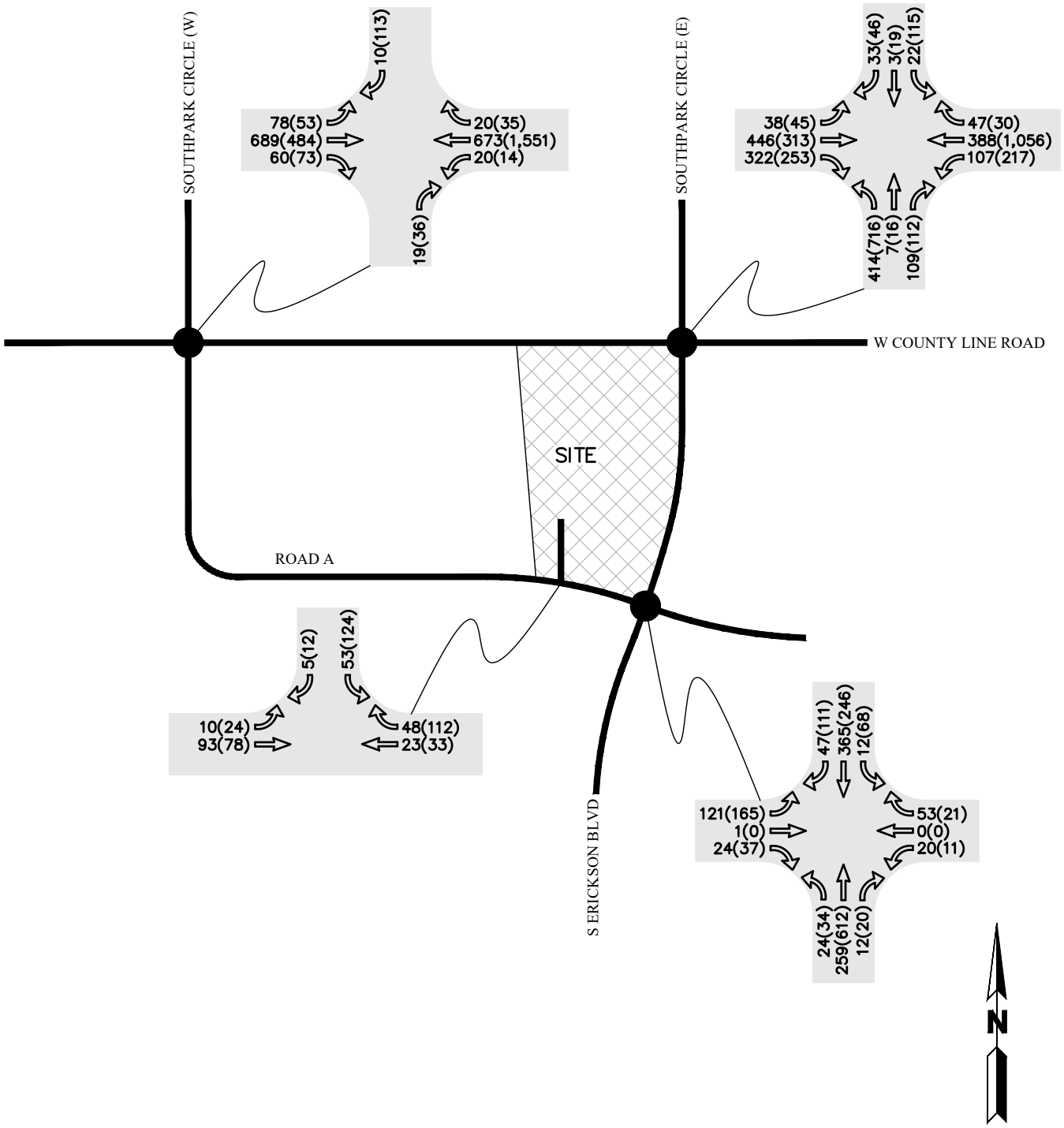
*bold values shown above represent calculated 95th percentile queues that currently exceed available storage

[a]Northbound left turn assumes two lanes, one at 140' and one at 310', for a combined length of 450'

As was the case in the no-project conditions, the calculated 95th percentile queues for the study area intersection are generally accommodate within the available storage. If the ambient growth along Erickson Boulevard comes to fruition and excessive delay is experienced on the eastbound approach, queues may reach the Tommy's Car Wash driveway and block it during the PM peak hour.

Sight Distance

Sight distance recommendations shown in the short-term conditions apply to this long-range scenario.



NOT TO SCALE

November 8, 2019

EXHIBIT 13

LONG-RANGE (2040) BUILD TRAFFIC VOLUMES

CivTRANS Engineering Inc.

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CONCLUSIONS & RECOMMENDATIONS

Based upon the analysis, field observations, assumptions, methodologies and results which are provided in the body of this document, this project has no significant impacts to the transportation system that warrant offsite mitigation as presented within this study. Therefore, the recommendation to the City of Littleton staff is that the proposed car wash development and its proposed access to Road A be approved.

Existing Conditions – Level of Service and Queuing

The City of Littleton has established a minimum level of service D (LOS D) for acceptable operations at signalized intersections and unsignalized (stop-controlled) approaches. The analysis results indicate all the study area intersections are currently operating at acceptable levels of service except the southbound approach at Southpark Circle (W) & County Line Road. This approach is currently operating at LOS F during the PM peak hour.

The southbound approach at Southpark Circle (W) & County Line Road has a raised concrete median that directs traffic slightly to make a right-turn at the intersection. However, left turns from this approach are not restricted and are still able to be completed despite the median. The City of Littleton should consider modifying the southbound approach median and install “right-turn only” signing to more forcibly restrict this approach to right turns only. The development along Southpark Circle has the opportunity to use the eastern intersection, which is signalized and has sufficient capacity to accommodate additional left turning traffic. It appears this intersection had a larger median in 2008 to restrict southbound movements to right-turn only. However, the median was modified prior to 2010 to allow for crossing maneuvers and left-turns from this approach.

The existing 95th percentile queues exceed the available storage for the southbound left during the PM peak hour at the intersection of Southpark Circle (E) / Erickson Blvd & County Line Road. This is not much of an issue except for when the protected left turn phase leads and left-turning vehicles end up blocking the through-right lane. During observations, this queue did not extend beyond the turn lane storage area. With the ability to have the left-turn protected phase lag with a flashing arrow signal head, the City should consider implementing a lag sequence for the southbound protected left turn phase at this intersection.

Short-term without Project Conditions – Level of Service and Queuing

The study area intersections are anticipated to continue to operate at acceptable levels of service for the short-term conditions without the proposed project.

The 95th percentile left and right turn queues at the study area intersection are anticipated to mostly be accommodated within the available storage for the short-term no project condition. In addition to the southbound left turn storage deficiency at Southpark Circle (E) & County Line Road (identified for the existing condition), the northbound left turn

queue at this intersection is anticipated to spill back to the adjacent intersection. There is space to restripe this approach to provide a second left turn lane for 140', which would address the anticipated queuing issue and provide additional capacity for the intersection.

Short-term with Project Conditions – Level of Service and Queuing

The study area intersections are anticipated to continue to operate at acceptable levels of service for the short-term conditions with the proposed project.

The 95th percentile left and right turn queues at the study area intersection are anticipated to be accommodated within the available storage for the short-term with project condition assuming improvements required for the "no-project" condition are completed. Vehicles are anticipated to queue on the site prior to the car wash. Three 150' queue lanes will be provided. The automated wash takes approximately 2 minutes from start to finish and the "tunnel" can accommodate up to 8 vehicles at a time, which corresponds to a service rate of 240 vehicles per hour.

Hourly volume data for the month of April 2018 was provided for other existing Tommy's Express Car Wash sites. The busiest site was in Grandville, Michigan, which had almost 50,000 vehicles go through its automated wash. Hourly volumes of vehicles visiting this site ranged from 4 vehicles to 273 vehicles in an hour. 95% of the hours of operation for this site had volumes of 237 vehicles or less and an average hourly volume of 117 vehicles per hour. Data provided for the other five sites was significantly less than the Grandville site with very few hourly volumes exceeding the 240 vehicle per hour service rate. The three lanes of 150' has adequately accommodated the on-site queues at all of these sites with rare occurrences where the queue storage reaches capacity. Therefore, the proposed queue storage for this site is anticipated to be adequate.

Site Driveways – Sight Distance

A Policy on Geometric Design of Highways and Streets, 7th Ed. (2018), published by the American Association of State Highway and Transportation Officials (AASHTO) was consulted for determining the required sight distance for vehicles turning from the site access driveway. Road A does not have a posted speed limit, but was assumed to be 25 mph. From tables 9-7 and 9-9, the required sight distance is 280' for left turning vehicles (looking west) and 240' for right turning vehicles (looking east). The driveway is anticipated to be approximately 120' west of Erickson Boulevard. This intersection should be visible from the driveway. Vehicles turning at Erickson Boulevard & Road A will slow to 10-15 mph before accelerating to 25 mph. Therefore, the 120' should be an adequate distance for the line of sight and allow vehicles on Road A and vehicles exiting the site to react to any potential conflict. When developing construction plans for this access, the line of sight (sight triangles) should be shown on the plans and any plantings or other visual obstructions within this triangle area should not exceed 3.5 feet in height.

Long Range Conditions – Level of Service

For the long-range condition, the intersection of Southpark Circle (E) / Erickson Boulevard & County Line Road is anticipated to fall to LOS D during the PM peak hour. Furthermore, the northbound left turn is anticipated to fall to LOS F with lengthy queues spilling back to the next intersection. There is enough space to restripe the northbound approach to accommodate dual left turns for 140'. With this restripe and retiming of the traffic signal, the intersection would improve to LOS B and the northbound approach would operate within acceptable levels.

For the long-range condition with the project, all of the intersections within the study area are anticipated to continue to operate within acceptable levels of service, except the eastbound approach on Road A at Erickson Boulevard. Due to ambient traffic growth, this approach is anticipated to eventually fall to LOS F. If this approach reaches this amount of delay, a shift of trips may occur to the right-out access to County Line Road. If the ambient traffic growth comes to fruition and excessive delays occur at this approach (Road A) where driver safety becomes a concern, the City may restrict left-turn egress movements from Road A onto Erickson Boulevard. This intersection should be monitored in the long-range future to determine if this becomes an issue.

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Traffic Impact Study
Tommy's Express Car Wash
County Line Road & Erickson Boulevard

TECHNICAL APPENDIX
November 8, 2019

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RAW TRAFFIC COUNTS

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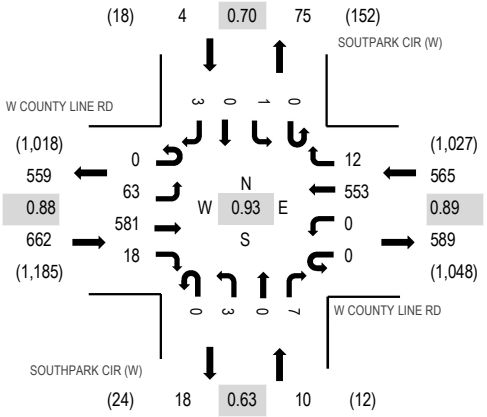
All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

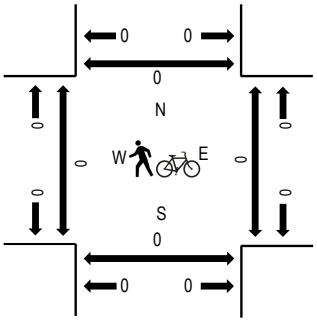
Location: 1 SOUTHPARK CIR (W) & W COUNTY LINE RD AM
Date: Wednesday, October 3, 2018
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	W COUNTY LINE RD Eastbound				W COUNTY LINE RD Westbound				SOUTHPARK CIR (W) Northbound				SOUTPARK CIR (W) Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	9	117	4	0	0	122	0	0	0	0	0	0	0	0	2	254	1,176	0	0	0	0
7:15 AM	0	9	142	1	0	0	129	3	0	1	0	3	0	0	0	1	289	1,241	0	0	0	0
7:30 AM	0	11	132	6	0	0	145	2	0	1	0	1	0	0	0	0	298	1,213	0	0	0	0
7:45 AM	0	14	151	8	0	0	155	3	0	0	0	3	0	0	0	1	335	1,136	0	0	0	0
8:00 AM	0	29	156	3	0	0	124	4	0	1	0	0	0	1	0	1	319	1,066	0	0	0	0
8:15 AM	0	27	113	0	0	0	113	4	0	0	0	1	0	1	0	2	261		0	0	0	0
8:30 AM	0	17	106	0	0	1	86	6	0	0	0	0	0	1	0	4	221		0	0	0	0
8:45 AM	0	11	118	1	0	0	127	3	0	0	0	1	0	1	0	3	265		0	0	0	0
Count Total	0	127	1,035	23	0	1	1,001	25	0	3	0	9	0	4	0	14	2,242		0	0	0	0
Peak Hour	0	63	581	18	0	0	553	12	0	3	0	7	0	1	0	3	#####		0	0	0	0

All Traffic Data Services Inc.

(303) 216-2439
www.alltrafficdata.net

Erickson Blvd/

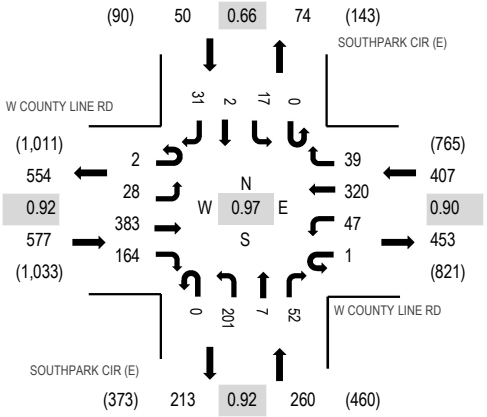
Location: 2 SOUTHPARK CIR (E) & W COUNTY LINE RD AM

Date: Wednesday, October 3, 2018

Peak Hour: 07:15 AM - 08:15 AM

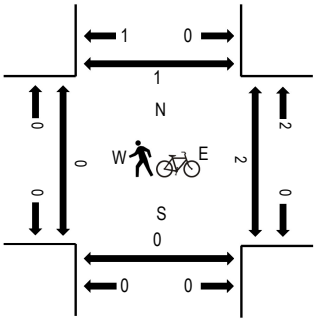
Peak 15-Minutes: 07:30 AM - 07:45 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



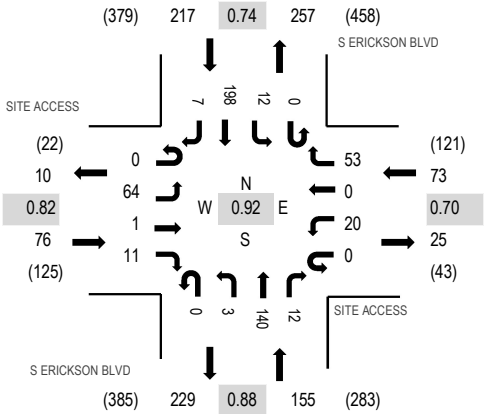
Traffic Counts

Interval Start Time	W COUNTY LINE RD Eastbound				W COUNTY LINE RD Westbound				SOUTHPARK CIR (E) Northbound				SOUTHPARK CIR (E) Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	6	77	33	0	8	68	7	0	51	0	9	0	4	2	1	266	1,233	0	0	0	0
7:15 AM	1	6	112	27	0	5	64	10	0	55	1	15	0	4	0	10	310	1,294	0	0	0	1
7:30 AM	1	7	90	34	0	13	92	13	0	47	1	16	0	9	1	9	333	1,240	0	0	0	0
7:45 AM	0	6	94	42	1	17	82	7	0	56	1	9	0	2	0	7	324	1,146	0	2	0	0
8:00 AM	0	9	87	61	0	12	82	9	0	43	4	12	0	2	1	5	327	1,115	0	0	0	0
8:15 AM	0	4	80	28	1	7	83	4	0	29	3	10	0	5	0	2	256		0	0	0	0
8:30 AM	0	12	68	23	0	10	54	10	0	32	1	16	0	5	2	6	239		0	0	0	0
8:45 AM	0	12	78	35	0	11	85	10	0	38	0	11	0	4	1	8	293		0	0	0	0
Count Total	2	62	686	283	2	83	610	70	0	351	11	98	0	35	7	48	2,348		0	2	0	1
Peak Hour	2	28	383	164	1	47	320	39	0	201	7	52	0	17	2	31	#####		0	2	0	1

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

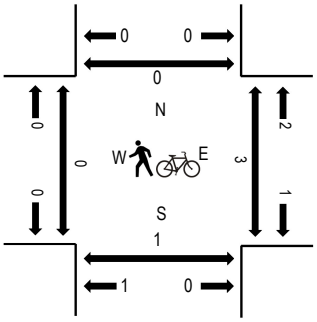
Location: 3 S ERICKSON BLVD & SITE ACCESS AM
Date: Wednesday, October 3, 2018
Peak Hour: 07:15 AM - 08:15 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	SITE ACCESS Eastbound				SITE ACCESS Westbound				S ERICKSON BLVD Northbound				S ERICKSON BLVD Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
7:00 AM	0	19	0	2	0	3	0	10	0	2	28	1	0	2	40	3	110	492	0	0	0	0
7:15 AM	0	24	0	1	0	6	0	20	0	1	30	0	0	1	30	1	114	521	0	3	1	0
7:30 AM	0	23	1	3	0	6	0	6	0	1	35	1	0	5	43	2	126	494	0	0	0	0
7:45 AM	0	11	0	5	0	6	0	16	0	1	37	5	0	2	56	3	142	457	0	0	0	0
8:00 AM	0	6	0	2	0	2	0	11	0	0	38	6	0	4	69	1	139	416	0	0	0	0
8:15 AM	0	4	0	2	0	4	0	11	0	0	29	2	0	4	29	2	87		0	0	0	0
8:30 AM	0	9	0	1	0	2	0	9	0	0	32	2	0	1	31	2	89		0	1	0	0
8:45 AM	0	12	0	0	0	1	0	8	0	1	30	1	0	5	41	2	101		0	0	0	0
Count Total	0	108	1	16	0	30	0	91	0	6	259	18	0	24	339	16	908		0	4	1	0
Peak Hour	0	64	1	11	0	20	0	53	0	3	140	12	0	12	198	7	521		0	3	1	0

All Traffic Data Services Inc.

(303) 216-2439
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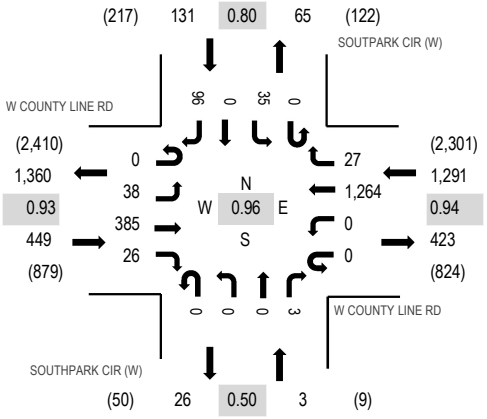
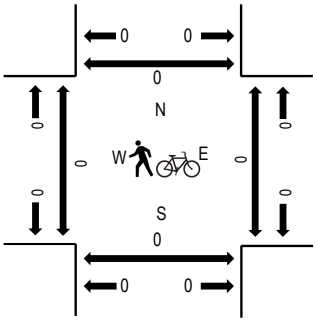
Location: 1 SOUTHPARK CIR (W) & W COUNTY LINE RD PM
Date: Wednesday, October 3, 2018
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



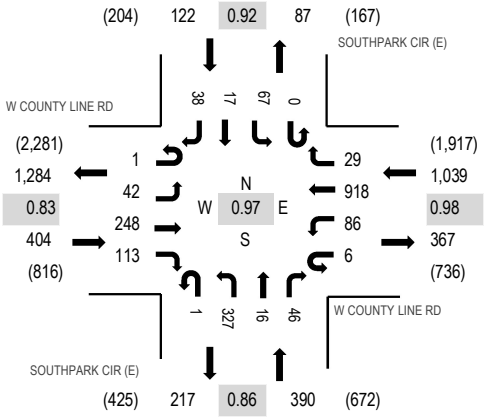
Traffic Counts

Interval Start Time	W COUNTY LINE RD Eastbound				W COUNTY LINE RD Westbound				SOUTHPARK CIR (W) Northbound				SOUTPARK CIR (W) Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	7	93	4	0	0	247	2	0	0	0	0	0	4	0	12	369	1,659	0	0	0	0
4:15 PM	0	9	91	3	0	0	241	7	0	0	0	1	0	6	1	10	369	1,756	1	0	0	0
4:30 PM	0	9	106	5	0	0	297	3	0	0	0	0	0	14	0	27	461	1,874	0	0	0	0
4:45 PM	0	13	97	11	0	0	303	8	0	0	0	0	0	5	0	23	460	1,857	0	0	0	0
5:00 PM	0	7	78	7	0	0	333	5	0	0	0	2	0	8	0	26	466	1,747	0	0	0	0
5:15 PM	0	9	104	3	0	0	331	11	0	0	0	1	0	8	0	20	487		0	0	0	0
5:30 PM	0	13	93	4	0	2	285	5	0	1	0	3	0	11	0	27	444		0	0	0	0
5:45 PM	0	8	95	10	0	0	215	6	0	0	0	1	0	3	0	12	350		0	0	0	0
Count Total	0	75	757	47	0	2	2,252	47	0	1	0	8	0	59	1	157	3,406		1	0	0	0
Peak Hour	0	38	385	26	0	0	1,264	27	0	0	0	3	0	35	0	96	#####		0	0	0	0

All Traffic Data Services Inc.
(303) 216-2439
www.alltrafficdata.net

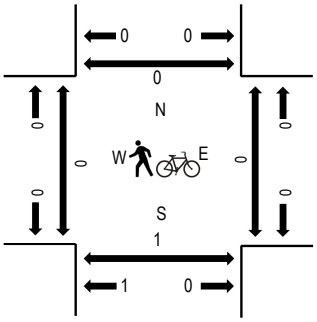
Location: 2 SOUTHPARK CIR (E) & W COUNTY LINE RD PM
Date: Wednesday, October 3, 2018
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	W COUNTY LINE RD Eastbound				W COUNTY LINE RD Westbound				SOUTHPARK CIR (E) Northbound				SOUTHPARK CIR (E) Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	13	68	20	1	20	184	3	0	61	1	23	0	14	0	6	414	1,747	0	0	0	1
4:15 PM	0	5	60	25	0	26	180	8	0	51	3	12	0	5	3	10	388	1,824	0	0	0	0
4:30 PM	0	7	86	34	1	18	228	6	0	63	6	6	0	13	2	6	476	1,941	0	0	0	1
4:45 PM	0	15	54	30	1	23	226	7	0	71	2	14	0	12	1	13	469	1,955	0	0	0	0
5:00 PM	0	7	60	23	1	15	232	8	1	101	5	6	0	21	5	6	491	1,862	0	0	0	0
5:15 PM	1	9	61	36	0	21	235	6	0	87	4	12	0	15	5	13	505		0	0	0	0
5:30 PM	0	11	73	24	4	27	225	8	0	68	5	14	0	19	6	6	490		0	0	0	0
5:45 PM	0	12	55	27	1	28	160	14	0	42	2	12	0	12	5	6	376		0	0	0	0
Count Total	1	79	517	219	9	178	1,670	60	1	544	28	99	0	111	27	66	3,609		0	0	0	2
Peak Hour	1	42	248	113	6	86	918	29	1	327	16	46	0	67	17	38	#####		0	0	0	0

All Traffic Data Services Inc.

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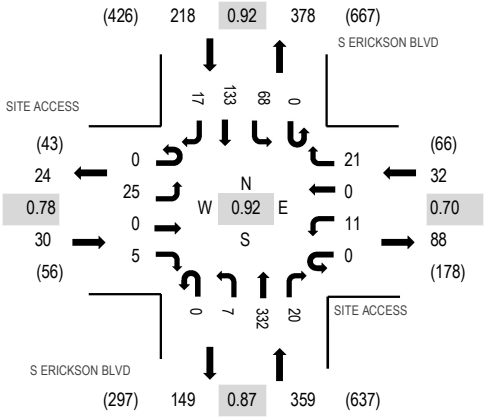
www.alltrafficdata.net

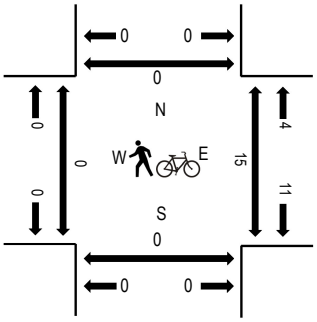
Location: 3 S ERICKSON BLVD & SITE ACCESS PM
Date: Wednesday, October 3, 2018
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

Peak Hour - All Vehicles



Note: Total study counts contained in parentheses.

Peak Hour - Pedestrians/Bicycles on Crosswalk



Traffic Counts

Interval Start Time	SITE ACCESS Eastbound				SITE ACCESS Westbound				S ERICKSON BLVD Northbound				S ERICKSON BLVD Southbound					Rolling Hour	Pedestrain Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
4:00 PM	0	3	0	0	0	2	0	2	0	0	78	5	0	2	35	5	132	563	0	1	0	0
4:15 PM	0	4	1	3	0	5	0	7	0	0	58	6	0	14	36	3	137	592	0	1	0	1
4:30 PM	0	5	0	1	0	0	0	4	0	0	72	5	0	21	31	2	141	628	0	5	0	1
4:45 PM	0	7	0	1	0	5	0	2	0	2	76	3	0	12	40	5	153	639	0	0	0	0
5:00 PM	0	8	0	1	0	2	0	2	0	1	99	5	0	13	28	2	161	622	0	0	0	0
5:15 PM	0	3	0	0	0	1	0	6	0	3	94	6	0	24	32	4	173		0	0	0	0
5:30 PM	0	7	0	3	0	3	0	11	0	1	63	6	0	19	33	6	152		0	2	0	0
5:45 PM	0	6	1	2	0	4	0	10	0	4	40	10	0	25	29	5	136		0	0	0	0
Count Total	0	43	2	11	0	22	0	44	0	11	580	46	0	130	264	32	1,185		0	9	0	2
Peak Hour	0	25	0	5	0	11	0	21	0	7	332	20	0	68	133	17	639		0	2	0	0

TRIP GENERATION DATA

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Grandville - Daily Wash Count

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon
	4/1/18	4/2/18	4/3/18	4/4/18	4/5/18	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18	4/20/18	4/21/18	4/22/18	4/23/18	4/24/18	4/25/18	4/26/18	4/27/18	4/28/18	4/29/18	4/30/18
12am	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
1am	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
2am	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
3am	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
4am	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
5am	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
6am	0	1	1	2	3	1	1	3	5	4	1	0	1	3	3	1	1	2	8	9	3	2	2	5	6	4	5	5	3	3
7am	30	36	18	49	55	32	16	37	77	55	32	24	7	5	17	21	53	106	134	110	44	43	42	59	84	64	82	58	57	98
8am	36	37	8	53	62	48	60	50	82	68	25	57	41	8	18	18	65	117	94	84	76	75	68	84	107	78	108	105	86	115
9am	46	50	10	56	79	85	83	41	80	98	81	81	32	4	18	31	64	154	221	205	140	96	61	69	95	63	134	168	127	130
10am	42	45	11	71	106	119	157	88	101	148	119	115	50	8	25	39	82	167	227	225	177	120	77	109	149	120	167	202	143	104
11am	54	54	11	80	129	167	228	123	97	160	125	102	43	21	41	62	124	189	241	240	224	188	95	82	113	180	251	235	188	137
12pm	91	98	20	121	163	176	253	144	109	183	166	109	31	6	20	81	171	224	241	246	226	164	111	140	165	185	228	206	152	124
1am	61	73	40	114	113	112	215	167	125	163	150	94	31	28	40	104	183	218	243	253	237	188	123	126	141	176	237	214	169	133
2pm	59	74	47	118	131	151	224	178	145	161	133	64	17	39	43	94	189	229	248	230	192	148	99	120	134	172	237	224	161	117
3pm	62	64	52	151	172	152	199	191	158	190	176	81	16	33	47	136	240	268	273	249	215	186	150	143	170	211	241	224	185	147
4pm	74	75	72	164	195	180	175	197	191	186	162	75	10	13	40	144	214	232	251	198	178	191	128	140	194	226	246	202	187	165
5pm	67	70	112	222	193	144	164	208	195	191	166	76	37	42	52	160	204	200	265	240	183	162	130	162	204	207	216	189	162	137
6pm	47	50	83	170	152	122	138	155	161	190	149	56	31	40	47	97	113	160	261	222	171	146	86	123	159	136	162	184	160	125
7pm	41	43	39	103	91	94	120	133	128	107	100	42	16	20	38	62	51	160	253	183	120	100	86	114	125	115	143	125	108	95
8pm	22	26	38	69	44	45	51	57	84	72	54	29	13	17	26	72	59	103	184	122	72	71	47	57	88	87	118	100	68	86
9pm	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
10pm	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
11pm	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
			18	53	62					68	32	57					65	117	134					84	107	78				
			112	222	195					191	166	76					214	232	265					162	204	226				
			563	1543	1688					1976	1639	1005					1813	2529	3144					1533	1934	2024				

		Veh	Trips
AM Peak	Avg (T-TH)	72.9	
PM Peak	Avg (T-TH)	188.8	
ADT	Avg (T-TH)	1782.6	
	Avg both sites (AM)	58.3	116.0
	Avg both sites (PM)	136.2	272.0
	Avg both sites (ADT)	1279.0	2558.1

Joplin - Daily Wash Count

	4/1/18	4/2/18	4/3/18	4/4/18	4/5/18	4/6/18	4/7/18	4/8/18	4/9/18	4/10/18	4/11/18	4/12/18	4/13/18	4/14/18	4/15/18	4/16/18	4/17/18	4/18/18	4/19/18	4/20/18	4/21/18	4/22/18	4/23/18	4/24/18	4/25/18	4/26/18	4/27/18	4/28/18	4/29/18	4/30/18
12am	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
1am	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
2am	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
3am	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
4am	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
5am	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
6am	0	0	0	0	0	0	0	1	1	0	0	0	1	1	0	0	0	2	2	0	0	1	4	3	0	1	1	0	0	0
7am	4	12	24	25	28	20	1	13	21	22	32	29	18	7	15	33	38	31	23	14	2	13	28	17	13	33	33	11	14	50
8am	13	28	48	54	49	33	5	31	66	50	40	38	32	19	35	68	64	50	41	31	9	21	44	23	20	46	44	18	31	61
9am	8	19	59	68	46	33	7	38	63	42	48	40	34	25	44	84	64	49	52	44	17	21	55	36	27	60	65	30	38	63
10am	12	38	65	57	43	48	26	42	70	61	56	43	46	29	40	70	50	34	36	39	17	29	59	31	16	62	77	30	29	66
11am	14	18	41	62	64	74	57	70	77	55	58	55	56	50	62	75	54	57	63	61	39	49	74	35	24	63	78	91	88	66
12pm	8	17	76	110	73	70	75	85	86	72	76	71	68	73	85	102	87	79	83	74	37	51	92	47	43	89	91	92	95	76
1am	13	20	66	90	63	73	75	73	82	76	71	70	77	79	74	71	71	81	89	91	50	62	97	45	46	83	73	75	85	74
2pm	12	37	75	95	69	67	86	76	78	80	63	61	72	65	76	82	69	69	69	60	37	65	95	45	35	73	73	61	71	78
3pm	13	56	100	97	57	65	78	51	57	72	73	70	67	59	90	100	71	69	78	67	42	57	71	39	57	91	54	47	74	72
4pm	7	56	99	102	82	91	83	63	79	75	76	75	63	52	62	86	83	76	87	48	22	63	90	46	50	105	86	66	79	94
5pm	6	30	89	108	58	55	57	57	96	94	80	49	20	38	79	93	88	89	76	39	29	60	68	35	42	88	72	59	78	75
6pm	3	36	74	68	37	58	60	35	59	57	49	33	23	38	57	61	62	70	68	36	12	46	57	25	25	58	55	42	59	67
7pm	2	25	50	43	16	26	26	12	34	41	40	37	34	18	32	56	42	42	47	23	0	28	47	21	26	55	68	37	28	50
8pm	2	16	23	23	14	18	18	10	20	28	31	25	19	7	13	28	24	22	28	16	1	11	34	26	20	44	42	15	14	23
9pm	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
10pm	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
11pm	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
			48	54	49					50	40	38					64	50	41					23	20	46				
			99	108	82					94	80	75					88	89	87					46	50	105				
			889	1002	699					826	794	696					868	821	842					474	444	951				

AM Peak	Avg (T-TH)	43.583
PM Peak	Avg (T-TH)	83.583
ADT	Avg (T-TH)	775.5

BACKGROUND PROJECT DATA

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Alpine Buick Project
Revised Traffic Impact Analysis Report
September 5, 2018

Prepared by
Dave L. Ruble, Jr., P.E.
DB Enterprise LLC

Figure 1 – Vicinity Map

Approximate Scale
Scale: 1" = 360'

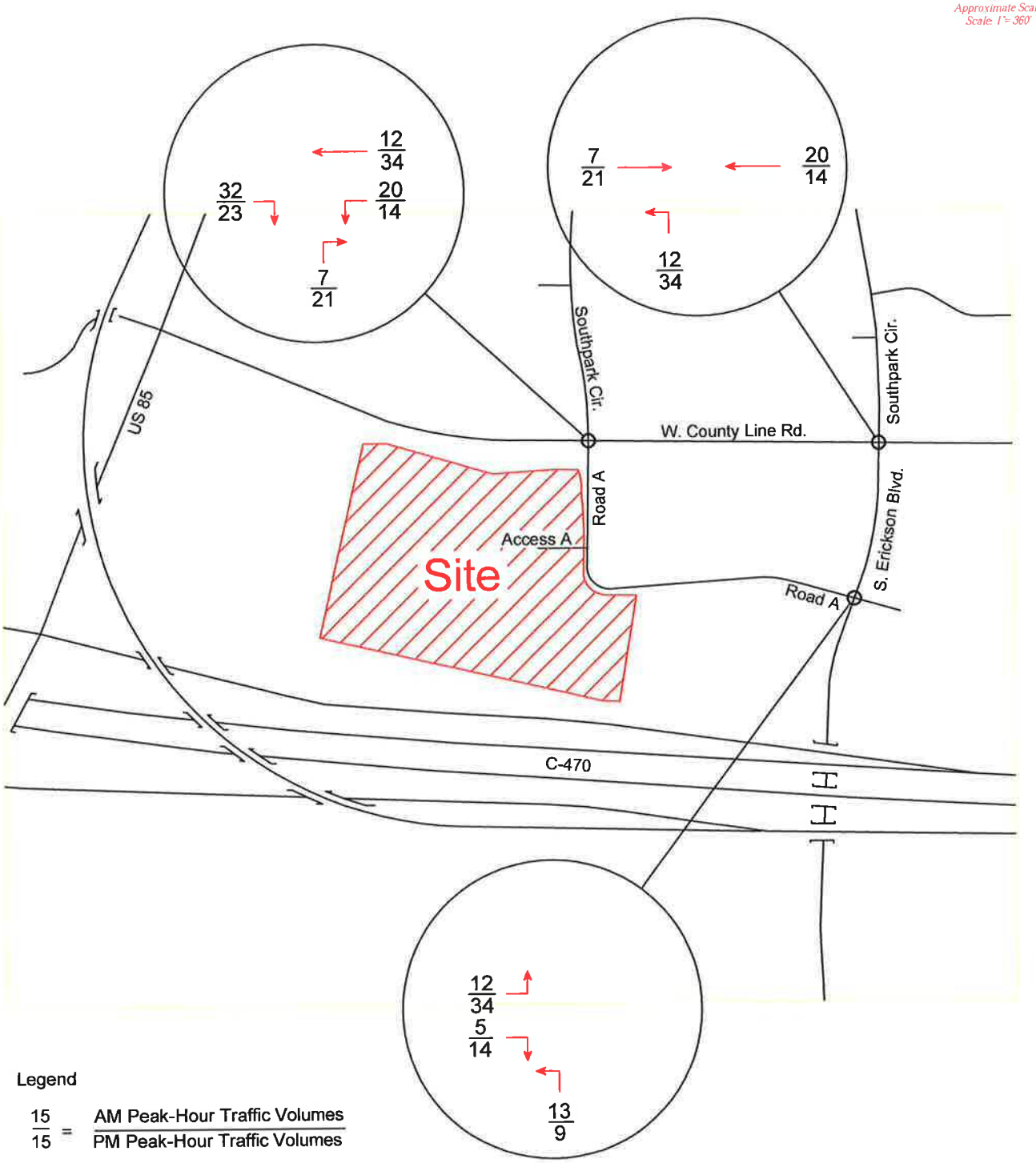
Table 1 – Estimated Vehicle Trip Generation

Table 1
Estimated Vehicle Trip Generation
Alpine Buick Commercial Development
Commerce City, Colorado
(DBE #180080; September, 2018)

ITE Category		Quantity		Trip Generation Rates (1) Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out	Total Vehicle Trips Generated Average Weekday	AM Peak-Hour In	AM Peak-Hour Out	PM Peak-Hour In	PM Peak-Hour Out
840	Automobile Sales (new)	47.10	KSF (2)	27.84	1.37	0.50	0.97	1.46	1,311	65	24	46	69

Notes:
(1) Source: "Trip Generation", Institute of Transportation Engineers, 10th Edition, 2017.
(2) KSF = 1,000 Square Feet

Figure 7 – Assignment of Site-Generated Traffic



LSC TRANSPORTATION CONSULTANTS, INC.

1889 York Street
Denver, CO 80206
(303) 333-1105
FAX (303) 333-1107
E-mail: lsc@lscdenver.com

June 14, 2018

Mr. Rob Devenney
Bowman Consulting
603 Park Point Drive, Suite 100
Golden, CO 80401

Re: Caliber Collision
Trip Generation Estimate
Littleton, CO
LSC #171470

Dear Mr. Devenney:

In response to your request, we have completed this updated trip generation letter for the proposed Caliber Collision development in Littleton, Colorado to address City comments. The purpose of this letter is to estimate the trip generation potential for the property.

Table 1 shows the estimated average weekday, morning peak-hour, and afternoon peak-hour trip generation potential for the proposed site based on the rates from *Trip Generation, 10th Edition, 2017* by the Institute of Transportation Engineers (ITE). No daily rate is available for ITE Land Use No. 942 - Automobile Care Center, so the sum of the peak-hour rates was multiplied by 4.8 based on the ratio of daily trips to the sum of the AM and PM peak-hour rates for ITE Land Use Code 941 - Quick Lubrication Vehicle Shop.

Table 1 shows the proposed 15,395 square-foot building is projected to generate about 396 vehicle-trips on the average weekday, with about half entering and half exiting during a 24-hour period. During the morning peak-hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 23 vehicles would enter and about 12 vehicles would exit the site. During the afternoon peak-hour, which generally occurs for one hour between 4:00 and 6:00 p.m., about 23 vehicles would enter and about 25 vehicles would exit.

* * *

We trust this information will assist you in planning for the Caliber Collision development.

Respectfully submitted,

LSC Transportation Consultants, Inc.

COLORADO LICENSED
CHRISTOPHER S. MCGRANAHAN
39018
PROFESSIONAL ENGINEER

By: _____
Christopher S. McGranahan, P.E., PTOE

6-14-18

CSM/wc

Enclosure: Table 1

Z:\LSC\Projects\2017\171470-CaliberCollision\June-2018\CaliberCollision-061418.wpd

Table 1
ESTIMATED TRIP GENERATION POTENTIAL
Caliber Collision
Littleton, CO
LSC #171470; June, 2018

		Trip Generation Rates [1]					Total Vehicle-Trips Generated				
		Average	AM Peak-Hour		PM Peak-Hour		Average	AM Peak-Hour		PM Peak-Hour	
Trip Generating Category	Quantity	Weekday	In	Out	In	Out	Weekday	In	Out	In	Out
Currently Proposed Land Use											
Automobile Care Center [2]	15.395 KSF [3]	25.73	1.485	0.765	1.493	1.617	396	23	12	23	25

Notes:
(1) Source: *Trip Generation,* Institute of Transportation Engineers, 10th Edition, 2017
(2) ITE Land Use No. 942 - Automobile Care Center. No daily rate available, so the sum of the peak-hour rates was multiplied by 4.8 based on the ratio of daily trips to the sum of the AM and PM peak-hour rates for ITE Land Use Code 941 - Quick Lubrication Vehicle Shop.
(3) KSF = 1,000 square feet

ALDRIDGE TRANSPORTATION CONSULTANTS, LLC

Advanced Transportation Planning and Traffic Engineering

John M.W. Aldridge, P.E.
Colorado Licensed Professional Engineer

1082 Chimney Rock Road
Highlands Ranch, CO 80126
303-703-9112
Mobile: 303-594-4132
john@atceng.com

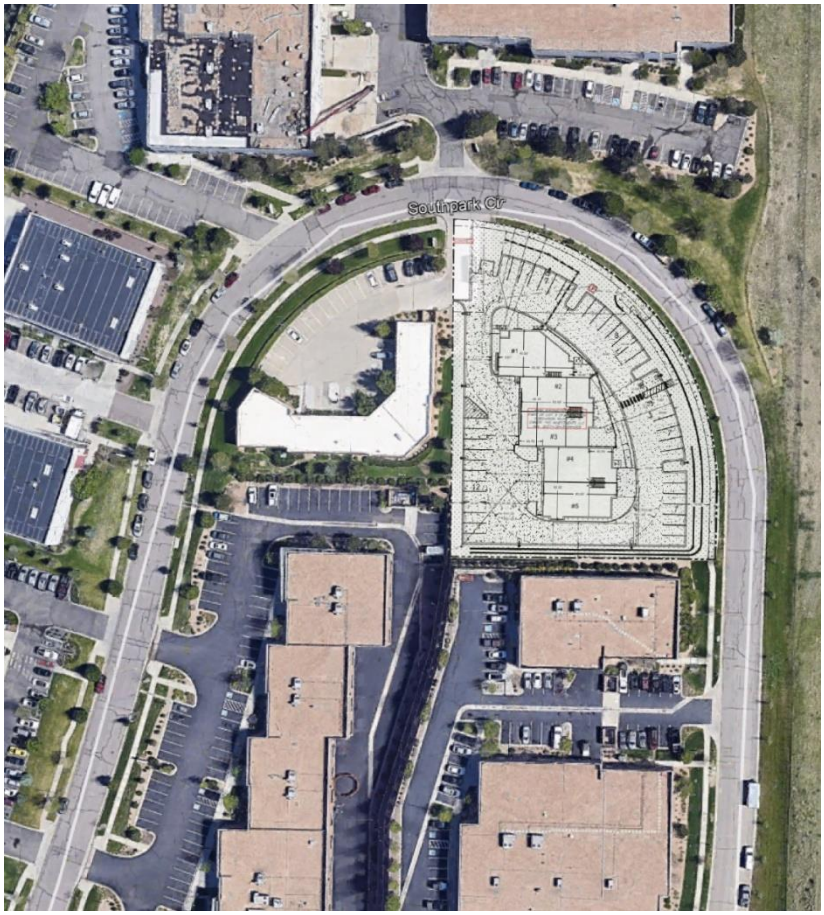
December 18, 2018

Mr. Cole Habarer
HCI Engineering
621 Southpark Dr. Suite 1600
Littleton, CO

RE: Traffic Generation Report
HCI Office Bldg. Southpark Cir. Littleton, CO

Dear Mr. Haberer:

Pursuant to your request, I have reviewed the proposed development of a new office building on the north end of Southpark Circle in Littleton. The building will contain approximately 16,000 of of office space. Figure 1 shows the location of the warehouse and surrounding area which is primarily office and industrial uses.



Southpark Circle is two-lane industrial local type road and posted at 30 mph. The site is accessible via County Line Road at a signalized intersection on the east end of the circle and a ¾ movement intersection on the west end.

The trip generation is based on rates and values from the ITE Trip Generation Manual, 10th Edition.

The following table presents the trip generation for the Average Daily Traffic, and the AM and PM peak hours.

Trip Generation Table								
ITE Code	Land Use	Variable	Quantity	ADT	AM in	AM out	PM in	PM out
710	General Office	KSF	16	*9.74*	*1.00*	*0.16*	*0.18*	*0.97*
				156	**16**	**3**	**3**	**15**
Total Trips				**156**	**16**	**3**	**3**	**15**

The trip distribution assumes that 50 percent will enter/exit to/from the west to access US-85 and that 50 percent will enter/exit to/from the east to access commercial areas of Littleton and Broadway

In terms of traffic impact, the site generated traffic is too small to have any significant impact on the adjacent streets and intersections.

In my professional opinion, the trip generation will blend in harmoniously with the existing/proposed street geometry and traffic control and that no mitigation is required.

Should you have any questions or need additional information please call me at 303-703-9112. Thank you for the opportunity to be of service.

Respectfully submitted,
Aldridge Transportation Consultants, LLC

John M.W. Aldridge, P.E.
Principal

Jmwa/me

LEVEL OF SERVICE CALCULATIONS EXISTING CONDITIONS

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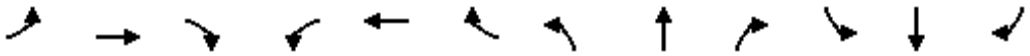
Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	63	581	18	0	553	12	0	0	7	1	0	3
Future Vol, veh/h	63	581	18	0	553	12	0	0	7	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	68	625	19	0	595	13	0	0	8	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	608	0	0	644	0	0	-	-	322	1051	1382	304
Stage 1	-	-	-	-	-	-	-	-	-	602	602	-
Stage 2	-	-	-	-	-	-	-	-	-	449	780	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	966	-	-	937	-	-	0	0	674	181	143	692
Stage 1	-	-	-	-	-	-	0	0	-	453	487	-
Stage 2	-	-	-	-	-	-	0	0	-	559	404	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	966	-	-	937	-	-	-	-	674	169	133	692
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	169	133	-
Stage 1	-	-	-	-	-	-	-	-	-	421	487	-
Stage 2	-	-	-	-	-	-	-	-	-	514	376	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0	10.4	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	674	966	-	-	937	-	-	390
HCM Lane V/C Ratio	0.011	0.07	-	-	-	-	-	0.011
HCM Control Delay (s)	10.4	9	-	-	0	-	-	14.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0	0.2	-	-	0	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	383	164	48	320	39	201	7	52	17	2	31
Future Volume (veh/h)	30	383	164	48	320	39	201	7	52	17	2	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	31	395	169	49	330	40	207	7	54	18	2	32
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	413	679	287	337	921	111	540	44	339	345	11	174
Arrive On Green	0.02	0.28	0.28	0.03	0.29	0.29	0.14	0.24	0.24	0.01	0.12	0.12
Sat Flow, veh/h	1781	2434	1028	1781	3194	384	1781	185	1428	1781	94	1505
Grp Volume(v), veh/h	31	287	277	49	182	188	207	0	61	18	0	34
Grp Sat Flow(s),veh/h/ln	1781	1777	1685	1781	1777	1801	1781	0	1613	1781	0	1599
Q Serve(g_s), s	0.5	6.0	6.1	0.8	3.5	3.6	4.0	0.0	1.3	0.4	0.0	0.8
Cycle Q Clear(g_c), s	0.5	6.0	6.1	0.8	3.5	3.6	4.0	0.0	1.3	0.4	0.0	0.8
Prop In Lane	1.00		0.61	1.00		0.21	1.00		0.89	1.00		0.94
Lane Grp Cap(c), veh/h	413	496	470	337	512	519	540	0	383	345	0	185
V/C Ratio(X)	0.08	0.58	0.59	0.15	0.36	0.36	0.38	0.00	0.16	0.05	0.00	0.18
Avail Cap(c_a), veh/h	786	1848	1753	694	1848	1873	957	0	1118	980	0	1109
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.9	13.4	13.5	11.1	12.2	12.2	12.2	0.0	13.1	16.6	0.0	17.3
Incr Delay (d2), s/veh	0.1	1.1	1.2	0.2	0.4	0.4	0.4	0.0	0.2	0.1	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.1	2.1	0.3	1.2	1.2	1.4	0.0	0.4	0.1	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	14.5	14.6	11.3	12.6	12.7	12.6	0.0	13.3	16.6	0.0	17.8
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		595			419			268			52	
Approach Delay, s/veh		14.4			12.5			12.8			17.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.6	15.3	5.3	18.1	9.9	10.0	4.9	18.5
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	30.0	10.0	45.0	16.0	30.0	10.0	45.0
Max Q Clear Time (g_c+I1), s	2.4	3.3	2.8	8.1	6.0	2.8	2.5	5.6
Green Ext Time (p_c), s	0.0	0.3	0.0	3.9	0.4	0.1	0.0	2.4

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱		↰	↑↑↱	
Traffic Vol, veh/h	64	1	11	20	0	53	3	140	12	12	198	7
Future Vol, veh/h	64	1	11	20	0	53	3	140	12	12	198	7
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	70	1	12	22	0	58	3	152	13	13	215	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	327	416	112	299	414	83	223	0	0	165	0	0
Stage 1	245	245	-	165	165	-	-	-	-	-	-	-
Stage 2	82	171	-	134	249	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	602	526	920	631	527	960	1343	-	-	1411	-	-
Stage 1	737	702	-	821	761	-	-	-	-	-	-	-
Stage 2	917	756	-	855	699	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	561	520	920	616	521	960	1343	-	-	1411	-	-
Mov Cap-2 Maneuver	561	520	-	616	521	-	-	-	-	-	-	-
Stage 1	736	696	-	819	759	-	-	-	-	-	-	-
Stage 2	860	754	-	835	693	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	9.8	0.1	0.4
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1343	-	-	594	833	1411	-	-
HCM Lane V/C Ratio	0.002	-	-	0.139	0.095	0.009	-	-
HCM Control Delay (s)	7.7	-	-	12	9.8	7.6	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.3	0	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	385	26	0	1264	27	0	0	3	35	0	96
Future Vol, veh/h	38	385	26	0	1264	27	0	0	3	35	0	96
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	401	27	0	1317	28	0	0	3	36	0	100

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1345	0	0	428	0	0	-	-	214	1612	1839	673
Stage 1	-	-	-	-	-	-	-	-	-	1331	1331	-
Stage 2	-	-	-	-	-	-	-	-	-	281	508	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	508	-	-	1128	-	-	0	0	791	69	75	398
Stage 1	-	-	-	-	-	-	0	0	-	163	222	-
Stage 2	-	-	-	-	-	-	0	0	-	702	537	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	508	-	-	1128	-	-	-	-	791	65	69	398
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	65	69	-
Stage 1	-	-	-	-	-	-	-	-	-	150	222	-
Stage 2	-	-	-	-	-	-	-	-	-	644	495	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	0	9.6	82.3
HCM LOS			A	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	791	508	-	-	1128	-	-	168
HCM Lane V/C Ratio	0.004	0.078	-	-	-	-	-	0.812
HCM Control Delay (s)	9.6	12.7	-	-	0	-	-	82.3
HCM Lane LOS	A	B	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0	0.3	-	-	0	-	-	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	248	113	92	918	29	328	16	46	67	17	38
Future Volume (veh/h)	43	248	113	92	918	29	328	16	46	67	17	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	44	256	116	95	946	30	338	16	47	69	18	39
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	844	371	489	1336	42	542	98	289	313	43	93
Arrive On Green	0.03	0.35	0.35	0.05	0.38	0.38	0.20	0.23	0.23	0.05	0.08	0.08
Sat Flow, veh/h	1781	2401	1057	1781	3516	111	1781	419	1230	1781	526	1139
Grp Volume(v), veh/h	44	188	184	95	478	498	338	0	63	69	0	57
Grp Sat Flow(s),veh/h/ln	1781	1777	1680	1781	1777	1850	1781	0	1649	1781	0	1665
Q Serve(g_s), s	1.0	4.7	4.9	2.0	13.9	13.9	9.8	0.0	1.9	2.1	0.0	2.0
Cycle Q Clear(g_c), s	1.0	4.7	4.9	2.0	13.9	13.9	9.8	0.0	1.9	2.1	0.0	2.0
Prop In Lane	1.00		0.63	1.00		0.06	1.00		0.75	1.00		0.68
Lane Grp Cap(c), veh/h	251	625	591	489	675	703	542	0	387	313	0	137
V/C Ratio(X)	0.17	0.30	0.31	0.19	0.71	0.71	0.62	0.00	0.16	0.22	0.00	0.42
Avail Cap(c_a), veh/h	497	1282	1212	684	1282	1335	681	0	811	724	0	819
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.4	14.3	14.4	11.6	16.0	16.0	17.8	0.0	18.6	24.0	0.0	26.6
Incr Delay (d2), s/veh	0.3	0.3	0.3	0.2	1.4	1.3	1.2	0.0	0.2	0.4	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.7	1.7	0.7	5.3	5.5	3.8	0.0	0.7	0.9	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.8	14.6	14.7	11.8	17.4	17.4	19.0	0.0	18.8	24.4	0.0	28.6
LnGrp LOS	B	B	B	B	B	B	B	A	B	C	A	C
Approach Vol, veh/h		416			1071			401			126	
Approach Delay, s/veh		14.6			16.9			19.0			26.3	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	19.3	7.3	27.4	16.2	10.0	5.6	29.2
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	17.0	30.0	10.0	44.0	17.0	30.0	10.0	44.0
Max Q Clear Time (g_c+I1), s	4.1	3.9	4.0	6.9	11.8	4.0	3.0	15.9
Green Ext Time (p_c), s	0.1	0.3	0.1	2.4	0.5	0.3	0.0	7.2

Intersection Summary	
HCM 6th Ctrl Delay	17.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	0	5	11	0	21	7	332	20	68	133	17
Future Vol, veh/h	25	0	5	11	0	21	7	332	20	68	133	17
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	0	5	12	0	23	8	361	22	74	145	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	499	701	82	609	699	192	163	0	0	383	0	0
Stage 1	302	302	-	388	388	-	-	-	-	-	-	-
Stage 2	197	399	-	221	311	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	454	361	961	379	362	817	1413	-	-	1172	-	-
Stage 1	682	663	-	607	607	-	-	-	-	-	-	-
Stage 2	786	601	-	761	657	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	418	336	961	357	337	817	1413	-	-	1172	-	-
Mov Cap-2 Maneuver	418	336	-	357	337	-	-	-	-	-	-	-
Stage 1	678	621	-	603	603	-	-	-	-	-	-	-
Stage 2	760	597	-	709	616	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.4	11.8	0.1	2.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1413	-	-	461	566	1172	-	-
HCM Lane V/C Ratio	0.005	-	-	0.071	0.061	0.063	-	-
HCM Control Delay (s)	7.6	-	-	13.4	11.8	8.3	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0.2	-	-

LEVEL OF SERVICE CALCULATIONS YEAR 2021 CONDITIONS WITHOUT PROJECT

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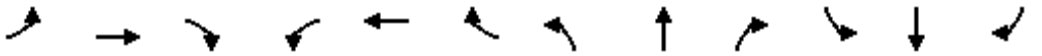
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	600	50	20	577	20	0	0	14	0	0	10
Future Vol, veh/h	78	600	50	20	577	20	0	0	14	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	645	54	22	620	22	0	0	15	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	642	0	0	699	0	0	-	-	350	-	-	321
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	939	-	-	893	-	-	0	0	646	0	0	675
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	939	-	-	893	-	-	-	-	646	-	-	675
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3	10.7	10.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	646	939	-	-	893	-	-	675
HCM Lane V/C Ratio	0.023	0.089	-	-	0.024	-	-	0.016
HCM Control Delay (s)	10.7	9.2	-	-	9.1	-	-	10.4
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-	-	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	397	178	52	352	47	232	7	56	22	3	33
Future Volume (veh/h)	38	397	178	52	352	47	232	7	56	22	3	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	409	184	54	363	48	239	7	58	23	3	34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	399	683	304	329	924	121	554	43	355	335	14	162
Arrive On Green	0.03	0.29	0.29	0.03	0.29	0.29	0.15	0.25	0.25	0.02	0.11	0.11
Sat Flow, veh/h	1781	2392	1064	1781	3158	414	1781	174	1438	1781	130	1475
Grp Volume(v), veh/h	39	303	290	54	203	208	239	0	65	23	0	37
Grp Sat Flow(s),veh/h/ln	1781	1777	1679	1781	1777	1796	1781	0	1612	1781	0	1605
Q Serve(g_s), s	0.7	6.7	6.8	1.0	4.1	4.2	4.9	0.0	1.4	0.5	0.0	1.0
Cycle Q Clear(g_c), s	0.7	6.7	6.8	1.0	4.1	4.2	4.9	0.0	1.4	0.5	0.0	1.0
Prop In Lane	1.00		0.63	1.00		0.23	1.00		0.89	1.00		0.92
Lane Grp Cap(c), veh/h	399	507	479	329	520	525	554	0	398	335	0	177
V/C Ratio(X)	0.10	0.60	0.61	0.16	0.39	0.40	0.43	0.00	0.16	0.07	0.00	0.21
Avail Cap(c_a), veh/h	745	1760	1663	663	1760	1779	908	0	1064	933	0	1060
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.2	14.0	14.0	11.4	12.8	12.9	12.7	0.0	13.4	17.5	0.0	18.4
Incr Delay (d2), s/veh	0.1	1.1	1.2	0.2	0.5	0.5	0.5	0.0	0.2	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	2.4	2.3	0.3	1.5	1.5	1.7	0.0	0.5	0.2	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.3	15.1	15.3	11.7	13.3	13.3	13.2	0.0	13.6	17.6	0.0	19.0
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	B
Approach Vol, veh/h		632			465			304			60	
Approach Delay, s/veh		14.9			13.1			13.3			18.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	16.2	5.5	19.0	11.0	10.0	5.2	19.3
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	30.0	10.0	45.0	16.0	30.0	10.0	45.0
Max Q Clear Time (g_c+I1), s	2.5	3.4	3.0	8.8	6.9	3.0	2.7	6.2
Green Ext Time (p_c), s	0.0	0.3	0.0	4.2	0.5	0.1	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	14.2
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	1	16	20	0	53	16	154	12	12	216	7
Future Vol, veh/h	76	1	16	20	0	53	16	154	12	12	216	7
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	83	1	17	22	0	58	17	167	13	13	235	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	383	479	122	352	477	90	243	0	0	180	0	0
Stage 1	265	265	-	208	208	-	-	-	-	-	-	-
Stage 2	118	214	-	144	269	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	550	484	906	578	486	950	1320	-	-	1393	-	-
Stage 1	717	688	-	775	729	-	-	-	-	-	-	-
Stage 2	874	724	-	844	685	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	508	473	906	557	475	950	1320	-	-	1393	-	-
Mov Cap-2 Maneuver	508	473	-	557	475	-	-	-	-	-	-	-
Stage 1	708	682	-	765	720	-	-	-	-	-	-	-
Stage 2	810	715	-	819	679	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13	10	0.7	0.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1320	-	-	549	796	1393	-	-
HCM Lane V/C Ratio	0.013	-	-	0.184	0.1	0.009	-	-
HCM Control Delay (s)	7.8	-	-	13	10	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.3	0	-	-

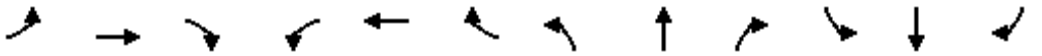
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	394	49	14	1329	35	0	0	24	0	0	113
Future Vol, veh/h	53	394	49	14	1329	35	0	0	24	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	410	51	15	1384	36	0	0	25	0	0	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1420	0	0	461	0	0	-	-	231	-	-	710
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	475	-	-	1096	-	-	0	0	771	0	0	376
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	475	-	-	1096	-	-	-	-	771	-	-	376
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.1	9.8	18.9
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	771	475	-	-	1096	-	-	376
HCM Lane V/C Ratio	0.032	0.116	-	-	0.013	-	-	0.313
HCM Control Delay (s)	9.8	13.6	-	-	8.3	-	-	18.9
HCM Lane LOS	A	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.4	-	-	0	-	-	1.3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	273	123	100	955	30	392	16	50	115	19	46
Future Volume (veh/h)	45	273	123	100	955	30	392	16	50	115	19	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	281	127	103	985	31	404	16	52	119	20	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	235	845	372	468	1346	42	566	86	279	356	37	88
Arrive On Green	0.03	0.35	0.35	0.06	0.38	0.38	0.23	0.22	0.22	0.08	0.08	0.08
Sat Flow, veh/h	1781	2400	1057	1781	3517	111	1781	387	1257	1781	496	1165
Grp Volume(v), veh/h	46	206	202	103	498	518	404	0	68	119	0	67
Grp Sat Flow(s),veh/h/ln	1781	1777	1680	1781	1777	1850	1781	0	1644	1781	0	1661
Q Serve(g_s), s	1.1	5.7	5.9	2.4	16.0	16.0	13.0	0.0	2.2	4.0	0.0	2.6
Cycle Q Clear(g_c), s	1.1	5.7	5.9	2.4	16.0	16.0	13.0	0.0	2.2	4.0	0.0	2.6
Prop In Lane	1.00		0.63	1.00		0.06	1.00		0.76	1.00		0.70
Lane Grp Cap(c), veh/h	235	625	591	468	680	708	566	0	365	356	0	125
V/C Ratio(X)	0.20	0.33	0.34	0.22	0.73	0.73	0.71	0.00	0.19	0.33	0.00	0.54
Avail Cap(c_a), veh/h	455	1175	1111	634	1175	1224	612	0	741	664	0	749
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.8	15.8	15.9	12.6	17.6	17.6	19.3	0.0	21.0	25.3	0.0	29.6
Incr Delay (d2), s/veh	0.4	0.3	0.3	0.2	1.5	1.5	3.6	0.0	0.2	0.5	0.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.2	2.1	0.9	6.2	6.4	5.4	0.0	0.8	1.7	0.0	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.2	16.1	16.2	12.8	19.1	19.1	22.9	0.0	21.3	25.8	0.0	33.2
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	C
Approach Vol, veh/h		454			1119			472			186	
Approach Delay, s/veh		16.1			18.5			22.6			28.5	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	19.8	7.8	29.4	19.3	10.0	5.8	31.5
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	17.0	30.0	10.0	44.0	17.0	30.0	10.0	44.0
Max Q Clear Time (g_c+I1), s	6.0	4.2	4.4	7.9	15.0	4.6	3.1	18.0
Green Ext Time (p_c), s	0.2	0.3	0.1	2.7	0.3	0.3	0.0	7.5

Intersection Summary	
HCM 6th Ctrl Delay	19.7
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	0	19	11	0	21	16	363	20	68	146	17
Future Vol, veh/h	59	0	19	11	0	21	16	363	20	68	146	17
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	0	21	12	0	23	17	395	22	74	159	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	548	767	89	668	765	209	177	0	0	417	0	0
Stage 1	316	316	-	440	440	-	-	-	-	-	-	-
Stage 2	232	451	-	228	325	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	419	331	951	344	332	797	1396	-	-	1138	-	-
Stage 1	670	654	-	566	576	-	-	-	-	-	-	-
Stage 2	750	569	-	754	648	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	383	306	951	317	307	797	1396	-	-	1138	-	-
Mov Cap-2 Maneuver	383	306	-	317	307	-	-	-	-	-	-	-
Stage 1	662	611	-	559	569	-	-	-	-	-	-	-
Stage 2	720	562	-	690	606	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	12.4	0.3	2.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1396	-	-	448	524	1138	-	-
HCM Lane V/C Ratio	0.012	-	-	0.189	0.066	0.065	-	-
HCM Control Delay (s)	7.6	-	-	14.9	12.4	8.4	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.2	0.2	-	-

LEVEL OF SERVICE CALCULATIONS YEAR 2021 CONDITIONS WITH PROJECT

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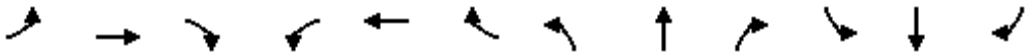
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	618	60	20	605	20	0	0	19	0	0	10
Future Vol, veh/h	78	618	60	20	605	20	0	0	19	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	665	65	22	651	22	0	0	20	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	673	0	0	730	0	0	-	-	365	-	-	337
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	914	-	-	870	-	-	0	0	632	0	0	659
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	914	-	-	870	-	-	-	-	632	-	-	659
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3	10.9	10.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	632	914	-	-	870	-	-	659
HCM Lane V/C Ratio	0.032	0.092	-	-	0.025	-	-	0.016
HCM Control Delay (s)	10.9	9.3	-	-	9.2	-	-	10.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	399	199	71	349	47	263	7	70	22	3	33
Future Volume (veh/h)	38	399	199	71	349	47	263	7	70	22	3	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	411	205	73	360	48	271	7	72	23	3	34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	407	665	328	335	971	128	565	37	377	315	13	153
Arrive On Green	0.03	0.29	0.29	0.04	0.31	0.31	0.17	0.26	0.26	0.02	0.10	0.10
Sat Flow, veh/h	1781	2306	1137	1781	3155	417	1781	142	1464	1781	130	1475
Grp Volume(v), veh/h	39	316	300	73	202	206	271	0	79	23	0	37
Grp Sat Flow(s),veh/h/ln	1781	1777	1666	1781	1777	1795	1781	0	1607	1781	0	1605
Q Serve(g_s), s	0.7	7.4	7.6	1.4	4.3	4.3	5.9	0.0	1.9	0.6	0.0	1.0
Cycle Q Clear(g_c), s	0.7	7.4	7.6	1.4	4.3	4.3	5.9	0.0	1.9	0.6	0.0	1.0
Prop In Lane	1.00		0.68	1.00		0.23	1.00		0.91	1.00		0.92
Lane Grp Cap(c), veh/h	407	513	481	335	547	552	565	0	413	315	0	166
V/C Ratio(X)	0.10	0.62	0.62	0.22	0.37	0.37	0.48	0.00	0.19	0.07	0.00	0.22
Avail Cap(c_a), veh/h	731	1655	1552	624	1655	1672	852	0	998	876	0	997
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	14.9	14.9	11.9	13.1	13.1	13.5	0.0	14.0	18.9	0.0	19.9
Incr Delay (d2), s/veh	0.1	1.2	1.3	0.3	0.4	0.4	0.6	0.0	0.2	0.1	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.7	2.6	0.5	1.5	1.6	2.1	0.0	0.6	0.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.9	16.1	16.3	12.2	13.5	13.5	14.1	0.0	14.2	19.0	0.0	20.5
LnGrp LOS	B	B	B	B	B	B	B	A	B	B	A	C
Approach Vol, veh/h		655			481			350			60	
Approach Delay, s/veh		15.9			13.3			14.1			20.0	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.8	17.4	6.1	19.9	12.2	10.0	5.2	20.9
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	30.0	10.0	45.0	16.0	30.0	10.0	45.0
Max Q Clear Time (g_c+I1), s	2.6	3.9	3.4	9.6	7.9	3.0	2.7	6.3
Green Ext Time (p_c), s	0.0	0.4	0.1	4.4	0.5	0.1	0.0	2.6

Intersection Summary	
HCM 6th Ctrl Delay	14.8
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	121	1	24	20	0	53	24	154	12	12	216	47
Future Vol, veh/h	121	1	24	20	0	53	24	154	12	12	216	47
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	132	1	26	22	0	58	26	167	13	13	235	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	423	519	143	370	538	90	286	0	0	180	0	0
Stage 1	287	287	-	226	226	-	-	-	-	-	-	-
Stage 2	136	232	-	144	312	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	515	460	879	562	448	950	1273	-	-	1393	-	-
Stage 1	696	673	-	756	716	-	-	-	-	-	-	-
Stage 2	853	711	-	844	656	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	473	447	879	532	435	950	1273	-	-	1393	-	-
Mov Cap-2 Maneuver	473	447	-	532	435	-	-	-	-	-	-	-
Stage 1	682	667	-	741	702	-	-	-	-	-	-	-
Stage 2	785	697	-	810	650	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.2	10.1	1	0.3
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1273	-	-	512	782	1393	-	-
HCM Lane V/C Ratio	0.02	-	-	0.31	0.101	0.009	-	-
HCM Control Delay (s)	7.9	-	-	15.2	10.1	7.6	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	93	23	48	53	5
Future Vol, veh/h	10	93	23	48	53	5
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	11	101	25	52	58	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	77	0	-	0	174	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	123	-
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	1522	-	-	-	816	1017
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1522	-	-	-	809	1017
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1522	-	-	-	824
HCM Lane V/C Ratio	0.007	-	-	-	0.077
HCM Control Delay (s)	7.4	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	437	73	14	1396	35	0	0	36	0	0	113
Future Vol, veh/h	53	437	73	14	1396	35	0	0	36	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	455	76	15	1454	36	0	0	38	0	0	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1490	0	0	531	0	0	-	-	266	-	-	745
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	447	-	-	1033	-	-	0	0	732	0	0	357
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	447	-	-	1033	-	-	-	-	732	-	-	357
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.3	0.1	10.2	20
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	732	447	-	-	1033	-	-	357
HCM Lane V/C Ratio	0.051	0.124	-	-	0.014	-	-	0.33
HCM Control Delay (s)	10.2	14.2	-	-	8.5	-	-	20
HCM Lane LOS	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-	-	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	282	169	148	944	30	470	16	78	115	19	46
Future Volume (veh/h)	45	282	169	148	944	30	470	16	78	115	19	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	291	174	153	973	31	485	16	80	119	20	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	696	405	446	1318	42	591	64	322	347	36	85
Arrive On Green	0.03	0.32	0.32	0.08	0.38	0.38	0.25	0.24	0.24	0.08	0.07	0.07
Sat Flow, veh/h	1781	2163	1258	1781	3515	112	1781	271	1355	1781	496	1165
Grp Volume(v), veh/h	46	238	227	153	492	512	485	0	96	119	0	67
Grp Sat Flow(s),veh/h/ln	1781	1777	1644	1781	1777	1850	1781	0	1626	1781	0	1661
Q Serve(g_s), s	1.2	7.2	7.5	3.7	16.4	16.4	16.7	0.0	3.3	4.1	0.0	2.7
Cycle Q Clear(g_c), s	1.2	7.2	7.5	3.7	16.4	16.4	16.7	0.0	3.3	4.1	0.0	2.7
Prop In Lane	1.00		0.77	1.00		0.06	1.00		0.83	1.00		0.70
Lane Grp Cap(c), veh/h	230	572	529	446	666	694	591	0	387	347	0	121
V/C Ratio(X)	0.20	0.42	0.43	0.34	0.74	0.74	0.82	0.00	0.25	0.34	0.00	0.55
Avail Cap(c_a), veh/h	441	1139	1054	562	1139	1186	591	0	711	641	0	726
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	18.2	18.3	13.1	18.5	18.5	20.2	0.0	21.2	26.2	0.0	30.7
Incr Delay (d2), s/veh	0.4	0.5	0.6	0.5	1.6	1.6	9.0	0.0	0.3	0.6	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	2.8	2.7	1.4	6.4	6.7	7.8	0.0	1.2	1.7	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.6	18.7	18.9	13.5	20.1	20.1	29.1	0.0	21.5	26.8	0.0	34.6
LnGrp LOS	B	B	B	B	C	C	C	A	C	C	A	C
Approach Vol, veh/h		511			1157			581			186	
Approach Delay, s/veh		18.6			19.2			27.9			29.6	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.7	21.3	9.5	28.1	21.0	10.0	5.9	31.7
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	17.0	30.0	10.0	44.0	17.0	30.0	10.0	44.0
Max Q Clear Time (g_c+I1), s	6.1	5.3	5.7	9.5	18.7	4.7	3.2	18.4
Green Ext Time (p_c), s	0.2	0.5	0.1	3.1	0.0	0.3	0.0	7.3

Intersection Summary	
HCM 6th Ctrl Delay	22.0
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	165	0	37	11	0	21	34	363	20	68	146	111
Future Vol, veh/h	165	0	37	11	0	21	34	363	20	68	146	111
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	179	0	40	12	0	23	37	395	22	74	159	121

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	640	859	140	708	908	209	280	0	0	417	0	0
Stage 1	368	368	-	480	480	-	-	-	-	-	-	-
Stage 2	272	491	-	228	428	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	360	292	882	322	274	797	1280	-	-	1138	-	-
Stage 1	624	620	-	536	553	-	-	-	-	-	-	-
Stage 2	711	546	-	754	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	325	265	882	286	249	797	1280	-	-	1138	-	-
Mov Cap-2 Maneuver	325	265	-	286	249	-	-	-	-	-	-	-
Stage 1	606	580	-	520	537	-	-	-	-	-	-	-
Stage 2	671	530	-	673	545	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	28.3	12.8	0.6	1.8
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	368	494	1138	-	-
HCM Lane V/C Ratio	0.029	-	-	0.597	0.07	0.065	-	-
HCM Control Delay (s)	7.9	-	-	28.3	12.8	8.4	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	3.7	0.2	0.2	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	78	33	112	124	12
Future Vol, veh/h	24	78	33	112	124	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	26	85	36	122	135	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	158	0	-	0	234	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	137	-
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	1422	-	-	-	754	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1422	-	-	-	740	959
Mov Cap-2 Maneuver	-	-	-	-	740	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1422	-	-	-	755
HCM Lane V/C Ratio	0.018	-	-	-	0.196
HCM Control Delay (s)	7.6	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

LEVEL OF SERVICE CALCULATIONS YEAR 2040 CONDITIONS WITHOUT PROJECT

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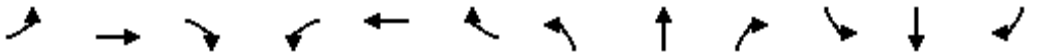
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	671	50	20	645	20	0	0	14	0	0	10
Future Vol, veh/h	78	671	50	20	645	20	0	0	14	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	722	54	22	694	22	0	0	15	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	716	0	0	776	0	0	-	-	388	-	-	358
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	880	-	-	836	-	-	0	0	611	0	0	638
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	880	-	-	836	-	-	-	-	611	-	-	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.3	11	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	611	880	-	-	836	-	-	638
HCM Lane V/C Ratio	0.025	0.095	-	-	0.026	-	-	0.017
HCM Control Delay (s)	11	9.5	-	-	9.4	-	-	10.7
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	444	301	88	391	47	383	7	95	22	3	33
Future Volume (veh/h)	38	444	301	88	391	47	383	7	95	22	3	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	458	310	91	403	48	395	7	98	23	3	34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	406	660	444	302	1133	134	605	31	438	253	11	122
Arrive On Green	0.02	0.32	0.32	0.05	0.35	0.35	0.23	0.29	0.29	0.02	0.08	0.08
Sat Flow, veh/h	1781	2032	1369	1781	3200	379	1781	107	1495	1781	130	1475
Grp Volume(v), veh/h	39	400	368	91	223	228	395	0	105	23	0	37
Grp Sat Flow(s),veh/h/ln	1781	1777	1624	1781	1777	1802	1781	0	1601	1781	0	1605
Q Serve(g_s), s	0.9	11.9	12.0	2.0	5.6	5.7	11.4	0.0	3.0	0.7	0.0	1.3
Cycle Q Clear(g_c), s	0.9	11.9	12.0	2.0	5.6	5.7	11.4	0.0	3.0	0.7	0.0	1.3
Prop In Lane	1.00		0.84	1.00		0.21	1.00		0.93	1.00		0.92
Lane Grp Cap(c), veh/h	406	577	527	302	629	638	605	0	469	253	0	132
V/C Ratio(X)	0.10	0.69	0.70	0.30	0.35	0.36	0.65	0.00	0.22	0.09	0.00	0.28
Avail Cap(c_a), veh/h	657	1318	1205	501	1318	1337	672	0	792	695	0	794
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	17.8	17.9	13.7	14.5	14.5	17.0	0.0	16.2	25.0	0.0	26.1
Incr Delay (d2), s/veh	0.1	1.5	1.7	0.6	0.3	0.3	2.0	0.0	0.2	0.2	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.6	4.3	0.8	2.1	2.1	4.5	0.0	1.0	0.3	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.4	19.4	19.6	14.3	14.8	14.8	19.0	0.0	16.5	25.1	0.0	27.3
LnGrp LOS	B	B	B	B	B	B	B	A	B	C	A	C
Approach Vol, veh/h		807			542			500			60	
Approach Delay, s/veh		19.2			14.7			18.4			26.4	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.0	22.8	7.2	25.7	17.7	10.0	5.4	27.5
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	30.0	10.0	45.0	16.0	30.0	10.0	45.0
Max Q Clear Time (g_c+I1), s	2.7	5.0	4.0	14.0	13.4	3.3	2.9	7.7
Green Ext Time (p_c), s	0.0	0.6	0.1	5.7	0.4	0.1	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	17.9
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱		↰	↑↑↱	
Traffic Vol, veh/h	76	1	16	20	0	53	16	259	12	12	365	7
Future Vol, veh/h	76	1	16	20	0	53	16	259	12	12	365	7
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	83	1	17	22	0	58	17	282	13	13	397	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	602	756	203	548	754	148	405	0	0	295	0	0
Stage 1	427	427	-	323	323	-	-	-	-	-	-	-
Stage 2	175	329	-	225	431	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	383	336	804	419	337	872	1150	-	-	1263	-	-
Stage 1	576	584	-	663	649	-	-	-	-	-	-	-
Stage 2	810	645	-	757	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	351	328	804	401	329	872	1150	-	-	1263	-	-
Mov Cap-2 Maneuver	351	328	-	401	329	-	-	-	-	-	-	-
Stage 1	567	578	-	653	639	-	-	-	-	-	-	-
Stage 2	745	635	-	732	575	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.5	11.2	0.5	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1150	-	-	388	660	1263	-	-
HCM Lane V/C Ratio	0.015	-	-	0.261	0.12	0.01	-	-
HCM Control Delay (s)	8.2	-	-	17.5	11.2	7.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1	0.4	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	444	301	88	391	47	383	7	95	22	3	33
Future Volume (veh/h)	38	444	301	88	391	47	383	7	95	22	3	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	458	310	91	403	48	395	7	98	23	3	34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	443	694	468	336	1185	140	982	24	339	289	12	140
Arrive On Green	0.02	0.34	0.34	0.05	0.37	0.37	0.15	0.23	0.23	0.02	0.10	0.10
Sat Flow, veh/h	1781	2032	1369	1781	3200	379	3456	107	1495	1781	130	1475
Grp Volume(v), veh/h	39	400	368	91	223	228	395	0	105	23	0	37
Grp Sat Flow(s),veh/h/ln	1781	1777	1624	1781	1777	1802	1728	0	1601	1781	0	1605
Q Serve(g_s), s	0.7	10.1	10.1	1.7	4.7	4.8	4.9	0.0	2.8	0.6	0.0	1.1
Cycle Q Clear(g_c), s	0.7	10.1	10.1	1.7	4.7	4.8	4.9	0.0	2.8	0.6	0.0	1.1
Prop In Lane	1.00		0.84	1.00		0.21	1.00		0.93	1.00		0.92
Lane Grp Cap(c), veh/h	443	607	555	336	658	667	982	0	363	289	0	153
V/C Ratio(X)	0.09	0.66	0.66	0.27	0.34	0.34	0.40	0.00	0.29	0.08	0.00	0.24
Avail Cap(c_a), veh/h	569	1590	1453	648	1826	1852	1457	0	1128	429	0	825
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.9	14.7	14.7	11.3	11.9	11.9	15.4	0.0	16.8	21.0	0.0	22.0
Incr Delay (d2), s/veh	0.1	1.2	1.4	0.4	0.3	0.3	0.3	0.0	0.4	0.1	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	3.7	3.4	0.6	1.7	1.7	1.7	0.0	1.0	0.2	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.0	15.9	16.1	11.7	12.2	12.2	15.7	0.0	17.2	21.1	0.0	22.8
LnGrp LOS	B	B	B	B	B	B	B	A	B	C	A	C
Approach Vol, veh/h		807			542			500			60	
Approach Delay, s/veh		15.8			12.1			16.0			22.2	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	16.9	6.8	23.9	11.8	10.0	5.3	25.5
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	5.0	37.0	12.0	47.0	15.0	27.0	5.0	54.0
Max Q Clear Time (g_c+I1), s	2.6	4.8	3.7	12.1	6.9	3.1	2.7	6.8
Green Ext Time (p_c), s	0.0	0.6	0.1	5.8	0.9	0.1	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	15.0
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	441	49	14	1484	35	0	0	24	0	0	113
Future Vol, veh/h	53	441	49	14	1484	35	0	0	24	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	459	51	15	1546	36	0	0	25	0	0	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1582	0	0	510	0	0	-	-	255	-	-	791
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	412	-	-	1051	-	-	0	0	744	0	0	332
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	412	-	-	1051	-	-	-	-	744	-	-	332
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.1	10	21.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	744	412	-	-	1051	-	-	332
HCM Lane V/C Ratio	0.034	0.134	-	-	0.014	-	-	0.355
HCM Control Delay (s)	10	15.1	-	-	8.5	-	-	21.7
HCM Lane LOS	B	C	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	0.5	-	-	0	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	304	207	169	1067	30	638	16	84	115	19	46
Future Volume (veh/h)	45	304	207	169	1067	30	638	16	84	115	19	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	313	213	174	1100	31	658	16	87	119	20	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	715	475	451	1440	41	557	56	304	337	35	82
Arrive On Green	0.03	0.35	0.35	0.09	0.41	0.41	0.23	0.22	0.22	0.08	0.07	0.07
Sat Flow, veh/h	1781	2045	1358	1781	3530	99	1781	252	1371	1781	496	1165
Grp Volume(v), veh/h	46	271	255	174	554	577	658	0	103	119	0	67
Grp Sat Flow(s),veh/h/ln	1781	1777	1626	1781	1777	1852	1781	0	1624	1781	0	1661
Q Serve(g_s), s	1.2	8.5	8.8	4.2	19.5	19.5	17.0	0.0	3.8	4.4	0.0	2.8
Cycle Q Clear(g_c), s	1.2	8.5	8.8	4.2	19.5	19.5	17.0	0.0	3.8	4.4	0.0	2.8
Prop In Lane	1.00		0.84	1.00		0.05	1.00		0.84	1.00		0.70
Lane Grp Cap(c), veh/h	216	621	568	451	725	756	557	0	360	337	0	118
V/C Ratio(X)	0.21	0.44	0.45	0.39	0.76	0.76	1.18	0.00	0.29	0.35	0.00	0.57
Avail Cap(c_a), veh/h	413	1074	983	544	1074	1120	557	0	669	606	0	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	18.2	18.3	12.7	18.5	18.5	24.6	0.0	23.5	28.0	0.0	32.8
Incr Delay (d2), s/veh	0.5	0.5	0.6	0.5	1.9	1.8	98.9	0.0	0.4	0.6	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.4	3.2	1.6	7.7	8.0	16.6	0.0	1.5	1.9	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.8	18.7	18.8	13.2	20.4	20.4	123.5	0.0	24.0	28.6	0.0	37.1
LnGrp LOS	B	B	B	B	C	C	F	A	C	C	A	D
Approach Vol, veh/h		572			1305			761			186	
Approach Delay, s/veh		18.6			19.4			110.0			31.6	
Approach LOS		B			B			F			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	21.1	10.2	31.5	21.0	10.2	6.0	35.7
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	17.0	30.0	10.0	44.0	17.0	30.0	10.0	44.0
Max Q Clear Time (g_c+I1), s	6.4	5.8	6.2	10.8	19.0	4.8	3.2	21.5
Green Ext Time (p_c), s	0.2	0.5	0.2	3.6	0.0	0.3	0.0	8.2

Intersection Summary	
HCM 6th Ctrl Delay	44.5
HCM 6th LOS	D

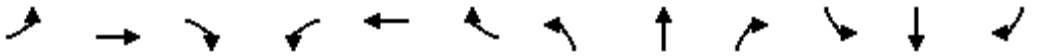
Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	0	19	11	0	21	16	612	20	68	246	17
Future Vol, veh/h	59	0	19	11	0	21	16	612	20	68	246	17
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	64	0	21	12	0	23	17	665	22	74	267	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	791	1145	143	992	1143	344	285	0	0	687	0	0
Stage 1	424	424	-	710	710	-	-	-	-	-	-	-
Stage 2	367	721	-	282	433	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	280	198	879	200	199	652	1274	-	-	903	-	-
Stage 1	578	585	-	391	435	-	-	-	-	-	-	-
Stage 2	625	430	-	701	580	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	251	179	879	181	180	652	1274	-	-	903	-	-
Mov Cap-2 Maneuver	251	179	-	181	180	-	-	-	-	-	-	-
Stage 1	570	537	-	386	429	-	-	-	-	-	-	-
Stage 2	595	424	-	628	532	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.4	16.6	0.2	1.9
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1274	-	-	304	344	903	-	-
HCM Lane V/C Ratio	0.014	-	-	0.279	0.101	0.082	-	-
HCM Control Delay (s)	7.9	-	-	21.4	16.6	9.3	-	-
HCM Lane LOS	A	-	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.1	0.3	0.3	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	304	207	169	1067	30	638	16	84	115	19	46
Future Volume (veh/h)	45	304	207	169	1067	30	638	16	84	115	19	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	313	213	174	1100	31	658	16	87	119	20	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	227	741	492	467	1486	42	1028	52	281	336	35	82
Arrive On Green	0.03	0.36	0.36	0.09	0.42	0.42	0.22	0.20	0.20	0.08	0.07	0.07
Sat Flow, veh/h	1781	2045	1358	1781	3530	99	3456	252	1371	1781	496	1165
Grp Volume(v), veh/h	46	271	255	174	554	577	658	0	103	119	0	67
Grp Sat Flow(s),veh/h/ln	1781	1777	1626	1781	1777	1852	1728	0	1624	1781	0	1661
Q Serve(g_s), s	1.2	8.2	8.5	4.0	18.7	18.7	11.5	0.0	3.8	4.3	0.0	2.8
Cycle Q Clear(g_c), s	1.2	8.2	8.5	4.0	18.7	18.7	11.5	0.0	3.8	4.3	0.0	2.8
Prop In Lane	1.00		0.84	1.00		0.05	1.00		0.84	1.00		0.70
Lane Grp Cap(c), veh/h	227	644	589	467	748	780	1028	0	333	336	0	117
V/C Ratio(X)	0.20	0.42	0.43	0.37	0.74	0.74	0.64	0.00	0.31	0.35	0.00	0.57
Avail Cap(c_a), veh/h	305	1172	1072	615	1346	1404	1398	0	775	392	0	443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.3	17.1	17.2	11.8	17.3	17.3	20.9	0.0	24.1	27.5	0.0	32.1
Incr Delay (d2), s/veh	0.4	0.4	0.5	0.5	1.5	1.4	0.7	0.0	0.5	0.6	0.0	4.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.2	3.0	1.5	7.2	7.5	4.4	0.0	1.5	1.8	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	15.7	17.5	17.7	12.3	18.8	18.8	21.6	0.0	24.6	28.2	0.0	36.5
LnGrp LOS	B	B	B	B	B	B	C	A	C	C	A	D
Approach Vol, veh/h		572			1305			761			186	
Approach Delay, s/veh		17.4			17.9			22.0			31.2	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	19.6	10.1	31.8	19.4	10.0	5.9	36.0
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	8.0	34.0	12.0	47.0	23.0	19.0	5.0	54.0
Max Q Clear Time (g_c+I1), s	6.3	5.8	6.0	10.5	13.5	4.8	3.2	20.7
Green Ext Time (p_c), s	0.0	0.6	0.2	3.7	1.9	0.2	0.0	9.3

Intersection Summary	
HCM 6th Ctrl Delay	19.8
HCM 6th LOS	B

LEVEL OF SERVICE CALCULATIONS YEAR 2040 CONDITIONS WITH PROJECT

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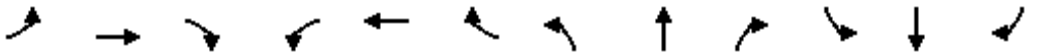
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	78	689	60	20	673	20	0	0	19	0	0	10
Future Vol, veh/h	78	689	60	20	673	20	0	0	19	0	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	84	741	65	22	724	22	0	0	20	0	0	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	746	0	0	806	0	0	-	-	403	-	-	373
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	858	-	-	814	-	-	0	0	597	0	0	624
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	858	-	-	814	-	-	-	-	597	-	-	624
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.3	11.2	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	597	858	-	-	814	-	-	624
HCM Lane V/C Ratio	0.034	0.098	-	-	0.026	-	-	0.017
HCM Control Delay (s)	11.2	9.7	-	-	9.5	-	-	10.9
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-	-	0.1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	446	322	107	388	47	414	7	109	22	3	33
Future Volume (veh/h)	38	446	322	107	388	47	414	7	109	22	3	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	39	460	332	110	400	48	427	7	112	23	3	34
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	453	682	490	343	1229	147	985	22	347	275	12	134
Arrive On Green	0.02	0.35	0.35	0.06	0.38	0.38	0.16	0.23	0.23	0.02	0.09	0.09
Sat Flow, veh/h	1781	1974	1418	1781	3197	381	3456	94	1505	1781	130	1475
Grp Volume(v), veh/h	39	414	378	110	221	227	427	0	119	23	0	37
Grp Sat Flow(s),veh/h/ln	1781	1777	1615	1781	1777	1802	1728	0	1599	1781	0	1605
Q Serve(g_s), s	0.8	11.0	11.0	2.1	4.8	4.9	5.6	0.0	3.4	0.6	0.0	1.2
Cycle Q Clear(g_c), s	0.8	11.0	11.0	2.1	4.8	4.9	5.6	0.0	3.4	0.6	0.0	1.2
Prop In Lane	1.00		0.88	1.00		0.21	1.00		0.94	1.00		0.92
Lane Grp Cap(c), veh/h	453	614	558	343	683	692	985	0	369	275	0	146
V/C Ratio(X)	0.09	0.67	0.68	0.32	0.32	0.33	0.43	0.00	0.32	0.08	0.00	0.25
Avail Cap(c_a), veh/h	571	1482	1347	650	1740	1764	1448	0	1073	407	0	757
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	15.4	15.4	11.5	11.9	12.0	16.3	0.0	17.6	22.3	0.0	23.3
Incr Delay (d2), s/veh	0.1	1.3	1.5	0.5	0.3	0.3	0.3	0.0	0.5	0.1	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.1	3.8	0.8	1.7	1.7	2.0	0.0	1.2	0.3	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	11.3	16.7	16.9	12.1	12.2	12.2	16.6	0.0	18.1	22.4	0.0	24.2
LnGrp LOS	B	B	B	B	B	B	B	A	B	C	A	C
Approach Vol, veh/h		831			558			546			60	
Approach Delay, s/veh		16.5			12.2			16.9			23.5	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	17.7	7.5	25.0	12.6	10.0	5.3	27.2
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	5.0	37.0	13.0	46.0	16.0	26.0	5.0	54.0
Max Q Clear Time (g_c+I1), s	2.6	5.4	4.1	13.0	7.6	3.2	2.8	6.9
Green Ext Time (p_c), s	0.0	0.7	0.2	6.0	1.0	0.1	0.0	3.0

Intersection Summary	
HCM 6th Ctrl Delay	15.6
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	121	1	24	20	0	53	24	259	12	12	365	47
Future Vol, veh/h	121	1	24	20	0	53	24	259	12	12	365	47
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	132	1	26	22	0	58	26	282	13	13	397	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	642	796	224	566	815	148	448	0	0	295	0	0
Stage 1	449	449	-	341	341	-	-	-	-	-	-	-
Stage 2	193	347	-	225	474	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	359	318	779	407	310	872	1109	-	-	1263	-	-
Stage 1	559	571	-	647	637	-	-	-	-	-	-	-
Stage 2	790	633	-	757	556	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	327	308	779	382	300	872	1109	-	-	1263	-	-
Mov Cap-2 Maneuver	327	308	-	382	300	-	-	-	-	-	-	-
Stage 1	546	565	-	632	622	-	-	-	-	-	-	-
Stage 2	721	618	-	723	550	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.6	11.4	0.7	0.2
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1109	-	-	361	645	1263	-	-
HCM Lane V/C Ratio	0.024	-	-	0.44	0.123	0.01	-	-
HCM Control Delay (s)	8.3	-	-	22.6	11.4	7.9	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	2.2	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	93	23	48	53	5
Future Vol, veh/h	10	93	23	48	53	5
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	11	101	25	52	58	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	77	0	-	0	174	51
Stage 1	-	-	-	-	51	-
Stage 2	-	-	-	-	123	-
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	1522	-	-	-	816	1017
Stage 1	-	-	-	-	971	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1522	-	-	-	809	1017
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	963	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1522	-	-	-	824
HCM Lane V/C Ratio	0.007	-	-	-	0.077
HCM Control Delay (s)	7.4	0	-	-	9.7
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2

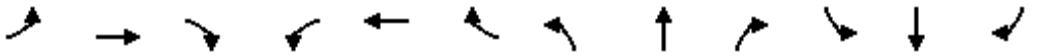
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	484	73	14	1551	35	0	0	36	0	0	113
Future Vol, veh/h	53	484	73	14	1551	35	0	0	36	0	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	190	-	-	90	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	55	504	76	15	1616	36	0	0	38	0	0	118

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1652	0	0	580	0	0	-	-	290	-	-	826
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.14	-	-	4.14	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	387	-	-	990	-	-	0	0	707	0	0	315
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	387	-	-	990	-	-	-	-	707	-	-	315
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.4	0.1	10.4	23.1
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	707	387	-	-	990	-	-	315
HCM Lane V/C Ratio	0.053	0.143	-	-	0.015	-	-	0.374
HCM Control Delay (s)	10.4	15.8	-	-	8.7	-	-	23.1
HCM Lane LOS	B	C	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0	-	-	1.7



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	313	253	217	1056	30	716	16	112	115	19	46
Future Volume (veh/h)	45	313	253	217	1056	30	716	16	112	115	19	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	46	323	261	224	1089	31	738	16	115	119	20	47
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	622	492	446	1451	41	1092	45	320	327	34	80
Arrive On Green	0.03	0.33	0.33	0.11	0.41	0.41	0.24	0.23	0.23	0.08	0.07	0.07
Sat Flow, veh/h	1781	1887	1492	1781	3529	100	3456	197	1418	1781	496	1165
Grp Volume(v), veh/h	46	304	280	224	548	572	738	0	131	119	0	67
Grp Sat Flow(s),veh/h/ln	1781	1777	1602	1781	1777	1852	1728	0	1615	1781	0	1661
Q Serve(g_s), s	1.3	10.3	10.6	5.7	19.6	19.6	13.5	0.0	5.1	4.5	0.0	2.9
Cycle Q Clear(g_c), s	1.3	10.3	10.6	5.7	19.6	19.6	13.5	0.0	5.1	4.5	0.0	2.9
Prop In Lane	1.00		0.93	1.00		0.05	1.00		0.88	1.00		0.70
Lane Grp Cap(c), veh/h	220	586	528	446	731	762	1092	0	365	327	0	114
V/C Ratio(X)	0.21	0.52	0.53	0.50	0.75	0.75	0.68	0.00	0.36	0.36	0.00	0.59
Avail Cap(c_a), veh/h	291	954	860	683	1265	1318	1476	0	759	374	0	379
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.2	20.2	20.3	13.6	18.7	18.7	21.3	0.0	24.3	28.9	0.0	33.7
Incr Delay (d2), s/veh	0.5	0.7	0.8	0.9	1.6	1.5	0.7	0.0	0.6	0.7	0.0	4.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	4.1	3.9	2.2	7.7	8.0	5.2	0.0	1.9	1.9	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.6	20.9	21.1	14.5	20.2	20.2	22.0	0.0	24.9	29.6	0.0	38.4
LnGrp LOS	B	C	C	B	C	C	C	A	C	C	A	D
Approach Vol, veh/h		630			1344			869			186	
Approach Delay, s/veh		20.8			19.3			22.4			32.7	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	21.8	12.1	30.5	21.7	10.1	6.0	36.6
Change Period (Y+Rc), s	4.0	5.0	4.0	6.0	4.0	5.0	4.0	6.0
Max Green Setting (Gmax), s	8.0	35.0	18.0	40.0	26.0	17.0	5.0	53.0
Max Q Clear Time (g_c+I1), s	6.5	7.1	7.7	12.6	15.5	4.9	3.3	21.6
Green Ext Time (p_c), s	0.0	0.8	0.4	4.0	2.2	0.2	0.0	9.1

Intersection Summary	
HCM 6th Ctrl Delay	21.3
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	12.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	165	0	37	11	0	21	34	612	20	68	246	111
Future Vol, veh/h	165	0	37	11	0	21	34	612	20	68	246	111
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	-	-	-	-	-	-	100	-	-	100	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	179	0	40	12	0	23	37	665	22	74	267	121

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	883	1237	194	1032	1286	344	388	0	0	687	0	0
Stage 1	476	476	-	750	750	-	-	-	-	-	-	-
Stage 2	407	761	-	282	536	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	240	175	815	187	163	652	1167	-	-	903	-	-
Stage 1	539	555	-	369	417	-	-	-	-	-	-	-
Stage 2	592	412	-	701	522	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	212	156	815	163	145	652	1167	-	-	903	-	-
Mov Cap-2 Maneuver	212	156	-	163	145	-	-	-	-	-	-	-
Stage 1	522	509	-	357	404	-	-	-	-	-	-	-
Stage 2	553	399	-	612	479	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	76.8	17.6	0.4	1.5
HCM LOS	F	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1167	-	-	245	321	903	-	-
HCM Lane V/C Ratio	0.032	-	-	0.896	0.108	0.082	-	-
HCM Control Delay (s)	8.2	-	-	76.8	17.6	9.3	-	-
HCM Lane LOS	A	-	-	F	C	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	7.6	0.4	0.3	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	78	33	112	124	12
Future Vol, veh/h	24	78	33	112	124	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	26	85	36	122	135	13

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	158	0	-	0	234	97
Stage 1	-	-	-	-	97	-
Stage 2	-	-	-	-	137	-
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	1422	-	-	-	754	959
Stage 1	-	-	-	-	927	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1422	-	-	-	740	959
Mov Cap-2 Maneuver	-	-	-	-	740	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	890	-

Approach	EB	WB	SB
HCM Control Delay, s	1.8	0	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1422	-	-	-	755
HCM Lane V/C Ratio	0.018	-	-	-	0.196
HCM Control Delay (s)	7.6	0	-	-	10.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.7

QUEUING
CALCULATIONS
EXISTING CONDITIONS

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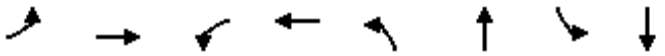
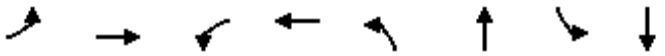


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	31	564	49	370	207	61	18	34
v/c Ratio	0.07	0.59	0.13	0.34	0.34	0.09	0.05	0.16
Control Delay	9.8	19.2	10.3	16.5	14.2	7.5	13.6	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	19.2	10.3	16.5	14.2	7.5	13.6	14.3
Queue Length 50th (ft)	6	80	9	39	48	2	4	1
Queue Length 95th (ft)	19	142	27	98	106	29	16	25
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600				50	
Base Capacity (vph)	549	2788	474	2864	668	953	683	935
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.20	0.10	0.13	0.31	0.06	0.03	0.04

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	372	95	976	338	63	69	57
v/c Ratio	0.15	0.30	0.18	0.71	0.63	0.14	0.21	0.30
Control Delay	10.0	15.0	10.0	23.1	27.2	14.8	21.6	22.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	15.0	10.0	23.1	27.2	14.8	21.6	22.8
Queue Length 50th (ft)	10	53	21	214	128	6	22	8
Queue Length 95th (ft)	25	91	45	307	#277	44	60	47
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600				50	
Base Capacity (vph)	358	2123	569	2190	556	728	565	730
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	0.12	0.18	0.17	0.45	0.61	0.09	0.12	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

QUEUING
CALCULATIONS
YEAR 2021 CONDITIONS
WITHOUT PROJECT

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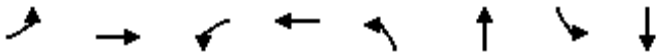
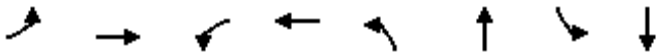


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	593	54	411	239	65	23	37
v/c Ratio	0.09	0.60	0.15	0.37	0.39	0.10	0.06	0.18
Control Delay	10.1	19.6	10.7	17.0	15.0	7.5	14.2	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	19.6	10.7	17.0	15.0	7.5	14.2	14.7
Queue Length 50th (ft)	7	88	10	46	58	2	5	1
Queue Length 95th (ft)	23	150	29	110	125	31	19	27
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600				50	
Base Capacity (vph)	537	2714	458	2786	661	923	672	909
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.22	0.12	0.15	0.36	0.07	0.03	0.04

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	408	103	1016	404	68	119	67
v/c Ratio	0.16	0.32	0.20	0.71	0.77	0.20	0.33	0.34
Control Delay	10.0	15.4	10.0	23.1	35.3	16.2	23.5	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	15.4	10.0	23.1	35.3	16.2	23.5	23.0
Queue Length 50th (ft)	10	61	23	227	169	7	41	10
Queue Length 95th (ft)	26	102	49	326	#345	48	97	52
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600				50	
Base Capacity (vph)	349	2032	556	2095	532	699	545	703
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	0.13	0.20	0.19	0.48	0.76	0.10	0.22	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

QUEUING
CALCULATIONS
YEAR 2021 CONDITIONS
WITH PROJECT

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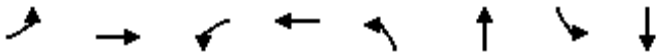
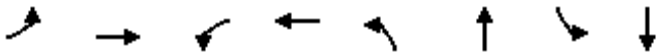


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	616	73	408	271	79	23	37
v/c Ratio	0.09	0.64	0.20	0.34	0.46	0.13	0.07	0.19
Control Delay	10.0	20.9	11.0	16.3	17.2	8.0	14.8	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	20.9	11.0	16.3	17.2	8.0	14.8	15.0
Queue Length 50th (ft)	8	95	15	48	69	2	5	1
Queue Length 95th (ft)	22	155	36	108	149	35	20	27
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600				50	
Base Capacity (vph)	547	2541	439	2610	626	869	629	849
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.24	0.17	0.16	0.43	0.09	0.04	0.04

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	465	153	1004	485	96	119	67
v/c Ratio	0.16	0.41	0.33	0.72	0.90	0.25	0.33	0.35
Control Delay	10.2	15.5	11.4	23.3	48.0	13.9	23.3	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.2	15.5	11.4	23.3	48.0	13.9	23.3	23.0
Queue Length 50th (ft)	10	64	35	223	214	7	41	10
Queue Length 95th (ft)	26	108	68	321	#458	55	96	52
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600				50	
Base Capacity (vph)	353	2020	493	2081	537	703	538	699
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	0.13	0.23	0.31	0.48	0.90	0.14	0.22	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

QUEUING
CALCULATIONS
YEAR 2040 CONDITIONS
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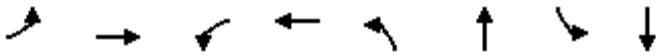
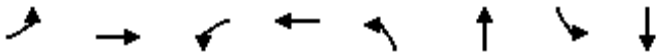


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	768	91	451	395	105	23	37
v/c Ratio	0.09	0.67	0.27	0.35	0.38	0.18	0.08	0.19
Control Delay	9.2	18.6	10.7	15.3	16.5	7.5	17.1	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.2	18.6	10.7	15.3	16.5	7.5	17.1	15.8
Queue Length 50th (ft)	7	107	17	67	54	2	6	1
Queue Length 95th (ft)	22	182	41	109	105	40	22	29
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600		140		50	
Base Capacity (vph)	439	2556	455	2929	1105	1016	295	735
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	0.09	0.30	0.20	0.15	0.36	0.10	0.08	0.05

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	526	174	1131	658	103	119	67
v/c Ratio	0.22	0.44	0.38	0.74	0.61	0.23	0.41	0.36
Control Delay	13.4	16.0	13.6	24.1	24.9	11.5	28.1	25.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.4	16.0	13.6	24.1	24.9	11.5	28.1	25.7
Queue Length 50th (ft)	12	78	49	288	147	7	45	11
Queue Length 95th (ft)	30	130	89	388	247	53	102	57
Internal Link Dist (ft)		612		785		286		184
Turn Bay Length (ft)	350		600		140		50	
Base Capacity (vph)	210	1985	496	2335	1145	728	298	424
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	0.22	0.26	0.35	0.48	0.57	0.14	0.40	0.16

Intersection Summary

QUEUING
CALCULATIONS
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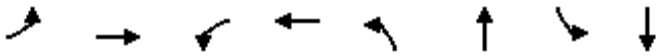
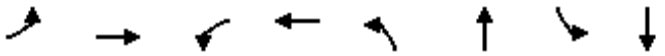


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	792	110	448	427	119	23	37
v/c Ratio	0.09	0.68	0.33	0.34	0.41	0.20	0.08	0.20
Control Delay	9.5	19.0	11.6	15.4	17.3	7.3	17.8	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	19.0	11.6	15.4	17.3	7.3	17.8	16.4
Queue Length 50th (ft)	7	114	22	68	63	2	6	1
Queue Length 95th (ft)	22	192	49	110	118	43	23	29
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600		140		50	
Base Capacity (vph)	439	2455	463	2849	1120	992	284	687
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	0.09	0.32	0.24	0.16	0.38	0.12	0.08	0.05

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	46	584	224	1120	738	131	119	67
v/c Ratio	0.23	0.53	0.51	0.75	0.65	0.26	0.43	0.37
Control Delay	15.1	19.1	16.9	25.7	25.4	9.9	29.0	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	19.1	16.9	25.7	25.4	9.9	29.0	26.7
Queue Length 50th (ft)	13	97	71	303	175	7	46	12
Queue Length 95th (ft)	32	164	122	404	283	57	102	58
Internal Link Dist (ft)		612		785		290		184
Turn Bay Length (ft)	350		600		140		50	
Base Capacity (vph)	202	1668	531	2215	1219	738	285	373
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	0.23	0.35	0.42	0.51	0.61	0.18	0.42	0.18

Intersection Summary

HARTLAND TOWNSHIP PLANNING COMMISSION APPROVED MEETING MINUTES

September 8, 2022– 7:00 PM

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1. **Call to Order: Chair Fox called the meeting to order at 7:00 p.m.**

2. **Pledge of Allegiance:**

3. **Roll Call and Recognition of Visitors:**
   Present – Commissioners Fox, Grissim, Mayer, McMullen, Mitchell, Murphy
   Absent – None

4. **Approval of the Meeting Agenda:**
   A Motion to approve the September 8, 2022 Planning Commission Meeting Agenda was made by Commissioner Mitchell. Seconded by Commissioner Grissim. Motion caried unanimously.

5. **Approval of Meeting Minutes:**
   a. Planning Commission Meeting Minutes of August 25, 2022
      A Motion to approve the Meeting Minutes of August 25, 2022 was made by Commissioner Grissim and seconded by Commissioner McMullen. Motion carried unanimously.

6. **Call to the Public:**
   None

7. **Public Hearing:**
   a. **Site Plan with Special Land Use Application #22-007 (Automobile wash within completely enclosed building at 10382 Highland Road)** a request to redevelop a commercial site and construct an approximate 6,500 square foot automobile wash, within a completely enclosed building, at 10382 Highland Road.

      Chair Fox opened the Public Hearing at 7:03 PM stating all public notice requirements for the Public Hearing have been met.

      Director Langer gave an overview of the location and scope of the request stating the following:
      - Existing building located 10382 Highland Road, south of M59, east of US 23.
      - Former Burger King site.
      - Special Use Permit is required by the Ordinance for General Commercial.
      - For a Special Use Permit the Planning Commission will make a recommendation; final approval will come from the Township Board.

      Director Langer explained the site plan and layout of the site.

      The Applicant, Max Buell, Engineer with Kimley-Horn and Raleigh Sadler representing Mister Car Wash introduced themselves.

CALL TO PUBLIC:
Barbara Krueger, Hartland Township; does not support another car wash as there are two already, did not care for the design, and feels construction at that location at this time would be irresponsible.

Chris Hall, owner of M59 Car Wash; concerned for his business as it is a local, family owned small business, Mister Car Wash is a big company and can put smaller operations out of business, concerned about the increased traffic, not going anywhere until they have to.

Tawny Hall, with M59 Car Wash; feels Hartland does not need three car washes within one-quarter mile, waste of resources, too much traffic now.

Chair Fox closed the Public Hearing at 7:19 PM

Chair Fox referred to the staff memorandum dated September 1, 2022

SPECIAL LAND USE REVIEW – General Standards – The Planning Commission had no additional comments.

SPECIAL LAND USE REVIEW – Applicable Site Standards
Automobile Wash Establishment (Section 4.17)

Layout
Director Langer explained the layout in detail, specifically the location of the vacuuming activities stating historically, when the ordinance was written, car washes had large vacuum canisters and the desire was to not have those located in the front of the site. The system being proposed is different, there is no large canister at each station, only a nozzle and hose. The actual mechanical equipment for the vacuums is in a screened area to the rear of the site.

Chair Fox recounted when they reviewed the coin operated car wash and required the large canister vacuums to be located on the side or rear of the site. These vacuum stations are not like those. It is actually smaller than a fuel pump at a gas station. He said he is not opposed to it and also there will be landscape screening along Blaine Road which will cover most of them.

Commissioner Murphy asked if the Ordinance states the vacuums systems be located in the side or the rear, then it must be determined if the plan shows them in the side or the rear; if that is the case, even with the new design if they are to be screened because some might find them unsightly, then they should be located in the rear.

Commissioner Mayer concurred.

Commissioner Mitchel was not opposed to leaving them where are currently shown.

Commissioner Grissim stated she had nothing to add.

Commissioner McMullen stated she is not opposed to the style but as concerns about the noise as they are continuously on.

The Applicant stated they are centrally powered and on continuously, but the noise is contained by the unit. One might hear some whistling but will not hear the vacuum itself until it is removed from the holster.

Commissioner Murphy asked if there is a decibel rating comparison for the two systems. The Applicant said he did not have that information, but he would ask the team and see if it could be provided.

Commissioner Mayer asked about the hours of operation. The Applicant stated Monday through Saturday 7:30 AM to 7:00 PM and 8:00 AM to 6:00 PM on Sundays. They are left on a little bit past closing as a service for their customers free of charge. Once the staff leaves, they are turned off.

Chair Fox stated again he is not opposed to having them where they are, they are quite different than the ones used when the Ordinance was written. He expects they certainly are not as loud as M59 or US 23 traffic.

The Planning Commission briefly discussed canopies over vacuum units.

Director Langer stated there is a setback from residential zoned property, but it is so far away he does not have a measurement of the distance.

Entrances and Exits
Director Langer stated the following:

- Typically, a car wash is designed so the exit is at the street.
- Often, residual water can accumulate and, in the winter, create an ice hazard.
- This design has a drainage system to manage any residual water.

SITE PLAN REVIEW – Applicable Site Standards

Chair Fox stated an Impact Assessment and Traffic Generation information was not provided but it is also not required for this project.

Commissioner Grissim asked if this use is more intense than the previous use of fast food vendor. Director Langer stated he cannot answer that question specifically but can give a general answer: He explained there is a manual, the ITT manual which is a collection of traffic data for many different uses throughout the country typically broken down by the square footage of the building. It is the document used by Traffic Engineers. He cannot answer specifically but for this project, there was not enough traffic projected to warrant a traffic study.

The Planning Commission briefly discussed traffic at that location and elsewhere.

Commissioner Murphy asked about staffing and the number of cars that can be managed at one time. The Applicant replied thirty-eight (38).

Commissioner Mitchell asked how many cars are anticipated in one day. The Applicant stated that is difficult to say as there are so many variables such as season and weather. They do have a process

to address any potential backups in the process. Their intent is to capture existing traffic in the area as opposed to generating new traffic.

Commissioner Mayer inquired as to how many Mister Car Wash sites are in the region. The Applicant replied nine in the Saginaw region. Commissioner Mayer asked what is the greatest number of vehicles that has been through the car wash in one day. The Applicant stated he was unable to disclose that information, there are so many variables, but did say they have A, B and C sites all over the nation that do a variety of volumes given the season and weather conditions. Commissioner Mayer repeated the question. The Applicant stated for their store back home, maybe 1000.

Commissioner Grissim asked how long it takes per car wash? The Applicant stated several cars can occupy the wash tunnel at one time.

Commissioner Murphy asked how many cars can exit at one time? The Applicant stated one at a time.

The Planning Commission discussed the following:
- Time it takes to complete a wash.
- Car wash is not typically a destination service, may not increase traffic volume.
- Cars exit onto Blaine at the light.

Building Setbacks (Sec. 3.1.14) Dumpster Enclosure
Director Langer stated the following:
- Trash and Vacuum enclosure are within the Blaine Road right-of-way but will be screened with Landscaping.
- There are several commercial lots with a road at the front and another to the rear that have these structures within the setback.
- Historically the Planning Commission has approved parking lots to be less than twenty-five (25) feet away.
- The building complies, it is the enclosure that does not.

Chair Fox stated this has been approved by the Planning Commission for many other recent commercial sites. If this were not permitted, it would create a huge issue for future development.

Commissioner Grissim asked if the thirty-two (32) foot aisle could be pared down to twenty-eight (28) feet to lessen the impact of all the pavement. The Applicant stated they can take that up with the development team and get back to the Planning Commission. Chair Fox suggested they go to twenty-four (24) feet and pull everything back eight (8) feet it would help their cause.

Off-Street Parking (Sec. 5.8.4.H - Auto Wash - fully automatic car wash)
Director Langer stated the following:
- Fourteen (14) parking spaces required by the Ordinance.
- Proposing sixty-five (65) spaces some of which are for vacuum services.
- The Planning Commission may modify the numerical number of off-street parking spaces, based on evidence that another standard would be more reasonable.
- Objective is to limit having more paved surface than necessary.

Commissioner Mitchell stated he is in favor of allowing the vacuum spaces to count toward the required number of parking spaces.

Commissioner Mayer stated he feels there is not enough spaces for employee parking, that some the employees will have to park on another site and walk over. The Applicant stated there are three (3) people on a typical shift with maybe an additional two (2) during shift change and they could utilize some of the vacuum parking if needed. It is uncommon that they are all taken at the same time.

Commissioner Mitchell asked why they need so many vacuum bays. In his car wash experience, there are just a few being used while the major line of cars is waiting for the car wash. The Applicant replied it would be unlikely to have all of the vacuum stalls occupied at one time; however, the vacuum stalls are an overflow asset at peak hours when the wash traffic is heavy. Those are definitely the place customers will spend more time which is part of the reason they are proposing so many. The vacuums are free and non-members are welcome to use them as well.

Commissioner Mitchell proposed that the vacuum stalls adjacent to Blaine Road be eliminated and the total number be reduced to eleven (11) to preclude any visual issues not addressed by the landscaping.

Commissioner Mayer asked if the approved landscaping is required to remain for perpetuity or can the occupant remove it later. Director Langer stated speaking hypothetically, if the site is approved and built, the required landscaping and trees are installed; then, the owner later decides he wants to remove the trees or screened vegetation, and they do not contact the Township before proceeding, the Township would contact them and require those landscaping items be replaced. Of course, they would have to replace the older, taller trees with smaller trees. He cannot say that it would be perfect and exactly what was approved but we would require them to replace trees.

Parking Lot / Driveway / Internal Roads Setbacks (Sec. 5.8.3.)
Director Langer pointed out there are three (3) spaces along the Blaine Road frontages that are less than twenty-five (25) feet from the right-of-way; they are ten (10) feet.

Chair Fox suggested these items be addressed at the end.

Landscaping and Screening (Sec. 5.11)
Greenbelt Landscaping (Sec. 5.11.C.)
Commissioner Grissim stated the following:

- Seven (7) trees required, they are proposing three (3), but the driveway takes up most of the space and adding more trees would be difficult.
- Shrubs required but none are shown on the plan.
- She would recommend keeping the number of trees at three (3) but add the required shrubs for additional screening. The Applicant and Planning Commission agreed.

Calculations for Greenbelt along Blaine Road
Commissioner Grissom stated the following:

- Requirement is it needs to be a solid screen, can add a berm, can be evergreen but must a minimum height o thirty (30) inches but may also count as Parking Lot screening.
- Can add one additional tree north of the parking bay along the edge.

Commissioner Murphy commented if vacuum stalls were removed along the Blaine Road frontage that would help reduce some of the screening needed.

Foundation Landscaping (Sec. 5.11.2.D.)
Commissioner Grissim stated the following:

- Different materials are required along the foundation.
- Must equal sixty (60) percent of the front and sides of the building adjacent to a road or parking area.
- One requirement is for ornamental trees and there are none shown on the plan.
- Shrubs are required at the base
- A narrow ornamental tree would fit, the building is tall, there is room to add more.
    - The east side of the building has a couple of notches with canopies overhanging, trees would fit in those spaces very well and not interfere with the building.
    - On the north side of the building with the notch back and square area, an ornamental tree would fit there.
    - That would meet the four (4) required.
- Rock mulch is not permitted; recommend tighten up the size of the beds and use bark mulch. Director Langer added that if the blowers would interfere with the bark mulch on the south side, grass can also be used. Commissioner Grissim concurred.

Parking Lot Landscaping (Sec. 5.11.2.E.i.)
Commissioner Grissim stated the following:

- Also deficient in trees; requirement is five (5) canopy trees, two (2) are proposed.
- One option is the north end of the parking bay on the west side of the street. This would also count as a Greenbelt tree for Blaine Road.
- Require trees at the end caps, the ends of the rows of parking.
- On the east side of the vacuum bays, at the south end, there is approximately twelve (12) feet between the building and the first parking stall. It would also be considered an end cap tree. The Applicant mentioned they are trying to keep any debris such as mulch or leaves away from the blower area, but they will revisit that location with their landscape team.
- On the east side and the north end of that bay, in the lawn area, there is room for another tree.
- Trying to get the plan closer to what is required by the Ordinance.
- Along the sidewalk there could be a continuous evergreen hedge, at least thirty (30) inches high that would meet the thirty-six (36) inch height as it matures.

Perimeter Landscaping - For areas visible from a public road (facing Highland Road and Blaine Road; Sec. 5.11.2.E.ii.a.)
Commissioner Grissim stated an evergreen hedge row should be added next to barrier-free parking spaces to shield view of parking. Also focus on minimizes beds and consider turning them into lawn.

Detention/Retention Area Landscaping (Sec. 5.11.2.H.)
Director Langer stated the following:

- Focusing on the area along Blaine Road where there is a storm water detention basin.
- Not at the stage on this plan where storm water detention calculations are available, that comes later.

- Current landscape plans show trees planted in the detention area
- It is not a berm but the opposite of a berm, a depression.
- Just making a note so the Applicant is aware. The Applicant stated they will work with the Township to ensure it complies.

Sidewalks and Pathways (Sec. 5.12)
Director Langer stated there is a gap in the sidewalk that needs to be filled; it is at the discretion of the Planning Commission to require it be filled as pat of Site Plan Approval. The Planning Commission agreed.

Lighting (Sec. 5.13)
Director Langer stated the following:

- Have been working with the Applicants on Lighting but have a little more work to do.
- Typically done at the end of a project.
- Will require an amended Lighting Plan.

Architecture / Building Materials (Sec. 5.24)
Director Langer stated he spoke with Eric from the St. Paul, Minnesota engineering firm about the brick material. Colored block must come from the factory colored. Painted block is not permitted. We have a written statement ensuring no painted block will be used for this building. A second question was related to the color of something on the top. They agreed it will be earth tone. Mo real changes.

Commissioner Grissim asked if they are permitted to have as many signs on the building as was shown on the plans. Chair Fox stated signage is handled by staff. Director Langer replied no, they will not be permitted as many signs as shown.

Commissioner Mayer asked if the car wash has plans to recycle or reclaim the fresh water that will be used. The Applicant replied on average, thirty-three (33) percent of the water is reclaimed and used again which is an integral part of their process. They are also taking steps to modify their blower gates, so they do not pull as many amps. Their chemicals do not have any dyes which helps the sewer system. Environmental issues are important to their company.

Commissioner Mayer expressed concern about phosphates and oils entering the sewer system and asked if they will be filtered out. The Applicant stated he would have to get back to the Commissioner with that information.

Commissioner Mayer stated he had a question about storm water detention but as discussed earlier, there was nothing in the plans about that at this time.

Director Langer stated there is some incentive for Mister Car Wash to use a recycler system for the water. In order to connect to the Township water system, they must purchase REUs (Residential Equivalency Units). If they do not have a recycler, they would need to purchase more REUs making it worth the expense of adding the recycler.

Other buildings:
Vehicular Canopy (POS)
Director Langer stated the following:

- Treated like a fuel station canopy.
- Under the canopy is a device where th4 customer would pay for the ca wash.
- Has brick columns similar to fuel station canopies previously approved.
- Will be an earth tone color.

Attendant Shelter
Director Langer stated the following:

- Bottom half is brick, top half is EIFS.
- It has windows.
- May not completely comply but given the size of it, staff has no issues.

Chair Fox stated he feels the Planning Commission is not ready to approve the project and is looking for more information. He encouraged the Planning Commission to give their comments.

Commissioner Grissim stated she is interested in seeing some traffic information, also to minimize the number of vacuum stations, the amount of pavement, tighten up the site, use the different comments that have been made tonight and improve the site plan.

Commissioner Mayer concurred stating he would like to see them cut back on the number of vacuums and the amount of pavement while increasing the landscaping.

Commissioner Mitchell stated he agrees with the previous comments to eliminate some of the vacuum stations which would help with the parking side setbacks.

Commissioner Murphy stated he had nothing further to add except he is unclear as to how many vacuum stations there are, he counted twenty-six (26) rather than twenty-two (22). He suggests mirroring the plan to get the vacuum stations in the rear and it might help with the other issues like setbacks for parking.

Commissioner McMullen asked if they will be open 24 hours or specific set hours. The Applicant stated they will be open Monday Through Saturday 7:30AM to 7:00PM, Sunday 8:00AM to 6:00 PM and try to have consistency for all of their store's hours.

Chair Fox stated the Planning Commission cannot base their decisions on "We just don't want another one." That is how cases end up in lawsuits. When Meijer came it was "We don't need that, we have Kroger." When a new restaurant comes in it is "We can't have that, they will take my customers." That is not an element we can deal with. We understand that but it is not part of the Zoning Ordinance. The goal of the Planning Commission is to enforce the Zoning Ordinance standards for site development. The Township would not have a Meijer if the Planning Commission had heeded that kind of thinking. The Planning Commission must work within the parameters it has to work within. He said they would get answers and part of it is understanding what the Planning Commission does. The Applicant has more work to do. One should not interpret anything said as a yes or a no.

8. Call to the Public:

Tawny Hall, with M59 Car Wash; asked about the Special Use process. Chair Fox explained the five criteria discussed earlier in the meeting. Director Langer added a Special Use must also be heard at the Township Board level; so, they have to meet more standards and they have to go before the Board.
Ms. Hall continued stating the following:

- Traffic will be much more than the Applicant has said just knowing how many cars their car wash does. She thinks they will have possibly more than 1000 cars.
- Even more will be generated by the free vacuums.
- Believes their water/sewer use will be higher than estimated.

Chris Hall with M59 Car Wash; stated the following:

- Large car wash built to service a large volume of cars.
- Cannot be screened.
- Free vacuums will draw more traffic.
- Unlimited membership allows anyone around the country who has a membership to have as many washes as they choose.
- Believes it will take more employees.
- There will be a sound impact.
- Feels it will be an eyesore.
- Their intent is volume.

9. Planner Report:

Director Langer reported the following:

- Citizen Planner Forum, some dates for the in-person training conflict with Planning Commission meeting states. He spoke to the Chair to see if it would be acceptable to alter some of the meeting dates to allow Commissioners to have the training which was approved. If any of the Commissioners are interested, please contact the Director.
- New Planning Commissioner Matthew Eckman and his wife are in the audience this evening. Welcome!
- Planet Fitness is going into the former Food Town space at Hartland Plaza. The Township has issued a demo permit so they could get started while the remodel plans are being finalized.

10. Committee Reports:

None

11. Adjournment:

A Motion to adjourn was made by Commissioner Mitchell and seconded by Commissioner McMullen. Motion carried unanimously. The meeting was adjourned at approximately 8:56 PM.

Submitted by.

Tom Murphy
Planning Commission Secretary

HARTLAND TOWNSHIP PLANNING COMMISSION APPROVED SPECIAL MEETING MINUTES

October 20, 2022– 7:00 PM

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1. **Call to Order: Chair Fox called the meeting to order at 7:00 p.m.**

2. **Pledge of Allegiance:**

3. **Roll Call and Recognition of Visitors:**
   Present – Commissioners Fox, Grissim, Mayer, McMullen, Mitchell, Eckman
   Absent – Commissioner Murphy

4. **Approval of the Meeting Agenda:**
   A Motion to approve the October 20, 2022 Planning Commission Meeting Agenda was made by Commissioner Mitchell. Seconded by Commissioner Grissim. Motion carried unanimously

5. **Approval of Meeting Minutes:**
   A Motion to approve the Planning Commission Meeting Minutes of September 8, 2022 was made by Commissioner Grissim. Seconded by Commissioner Mitchell. Motion carried unanimously.

6. **Call to the Public:**
   None

7. **Old and New Business**
   a. Site Plan with Special Land Use Application #22-007 (Automobile wash within completely enclosed building at 10382 Highland Road)

      Director Langer stated the following:
      - Located at the intersection of Blaine Road and M-59.
      - Public Hearing was held on September 8, 2022.
      - Revised plan provided based on items discussed at the previous meeting plus additional information.
      - Proposing to remove existing structure (former Burger King) and construct an approximate 6,500 square foot building for a fully automated automobile wash (Mister Car Wash).

      Chair Fox referred to the staff memorandum dated October 13, 2022 and the revised site plan dated October 6, 2022.

      Director Langer stated the following:
      - The Planning Commission requested the drive aisle be reduced; it is now 26 feet wide.
      - The Planning Commission expressed concern about the setback in the northwest corner; this plan meets the required setback at that location and reoriented some of the parking spaces.
      - The Planning Commission requested fewer vacuum stations, but the Applicant is hoping for the opportunity to explain why they feel they need them. It was discussed by the Site Plan

Review Committee, and they thought it best to have the discussion before the full Planning Commission.
- Also submitted a revised Landscape Plan.

Chair Fox asked the Planning Commission for a determination on vacuums in the front of the site.

Director Langer explained the following:
- The front yard of a site is the area between the building and any road frontage.
- This site has two front yards; one on Blaine and one on M-59.
- That ordinance about car wash vacuums was written during a time when the type of vacuum associated with a car wash was the large, self-contained canister style vacuum. This style of vacuum is the hose only with the central motor tucked in an enclosed area.

Director Langer went on to explain the Planning Commission can make a determination or interpretation that this type of vacuum is permitted but they cannot legislate the number of vacuums; they either are permitted, or they are not permitted. Such a determination can have implications beyond this site. As the Site Plan Review Committee discussed this issue further, their desire was to bring the topic back. Essentially there are two possible answers; yes, these are only hoses not vacuums and shall be permitted or no, these are still vacuums and shall not be permitted.

Commissioner Mitchell stated the following:
- Hartland Township has requirements for Car Wash facilities Section 4.1.7.
- Section 4.1.7.1. it specifically states vacuum systems are not allowed in the front yard, it has no further detail or description of components.
- He does not feel comfortable going against the Township's established Ordinance saying they can define a type of vacuum system that is allowed versus those that are not.
  [Director Langer displayed a photo of a newer car wash facility in another community with a hose and small canister vacuum.]
- Would this hybrid type of vacuum station be permitted?
- He feels it is a bigger issue and that the Planning Commission should stand by the existing Ordinance which does not permit vacuums in the front yard.
- He cannot support this design.

Chair Fox stated the following:
- He was the one who gave the historical significance of the Ordinance and that it was written before this product existed.
- It does not define what a vacuum is.
- His concern is if these are allowed, what happens the next time when it is something different, but vacuums are now allowed.
- He cannot support the plan as it is proposed right now.

Chair Fox would like to canvas the Planning Commission on who supports the Ordinance which does not allow for vacuums in the front yard.

Commissioner Grissim agreed, she supports the Ordinance and cannot approve this plan as presented.
Commissioner Mayer agreed the Planning Commission should abide by the Ordinance.

Commissioner Mitchell reiterated the Planning Commission should abide by the Ordinance.

Commissioner McMullen agreed the Planning Commission should abide by the Ordinance.

Commissioner Eckman stated the same, that Planning Commission should abide by the Ordinance.

Chair Fox summarized vacuums are not permitted in the front yard no matter what the style and the Planning Commission will abide by the Ordinance. The plan cannot be approved as presented.

Director Langer stated the following:

- Earlier the Planning Commission discussed traffic and that there was no need for a traffic study; however, the Applicant did provide some additional information using the ITE Manual.
- ITE offers information about estimated traffic generated by similar uses around the county.
- A car wash was compared to the traffic generated by a fast food restaurant with a drive-through and was shown to generate less traffic.
- A resident provided an actual traffic study of a car wash in Colorado as part of that they used a car wash in Grandville, Michigan. This information was provided earlier this week in an email.

The Planning Commission briefly discussed the options going forward; to ask the Applicant to revise their plan and return or forward this Site Plan with Special Use to the Township Board with the Planning Commission not recommending approval.

Chair Fox asked the Applicant what they would like to do. The Applicant indicated they would like to revise the plan and come back.

8. Call to the Public:
None.

9. Planner Report:
None

10. Committee Reports:
None

11. Adjournment:
A Motion to adjourn was made by Commissioner Mitchell and seconded by Commissioner McMullen. Motion carried unanimously. The meeting was adjourned at approximately 7:28 PM.

Submitted by.

Tom Murphy
Planning Commission Secretary

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Michael Luce, Director of Public Works

Subject: 2023 Cundy Road Paving LCRC Agreement

Date: February 1, 2023

Recommended Action
Move to approve the Project Agreement with the Livingston County Road Commission as presented in an amount not to exceed $275,000.00 for the repaving of the Cundy Road.

Discussion
As part of the M59 – Cundy Road watermain extension, the resurfacing of Cundy Road has been identified as part of this project. Currently the road is in disrepair and in need of replacement. At this point any temporary patching or spot fixes are not feasible. Attached is the Project Agreement for the repaving of Cundy Road, the LCRC will be providing a cost share of 50% on this project.

Paving will take place this summer with some drainage improvements. Currently the LCDC has identified 3 culverts that are in need of replacement. We will be coordinating with the LCDC and the LCRC to replace the culverts prior to the road being paved. The exiting road will be crushed and shaped in place and a 4" topcoat will be applied in 2 lifts. LCRC is anticipating this project to only last a few weeks and manageable interruption to the residents. Public Works will be monitoring the project and looks forward to the completion as it will be a relief to many residents in the development.

Financial Impact
Is a Budget Amendment Required? ☐Yes ☒No

Currently this is budgeted for in the FY 23-24 budget under the Road Improvements line item.

Attachments
Cundy Rd Contract LCRC

PROJECT AGREEMENT

JOB NUMBER: 489.09.5106 BW

This Agreement made and entered into this _____ day of_____, 2022 by and between the TOWNSHIP of HARTLAND Livingston County, Michigan, hereinafter referred to as "TOWNSHIP" and the BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF LIVINGSTON, hereinafter referred to as "ROAD COMMISSION."

W I T N E S S E T H

The Township has selected the following road to be improved as described below:

CUNDY ROAD,
M-59 TO HARTLAND GLEN ROAD,
APPROXIMATELY 0.85 MILES
CRUSH AND SHAPE AND PLACE 4.0" HOT MIX ASPHALT IN 2 LIFTS,
ALTOGETHER WITH THE NECESSARY RELATED WORK

The parties agree as follows:

1. The Engineer's Opinion of Probable Cost is $550,000. The Township shall pay the Road Commission 50% of the cost of the project not to exceed $275,000. The remaining balance will be paid by the Livingston County Road Commission.

   A. The balance shall be paid promptly as invoiced.

   B. The Road Commission shall furnish the Township with a final breakdown of its actual expenses upon completion of the project.

   C. The Township will not withhold payments because of any set-off, counterclaim, or any other claim which it may have against the Road Commission arising out of this or any other matter. If there is a dispute over the balance due upon completion, the Township will pay the amount claimed by the Road Commission, and such payment shall not be a waiver by the Township of any claims it may have arising from this contract and the completion of the project.

2. All work shall be performed in a good workmanlike manner and in accordance with plans and specifications adopted by the Road Commission.

3. The work will be completed within the current contract year, unless the parties otherwise so agree.

4. In the event the project cannot be completed due to circumstances beyond the control of the Road Commission, and through no fault of the Road Commission, the contract price for later completion will be subject to renegotiation.

IN WITNESS WHEREOF, the parties have hereunto set their hands and seals the date and year first above written.

TOWNSHIP OF HARTLAND

BY: _____
WILLIAM FOUNTAIN, SUPERVISOR

_____
LARRY N. CIOFU, CLERK

BOARD OF COUNTY ROAD COMMISSIONERS
OF THE COUNTY OF LIVINGSTON

BY: _____
STEVEN J. WASYLK, MANAGING DIRECTOR

_____
SARAH NEWTON, DIRECTOR OF FINANCE

Hartland Township Board of Trustees Meeting Agenda Memorandum

Submitted By: Robert M. West, Township Manager

Subject: FY2023-2024 Employee Merit Pool Discussion

Date: February 2, 2023

Recommended Action
No formal action is required at this time.

Discussion
Manager West will outline recommendations for the Township staff FY2023-2024 Employee Merit Pool to be included in the FY2023-2024 Township Budget. The Township Budget review is projected to be presented to the Township Board on February 21, 2023.