EAST LANSING AGENDA

Transportation Commission Meeting

6:00 PM - Monday, June 1, 2026

Hannah Community Center, 2nd Floor Executive Room

Public Comment - Email: sclayton@cityofeastlansing.com

		Page
1.	**CALL TO ORDER**	
1.1.	Roll Call	
1.2.	Approval of the agenda	
1.3.	Approval of the minutes Transportation Commission - 04 May 2026 - Minutes - Pdf	2 - 4
2.	**WRITTEN COMMUNICATIONS**	
3.	**COMMUNICATIONS FROM THE AUDIENCE**	
4.	**BUSINESS AGENDA**	
4.1.	Introduction of the Howard Traffic Impact Study for the July 13th Transportation Commission meeting Agenda Item Report - Pdf	5 - 113
4.2.	Traffic Calming Action Plan Scoring Matrix Discussion Agenda Item Report - Pdf	114 - 117
4.3.	Presentation on and Discussion Regarding the Graduate Hotel Valet Parking and Proposed Improvements to Traffic Agenda Item Report - Pdf	118 - 211
4.4.	Introduction of the Traffic Impact Study for 530 Albert Avenue for the July 13th Transportation Commission meeting. Agenda Item Report - Pdf	212 - 364
5.	**UNFINISHED BUSINESS AGENDA**	
6.	**COMMITTEE REPORTS**	
7.	**ANNOUNCEMENTS / BOARD MEMBER COMMENTS**	
8.	**ADJOURNMENT**	

MINUTES
Transportation Commission Meeting

6:00 PM - Monday, May 4, 2026
Hannah Community Center, 1st Floor, Banquet Hall

The Transportation Commission of the City of East Lansing was called to order on Monday, May 4, 2026, at 6:00 PM, in the Hannah Community Center, 1st Floor, Banquet Hall, with the following members present:

PRESENT: Commissioner Adan Quan, Commissioner Brianna Egan, Commissioner Evan Martin, Nathan Werner, Noah Vander Galien, Willem Nienhuis, and Commissioner Corwin Harris

EXCUSED: Mitchell Moore and Commissioner Ankita Shukla

1. CALL TO ORDER

Roll Call

Approval of the agenda

Moved by Willem Nienhuis, seconded by Noah Vander Galien, to approve.

Approval of the minutes

Moved by Corwin Harris, seconded by Willem Nienhuis, to approve as presented.

2. WRITTEN COMMUNICATIONS

Written Correspondence

3. COMMUNICATIONS FROM THE AUDIENCE - NONE

4. BUSINESS AGENDA

4.1 Traffic Calming Action Plan Update

Egan said the plan is much easier to understand by the community.

Clayton thanked Egan for all her work on the plan.

Egan said making the process clear and realistic, helps so people don't have unrealistic expectations. Such as having a score of 90, which seems relatively high, but being low priority on the list. They may feel they are in the high priority queue and have a perceived expectation that may not be valid.

Quan said the whole document is more accommodating to residents' concerns and he appreciates how it has evolved. He said traffic calming can be temporary or permanent and residents need for that to be made clear when a temporary or pilot "quick build" is installed.

Moved by Brianna Egan, seconded by Evan Martin, that the Transportation Commission direct staff to incorporate the revised Step 6 Evaluation Table, the structured 100-point prioritization scoring matrix, into the draft Traffic Calming Action Plan, in place of the current open-ended five-criterion evaluation, and that the revised Evaluation Table be presented as part of the final TCAP recommended to City Council for adoption, and allow staff to modify the proposed language to fit form and function, as long as intent is preserved.

YEA: Adan Quan, Brianna Egan, Evan Martin, Nathan Werner, Noah Vander Galien, Willem Nienhuis, and Corwin Harris

CARRIED

4.3 Prime Time Request for Transportation Committee

Clayton said the Seniors Commission is holding a Transportation Committee meeting on Friday, October 2, 2026 from 1:00 pm to 3:00 pm and asked for two members to join the Committee. Martin and Vander Galien will join the Transportation Committee of the Seniors Commission

4.4 Discussion of stop signs requested at the intersection of Sunset Lane and Oxford Road

Clayton said the intersection was evaluated last year but it did not meet the criteria. The consultants have since recommended the installation of an all way stop and Staff concurs.

Moved by Noah Vander Galien, seconded by Willem Nienhuis, to recommend in accordance with the MMTC to add all way stop signs at Sunset Lane and Oxford Road.

YEA: Adan Quan, Brianna Egan, Evan Martin, Nathan Werner, Noah Vander Galien, Willem Nienhuis, and Corwin Harris

CARRIED

4.5 Update from Bike Friendly Communities East Lansing

Martin gave an update of the program and invited staff and councilmembers to join the group rides. He said group rides are scheduled at 6:00 pm leaving from the East Lansing Public Library on Tuesday's beginning May 12, 2026. He also said that the group is continuing to advocate for bike lanes and safety as well as engaging with the community.

Martin asked if staff could get clarification from the city attorney whether multiple members of the Transportation Commission being on a Tuesday night ride only talking about bicycle matters and not transportation would constitute a

quorum of the Transportation Commission.

Vander Galien said they are trying to bring the Ready to Ride initiative of the League of American Bicyclists to East Lansing Schools. He said the program teaches children the fundamentals of how to ride a bike in school. He said the group is working on engage local businesses to give a discount to bike riders who patronize their establishment.

5. UNFINISHED BUSINESS AGENDA - NONE

6. COMMITTEE REPORTS - NONE

7. ANNOUNCEMENTS / BOARD MEMBER COMMENTS

Egan thanked the staff and commissioner for all the work on the Traffic Calming Action Plan. She asked when members of Southeast Marble neighborhood will see a map of the proposed changes as she has received questions from the neighborhood.

Clayton updated the Commission on the Southeast Marble neighborhood meetings. He said residents were invited to attend a meeting in January and one in April. He said the consensus was generally the addition of traffic circles and raised crosswalks. Also, staff met with the Neighborhood Association and the “grass roots” of the neighborhood and both were supportive of the plan. He also said that the neighborhood will receive the map and proposed changes probably at the end of the week.

Egan asked if there are sidewalks at the intersections of the round-abouts. She said there is confusion about right away if a bike approaches a round-about.

Clayton said they all have connecting lanes on either side and there will be ADA improvements as well.

Martin asked if submitting a letter to MDOT and the Southeast Marble neighborhood about possibly making some streets not cut through.

Harris said enforcement is going to be an issue.

8. ADJOURNMENT

Moved by Evan Martin, seconded by Noah Vander Galien, to adjourn.

Transportation Commission

AGENDA ITEM REPORT

To:	Transportation Commission
Subject:	Introduction of the Howard Traffic Impact Study for the July 13th Transportation Commission meeting
Meeting:	Transportation Commission - 01 Jun 2026
Department:	Public Works
Staff Contact:	Stephen Clayton, Engineering Administrator

BACKGROUND INFORMATION:

Staff are working with the developer to present the Howard traffic study and proposed loading area on Charles Street on July 13th, 2026 for review and comment.

The most recently submitted traffic impact study, parking analysis, and traffic engineer response letter, as well as the latest plan set, are attached for reference.

ATTACHMENTS:

The Howard_Parking Analysis_Final_030226docx
The Howard - Traffic Analysis and Mitigation Final Memo (05-05-2026)
LT_The Howard TIS Review_2026_0513
5.19.26 KEBS E-1048274-SET-5-18-26

Prepared for Harbor Bay Ventures

The Howard Development

Parking Analysis

March 2, 2026

WALKER CONSULTANTS

Contents

Executive Summary 2
Introduction 3
Transit and Walkability 3
On-Campus Permits and Local Economic Factors 4
East Lansing Off-Street Parking Requirements 5
University Towns and Multifamily Residential Parking 6
Projected Parking Needs 7
Projected Shared Parking Needs 8
Design Day Conditions 8
Residential Parking Planning Ratios 8
Projected Residential Off-Site Parking Need 8
Projected Total Parking Need by Hour of Day and Month of Year 9
East Lansing Off-Street Public Parking System 11
Public Parking Inventory and Occupancy 11
Parking Garage Inventory and Availability 12
Parking Policy Considerations 12
Presence Factor 12
Future Parking Accommodations 13
Proximate Available Supply 13
Permit Management 13
MSU Commuter Lot Program 13

List of Figures

Figure 1: Project Site 3
Figure 2: Parking Ratios at Comparable Multifamily Residential Developments 6
Figure 3: Shared Parking Analysis Methodology 7
Figure 4: Shared Parking Summary 8
Figure 5: Weekday – Projected Parking Need by Hour 9
Figure 6: Weekend – Projected Parking Need by Hour 9
Figure 7: Weekday – Month-by-Month Estimated Total Parking Need 10
Figure 8: Weekend – Month-by-Month Estimated Total Parking Need 10
Figure 9: Parking Occupancy Data - Spring and Fall 2025 11
Figure 10: Off-Site Parking Occupancy Data - Fall 2025 12

Executive Summary

The purpose of this analysis is to evaluate future residential parking needs for The Howard development and to provide an understanding of local parking market conditions and shared parking opportunities in the B-3 District.

- **Development Program:** The residential and commercial development program for The Howard includes 296 apartment units (748 beds) and 8,000 square feet of retail and restaurant spaces.

- **Project Site:** The project site is in the 400 block of East Grand River Avenue in East Lansing, MI. The site is rated a "Walker's Paradise" with a WalkScore of 91 and a BikeScore of 96, both of which are defined as "daily errands that do not require a car."

- **Code Review:** The City of East Lansing's Code of Ordinances, Chapter 50 – Zoning, Article VIII – Off-Street Parking Requirements, Section 50-814(4) allows high-density residential and mixed-use developments in the City Center Commercial District (B-3) to meet their off-street parking needs using off-premises parking facilities and emphasizes reliance on the city's consolidated parking system.

- **Projected Residential Parking Need:** A 156-space parking need is projected for residents under peak weekday conditions, defined as a Thursday in September at 10:00 p.m. This corresponds to parking planning ratios of approximately 0.53 per unit and 0.21 per bed, based on the proposed development program of 296 units and 748 beds.

    - Approximately 156 permitted parking spaces are needed. The proposed development plan includes no on-site parking and relies on the public parking system for the permitted parking spaces.

    - There are approximately 430 unoccupied spaces located in the Division St., Charles St., and M.A.C. garages during peak weekday conditions. The Parking Division indicated that approximately 215 may be available for permit use (half of the available supply), with the balance allocated for daily patrons and an operational cushion – there is some flexibility in these numbers; however, there are existing permit agreements with downtown businesses/buildings in the Division St. and Charles St. garages that must be honored.

    - The Parking Division aims to maintain access for both permit and transient parkers. Adding 150 or more new permits to a single property poses the operational risk of displacing the hourly parking supply used by downtown businesses. If all needed off-site residential permits for The Howard cannot be accommodated in the adjacent Division St. Garage, the likely solution involves a permit agreement between The Howard and the Parking Division for monthly residential permits in the Division St. and Charles St. garages, and potentially the M.A.C. Garage if needed. All three off-site locations are within a 3- to 5-minute walk of The Howard.

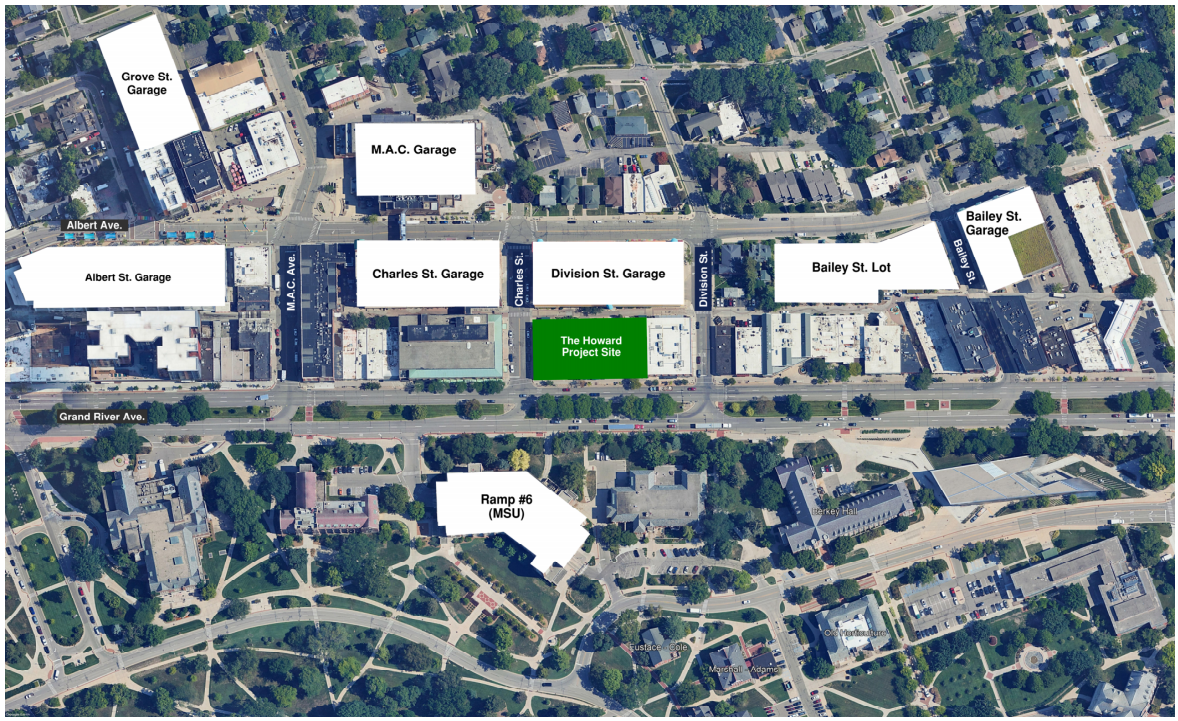
- **Projected Transient and Employee Parking Needs:** A 25-space parking need is projected for visitors, restaurant guests, retail patrons, and employees under peak weekday conditions, defined as a Thursday in September at 10:00 p.m. The nearby public on- and off-street parking inventory can accommodate this demand.

Introduction

The Howard development is a proposed 12-story, high-density residential building with at-grade commercial space, located in the City Center Commercial District (B-3) on the 400 block of East Grand River Avenue in East Lansing. The development program includes 296 apartment units (748 beds), 4,000 square feet of retail, and 4,000 square feet of restaurant space. Off-site parking options are available within a two-block radius, a 3–5-minute walk, including three public parking garages and one surface lot. Notably, the city-owned Division Street Garage, with a capacity of 615 spaces, is situated adjacent to the project site.

The purpose of this parking analysis is to identify the future parking needs and practical parking solutions that accommodate residents and visitors of The Howard.

Figure 1: Project Site



Transit and Walkability

The site's direct access to public transit, comprehensive walkable amenities, and proximity to the MSU campus are contributing factors in assessing future parking needs for The Howard. Prospective tenants include undergraduate students seeking to live near campus, graduate students, postdoctoral researchers, Michigan State University (MSU) faculty and staff, as well as professionals working on or near campus who seek facility amenities, proximity, and multimodal accessibility over car access.

The Howard incorporates several design elements that promote a student-oriented and pedestrian-friendly development. The project site is located at the intersection of East Grand River Avenue and Charles Street, directly across from the MSU campus. East Grand River Avenue is a major transit corridor in East Lansing, with five bus routes that connect the site to the MSU campus, Downtown Lansing, and other locations throughout East Lansing and the surrounding townships. Adjacent bus routes include the 1, 20, 24, 26, and 48, while the 22 and 23 routes are within walking distance.

The project site is rated as a "Walker's Paradise" with a WalkScore of 91 and a BikeScore of 96, both of which are defined as "daily errands that do not require a car." In addition to the numerous goods and local services available in the blocks surrounding the development site, the site is conveniently located within three blocks of a Target, allowing residents to run errands and purchase groceries without a personal vehicle or relying on public transportation.

The Howard project site is located one block away from the Michigan Flyer's East Lansing pickup/drop-off station outside of University Place. The Michigan Flyer makes 14 daily round-trips between East Lansing, Ann Arbor, and the DTW airport.

The Capital Area Multimodal Gateway, which offers Amtrak rail service, is located at 1240 South Harrison Road and is accessible via the CATA 20 route. Bus stops at EBD #1654 and WBD #1657, located on Grand River Avenue near the intersection of Division Street, are approximately a 10-minute ride to and from the train station. Additional transportation options, including taxi and transportation network companies, are available to and from the Capital Area Multimodal Gateway.

On-Campus Permits and Local Economic Factors

MSU Parking Services actively oversees parking availability, applying pricing policies and allocation practices to facilitate student access to campus. Student parking permits are available on a first-come, first-served basis through an online portal. With campus parking demand being relatively high, many popular options, including commuter lots and several resident lots, sell out quickly and move to waitlists. Additionally, resident parking permits at university apartments, including University Village and 1855 Place, sell out each year. MSU parking supply is managed through a combination of lot allocation, eligibility rules (e.g., on-campus residents must have 28+ credits), and demand, which remains consistently high for preferred parking near residence halls or academic areas.

Permit rates for MSU on-campus residents range from $107 to $388 for the academic year, or approximately $12 to $43 per month. These rates are relatively low compared with those charged at off-campus student residences and by the City of East Lansing. Monthly permits for public East Lansing parking garages cost between $90 and $130. The starting monthly parking permit rates are $ 130 for Landmark, $115 for The Hub, and $250 for the Abbot. When comparing on-campus and off-campus rates, the relatively low cost of parking for on-campus residents at MSU contributes to high permit purchase rates and waitlists.

Walker's national research indicates that student demand for on-campus parking is price-sensitive; lower prices encourage more students to buy permits and park on campus, while higher permit fees generally discourage bringing vehicles, lowering demand. Demand for student parking is also influenced by the availability and quality of alternative transportation options. Pedestrian-friendly infrastructure, biking, ridesharing, delivery services, and a robust and affordable public transit system reduce the need for a car to get around.

The Howard has not yet set a monthly parking fee for residents, but it is reasonable to expect residents to pay higher monthly permit rates than those charged on campus. Consequently, the resident vehicle ownership rate at The Howard will likely be lower than that of eligible MSU on-campus residents. This assumption is based on the following: parking demand is elastic, with studies suggesting negative price elasticities of -0.3 to -0.5 or higher for parking volume/mode choice; resident parking will likely be unbundled from rent, providing financial flexibility; and The Howard is adjacent to reliable and multiple transportation options and amenities.

East Lansing Off-Street Parking Requirements

Section 50-814(4) of the Code of Ordinances allows high-density residential and mixed-use developments in the City Center Commercial District (B-3) to meet their off-street parking needs using off-premises parking facilities and emphasizes reliance on the city's consolidated parking system. Off-premises parking facilities may be located within one-quarter mile of the intended use. The Howard site is within a quarter of a mile of seven (7) off-street parking facilities, with the most proximate being Division Street, Charles Street, and M.A.C. garages. The Code requires that off-premises parking facilities remain available to serve the intended use and that, if a municipal parking facility is used, parking passes must be purchased on an annual basis.

This parking analysis follows the B-3 parking reform framework, which considers no minimum parking requirements and focuses on the use of public parking assets within a shared parking system. The following sections of this report include a review of parking ratios at comparable student- and transit-oriented residential complexes, the analysis of projected parking need for the proposed site, and off-premises parking options within the public parking system. The Parking Garage Inventory and Availability section of this analysis includes data regarding off-premises public parking that may be available for lease by The Howard tenants.

University Towns and Multifamily Residential Parking

Given the student- and pedestrian-oriented nature of the B-3 district and its proximity to the MSU campus, recently built student residential developments have parking ratios below the general requirements for off-street parking codified in Chapter 50 – Zoning, Article VIII – Off-Street Parking Requirements. This is because students have lower vehicle ownership, commercial uses serve people already on foot, and sites are near transit routes, resulting in more trips by transit or bike.

Figure 2 compares parking ratios across thirteen (13) residential developments near major university campuses, primarily leased by college students and adjacent to public transit and new mobility options. Among peer developments, per-bed ratios range from 0.07 to 0.44, with an average of 0.21 spaces/bed. The number of parking stalls per unit ranges from 0.22 to 0.74, with an average of 0.51 per unit.

Figure 2: Parking Ratios at Comparable Multifamily Residential Developments

Development Name	City	Year Built	Parking	Total units	Total beds	Parking Ratio (spaces/unit)	Parking Ratio (spaces/bed)
The Abbot	East Lansing	2020	89	196	398	0.45	0.22
The Hub	East Lansing	2019	158	347	568	0.46	0.28
The Landmark (1)	East Lansing	2019	202	273	464	0.74	0.44
VERVE	Ann Arbor	2025	103	228	677	0.45	0.15
The Legacy	Ann Arbor	2025	118	253	521	0.47	0.23
The Yard	Ann Arbor	2018	225	359	1,047	0.63	0.21
Hub Five Corners (2)	Ann Arbor	2026	82	368	1,217	0.22	0.07
Hub Bassett	Madison	2025	165	232	910	0.71	0.18
oLiv Madison	Madison	2024	182	376	1,099	0.48	0.17
The James	Madison	2017	165	348	870	0.47	0.19
The Dean	Champaign-Urbana	2021	160	322	672	0.50	0.24
Hub Champaign	Champaign-Urbana	2021	140	241	569	0.58	0.25
HERE Champaign	Champaign-Urbana	2015	220	526	1,630	0.42	0.13
	Average			**313**	**819**	**0.51**	**0.21**
	Median			**322**	**677**	**0.47**	**0.21**
	High			**526**	**1630**	**0.74**	**0.44**
	Low			**196**	**398**	**0.22**	**0.07**

Source: Walker Research 2026. Data obtained from a combination of approved building plans, property management interviews, and site observations.

(1) Two hundred and two (202) parking spaces for the commercial and residential tenants of Landmark Buildings A1 and A2. An additional 114 spaces are included in the Landmark master parking agreement for dedicated use by other building tenants.

(2) Under construction. Actual capacity may vary.

University towns are increasingly reforming parking minimums and policies to boost economic growth, improve housing, enhance walkability, and optimize the use of public parking investments. These reforms aim to create more pedestrian-centered communities and support sustainable development practices. The parking ratios presented in Figure 2 reflect developments in transit-rich, walkable city districts with increased bicycle parking requirements and flexible or no minimum parking requirements.

Projected Parking Needs

Walker utilized industry research and the Shared Parking methodology to project the parking needs of the land uses included in the development program for The Howard. The shared parking analysis and corresponding conclusions presented below are based on recommendations and data presented by the Urban Land Institute (ULI), the Institute of Traffic Engineers (ITE), the International Council of Shopping Centers (ICSC), and specifically ULI's shared parking methodology, using ITE- and ULI-supplied data as presented in *Shared Parking,* as well as Walker's experience in similar municipalities evaluating multifamily residential development plans. Shared parking is defined as the ability to use the same parking resource by multiple nearby or adjacent land uses without encroachment on each other's use. The basic premise is that in a mixed-use area, the combination of land uses will usually result in less parking being needed than would be the case if those same land uses were all stand-alone developments building to their individual peak needs.

A shared parking analysis begins by multiplying the land-use quantities of a development, such as the number of residential dwelling units, by a base demand ratio. Base parking demand ratios, as determined by the ULI Shared Parking model and, in some cases, refined through additional research by Walker, serve as a starting point for the analysis. Based on research on the parking generation rates for free-standing developments, these industry standards are later adjusted to reflect site-specific conditions.

Walker applies two adjustments to the base parking demand ratios: one to reflect an estimate of the local transportation modal split and vehicle ownership rate (the drive ratio), and another to account for the best estimate of captive-market effects (the non-captive ratio). The monthly and hourly factors are calibrated to reflect the tenant presence in East Lansing by month of year and time of day. The following graphic illustrates the variables involved in the shared parking analysis.

Figure 3: Shared Parking Analysis Methodology

Land Use Units (Number of rooms, square footage, etc.)	X	Standard or Base Parking Generation Ratio	X	Monthly Factor	X	Hourly Factor	X	Driving Ratio	X	Non-Captive Ratio	=	Total

Source: Walker Consultants, 2026

The primary goal of a shared parking analysis is to strike a balance between providing sufficient parking to support a development from a commercial and operational perspective, while protecting the interests of neighboring property owners and minimizing the negative aspects of excessive land area or resources devoted to parking. The goal of a shared parking analysis is to identify a reasonably predictable scenario during peak periods or a design-day condition.

Projected Shared Parking Needs

Design Day Conditions

The projected design day condition occurs near 10:00 p.m. on a typical non-event weekday in September during the Fall semester.

The projection represents the combined parking needs of the residential and commercial components, including 156 residential spaces, 3 employee spaces, and 22 customer/visitor spaces.

The proposed allocation plan during design day conditions includes 156 off-street residential permits in nearby public parking garages, 3 employee parking permits in the public garages, and 22 customer and visitor spaces distributed across nearby on-street and transient parking areas in the public garages.

Residential Parking Planning Ratios

Typical Peak Weekday Conditions: A 156-space parking need is projected for residents during peak weekday conditions. This corresponds to parking planning ratios of 0.21 per bed and 0.53 per unit, based on the proposed development program of 296 units and 748 beds.

Figure 4: Shared Parking Summary

Peak Month: SEPTEMBER -- Peak Period: 10 PM, WEEKDAY

Land Use	Project Data		Weekday					Weekend					Weekday			Weekend		
	Quantity	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit	Base Ratio	Driving Adj	Non-Captive Ratio	Project Ratio	Unit	Peak Hr Adj 10 PM	Peak Mo Adj September	Est. Parking Need	Peak Hr Adj 10 PM	Peak Mo Adj September	Est. Parking Need
Retail	4,000	sf GLA	2.90	25%	91%	0.66	ksf GLA	3.20	25%	92%	0.74	ksf GLA	15%	66%	-	30%	66%	1
Employee			0.70	60%	73%	0.31		0.80	60%	71%	0.34		40%	76%	-	45%	76%	1
Casual Dining	4,000	sf GLA	12.40	25%	91%	2.83	ksf GLA	12.70	25%	87%	2.76	ksf GLA	75%	100%	10	80%	100%	12
Employee			2.00	60%	73%	0.88		2.00	60%	71%	0.85		90%	100%	3	100%	100%	4
Residential																		
Studio	98	units	0.50	35%	100%	0.18	unit	0.50	35%	100%	0.18	unit	100%	100%	17	85%	100%	15
1 Bed	30	units	0.90	35%	100%	0.32	unit	0.90	35%	100%	0.32	unit	100%	100%	9	85%	100%	8
2 Beds	21	units	1.50	35%	100%	0.53	unit	1.50	35%	100%	0.53	unit	100%	100%	11	85%	100%	10
3+ Beds	147	units	2.30	35%	100%	0.81	unit	2.30	35%	100%	0.81	unit	100%	100%	119	85%	100%	101
Reserved		spaces	0.00	0%	100%	0.00	unit	0.00	0%	100%	0.00	unit	100%	100%	-	100%	100%	-
Visitor	296	units	0.10	40%	100%	0.04	unit	0.15	25%	100%	0.04	unit	100%	100%	12	100%	100%	14
													Customer/Visitor		22			27
													Resident/Employee		159			139
													Reserved		-			-
													Total		**181**			**166**
													Resident Only		**156**			**134**
													Bed Ratio		**0.21**			**0.18**
													Unit Ratio		**0.53**			**0.45**

Source: ULI Shared Parking model. Research and Analysis prepared by Walker Consultants, 2026.

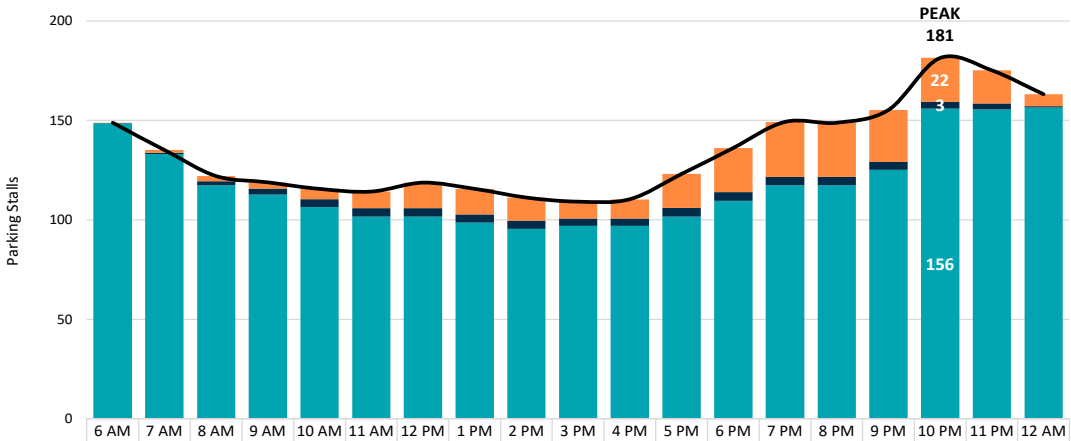
Projected Residential Off-Site Parking Need

156 residential permit parking spaces in city-owned parking garages

Projected Total Parking Need by Hour of Day and Month of Year

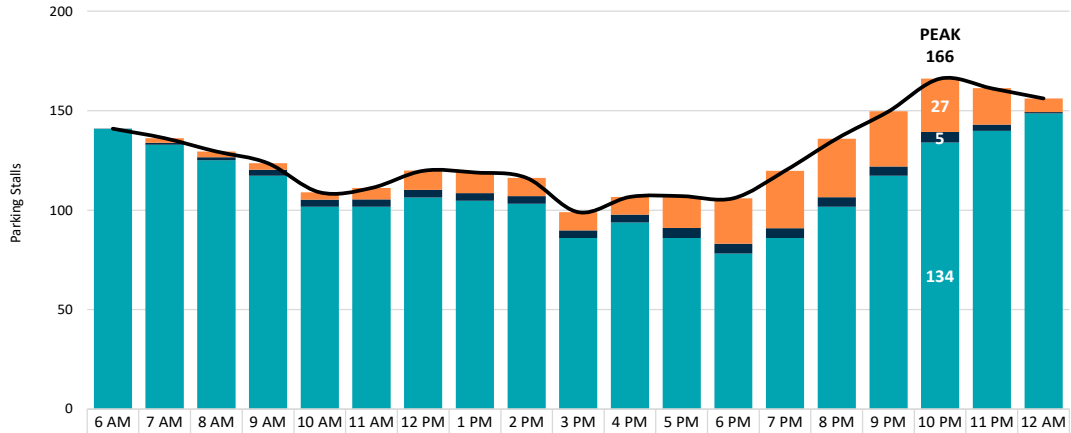
The projected parking needs by hour of day and month of year are shown in Figures 5 and 6.

Figure 5: Weekday – Projected Parking Need by Hour



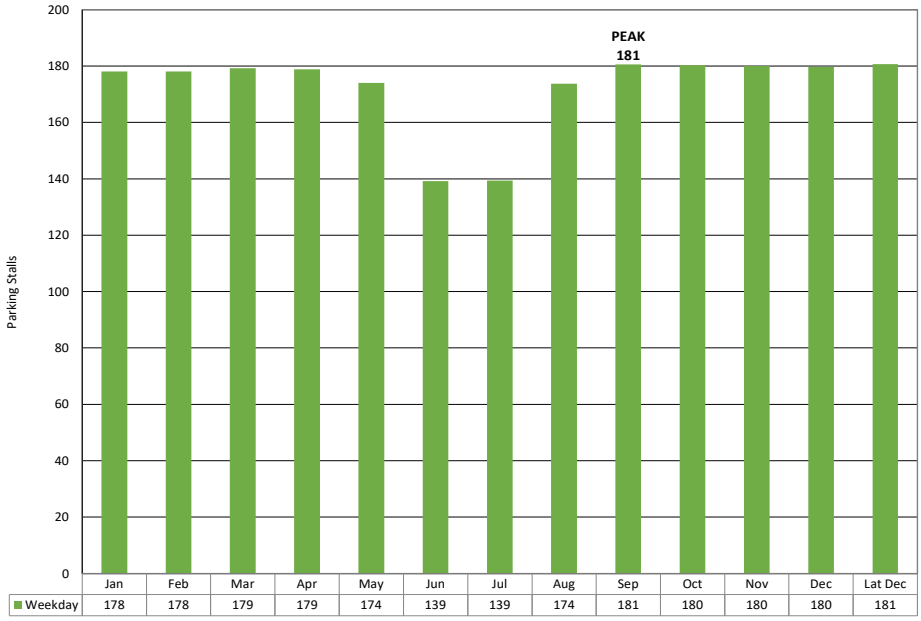
	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
Customer/Visitor	0	1	3	3	5	8	13	13	12	9	10	17	22	28	27	26	22	17	6
Employee	0	1	2	3	4	4	4	4	4	4	4	4	4	4	4	4	3	3	1
Resident	149	133	117	113	106	102	102	99	95	97	97	102	110	117	117	125	156	155	156
Total	149	135	122	119	116	114	119	116	111	109	110	123	136	149	149	155	181	175	163

Figure 6: Weekend – Projected Parking Need by Hour



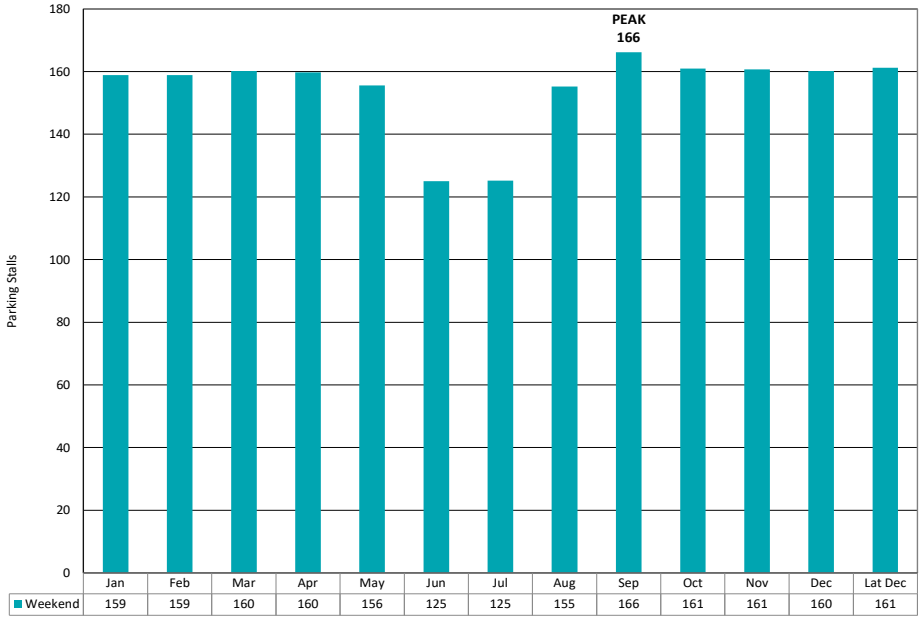
	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM
Customer/Visitor	0	2	3	3	4	6	10	10	9	9	9	16	23	29	29	28	27	18	7
Employee	0	1	2	3	4	4	4	4	4	4	4	5	5	5	5	5	5	3	1
Resident	141	133	125	117	102	102	106	105	103	86	94	86	78	86	102	117	134	140	149
Total	141	136	130	124	109	111	120	119	116	99	107	107	106	120	136	150	166	161	156

Figure 7: Weekday – Month-by-Month Estimated Total Parking Need



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Lat Dec
Weekday	178	178	179	179	174	139	139	174	181	180	180	180	181

Figure 8: Weekend – Month-by-Month Estimated Total Parking Need



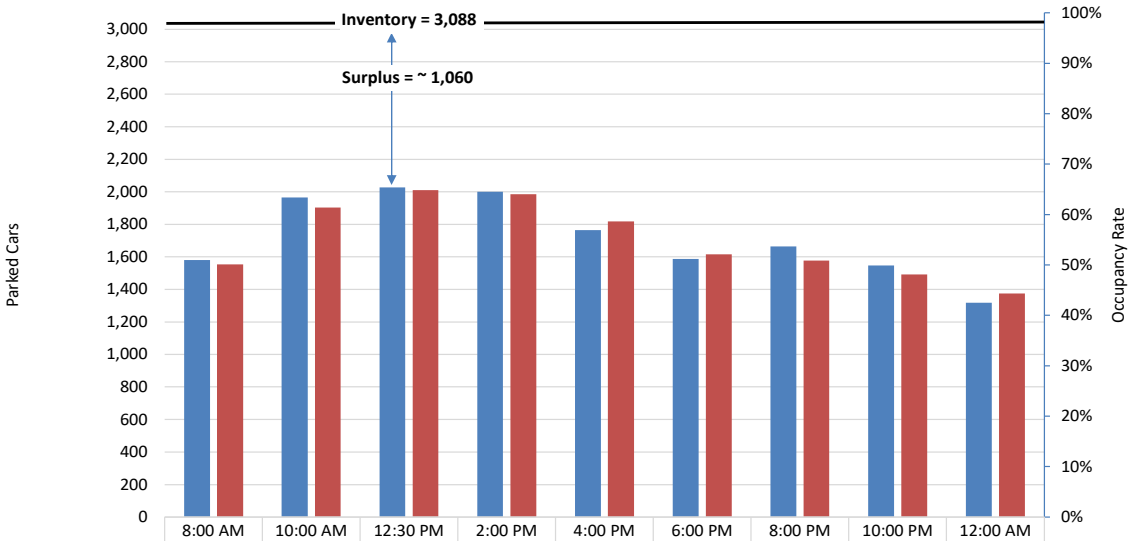
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Lat Dec
Weekend	159	159	160	160	156	125	125	155	166	161	161	160	161

East Lansing Off-Street Public Parking System

Public Parking Inventory and Occupancy

There are currently 3,088 parking spaces in the downtown East Lansing public parking system, located in on-street parking, surface lots, and parking garages. The Parking Division provided historical parking occupancy data, documented in the Spring and Fall of 2025, indicating that peak occupancy of 66 percent occurs near 12:30 p.m. on Thursdays. While overall parking system utilization has increased in recent years, it operates with a surplus of approximately 1,060 spaces during peak weekday conditions.

Figure 9: Parking Occupancy Data - Spring and Fall 2025



	8:00 AM	10:00 AM	12:30 PM	2:00 PM	4:00 PM	6:00 PM	8:00 PM	10:00 PM	12:00 AM
Spring 2025	1,581	1,966	2,028	2,000	1,765	1,587	1,664	1,548	1,319
Spring Occupancy	51%	64%	66%	65%	57%	51%	54%	50%	43%
Fall 2025	1,554	1,904	2,011	1,985	1,818	1,615	1,578	1,492	1,375
Fall Occupancy	50%	62%	65%	64%	59%	52%	51%	48%	45%

Source: City of East Lansing Parking Division, December 2025; Data analyzed by Walker Consultants.

Parking Garage Inventory and Availability

Residents of The Howard who desire a parking space will need to obtain a monthly permit off-site. The city-owned Division, Charles, and M.A.C. garages offer a combined parking inventory of 1,532 spaces and are conveniently located within a 3–5-minute walk from the Howard project site. To understand the utilization patterns and the number of unoccupied parking stalls throughout a typical weekday, Walker evaluated data from Fall 2025 provided by the Parking Division.

Peak weekday conditions occurred on Thursday at approximately 12:30 p.m., with a 69 percent occupancy rate and 468 parking stalls remaining unoccupied. Occupancy decreases late at night and early in the morning, to 44 percent, with approximately 856 parking stalls remaining unoccupied.

Figure 10: Off-Site Parking Occupancy Data - Fall 2025

Parking Garages	Inventory	AM Occupancy				PM Occupancy												AM	
		8:00		10:00		12:30		2:00		4:00		6:00		8:00		10:00		12:00	
Lot 10: Division Garage	**615**	288	47%	354	58%	**384**	**62%**	380	62%	347	56%	275	45%	259	42%	**242**	**39%**	241	39%
Lot 3: Charles Garage	**679**	293	43%	466	69%	**489**	**72%**	487	72%	418	62%	324	48%	299	44%	**285**	**42%**	245	36%
Lot 12: M.A.C. Garage	**238**	188	79%	193	81%	**191**	**80%**	194	82%	191	80%	147	62%	150	63%	**149**	**63%**	150	63%
Total	**1,532**	**769**	**50%**	**1,013**	**66%**	**1,064**	**69%**	**1,061**	**69%**	**956**	**62%**	**746**	**49%**	**708**	**46%**	**676**	**44%**	**636**	**42%**
Unoccupied Parking Inventory		**763**		**519**		**468**		**471**		**576**		**786**		**824**		**856**		**896**	

Source: City of East Lansing Parking Division, 2025; Data analyzed by Walker Consultants.
Note permits are sold monthly, and the number of units sold fluctuates throughout the year.

Parking Policy Considerations

The operating policy for the parking garages aims to strike a balance between access for transient and monthly parkers. Therefore, each public parking garage has a limit on the number of monthly parking permits sold, ensuring that transient patrons have access to nearby retail, restaurants, and businesses. There is flexibility in the limit of active permits administered by the Parking Division, which routinely monitors facility operations and the parking needs of the downtown community. For example, the Parking Division follows industry practice by maintaining an inventory buffer at each garage to optimize utilization, balance demand fluctuations, and ensure operational continuity across downtown facilities. This practice aligns with buffer stock management, which maintains a reserve to absorb variability and prevent shortages. The combined buffer across the three garages is 149 spaces: 49 in the Division St. Garage, 50 in the Charles St. Garage, and 50 in the M.A.C. Garage.

Presence Factor

The number of permits sold (active permits) can exceed the allocated supply for permit parkers, as peak utilization (presence) ranges from approximately 40 to 70 percent. Example – Division St. Garage has about 500 active permits. Peak permit occupancy (presence) is approximately 300, or 60 percent occupancy. The predictability of permit parking activity and buffer practice allows the Parking Division to oversell permits.

Future Parking Accommodations

The analysis shows the need for 156 permit parking spaces for residents of The Howard. The development plan does not include new on-site parking. Therefore, approximately 156 off-site permitted parking spaces are needed in the public garages.

Proximate Available Supply

About 430 spaces are available at Division St., Charles St., and M.A.C. garages during peak conditions.

Permit Management

Of the 430 spaces, the City indicated that approximately 215 may be available for permit use (half of the available supply), with the balance allocated for daily patrons and an operational cushion – there is some flexibility in these numbers; however, there are existing permit agreements with downtown businesses/buildings in the Division St. and Charles St. garages that must be honored.

The Parking Division aims to maintain access for both permit and transient parkers. Adding 156 permits to a single property may pose the operational risk of displacing the hourly parking supply used by downtown businesses. If all off-site residential permits for The Howard cannot be accommodated in a single garage, the likely solution may involve a permit agreement between The Howard and the Parking Division for monthly residential permits in the Division St. and Charles St. garages, and potentially the M.A.C. Garage.

MSU Commuter Lot Program

It is Walker's understanding that the City Planning Department is coordinating with MSU to explore offering a commuter lot program for downtown residents. The program could help alleviate pent-up residential parking demand and future parking needs, support MSU in maximizing use of its existing parking assets, and generate additional revenue for the university. The program may be appealing to price-sensitive residents who use their vehicles infrequently. As a result, the city's parking garages may see an increase in permit availability when residents are offered a high-quality, lower-cost alternative. This program may also appeal to future residents of The Howard.

MEMO

TO: City of East Lansing, Harbor Bay Ventures

FROM: WSP Michigan, Inc.

SUBJECT: **The Howard - Traffic Analysis and Mitigation**

DATE: **May 5, 2026**

SUMMARY

The purpose of this memo is to expand on the *Traffic Assumptions and Approach Memo* and document the traffic analysis for The Howard development proposed by Harbor Bay Ventures in East Lansing, Michigan. The proposed facility consists of a 12-story residential housing development with ground-floor commercial space. The analysis details existing 2026 traffic conditions, traffic forecasts, impacts of the proposed development on the existing roadway system, and recommended improvements if necessary. The four intersections comprising the study area are:

- Grand River Avenue and Division Street (signalized)
- Albert Avenue and Division Street (all-way STOP)
- Albert Avenue and Charles Street (all-way STOP)
- Grand River Avenue and Charles Street (two-way STOP)

Background conditions without the development and forecasted conditions with the development were analyzed to assess the potential impact on the surrounding road network. A conservative growth rate of 0.5 percent per year was used. Overall, the proposed development The Howard is anticipated to have little impact on the surrounding road network. The intersection at Grand River Avenue and Charles Street is expected to experience the largest impact because of the proposed development. Recommendations were provided to accommodate the forecasted growth of non-motorized road users within the study area.

EXISTING CONDITIONS

SITE LOCATION

The Howard is expected to replace existing land use located in the northeast quadrant of Grand River Avenue and Charles Street. The existing land use currently comprises of vacant space and the following:

- Coffee Shop 2,600 SF
- Bookstore 25,000 SF

DATA COLLECTION

Turning-movement counts were collected by our vender Quality Counts LLC at the following four intersections adjacent to the proposed site:

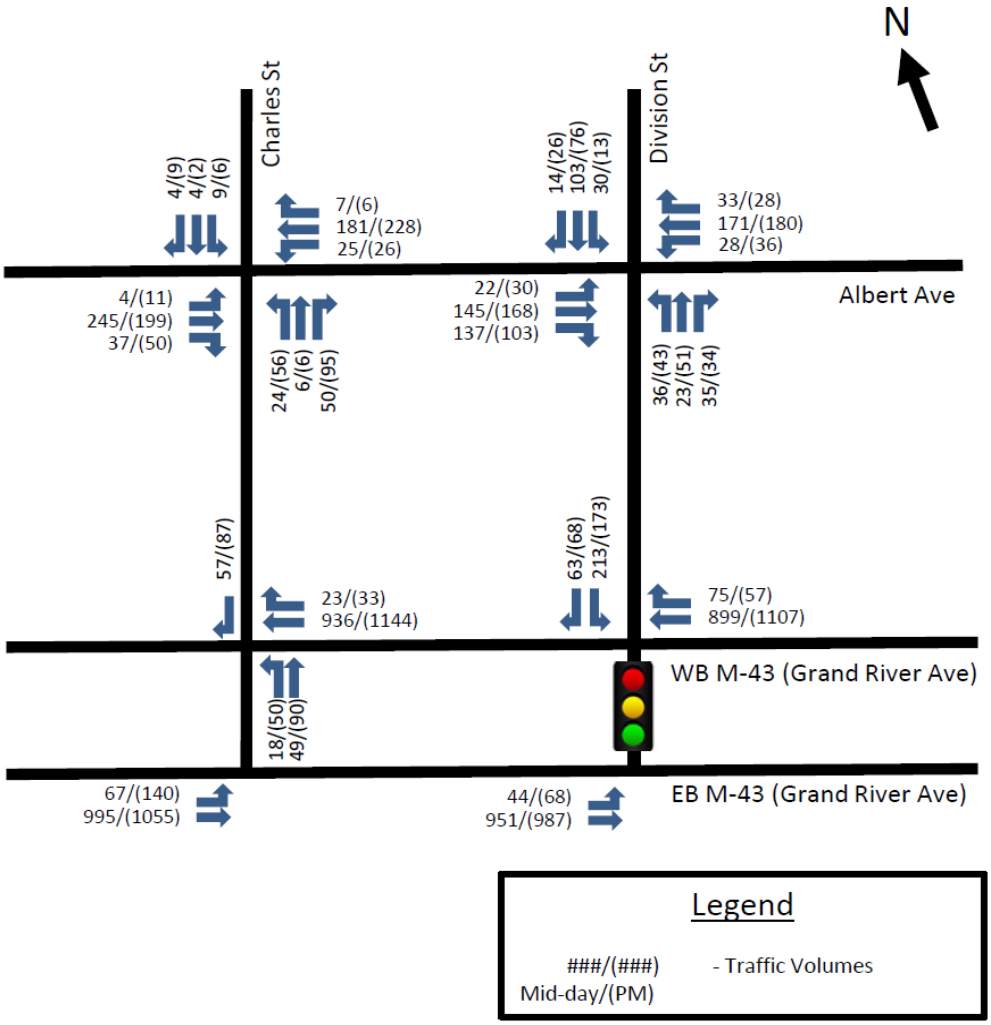
- Grand River Avenue and Division Street (signalized)
- Albert Avenue and Division Street (all-way STOP)
- Albert Avenue and Charles Street (all-way STOP)
- Grand River Avenue and Charles Street (two-way STOP)

Counts were collected while Michigan State University was in session during the mid-day and PM peak periods from 11AM to 1PM and 4PM to 6PM during a typical weekday on Tuesday, January 13, 2026,

The existing lane configurations, posted speeds, and traffic control devices were also collected for use in the analysis. The traffic signal timing permit was obtained from MDOT for the signalized intersection at Grand River Avenue and Division Street. The traffic signal timing permits can be found in **Attachment 1**.

EXISTING 2026 TRAFFIC CONDITIONS

Based on the turning-movement counts, the mid-day peak hour for all four intersections was 11:45 AM – 12:45 PM. The PM peak hour varied between the study intersections with the most common peak hour at 4:30 PM – 5:30 PM. **Figure 1** illustrates the existing peak hour traffic volumes for each of the study locations. Additional traffic volume data, such as heavy vehicle percents and pedestrian counts are provided in **Attachment 2**.



Note: Traffic volumes in Synchro may differ slightly to address minor volume imbalances.

Figure 1 – Existing Peak Hour Turning Movement Counts (2026)

Table 1 summarizes the delay and levels of service (LOS) for each of the study intersections as analyzed in 2026 and reported by Synchro 12. Detailed Synchro analysis reports are provided in **Attachment 3**. Overall, all intersections operate at an acceptable level of service during the mid-day and PM peak hours. However, the northbound cross-over approach at Grand River Avenue and Charles Street, experiences long delays during the PM peak hour resulting in a LOS E. A review of the SimTraffic simulation for this model found that there was no significant queuing for the northbound x-over at Grand River Avenue and Charles Street.

Table 1: Mid-day and PM Peak Hour Levels of Service for 2026 (Existing) Conditions

Intersection		Mid-day Peak Hour		PM Peak Hour	
	Approach	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Grand River Avenue & Division Street (signalized)	Eastbound	7.0	A	6.6	A
	Westbound	21.2	C	23.1	C
	Southbound	26.5	C	23.9	C
	Overall	**15.6**	**B**	**16.3**	**B**
Albert Avenue & Division Street (all-way STOP)	Eastbound	10.7	B	10.5	B
	Westbound	11.7	B	12.5	B
	Northbound	9.4	A	9.5	A
	Southbound	13.1	B	11.8	B
	Overall	**11.2**	**B**	**11.2**	**B**
Albert Avenue & Charles Street (all-way STOP)	Eastbound	11.1	B	10.0	A
	Westbound	11.8	B	13.3	B
	Northbound	8.3	A	8.9	A
	Southbound	9.6	A	9.6	A
	Overall	**11.0**	**B**	**10.9**	**B**
Grand River Avenue & Charles Street (two-way STOP)	Westbound	0.0	A	0.0	A
	Northbound x-over	20.0	C	38.7	E
	Southbound	10.3	B	11.9	B
	Overall	**1.9**	**A**	**4.6**	**A**

Source: Synchro 12
LOS = Level of Service; sec / veh = seconds per vehicle

PROPOSED DEVELOPMENT CONDITIONS

CHARACTERISTICS OF THE HOWARD

To determine the impact the proposed development will have on the surrounding road network, an assessment of the amount of traffic generated by the development was performed. Based on the Land Use Development Application dated November 5, 2025, and subsequently updated site plan provided on February 26, 2026, The Howard is a 12-story residential housing development with ground-floor commercial space. It will consist of 292 dwelling units. **Figure 2** shows the updated site plan that features a loading zone with curb bump outs on Charles Street, loading dock in the alley way, proposed building configuration, and added bicycle storage adjacent to Grand River Avenue. The anticipated opening year for the proposed development is 2028.

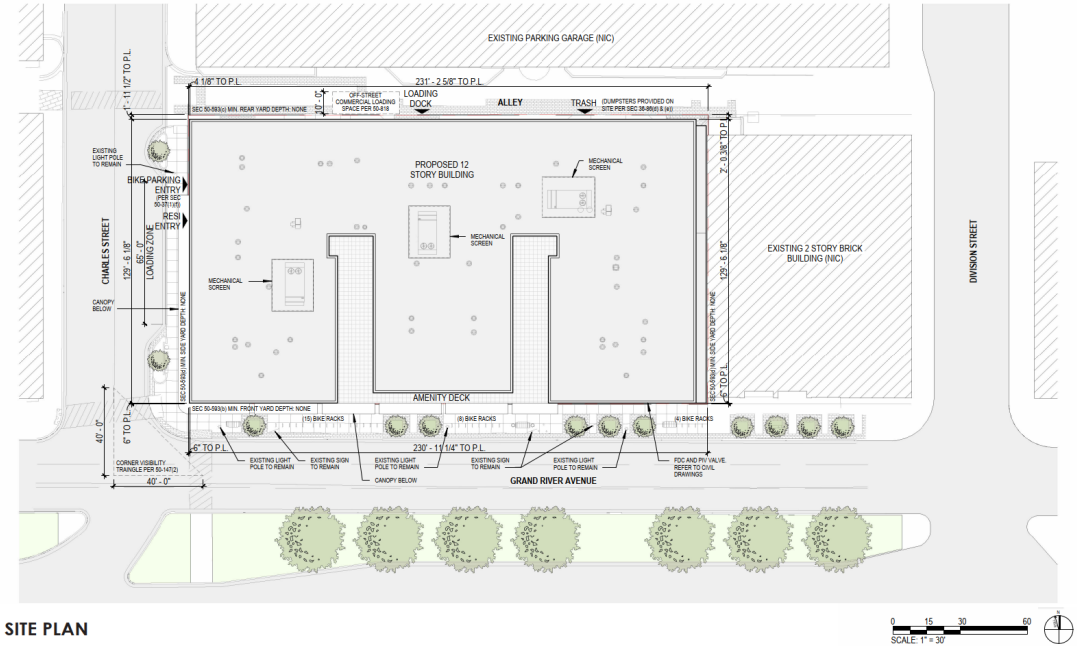


Figure 2 - Proposed Site Plan (Received February 26, 2026)

PARKING ACCESS

Residential parking requirements will be accommodated by leasing parking spaces from existing parking garages located near the proposed site, including Division St Garage, Charles St Garage, and M.A.C. Garage. Retail parking requirements will be accommodated by on-street parking and dedicated transient areas in the Division St Parking Garage. The Division St Parking Garage is located directly north of the proposed site; permit-only entry is provided off Albert Avenue, and entry/exit access is provided off Division Street. Access to existing parking spaces is illustrated in **Figure 3**.

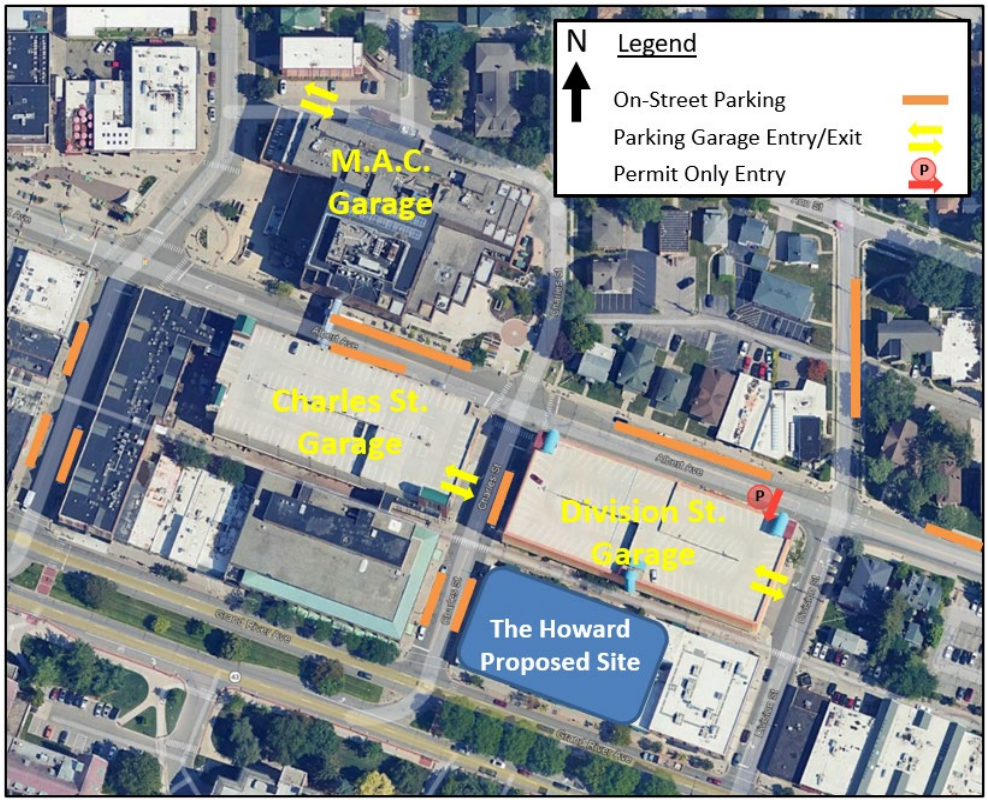


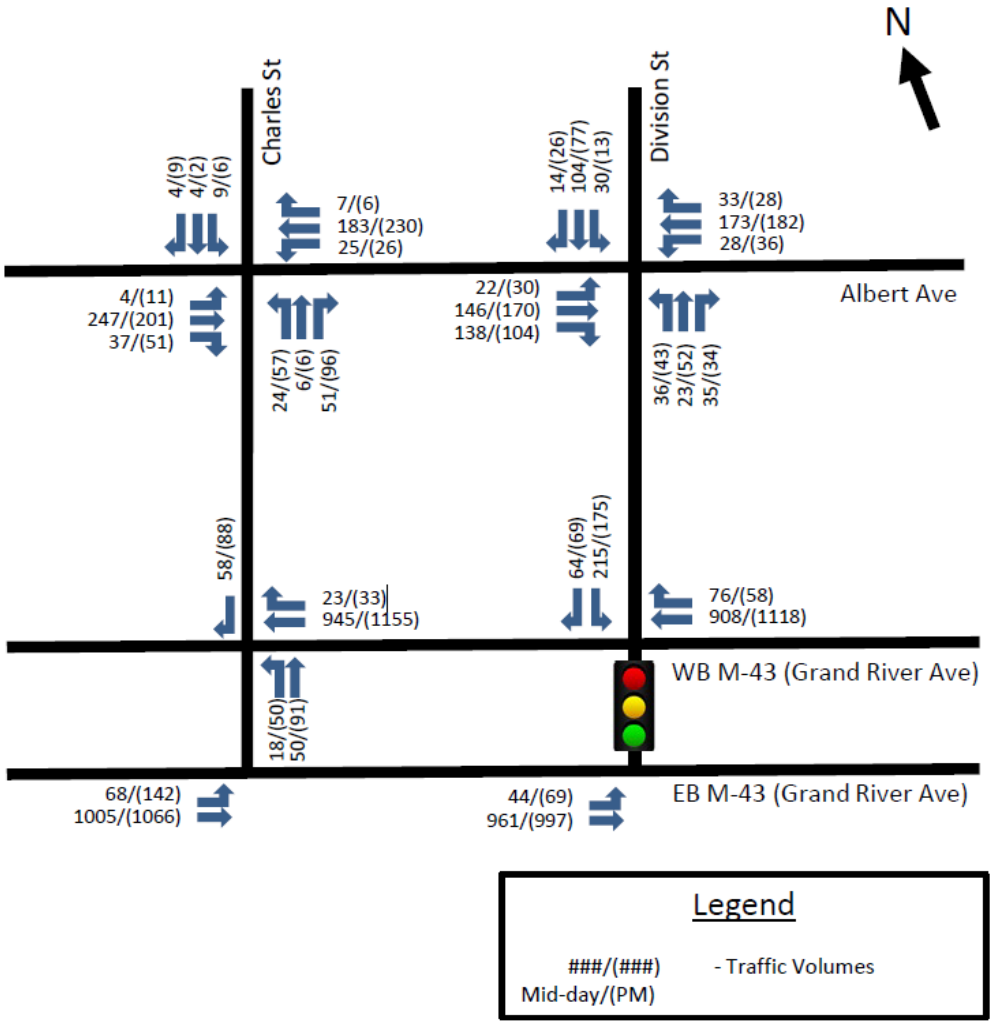
Figure 3 – Parking Access

TRAFFIC FORECASTS

BACKGROUND TRAFFIC GROWTH

To quantify traffic impact on the surrounding roadway, a baseline condition must be made. To determine the roadway conditions in the year 2028 **without** the proposed development**,** historical traffic volumes were reviewed to determine the anticipated growth rate in the study area. Since 2016, the average annual growth rate along Grand River Avenue has been 0.33%, whereas Charles Street, Division Street, and Albert Avenue have all shown a decrease in traffic volumes since 2016. Therefore, a standard 0.5% annual growth rate was used to determine the anticipated growth rate in the study area, consistent with other recent growth factors obtained from MDOT when historical counts show a decrease in traffic.

Figure 4 illustrates the projected traffic volumes for the year 2028 **without** the proposed expansion.



Note: Traffic volumes in Synchro may differ slightly to address minor volume imbalances.

Figure 4 – Background Conditions Mid-day and PM Peak Hour Projected Volumes (2028)

Table 2 summarizes the delay and levels of service (LOS) as reported by Synchro 12 for the background conditions **without** the proposed development in 2028. All intersections operate at an acceptable level of service during the mid-day and PM peak hours. Similar to the existing conditions of 2026, the northbound cross-over approach at Grand River Avenue and Charles Street, is reported to experience long delays during the PM peak hour resulting in a LOS E. However, also like the existing condition, a review of SimTraffic found that the crossover operates acceptable with minimal queuing.

Table 2: Mid-day and PM Peak Hour Levels of Service for 2028 Background Conditions

Intersection		Mid-day Peak Hour		PM Peak Hour	
	Approach	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**
Grand River Avenue & Division Street (signalized)	Eastbound	7.1	A	6.8	A
	Westbound	21.3	C	23.2	C
	Southbound	26.6	C	24.0	C
	Overall	**15.7**	**B**	**16.4**	**B**
Albert Avenue & Division Street (all-way STOP)	Eastbound	10.7	B	10.6	B
	Westbound	11.8	B	12.6	B
	Northbound	9.4	A	9.6	A
	Southbound	13.1	B	11.9	B
	Overall	**11.3**	**B**	**11.3**	**B**
Albert Avenue & Charles Street (all-way STOP)	Eastbound	11.2	B	10.0	A
	Westbound	11.9	B	13.4	B
	Northbound	8.3	A	8.9	A
	Southbound	9.6	A	9.6	A
	Overall	**11.0**	**B**	**11.0**	**B**
Grand River Avenue & Charles Street (two-way STOP)	Westbound	0.0	A	0.0	A
	Northbound x-over	20.2	C	39.7	E
	Southbound	10.3	B	11.9	B
	Overall	**2.0**	**A**	**4.7**	**A**

Source: Synchro 12
LOS = Level of Service; sec / veh = seconds per vehicle

TRIP GENERATION

The *Institute of Transportation Engineers (ITE) Trip Generation Manual 12th Edition* was used to estimate multi-modal trips for the proposed development. The following land use code was used for The Howard:

- Land Use 232 – High-Rise Residential with Ground Floor Commercial

  Description – High-rise residential with ground-floor commercial is mixed-use multifamily housing building with more than 10 floors of residential living pace and commercial space open to the public on the ground level. These facilities are typically found in dense multi-use urban and center city core settings.

The multi-model trips for the proposed development will then be discounted by the trips generated by the existing land use to determine the new trips that the proposed development will generate within the study area. Various land use codes were considered for the bookstore including a Land Use 590 Library and Land Use 868 Book Superstore, however both land uses resulted in higher than likely trips being generated. Therefore, the land use for a retail store was used instead as detailed below:

- Land Use 822 – Strip Retail Plaza <40k (Bookstore)

  Description: A strip retail plaza is an integrated group of commercial establishments planned, developed, owned, and managed as a unit. Each study site in this land use has less than 40,000 square feet of gross leasable area (GLA).

- Land Use 936 – Coffee/Donut Shop without Drive-Through Window (Starbucks)

  Description - This land use includes any coffee and donut restaurant that does not have a drive-through window. The restaurant sells freshly brewed coffee (along with coffee-related accessories) and a variety of food/drink products such as donuts, bagels, breads, muffins, cakes, sandwiches, wraps, salads, and other hot and cold beverages. The restaurant marketing and sales may emphasize coffee beverages over food (or vice versa).

The trips generated for The Howard and the distribution between trip types are summarized in **Table 3**. The trips generated for the Mid-day Peak Hour were calculated based on the Weekday AM Peak Hour of the Generator, and the PM Peak Hour were calculated based on the Weekday PM Peak Hour of Adjacent Street.

To maintain a conservative trip generation forecast, only the trips associated with the existing bookstore were discounted from the trips generated for The Howard to determine the new trips within the study area. **Table 4** details the trips generated for the existing land use and **Table 5** details the new trips calculated for The Howard.

Table 3: The Howard Trip Generation

Land Use (Code)	Variable	Trip Type	Trips/Hour (% of Total)	
			Mid-Day Peak	PM Peak
The Howard (232)	292 units	Vehicle	91 (32%)	61 (33%)
		Transit	58 (20%)	32 (17%)
		Walk	134 (46%)	88 (47%)
		Bike	6 (2%)	6 (3%)
Total Trips, The Howard			**289**	**187**

Table 4: Trips for Existing Land Use

Land Use (Code)	Variable	Trip Type	Trips/Hour	
			Mid-Day Peak	PM Peak
Strip Retail Plaza <40k (822)	25,000 SF	All	135	142
Starbucks (936)	2,600 SF	Person	211	197

Table 5: Net New Trips for The Howard

Land Use (Code)	Variable	Trip Type	Trips/Hour (% of Total)	
			Mid-Day Peak	PM Peak
The Howard (232)	361 units	Vehicle	49 (32%)	15 (33%)
		Transit	31 (20%)	8 (17%)
		Walk	71 (46%)	21 (47%)
		Bike	3 (2%)	1 (3%)
Total New Trips, The Howard			**154**	**45**

TRIP DISTRIBUTION

The proposed trip distribution consists of the new inbound and outbound trips generated by the proposed development. The directional distribution for a High-Rise Residential with Ground Floor Commercial is not provided within the *ITE Trip Generation Manual.* Therefore, the directional distribution for a similar land use Mid-Rise Residential with Ground Floor Commercial (231) was used. That is 30% entering and 70% existing during the Mid-day peak hour, and 70% entering and 30% existing during the PM peak hour.

The new vehicle trips generated in the previous section were distributed onto the surrounding road network for the weekday Mid-day and PM peak hours based on the existing travel patterns within the study area. To provide a conservative trip distribution, all new vehicle trips were assigned to the Division St Parking Garage entry/exit access on Division Street. The distributed traffic volumes are shown in **Figure 5**.

Similarly, new transit trips were assigned to nearby bus stops and converted into pedestrian trips. A total of 102 new pedestrian trips and 3 new bike trips were distributed within the Mid-day peak hour, and 29 new pedestrian trips and 1 new bike trips were distributed within the PM peak hour. Due to limited existing and forecasted bike trips, all new bike trips were assigned to intersection approaches with existing bike trips. The distributed walk, transit, and bike trips are shown in **Figure 6.**

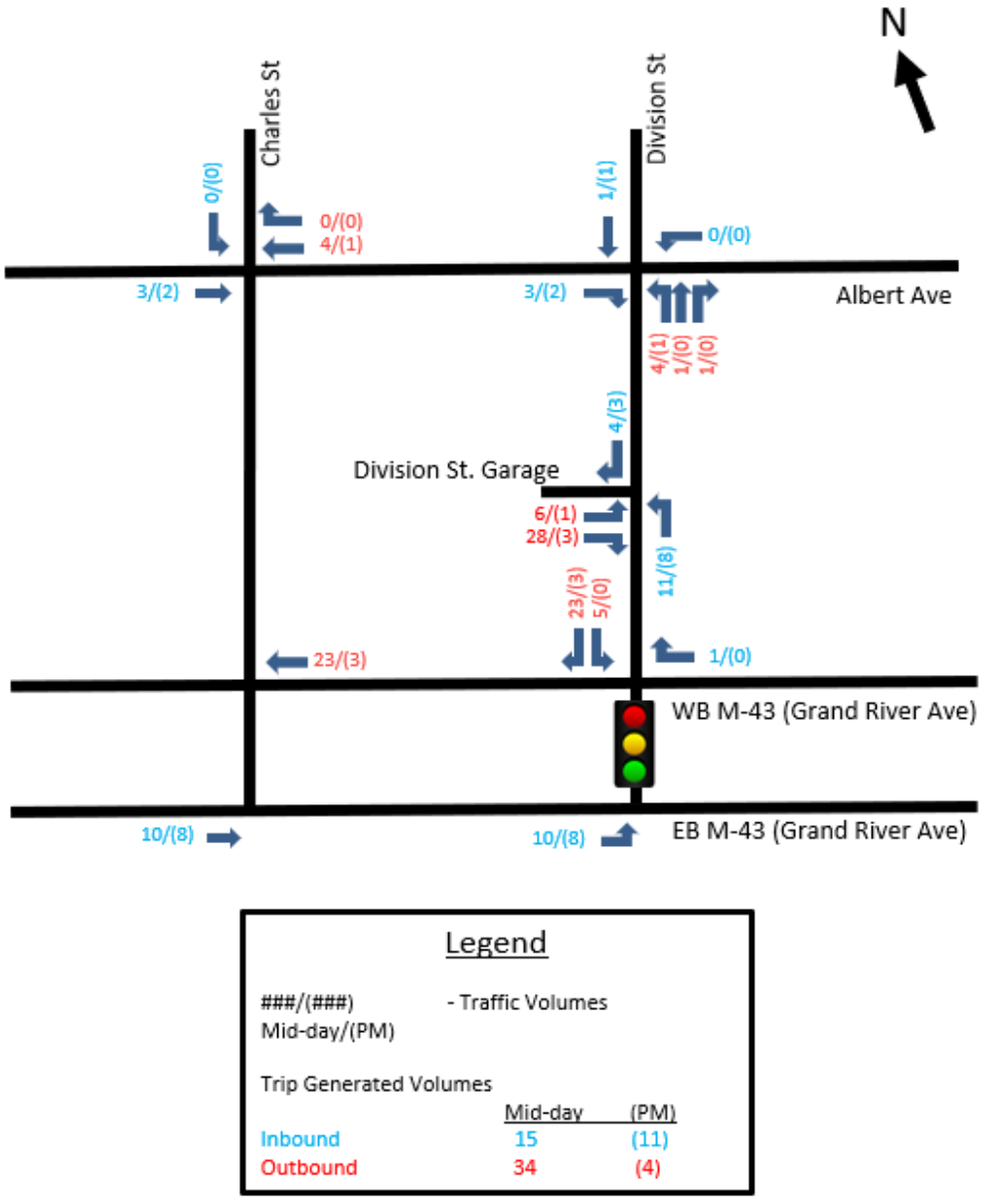


Figure 5 – The Howard Proposed Vehicle Trip Distribution

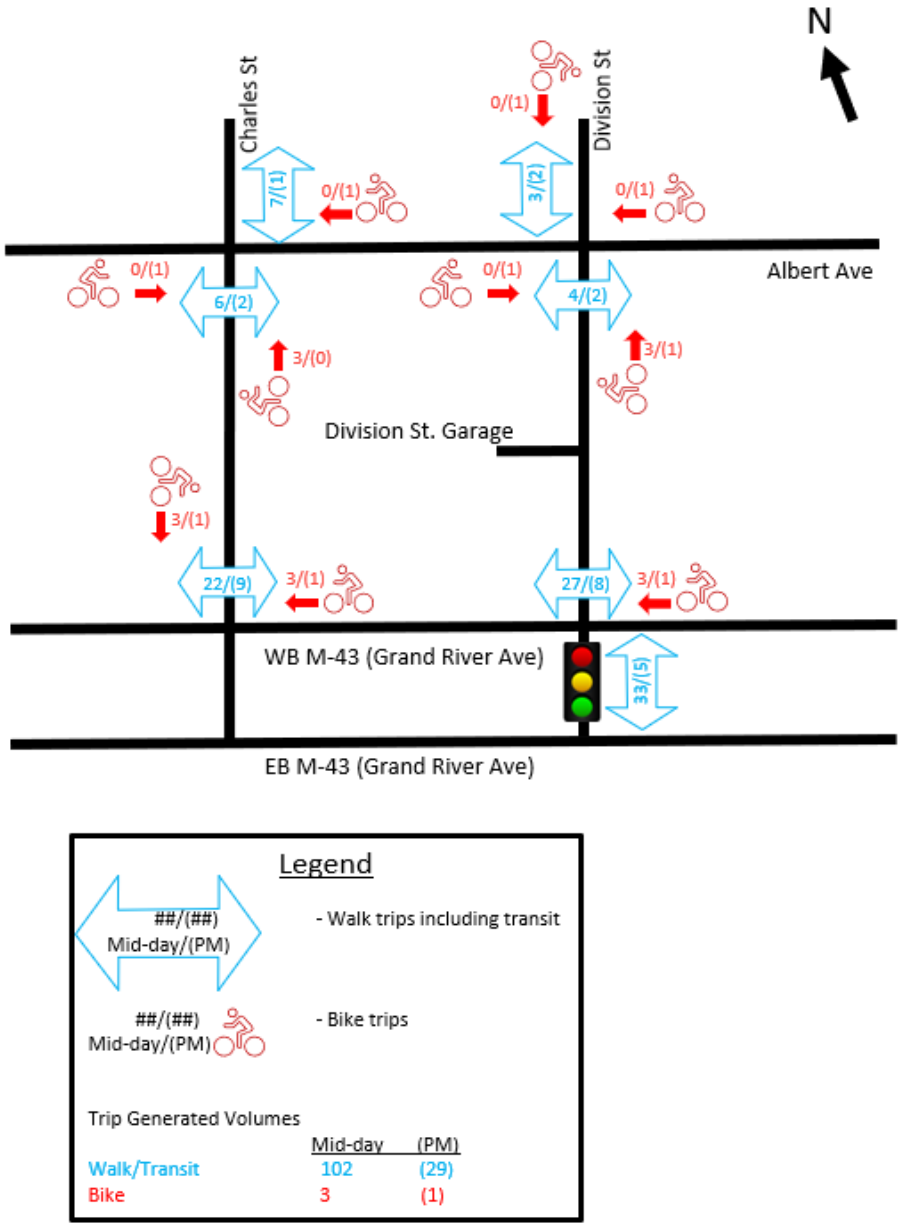
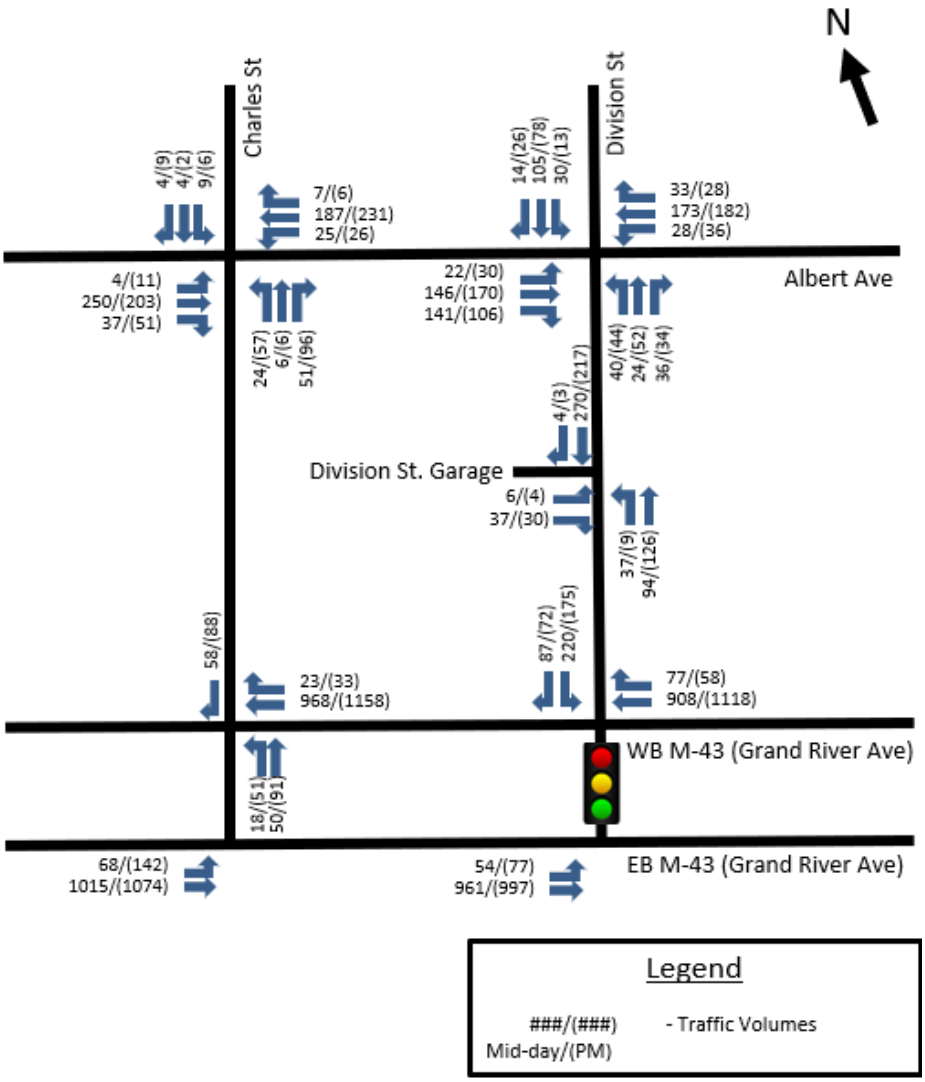


Figure 6 – The Howard Proposed Walk, Transit, and Bike Trip Distribution

TRAFFIC IMPACTS OF PROPOSED DEVELOPMENT

The trip generated traffic shown in **Figure 5** was applied to the projected 2028 volumes provided in **Figure 4**. **Figure 7** illustrates the forecasted turning movements for each of the individual study locations.



Note: Traffic volumes in Synchro may differ slightly to address minor volume imbalances.

Figure 7 – Projected Build Mid-day and PM Peak Hour Turning Movement Counts (2028)

The operational results for conditions with the proposed development are provided in **Table 6** for the mid-day peak hour and **Table 7** for the PM peak hour. Compared to the no-build conditions, the proposed development is expected to slightly increase delay while maintaining acceptable LOS. The largest increase in delay was less than 3 seconds and occurred during the mid-day and PM peak hours at Grand River Avenue & Charles Street involving the eastbound to northbound crossover movement. This movement also experiences LOS E during the PM peak hour in the existing conditions which is also reflected in the no-build and build conditions.

Table 6: Mid-day Peak Hour Levels of Service for 2028 Build Conditions

Intersection		No-Build		Build	
	Approach	Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
Grand River Avenue & Division Street (signalized)	Eastbound	7.1	A	7.6	A
	Westbound	21.3	C	21.3	C
	Southbound	26.6	C	25.9	C
	Overall	**15.7**	**B**	**16.0**	**B**
Albert Avenue & Division Street (all-way STOP)	Eastbound	10.7	B	10.9	B
	Westbound	11.8	B	11.9	B
	Northbound	9.4	A	9.5	A
	Southbound	13.1	B	13.3	B
	Overall	**11.3**	**B**	**11.4**	**B**
Albert Avenue & Charles Street (all-way STOP)	Eastbound	11.2	B	11.4	B
	Westbound	11.9	B	12.1	B
	Northbound	8.3	A	8.4	A
	Southbound	9.6	A	9.7	A
	Overall	**11.0**	**B**	**11.2**	**B**
Grand River Avenue & Charles Street (two-way STOP)	Westbound	0.0	A	0.0	A
	Northbound x-over	20.2	C	22.2	C
	Southbound	10.3	B	10.5	B
	Overall	**2.0**	**A**	**2.1**	**A**

Source: Synchro 12
LOS = Level of Service; sec / veh = seconds per vehicle

Table 7: PM Peak Hour Levels of Service for 2028 Build Conditions

Intersection		No-Build		Build	
	Approach	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**
Grand River Avenue & Division Street (signalized)	Eastbound	6.8	A	7.1	A
	Westbound	23.2	C	23.2	C
	Southbound	24.0	C	23.9	C
	Overall	**16.4**	**B**	**16.5**	**B**
Albert Avenue & Division Street (all-way STOP)	Eastbound	10.6	B	10.6	B
	Westbound	12.6	B	12.6	B
	Northbound	9.6	A	9.6	A
	Southbound	11.9	B	11.9	B
	Overall	**11.3**	**B**	**11.3**	**B**
Albert Avenue & Charles Street (all-way STOP)	Eastbound	10.0	A	10.1	B
	Westbound	13.4	B	13.5	B
	Northbound	8.9	A	8.9	A
	Southbound	9.6	A	9.6	A
	Overall	**11.0**	**B**	**11.0**	**B**
Grand River Avenue & Charles Street (two-way STOP)	Westbound	0.0	A	0.0	A
	Northbound x-over	39.7	E	41.9	E
	Southbound	11.9	B	12.0	B
	Overall	**4.7**	**A**	**4.9**	**A**

Source: Synchro 12
LOS = Level of Service; sec / veh = seconds per vehicle

TRAFFIC IMPACT MITIGATION

All intersections operate at an acceptable intersection-level LOS (LOS D or better) in 2026 conditions. However, the eastbound Grand River Avenue crossover approach to northbound Charles Street results in a LOS E and F under the existing conditions. Delay values are slightly impacted by the proposed development, with the greatest impact at the crossover. However, this was not the case when viewing the SimTraffic simulation which showed acceptable operations at all locations. Regardless, to provide options for improving traffic operations under the anticipated future conditions, mitigation measures were considered at the intersection of Grand River Avenue and Charles Street during the PM peak hour.

A traffic signal control at this location is expected to improve the LOS E to a LOS C during the PM Peak Hour, while westbound Grand River Avenue is expected to operate with a LOS A as detailed in **Table 8**. A signal would also provide an opportunity to provide a protected pedestrian phase similar to the intersection at Grand River Avenue and Division Street. A signal warrant analysis is required to determine if a signal is warranted at Grand River Avenue and Charles Street. If a signal is not warranted, monitor future traffic conditions for warrants and adequate storage for eastbound left-turn maneuvers. If observed operations align with the SimTraffic simulation results, then no operational improvements are anticipated to be needed at this intersection. For reference, when averaging five simulation runs, the proposed build condition is expected to result in a 95th percentile queue length of 78 feet for the eastbound left-turn maneuver during the PM peak hour. The existing 150-foot storage length is adequate for proposed build conditions. No mitigations are required to facilitate development traffic and are only advised for future planning along this corridor as it relates to the existing delay at the crossover as noted.

Table 8: Grand River Avenue and Charles Street, LOS Comparison (PM Peak)

Intersection		Existing 2026		No-Build		Build		Build w/ signal	
	Approach	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**	**Delay (sec/veh)**	**LOS**
Grand River Avenue & Charles Street	Eastbound	0.0	A	0.0	A	0.0	A	13.7	B
	Westbound	0.0	A	0.0	A	0.0	A	2.3	A
	Northbound x-over	38.7	E	39.7	E	41.9	E	23.4	C
	Southbound	11.9	B	11.9	B	12.0	B	23.7	C
	Overall	**4.6**	**A**	**4.7**	**A**	**4.9**	**A**	**9.3**	**A**

Source: Synchro 12.0

LOS = Level of Service; sec / veh = seconds per vehicle

FINDINGS AND RECOMMENDATIONS

Overall, the proposed development The Howard is anticipated to have little impact on the surrounding road network. The intersection at Grand River Avenue and Charles Street is expected to experience the largest impact to traffic operations. The cross-over movement at this intersection experiences long delays during the PM peak hour which is further exacerbated by the proposed development. However, the increase in delay is still minimal and the existing LOS remains unchanged. If the delays are deemed significant enough to mitigate for better LOS, a traffic signal can be installed if warranted. As forecasted by the *(ITE) Trip Generation Manual* more than two-thirds of the trips are transit, bike, or walk trips. Therefore, the following low-cost recommendations should be considered to accommodate the anticipated growth of non-motorized road users within the study area.

No Turn On Red

"No Turn On Red" should be considered on the westbound Grand River Avenue approach at Division Street. This implementation would help mitigate conflicts between right-turning vehicles and pedestrians crossing the north leg of the intersection and was found to maintain the same LOS as reported for the build models when testing implementation at that intersection. More than 200 pedestrians currently utilize this crosswalk during the peak hours.

Curb-bump outs

Curb bump outs are a traffic calming measure that involves extending the sidewalk or curb into the roadway at intersections, effectively narrows the crossing distance for pedestrians and improves their visibility to motorists. This is particularly effective in areas with a high presence of pedestrians and bus traffic, where they also help delineate on street parking, preventing vehicles from parking too close to pedestrian crosswalks. The proposed site plan includes bump outs are present along Charles Street, which provide an improvement for pedestrians crossing Charles Street, north of Grand River.

Wide Clear Sidewalks

Maintain wide clear sidewalk paths to accommodate an increase in pedestrian activity in the area. A wide, unobstructed sidewalk provides a buffer between pedestrians and moving vehicles, making walking more comfortable and safer. Safe and comfortable sidewalks improve walkability in the area, supports accessibility for wheelchair users, and keeps pedestrians out of traffic lanes.

High Visibility Crosswalks

Provide continental high visibility crosswalks along Charles Street and Division Street at Grand River Avenue. High visibility crosswalks enhance pedestrian safety by increasing driver awareness of non-motorized road users in the area, particularly during dark and/or adverse weather conditions.

Leading Pedestrian Intervals

Consider installing leading pedestrian intervals (LPIs) at Grand River Avenue and Division Street, as they were found to not adversely impact LOS as compared to reported values when testing implementation within the build model (4 seconds was tested). LPIs provide pedestrians with a head start and a walk indication seconds before vehicles are given a green signal to proceed, allowing pedestrians to establish their presence in the crosswalk and become more visible to turning drivers before they accelerate. This measure reduces the likelihood of pedestrian-vehicle conflicts, especially with right-turning motorists, and improves overall intersection safety. LPIs also help reduce pedestrian delay by prioritizing pedestrian movement and encouraging compliance with crossing signals, making intersections safer and more accessible for vulnerable road users.

Attachment 1

NTCIP Permit 6-22-23

NTCIP TRAFFIC SIGNAL TIMING PERMIT

PHASE	1	2	3	4	5	6	7	8
APPROACH	WB TH.	EB LEFT	SB					
MINIMUM GREEN	10	7	7					
PASSAGE	0.0	0.0	0.0					
MAXIMUM GREEN NO. 1	49	17	20					
MAXIMUM GREEN NO. 2	0	0	0					
YELLOW CLEARANCE	3.0	3.0	3.0					
ALL RED CLEARANCE	3.1	3.1	3.5					
WALK	7	0	7					
FLASHING DON'T WALK (FDW) CLEARANCE	11	0	11					
EXT PED CLR (EOG, EOY, 3.0s)	EOG	EOG	EOG					
START UP PHASE(S)	☒	☐	☐	☐	☐	☐	☐	☐
VEHICLE RECALL (NONE, MIN, MAX, SOFT)	MAX	MAX	MAX					
PEDESTRIAN RECALL (NONE, RECL, OTHR)	RECL	NONE	RECL					
DUAL ENTRY (Y, N)	N	N	N					
MODE (CRD, MIN, MAX, D-CRD, NOCRD)	CRD	NOCRD	D-CRD					
DAILY FLASH (Y, R, DK, NA)	NA	NA	NA					
CONFLICT FLASH (Y, R, DK)	R	R	R					
EVNT/ACTN PLN 1 OFFSET 75 CYCLE 80	37	17	26					
EVNT/ACTN PLN 2 OFFSET 32 CYCLE 80	37	17	26					
EVNT/ACTN PLN 3 OFFSET 59 CYCLE 80	37	17	26					
EVNT/ACTN PLN OFFSET CYCLE								
EVNT/ACTN PLN OFFSET CYCLE								
EVNT/ACTN PLN OFFSET CYCLE								

START UP TIME: 6.0 START UP STATE: All Red ☒ Flash ☐

CYCLE PEDS WHEN IN FREE? (CP, WR)								
LEAD PEDESTRIAN INTERVAL								
DILEMMA RED MAX (AR + RED EXT)								

TIMING INSTALLED 10/15/25

PRE-EMPT ☒ COUNTDOWN PEDS ☒

REMARKS

07/25/25 - Modified for integration into CSCS
- Updated Clearance Intervals
- Field Note: Electrician to change conflict flash to R/R

The pedestrians are on recall due to the TSC's request for an existing blind person in the area. Audible PBs are used for APS function only.

The Eastbound M-43 (Grand River Avenue) left turns operate on a lagging, protected-only basis.

The preemption has been re-enabled.

FLASH HOURS: ____ to ____ DAILY ☐ NONE ☒

CONTROLLER and FIRMWARE#
☐ Siemens (SEPAC)
☒ ECONOLITE (EOS) 03.02.15
☐ Other:

PREPARED BY: EJC
DATE: 07/25/25

PHASE
1 WB M-43 (Grand River Ave.) Thru
2 EB M-43 (Grand River Ave.) Left
3 SB Division Street
4
5
6
7
8

VEHICLE OVERLAPS

Overlap Phase	Load Bay	Phases Overlapped	T.G. (s)	Y (s)	R (s)	FYA Phases Perm	FYA Phases Prot	Flash Daily	Flash Confl
A = EB M-43 (Grand River) Thru	5	1 and 2	0.0	3.0	3.1			NA	R
B = SB Division Street RTGA	6	2	0.0	3.0	3.1			NA	DK
=									
=									
=									
=									
=									
=									

LOCATION:
M-43 (Grand River Avenue) at Division Street
CITY/TWP: City of East Lansing
COUNTY : Ingham

MILE POINT	CONTROL SECTION-SPOT #
1.50	33082-01-020

Job # (If Applicable):

CLEAR ALL

Page 4 included only if Pre-Empt Checked

NTCIP Permit 6-1-23

Attachment 1

ADVANCED TIMING PARAMETERS FORM

SYSTEM INFORMATION

System Type:

- [x] Central
  Group ID 33-3
- [ ] TBC
- [ ] None
- [ ] Other:

Controller Location ID:

Interconnect:

- [ ] HARDWIRE
- [ ] FIBER-OPTIC
- [ ] RADIO
- [ ] SERIAL RADIO
  Hop Pattern:
- [ ] IP RADIO
- [ ] TBC
- [ ] GPS CLOCK
- [x] CELL MODEM
- [ ] NONE
- [ ] Other:

LEFT-TURN PHASING

Phase # / Description	*Permissive-Protected* Lead	*Permissive-Protected* Lag	*Protected-Only* Split	*Protected-Only* Lead	*Protected-Only* Lag
Phase 2 - EB M-43 (Grand River) Left	☐	☐	☐	☐	☒
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

RING AND BARRIER STRUCTURE

	B1				B2				B3				B4			
R1	1	2			3											
R2																
R3																
R4																

VEHICULAR AND PEDESTRIAN DETECTION

Approach	*Vehicle Detection* Movements and Call Delay (s) Left	Thru	Right	Locking Left	Thru	Right	*Pedestrian Detection* Phase # / Crossing / Load Switch #
	☐	☐	☐	☐	☐	☐	1 Division Street N Leg 7
	☐	☐	☐	☐	☐	☐	3 M-43 E Leg 8
	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	
	☐	☐	☐	☐	☐	☐	

COORDINATION/OPERATION SETTINGS

CHANGE (ADD ONLY, ADD/SUBT, OTHR)	SMOOTH
REST IN WALK FOR COORD PHASE (Y/N)	N
PUSHBUTTONS FOR COORD PHASE (Y/N)	N

ADDITIONAL EVENT/ACTION PLAN DATA

		PHASE	1	2	3	4	5	6	7	8
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								
EVNT/ACTN PLN	OFFSET	CYCLE								

DISAPPEARING CASE SIGN

REMARKS

PREPARED BY: EJC DATE: 07/25/25

☒ MDOT ☐ County ☐ City ☐ Consultant

LOCATION:
M-43 (Grand River Avenue) at Division Street

CONTROL SECTION-SPOT #
33082-01-020

Attachment 1

NTCIP Permit 6-1-23

SCHEDULING INFORMATION

Default Weekly Schedule

Schedule #	Days of Week	Start Date	End Date	Day Plan #	Events
1	Saturday and Sunday	January 1st	December 31st	1	#1 Normal:
2	Monday - Friday	January 1st	December 31st	2	#1 Normal: #2 AM Peak: 06:00 - 09:00 #3 PM Peak: 15:00 - 18:30
3				3	
4				4	

Special Schedules — Schedule remarks including floating holiday schedules

Day Plan #	Events	Day Plan #	Events	Day Plan #	Events	Day Plan #	Events
5		6		7		8	

Schedule	Day Plan #	MONTH OF YEAR												DAY OF WEEK							DAY OF MONTH																												REMARKS :
		J	F	M	A	M	J	J	A	S	O	N	D	S	M	T	W	T	F	S	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
11																																																					
12																																																					
13																																																					
14																																																					
15																																																					
16																																																					
17																																																					
18																																																					
19																																																					
20																																																					
21																																																					
22																																																					
23																																																					
24																																																					

PREPARED BY: EJC	DATE: 07/25/25	LOCATION: M-43 (Grand River Avenue) at Division Street	CONTROL SECTION-SPOT # 33082-01-020

Attachment 1

PREEMPTION INFORMATION FORM

Preemption Description: WESTBOUND M-43 (GRAND RIVER AVENUE) EMERGENCY VEHICLE VIA OPTICOM

Preempt # = 1	Seconds		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--		
Entry Ped Cl	11																			Locking	N
Entry Yellow	3.0		Phas/Ovl	1	2	3		A	B											Delay (s)	0
Entry Red Cl	3.5	Vehicle	Track																	Extend (s)	5
Track Green	0		Dwell	G	R	R		R	DK											Duration (s)	0
Track Ped Cl	0		Cycle																	Max Call (s)	90
Track Yellow	0.0		Exit			X														Link PreEmpt #	0
Track Red Cl	0.0																			Exit Free or Crd	OFF
Dwell Green	7		Phase #	1		3														**Display Case Sign?**	
Exit Ped Cl	0	Ped	Track																	No Turn on Red	N
Exit Yellow	3.0		Dwell	DW		DW														No Right Turn	N
Exit Red Cl	3.1		Cycle																	No Left Turn	N
																				Other Case Sign	N

Preemption Description: EASTBOUND M-43 (GRAND RIVER AVENUE) EMERGENCY VEHICLE VIA OPTICOM

Preempt # = 2	Seconds		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--		
Entry Ped Cl	11																			Locking	N
Entry Yellow	3.0		Phas/Ovl	1	2	3		A	B											Delay (s)	0
Entry Red Cl	3.5	Vehicle	Track																	Extend (s)	5
Track Green	0		Dwell	R	G	R		G	DK											Duration (s)	0
Track Ped Cl	0		Cycle																	Max Call (s)	90
Track Yellow	0.0		Exit			X														Link PreEmpt #	0
Track Red Cl	0.0																			Exit Free or Crd	OFF
Dwell Green	7		Phase #	1		3														**Display Case Sign?**	
Exit Ped Cl	0	Ped	Track																	No Turn on Red	N
Exit Yellow	3.0		Dwell	DW		DW														No Right Turn	N
Exit Red Cl	3.1		Cycle																	No Left Turn	N
																				Other Case Sign	N

Preemption Description: SOUTHBOUND DIVISION STREET EMERGENCY VEHICLE VIA OPTICOM

Preempt # = 3	Seconds		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--		
Entry Ped Cl	11																			Locking	N
Entry Yellow	3.0		Phas/Ovl	1	2	3		A	B											Delay (s)	0
Entry Red Cl	3.5	Vehicle	Track																	Extend (s)	5
Track Green	0		Dwell	R	R	G		R	DK				DK							Duration (s)	0
Track Ped Cl	0		Cycle																	Max Call (s)	90
Track Yellow	0.0		Exit	X																Link PreEmpt #	0
Track Red Cl	0.0																			Exit Free or Crd	OFF
Dwell Green	7		Phase #	1		3														**Display Case Sign?**	
Exit Ped Cl	0	Ped	Track																	No Turn on Red	N
Exit Yellow	3.0		Dwell	DW		DW														No Right Turn	N
Exit Red Cl	3.5		Cycle																	No Left Turn	N
																				Other Case Sign	N

Preemption Description:

Preempt # =	Seconds		Load Switch	1	2	3	4	5	6	7	8	9	10	11	12	--	--	--	--		
Entry Ped Cl																				Locking	N
Entry Yellow			Phas/Ovl	1	2	3		A	B											Delay (s)	
Entry Red Cl		Vehicle	Track																	Extend (s)	
Track Green			Dwell																	Duration (s)	
Track Ped Cl			Cycle																	Max Call (s)	
Track Yellow			Exit																	Link PreEmpt #	
Track Red Cl																				Exit Free or Crd	
Dwell Green			Phase #	1		3														**Display Case Sign?**	
Exit Ped Cl		Ped	Track																	No Turn on Red	N
Exit Yellow			Dwell																	No Right Turn	N
Exit Red Cl			Cycle																	No Left Turn	N
																				Other Case Sign	N

Preempt System Data

Preempt	1	2	3	4
MIN GREEN	7.0	7.0	7.0	
MIN WALK	7.0	7.0	7.0	
Overide Flash				
Priority	-	-	-	-

PE Status Pos in Pedestrian LSs	Ped Y1	Ped Y2	Ped Y3	Ped Y4	Ped Y5	Ped Y6	Ped Y7	Ped Y8
PE# Represented		1		2		3		4

For Railroad Preemption

Dummy PH#:	9	Min Green:	Yellow:
Track Overlap:		Max Green:	All Red:

REMARKS :
EXTEND TIME CHANGED TO 5 SEC

THE OVERLAP THAT IS ASSOCIATED WITH THE RIGHT-TURN GREEN ARROW (OVERLAP "B") DWELLS DARK DURING PREEMPTION.

CONFIRMATION LIGHT TIED TO D-PANEL, ENABLE LOGIC PROCESSOR 40

PREPARED BY: EJC DATE: 07/25/25

LOCATION:
M-43 (Grand River Avenue) at Division Street

CONTROL SECTION-SPOT #
33082-01-020

Attachment 2

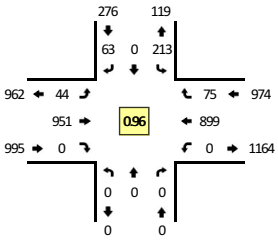
Type of peak hour being reported: Intersection Peak

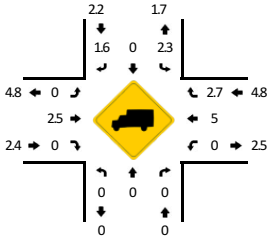
Method for determining peak hour: Total Entering Volume

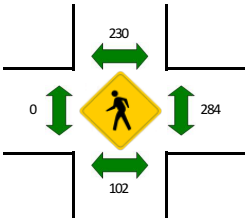
LOCATION: Division St -- Grand River Ave
CITY/STATE: East Lansing, MI

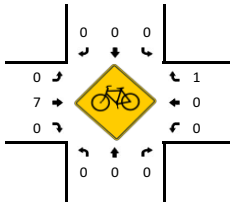
QC JOB #: 17395907
DATE: Tue, Jan 13 2026

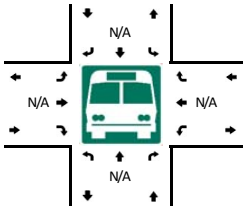
Peak-Hour: 11:45 AM -- 12:45 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

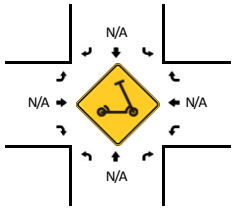












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	0	0	0	0	19	0	8	0	3	158	0	0	0	203	11	0	402	
11:15 AM	0	0	0	0	33	0	11	0	6	167	0	0	0	215	12	0	444	
11:30 AM	0	0	0	0	37	0	7	0	8	208	0	0	0	190	18	0	468	
11:45 AM	0	0	0	0	47	0	15	0	11	210	0	0	0	258	23	0	564	1878
12:00 PM	0	0	0	0	50	0	19	0	6	259	0	0	0	215	11	0	560	2036
12:15 PM	0	0	0	0	65	0	13	0	17	263	0	0	0	212	16	0	586	2178
12:30 PM	0	0	0	0	51	0	16	0	10	219	0	0	0	214	25	0	535	2245
12:45 PM	0	0	0	0	34	0	3	0	11	180	0	1	0	207	17	0	453	2134

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	260	0	52	0	68	1052	0	0	0	848	64	0	2344
Heavy Trucks	0	0	0		8	0	4		0	28	0		0	20	0		60
Buses																	
Pedestrians		144				240				0				336			720
Bicycles	0	0	0		0	0	0		0	12	0		0	0	0		12
Scooters																	

Comments:

Report generated on 1/16/2026 9:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment 2

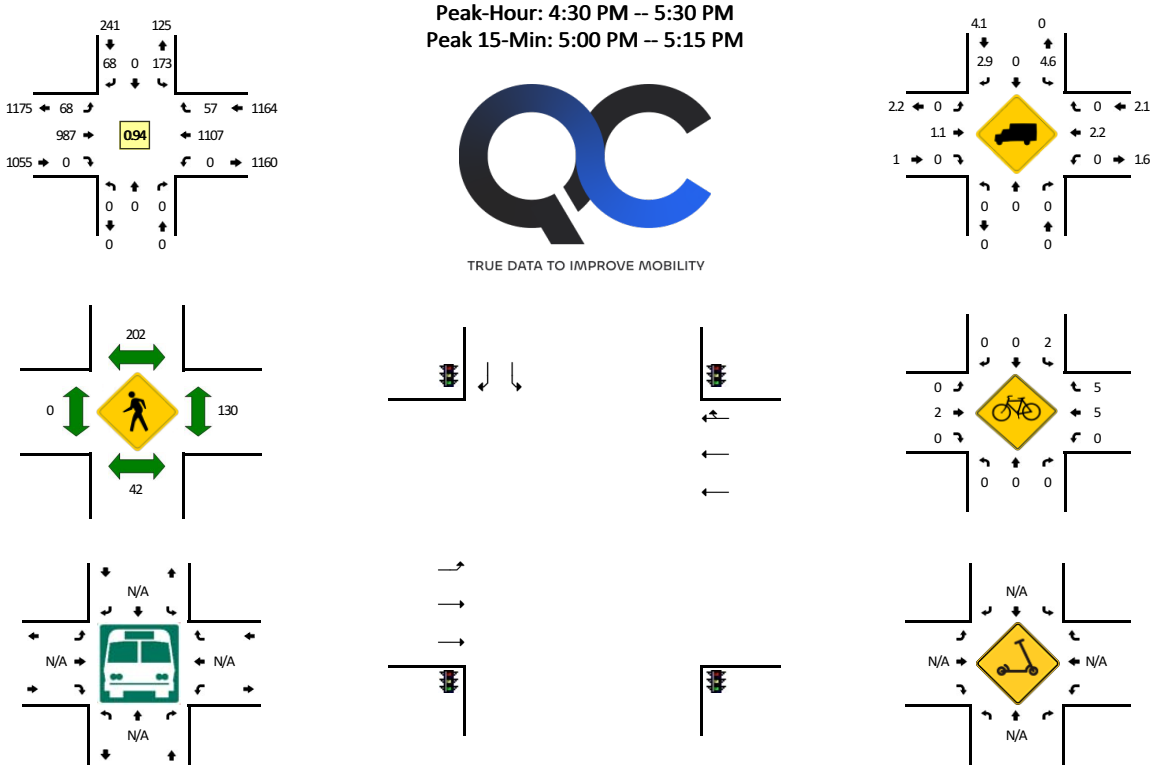
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Division St -- Grand River Ave
CITY/STATE: East Lansing, MI

QC JOB #: 17395908
DATE: Tue, Jan 13 2026

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



TRUE DATA TO IMPROVE MOBILITY

15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	32	0	26	0	14	273	0	0	0	282	32	0	659	
4:15 PM	0	0	0	0	40	0	13	0	19	207	0	0	0	263	11	0	553	
4:30 PM	0	0	0	0	60	0	13	0	16	229	0	0	0	255	9	0	582	
4:45 PM	0	0	0	0	40	0	11	0	15	273	0	0	0	260	17	0	616	2410
5:00 PM	0	0	0	0	43	0	25	0	20	238	0	0	0	313	14	0	653	2404
5:15 PM	0	0	0	0	30	0	19	0	17	247	0	0	0	279	17	0	609	2460
5:30 PM	0	0	0	0	38	0	21	0	13	239	0	0	0	234	30	0	575	2453
5:45 PM	0	0	0	0	27	0	21	0	11	249	0	0	0	280	23	0	611	2448

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	172	0	100	0	80	952	0	0	0	1252	56	0	2612
Heavy Trucks	0	0	0		4	0	8		0	12	0		0	12	0		36
Buses																	
Pedestrians		20				188				0				92			300
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 1/16/2026 9:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment 2

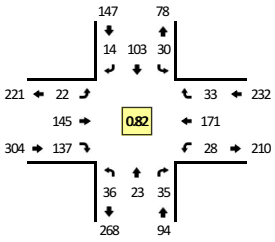
Type of peak hour being reported: Intersection Peak

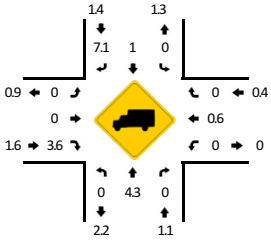
Method for determining peak hour: Total Entering Volume

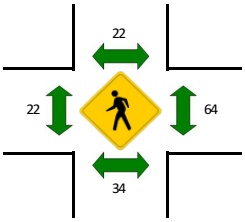
LOCATION: Division St -- Albert Ave
CITY/STATE: East Lansing, MI

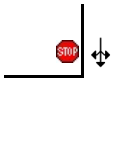
QC JOB #: 17395905
DATE: Tue, Jan 13 2026

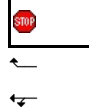
Peak-Hour: 11:45 AM -- 12:45 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

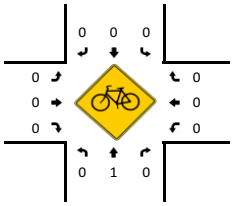


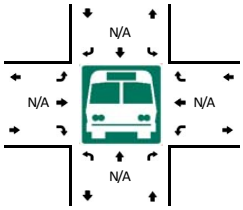


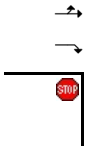


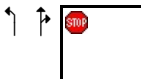


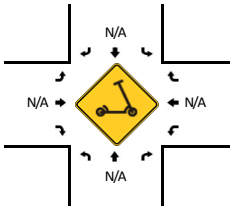












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	8	1	5	0	2	7	1	0	3	22	14	0	4	22	5	0	94	
11:15 AM	8	10	6	0	2	12	5	0	5	22	23	0	2	25	9	0	129	
11:30 AM	11	4	8	0	1	17	1	0	8	24	17	0	6	37	9	0	143	
11:45 AM	11	11	10	0	2	20	3	0	6	23	30	0	7	56	7	0	186	552
12:00 PM	4	6	6	0	5	38	3	0	6	42	29	0	7	40	10	0	196	654
12:15 PM	9	4	9	0	20	23	7	0	4	62	41	0	8	40	9	0	236	761
12:30 PM	12	2	10	0	3	22	1	0	6	18	37	0	6	35	7	0	159	777
12:45 PM	6	6	3	0	3	11	2	0	6	24	28	0	6	28	5	0	128	719

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	16	36	0	80	92	28	0	16	248	164	0	32	160	36	0	944
Heavy Trucks	0	0	0		0	4	4		0	0	8		0	0	0		16
Buses																	
Pedestrians		68				44				16				96			224
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/16/2026 9:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment 2

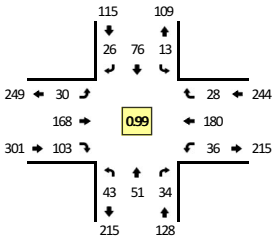
Type of peak hour being reported: Intersection Peak

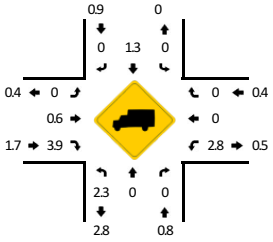
Method for determining peak hour: Total Entering Volume

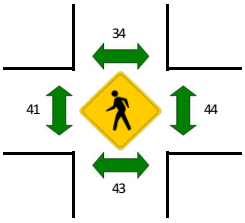
LOCATION: Division St -- Albert Ave
CITY/STATE: East Lansing, MI

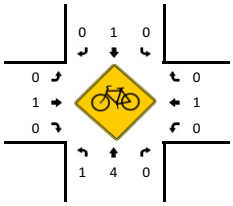
QC JOB #: 17395906
DATE: Tue, Jan 13 2026

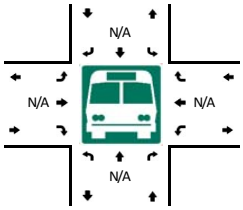
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

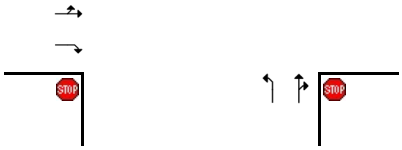


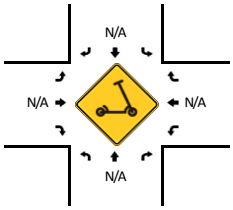












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	18	11	11	0	4	16	3	0	10	35	17	0	7	56	6	0	194	
4:15 PM	12	12	7	0	3	12	4	0	5	44	22	0	12	55	8	0	196	
4:30 PM	5	13	6	0	2	22	8	0	14	42	33	0	8	37	8	0	198	
4:45 PM	16	15	7	0	5	13	7	0	6	41	27	0	6	44	8	0	195	783
5:00 PM	10	11	14	0	3	29	7	0	5	41	21	0	10	44	4	0	199	788
5:15 PM	8	9	13	0	2	8	4	0	10	41	24	0	8	48	5	0	180	772
5:30 PM	11	4	13	0	3	22	8	0	4	42	21	0	8	33	10	0	179	753
5:45 PM	11	9	14	0	1	16	5	0	4	38	20	0	15	52	5	0	190	748

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	44	56	0	12	116	28	0	20	164	84	0	40	176	16	0	796
Heavy Trucks	0	0	0		0	4	0		0	0	4		4	0	0		12
Buses																	
Pedestrians		24				56				24				28			132
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/16/2026 9:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment 2

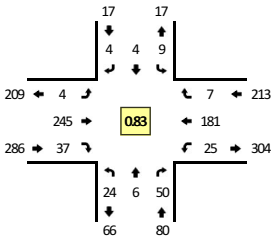
Type of peak hour being reported: Intersection Peak

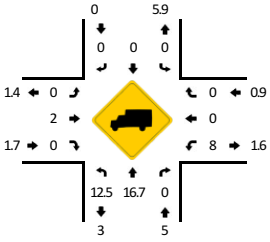
Method for determining peak hour: Total Entering Volume

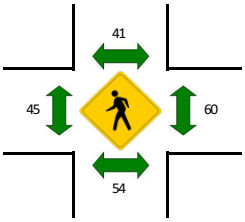
LOCATION: Charles St -- Albert Ave
CITY/STATE: East Lansing, MI

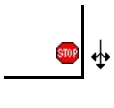
QC JOB #: 17395903
DATE: Tue, Jan 13 2026

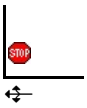
Peak-Hour: 11:45 AM -- 12:45 PM
Peak 15-Min: 12:15 PM -- 12:30 PM

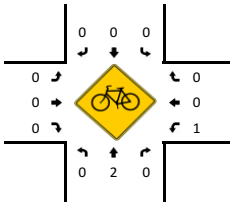


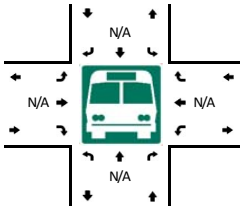


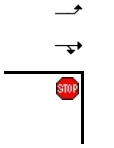


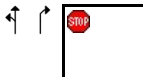


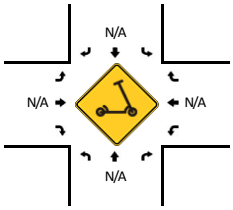












15-Min Count Period Beginning At	Charles St (Northbound)				Charles St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	8	1	9	0	0	3	1	0	0	33	6	0	1	29	0	0	91	
11:15 AM	6	1	12	0	0	0	2	0	1	41	4	0	3	29	2	0	101	
11:30 AM	8	1	10	0	1	0	0	0	1	37	7	0	6	47	0	0	118	
11:45 AM	6	2	8	0	1	1	0	0	1	50	8	0	4	58	2	0	141	451
12:00 PM	4	2	14	0	4	1	2	0	1	61	6	0	7	39	4	0	145	505
12:15 PM	7	2	16	0	2	1	0	0	0	86	10	0	10	45	0	0	179	583
12:30 PM	7	0	12	0	2	1	2	0	2	48	13	0	4	39	1	0	131	596
12:45 PM	8	1	18	0	4	1	2	0	1	37	10	0	4	31	0	0	117	572

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	8	64	0	8	4	0	0	0	344	40	0	40	180	0	0	716
Heavy Trucks	0	4	0		0	0	0		0	8	0		4	0	0		16
Buses																	
Pedestrians		68				68				40				80			256
Bicycles	0	0	0		0	0	0		0	0	0		4	0	0		4
Scooters																	

Comments:

Report generated on 1/22/2026 3:44 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment 2

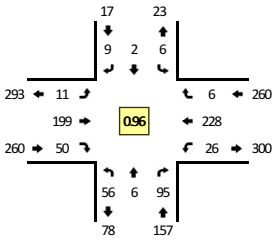
Type of peak hour being reported: Intersection Peak

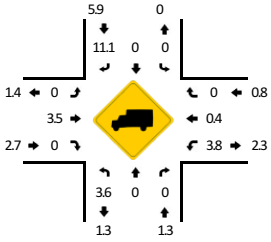
Method for determining peak hour: Total Entering Volume

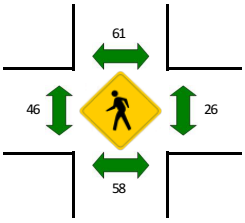
LOCATION: Charles St -- Albert Ave
CITY/STATE: East Lansing, MI

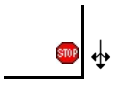
QC JOB #: 17395904
DATE: Tue, Jan 13 2026

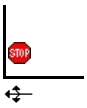
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

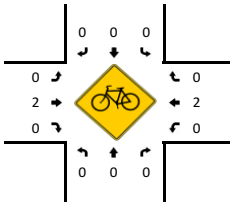


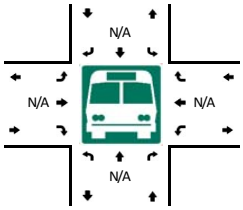


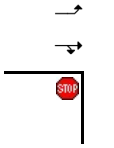


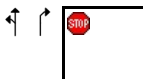


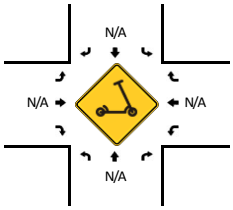












15-Min Count Period Beginning At	Charles St (Northbound)				Charles St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	10	4	22	0	2	1	3	0	5	41	17	0	6	67	2	0	180	
4:15 PM	13	0	24	0	2	0	2	0	2	47	10	0	8	64	2	0	174	
4:30 PM	21	2	28	0	2	1	3	0	0	60	13	0	4	44	1	0	179	
4:45 PM	12	0	21	0	0	0	1	0	4	51	10	0	8	53	1	0	161	694
5:00 PM	17	3	21	0	1	1	1	0	5	51	7	0	4	53	0	0	164	678
5:15 PM	14	3	15	0	1	2	4	0	1	51	8	0	6	56	2	0	163	667
5:30 PM	7	2	19	0	1	3	0	0	2	45	10	0	5	43	2	0	139	627
5:45 PM	14	1	6	0	1	0	1	0	1	53	14	0	4	58	2	0	155	621

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	40	16	88	0	8	4	12	0	20	164	68	0	24	268	8	0	720
Heavy Trucks	4	0	0		0	0	4		0	12	0		4	0	0		24
Buses																	
Pedestrians		64				40				24				36			164
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 1/22/2026 3:44 PM

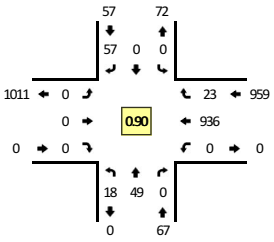
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

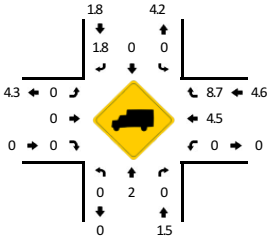
Attachment 2

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

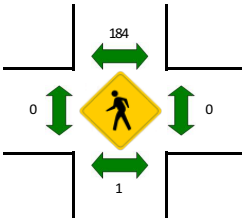
LOCATION: Charles St -- WB Grand River Ave | **QC JOB #:** 17395901
CITY/STATE: East Lansing, MI | **DATE:** Tue, Jan 13 2026

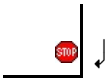
Peak-Hour: 11:45 AM -- 12:45 PM
Peak 15-Min: 11:45 AM -- 12:00 PM

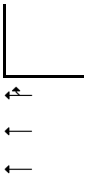


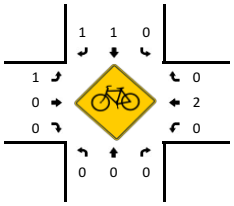


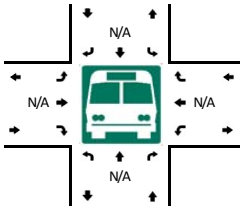
TRUE DATA TO IMPROVE MOBILITY

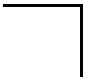


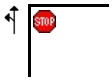


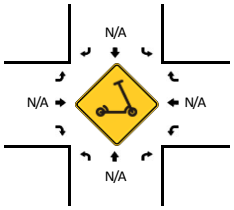












15-Min Count Period Beginning At	Charles St (Northbound)				Charles St (Southbound)				WB Grand River Ave (Eastbound)				WB Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
11:00 AM	10	3	0	0	0	0	6	0	0	0	0	0	0	200	10	0	229	
11:15 AM	3	13	0	0	0	0	8	0	0	0	0	0	0	222	9	0	255	
11:30 AM	5	11	0	0	0	0	12	0	0	0	0	0	0	191	5	0	224	
11:45 AM	9	11	0	0	0	0	11	0	0	0	0	0	0	263	6	0	300	1008
12:00 PM	4	10	0	0	0	0	18	0	0	0	0	0	0	222	8	0	262	1041
12:15 PM	2	10	0	0	0	0	17	0	0	0	0	0	0	224	4	0	257	1043
12:30 PM	3	18	0	0	0	0	11	0	0	0	0	0	0	227	5	0	264	1083
12:45 PM	6	21	0	0	0	0	18	0	0	0	0	0	0	210	3	0	258	1041

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	44	0	0	0	0	44	0	0	0	0	0	0	1052	24	0	1200
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	60	4		64
Buses																	
Pedestrians		0				232				0				0			232
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 1/16/2026 9:44 AM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Attachment 2

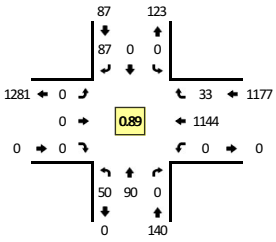
Type of peak hour being reported: Intersection Peak

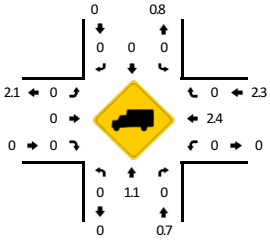
Method for determining peak hour: Total Entering Volume

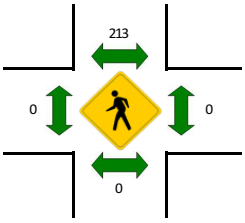
LOCATION: Charles St -- WB Grand River Ave
CITY/STATE: East Lansing, MI

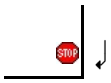
QC JOB #: 17395902
DATE: Tue, Jan 13 2026

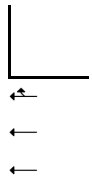
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

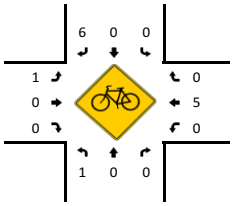


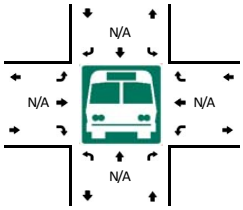


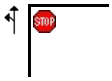


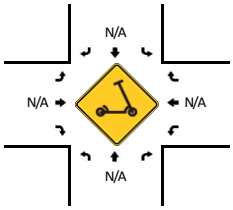












15-Min Count Period Beginning At	Charles St (Northbound)				Charles St (Southbound)				WB Grand River Ave (Eastbound)				WB Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	4	23	0	0	0	0	16	0	0	0	0	0	0	311	4	0	358	
4:15 PM	6	21	0	0	0	0	17	0	0	0	0	0	0	268	10	0	322	
4:30 PM	9	29	0	0	0	0	40	0	0	0	0	0	0	261	7	0	346	
4:45 PM	14	23	0	0	0	0	13	0	0	0	0	0	0	256	5	0	311	1337
5:00 PM	15	17	0	0	0	0	15	0	0	0	0	0	0	333	13	0	393	1372
5:15 PM	12	21	0	0	0	0	19	0	0	0	0	0	0	294	8	0	354	1404
5:30 PM	6	16	0	0	0	0	19	0	0	0	0	0	0	245	10	0	296	1354
5:45 PM	8	19	0	0	0	0	19	0	0	0	0	0	0	281	9	0	336	1379

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	60	68	0	0	0	0	60	0	0	0	0	0	0	1332	52	0	1572
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	32	0		32
Buses																	
Pedestrians		0				176				0				0			176
Bicycles	4	0	0		0	0	12		0	0	0		0	8	0		24
Scooters																	

Comments:

Report generated on 1/16/2026 9:44 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

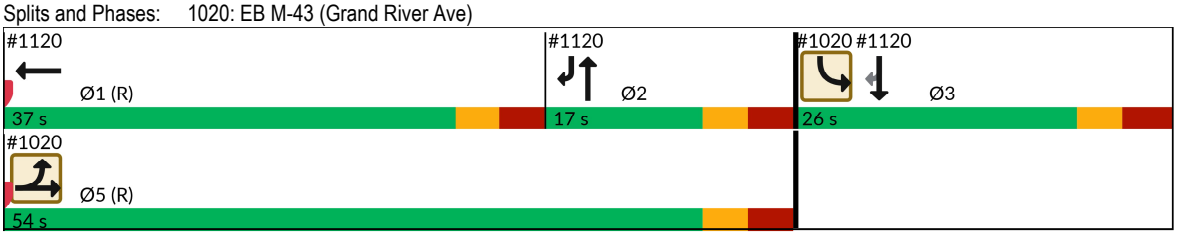
Attachment 3

Lanes, Volumes, Timings
1020: EB M-43 (Grand River Ave) 01/30/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	44	951	0	0	213	0		
Future Volume (vph)	44	951	0	0	213	0		
Satd. Flow (prot)	1770	3539	0	0	1770	0		
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1770	3539	0	0	1211	0		
Satd. Flow (RTOR)								
Confl. Peds. (#/hr)					284			
Peak Hour Factor	0.89	0.89	0.92	0.92	0.88	0.88		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	49	1069	0	0	242	0		
Turn Type	Split	NA			Prot			
Protected Phases	5	5			3		1	2
Permitted Phases								
Total Split (s)	54.0	54.0			26.0		37.0	17.0
Total Lost Time (s)	6.1	6.1			6.5			
Act Effct Green (s)	47.9	47.9			19.5			
Actuated g/C Ratio	0.60	0.60			0.24			
v/c Ratio	0.05	0.50			0.56			
Control Delay (s/veh)	6.8	10.3			5.8			
Queue Delay	0.0	0.0			0.0			
Total Delay (s/veh)	6.8	10.3			5.8			
LOS	A	B			A			
Approach Delay (s/veh)		10.1			5.8			
Approach LOS		B			A			

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay (s/veh): 9.3	Intersection LOS: A
Intersection Capacity Utilization 72.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1020: EB M-43 (Grand River Ave)



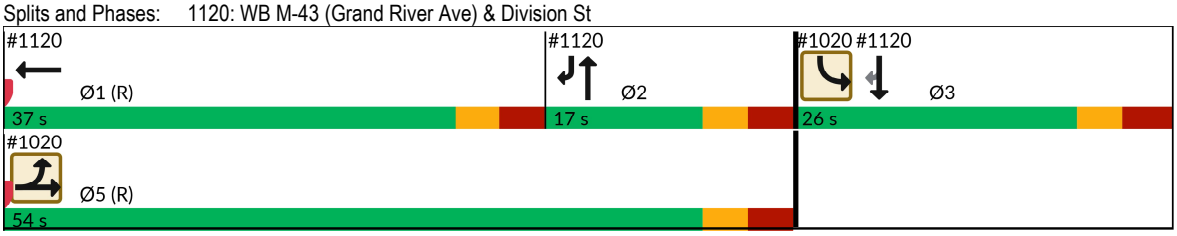
Attachment 3

Lanes, Volumes, Timings
1120: WB M-43 (Grand River Ave) & Division St 01/30/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	899	75	0	44	0	0	213	63
Future Volume (vph)	0	0	0	0	899	75	0	44	0	0	213	63
Satd. Flow (prot)	0	0	0	0	4688	0	0	1863	0	0	1863	1583
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	4688	0	0	1863	0	0	1863	1583
Satd. Flow (RTOR)					19							42
Confl. Peds. (#/hr)						230						
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1119	0	0	49	0	0	242	72
Turn Type					NA			NA			NA	custom
Protected Phases					1			2			3	2
Permitted Phases												3
Total Split (s)					37.0			17.0			26.0	17.0
Total Lost Time (s)					6.1			6.1			6.5	6.1
Act Effct Green (s)					30.9			10.9			19.5	36.9
Actuated g/C Ratio					0.39			0.14			0.24	0.46
v/c Ratio					0.61			0.19			0.53	0.10
Control Delay (s/veh)					21.2			26.3			31.4	6.8
Queue Delay					0.0			0.0			0.0	0.0
Total Delay (s/veh)					21.2			26.3			31.4	6.8
LOS					C			C			C	A
Approach Delay (s/veh)					21.2			26.3			25.7	
Approach LOS					C			C			C	

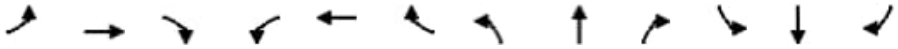
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay (s/veh): 22.3	Intersection LOS: C
Intersection Capacity Utilization 70.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1120: WB M-43 (Grand River Ave) & Division St



Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2001: Division St & Albert Ave 01/30/2026



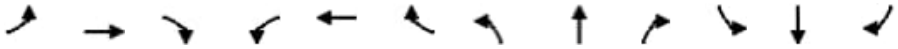
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	22	145	137	28	171	33	36	23	35	30	103	14
Future Volume (vph)	22	145	137	28	171	33	36	23	35	30	103	14
Peak Hour Factor	0.71	0.71	0.71	0.83	0.83	0.83	0.73	0.73	0.73	0.74	0.74	0.74
Hourly flow rate (vph)	31	204	193	34	206	40	49	32	48	41	139	19

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	235	193	240	40	49	80	199
Volume Left (vph)	31	0	34	0	49	0	41
Volume Right (vph)	0	193	0	40	0	48	19
Hadj (s)	0.10	-0.67	0.07	-0.70	0.52	-0.40	0.00
Departure Headway (s)	6.1	5.3	6.2	5.5	7.2	6.3	6.5
Degree Utilization, x	0.40	0.29	0.42	0.06	0.10	0.14	0.36
Capacity (veh/h)	564	644	549	618	454	515	518
Control Delay (s/veh)	11.9	9.2	12.4	7.6	9.8	9.1	13.1
Approach Delay (s/veh)	10.7		11.7		9.4		13.1
Approach LOS	B		B		A		B

Intersection Summary				
Delay	11.2			
Level of Service	B			
Intersection Capacity Utilization	48.7%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2002: Charles St & Albert Ave 01/30/2026



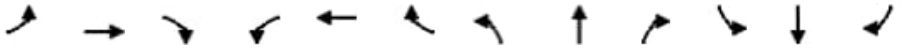
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	245	37	25	181	7	24	6	50	9	4	4
Future Volume (vph)	4	245	37	25	181	7	24	6	50	9	4	4
Peak Hour Factor	0.74	0.74	0.74	0.83	0.83	0.83	0.80	0.80	0.80	0.61	0.61	0.61
Hourly flow rate (vph)	5	331	50	30	218	8	30	8	62	15	7	7

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	336	50	256	38	62	29
Volume Left (vph)	5	0	30	30	0	15
Volume Right (vph)	0	50	8	0	62	7
Hadj (s)	0.04	-0.67	0.02	0.48	-0.62	-0.04
Departure Headway (s)	5.2	4.5	5.4	6.6	5.5	6.2
Degree Utilization, x	0.48	0.06	0.38	0.07	0.10	0.05
Capacity (veh/h)	669	775	649	496	587	512
Control Delay (s/veh)	11.8	6.6	11.6	8.9	7.9	9.6
Approach Delay (s/veh)	11.1		11.6	8.3		9.6
Approach LOS	B		B	A		A

Intersection Summary				
Delay	10.8			
Level of Service	B			
Intersection Capacity Utilization	48.4%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2003: WB M-43 (Grand River Ave) & Charles St 01/30/2026



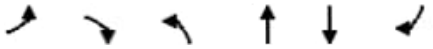
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	936	23	18	49	0	0	0	57
Future Volume (Veh/h)	0	0	0	0	936	23	18	49	0	0	0	57
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.80	0.80	0.80	0.79	0.79	0.79
Hourly flow rate (vph)	0	0	0	0	1052	26	22	61	0	0	0	72
Pedestrians											184	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											18	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					383							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1262			0			423	1262	0	1280	1249	548
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	637			0			0	637	0	658	621	0
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	78	100	100	100	90
cM capacity (veh/h)	652			1600			671	272	1084	174	278	750

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	421	421	236	83	72
Volume Left	0	0	0	22	0
Volume Right	0	0	26	0	72
cSH	1700	1700	1700	323	750
Volume to Capacity	0.25	0.25	0.14	0.26	0.10
Queue Length 95th (ft)	0	0	0	25	8
Control Delay (s/veh)	0.0	0.0	0.0	20.0	10.3
Lane LOS				C	B
Approach Delay (s/veh)	0.0			20.0	10.3
Approach LOS				C	B

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	35.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2005: Division St & Division Garage 01/30/2026

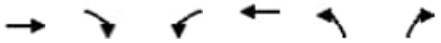


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	8	25	94	268	0
Future Volume (Veh/h)	0	8	25	94	268	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	27	102	291	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked	1.00					
vC, conflicting volume	447	291	291			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	444	291	291			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	98			
cM capacity (veh/h)	558	748	1271			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	9	129	291	0
Volume Left	0	27	0	0
Volume Right	9	0	0	0
cSH	748	1271	1700	1700
Volume to Capacity	0.01	0.02	0.17	0.00
Queue Length 95th (ft)	1	2	0	0
Control Delay (s/veh)	9.9	1.8	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	9.9	1.8	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	33.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2006: Permit Entry Only & Albert Ave 01/30/2026



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	304	0	0	221	0	0
Future Volume (Veh/h)	304	0	0	221	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	330	0	0	240	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			330		570	165
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			330		570	165
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1226		452	850

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	220	110	240
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.13	0.06	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s/veh)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.0%	ICU Level of Service	A
Analysis Period (min)	15		

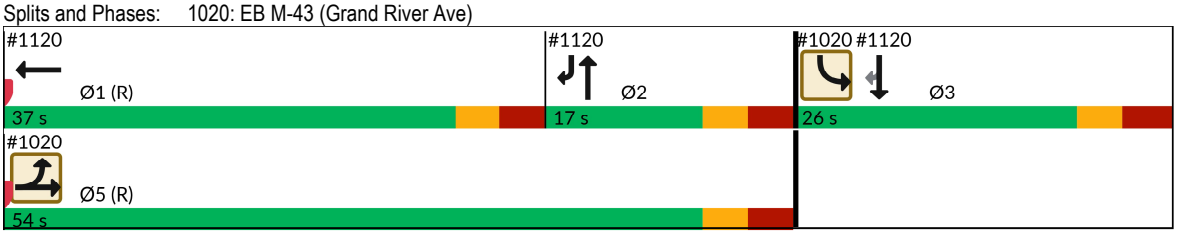
Attachment 3

Lanes, Volumes, Timings
1020: EB M-43 (Grand River Ave) 01/30/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	68	987	0	0	173	0		
Future Volume (vph)	68	987	0	0	173	0		
Satd. Flow (prot)	1787	3574	0	0	1736	0		
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1787	3574	0	0	1435	0		
Satd. Flow (RTOR)								
Confl. Peds. (#/hr)					130			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.83	0.83		
Heavy Vehicles (%)	1%	1%	2%	2%	4%	4%		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	74	1073	0	0	208	0		
Turn Type	Split	NA			Prot			
Protected Phases	5	5			3		1	2
Permitted Phases								
Total Split (s)	54.0	54.0			26.0		37.0	17.0
Total Lost Time (s)	6.1	6.1			6.5			
Act Effct Green (s)	47.9	47.9			19.5			
Actuated g/C Ratio	0.60	0.60			0.24			
v/c Ratio	0.07	0.50			0.49			
Control Delay (s/veh)	7.0	10.2			5.0			
Queue Delay	0.2	0.0			0.0			
Total Delay (s/veh)	7.1	10.2			5.0			
LOS	A	B			A			
Approach Delay (s/veh)		10.0			5.0			
Approach LOS		B			A			

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 59 (74%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay (s/veh): 9.3	Intersection LOS: A
Intersection Capacity Utilization 75.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1020: EB M-43 (Grand River Ave)



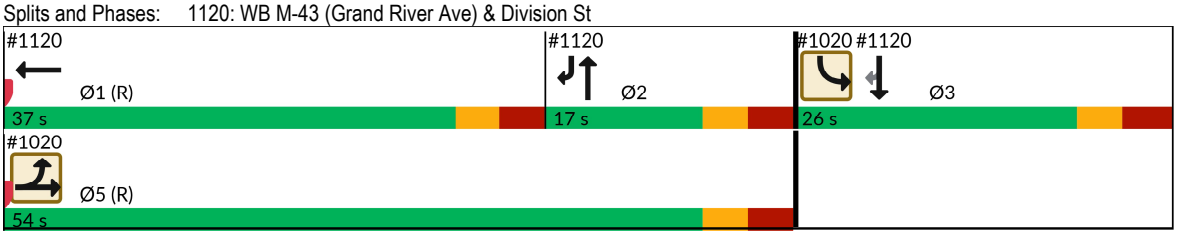
Attachment 3

Lanes, Volumes, Timings
1120: WB M-43 (Grand River Ave) & Division St 01/30/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1107	57	0	68	0	0	173	68
Future Volume (vph)	0	0	0	0	1107	57	0	68	0	0	173	68
Satd. Flow (prot)	0	0	0	0	4794	0	0	1863	0	0	1863	1583
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	4794	0	0	1863	0	0	1863	1583
Satd. Flow (RTOR)					11							42
Confl. Peds. (#/hr)						202						
Confl. Bikes (#/hr)						10						
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1308	0	0	74	0	0	208	82
Turn Type					NA			NA			NA	custom
Protected Phases					1			2			3	2
Permitted Phases												3
Total Split (s)					37.0			17.0			26.0	17.0
Total Lost Time (s)					6.1			6.1			6.5	6.1
Act Effct Green (s)					30.9			10.9			19.5	36.9
Actuated g/C Ratio					0.39			0.14			0.24	0.46
v/c Ratio					0.70			0.29			0.46	0.11
Control Delay (s/veh)					23.0			27.7			29.7	7.4
Queue Delay					0.0			0.0			0.0	0.0
Total Delay (s/veh)					23.0			27.7			29.7	7.4
LOS					C			C			C	A
Approach Delay (s/veh)					23.0			27.7			23.4	
Approach LOS					C			C			C	

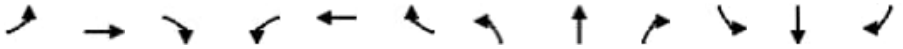
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 59 (74%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay (s/veh): 23.3	Intersection LOS: C
Intersection Capacity Utilization 72.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1120: WB M-43 (Grand River Ave) & Division St



Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2001: Division St & Albert Ave 01/30/2026



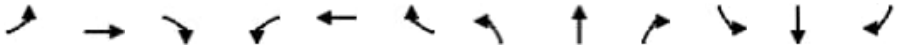
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	168	103	36	180	28	43	51	34	13	76	26
Future Volume (vph)	30	168	103	36	180	28	43	51	34	13	76	26
Peak Hour Factor	0.85	0.85	0.85	0.81	0.81	0.81	0.84	0.84	0.84	0.74	0.74	0.74
Hourly flow rate (vph)	35	198	121	44	222	35	51	61	40	18	103	35

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	233	121	266	35	51	101	156
Volume Left (vph)	35	0	44	0	51	0	18
Volume Right (vph)	0	121	0	35	0	40	35
Hadj (s)	0.11	-0.67	0.08	-0.70	0.52	-0.26	-0.09
Departure Headway (s)	6.0	5.2	6.0	5.3	7.0	6.2	6.3
Degree Utilization, x	0.39	0.18	0.45	0.05	0.10	0.18	0.28
Capacity (veh/h)	569	650	569	644	470	525	522
Control Delay (s/veh)	11.6	8.1	12.6	7.3	9.6	9.4	11.7
Approach Delay (s/veh)	10.4		12.0		9.4		11.7
Approach LOS	B		B		A		B

Intersection Summary				
Delay	11.0			
Level of Service	B			
Intersection Capacity Utilization	49.1%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2002: Charles St & Albert Ave 01/30/2026



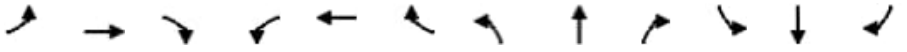
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	199	50	26	228	6	56	6	95	6	2	9
Future Volume (vph)	11	199	50	26	228	6	56	6	95	6	2	9
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.77	0.77	0.77	0.71	0.71	0.71
Hourly flow rate (vph)	12	224	56	30	262	7	73	8	123	8	3	13

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	236	56	299	81	123	24
Volume Left (vph)	12	0	30	73	0	8
Volume Right (vph)	0	56	7	0	123	13
Hadj (s)	0.08	-0.65	0.02	0.47	-0.68	-0.16
Departure Headway (s)	5.6	4.9	5.6	6.6	5.4	6.3
Degree Utilization, x	0.37	0.08	0.46	0.15	0.18	0.04
Capacity (veh/h)	613	703	625	510	612	502
Control Delay (s/veh)	10.6	7.1	13.3	9.5	8.4	9.6
Approach Delay (s/veh)	9.9		13.3	8.9		9.6
Approach LOS	A		B	A		A

Intersection Summary				
Delay	10.9			
Level of Service	B			
Intersection Capacity Utilization	49.2%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2003: WB M-43 (Grand River Ave) & Charles St 01/30/2026

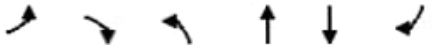


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	1144	33	50	90	0	0	0	87
Future Volume (Veh/h)	0	0	0	0	1144	33	50	90	0	0	0	87
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.54	0.54	0.54
Hourly flow rate (vph)	0	0	0	0	1346	39	54	98	0	0	0	161
Pedestrians											213	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											20	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					383							
pX, platoon unblocked	0.79						0.79	0.79		0.79	0.79	0.79
vC, conflicting volume	1598			0			610	1598	0	1628	1579	681
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	814			0			0	814	0	851	789	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			90	50	100	100	100	76
cM capacity (veh/h)	508			1622			521	196	1088	84	204	685

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	538	538	308	152	161
Volume Left	0	0	0	54	0
Volume Right	0	0	39	0	161
cSH	1700	1700	1700	252	685
Volume to Capacity	0.32	0.32	0.18	0.60	0.24
Queue Length 95th (ft)	0	0	0	89	23
Control Delay (s/veh)	0.0	0.0	0.0	38.8	11.9
Lane LOS				E	B
Approach Delay (s/veh)	0.0			38.8	11.9
Approach LOS				E	B

Intersection Summary				
Average Delay	4.6			
Intersection Capacity Utilization	45.9%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2005: Division St & Division Garage 01/30/2026

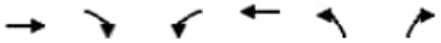


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	26	0	125	215	0
Future Volume (Veh/h)	3	26	0	125	215	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	28	0	136	234	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked	0.98					
vC, conflicting volume	370	234	234			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	343	234	234			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	100			
cM capacity (veh/h)	638	805	1333			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	31	136	234	0
Volume Left	3	0	0	0
Volume Right	28	0	0	0
cSH	785	1333	1700	1700
Volume to Capacity	0.04	0.00	0.14	0.00
Queue Length 95th (ft)	3	0	0	0
Control Delay (s/veh)	9.8	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s/veh)	9.8	0.0	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	21.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2006: Permit Entry Only & Albert Ave 01/30/2026



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	300	0	0	249	0	0
Future Volume (Veh/h)	300	0	0	249	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	326	0	0	271	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			326		597	163
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			326		597	163
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1230		434	853

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	217	109	271
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.13	0.06	0.16
Queue Length 95th (ft)	0	0	0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s/veh)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.4%	ICU Level of Service	A
Analysis Period (min)	15		

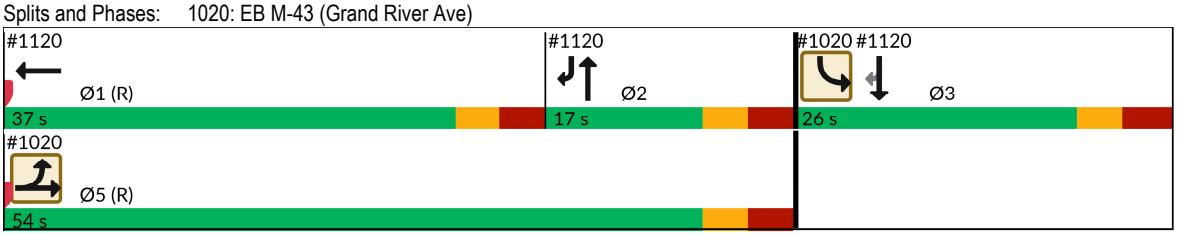
Attachment 3

Lanes, Volumes, Timings
1020: EB M-43 (Grand River Ave) 01/30/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	44	961	0	0	215	0		
Future Volume (vph)	44	961	0	0	215	0		
Satd. Flow (prot)	1770	3539	0	0	1770	0		
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1770	3539	0	0	1211	0		
Satd. Flow (RTOR)								
Confl. Peds. (#/hr)					284			
Peak Hour Factor	0.89	0.89	0.92	0.92	0.88	0.88		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	49	1080	0	0	244	0		
Turn Type	Split	NA			Prot			
Protected Phases	5	5			3		1	2
Permitted Phases								
Total Split (s)	54.0	54.0			26.0		37.0	17.0
Total Lost Time (s)	6.1	6.1			6.5			
Act Effct Green (s)	47.9	47.9			19.5			
Actuated g/C Ratio	0.60	0.60			0.24			
v/c Ratio	0.05	0.51			0.57			
Control Delay (s/veh)	6.8	10.3			5.9			
Queue Delay	0.0	0.0			0.0			
Total Delay (s/veh)	6.8	10.3			5.9			
LOS	A	B			A			
Approach Delay (s/veh)		10.2			5.9			
Approach LOS		B			A			

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay (s/veh): 9.4	Intersection LOS: A
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1020: EB M-43 (Grand River Ave)



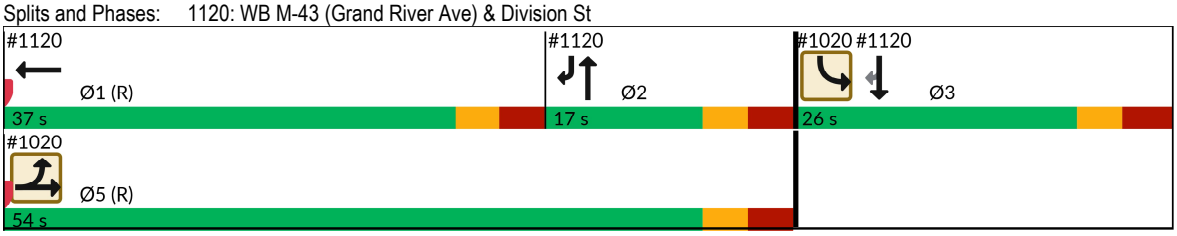
Attachment 3

Lanes, Volumes, Timings
1120: WB M-43 (Grand River Ave) & Division St 01/30/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	908	76	0	44	0	0	215	64
Future Volume (vph)	0	0	0	0	908	76	0	44	0	0	215	64
Satd. Flow (prot)	0	0	0	0	4688	0	0	1863	0	0	1863	1583
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	4688	0	0	1863	0	0	1863	1583
Satd. Flow (RTOR)					20							42
Confl. Peds. (#/hr)						230						
Confl. Bikes (#/hr)						1						
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1131	0	0	49	0	0	244	73
Turn Type					NA			NA			NA	custom
Protected Phases					1			2			3	2
Permitted Phases												3
Total Split (s)					37.0			17.0			26.0	17.0
Total Lost Time (s)					6.1			6.1			6.5	6.1
Act Effct Green (s)					30.9			10.9			19.5	36.9
Actuated g/C Ratio					0.39			0.14			0.24	0.46
v/c Ratio					0.62			0.19			0.54	0.10
Control Delay (s/veh)					21.3			26.3			31.5	6.9
Queue Delay					0.0			0.0			0.0	0.0
Total Delay (s/veh)					21.3			26.3			31.5	6.9
LOS					C			C			C	A
Approach Delay (s/veh)					21.3			26.3			25.8	
Approach LOS					C			C			C	

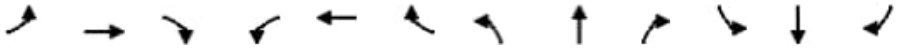
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay (s/veh): 22.4	Intersection LOS: C
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1120: WB M-43 (Grand River Ave) & Division St



Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2001: Division St & Albert Ave 01/30/2026



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	22	146	138	28	173	33	36	23	35	30	104	14
Future Volume (vph)	22	146	138	28	173	33	36	23	35	30	104	14
Peak Hour Factor	0.71	0.71	0.71	0.83	0.83	0.83	0.73	0.73	0.73	0.74	0.74	0.74
Hourly flow rate (vph)	31	206	194	34	208	40	49	32	48	41	141	19

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	237	194	242	40	49	80	201
Volume Left (vph)	31	0	34	0	49	0	41
Volume Right (vph)	0	194	0	40	0	48	19
Hadj (s)	0.10	-0.67	0.07	-0.70	0.52	-0.40	0.00
Departure Headway (s)	6.1	5.3	6.2	5.5	7.3	6.3	6.5
Degree Utilization, x	0.40	0.29	0.42	0.06	0.10	0.14	0.36
Capacity (veh/h)	563	643	548	616	452	513	517
Control Delay (s/veh)	11.9	9.3	12.5	7.6	9.9	9.2	13.1
Approach Delay (s/veh)	10.7		11.8		9.4		13.1
Approach LOS	B		B		A		B

Intersection Summary				
Delay	11.3			
Level of Service	B			
Intersection Capacity Utilization	48.8%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2002: Charles St & Albert Ave 01/30/2026

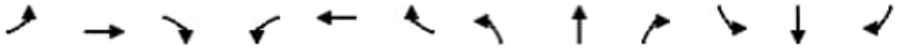
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	247	37	25	183	7	24	6	51	9	4	4
Future Volume (vph)	4	247	37	25	183	7	24	6	51	9	4	4
Peak Hour Factor	0.74	0.74	0.74	0.83	0.83	0.83	0.80	0.80	0.80	0.61	0.61	0.61
Hourly flow rate (vph)	5	334	50	30	220	8	30	8	64	15	7	7

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	339	50	258	38	64	29
Volume Left (vph)	5	0	30	30	0	15
Volume Right (vph)	0	50	8	0	64	7
Hadj (s)	0.04	-0.67	0.02	0.48	-0.62	-0.04
Departure Headway (s)	5.2	4.5	5.4	6.6	5.5	6.3
Degree Utilization, x	0.49	0.06	0.39	0.07	0.10	0.05
Capacity (veh/h)	668	773	648	495	585	510
Control Delay (s/veh)	11.9	6.6	11.7	8.9	7.9	9.6
Approach Delay (s/veh)	11.2		11.7	8.3		9.6
Approach LOS	B		B	A		A

Intersection Summary				
Delay	10.9			
Level of Service	B			
Intersection Capacity Utilization	48.4%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2003: WB M-43 (Grand River Ave) & Charles St 01/30/2026



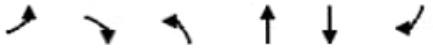
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	945	23	18	50	0	0	0	58
Future Volume (Veh/h)	0	0	0	0	945	23	18	50	0	0	0	58
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.80	0.80	0.80	0.79	0.79	0.79
Hourly flow rate (vph)	0	0	0	0	1062	26	22	62	0	0	0	73
Pedestrians											184	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											18	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					383							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	1272			0			427	1272	0	1290	1259	551
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	637			0			0	637	0	658	621	0
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	77	100	100	100	90
cM capacity (veh/h)	650			1600			667	271	1084	173	277	747

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	425	425	238	84	73
Volume Left	0	0	0	22	0
Volume Right	0	0	26	0	73
cSH	1700	1700	1700	321	747
Volume to Capacity	0.25	0.25	0.14	0.26	0.10
Queue Length 95th (ft)	0	0	0	26	8
Control Delay (s/veh)	0.0	0.0	0.0	20.1	10.3
Lane LOS				C	B
Approach Delay (s/veh)	0.0			20.1	10.3
Approach LOS				C	B

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	36.2%	ICU Level of Service	A	
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2005: Division St & Division Garage 01/30/2026



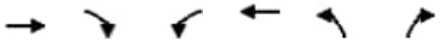
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	9	26	94	270	0
Future Volume (Veh/h)	0	9	26	94	270	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	10	28	102	293	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked	1.00					
vC, conflicting volume	451	293	293			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	448	293	293			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	98			
cM capacity (veh/h)	554	746	1269			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	10	130	293	0
Volume Left	0	28	0	0
Volume Right	10	0	0	0
cSH	746	1269	1700	1700
Volume to Capacity	0.01	0.02	0.17	0.00
Queue Length 95th (ft)	1	2	0	0
Control Delay (s/veh)	9.9	1.8	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	9.9	1.8	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	33.9%	ICU Level of Service	A
Analysis Period (min)	15		

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2006: Permit Entry Only & Albert Ave 01/30/2026



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	306	1	0	223	0	0
Future Volume (Veh/h)	306	1	0	223	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	333	1	0	242	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			334		576	167
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			334		576	167
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1222		448	848

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	222	112	242
Volume Left	0	0	0
Volume Right	0	1	0
cSH	1700	1700	1700
Volume to Capacity	0.13	0.07	0.14
Queue Length 95th (ft)	0	0	0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s/veh)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	15.1%	ICU Level of Service	A
Analysis Period (min)	15		

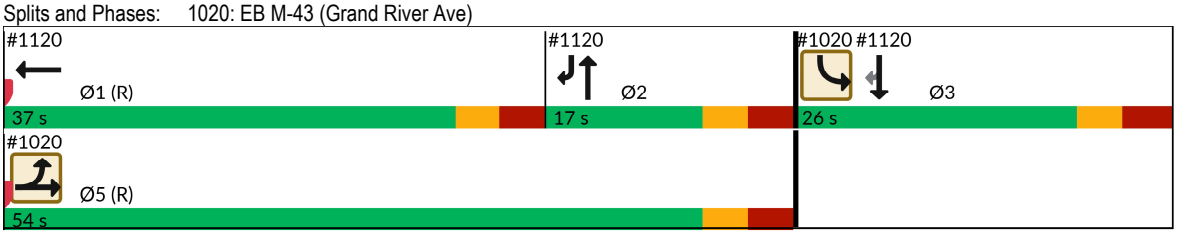
Attachment 3

Lanes, Volumes, Timings
1020: EB M-43 (Grand River Ave) 01/30/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	69	997	0	0	175	0		
Future Volume (vph)	69	997	0	0	175	0		
Satd. Flow (prot)	1787	3574	0	0	1736	0		
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1787	3574	0	0	1435	0		
Satd. Flow (RTOR)								
Confl. Peds. (#/hr)					130			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.83	0.83		
Heavy Vehicles (%)	1%	1%	2%	2%	4%	4%		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	75	1084	0	0	211	0		
Turn Type	Split	NA			Prot			
Protected Phases	5	5			3		1	2
Permitted Phases								
Total Split (s)	54.0	54.0			26.0		37.0	17.0
Total Lost Time (s)	6.1	6.1			6.5			
Act Effct Green (s)	47.9	47.9			19.5			
Actuated g/C Ratio	0.60	0.60			0.24			
v/c Ratio	0.07	0.51			0.50			
Control Delay (s/veh)	7.0	10.3			5.1			
Queue Delay	0.2	0.0			0.0			
Total Delay (s/veh)	7.2	10.3			5.1			
LOS	A	B			A			
Approach Delay (s/veh)		10.1			5.1			
Approach LOS		B			A			

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 59 (74%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 9.3	Intersection LOS: A
Intersection Capacity Utilization 75.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1020: EB M-43 (Grand River Ave)



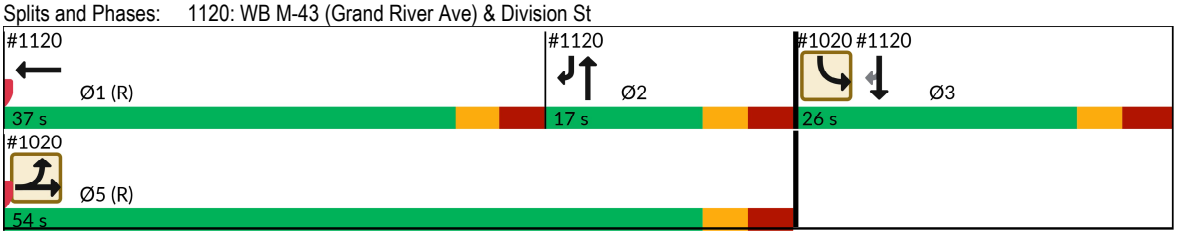
Attachment 3

Lanes, Volumes, Timings
1120: WB M-43 (Grand River Ave) & Division St 01/30/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1118	58	0	69	0	0	175	69
Future Volume (vph)	0	0	0	0	1118	58	0	69	0	0	175	69
Satd. Flow (prot)	0	0	0	0	4793	0	0	1863	0	0	1863	1583
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	4793	0	0	1863	0	0	1863	1583
Satd. Flow (RTOR)					11							42
Confl. Peds. (#/hr)						202						
Confl. Bikes (#/hr)						10						
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1321	0	0	75	0	0	211	83
Turn Type					NA			NA			NA	custom
Protected Phases					1			2			3	2
Permitted Phases												3
Total Split (s)					37.0			17.0			26.0	17.0
Total Lost Time (s)					6.1			6.1			6.5	6.1
Act Effct Green (s)					30.9			10.9			19.5	36.9
Actuated g/C Ratio					0.39			0.14			0.24	0.46
v/c Ratio					0.71			0.30			0.46	0.11
Control Delay (s/veh)					23.2			28.0			29.8	7.5
Queue Delay					0.0			0.0			0.0	0.0
Total Delay (s/veh)					23.2			28.0			29.8	7.5
LOS					C			C			C	A
Approach Delay (s/veh)					23.2			28.0			23.5	
Approach LOS					C			C			C	

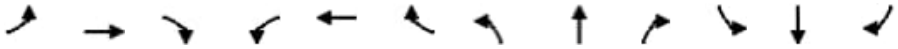
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 59 (74%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 23.5	Intersection LOS: C
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1120: WB M-43 (Grand River Ave) & Division St



Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2001: Division St & Albert Ave 01/30/2026



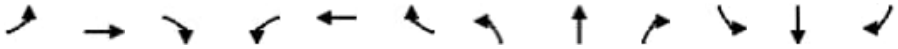
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	170	104	36	182	28	43	52	34	13	77	26
Future Volume (vph)	30	170	104	36	182	28	43	52	34	13	77	26
Peak Hour Factor	0.85	0.85	0.85	0.81	0.81	0.81	0.84	0.84	0.84	0.74	0.74	0.74
Hourly flow rate (vph)	35	200	122	44	225	35	51	62	40	18	104	35

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	235	122	269	35	51	102	157
Volume Left (vph)	35	0	44	0	51	0	18
Volume Right (vph)	0	122	0	35	0	40	35
Hadj (s)	0.11	-0.67	0.08	-0.70	0.52	-0.26	-0.09
Departure Headway (s)	6.0	5.3	6.1	5.3	7.1	6.3	6.4
Degree Utilization, x	0.39	0.18	0.45	0.05	0.10	0.18	0.28
Capacity (veh/h)	568	648	568	642	468	522	520
Control Delay (s/veh)	11.7	8.2	12.8	7.4	9.6	9.4	11.8
Approach Delay (s/veh)	10.5		12.1		9.5		11.8
Approach LOS	B		B		A		B

Intersection Summary				
Delay	11.1			
Level of Service	B			
Intersection Capacity Utilization	49.2%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2002: Charles St & Albert Ave 01/30/2026



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	201	51	26	230	6	57	6	96	6	2	9
Future Volume (vph)	11	201	51	26	230	6	57	6	96	6	2	9
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.77	0.77	0.77	0.71	0.71	0.71
Hourly flow rate (vph)	12	226	57	30	264	7	74	8	125	8	3	13

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	238	57	301	82	125	24
Volume Left (vph)	12	0	30	74	0	8
Volume Right (vph)	0	57	7	0	125	13
Hadj (s)	0.08	-0.65	0.02	0.47	-0.68	-0.16
Departure Headway (s)	5.6	4.9	5.6	6.6	5.4	6.3
Degree Utilization, x	0.37	0.08	0.47	0.15	0.19	0.04
Capacity (veh/h)	611	701	623	509	610	500
Control Delay (s/veh)	10.7	7.1	13.4	9.5	8.5	9.6
Approach Delay (s/veh)	10.0		13.4	8.9		9.6
Approach LOS	B		B	A		A

Intersection Summary				
Delay	10.9			
Level of Service	B			
Intersection Capacity Utilization	49.3%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

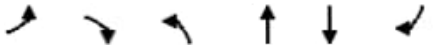
HCM Unsignalized Intersection Capacity Analysis
2003: WB M-43 (Grand River Ave) & Charles St 01/30/2026

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	1155	33	51	91	0	0	0	88
Future Volume (Veh/h)	0	0	0	0	1155	33	51	91	0	0	0	88
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.54	0.54	0.54
Hourly flow rate (vph)	0	0	0	0	1359	39	55	99	0	0	0	163
Pedestrians											213	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											20	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					383							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	1611			0			616	1611	0	1641	1592	686
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	815			0			0	815	0	853	790	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			89	49	100	100	100	76
cM capacity (veh/h)	505			1622			516	195	1088	82	203	682

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	544	544	311	154	163
Volume Left	0	0	0	55	0
Volume Right	0	0	39	0	163
cSH	1700	1700	1700	251	682
Volume to Capacity	0.32	0.32	0.18	0.61	0.24
Queue Length 95th (ft)	0	0	0	92	23
Control Delay (s/veh)	0.0	0.0	0.0	39.7	11.9
Lane LOS				E	B
Approach Delay (s/veh)	0.0			39.7	11.9
Approach LOS				E	B

Intersection Summary				
Average Delay	4.7			
Intersection Capacity Utilization	46.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
2005: Division St & Division Garage 01/30/2026



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	3	27	1	126	217	0
Future Volume (Veh/h)	3	27	1	126	217	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	29	1	137	236	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked	0.98					
vC, conflicting volume	375	236	236			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	347	236	236			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	100			
cM capacity (veh/h)	634	803	1331			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	32	138	236	0
Volume Left	3	1	0	0
Volume Right	29	0	0	0
cSH	783	1331	1700	1700
Volume to Capacity	0.04	0.00	0.14	0.00
Queue Length 95th (ft)	3	0	0	0
Control Delay (s/veh)	9.8	0.1	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	9.8	0.1	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	21.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2006: Permit Entry Only & Albert Ave 01/30/2026

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	303	0	0	251	0	0
Future Volume (Veh/h)	303	0	0	251	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	329	0	0	273	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			329		602	165
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			329		602	165
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1227		431	851

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	219	110	273
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.13	0.06	0.16
Queue Length 95th (ft)	0	0	0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s/veh)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

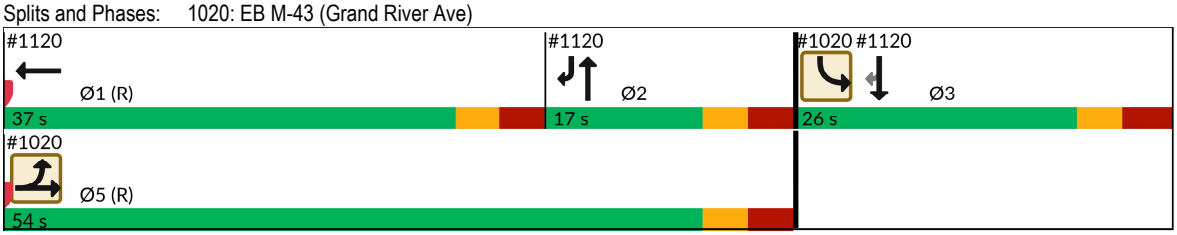
Attachment 3

Lanes, Volumes, Timings
1020: EB M-43 (Grand River Ave) 02/18/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	54	961	0	0	220	0		
Future Volume (vph)	64	961	0	0	225	0		
Satd. Flow (prot)	1770	3539	0	0	1770	0		
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1770	3539	0	0	1195	0		
Satd. Flow (RTOR)								
Confl. Peds. (#/hr)					317			
Peak Hour Factor	0.89	0.89	0.92	0.92	0.88	0.88		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	72	1080	0	0	256	0		
Turn Type	Split	NA			Prot			
Protected Phases	5	5			3		1	2
Permitted Phases								
Total Split (s)	54.0	54.0			26.0		37.0	17.0
Total Lost Time (s)	6.1	6.1			6.5			
Act Effct Green (s)	47.9	47.9			19.5			
Actuated g/C Ratio	0.60	0.60			0.24			
v/c Ratio	0.07	0.51			0.59			
Control Delay (s/veh)	7.0	10.3			6.3			
Queue Delay	0.2	0.0			0.0			
Total Delay (s/veh)	7.1	10.3			6.3			
LOS	A	B			A			
Approach Delay (s/veh)		10.1			6.3			
Approach LOS		B			A			

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay (s/veh): 9.4	Intersection LOS: A
Intersection Capacity Utilization 73.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1020: EB M-43 (Grand River Ave)



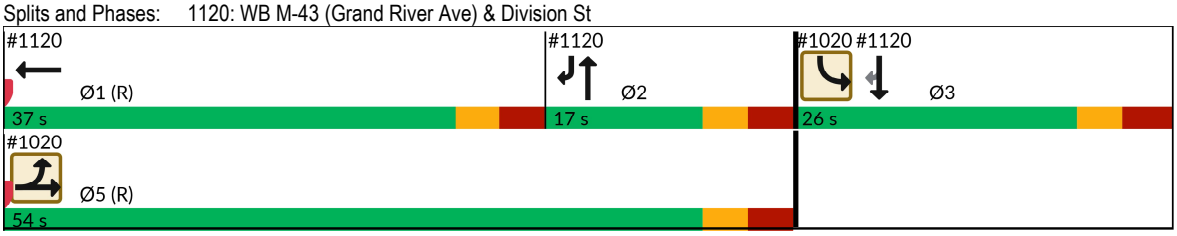
Attachment 3

Lanes, Volumes, Timings
1120: WB M-43 (Grand River Ave) & Division St 02/18/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	908	77	0	54	0	0	220	87
Future Volume (vph)	0	0	0	0	908	78	0	64	0	0	225	110
Satd. Flow (prot)	0	0	0	0	4677	0	0	1863	0	0	1863	1583
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	4677	0	0	1863	0	0	1863	1583
Satd. Flow (RTOR)					20							42
Confl. Peds. (#/hr)						257						
Confl. Bikes (#/hr)						4						
Peak Hour Factor	0.92	0.92	0.92	0.87	0.87	0.87	0.89	0.89	0.89	0.88	0.88	0.88
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1134	0	0	72	0	0	256	125
Turn Type					NA			NA			NA	custom
Protected Phases					1			2			3	2
Permitted Phases												3
Total Split (s)					37.0			17.0			26.0	17.0
Total Lost Time (s)					6.1			6.1			6.5	6.1
Act Effct Green (s)					30.9			10.9			19.5	36.9
Actuated g/C Ratio					0.39			0.14			0.24	0.46
v/c Ratio					0.62			0.28			0.56	0.17
Control Delay (s/veh)					21.3			27.6			32.2	9.2
Queue Delay					0.0			0.0			0.0	0.0
Total Delay (s/veh)					21.3			27.6			32.2	9.2
LOS					C			C			C	A
Approach Delay (s/veh)					21.3			27.6			24.6	
Approach LOS					C			C			C	

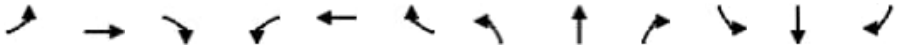
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 75 (94%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.62	
Intersection Signal Delay (s/veh): 22.4	Intersection LOS: C
Intersection Capacity Utilization 71.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1120: WB M-43 (Grand River Ave) & Division St



Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2001: Division St & Albert Ave 02/18/2026



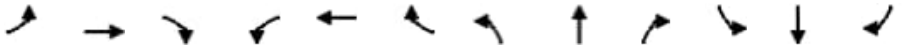
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	22	146	141	28	173	33	40	24	36	30	105	14
Future Volume (vph)	22	146	144	28	173	33	44	25	37	30	106	14
Peak Hour Factor	0.71	0.71	0.71	0.83	0.83	0.83	0.73	0.73	0.73	0.74	0.74	0.74
Hourly flow rate (vph)	31	206	203	34	208	40	60	34	51	41	143	19

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	237	203	242	40	60	85	203
Volume Left (vph)	31	0	34	0	60	0	41
Volume Right (vph)	0	203	0	40	0	51	19
Hadj (s)	0.10	-0.67	0.07	-0.70	0.52	-0.40	0.00
Departure Headway (s)	6.2	5.4	6.3	5.6	7.3	6.4	6.6
Degree Utilization, x	0.41	0.31	0.43	0.06	0.12	0.15	0.37
Capacity (veh/h)	555	633	539	605	450	510	511
Control Delay (s/veh)	12.2	9.6	12.8	7.7	10.1	9.3	13.4
Approach Delay (s/veh)	11.0		12.1		9.6		13.4
Approach LOS	B		B		A		B

Intersection Summary				
Delay	11.5			
Level of Service	B			
Intersection Capacity Utilization	49.2%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2002: Charles St & Albert Ave 02/18/2026



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	4	250	37	25	187	7	24	6	51	9	4	4
Future Volume (vph)	4	253	37	25	191	7	24	6	51	9	4	4
Peak Hour Factor	0.74	0.74	0.74	0.83	0.83	0.83	0.80	0.80	0.80	0.61	0.61	0.61
Hourly flow rate (vph)	5	342	50	30	230	8	30	8	64	15	7	7

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	347	50	268	38	64	29
Volume Left (vph)	5	0	30	30	0	15
Volume Right (vph)	0	50	8	0	64	7
Hadj (s)	0.04	-0.67	0.02	0.48	-0.62	-0.04
Departure Headway (s)	5.2	4.5	5.4	6.7	5.6	6.3
Degree Utilization, x	0.50	0.06	0.40	0.07	0.10	0.05
Capacity (veh/h)	666	771	646	491	579	503
Control Delay (s/veh)	12.2	6.6	12.0	9.0	8.0	9.7
Approach Delay (s/veh)	11.5		12.0	8.4		9.7
Approach LOS	B		B	A		A

Intersection Summary				
Delay	11.2			
Level of Service	B			
Intersection Capacity Utilization	48.6%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2003: WB M-43 (Grand River Ave) & Charles St 02/18/2026

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	968	23	18	50	0	0	0	58
Future Volume (Veh/h)	0	0	0	0	991	23	18	50	0	0	0	58
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.80	0.80	0.80	0.79	0.79	0.79
Hourly flow rate (vph)	0	0	0	0	1113	26	22	62	0	0	0	73
Pedestrians											206	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											20	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					383							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	1345			0			444	1345	0	1363	1332	590
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	721			0			0	721	0	743	706	0
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			97	74	100	100	100	90
cM capacity (veh/h)	588			1600			652	236	1084	139	241	728

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	445	445	249	84	73
Volume Left	0	0	0	22	0
Volume Right	0	0	26	0	73
cSH	1700	1700	1700	283	728
Volume to Capacity	0.26	0.26	0.15	0.30	0.10
Queue Length 95th (ft)	0	0	0	30	8
Control Delay (s/veh)	0.0	0.0	0.0	23.0	10.5
Lane LOS				C	B
Approach Delay (s/veh)	0.0			23.0	10.5
Approach LOS				C	B

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	36.6%	ICU Level of Service	A	
Analysis Period (min)	15			

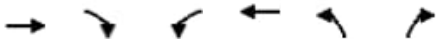
HCM Unsignalized Intersection Capacity Analysis
2005: Division St & Division Garage 02/18/2026

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	37	37	94	270	4
Future Volume (Veh/h)	12	65	48	94	270	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	71	52	102	293	9
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked	0.98					
vC, conflicting volume	499	293	302			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	479	293	302			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	90	96			
cM capacity (veh/h)	513	746	1259			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	84	154	293	9
Volume Left	13	52	0	0
Volume Right	71	0	0	9
cSH	697	1259	1700	1700
Volume to Capacity	0.12	0.04	0.17	0.01
Queue Length 95th (ft)	10	3	0	0
Control Delay (s/veh)	10.9	2.9	0.0	0.0
Lane LOS	B	A		
Approach Delay (s/veh)	10.9	2.9	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2006: Permit Entry Only & Albert Ave 02/18/2026

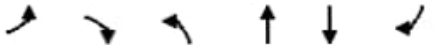


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	309	1	0	227	0	0
Future Volume (Veh/h)	312	1	0	231	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	339	1	0	251	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			340		591	170
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			340		591	170
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1216		438	844

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	226	114	251
Volume Left	0	0	0
Volume Right	0	1	0
cSH	1700	1700	1700
Volume to Capacity	0.13	0.07	0.15
Queue Length 95th (ft)	0	0	0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s/veh)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		15.3%	ICU Level of Service
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
9008: Charles St & Charles Garage 02/18/2026



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	1	0	73	57	9
Future Volume (Veh/h)	8	1	0	73	57	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	1	0	79	62	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	141	62	72			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	141	62	72			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	852	1003	1528			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	10	79	62	10
Volume Left	9	0	0	0
Volume Right	1	0	0	10
cSH	865	1528	1700	1700
Volume to Capacity	0.01	0.00	0.04	0.01
Queue Length 95th (ft)	1	0	0	0
Control Delay (s/veh)	9.2	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s/veh)	9.2	0.0	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	13.8%	ICU Level of Service	A
Analysis Period (min)	15		

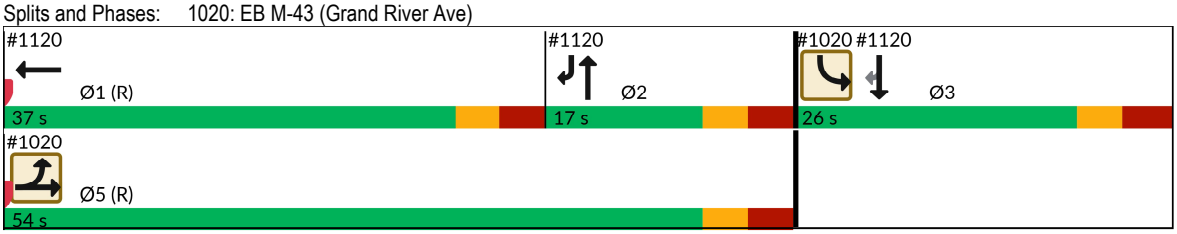
Attachment 3

Lanes, Volumes, Timings
1020: EB M-43 (Grand River Ave) 02/18/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1	Ø2
Lane Configurations								
Traffic Volume (vph)	77	997	0	0	175	0		
Future Volume (vph)	85	997	0	0	175	0		
Satd. Flow (prot)	1787	3574	0	0	1736	0		
Flt Permitted	0.950				0.950			
Satd. Flow (perm)	1787	3574	0	0	1423	0		
Satd. Flow (RTOR)								
Confl. Peds. (#/hr)					135			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.83	0.83		
Heavy Vehicles (%)	1%	1%	2%	2%	4%	4%		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	92	1084	0	0	211	0		
Turn Type	Split	NA			Prot			
Protected Phases	5	5			3		1	2
Permitted Phases								
Total Split (s)	54.0	54.0			26.0		37.0	17.0
Total Lost Time (s)	6.1	6.1			6.5			
Act Effct Green (s)	47.9	47.9			19.5			
Actuated g/C Ratio	0.60	0.60			0.24			
v/c Ratio	0.09	0.51			0.50			
Control Delay (s/veh)	7.1	10.3			5.1			
Queue Delay	0.6	0.0			0.0			
Total Delay (s/veh)	7.6	10.3			5.1			
LOS	A	B			A			
Approach Delay (s/veh)		10.1			5.1			
Approach LOS		B			A			

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 59 (74%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 9.3	Intersection LOS: A
Intersection Capacity Utilization 75.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1020: EB M-43 (Grand River Ave)



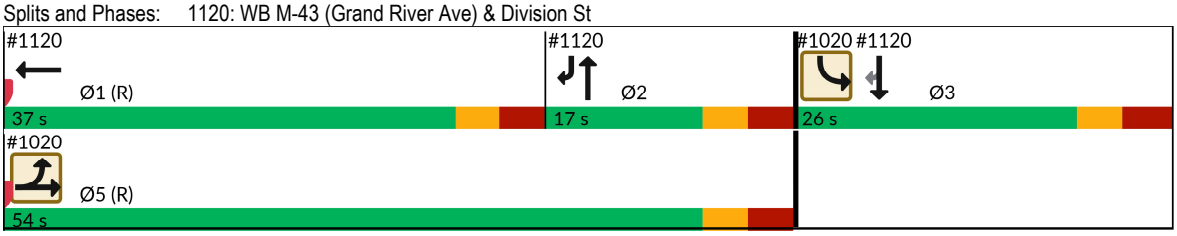
Attachment 3

Lanes, Volumes, Timings
1120: WB M-43 (Grand River Ave) & Division St 02/18/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1118	58	0	77	0	0	175	72
Future Volume (vph)	0	0	0	0	1118	58	0	85	0	0	175	75
Satd. Flow (prot)	0	0	0	0	4789	0	0	1863	0	0	1863	1583
Flt Permitted												
Satd. Flow (perm)	0	0	0	0	4789	0	0	1863	0	0	1863	1583
Satd. Flow (RTOR)					11							42
Confl. Peds. (#/hr)						210						
Confl. Bikes (#/hr)						11						
Peak Hour Factor	0.92	0.92	0.92	0.89	0.89	0.89	0.92	0.92	0.92	0.83	0.83	0.83
Heavy Vehicles (%)	2%	2%	2%	5%	5%	5%	2%	2%	2%	2%	2%	2%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1321	0	0	92	0	0	211	90
Turn Type					NA			NA			NA	custom
Protected Phases					1			2			3	2
Permitted Phases												3
Total Split (s)					37.0			17.0			26.0	17.0
Total Lost Time (s)					6.1			6.1			6.5	6.1
Act Effct Green (s)					30.9			10.9			19.5	36.9
Actuated g/C Ratio					0.39			0.14			0.24	0.46
v/c Ratio					0.71			0.36			0.46	0.12
Control Delay (s/veh)					23.2			29.0			29.8	7.9
Queue Delay					0.0			0.0			0.0	0.0
Total Delay (s/veh)					23.2			29.0			29.8	7.9
LOS					C			C			C	A
Approach Delay (s/veh)					23.2			29.0			23.2	
Approach LOS					C			C			C	

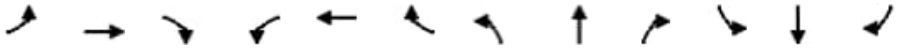
Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 59 (74%), Referenced to phase 1:WBT and 5:, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 23.5	Intersection LOS: C
Intersection Capacity Utilization 73.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1120: WB M-43 (Grand River Ave) & Division St



Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2001: Division St & Albert Ave 02/18/2026



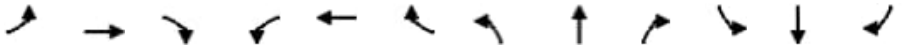
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	170	106	36	182	28	44	52	34	13	78	26
Future Volume (vph)	30	170	108	36	182	28	45	52	34	13	79	26
Peak Hour Factor	0.85	0.85	0.85	0.81	0.81	0.81	0.84	0.84	0.84	0.74	0.74	0.74
Hourly flow rate (vph)	35	200	127	44	225	35	54	62	40	18	107	35

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	235	127	269	35	54	102	160
Volume Left (vph)	35	0	44	0	54	0	18
Volume Right (vph)	0	127	0	35	0	40	35
Hadj (s)	0.11	-0.67	0.08	-0.70	0.52	-0.26	-0.09
Departure Headway (s)	6.1	5.3	6.1	5.3	7.1	6.3	6.4
Degree Utilization, x	0.40	0.19	0.46	0.05	0.11	0.18	0.28
Capacity (veh/h)	565	645	564	638	467	520	519
Control Delay (s/veh)	11.8	8.3	12.9	7.4	9.7	9.5	11.9
Approach Delay (s/veh)	10.5		12.2		9.5		11.9
Approach LOS	B		B		A		B

Intersection Summary				
Delay	11.1			
Level of Service	B			
Intersection Capacity Utilization	49.4%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

HCM Unsignalized Intersection Capacity Analysis
2002: Charles St & Albert Ave 02/18/2026



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	11	203	51	26	231	6	57	6	96	6	2	9
Future Volume (vph)	11	205	51	26	232	6	57	6	96	6	2	9
Peak Hour Factor	0.89	0.89	0.89	0.87	0.87	0.87	0.77	0.77	0.77	0.71	0.71	0.71
Hourly flow rate (vph)	12	230	57	30	267	7	74	8	125	8	3	13

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1
Volume Total (vph)	242	57	304	82	125	24
Volume Left (vph)	12	0	30	74	0	8
Volume Right (vph)	0	57	7	0	125	13
Hadj (s)	0.08	-0.65	0.02	0.47	-0.68	-0.16
Departure Headway (s)	5.6	4.9	5.6	6.6	5.4	6.3
Degree Utilization, x	0.38	0.08	0.47	0.15	0.19	0.04
Capacity (veh/h)	611	700	622	507	608	498
Control Delay (s/veh)	10.8	7.1	13.5	9.6	8.5	9.6
Approach Delay (s/veh)	10.1		13.5	8.9		9.6
Approach LOS	B		B	A		A

Intersection Summary				
Delay	11.0			
Level of Service	B			
Intersection Capacity Utilization	49.4%	ICU Level of Service		A
Analysis Period (min)	15			

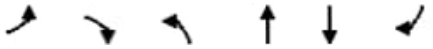
HCM Unsignalized Intersection Capacity Analysis
2003: WB M-43 (Grand River Ave) & Charles St 02/18/2026

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	1158	33	51	91	0	0	0	88
Future Volume (Veh/h)	0	0	0	0	1161	33	51	91	0	0	0	88
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.54	0.54	0.54
Hourly flow rate (vph)	0	0	0	0	1366	39	55	99	0	0	0	163
Pedestrians											222	
Lane Width (ft)											12.0	
Walking Speed (ft/s)											3.5	
Percent Blockage											21	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					383							
pX, platoon unblocked	0.78						0.78	0.78		0.78	0.78	0.78
vC, conflicting volume	1627			0			618	1627	0	1657	1608	697
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	834			0			0	834	0	873	809	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			89	47	100	100	100	76
cM capacity (veh/h)	491			1622			510	188	1088	76	196	674

Direction, Lane #	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	546	546	312	154	163
Volume Left	0	0	0	55	0
Volume Right	0	0	39	0	163
cSH	1700	1700	1700	243	674
Volume to Capacity	0.32	0.32	0.18	0.63	0.24
Queue Length 95th (ft)	0	0	0	97	24
Control Delay (s/veh)	0.0	0.0	0.0	42.4	12.0
Lane LOS				E	B
Approach Delay (s/veh)	0.0			42.4	12.0
Approach LOS				E	B

Intersection Summary				
Average Delay	4.9			
Intersection Capacity Utilization	46.4%	ICU Level of Service		A
Analysis Period (min)	15			

Attachment 3

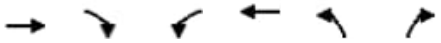


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	30	9	126	217	3
Future Volume (Veh/h)	5	33	17	126	217	6
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	36	18	137	236	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)				211		
pX, platoon unblocked	0.96					
vC, conflicting volume	409	236	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	369	236	243			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	99			
cM capacity (veh/h)	601	803	1323			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	41	155	236	7
Volume Left	5	18	0	0
Volume Right	36	0	0	7
cSH	771	1323	1700	1700
Volume to Capacity	0.05	0.01	0.14	0.00
Queue Length 95th (ft)	4	1	0	0
Control Delay (s/veh)	9.9	1.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s/veh)	9.9	1.0	0.0	
Approach LOS	A			

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	24.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
2006: Permit Entry Only & Albert Ave 02/18/2026

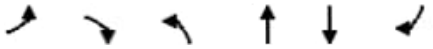


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	305	0	0	252	0	0
Future Volume (Veh/h)	307	0	0	253	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	334	0	0	275	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			334		609	167
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			334		609	167
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1222		427	848

Direction, Lane #	EB 1	EB 2	WB 1
Volume Total	223	111	275
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1700
Volume to Capacity	0.13	0.07	0.16
Queue Length 95th (ft)	0	0	0
Control Delay (s/veh)	0.0	0.0	0.0
Lane LOS			
Approach Delay (s/veh)	0.0		0.0
Approach LOS			

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	16.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
9008: Charles St & Charles Garage 02/18/2026



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	35	9	0	124	79	0
Future Volume (Veh/h)	35	9	0	124	79	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	10	0	135	86	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	221	86	86			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	221	86	86			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	99	100			
cM capacity (veh/h)	767	973	1510			

Direction, Lane #	EB 1	NB 1	SB 1	SB 2
Volume Total	48	135	86	0
Volume Left	38	0	0	0
Volume Right	10	0	0	0
cSH	803	1510	1700	1700
Volume to Capacity	0.06	0.00	0.05	0.00
Queue Length 95th (ft)	5	0	0	0
Control Delay (s/veh)	9.8	0.0	0.0	0.0
Lane LOS	A			
Approach Delay (s/veh)	9.8	0.0	0.0	
Approach LOS	A			

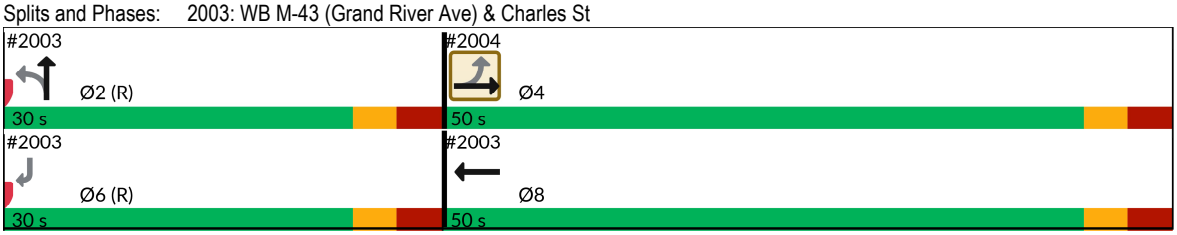
Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	16.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
2003: WB M-43 (Grand River Ave) & Charles St 02/18/2026

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	1158	33	51	91	0	0	0	88
Future Volume (vph)	0	0	0	0	1161	33	51	91	0	0	0	88
Satd. Flow (prot)	0	0	0	0	4994	0	0	1570	0	0	0	1397
Flt Permitted								0.982				
Satd. Flow (perm)	0	0	0	0	4994	0	0	1570	0	0	0	1373
Satd. Flow (RTOR)					8			42				42
Confl. Peds. (#/hr)						222						
Confl. Bikes (#/hr)						6						7
Peak Hour Factor	0.92	0.92	0.92	0.85	0.85	0.85	0.92	0.92	0.92	0.54	0.54	0.54
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	1%	1%	1%	0%	0%	0%
Parking (#/hr)								10				10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	1405	0	0	154	0	0	0	163
Turn Type					NA		Perm	NA				Perm
Protected Phases					8			2				
Permitted Phases							2					6
Total Split (s)					50.0		30.0	30.0				30.0
Total Lost Time (s)					6.1			6.1				6.1
Act Effct Green (s)					43.9			23.9				23.9
Actuated g/C Ratio					0.55			0.30				0.30
v/c Ratio					0.51			0.31				0.37
Control Delay (s/veh)					2.0			21.1				19.1
Queue Delay					0.0			0.0				0.0
Total Delay (s/veh)					2.0			21.1				19.1
LOS					A			C				B
Approach Delay (s/veh)					2.0			21.1			19.1	
Approach LOS					A			C			B	

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 26 (33%), Referenced to phase 2:NBTL and 6:SBR, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay (s/veh): 5.4	Intersection LOS: A
Intersection Capacity Utilization 52.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2003: WB M-43 (Grand River Ave) & Charles St

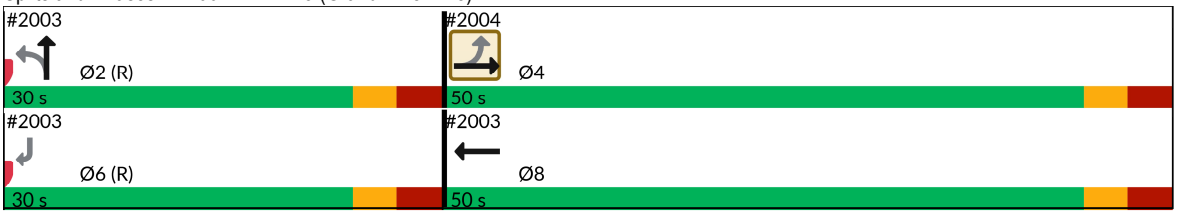


Lanes, Volumes, Timings
2004: EB M-43 (Grand River Ave) 02/18/2026

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø2	Ø6	Ø8
Lane Configurations									
Traffic Volume (vph)	142	1074	0	0	0	0			
Future Volume (vph)	142	1082	0	0	0	0			
Satd. Flow (prot)	1787	3574	0	0	0	0			
Flt Permitted	0.950								
Satd. Flow (perm)	1787	3574	0	0	0	0			
Satd. Flow (RTOR)	154								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Heavy Vehicles (%)	1%	1%	2%	2%	2%	2%			
Shared Lane Traffic (%)									
Lane Group Flow (vph)	154	1176	0	0	0	0			
Turn Type	Perm	NA							
Protected Phases		4					2	6	8
Permitted Phases	4								
Total Split (s)	50.0	50.0					30.0	30.0	50.0
Total Lost Time (s)	6.1	6.1							
Act Effct Green (s)	43.9	43.9							
Actuated g/C Ratio	0.55	0.55							
v/c Ratio	0.15	0.60							
Control Delay (s/veh)	2.0	13.8							
Queue Delay	0.3	0.0							
Total Delay (s/veh)	2.3	13.8							
LOS	A	B							
Approach Delay (s/veh)		12.4							
Approach LOS		B							

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 26 (33%), Referenced to phase 2:NBTL and 6:SBR, Start of Green	
Control Type: Pretimed	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay (s/veh): 12.4	Intersection LOS: B
Intersection Capacity Utilization 34.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 2004: EB M-43 (Grand River Ave)



fishbeck
Engineers | Architects | Scientists | Constructors

5913 Executive Drive, Suite 100
Lansing, Michigan 48911

517.882.0383 | fishbeck.com

May 13, 2026
Project No. 2500792

Stephen Clayton, PE
Engineering Administrator
City of East Lansing
1800 East State Road
East Lansing, MI 48823

The Howard Development
Northeast Quadrant of Grand River Avenue and Charles Street
Traffic Impact Study Review

At the request of the City of East Lansing, Fishbeck has reviewed the revised Traffic Impact Study (TIS) and Comment Response Memo completed by WSP and dated May 5, 2026, for The Howard development. Additionally, Fishbeck has reviewed the Parking Analysis completed by Walker Consultants and dated March 2, 2026. Based on our review, Fishbeck offers the following comments and findings:

1. All items from our review letter dated April 23, 2026, have been addressed satisfactorily.
2. Walker Consultants completed a parking analysis for the proposed development. Their analysis was based on data and research from the Urban Land Institute and Institute of Transportation Engineers. Additionally, parking ratios from 13 similar developments that were constructed in the past 10 years in East Lansing, Ann Arbor (University of Michigan), Madison (University of Wisconsin), and Champaign-Urbana (University of Illinois) were provided. The results of this analysis indicated that 156 residential parking spaces, 3 employee parking spaces, and 22 customer/visitor parking spaces would be required. There is excess capacity in the Division Garage, Charles Garage, and M.A.C. Garage that could accommodate these vehicles.

At this time, Fishbeck recommends approval of the TIS and Parking Analysis.

If you have any questions or require additional information, please contact me at 616.464.3793 or kreidsma@fishbeck.com.

Sincerely,

Kyle M. Reidsma, PE, PTOE
Vice President/Senior Traffic Engineer/Project Manager

By email
Copy: Alyssa Wambold, PE, PTOE, RSP1 – Fishbeck

\\EGNYTEDRIVE\ALLPROJECTS\2025\2500792\WORK\CORR\THE HOWARD\LT_THE HOWARD TIS REVIEW_2026_0513.DOCX

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

SPECIFICATIONS

STORM SEWER

1. All on site storm sewer shall be HDPE N-12, RCP C-76 or equal, storm sewer in the public road R.O.W. shall be RCP C-76 CL IV
2. All pipe to be laid with the aid of laser equipment.
3. All storm sewer manholes and catch basins shall be in accordance with the City of East Lansing Standards. Structures shall be precast ASTM C478 with the reinforced precast concrete adjusting rings for final grade adjustments.
4. Curb castings shall be EJIW 7045 or similar approved by City. Storm manhole covers shall be EJIW 1040A. Lawn basin castings shall be EJIW 6508 or similar
5. All catch basins and yard drains shall have a three foot deep sump.
6. All structures within the site shall be inspected by project manager in the presence of a City Inspector prior to final approval

SITE WORK

1. Documentation of existing conditions, including existing trees and plantings should be obtained through the use of video or photos. All trees that are to be saved or removed, shall be properly identified with the use of the demolition plan and/or landscaping plan. If there are any uncertainties in what trees/plantings are to remain or be removed, the engineer and landscape architect shall be contacted. All saved items shall be protected for the duration of construction. Any ex. trees or shrubs that are to remain are damaged during construction, they shall be replaced
2. Prior to work starting, all existing utilities shall be located and flagged, contact Miss Dig a minimum of 3 days before starting work. Any existing utilities that need to be shutoff/capped, shall be capped at the main or per Utility Company or City of East Lansing requirements. All utilities shall be disconnected prior to site clearing and earth moving work.

SIDEWALK

1. All City sidewalk construction shall be in accordance with the requirements of the City of East Lansing. The City of East Lansing Sidewalk details are included.

STREETS AND PARKING AREAS

1. All construction within an existing or proposed public R.O.W. shall comply with the requirements of the City of East Lansing and be subject to their inspection and approval.
2. All disturbed areas between the curb and the road right of way shall be covered with 3" of top soil, seeded and mulched unless otherwise noted.
3. All Radii shall be 25' unless noted.
4. All roadway subgrade (sand) is to be compacted to 95% max. density and the base materials (aggregate) to 98% max. density. A qualified independent geotechnical testing firm shall be utilized to perform on-site testing to verify density requirements have been met.
5. All materials used for construction of subgrade and base for parking lots, roads, and for engineered fill shall be tested by geotechnical firm. This analysis shall be done at both on-site and borrow sources prior to use.

EXCAVATION & UTILITY BACKFILL

1. Excavate subgrade to accomodate paving, sidewalk, building and other site features for construction. Proper depth shall be provided to ensure all required materials can be installed to meet the proper cross sections.
2. Remove any unsuitable material that is encountered such as clay lumps, rocks or debris.
3. Notify the engineer, architect and/or geotechnical engineer of any unexpected subsurface conditions or items.
4. Provide properly sloped banks at the edges of excavation and remove any loose material. At the top of the excavation, slope grade away from the excavation area so surface runoff drains away from the excavation.
5. All sewer pipe shall be bedded with CL. II granular material. Class II material shall be used in backfilling all sewer trenches to 1' above the sewer pipe. See City of East Lansing detail sheet for further information.
6. All backfill of trenches within the influence of roadways and sidewalks shall be MDOT CL II sand, compacted to 95% density. Equipment such as a small dozer in the trenches and a hoe-pack around the structures will be required, or equipment capable of reaching 95% density and all required trenches. Density testing is to be completed within utility trench locations (water and sewer) and reports are to be provided to the City. See City of East Lansing detail sheet for further information.

GENERALS

1. Information on depth, size, etc., of all other underground utilities shown herein is obtained from survey. Prior to any final design or construction, it is recommended that all utility companies, agencies, City Departments, etc. involved be contacted for verification of such locations.
2. The locations, size and elevation of sewers and related structures shown herein, were obtained through field observation. Kebs, Inc., is not responsible for information on any other sewers, drains or related structures not found and not shown hereon, that may cross, parallel, lie contiguous to or service this site.
3. For protection of underground utilities, the contractor shall dial 800-482-7171 a minimum of 72 hours prior to excavating in the vicinity of utility lines. All "MISS DIG" participating members will thus be routinely notified. This does not relieve the contractor of the responsibility of notifying utility owners who may not be a part of the "MISS DIG" alert system.
4. All existing roads, driveways and yards disturbed during construction shall be restored by the contractor to its original condition.
5. Contractor shall be responsible for obtaining all permits required for construction. Proper permitting is to be obtained prior to commencing construction activities and and placement of traffic control.
6. "Contractor shall be responsible for maintaining as-built drawings for the entire project including all utility locations and elevations and surface locations and elevations. These will be provided to the City on a CD in Acad release 14 or newer prior to acceptance of the project."

LOCATION MAP
NO SCALE

LEGAL DESCRIPTION:

(As provided by First American Title Insurance Company, Commitment No. NCS-1281646-MPLS, dated October 15, 2025)

Lots 35, 36, 37 and the West 13 and 5/10 feet of Lot 38, and Lot 39, except the East 10 feet thereof, all in ANGELL'S SUBDIVISION, of Lot 80 and portions of Lots 78 and 79, COLLEGE GROVE PLAT, City of East Lansing, according to the recorded plat thereof, as recorded September 12, 1907, in Plat Book 3, Page 45, Ingham County Records. Together with the vacated Westerly 94 and 1/10 feet of the 16 and 5/10 feet wide East and West alley running through the block containing the lots and parts of lots above described.
Except: Lot 36, the W 13.50 feet of Lot 38, the Westerly 94.10 feet of the 16.50 foot wide vacated alley lying Southerly of and contiguous to Lots 36 and 38, and Lots 40 and 42 of ANGELL'S SUBDIVISION of Lot 80 and portions of Lots 78 and 79, COLLEGE GROVE PLAT, City of East Lansing, according to the plat of said ANGELL'S SUBDIVISION, recorded September 12, 1907, in Plat Book 3, Page 45, Ingham County Records.

Also described as:
The West 31 feet of Lot 39 and the East 8 feet of Lot 37, all in ANGELL'S SUBDIVISION, of Lot 80 and portions of Lots 78 and 79, COLLEGE GROVE PLAT, as in recorded Plat Book 3, Page 45, Ingham County Records.
Also:
Lot 39 except the West 31.00 feet and except the East 10.00 feet, all in ANGELL'S SUBDIVISION, of Lot 80 and portions of Lots 78 and 79, COLLEGE GROVE PLAT, as in recorded Plat Book 3, Page 45, Ingham County Records.
Also:
Lot 35 and Lot 37 except the East 8.00 feet, all in ANGELL'S SUBDIVISION, of Lot 80 and portions of Lots 78 and 79, COLLEGE GROVE PLAT, as in recorded plat book 3, Page 45, Ingham County Records.

SCHEDULE B, SECTION II, EXCEPTIONS:

(As provided by First American Title Insurance Company, Commitment No. NCS-1281646-MPLS, dated October 15, 2025)

Item 7: Area described in Warranty Deed as recorded in Liber 350, Page 242; crosses parcel, is plottable and shown hereon.

Item 8: Driveway easement as described in Warranty Deed as recorded in Liber 623, Page 503; crosses parcel, is plottable and shown hereon.

Item 9: Area as described in Liber 48 of Miscellaneous Records, Page 90; crosses parcel, is plottable and shown hereon.

Item 10: Memorandum of Agreement as recorded in Liber 49 of Miscellaneous Records, Page 321; crosses parcel, is plottable and shown hereon.

Item 11: Warranty Deed as recorded in Liber 1718, Page 221; does not cross parcel, therefore not shown hereon.

Item 12: Easement as recorded in Liber 1771, Page 85; crosses parcel, is plottable and shown hereon.

Item 13: Easement as recorded in Liber 1779, Page 1130; crosses parcel, is plottable and shown hereon.

SURVEYOR'S NOTES:

1. This plan was made at the direction of the parties named hereon and is intended solely for their immediate use.
2. All bearings are Michigan State Plane South Zone grid bearings obtained from GPS observations using corrections obtained from the nearest National Geodetic Survey C.O.R.S. station.
3. All dimensions shown are as-measured unless otherwise noted.
4. All dimensions are in feet and decimals thereof.
5. No building tie dimensions are to be used for establishing the property lines. All dimensions of building lines in relation to property lines are per visual exterior building separation lines only - no determination of ownership of party walls has been completed on the interior or basement walls of the structures.
6. There are no observable potential encroachments onto the subject property from adjoining lands, or from the subject property onto adjoining lands, except as shown hereon.
7. Parcel has direct access to public Charles Street and public Grand River Avenue.

ABBREVIATION CONVERSION CHART

& - AND
@ - AT
BM - BENCHMARK
BIT - BITUMINOUS
C.B. - CATCH BASIN
C.H. - CHORD
C/L - CENTERLINE
CL - CLASS
C.O. - CLEAN OUT
CONC. - CONCRETE
CMP - CORRUGATED METAL PIPE
CULV'T - CULVERT
DIA - DIAMETER
E - EAST
ELEV - ELEVATION
EX - EXISTING
EXT. - EXISTING
EXIST. - EXISTING
F-F - FACE TO FACE
F-F - FIRST FLOOR ELEV.

G.V. - GATE VALVE
GA - GAUGE
HYD - HYDRANT
I.E. - INVERT
LN - LANE
LT - LEFT

LF - LINEAR FEET
L.P.- LOW POINT
M.H. - MANHOLE
MIN - MINIMUM
N - NORTH
- NUMBER
NO. - NUMBER
PAV'T - PAVEMENT
PERP - PERPENDICULAR
± - PLUS OR MINUS
PC - POINT OF CURVE
PT - POINT OF TANGENT
PROP - PROPOSED
RT - RIGHT
R.O.W. - RIGHT OF WAY
SA - SANITARY
SAN - SANITARY
S - SOUTH
SY - SQUARE YARD
SQ. FT. - SQUARE FEET
STA - STATION
ST. - STORM
STM. - STORM
T/CAS - TOP OF CASTING
T/C - TOP OF CURB
T/G - TOP OF GROUND
T/P - TOP OF PAVEMENT
T/W - TOP OF WALK
TYP - TYPICAL
W - WEST
W/ - WITH

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

SEWER INVENTORIES

STORM MANHOLE #100
RIM - 842.19
18" RCP E - 833.19
18" RCP NW - 831.63

STORM MANHOLE #101
RIM - 840.74
15" RCP N - 833.65
12" S - 833.62
15" RCP W - 833.50

STORM MANHOLE #102
RIM - 841.05
18" DIP E - 834.00
UNKNOWN SIZE
RCP S - 836.47
18" RCP W - 833.65

CATCH BASIN #103
RIM - 840.82
15" RCP NE - 833.52
18" RCP W - 833.52

STORM MANHOLE #104
RIM - 841.74
UNKNOWN SIZE
RCP N - 826.88
UNKNOWN SIZE
RCP S - 826.89

STORM MANHOLE #105
RIM - 842.69
10" RCP NE - 836.49
12" RCP E - 837.49
10" RCP SE - 836.65

STORM MANHOLE #106
RIM - 841.83
UNABLE TO OPEN STRUCTURE

STORM MANHOLE #107
RIM - 840.78
8" VCP N - 838.51
6" RCP E - 838.14
6" VCP S - 838.56
8" PVC W - 838.66

CATCH BASIN #108
RIM - 840.29
6" RCP W - 837.69

CATCH BASIN #109
RIM - 841.89
12" RCP W - 837.70

CATCH BASIN #110
RIM - 840.21
12" RCP E - 835.42

CATCH BASIN #111
RIM - 840.38
15" RCP N - 833.90
15" RCP S - 833.88
12" RCP W - 834.78

STORM MANHOLE #112
RIM - 841.87
8" PVC N - 841.19
10" VCP SW - 837.57

CATCH BASIN #113
RIM - 841.77
8" PVC S - 840.34

STORM MANHOLE #114
RIM - 841.16
8" VCP N - 838.62

CATCH BASIN #115
RIM - 839.89
12" RCP E - 834.23

CATCH BASIN #116
RIM - 840.25
10" RCP E - 834.33
15" RCP S - 834.04
12" RCP W - 834.07

CATCH BASIN #117
RIM - 842.64
8" VCP NW - 839.79

CATCH BASIN #118
RIM - 842.11
8" PVC SE - 839.99

STORM MANHOLE #119
RIM - 841.98
52" RCP N - 827.64
8" PVC NE - 836.42
4" PVC E - 836.58
24" RCP SE - 830.53
8" RCP S - 838.18
60" RCP SW - 827.64
8" PVC NW - 838.19
24" RCP NW - 830.36

CATCH BASIN #120
RIM - 841.92
8" PVC SW - 839.29

STORM MANHOLE #121
RIM - 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM - 842.29
10" RESTR. PLATE SE - 839.53

CATCH BASIN #123
RIM - 842.57
10" PVC W - 838.27

SANITARY MANHOLE #200
RIM - 841.34
10" VCP E - 835.16
10" RCP W - 835.12

SANITARY MANHOLE #201
RIM - 841.99
12" PVC N - 836.37
15" PVC N - 832.74
8" PVC N - 832.78
8" PVC N - 836.38
24" RCP E - 830.83
TOP OF 6" PVC DROP PIPE SW - 836.83
24" RCP W - 830.81

SANITARY MANHOLE #202
RIM - 842.41
6" PVC N - 837.97
24" RCP E - 830.91
24" RCP W - 830.89
10" RCP NW - 837.74

SANITARY MANHOLE #203
RIM - 842.73
12" PVC N - 832.73
24" RCP E - 831.27
10" PVC SE - 837.72
TOP OF 6" PVC DROP PIPE SW - 839.08
24" RCP W - 831.27
12" PVC N - 837.41
8" PVC SE - 838.95

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV.
- T/C 800.00 PROPOSED TOP OF CURB ELEV.
- T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- T/P 800.00 PROPOSED TOP OF PAV'T ELEV.
- T/W 800.00 PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYING SYSTEM

BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

SHEET INDEX - CIVIL PLANS

C1.0 COVER SHEET
C1.1 EXIST. CONDITIONS & DEMOLITION PLAN
C2.0 SITE & UTILITY PLAN-OVERALL
C2.1 SITE & UTILITY PLAN-SOUTH
C2.2 SITE & UTILITY PLAN-WEST
C2.3 SITE & UTILITY PLAN-ALLEY
C3.0 STORM & GRADING PLAN-OVERALL
C3.1 STORM & GRADING PLAN-SOUTH
C3.2 STORM & GRADING PLAN-WEST
C3.3 STORM & GRADING PLAN-ALLEY
C4.0 SOIL EROSION CONTROL PLAN
C5.0 DETAILS
C5.1 CITY OF EAST LANSING DETAILS

ATTACHMENTS:
LANDSCAPING PLAN (BY OTHERS)
LIGHTING PLAN (BY OTHERS)
TRUCK TURNING (3 PAGES)

ARCHITECT:
DLR GROUP
1422 EUCLID AVENUE, SUITE 1300
CLEVELAND, OH 44115
PH:(216) 522-1350

ENGINEER/SURVEYOR:
KEBS, Inc.
2116 HASLETT RD.
HASLETT, MI. 48840
PH:(517) 339-1014

LANDSCAPE ARCHITECT:
OUTDOOR LIVING
2720 ALPHA ACCESS
LANSING, MI 48910
PH:(517) 484-0230

STATE OF MICHIGAN
GREGORY A. PETRU
ENGINEER NO. 50958
REGISTERED PROFESSIONAL ENGINEER
5-18-26

DLRGROUP
© DLR Group

KEBS, INC.
SURVEYING
CIVIL ENGINEERING
LAND DEVELOPMENT
2116 HASLETT RD
HASLETT, MI 48840
PH: (517) 339-1014

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

COVER SHEET

C1.0

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

DEMOLITION NOTES:

A DEMOLITION PERMIT IS REQUIRED, CONTRACTOR SHALL APPLY FOR AND RECEIVE PRIOR TO ANY DEMOLITION.

ALL UTILITIES MUST BE PROPERLY SHUT OFF/CAPPED AND/OR REMOVED PRIOR TO STARTING, VERIFY WITH UTILITY COMPANIES AND WITH THE CITY OF EAST LANSING.

ALL EX. STRUCTURES AND ANY FOUNDATIONS SHALL BE REMOVED FROM THE SITE.

DEMOLITION CONTRACTOR SHALL REVIEW ALL ENVIRONMENTAL REPORTS AND/OR SOIL BORINGS AND DISPOSE OF ALL EXISTING AND REMOVED MATERIALS AS REQUIRED BY ENVIRONMENTAL REPORT AND RECOMMENDATIONS.

CONTRACTOR IS RESPONSIBLE FOR COMPLETE DEMOLITION OF ALL ITEMS WITHIN DEMOLITION LIMITS, INCLUDING ITEMS THAT MAY NOT BE SPECIFICALLY SHOWN. IF CONTRACTOR HAS ANY DEMOLITION QUESTIONS THEY SHALL BE REQUESTED TO OWNER/ARCHITECT/ENGINEER PRIOR TO STARTING WORK.

STREETSCAPE ITEMS SUCH AS BENCHES, LIGHTS, WASTE RECEPTACLES, SIGNS, AND ART, ETC. SHALL BE REMOVED DURING THE SITE DEMOLITION. MANY OF THESE ITEMS CAN BE STORED AND RE-USED IF IN GOOD CONDITION. BIKE RACKS WILL BE REMOVED AND REPLACED WITH NEW RACKS

APPROX. DEMO LIMITS

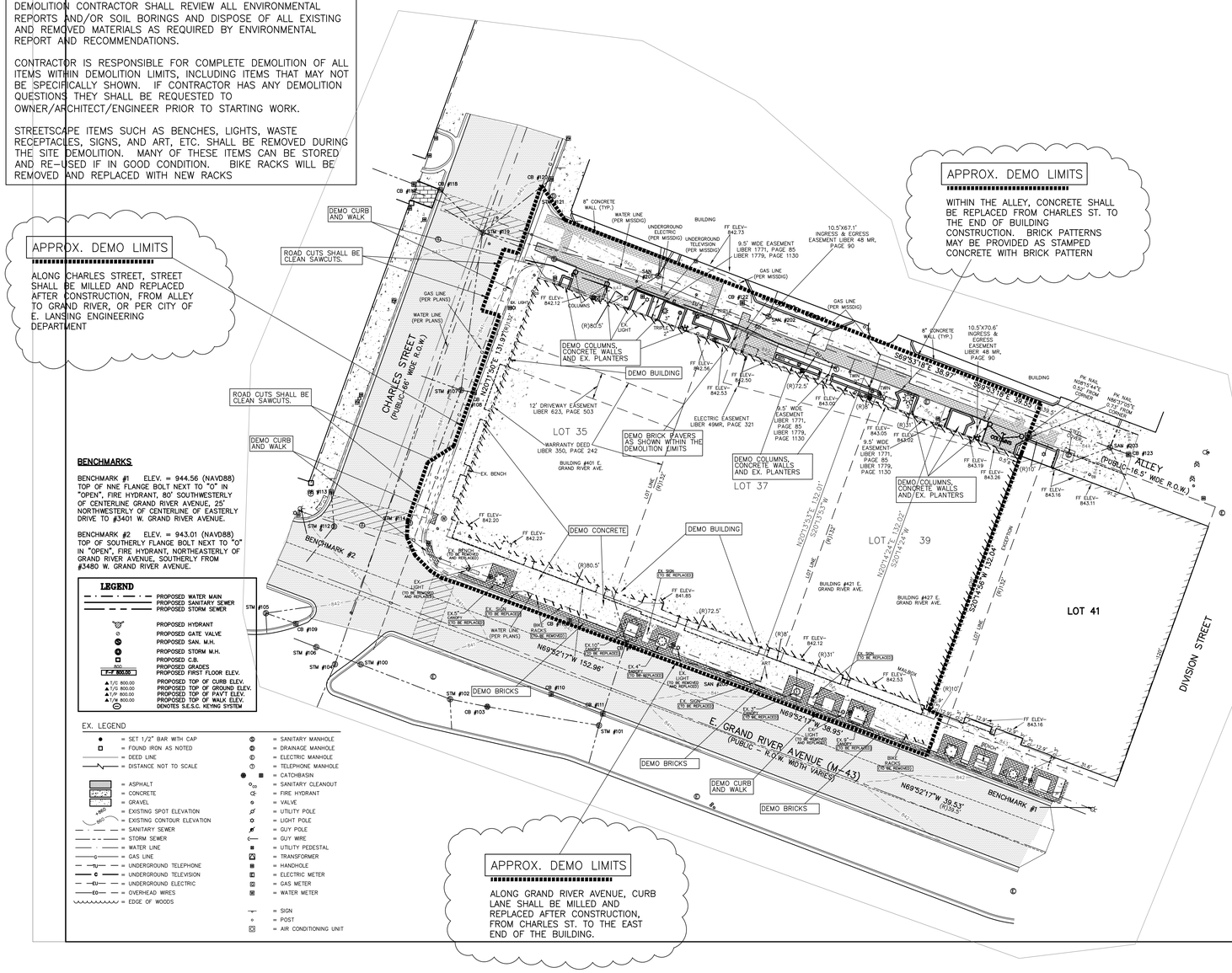
ALONG CHARLES STREET, STREET SHALL BE MILLED AND REPLACED AFTER CONSTRUCTION, FROM ALLEY TO GRAND RIVER, OR PER CITY OF E. LANSING ENGINEERING DEPARTMENT

APPROX. DEMO LIMITS

WITHIN THE ALLEY, CONCRETE SHALL BE REPLACED FROM CHARLES ST. TO THE END OF BUILDING CONSTRUCTION. BRICK PATTERNS MAY BE PROVIDED AS STAMPED CONCRETE WITH BRICK PATTERN

APPROX. DEMO LIMITS

ALONG GRAND RIVER AVENUE, CURB LANE SHALL BE MILLED AND REPLACED AFTER CONSTRUCTION, FROM CHARLES ST. TO THE EAST END OF THE BUILDING.


CHARLES STREET (PUBLIC-60' WIDE R.O.W.)
E. GRAND RIVER AVENUE (M-43) (PUBLIC - R.O.W. WIDTH VARIES)
ALLEY (PUBLIC-16.5' WIDE R.O.W.)
DIVISION STREET
DEMO CURB AND WALK
ROAD CUTS SHALL BE CLEAN SAWCUTS.
DEMO COLUMNS, CONCRETE WALLS AND EX. PLANTERS
DEMO BUILDING
DEMO BRICK PAVERS AS SHOWN WITHIN THE DEMOLITION LIMITS
DEMO CONCRETE
DEMO BRICKS
LOT 35
LOT 37
LOT 39
LOT 41
BENCHMARK #1
BENCHMARK #2
N69°52'17"W 152.96'
S69°52'17"E 39.97'
N69°52'17"W 38.95'
N69°52'17"W 39.53'
S20°14'36"E 132.04'
N20°13'37"E 132.01'
S20°13'37"W 132.01'
N20°14'24"E 132.02'
S20°14'24"W 132.02'
N20°13'37"E 131.97'(R)(M)132'
12' DRIVEWAY EASEMENT LIBER 623, PAGE 503
ELECTRIC EASEMENT LIBER 49MR, PAGE 321
9.5' WIDE EASEMENT LIBER 1771, PAGE 85 LIBER 1779, PAGE 1130
10.5'X67.1' INGRESS & EGRESS EASEMENT LIBER 48 MR, PAGE 90
10.5'X70.6' INGRESS & EGRESS EASEMENT LIBER 48 MR, PAGE 90
"WARRANTY DEED LIBER 350, PAGE 242
BUILDING #401 E. GRAND RIVER AVE.
BUILDING #421 E. GRAND RIVER AVE.
BUILDING #427 E. GRAND RIVER AVE.
EX. BENCH
EX. BENCH TO BE REMOVED AND REPLACED
EX. LIGHT (TO BE REMOVED AND REPLACED)
EX. SIGN TO BE REPLACED
EX. CANOPY TO BE REPLACED
EX. AWNING TO BE REPLACED
BIKE RACKS (TO BE REMOVED)
WATER LINE (PER PLANS)
GAS LINE (PER PLANS)
GAS LINE (PER MISSDIG)
UNDERGROUND ELECTRIC (PER MISSDIG)
UNDERGROUND TELEVISION (PER MISSDIG)
8" CONCRETE WALL (TYP.)
MAILBOX
EXCEPTION
CB #109
CB #110
CB #111
CB #102
CB #103
CB #120
CB #122
CB #123
STM #101
STM #102
STM #105
STM #106
STM #107
STM #108
STM #112
STM #113
STM #114
STM #115
STM #116
SAN #001
SAN #002
SAN #003
SAN #004
SAN #005
SAN #006
SAN #007
SAN #008
SAN #009
SAN #010
SAN #011
SAN #012
SAN #013
SAN #014
SAN #015
SAN #016
SAN #017
SAN #018
SAN #019
SAN #020
SAN

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

ARCHITECT:	ENGINEER/SURVEYOR:	LANDSCAPE ARCHITECT:
DLR GROUP 1422 EUCLID AVENUE, SUITE 1300 CLEVELAND, OH 44115 PH:(216) 522-1350	KEBS, Inc. 2116 HASLETT RD. HASLETT, MI. 48840 PH:(517) 339-1014	OUTDOOR LIVING 2720 ALPHA ACCESS LANSING, MI 48910 PH:(517) 484-0230

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 401, 421 AND 427 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

SEWER INVENTORIES

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM = 842.19
10" RCP NE = 833.19
18" RCP NW = 831.63

STORM MANHOLE #101
RIM = 840.74
15" RCP N = 833.65
12" S = 833.62
15" RCP W = 833.50

STORM MANHOLE #102
RIM = 841.05
18" DIP E = 834.00
UNKNOWN SIZE
RCP S = 836.47
18" RCP W = 833.65

CATCH BASIN #103
RIM = 840.82
15" RCP NE = 833.52
18" RCP W = 833.52

STORM MANHOLE #104
RIM = 841.74
UNKNOWN SIZE
RCP N = 826.88
UNKNOWN SIZE
RCP S = 826.89

STORM MANHOLE #105
RIM = 842.69
10" RCP NE = 836.49
12" RCP E = 837.49
10" RCP SE = 836.65

STORM MANHOLE #106
RIM = 841.83
UNABLE TO OPEN
STRUCTURE

STORM MANHOLE #107
RIM = 840.78
8" VCP N = 838.51
6" RCP E = 838.14
6" VCP S = 838.56
8" PVC W = 838.66

CATCH BASIN #108
RIM = 840.29
6" RCP W = 837.69

CATCH BASIN #109
RIM = 841.89
12" RCP W = 837.70

CATCH BASIN #110
RIM = 840.21
12" RCP E = 835.42

CATCH BASIN #111
RIM = 840.38
15" RCP N = 833.90
15" RCP S = 833.88
12" RCP W = 834.78

STORM MANHOLE #112
RIM = 841.87
8" PVC N = 841.19
10" VCP SW = 837.57

CATCH BASIN #113
RIM = 841.77
8" PVC S = 840.34

STORM MANHOLE #114
RIM = 841.16
8" VCP N = 838.62

CATCH BASIN #115
RIM = 839.89
12" RCP E = 834.23

CATCH BASIN #116
RIM = 840.25
10" RCP E = 834.33
10" RCP S = 834.04
12" RCP W = 834.07

CATCH BASIN #117
RIM = 842.64
8" VCP NW = 839.79

CATCH BASIN #118
RIM = 842.11
8" PVC SE = 839.99

STORM MANHOLE #119
RIM = 841.98
52" RCP N = 827.64
8" PVC NE = 836.42
4" PVC E = 836.58
24" RCP SE = 830.53
8" RCP S = 838.18
60" RCP SW = 827.64
8" PVC NW = 838.19
24" RCP NW = 830.36

CATCH BASIN #120
RIM = 841.92
8" PVC SW = 839.29

STORM MANHOLE #121
RIM = 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM = 842.29
10" RESTR. PLATE SE = 839.53

CATCH BASIN #123
RIM = 842.57
10" PVC W = 838.27

SANITARY MANHOLE #200
RIM = 841.34
10" VCP E = 835.16
10" RCP W = 835.12

SANITARY MANHOLE #201
RIM = 841.99
12" PVC N = 836.37
15" PVC N = 832.74
8" PVC N = 832.78
8" PVC N = 836.38
24" RCP E = 830.83
TOP OF 6" PVC DROP PIPE SW = 836.83
24" RCP W = 830.81

SANITARY MANHOLE #202
RIM = 842.41
6" PVC N = 837.97
24" RCP E = 830.91
24" RCP W = 830.89
10" RCP NW = 837.74
PROP. 15" S = 835.00

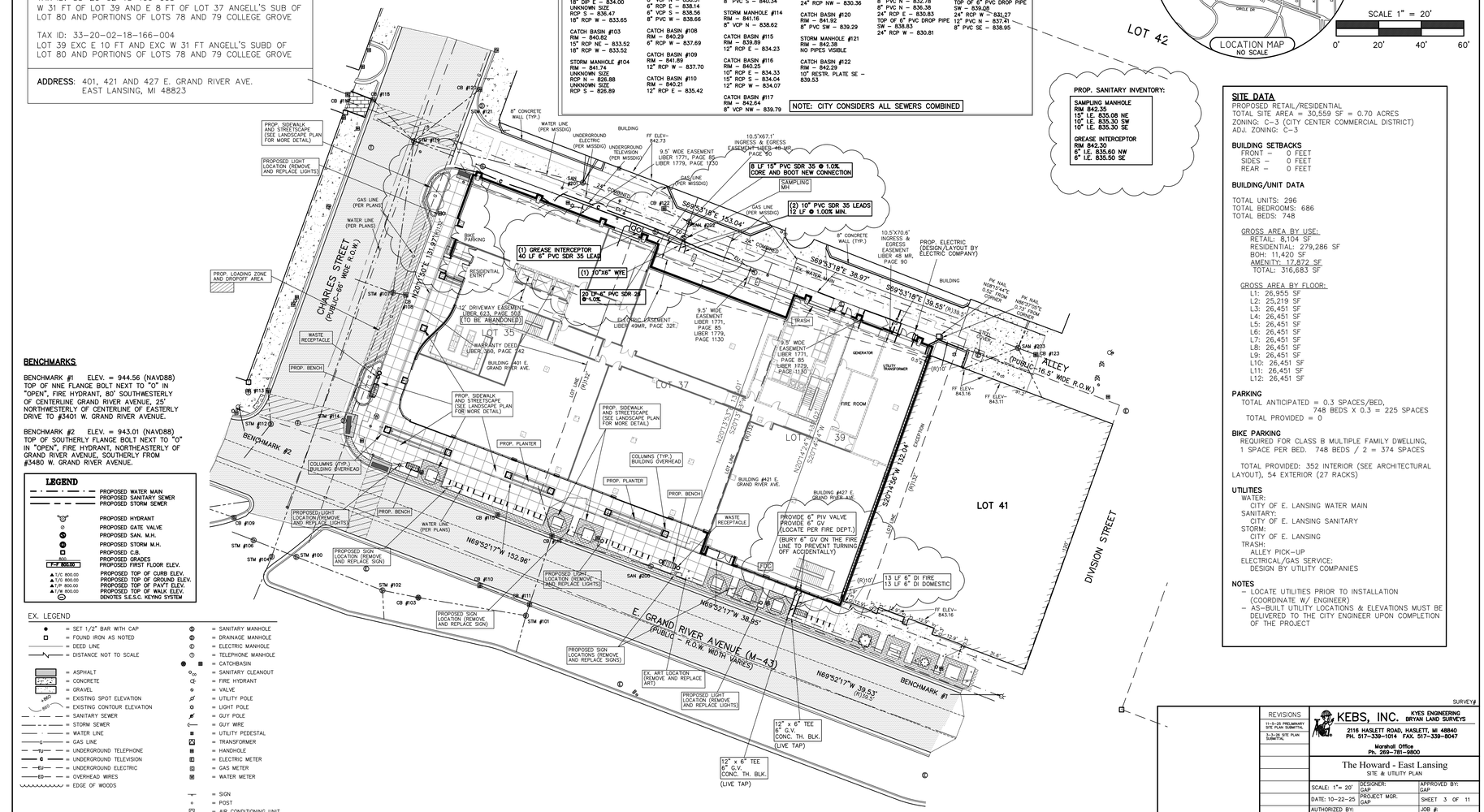
SANITARY MANHOLE #203
RIM = 842.73
12" PVC N = 832.73
24" RCP E = 831.27
10" PVC SE = 837.72
TOP OF 6" PVC DROP PIPE SW = 839.08
24" RCP W = 831.27
12" PVC N = 837.41
8" PVC SE = 838.95

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

PROP. SANITARY INVENTORY:

SAMPLING MANHOLE
RIM 842.35
15" I.E. 835.08 NE
10" I.E. 835.30 SW
10" I.E. 835.30 SE

GREASE INTERCEPTOR
RIM 842.30
6" I.E. 835.60 NW
6" I.E. 835.50 SE


PROP. SIDEWALK AND STREETSCAPE (SEE LANDSCAPE PLAN FOR MORE DETAIL)
PROPOSED LIGHT LOCATION (REMOVE AND REPLACE LIGHTS)
CHARLES STREET (PUBLIC - 66' WIDE R.O.W.)
N00°30'53"E 131.87'(R)
PROP. LOADING ZONE AND DROPOFF AREA
WASTE RECEPTACLE
PROP. BENCH
BENCHMARK #2
STM #114
STM #113
STM #112
CB #109
STM #106
STM #104
CB #108
CB #107
CB #105
STM #100
STM #102
CB #103
CB #110
CB #111
STM #101
N69°52'17"W 152.96'
PROP. SIGN LOCATION (REMOVE AND REPLACE SIGN)
COLUMNS (TYP.) BUILDING OVERHEAD
PROP. PLANTER
LOT 35
LOT 37
LOT 39
LOT 41
BUILDING 401 E. GRAND RIVER AVE.
WARRANTY DEED LIBER 930, PAGE 342
12' DRIVEWAY EASEMENT LIBER 623, PAGE 502 (TO BE ABANDONED)
ELECTRIC EASEMENT LIBER 49MR, PAGE 321
9.5' WIDE EASEMENT LIBER 1771, PAGE 85, LIBER 1779, PAGE 1130
BUILDING #421 E. GRAND RIVER AVE.
BUILDING #427 E. GRAND RIVER AVE.
PROVIDE 6" PIV VALVE PROVIDE 6" GV (LOCATE PER FIRE DEPT.) (BURY 6" GV ON THE FIRE LINE TO PREVENT TURNING OFF ACCIDENTALLY)
13 LF 6" DI FIRE
13 LF 6" DI DOMESTIC
DIVISION STREET
E. GRAND RIVER AVENUE (M-43) (PUBLIC - R.O.W. WIDTH VARIES)
N69°52'17"W 38.85'
N69°52'17"W 39.53' (R)39.5'
BENCHMARK #1
ALLEY (PUBLIC - 16.5' WIDE R.O.W.)
S69°53'18"E 153.04'
S69°53'18"E 38.97'
S69°53'18"E 39.55'(R)39.5'
(1) GREASE INTERCEPTOR 40 LF 6" PVC SDR 35 LEAD
(1) 0"X6" WYE
20 LF-4" PVC SDR 26 @ 1.0%
8 LF 15" PVC SDR 35 @ 1.0% CORE AND BOOT NEW CONNECTION
SAMPLING MH
(2) 10" PVC SDR 35 LEADS 12 LF @ 1.00% MIN.
12" x 6" TEE 6" G.V. CONC. TH. BLK. (LIVE TAP)
12" x 6" TEE 6" G.V. CONC. TH. BLK. (LIVE TAP)
PROP. ELECTRIC (DESIGN/LAYOUT BY ELECTRIC COMPANY)
10.5'X67.1' INGRESS & EGRESS EASEMENT LIBER 48 MR, PAGE 90
10.5'X70.6' INGRESS & EGRESS EASEMENT LIBER 48 MR, PAGE 90
TRASH
GENERATOR
UTILITY TRANSFORMER
FIRE ROOM
BUILDING
FF ELEV-842.73
FF ELEV-843.16
FF ELEV-843.11
FF ELEV-843.16
PROP. SIDEWALK AND STREETSCAPE (SEE LANDSCAPE PLAN FOR MORE DETAIL)
PROP. PLANTER
COLUMNS (TYP.) BUILDING OVERHEAD
PROP. BENCH
WASTE RECEPTACLE
PROPOSED LIGHT LOCATION (REMOVE AND REPLACE LIGHTS)
PROPOSED SIGN LOCATION (REMOVE AND REPLACE SIGN)
PROPOSED SIGN LOCATIONS (REMOVE AND REPLACE SIGNS)
EX. ART LOCATION (REMOVE AND REPLACE ART)
PROPOSED LIGHT LOCATION (REMOVE AND REPLACE LIGHTS)
WATER LINE (PER PLANS)
UNDERGROUND ELECTRIC (PER MISSDIG)
UNDERGROUND TELEVISION (PER MISSDIG)
GAS LINE (PER MISSDIG)
WATER LINE (PER MISSDIG)
BIKE PARKING
RESIDENTIAL ENTRY
BUILDING 401 E. GRAND RIVER AVE.
8" CONCRETE WALL (TYP.)
8" COMBINED
SAN #201
SAN #200
SAN #203
CB #123
CB #122
IRF #4992, 0.75'(R)0.5' INSET FROM CORNER
IRF #4992, 0.52' FROM CORNER
IRF NAIL FOUND 0.4' FROM CORNER
EXISTING
PROPOSED
LOT LINE (R)132'
N20°14'56"W 132.04'
S20°14'56"E 132.04'
S20°14'44"E
N20°14'44"W
(R)132'
(R)10'
(R)10.5'
31.6'
12.9'
12.9'
12.9

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

SEWER INVENTORIES: NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.89

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN
STRUCTURE

STORM MANHOLE #107
RIM – 840.78
8" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" RCP W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.38
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
8" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE –
839.53

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

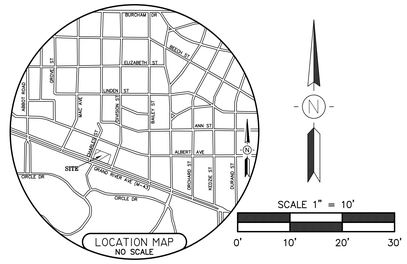
SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE
SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74
PROP. 15" S – 835.00

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE
SW – 839.08
24" RCP W – 831.27
12" PVC N – 837.41
8" PVC SE – 838.95

NOTE: CITY CONSIDERS ALL SEWERS COMBINED



LOCATION MAP
NO SCALE

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

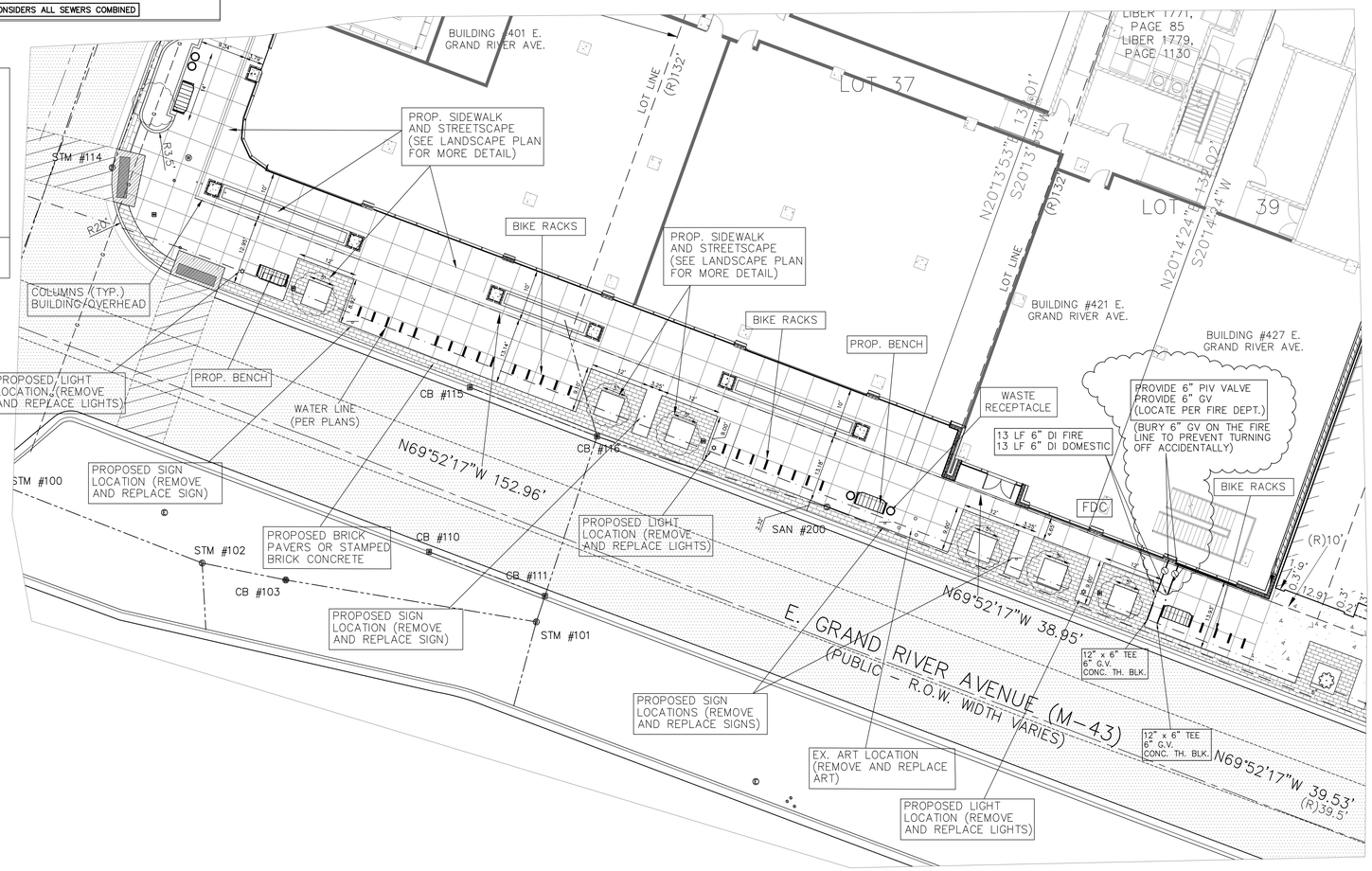
BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV. (FF 800.00)
- T/C 800.00 PROPOSED TOP OF CURB ELEV.
- T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- T/P 800.00 PROPOSED TOP OF PAVT ELEV.
- T/W 800.00 PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT



DLRGROUP
© DLR Group

KEBS, INC.
ENGINEERS, SURVEYORS
PLANNERS AND SERVICES
2116 PAYSPHERE CIRCLE
CHICAGO, IL 60674
PHONE: 517.349.8487
FAX: 517.349.8851

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

SITE AND UTILITY PLANS - SOUTH

C2.1

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

SEWER INVENTORIES — NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.89

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN STRUCTURE

STORM MANHOLE #107
RIM – 840.78
8" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" RCP W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.38
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
8" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE – 839.53

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74
PROP. 15" S – 835.00

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE SW – 839.08
24" RCP W – 831.27
12" PVC N – 837.41
8" PVC SE – 838.95

BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

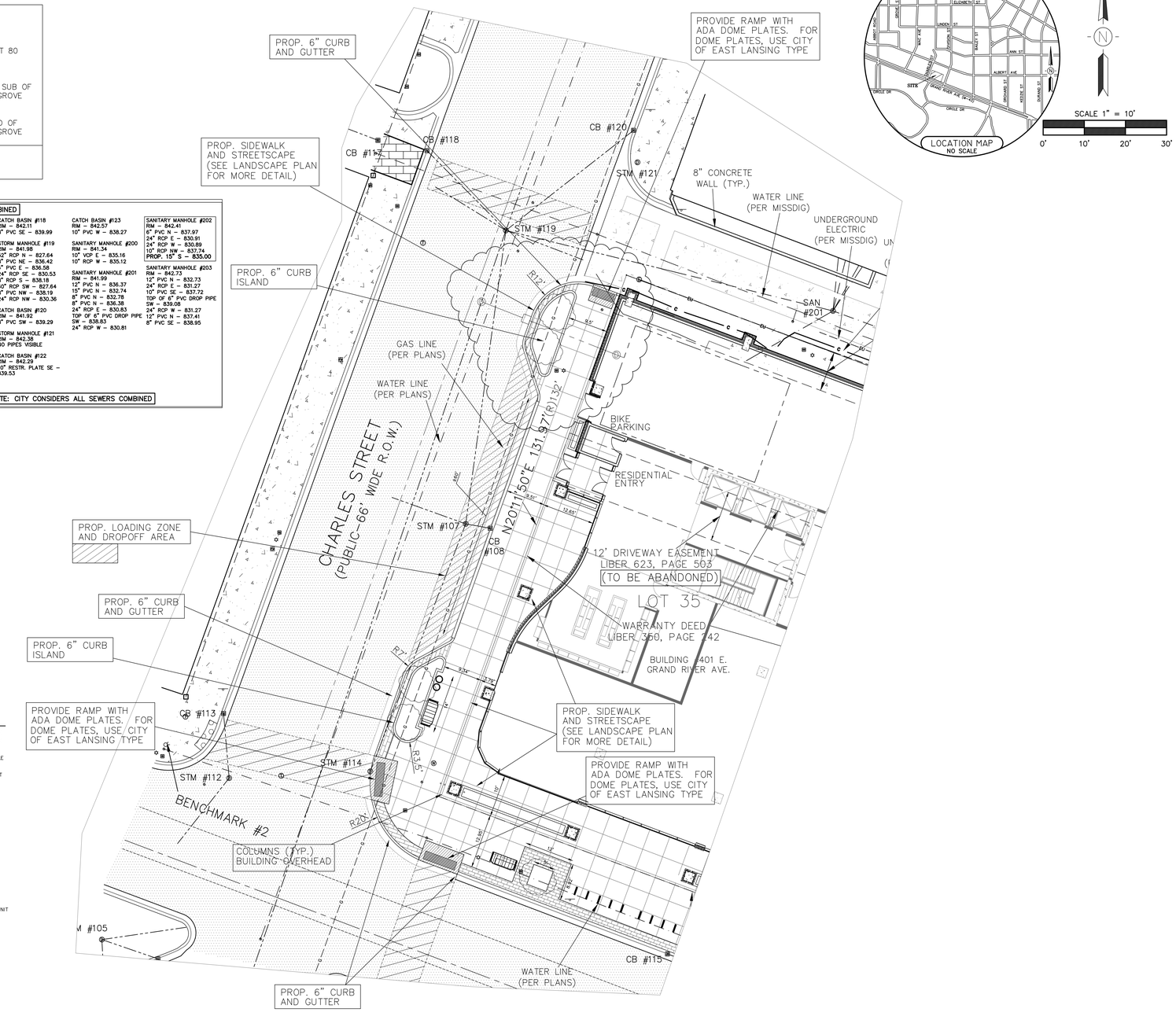
BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV.
- ▲T/C 800.00 PROPOSED TOP OF CURB ELEV.
- ▲T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- ▲T/P 800.00 PROPOSED TOP OF PAVT ELEV.
- ▲T/W 800.00 PROPOSED TOP OF WALK ELEV.
- PROPOSED S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT



DLR GROUP
© DLR Group

KEBS, INC.
CIVIL ENGINEERS
LAND SURVEYORS
PLANNERS
OKEMOS, MI 48864
PH: (517) 349-8487
FAX: (517) 349-8851

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

SITE AND UTILITY PLANS - WEST

C2.2

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

SEWER INVENTORIES — NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.89

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN STRUCTURE

STORM MANHOLE #107
RIM – 840.78
6" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" RCP W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.38
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
6" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.35
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE – 839.53

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

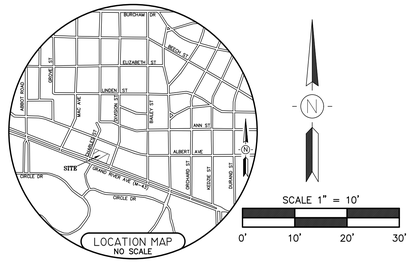
SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74
PROP. 15" S – 835.00

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE SW – 839.08
24" RCP W – 831.27
12" PVC N – 837.41
8" PVC SE – 838.95

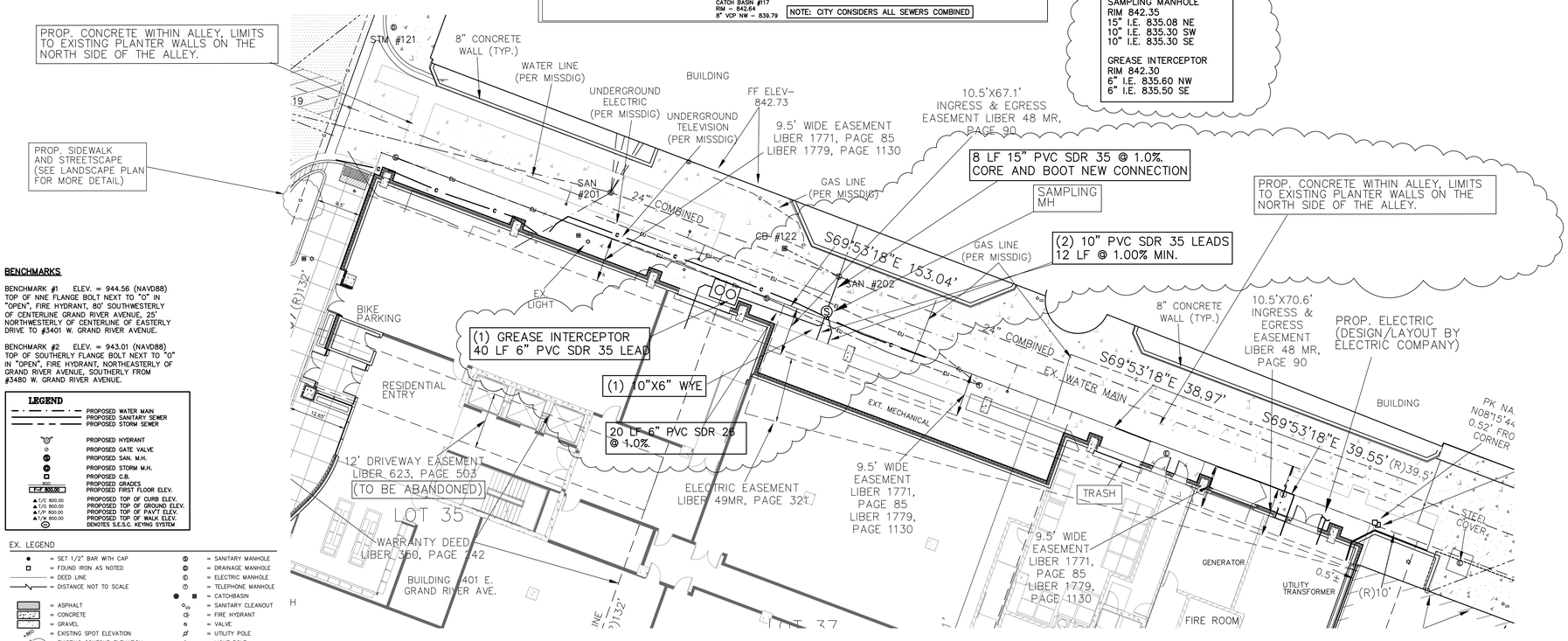
NOTE: CITY CONSIDERS ALL SEWERS COMBINED



SCALE 1" = 10'
0' 10' 20' 30'

PROP. SANITARY INVENTORY:
SAMPLING MANHOLE
RIM 842.35
15" I.E. 835.08 NE
10" I.E. 835.30 SW
10" I.E. 835.30 SE

GREASE INTERCEPTOR
RIM 842.30
6" I.E. 835.60 NW
6" I.E. 835.50 SE



BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV.
- T/C 800.00 PROPOSED TOP OF CURB ELEV.
- T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- T/P 800.00 PROPOSED TOP OF PAV'T ELEV.
- T/W 800.00 PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

DLRGROUP
© DLR Group

KEBS, INC.
CIVIL ENGINEERS
SURVEYORS
PLANNERS
2116 HASLETT RD
HASLETT, MI 48840
(517) 339-1014

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN

REVISIONS
05/01/2026

24-25104-00

SITE AND UTILITY PLANS - ALLEY

C2.3

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

ARCHITECT:	ENGINEER/SURVEYOR:	LANDSCAPE ARCHITECT:
DLR GROUP 1422 EUCLID AVENUE, SUITE 1300 CLEVELAND, OH 44115 PH:(216) 522-1350	KEBS, Inc. 2116 HASLETT RD. HASLETT, MI. 48840 PH:(517) 339-1014	OUTDOOR LIVING 2720 ALPHA ACCESS LANSING, MI 48910 PH:(517) 484-0230

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

SEWER INVENTORIES

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.69

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN STRUCTURE

STORM MANHOLE #107
RIM – 840.78
6" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" PVC W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.35
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
8" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE – 839.53

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

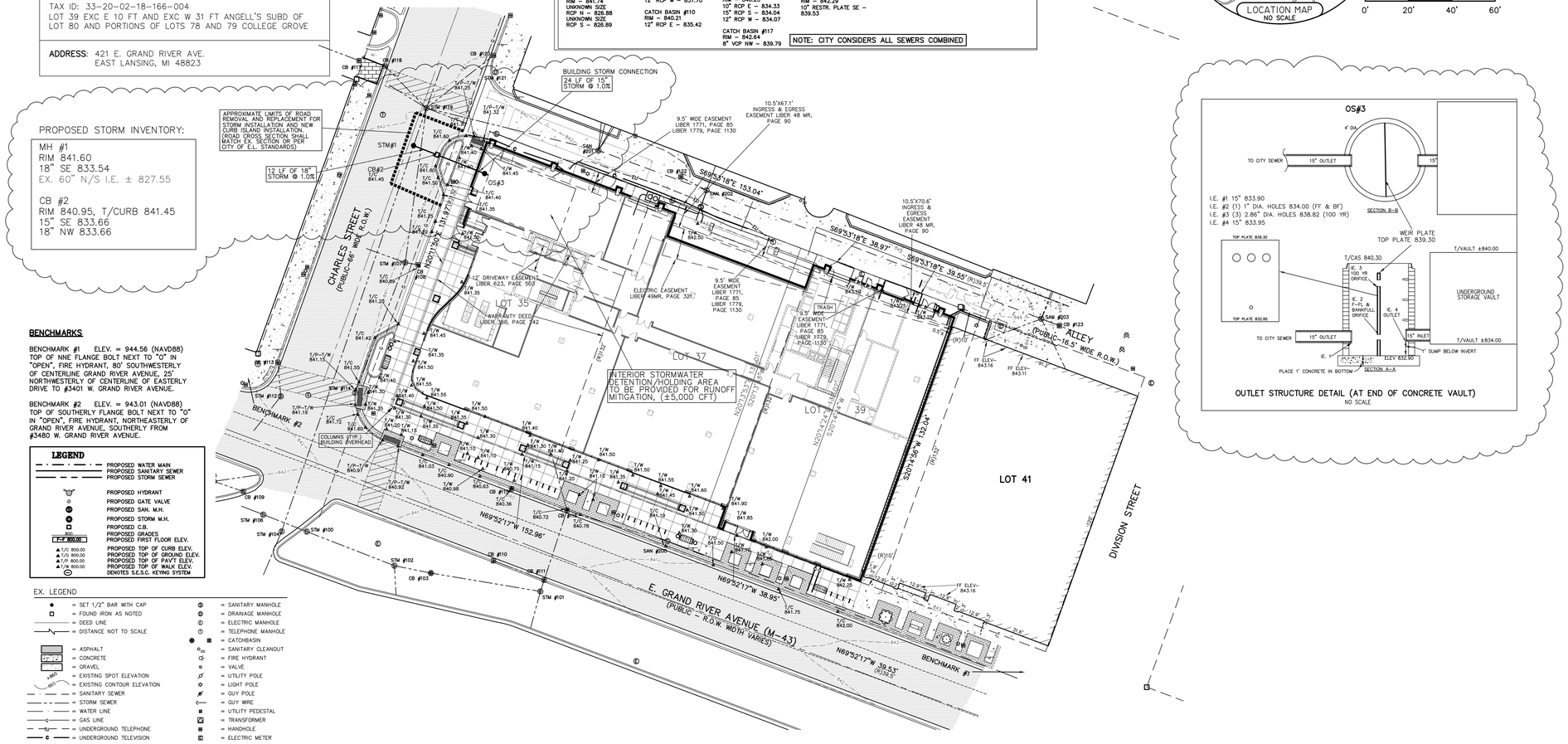
SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74
PROP. 15" S – 835.00

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE SW – 839.08
24" RCP W – 831.27
12" RCP NW – 837.41
8" PVC SE – 838.95

NOTE: CITY CONSIDERS ALL SEWERS COMBINED



PROPOSED STORM INVENTORY:

MH #1
RIM 841.60
18" SE 833.54
EX. 60" N/S I.E. ± 827.55

CB #2
RIM 840.95, T/CURB 841.45
15" SE 833.66
18" NW 833.66

BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

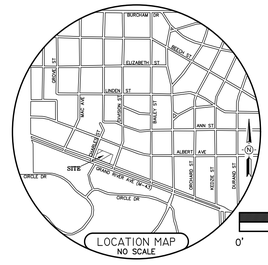
BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV.
- PROPOSED TOP OF CURB ELEV.
- PROPOSED TOP OF GROUND ELEV.
- PROPOSED TOP OF PAVT ELEV.
- PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT



OUTLET STRUCTURE DETAIL (AT END OF CONCRETE VAULT)
NO SCALE

DLRGROUP
© DLR Group

KEBS, INC.
CIVIL ENGINEERS
SURVEYORS
LAND DEVELOPMENT CONSULTANTS
2116 HASLETT RD.
HASLETT, MI. 48840
PH: (517) 339-1014

HARBOR BAY VENTURES

THE HOWARD
421 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

STORM SEWER AND GRADING PLAN

C3.0

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

SEWER INVENTORIES NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.89

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN
STRUCTURE

STORM MANHOLE #107
RIM – 840.78
8" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" RCP W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.38
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
8" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE – 839.53

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE SW – 839.08
24" RCP W – 831.27
12" PVC N – 837.41
8" PVC SE – 838.95

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

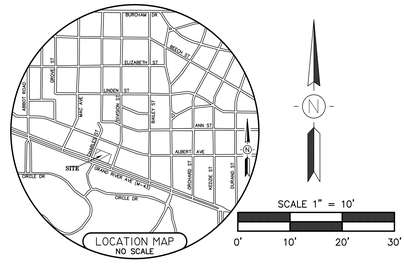
LEGAL DESCRIPTION:
(As provided)

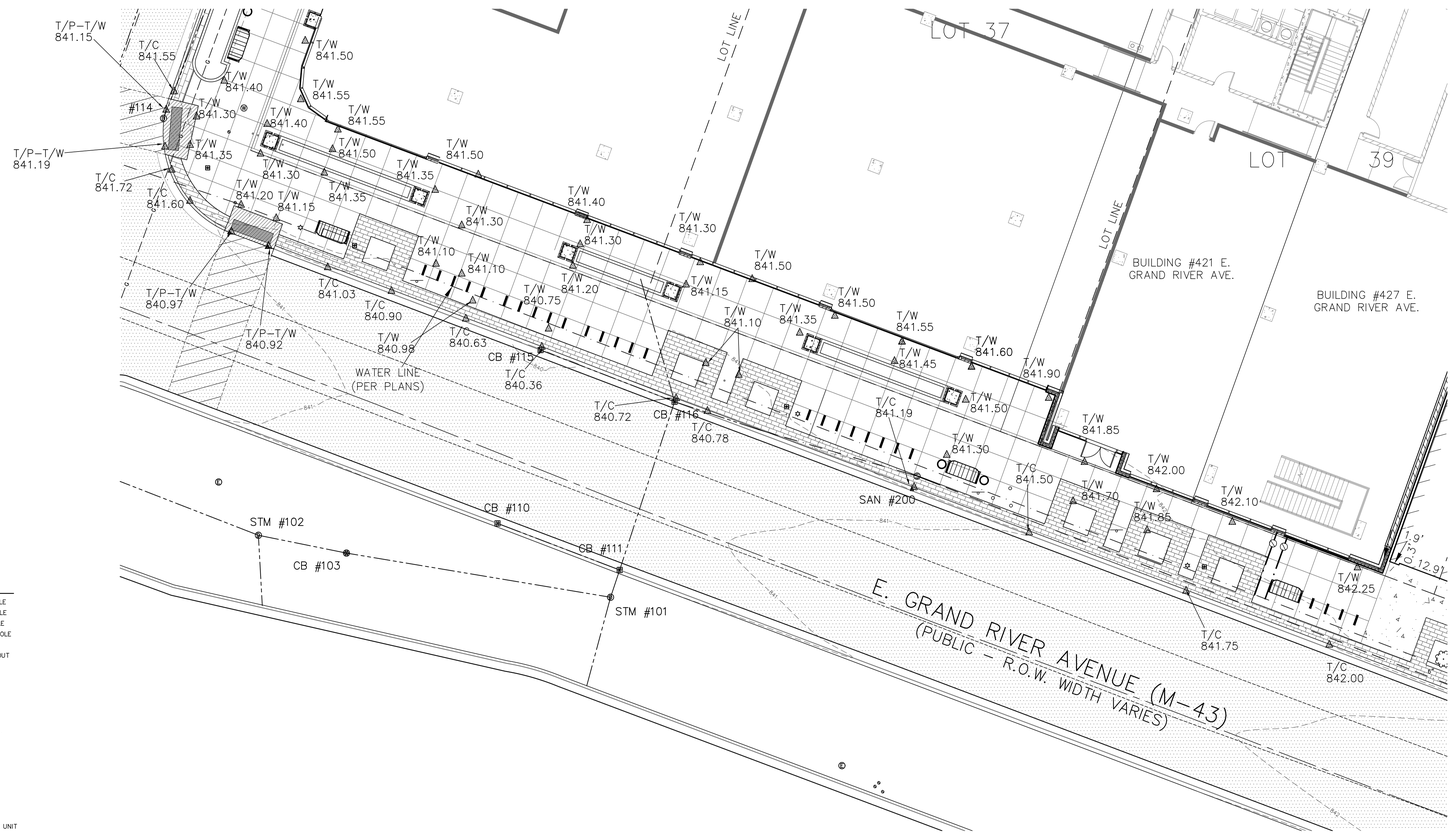
TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823





BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- 800 PROPOSED GRADES
- 801.00 PROPOSED FIRST FLOOR ELEV.
- T/C 800.00 PROPOSED TOP OF CURB ELEV.
- T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- T/P 800.00 PROPOSED TOP OF PAVT ELEV.
- T/W 800.00 PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

DLRGROUP
© DLR Group

KEBS, INC.
CIVIL ENGINEERS
SURVEYORS
OKEMOS, MICHIGAN

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

STORM SEWER AND GRADING PLAN - SOUTH

C3.1

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

SEWER INVENTORIES

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.89

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN
STRUCTURE

STORM MANHOLE #107
RIM – 840.78
8" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" RCP W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.38
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
8" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE – 839.53

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE SW – 839.08
24" RCP W – 831.27
12" PVC N – 837.41
8" PVC SE – 838.95

BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- 800 — PROPOSED GRADES
- T.F. 800.00 — PROPOSED FIRST FLOOR ELEV.
- ▲T/C 800.00 — PROPOSED TOP OF CURB ELEV.
- ▲T/G 800.00 — PROPOSED TOP OF GROUND ELEV.
- ▲T/P 800.00 — PROPOSED TOP OF PAVT ELEV.
- ▲T/W 800.00 — PROPOSED TOP OF WALK ELEV.
- (S) — DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

APPROXIMATE LIMITS OF ROAD REMOVAL AND REPLACEMENT FOR STORM INSTALLATION AND NEW CURB ISLAND INSTALLATION. (ROAD CROSS SECTION SHALL MATCH EX. SECTION OR PER CITY OF E.L. STANDARDS)

12 LF OF 18" STORM @ 1.0%

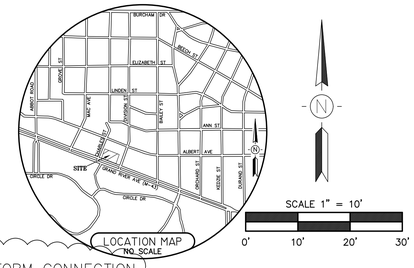
!!BEWARE OF UTILITIES!! DURING INSTALLATION

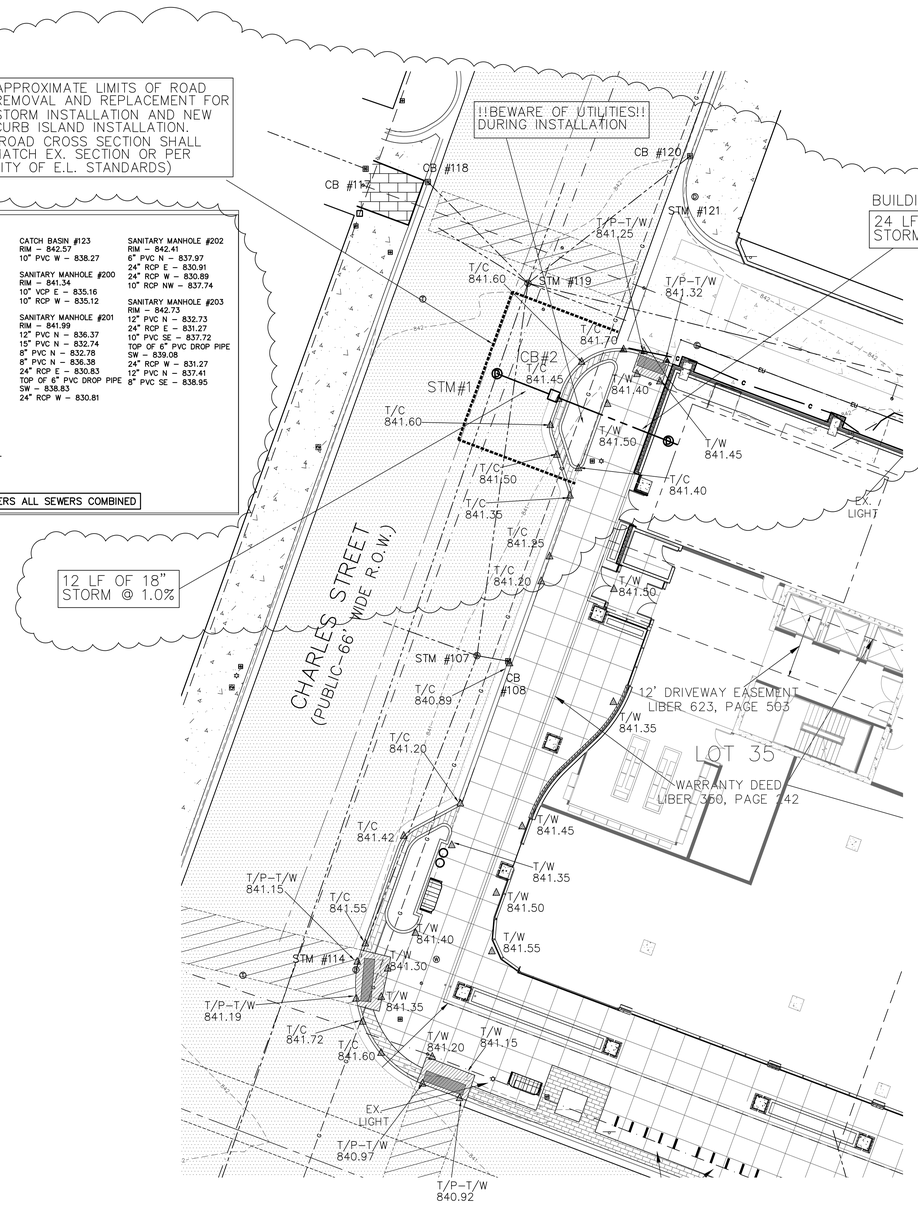
BUILDING STORM CONNECTION
24 LF OF 15" STORM @ 1.0%

PROPOSED STORM INVENTORY:

MH #1
RIM 841.60
18" SE 833.54
EX. 60" N/S I.E. ± 827.55

CB #2
RIM 840.95, T/CURB 841.45
15" SE 833.66
18" NW 833.66





DLRGROUP
© DLR Group

KEBS, INC.
SURVEYORS
PLANNERS
ENGINEERS
2116 AUBURN RD
AUBURN HILLS, MI 48326
PH: (248) 475-9311

HARBOR BAY VENTURES

THE HOWARD
421 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

STORM SEWER AND GRADING PLAN - WEST

C3.2

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

SEWER INVENTORIES NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM – 842.19
18" RCP E – 833.19
18" RCP NW – 831.63

STORM MANHOLE #101
RIM – 840.74
15" RCP N – 833.65
12" S – 833.62
15" RCP W – 833.50

STORM MANHOLE #102
RIM – 841.05
18" DIP E – 834.00
UNKNOWN SIZE
RCP S – 836.47
18" RCP W – 833.65

CATCH BASIN #103
RIM – 840.82
15" RCP NE – 833.52
18" RCP W – 833.52

STORM MANHOLE #104
RIM – 841.74
UNKNOWN SIZE
RCP N – 826.88
UNKNOWN SIZE
RCP S – 826.89

STORM MANHOLE #105
RIM – 842.69
10" RCP NE – 836.49
12" RCP E – 837.49
10" RCP SE – 836.65

STORM MANHOLE #106
RIM – 841.83
UNABLE TO OPEN STRUCTURE

STORM MANHOLE #107
RIM – 840.78
8" VCP N – 838.51
6" RCP E – 838.14
6" VCP S – 838.56
8" PVC W – 838.66

CATCH BASIN #108
RIM – 840.29
6" RCP W – 837.69

CATCH BASIN #109
RIM – 841.89
12" RCP W – 837.70

CATCH BASIN #110
RIM – 840.21
12" RCP E – 835.42

CATCH BASIN #111
RIM – 840.38
15" RCP N – 833.90
15" RCP S – 833.88
12" RCP W – 834.78

STORM MANHOLE #112
RIM – 841.87
8" PVC N – 841.19
10" VCP SW – 837.57

CATCH BASIN #113
RIM – 841.77
8" PVC S – 840.34

STORM MANHOLE #114
RIM – 841.16
8" VCP N – 838.62

CATCH BASIN #115
RIM – 839.89
12" RCP E – 834.23

CATCH BASIN #116
RIM – 840.25
10" RCP E – 834.33
15" RCP S – 834.04
12" RCP W – 834.07

CATCH BASIN #117
RIM – 842.64
8" VCP NW – 839.79

CATCH BASIN #118
RIM – 842.11
8" PVC SE – 839.99

STORM MANHOLE #119
RIM – 841.98
52" RCP N – 827.64
8" PVC NE – 836.42
4" PVC E – 836.58
24" RCP SE – 830.53
8" RCP S – 838.18
60" RCP SW – 827.64
8" PVC NW – 838.19
24" RCP NW – 830.36

CATCH BASIN #120
RIM – 841.92
8" PVC SW – 839.29

STORM MANHOLE #121
RIM – 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM – 842.29
10" RESTR. PLATE SE – 839.53

CATCH BASIN #123
RIM – 842.57
10" PVC W – 838.27

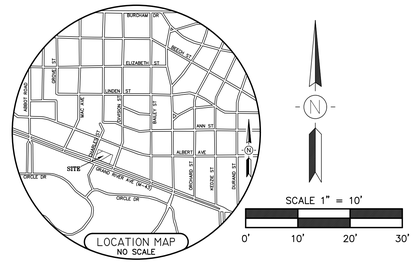
SANITARY MANHOLE #200
RIM – 841.34
10" VCP E – 835.16
10" RCP W – 835.12

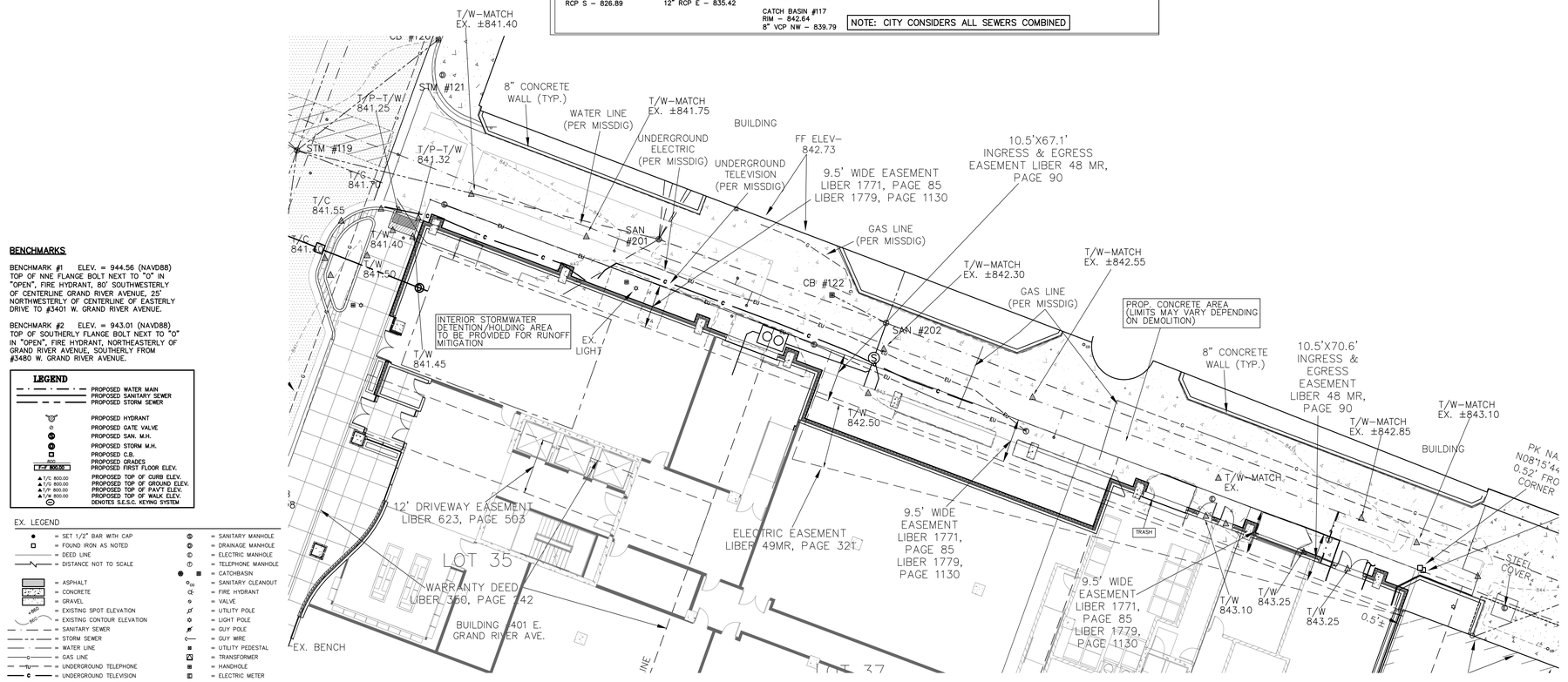
SANITARY MANHOLE #201
RIM – 841.99
12" PVC N – 836.37
15" PVC N – 832.74
8" PVC N – 832.78
8" PVC N – 836.38
24" RCP E – 830.83
TOP OF 6" PVC DROP PIPE SW – 838.83
24" RCP W – 830.81

SANITARY MANHOLE #202
RIM – 842.41
6" PVC N – 837.97
24" RCP E – 830.91
24" RCP W – 830.89
10" RCP NW – 837.74
PROP. 15" S – 835.00

SANITARY MANHOLE #203
RIM – 842.73
12" PVC N – 832.73
24" RCP E – 831.27
10" PVC SE – 837.72
TOP OF 6" PVC DROP PIPE SW – 839.08
24" RCP W – 831.27
12" PVC N – 837.41
8" PVC SE – 838.95

NOTE: CITY CONSIDERS ALL SEWERS COMBINED





BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV.
- ▲T/C 800.00 PROPOSED TOP OF CURB ELEV.
- ▲T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- ▲T/P 800.00 PROPOSED TOP OF PAVT ELEV.
- ▲T/W 800.00 PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

DLR GROUP
© DLR Group

KEBS, INC.
SURVEYORS
CIVIL AND SURVEY SERVICES
2116 HASLETT ROAD
HASLETT, MI 48840
PH: (517) 339-1014

HARBOR BAY VENTURES

THE HOWARD
421 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

STORM SEWER AND GRADING PLAN - ALLEY

C3.3

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attained).
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment laden sheet flow from entering these areas.
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
T55	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S59	INLET PROTECTION FABRIC FENCE		Use at stormwater inlets, especially at construction sites.

SEE DETAIL SHEET FOR SESC DETAILS

TOTAL ACRES = 0.61 ACRES

AREA DISTURBED = 0.65 ACRES

DENOTES EXISTING DRAINAGE FLOW ⟹

DENOTES PROPOSED DRAINAGE FLOW ⟶

SILT FENCE (TYP.)

LIMITS OF EARTH DISTURBANCE (TYP.)

SEWER INVENTORIES

NOTE: CITY CONSIDERS ALL SEWERS COMBINED

STORM MANHOLE #100
RIM = 842.69
18" RCP E = 833.19
18" RCP NW = 831.63

STORM MANHOLE #101
RIM = 840.74
15" RCP N = 833.65
12" S = 833.62
15" RCP W = 833.50

STORM MANHOLE #102
RIM = 841.05
18" DIP E = 834.00
UNKNOWN SIZE
RCP S = 836.47
18" RCP W = 833.65

CATCH BASIN #103
RIM = 840.82
15" RCP NE = 833.52
18" RCP W = 833.52

STORM MANHOLE #104
RIM = 841.74
UNKNOWN SIZE
RCP N = 826.88
UNKNOWN SIZE
RCP S = 826.89

STORM MANHOLE #105
RIM = 842.69
10" RCP NE = 836.49
12" RCP E = 837.49
10" RCP SE = 836.65

STORM MANHOLE #106
RIM = 841.83
UNABLE TO OPEN STRUCTURE

STORM MANHOLE #107
RIM = 840.78
8" VCP N = 838.51
6" RCP E = 838.14
6" VCP S = 838.56
8" PVC W = 838.66

CATCH BASIN #108
RIM = 840.29
6" RCP W = 837.69

CATCH BASIN #109
RIM = 841.89
12" RCP W = 837.70

CATCH BASIN #110
RIM = 840.21
12" RCP E = 835.42

CATCH BASIN #111
RIM = 840.38
15" RCP N = 833.90
15" RCP S = 833.88
12" RCP W = 834.78

STORM MANHOLE #112
RIM = 841.87
8" PVC N = 841.19
10" VCP SW = 837.57

CATCH BASIN #113
RIM = 841.77
8" PVC S = 840.34

STORM MANHOLE #114
RIM = 841.16
8" VCP N = 838.62

CATCH BASIN #115
RIM = 839.89
12" RCP E = 834.23

CATCH BASIN #116
RIM = 840.25
10" RCP E = 834.33
15" RCP S = 834.04
12" RCP W = 834.07

CATCH BASIN #117
RIM = 842.64
8" VCP NW = 839.79

CATCH BASIN #118
RIM = 842.11
8" PVC SE = 839.99

STORM MANHOLE #119
RIM = 841.98
52" RCP N = 827.64
8" PVC NE = 836.42
4" PVC E = 836.58
24" RCP SE = 830.53
8" RCP S = 836.18
60" RCP SW = 827.64
8" PVC NW = 838.19
24" RCP NW = 830.36

CATCH BASIN #120
RIM = 841.92
8" PVC SW = 839.29

STORM MANHOLE #121
RIM = 842.38
NO PIPES VISIBLE

CATCH BASIN #122
RIM = 842.29
10" RESTR. PLATE SE = 839.53

CATCH BASIN #123
RIM = 842.57
10" PVC W = 838.27

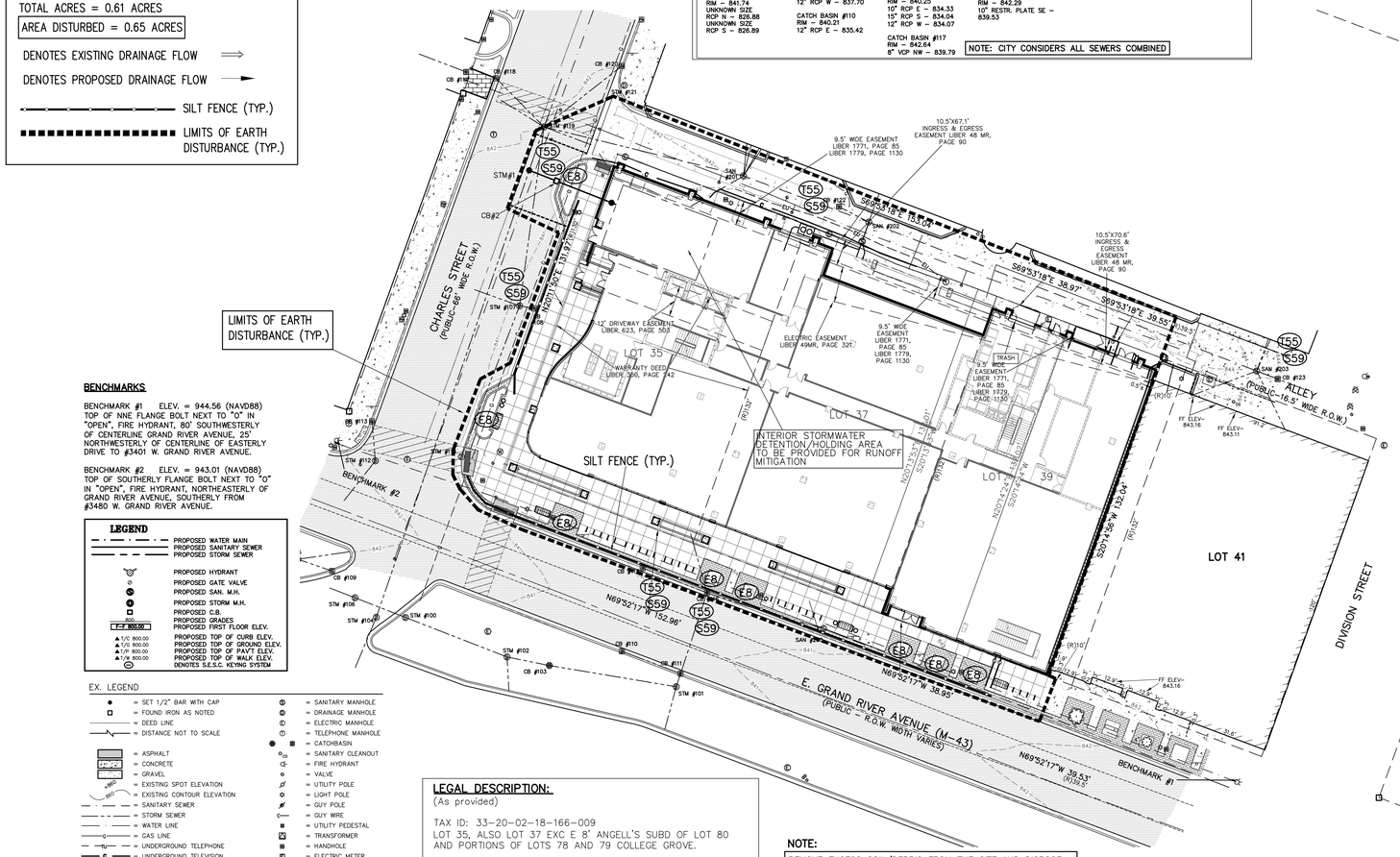
SANITARY MANHOLE #200
RIM = 841.34
10" VCP E = 835.16
10" RCP W = 835.12

SANITARY MANHOLE #201
RIM = 841.99
12" PVC N = 836.37
15" PVC N = 832.74
8" PVC N = 832.78
8" PVC N = 836.38
24" RCP E = 830.83
TOP OF 6" PVC DROP PIPE SW = 838.83
24" RCP W = 830.81

SANITARY MANHOLE #202
RIM = 842.41
6" PVC N = 837.97
24" RCP E = 830.91
24" RCP W = 830.89
10" RCP NW = 837.74
PROP. 15" S = 835.00

SANITARY MANHOLE #203
RIM = 842.73
12" PVC N = 832.73
24" RCP E = 831.27
10" PVC SE = 837.72
TOP OF 6" PVC DROP PIPE SW = 839.08
24" RCP W = 831.27
12" PVC NW = 837.41
8" PVC SE = 838.95

NOTE: CITY CONSIDERS ALL SEWERS COMBINED



BENCHMARKS

BENCHMARK #1 ELEV. = 944.56 (NAVD88)
TOP OF NNE FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, 80' SOUTHWESTERLY OF CENTERLINE GRAND RIVER AVENUE, 25' NORTHWESTERLY OF CENTERLINE OF EASTERLY DRIVE TO #3401 W. GRAND RIVER AVENUE.

BENCHMARK #2 ELEV. = 943.01 (NAVD88)
TOP OF SOUTHERLY FLANGE BOLT NEXT TO "O" IN "OPEN", FIRE HYDRANT, NORTHEASTERLY OF GRAND RIVER AVENUE, SOUTHERLY FROM #3480 W. GRAND RIVER AVENUE.

LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- PROPOSED GRADES
- PROPOSED FIRST FLOOR ELEV. (F.F. 800.00)
- PROPOSED TOP OF CURB ELEV. (T/C 800.00)
- PROPOSED TOP OF GROUND ELEV. (T/G 800.00)
- PROPOSED TOP OF PAV'T ELEV. (T/P 800.00)
- PROPOSED TOP OF WALK ELEV. (T/W 800.00)
- DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- SET 1/2" BAR WITH CAP
- FOUND IRON AS NOTED
- DEED LINE
- DISTANCE NOT TO SCALE
- ASPHALT
- CONCRETE
- GRAVEL
- EXISTING SPOT ELEVATION
- EXISTING CONTOUR ELEVATION
- SANITARY SEWER
- STORM SEWER
- WATER LINE
- GAS LINE
- UNDERGROUND TELEPHONE
- UNDERGROUND TELEVISION
- UNDERGROUND ELECTRIC
- OVERHEAD WIRES
- EDGE OF WOODS
- SANITARY MANHOLE
- DRAINAGE MANHOLE
- ELECTRIC MANHOLE
- TELEPHONE MANHOLE
- CATCHBASIN
- SANITARY CLEANOUT
- FIRE HYDRANT
- VALVE
- UTILITY POLE
- LIGHT POLE
- GUY POLE
- GUY WIRE
- UTILITY PEDESTAL
- TRANSFORMER
- HANDHOLE
- ELECTRIC METER
- GAS METER
- WATER METER
- SIGN
- POST
- AIR CONDITIONING UNIT

LEGAL DESCRIPTION:
(As provided)

TAX ID: 33-20-02-18-166-009
LOT 35, ALSO LOT 37 EXC E 8' ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE.

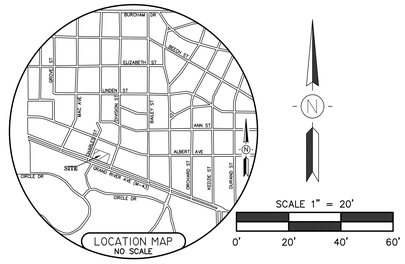
TAX ID: 33-20-02-18-166-003
W 31 FT OF LOT 39 AND E 8 FT OF LOT 37 ANGELL'S SUB OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

TAX ID: 33-20-02-18-166-004
LOT 39 EXC E 10 FT AND EXC W 31 FT ANGELL'S SUBD OF LOT 80 AND PORTIONS OF LOTS 78 AND 79 COLLEGE GROVE

ADDRESS: 421 E. GRAND RIVER AVE.
EAST LANSING, MI 48823

NOTE:
REMOVE EXCESS SOIL/DEBRIS FROM THE SITE AND DISPOSE PROPERLY IN ACCORDANCE WITH APPLICABLE REGULATIONS

STREET SWEEPING NOTES:
GRAND RIVER AND CHARLES ST. SHALL BE KEPT CLEAN AND FREE OF TRACKED SEDIMENT. A STREET SWEEPER OR A BOBCAT WITH A BROOM ATTACHMENT SHOULD BE KEPT ON SITE TO DEAL WITH ANY OFF-SITE TRACKING AFTER WEATHER EVENTS.



CONSTRUCTION SCHEDULE & SEQUENCING:	2026 JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	2027 JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
PLACE AND MAINTAIN TEMPORARY EROSION CONTROLS												
DEMOLITION AND REMOVALS												
ON-SITE UTILITIES CONSTRUCTION												
SITE GRADING & EARTHWORK												
BUILDING AND SITE CONSTRUCTION												
TOPSOIL SPREADING												
PERMANENT SEEDING												
FINAL INSPECTIONS & REMOVE TEMPORARY EROSION CONTROLS												

SOIL EROSION CONTROL NOTES:

1. ALL SOIL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH THE CITY OF EAST LANSING REQUIREMENTS AND PROJECT SPECIFICATIONS.
2. ANY EROSION OR SEDIMENT FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT BE ALLOWED TO COLLECT ON ANY OFF-SITE AREAS, OR IN WATERWAYS; WATERWAYS INCLUDE BOTH NATURAL AND MANMADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
3. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES AS REQUIRED AND AS DIRECTED ON THESE PLANS. ALL TEMPORARY SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO OR AT COMMENCEMENT OF CONSTRUCTION ACTIVITY. HE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES AND OTHER EARTH CHANGES HAVE BEEN ESTABLISHED.
4. DUST CONTROL WILL BE EXERCISED AT ALL TIMES WITHIN THE PROJECT BY THE CONTRACTORS. SPRINKLING TANK TRUCKS SHALL BE AVAILABLE AT ALL TIMES TO BE USED ON HAUL ROUTES OR OTHER PLACES WHERE DUST BECOMES A PROBLEM.
5. SEDIMENT @ C.B.'s SHALL BE REMOVED AFTER EVERY STORM. SEEDING OF EXPOSED AREAS SHALL BE COMPLETED WITHIN 5 DAYS OF FINAL GRADING.
6. ALL DISTURBED AREAS WILL RECEIVE PERMANENT EROSION CONTROL WITHIN 5 DAYS OF FINAL GRADING. AREAS NOT STABILIZED SHALL BE DIVERTED TOWARD RETENTION/SEDIMENT BASINS.
7. WEATHER AND UNFORESEEN DELAYS MAY RESULT IN EXTENSION OF CONSTRUCTION SCHEDULE.
8. SITE DEVELOPMENT CONTRACTOR SHALL INSPECT SOIL EROSION CONTROL MEASURES ON A DAILY BASIS, MORE OFTEN IF NECESSARY. ANY NEEDED REPAIRS SHALL BE PROMPTLY MADE.
9. SITE DEVELOPMENT CONTRACTOR SHALL MEET WITH SOIL EROSION ENFORCEMENT OFFICER PRIOR TO START OF WORK.
10. ALL DISTURBANCE SHALL BE KEPT AT LEAST 25' FROM WATER FEATURES LEAVING AN UNDISTURBED VEGETATION BUFFER, UNLESS ADDITIONAL SESC MEASURES ARE PROPOSED AND APPROVED BY THE CITY OF EAST LANSING.
11. EACH DISTURBANCE ADJACENT TO WETLANDS, INLAND STREAMS & LAKES, OR ADJACENT TO SLOPES GREATER THAN 8% SHALL BE TOPSOILED, SEEDED, AND EROSION CONTROL MATTING APPROPRIATE FOR THE SLOPE CONDITIONS INSTALLED, WITHIN 3 DAYS OF FINAL GRADING OR FINAL ACTIVITY OF THOSE AREAS.
12. STOCK PILE AREAS SHALL BE LOCATED GREATER THAN 25' FROM WETLANDS & INLAND STREAMS & LAKES, AND AT LEAST 25' FROM PROPERTY LINES.
13. WATER FROM TRENCHES AND OTHER EXCAVATIONS SHALL BE PUMPED INTO A FILTRATION BAG TO REMOVE SEDIMENT FROM THE WATER.
14. THE PROJECT SITE IS NOT WITHIN 500 FT. OF A STREAM, LAKE OR DRAINAGE CHANNEL.
15. ANY DEBRIS, MUD/DIRT ON ANY PAVED AREA RESULTING FROM CONSTRUCTION TRAFFIC SHALL BE CLEANED AND/OR SWEPT IN A PROMPT MANNER.
16. REMOVE EXCESS SOIL FROM THE SITE AND DISPOSE OF PROPERLY IN ACCORDANCE WITH APPLICABLE REGULATIONS.

SEQUENCE OF CONSTRUCTION

1. INSTALL ALL TEMPORARY SILT FENCE PER PLAN AND AS SHOWN ON DETAIL
2. USE CONSTRUCTION ENTRANCE'S AS SHOWN ON PLAN FOR CONSTRUCTION ENTRANCE/EXIT.
3. INSTALL INLET PROTECTION FABRIC DROPS BETWEEN THE FRAME AND COVER OF ALL EXISTING YARD BASINS OR INLETS WHICH MAY BE SUSCEPTIBLE TO SEDIMENT EROSION FROM THE PROPOSED CONSTRUCTION AS SHOWN IN THESE PLANS.
4. WHILE MAINTAINING A VEGETATIVE BUFFER WHENEVER POSSIBLE STRIP AND STOCKPILE TOPSOIL ABOVE AREAS OF PROPOSED EXCAVATION OR GRADING FOR LATER USE ON SITE PLACE STOCKPILED TOPSOIL IN AREAS WHICH ARE NEITHER SUBJECT TO HIGH RUNOFF NOR ALONG STEEP SLOPES SEED AND MULCH STOCKPILES IMMEDIATELY TO PREVENT WIND BLOWN SEDIMENT POLLUTION AND EXCESSIVE DUST.
5. EXCAVATE FOR PROPOSED BUILDING, SIDEWALKS & UTILITIES CONSTRUCTION AS NECESSARY. DO NOT EXPOSE AREAS FAR IN ADVANCE OF THE PROPOSED CONSTRUCTION FOR THAT AREA. ROUGHEN AND SCARIFY EXPOSED SURFACES TO REDUCE RUNOFF VELOCITY AND SEDIMENTATION. MAINTAIN VEGETATION WHENEVER POSSIBLE TO PROVIDE A NATURAL BUFFER.
6. TOPSOIL, SEED, FERTILIZE AND MULCH ALL EXPOSED AREAS AS SOON AS FEASIBLE TO PROTECT AND RESTORE PERMANENT VEGETATION.
7. WATER EXPOSED GROUND REGULARLY TO CONTROL AIRBORNE PARTICULATE MATTER.
8. THE SOIL EROSION PERMITTEE IS RESPONSIBLE FOR ENSURING THAT ALL PERMANENT AND TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES THROUGHOUT THE ENTIRE CONSTRUCTION PROCESS ARE INSTALLED CORRECTLY AND MAINTAINED UNTIL PERMANENT VEGETATION IS REESTABLISHED IN ALL EXPOSED AREAS.
9. THE SITE WILL BE PERIODICALLY INSPECTED BY THE CITY OF EAST LANSING. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE RULES AND REGULATIONS OF THAT OFFICE
10. UPON FINAL APPROVED INSPECTION OF THE COMPLETED CONSTRUCTION BY ALL REVIEWING AGENCIES, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES.
11. ANY CONSTRUCTION ACCESS ROAD WILL BE PROTECTED WITH CRUSHED STONE OR CRUSHED CONCRETE, AGGREGATE SIZE 1"-2".

SOIL TYPE:
UpA - URBAN LAND CAP.AC-COLWOOD COMPLEX, 0-4 PERCENT SLOPES

NOTE: STORM WATER RUNOFF FROM THIS SITE WILL NOT ADVERSELY AFFECT ADJACENT PROPERTIES.

NOTE: ANY STOCKPILING OF SOIL SHALL BE SURROUNDED BY SILT FENCE, SEEDED IF LEFT OVER 30 DAYS.

DLRGROUP
© DLR Group

KEBS, INC.
CIVIL ENGINEERS
SURVEYORS
PLANNERS
2116 E. M-36
PINCKNEY, MI 48169
PH: (517) 605-0456

HARBOR BAY VENTURES

THE HOWARD
421 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

SOIL EROSION & SEDIMENTATION CONTROL PLAN

C4.0

E8 PERMANENT SEEDING SPECIFICATIONS

When
- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation problem.
- Within 5 days of final grade.

Why
- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

Where
- Used on construction and earth change sites which require permanent vegetative stabilization.

How

1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass and ground cover for permanent cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
6. Prepare a 3–5" deep seedbed, with the top 3–4" consisting of topsoil.
7. Slopes steeper than 1:3 should be roughened.
8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
9. Mulch immediately after seeding.
10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.

STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

PERMANENT SEEDING SPECIFICATIONS E8

How (cont.)

11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance
- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations
- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

E8 PERMANENT SEEDING

Planting Zones:	Lower Peninsula (South of T2ON) Zone 1	Lower Peninsula (North of T2ON) Zone 2	Upper Peninsula Zone 3
Seeding Window Permanent Seeding	4/15 – 10/10	5/1 – 10/1	5/1 – 9/20
Seeding Window Dormant Seeding*	11/15 – Freeze	11/01 – Freeze	11/01 – Freeze

Source: Adapted from MDOT Interim 2003 Standard Specifications for Construction

	Zone 1 Lower Peninsula (South of U.S. 10)	Zone 2 Lower Peninsula (North of U.S. 10)	Zone 3 Upper Peninsula
Seeding Dates (With Irrigation or Mulch)	4/1 – 8/1	5/1 – 9/20	5/1 – 9/10
Seeding Dates (w/o Irrigation or Mulch)	4/1 – 5/20 or 8/10 – 10/1	5/1 – 6/10 or 8/1 – 9/20	5/1 – 6/15 or 8/1 – 9/20
Dormant Seeding Dates*	11/1 – Freeze	10/25 – Freeze	10/25 – Freeze

Source: Adapted from USDA NRCS Technical Guide #342 (1999)

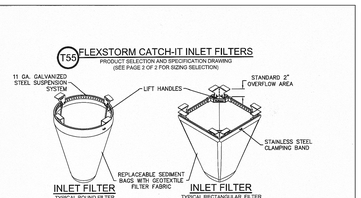
* Dormant seeding is for use in the late fall after the soil temperature remains consistently below 50°F, prior to the ground freezing. This practice is appropriate if construction on a site is completed in the fall but the seed was not planted prior to recommended seeding dates. No seed germination will take place until spring. A cool season annual grass may be added in an attempt to have some fall growth.

- Mulch must be used with dormant seed.
- Do not seed when the ground is frozen or snow covered.
- Do not use a dormant seed mix on grassed waterways.

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

T55 FLEXSTORM CATCH-IT INLET FILTERS

PRODUCT SELECTION AND SPECIFICATION DRAWING (SEE PAGE 2 OF 2 FOR SIZING SELECTION)



INLET FILTER — TYPICAL ROUND FILTER

INLET FILTER — TYPICAL RECTANGULAR FILTER

INLET FILTER — TYPICAL COMBINATION INLET FILTER W/ CURB GUARD

NOTES:
1. ALL FRAMING IS CONSTRUCTED OF CORROSION RESISTANT STEEL (ZINC PLATED OR GALVANIZED) FOR 7 YEAR MINIMUM SERVICE LIFE.
2. UPON ORDERING CONFIRMATION OF THE DOT CALLOUT, PRECAST OR CASTING MAKE AND MODEL, OR DETAILED DIMENSIONAL FORMS MUST BE PROVIDED TO CONFIGURE AND ASSEMBLE YOUR CUSTOMIZED FLEXSTORM INLET FILTER. PART NUMBER ALONE IS NOT SUFFICIENT.
3. FOR WRITTEN SPECIFICATIONS AND MAINTENANCE GUIDELINES VISIT: WWW.INLETFILTERS.COM

ALL PRODUCTS MANUFACTURED BY INLET & PIPE PROTECTION, INC A DIVISION OF ADS, INC. WWW.INLETFILTERS.COM (866) 287-8650 PH (630) 355-3477 FX INFO@INLETFILTERS.COM

SIZE	DRAWN BY	DESCRIPTION	DWG NO.	REV
C		FLEXSTORM_CATCH_IT		A

STANDARD DETAILS			ENG. REVIEW
FLEXSTORM CATCH-IT INLET FILTERS			03/01/16
CJM	RFS	RFS	NONE
02/20/14	03/14/14	03/14/14	1 OF 2

C:\Users\jschine\Soil Erosion Control\SESC – FlexStorm Inlet Filter Detail – Rev 030116.dwg, Friday, May 26, 2017 3:10:50 PM, Jack Schineman

T55 FLEXSTORM CATCH-IT INLET FILTERS

PRODUCT SELECTION AND SPECIFICATION DRAWING (SEE PAGE 1 OF 2 FOR DETAIL DRAWINGS)

1. IDENTIFY YOUR FRAME STYLE AND SIZE

STYLE	FRAME STYLE AND SIZE	Frame P/N
ROUND	Small Round (up to 20.0" dia grates) (A) (Dm)	62RD
	Med Round (20.1" – 26.0" dia grates) (A) up to 20" dia openings (B))	62MD
	Large Round (26.1" – 32.0" dia grates) (A) up to 20" openings (B))	62RD
INVERT DRAWER	Small Rect / Square (up to 24" (A) x 24" (D) openings or 576" perimeter)	62SQ
	Med Rect / Square (up to 30" (A) x 30" (D) openings or 960" perimeter)	62MSQ
	Large Rect / Square (up to 36" (A) x 36" (D) openings or 1,44" perimeter)	62LSQ
	XL Rect / Square (wide by side 2 as used to fit up to 48" (A) x 36" (D) openings)	62XLSQ
CURB INLETS	Small Rect / Square (roof Rect sizing; shipped with Magnetic Curb Flaps)	62SCR
	Med Rect / Square (roof Rect sizing; shipped with Magnetic Curb Flaps)	62MCR
	Large Rect / Square (roof Rect sizing; shipped with Magnetic Curb Flaps)	62LCR
	XL Rect / Square (roof Rect sizing; shipped with Magnetic Curb Flaps)	62XLCR
RETROFIT	12" diameter Polyplast castings (Stainless Steel Framing standard)	623MY
	15" diameter Polyplast castings (Stainless Steel Framing standard)	625MY
	18" diameter Polyplast castings (Stainless Steel Framing standard)	628MY
	24" diameter Polyplast castings (Stainless Steel Framing standard)	624MY
	30" diameter Polyplast castings (Stainless Steel Framing standard)	630MY

2. SELECT YOUR BAG PART NUMBER

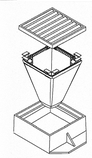
FLEXSTORM FILTER BAGS	100" Width Std Bag P/N	132" Width Short Bag P/N	Clean Water Flow Rate (GPM/SqFt)	MAX A.O.S. (US Sieve)
Fit Standard Woven Bag	FX	FX-S	240	#5
Fit DOT Non-Woven Bag	FL	FL-S	145	70

3. CREATE YOUR FLEXSTORM INLET FILTER PART NUMBER

Frame P/N from Step 1.		Filter Bag P/N from Step 2.

SPECIFICATIONS FOR STANDARD BAGS BY NOMINAL SIZE

Nominal Bag Size	Solids Storage (CuYd)	Filtered Flow Rate at 50% Max (GPS) Fit (Woven)	XL (Nonwoven)
Small	1.6	1.2	0.9
Medium	2.1	1.7	1.3
Large	3.8	2.7	1.9
XL	4.2	3.6	2.6



INSTALLATION NOTES:
1. REMOVE GRATE
2. DROP FLEXSTORM INLET FILTER ON TO LOAD BEARING LIP OF CASTING OR CONCRETE STRUCTURE
3. REPLACE GRATE

INLET FILTER — TYPICAL INSTALLATION

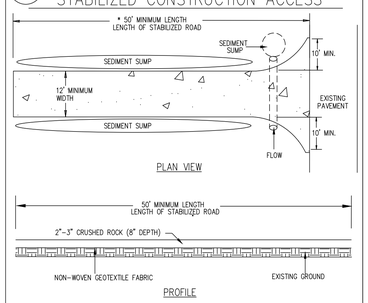
ALL PRODUCTS MANUFACTURED BY INLET & PIPE PROTECTION, INC A DIVISION OF ADS, INC. WWW.INLETFILTERS.COM (866) 287-8650 PH (630) 355-3477 FX INFO@INLETFILTERS.COM

SIZE	DRAWN BY	DESCRIPTION	DWG NO.	REV
C		FLEXSTORM_CATCH_IT		A

STANDARD DETAILS			ENG. REVIEW
FLEXSTORM CATCH-IT INLET FILTERS			03/01/16
CJM	RFS	RFS	NONE
02/20/14	03/14/14	03/14/14	2 OF 2

C:\Users\jschine\Soil Erosion Control\SESC – FlexStorm Inlet Filter Detail – Rev 030116.dwg, Friday, May 26, 2017 3:11:59 PM, Jack Schineman

S53 STABILIZED CONSTRUCTION ACCESS

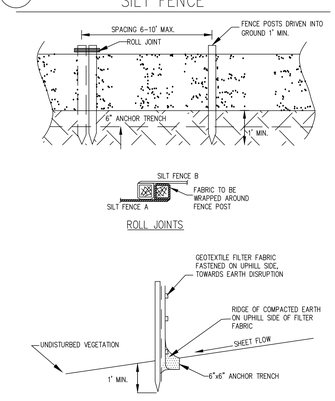


NOTES:
1. Establish stabilized construction entrance prior to the initiation of site construction activities.
2. Care should be taken to prevent material movement into adjacent wetlands/waterbodies.
3. Care should be taken to maintain existing roadside drainage via culvert installation, with sediment sump placed downflow of culvert.

STANDARD SYMBOL

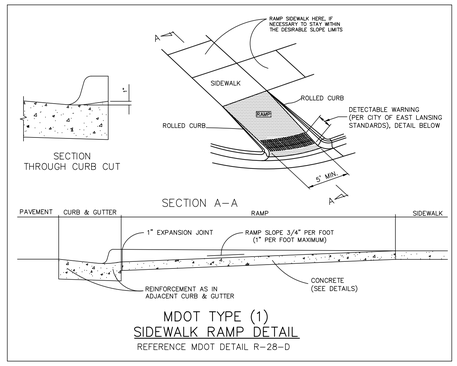
MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET

S51 SILT FENCE



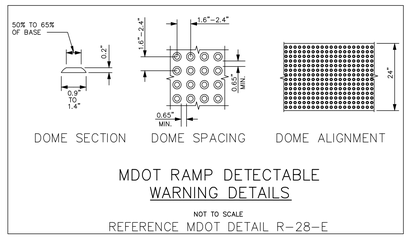
STANDARD SYMBOL

MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET



MDOT TYPE (1) SIDEWALK RAMP DETAIL

REFERENCE MDOT DETAIL R–28–D

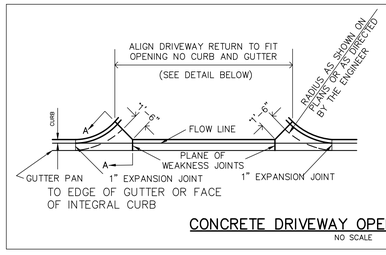


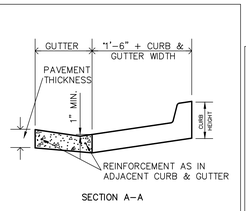
MDOT RAMP DETECTABLE WARNING DETAILS

NOT TO SCALE

REFERENCE MDOT DETAIL R–28–E

FOR SIDEWALKS AND STREETSCAPE SEE CITY OF E.L. DETAILS

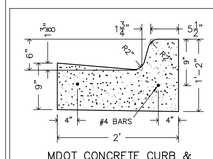




SECTION A–A

CONCRETE DRIVEWAY OPENING – DETAIL M

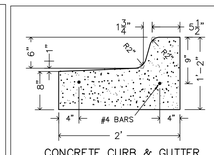
NO SCALE



MDOT CONCRETE CURB & GUTTER (F–4)

NO SCALE

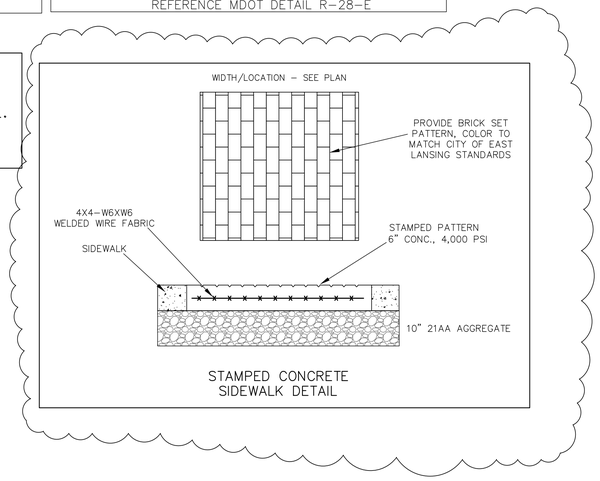
REVIEW GRADING PLAN TO DETERMINE WHETHER TO USE SPILLOUT CURB & GUTTER OR REGULAR CURB & GUTTER



CONCRETE CURB & GUTTER (F–4) – SPILLOUT

NO SCALE

REVIEW GRADING PLAN TO DETERMINE WHETHER TO USE SPILLOUT CURB & GUTTER OR REGULAR CURB & GUTTER



STAMPED CONCRETE SIDEWALK DETAIL

DLRGROUP
© DLR Group

KEERS, INC.
CIVIL ENGINEERS
LAND SURVEYORS
LANDSCAPE ARCHITECTS
OKEMOS, MI 48864
(517) 349-8477

HARBOR BAY VENTURES

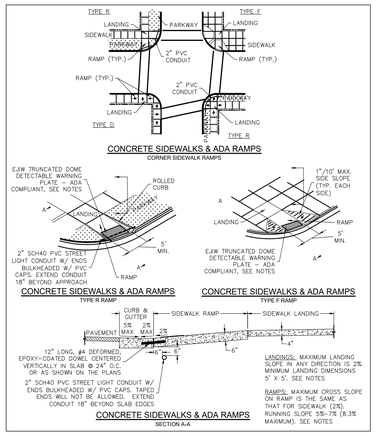
THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

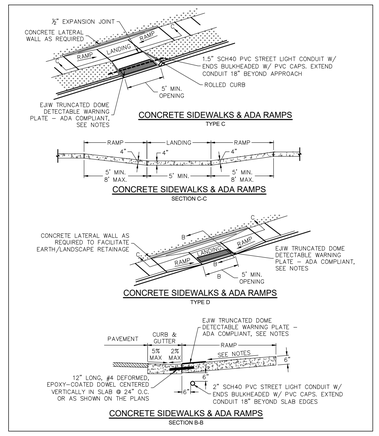
100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

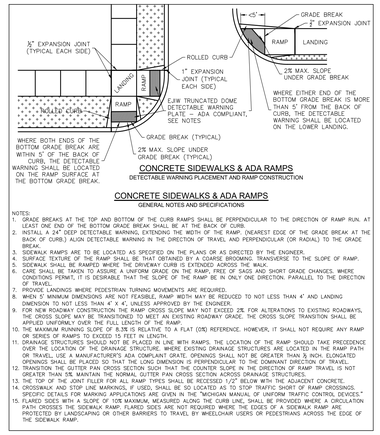
24-25104-00

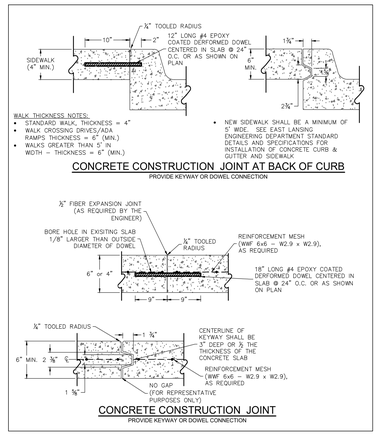
DETAILS

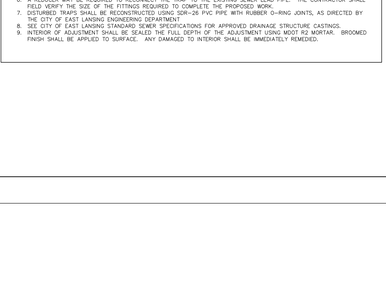
C5.0

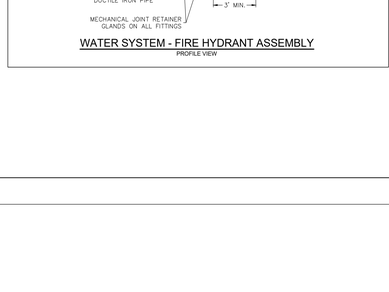


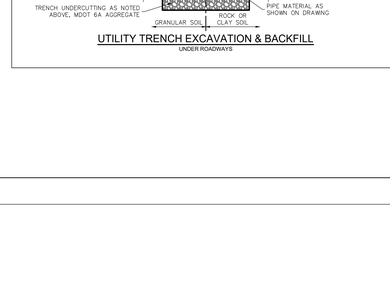


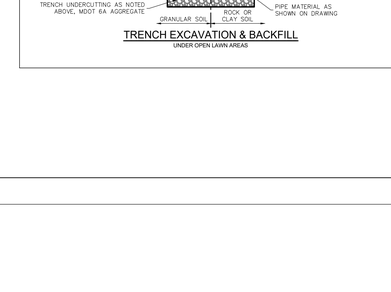












DLRGROUP
© DLR Group
KEBS, INC.
CIVIL ENGINEERS
LAND SURVEYORS
ARCHITECTS
PLANNERS
HARBOR BAY VENTURES
THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN

05/01/2026
REVISIONS

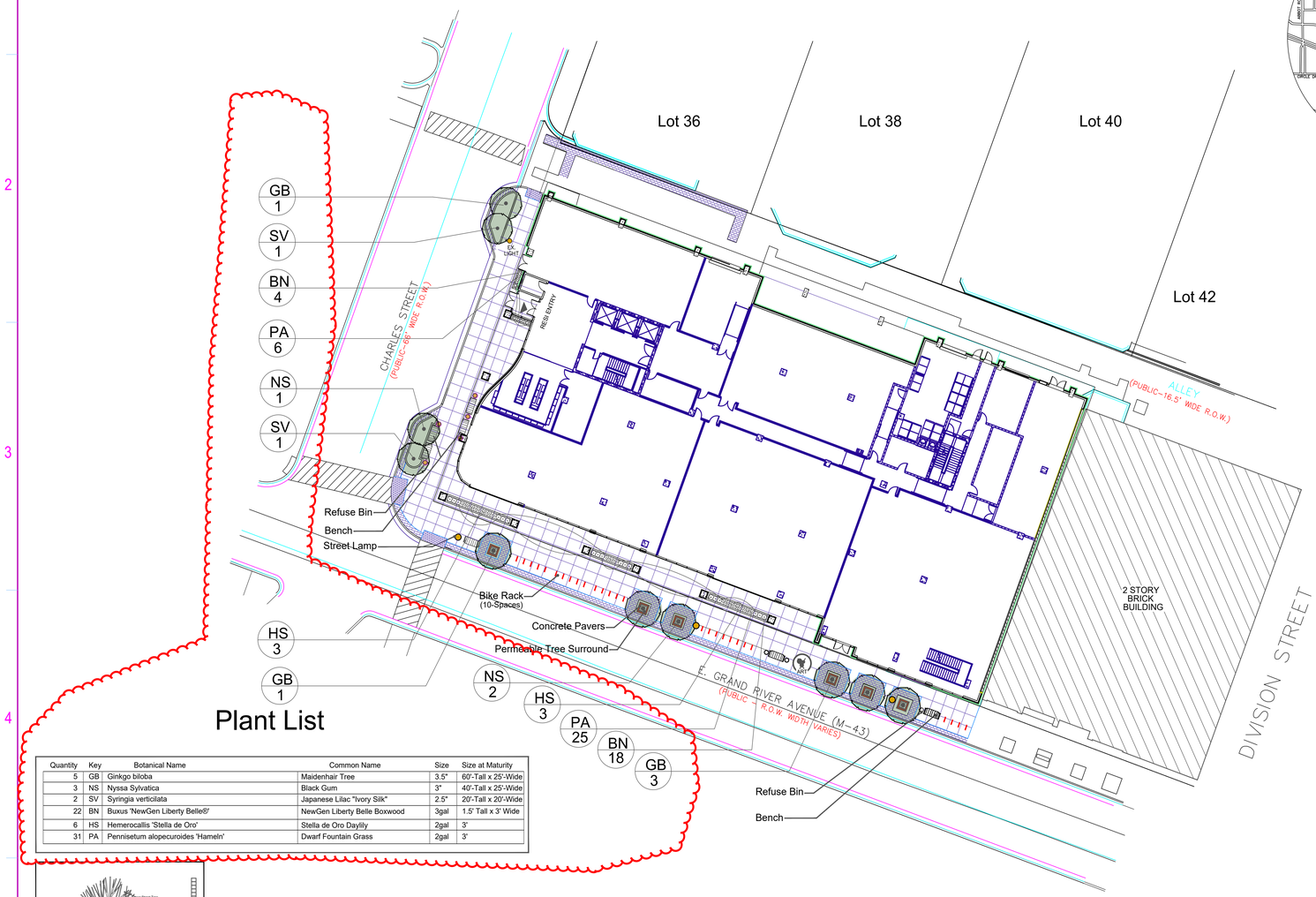
24-25104-00

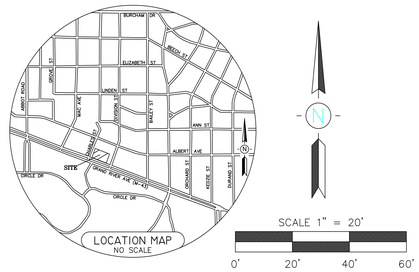
CITY OF EAST LANSING DETAILS

C5.1

THE HOWARD - EAST LANSING

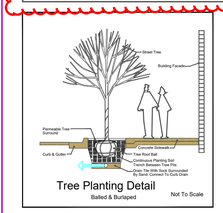
CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN





Plant List

Quantity	Key	Botanical Name	Common Name	Size	Size at Maturity
5	GB	Ginkgo biloba	Maidenhair Tree	3.5"	60'-Tall x 25'-Wide
3	NS	Nyssa Sylvatica	Black Gum	3"	40'-Tall x 25'-Wide
2	SV	Syringia verticilata	Japanese Lilac "Ivory Silk"	2.5"	20'-Tall x 20'-Wide
22	BN	Buxus 'NewGen Liberty Belle®'	NewGen Liberty Belle Boxwood	3gal	1.5' Tall x 3' Wide
6	HS	Hemerocallis 'Stella de Oro'	Stella de Oro Daylily	2gal	3'
31	PA	Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	2gal	3'



Landscape Notes

1. Contractor shall verify the location of all underground utilities, pipes and structures, as well as the location of existing trees and vegetation. Contractor shall be responsible for any cost incurred due to damage/removal of said elements.
2. Any discrepancies between plans, notes, details and existing conditions shall be immediately reported to the owner's authorized representative for review and decision. Contractor shall assume full responsibility for all revisions due to failure to give such notification.
3. Contractor is responsible for any damage to existing materials/improvements damaged during construction.
4. Site boundary, topography, utilities and other base information provided by others.
5. Contractor shall verify quantities shown on plant schedules and those indicated on plans. Contractor is responsible for installation of quantities drawn.
6. Contractor shall make minor adjustments to plant material locations in field as necessary. The location of all plant material shall be subject to approval by the owners authorized representative.
7. All plant material shall be of the sizes called for in the plant schedules. Any plant material not meeting the size and/or quality as called for shall be removed from site. All trees shall be inspected and approved by the owner's authorized representative. No substitutions of plant materail shall be made without approval from the owner's authorized representative.
8. All planting beds to be treated with pre-emergent herbicide. Contractor shall insure that proposed plant material is resistant to the herbicide properties and that herbicide application follows the manufacturer's specifications and is applied in accordance with sound horticultural practices.
9. Contractor shall determine appropriate planting mixes (based on soils/subsurface conditions) and review alternatives with owner's representative prior to installation.

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL-FREE)

Outdoor Living, Inc.
5320 South Pennsylvania Ave.
Lansing, MI 48911
Phone (517) 484-0230
Cell (517) 204-7593

STATE OF MICHIGAN
TIMOTHY J. BANFIELD
LANDSCAPE ARCHITECT
No. 859
Seal: Timothy I. Banfield PLA ASLA
LIC #3901000859

© ELM Group

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

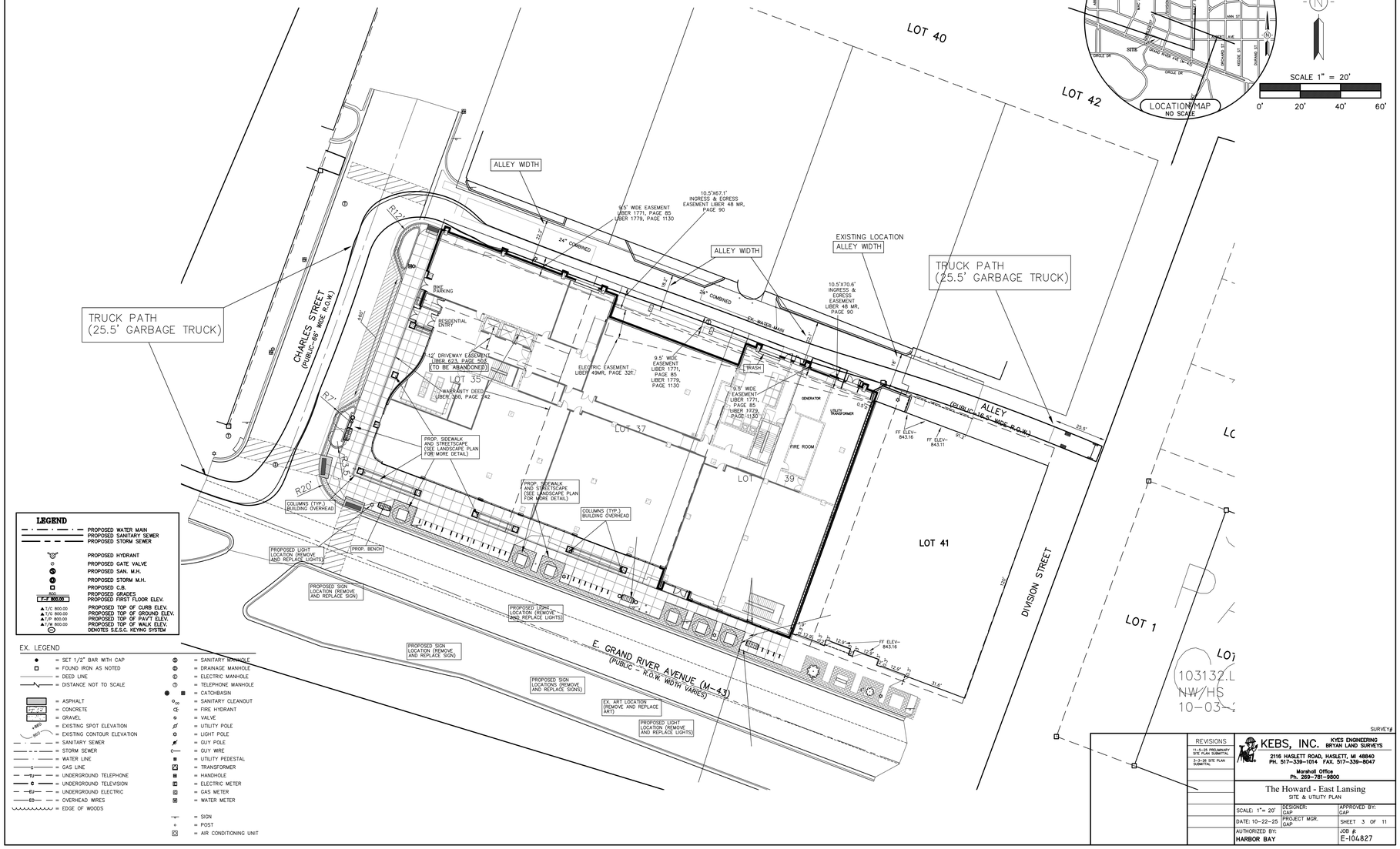
24-25104-00

LANDSCAPING PLANS

L1.0

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN



LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- 800 PROPOSED GRADES
- F.F. 800.00 PROPOSED FIRST FLOOR ELEV.
- ▲T/C 800.00 PROPOSED TOP OF CURB ELEV.
- ▲T/G 800.00 PROPOSED TOP OF GROUND ELEV.
- ▲T/P 800.00 PROPOSED TOP OF PAVT ELEV.
- ▲T/W 800.00 PROPOSED TOP OF WALK ELEV.
- DENOTES S.E.S.C. KEYNG SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- 880 = EXISTING SPOT ELEVATION
- 880 = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- G = GAS LINE
- U = UNDERGROUND TELEPHONE
- C = UNDERGROUND TELEVISION
- UE = UNDERGROUND ELECTRIC
- OE = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

SURVEY#

REVISIONS	KEBS, INC. KYES ENGINEERING BRYAN LAND SURVEYS
11-5-25 PRELIMINARY SITE PLAN SUBMITTAL	2116 HASLETT ROAD, HASLETT, MI 48840
1-13-26 SITE PLAN SUBMITTAL	PH. 517-339-1014 FAX. 517-339-8047
	Marshall Office: Ph. 269-781-9800
	The Howard - East Lansing SITE & UTILITY PLAN

SCALE: 1"= 20'	DESIGNER: GAP	APPROVED BY: GAP
DATE: 10-22-25	PROJECT MGR. GAP	SHEET 3 OF 11
AUTHORIZED BY: HARBOR BAY		JOB #: E-104827

10-22-25 PRELIMINARY SITE PLAN

STATE OF MICHIGAN — GREGORY A. PETRU — ENGINEER NO. 50958 — PROFESSIONAL ENGINEER

DLRGROUP
© DLR Group

KEBS, INC. KYES ENGINEERING BRYAN LAND SURVEYS
2116 HASLETT ROAD, HASLETT, MI 48840
PH. 517-339-1014 FAX. 517-339-8047
Marshall Office: Ph. 269-781-9800

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

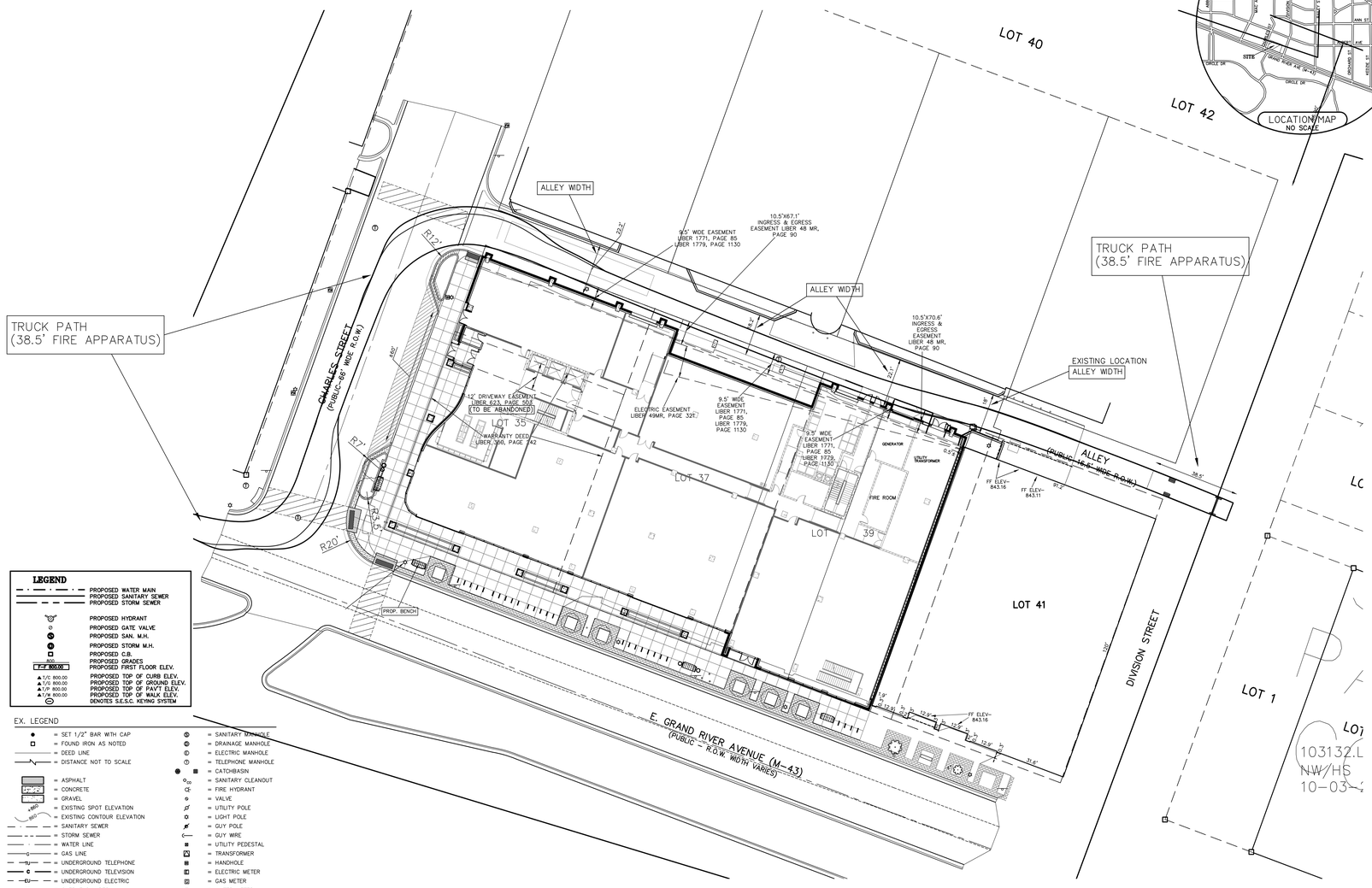
24-25104-00

GARBAGE TRUCK ACCESS (AT ALLEY)

C5.2

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN



LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- 800 — PROPOSED GRADES
- T.F. 800.00 — PROPOSED FIRST FLOOR ELEV.
- ▲T/C 800.00 — PROPOSED TOP OF CURB ELEV.
- ▲T/G 800.00 — PROPOSED TOP OF GROUND ELEV.
- ▲T/P 800.00 — PROPOSED TOP OF PAVT ELEV.
- ▲T/W 800.00 — PROPOSED TOP OF WALK ELEV.
- (S) — DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- 880 = EXISTING SPOT ELEVATION
- 880 = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- G = GAS LINE
- U = UNDERGROUND TELEPHONE
- C = UNDERGROUND TELEVISION
- EU = UNDERGROUND ELECTRIC
- EO = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

DLRGROUP
© DLR Group

KEBS, INC.
SURVEYORS
PLANNERS
LAND DEVELOPERS
2116 HASLETT ROAD
HASLETT, MI 48840
517-339-1014

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

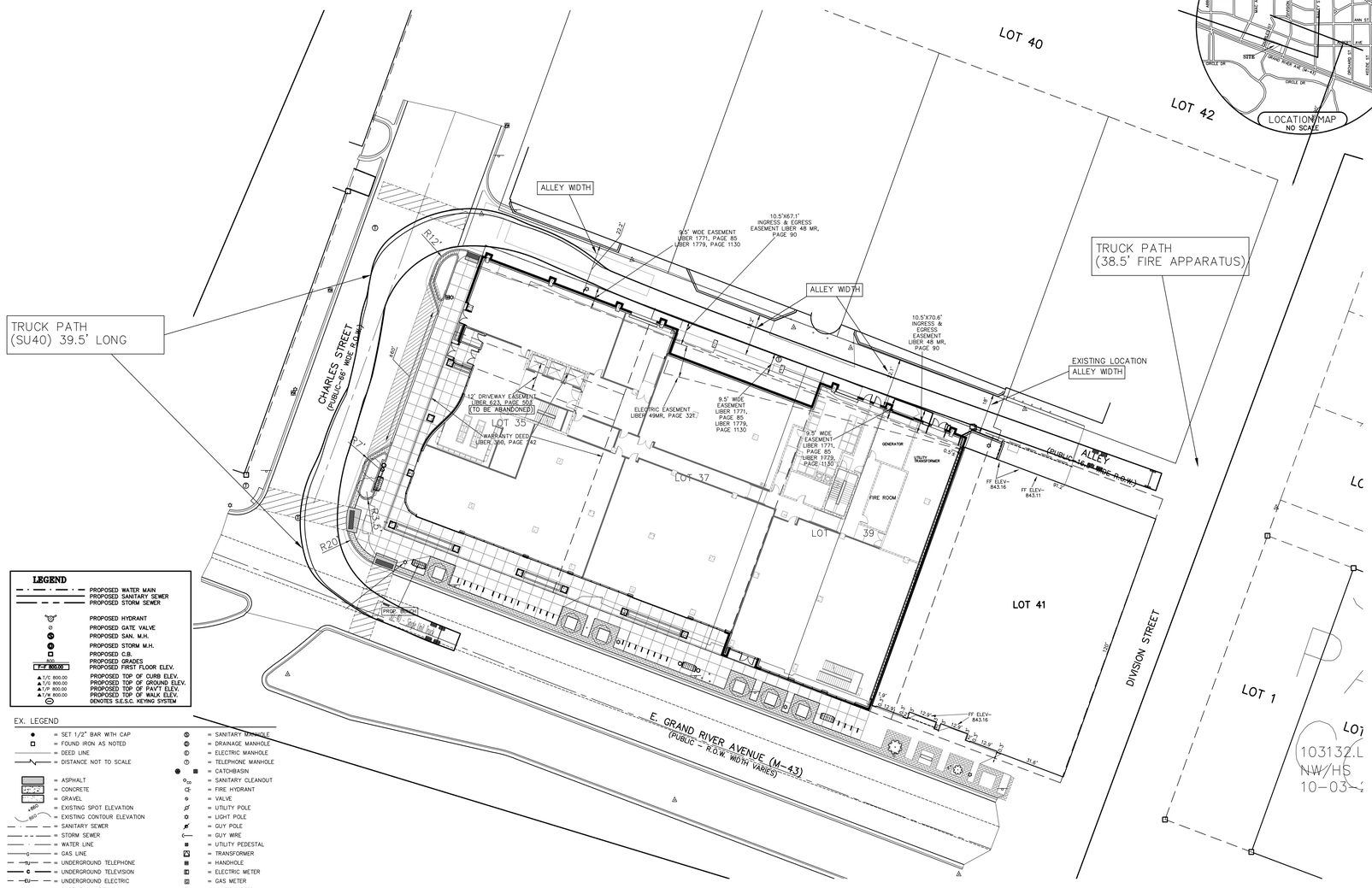
24-25104-00

FIRE APPARATUS ACCESS (AT THE ALLEY)

C5.3

THE HOWARD - EAST LANSING

CITY OF EAST LANSING, INGHAM COUNTY, MICHIGAN



LEGEND

- PROPOSED WATER MAIN
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- PROPOSED HYDRANT
- PROPOSED GATE VALVE
- PROPOSED SAN. M.H.
- PROPOSED STORM M.H.
- PROPOSED C.B.
- 800 — PROPOSED GRADES
- T.F. 800.00 — PROPOSED FIRST FLOOR ELEV.
- ▲T/C 800.00 — PROPOSED TOP OF CURB ELEV.
- ▲T/G 800.00 — PROPOSED TOP OF GROUND ELEV.
- ▲T/P 800.00 — PROPOSED TOP OF PAVT ELEV.
- ▲T/W 800.00 — PROPOSED TOP OF WALK ELEV.
- (S) — DENOTES S.E.S.C. KEYING SYSTEM

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = ASPHALT
- = CONCRETE
- = GRAVEL
- 800 = EXISTING SPOT ELEVATION
- 800 = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- G = GAS LINE
- TU = UNDERGROUND TELEPHONE
- C = UNDERGROUND TELEVISION
- EU = UNDERGROUND ELECTRIC
- EO = OVERHEAD WIRES
- = EDGE OF WOODS
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCHBASIN
- = SANITARY CLEANOUT
- = FIRE HYDRANT
- = VALVE
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY PEDESTAL
- = TRANSFORMER
- = HANDHOLE
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SIGN
- = POST
- = AIR CONDITIONING UNIT

DLRGROUP
© DLR Group

KEBS, INC.
SURVEYORS
PLANNERS
LANDSCAPE ARCHITECTS
2116 HASLETT ROAD, SUITE 100
HASLETT, MI 48840
517.339.1014

HARBOR BAY VENTURES

THE HOWARD
401 EAST GRAND RIVER AVENUE
EAST LANSING, MI 48823

100% SCHEMATIC DESIGN
05/01/2026
REVISIONS

24-25104-00

SU 40 ACCESS
(AT THE ALLEY)

C5.4

Transportation Commission

AGENDA ITEM REPORT

To:	Transportation Commission
Subject:	Traffic Calming Action Plan Scoring Matrix Discussion
Meeting:	Transportation Commission - 01 Jun 2026
Department:	Public Works
Staff Contact:	Stephen Clayton, Engineering Administrator

BACKGROUND INFORMATION:

In 2001 the Transportation Commission adopted an Action Plan for Addressing Neighborhood Speeding & Non-Resident Traffic Issues. In 2022, a sub-committee was formed by the Transportation Commission to update the Action Plan, which was then adopted in 2023. In 2024, the City Council adopted the Non-Motorized Transportation Plan which included recommended changes to the Neighborhood Action Plan. These changes were made and saved in the most recent 2025 Neighborhood Action Plan.

The plan has been used by the City to respond to various neighborhood speeding concerns. The plan has also been used as a starting point for various traffic neighborhood conversations including speeding, parking, and cut through traffic. Recently, the City has received feedback that the Action Plan could be improved to better serve residents.

The City's Traffic Engineer consultant provided updates to the Action Plan which were recommended for approval with the replacement of the scoring matrix and other minor changes during the May 4, 2026 Commission meeting. Afterwards, staff used traffic data from 14 previous locations to apply the scoring matrix and had additional follow questions for the Commission.

ATTACHMENTS:

Commission Motion to Adopt Revised TCAP Scoring Matrix

Traffic Calming Action Plan (TCAP) amendment

Replaces TCAP Step 6 Evaluation Table (Original)

Step 6 Prioritization Methodology

The Traffic Calming Action Plan employs a standardized 100-point scoring matrix to evaluate and prioritize traffic calming requests received from residents and City departments. Each submitted location is assessed against seven weighted criteria that reflect safety outcomes, community equity, active transportation infrastructure, and neighborhood connectivity. Locations scoring 70 points or above are considered high priority for implementation. Locations scoring 45–69 points are designated medium priority and placed on the TCAP project queue. Locations scoring below 45 points may be logged for future re-evaluation should conditions change.

Step 6 Scoring Evaluation Table

Evaluation Table (Revised): TCAP 100-Point Prioritization Scoring Matrix

Criterion	Scoring Threshold	Points Awarded	Max Points
1. Safety & Crash History	4 or more reportable crashes within the past 5 years	25 pts	**25**
	3 reportable crashes within the past 5 years	20 pts	
	2 reportable crashes within the past 5 years	12 pts	
	1 reportable crash within the past 5 years	5 pts	
	0 reportable crashes	0 pts	
	Crashes include those documented in Michigan Traffic Crash Reports (UD-10) maintained by the East Lansing Police Department. Reportable crashes with a behavior-related contributing factors will be noted.		
2. Vehicle Speed Compliance	85th-percentile speed 15 mph or more above posted limit	20 pts	**20**
	85th-percentile speed 10–14 mph above posted limit	15 pts	
	85th-percentile speed 5–9 mph above posted limit	8 pts	

Criterion	Scoring Threshold	Points Awarded	Max Points
	85th-percentile speed less than 5 mph above posted limit *Speed data shall be gathered via pneumatic tube counts or equivalent automated traffic recorder for a minimum 72-hour period.*	0 pts	
3. Traffic Volume (ADT, in vehicles per day)	701 vpd or greater 501–700 vpd 301–500 vpd 151–300 vpd 150 vpd or fewer *ADT thresholds in vpd retained from the original TCAP volume framework and scaled proportionally to the 15-point maximum.*	15 pts 11 pts 7 pts 3 pts 0 pts	**15**
4. Active Transportation & Vulnerable Road Users	Street segment is within the ELPS non-busing walk zone (students do not qualify for district busing under current ELPS Board transportation policy)— *binary yes/no* Designated school walking route or within 500 feet of a school, park, or playground A bike lane, shared-use path, or signed bicycle route is present on the subject street A fixed-route transit stop is located within 300 feet of the subject segment No Sidewalk Present Sidewalk Present with Significant Gaps *Points are cumulative; maximum 15 points. The ELPS walk-zone sub-criterion is a flat binary award (yes = 5 pts, no = 0 pts). ELPS walk-zone eligibility shall be verified against the current ELPS Transportation Policy on file with the District at time of scoring.*	5 pts 5 pts 3 pts 2 pts 2 pts 1 pt	**15**
5. Equity & Environmental Justice	Street segment is located within a City-identified Equity Priority Area Street segment directly serves a subsidized housing development, senior facility, or disability services provider *Points in this criterion are cumulative. Equity Priority Areas are defined per the City of East Lansing Comprehensive Plan equity mapping adopted [year].*	7 pts 3 pts	**10**
6. Neighborhood Connectivity	Street segment serves as the primary vehicular connection for a neighborhood or subdivision (one point of ingress/egress)	10 pts	**10**

Criterion	Scoring Threshold	Points Awarded	Max Points
	Street segment serves as a secondary connector shared by multiple blocks	5 pts	
	Cul-de-sac, dead-end, or low-connectivity segment	0 pts	
7. Community Engagement	Formal petition bearing signatures from 60% or more of households on the block face(s) in question, or	5 pts	**5**
	Written letter of Support from Neighborhood Association	2 pts	
	Written Letter of Support or documented concerns submitted by 3 or more separate households	2 pts	
	No documented community engagement on file	0 pts	
Maximum Total Score	**100 Points**		

Priority Tier Designations

Priority Tiers Table

Score Range	Priority Designation
70–100 pts	**High Priority**
45–69 pts	**Medium Priority**
Below 45 pts	**Low Priority**

Scoring Administration Note:

Scores are determined by the Department of Public Works in coordination with the East Lansing Police Department. Scoring shall be completed within 90 days of a complete request submission. All scores are subject to review by the Traffic Calming Advisory Committee and final approval by the Transportation Commission. Scoring documentation is a public record available upon request.

Transportation Commission

AGENDA ITEM REPORT

To:	Transportation Commission
Subject:	Presentation on and Discussion Regarding the Graduate Hotel Valet Parking and Proposed Improvements to Traffic
Meeting:	Transportation Commission - 01 Jun 2026
Department:	Public Works
Staff Contact:	Stephen Clayton, Engineering Administrator

BACKGROUND INFORMATION:

The City and the Commission have discussed the Graduate Hotel valet parking at length for several years. The southbound lane on Evergreen Avenue is currently being used as a parking lane by the hotel and cars are sometimes parked perpendicular to the curb to allow for more parking by the hotel. On several occasions staff have observed cars parked onto Albert Avenue. This is routinely a traffic safety and operational concern. The construction of the hotel has 1-2 spaces adjacent to the building and relies on the valet service to move cars out of this area quickly to accommodate. The demand for the valet appears to have been underestimated and/or the operational realities were not anticipated.

ONE WAY CONVERSION

The Graduate hotel contracted the Engineering firm DLZ to prepare the attached traffic study technical memorandum. The study evaluated the conversion of Evergreen Avenue to one-way and included a vehicle queue analysis. The report is proposing converting Evergreen Avenue into a one way southbound road. This study was discussed during the September 2022 and March 2026 Transportation Commission meetings. The new proposal includes converting Evergreen Avenue to one southbound lane with additional striping prohibiting on street parking in order to maintain the 26-wide unobstructed road width requirement per the Fire Department. According to the study, "conversion to a one-way southbound street is expected to improve operations along Evergreen Avenue". City engineering staff are concerned that converting Evergreen into one lane of southbound traffic will encourage a 'staging lane' that will be illegally used to stage cars adjacent to the hotel.

PARKING CAPACITY - QUEUE ANALYSIS

The queue analysis performed by the Graduate's consultant claims that "seven vehicle stages spaces is expected to be sufficient for even peak vehicle demand with adequate staffing". This was based on video observation on June 21, 2025 and valet service data from September to November 2025. City Engineering staff caution that enforcement will be a necessary component of any parking recommendation/solution.

SITE PLAN - ADDITIONAL 6-7 PARKING SPACES

The attached proposed site plan includes a conversion to one southbound lane on Evergreen Avenue between Albert Avenue and Grand River Avenue. The plan also proposed five (5) additional parking spaces adjacent to the hotel and one (1) ADA accessible space. The current valet parking remains as is.

TRANSPORTATION COMMISSION MEETING
The Transportation Commission listened to several representatives from the Graduate Hotel during the March Commission meeting and made a motion to support the plan of adding six parking spaces and one handicap parking space and the conversion to a one-way street for southbound traffic only and adding a raised crosswalk at both ends of Evergreen.

NEXT STEPS
A revised conceptual plan dated May 6, 2026 was submitted to the City. City staff have responded to the newest proposed layout with several conditions that will be required to move forward. **Specifically from the Commission, staff are seeking feedback regarding the omission of raised crosswalks from the revised plans.** According to the developer, raised crosswalks are more appropriately found at longer stretches of road and can increase ice buildup and hamper snow removal efforts. The Commission may decide to take no action and leave the previous recommendation as is,or make a motion to revise the recommendation to omit the raised crosswalks.

Staff will work with the Graduate Hotel for the remaining items prior to council approval.

ATTACHMENTS:
Graduate Hotel Combined Memorandum 2026-01-08 eml
05-06-2026 Graduate Hotel One Way Conversion

TECHNICAL MEMORANDUM

DATE: January 8, 2026

TO: Chris Raimondi
Director of Capital Projects
AJ Capital Partners

FROM: Charles Fawcett, PE, PTOE

SUBJECT: East Lansing Graduate Hotel
Evergreen Avenue Traffic Operations – Proposed Conversion to One-Way Southbound

INTRODUCTION AND SUMMARY OF FINDINGS

DLZ was retained by AJ Capital Partners (AJCP) to evaluate the existing traffic conditions of Evergreen Avenue between Albert Street and Grand River Avenue. The purpose of this study is to determine if converting this portion of Evergreen Avenue to one-way southbound operation is a viable alternative.

Turning movement counts were conducted at five (5) intersections that may be impacted by the one-way conversion on both a weekday and weekend. Observations of activity on Evergreen Avenue were made on both of these days related to the existing two-way operation and considering whether traffic operations along this street could benefit from a conversion to one-way. Additionally, a queue analysis was completed to determine the staging needs for the hotel's valet operation along with geometric considerations for Evergreen Avenue.

These observations and analyses led to the following conclusions regarding the one-way southbound operation of Evergreen Avenue:

- Conversion to a one-way southbound street is expected to improve operations along Evergreen Avenue and have minimal impact on study intersections. Northbound through volume is low and would easily reroute elsewhere.
- The hotel requires a valet parking operation but the 44-foot "lay-by lane" near the front door is not sufficient for the hotel.
- When the hotel is at higher capacity, Evergreen Avenue becomes inundated with hotel guest vehicles which narrows the street capacity to one lane for two-way traffic. This is exacerbated by vehicles attempting U-turns to access the hotel valet.
- Multiple vehicle staging configurations are possible within the current paved roadway. The configuration illustrated in Figure 5 is preferred which can provide the hotel valet operation with

eight (8) vehicle staging spaces, one-way southbound traffic flow, and adequate space for hotel guests to get in and out of vehicles outside of the travel lane.

- The queuing analysis found that seven vehicle staging spaces is expected to be sufficient for even peak vehicle demand with adequate staffing.

Additionally, conversion to one-way southbound would provide the following benefits:

- Pedestrians who cross Evergreen Avenue mid-block, as was observed, would only need to be concerned with traffic from one direction;
- The northbound left and right turn movements at Albert Street would be eliminated, reducing the number of conflicts for both pedestrians and vehicles at that intersection;
- Vehicles would not be permitted to make a U-Turn which would eliminate a concerning operational trend that is prevalent today.

The remainder of this memorandum discusses the studies that led to these conclusions.

EXISTING CONDITIONS

The East Lansing Graduate Hotel is located on the west side of Evergreen Street between Albert Street and Grand River Avenue. This segment of Evergreen Street is a two-lane, two-way street with stop control on its approaches to Albert Street and Grand River Avenue. The building on the east side of Evergreen Avenue houses apartments and retail stores. A 44-foot long “lay-by lane” located on the west side of the street provides a place for hotel guests to park while checking in and out.

VOLUME DATA COLLECTION

Peak period turning movement counts were conducted on Saturday June 21, 2025 and on Tuesday June 24, 2025. The weekend data captured traffic volumes on a day when hotel occupancy is typically higher and the weekday captured typical commuter traffic patterns. Data was collected at the following intersections:

1. Grand River Avenue and Abbott Road
2. Grand River Avenue and Evergreen Avenue
3. Grand River Avenue and Delta Street
4. Evergreen Avenue and Albert Street
5. Albert Street and Abbott Road

Additionally, video was taken of Evergreen Avenue from 6:00 am to 7:00 pm on both days with views of the length of the street.

INTERSECTION TURNING MOVEMENT VOLUMES

Peak hour turning movement volumes were determined for the five study intersections for both Saturday and Tuesday. These volumes are illustrated on Figures 1 & 2, respectively. The raw data counts are contained in the Appendix.

These data were collected while Michigan State University (MSU) was in its Summer session which could result in lower traffic volumes. These volumes were compared to data that was collected at the same intersections in April 2022 when MSU was in their Spring session. The comparison found that peak hour weekday volumes were comparable to each other such that MSU's Summer session did not negatively impact traffic volumes at these intersections.

The collected data shows that a small number of vehicles turn northbound on Evergreen Avenue from Grand River Avenue. On Tuesday, six (6) vehicles in the AM and eight (8) vehicles in the PM peak hour turned onto Evergreen Avenue. On Saturday, these volumes were seven (7) and ten (10), respectively.

If Evergreen Avenue were to be converted to one-way southbound, these vehicles are expected to be able to reroute on the study network with little to no impact on other study intersections.

EVERGREEN AVENUE OPERATIONS

The thirteen hours of video taken on both Saturday and Tuesday were reviewed to understand existing operations on Evergreen Avenue.

The following is a summary of observations on Tuesday June 24, 2025:

- Throughout the day, vehicles are parked angled within the lay-by lane partially, and sometimes fully, blocking the southbound lane. Southbound vehicles must cross the double-yellow centerline to continue southbound. For instance, at 7AM, a southbound articulated truck was observed conflicting with a northbound vehicle as a result.
- Vehicles routinely make U-Turn movements on Evergreen. This appears to mainly be vehicles related to the hotel facing southbound that make a U-Turn to head northbound.
- Occasionally, a northbound vehicle will park along the east curb. Some of these vehicles are delivery drivers for the hotel and some are customers to the Dunkin Donuts on the east side of the street. Occasionally, vehicles are parked on both sides of the street forcing through vehicles to travel down the middle of the roadway.
- The vast majority of vehicles on Evergreen Avenue are related to the hotel.
- At times, the entire southbound lane is operating as a drop-off/pick-up zone for hotel guests with vehicles stopped in the travel lane and drivers and passengers entering and exiting vehicles within

the street. This generally aligns with typical hotel check-in and check-out times. During these times, drivers were observed to stop in the middle of the roadway, on the double-yellow centerline, to unload when a spot along the curb was not available.

The following is a summary of observations on Saturday June 21, 2025:

- The general observations mentioned above were observed on Saturday as well but with greater frequency with more hotel activity.
- For most of the day, the entire southbound lane is blocked by parked vehicles.
- At approximately 9AM, a driver made a U-Turn in front of another vehicle pulling away from the curb which caused some confusion.
- For short periods, pick-up/drop-off activity can block the entire roadway.
- In the 1PM hour, a northbound vehicle parked along the west curb (facing the wrong direction) for 5 minutes loading/unloading at the hotel.

These observations found that Evergreen Avenue does not operate as designed. The roadway is designed as a two-way local street with no passing of vehicles allowed due to the double yellow centerline. The hotel's necessary valet operation requires that vehicles stand at the west curb to load/unload guests and luggage. Parking space is not provided in either direction aside from the southbound lay-by lane at the hotel front door with space for one or two vehicles, which is not sufficient for the hotel's vehicular demand.

As a result, the southbound lane is regularly blocked and requires other southbound vehicles to within the northbound lane at times. Converting Evergreen Avenue to southbound only traffic operation would allow the full street width to be used for both hotel guest vehicles standing at the curb and southbound through traffic.

PARKING CONFIGURATION

With the conversion of Evergreen Avenue to one-way southbound operation, parallel parking could be provided without widening the roadway. Six (6) parallel parking spaces could be provided along the length of the roadway on both sides of the street. This potential configuration is illustrated in Figure 3.

However, nearly all traffic and vehicle parking is related to the hotel on the west side of the roadway making parking spaces on the east curb less desirable. The publication "Urban Street Design Guide" by the National Association of City Transportation Officials (NACTO), suggests that a fifteen foot (15') wide parallel parking lane may be used, particularly in cases where loading or double parking occurs. Applying this guideline, a wider parallel parking space would allow more space for guests to load/unload and may allow vehicles to double park without impeding traffic, providing the opportunity for up to twelve (12) double parked vehicles

along the west curb in front of the hotel. This configuration is possible within the existing roadway and is illustrated in Figure 4.

A third configuration is possible that includes back-in angled parking spaces within the existing lay-by lane near the hotel's front door and parallel parking spaces to the north along the west curb. This configuration allows for up to eight (8) vehicle staging spaces without the need for double parking but also provides ample room for guest to load/unload the vehicles and an adequate southbound travel lane. This configuration is illustrated in Figure 5.

The third configuration shown in Figure 5 and is the preferred configuration alternative. This configuration efficiently utilizes the available street width and maximizes the number of vehicle staging spaces along the west curb, where demand is highest, without requiring vehicles to double park.

QUEUE ANALYSIS

A queue model was used to determine the vehicle staging needs for the hotel valet operation. Queuing is a function of vehicle demand, the time needed to process each vehicle, and the number of servers (valets) available to serve vehicles as they arrive.

Service Time

Service time for this analysis is defined as the amount of time a vehicle resides at the curb. In order to determine the service time for a typical vehicle, observations were made from the video collected on Saturday June 21, 2025 from 6am to 7pm. The service time was observed to vary based on whether the customer was arriving or departing. An arrival occurs when a guest drives up to the hotel and the valet takes the car away. Departures occur when a valet brings a car to the hotel and a guest drives the car away. The following table summarizes the average service times based on an arriving or departing guest. These average service times represent vehicles that were processed efficiently. There were instances where a vehicle was left at the curb for an extended period of time, however, these appeared to occur when demand was low and curb space was available. Those extended dwell times were not considered in the average service times listed below. For the purposes of this analysis, a period of high demand is assumed with vehicles processed efficiently to manage vehicle staging on Evergreen Avenue.

The arrival times are converted to the number of customers per hour that one valet can serve. The customer/hour rate was used in the queue model calculation.

Purpose of Visit	Average Service Time (mm:ss)	Customer/Hour
Arrival	6:01	10
Departure	4:35	13
Overall Average Service Time	--	11.5

Service Demand

Three months of daily valet ticket information was obtained from the valet service vendor for the months of September through November 2025. This data contained information on the date and time a ticket was opened for an arriving vehicle as well as the date and time when that ticket was closed. The time and date information of when tickets were created appeared to represent the distribution and demand of vehicles arriving to be valeted at the hotel. Information of when tickets were closed was found to not correlate to when guests actually departed with their vehicles. Many tickets were closed in the management system in bulk at some time after the vehicle left, apparently at the end of a valet's work shift or overnight. Therefore, reliable data on when vehicles departed was largely not available for this analysis.

The vehicle arrival data was summarized by hour and was used as the service demand in the queue model. The resulting hourly vehicle arrival demand was graphed in order of highest to lowest demand and is illustrated in Figure 6.

Queue Length

The queuing system for the valet service is considered a parallel server system in which there is one queue and multiple servers. The probability that there are *n* customers in queue for a system where the arrival distribution of customers follows Poisson distribution and the distribution for service time follows an exponential distribution with a given number of servers was calculated for two scenarios. Using the valet ticket data discussed above, two (2) hours out of the three months of data were chosen as representing typical peak valet activity.

The first chosen scenario occurred on Halloween night during the 9:00pm hour when it appears that a high number of vehicles arrive within the same hour. According to the data provided, this was the highest hour of demand for vehicle arrivals recorded over the three months from September to November.

The second scenario occurred on Friday October 10 during the 6:00pm hour when the arrivals and departures appear to be about equal throughout the hour. (While much of the departure data was not found

to be reliable, the time-stamped data for this hour appears to include tickets closed as vehicles were returned to owners and was, therefore, used in this analysis.)

These demand levels along with the service times discussed above were used in the queue model to determine the number of servers (valets) that would be needed to maintain the number of vehicles in the system to seven (7) or less. This queue length was chosen as a conservative limit to work within the eight (8) available vehicle staging spaces discussed in the Parking Configuration section and illustrated in Figure 5. The 95th-percentile queue was used for this purpose.

The following table summarizes the results of this analysis with the recommended number of valets needed (Recommended Staffing Level) to maintain a queue of seven (7) vehicles or less. The output worksheet from the queue model is included in the Appendix.

Day	Tickets Created	Tickets Closed	Assumed Service Time (Customers/Hour)	Recommended Staffing Level	Average Queue	95th %-ile Queue
Friday October 31 9-10pm	33	0	10	6	3	7
Friday October 10 6-7pm	17	16	11.5	5	2	7

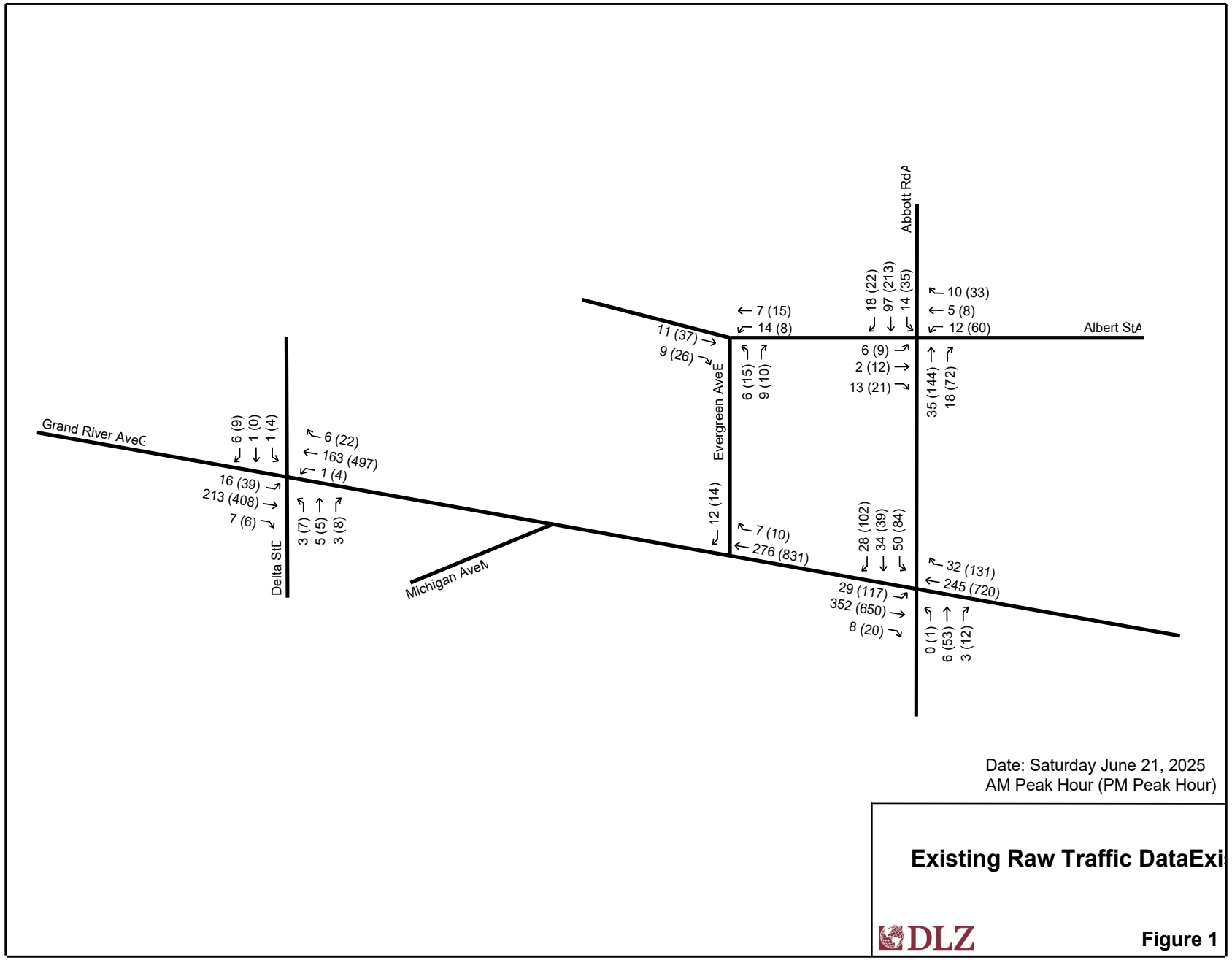
DLZ reviewed a typical schedule of valet staff at the hotel and the number of staff scheduled appears to range from two (2) to nine (9) depending on anticipated vehicle demand. Therefore, the above recommended staffing levels of six (6) and five (5) for the two, respective scenarios were determined to be reasonable.

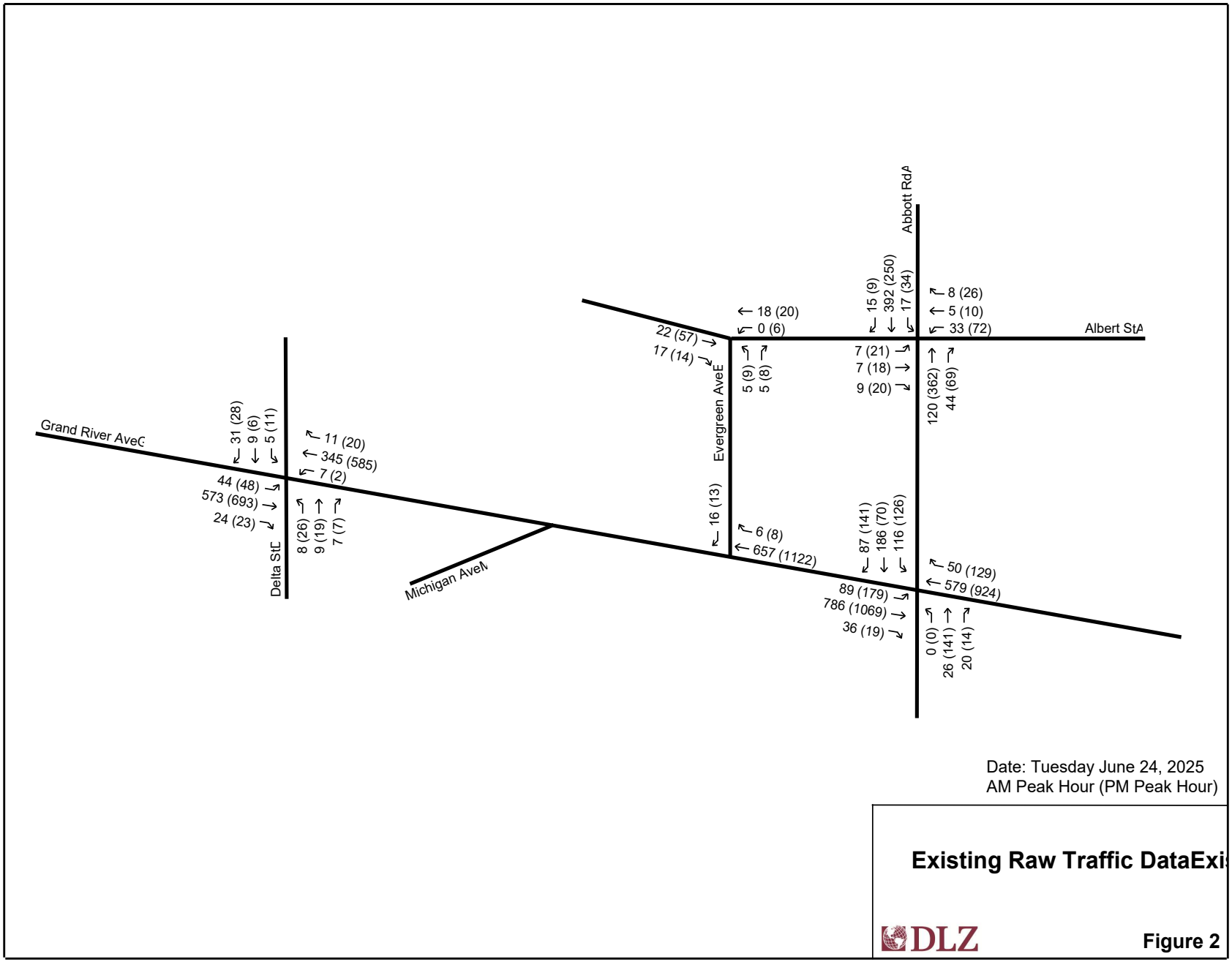
Based on observations and this queuing analysis, the queuing needs may be maintained at seven vehicles with adequate staffing levels based on demand.

CONCLUSIONS

Based on the traffic volumes and observation of traffic flow, we have the following conclusions regarding the potential conversion of Evergreen Avenue to one-way southbound operation:

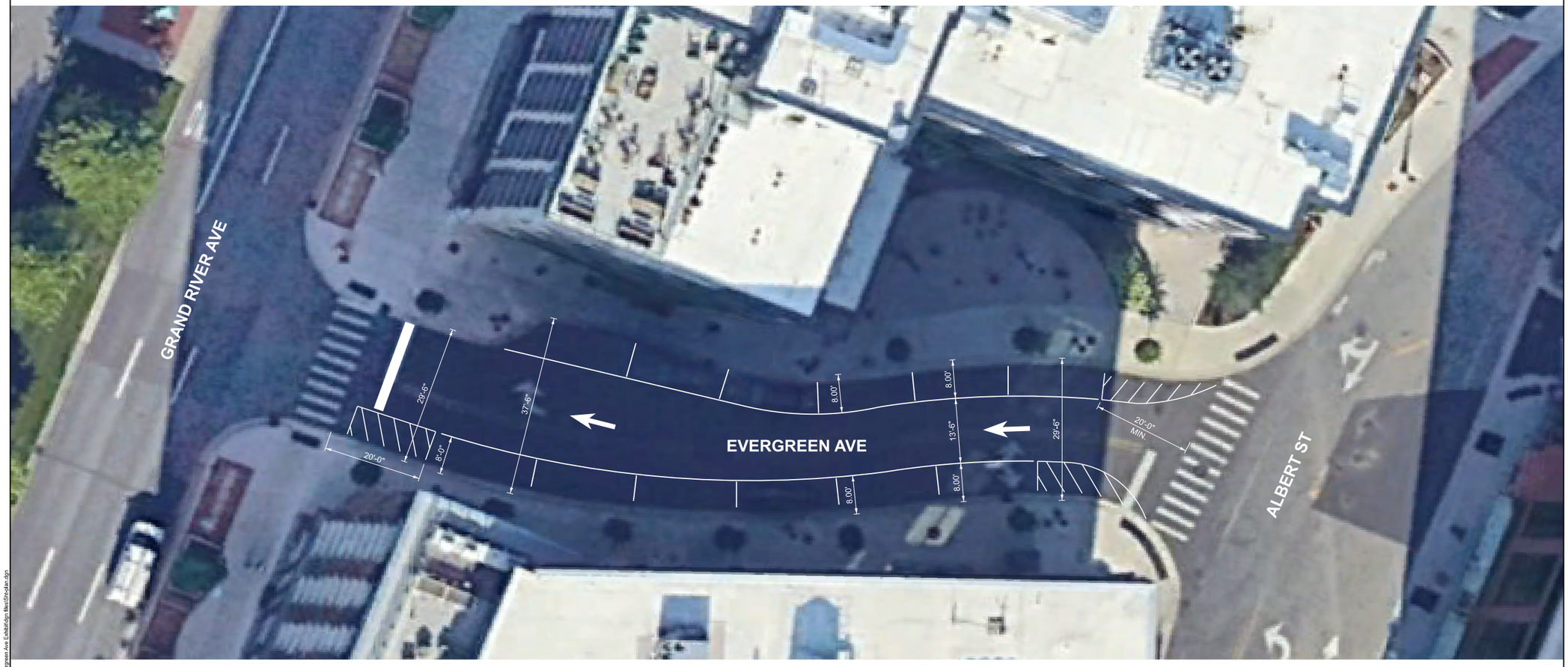
- Conversion to a one-way southbound street is expected to improve operations along Evergreen Avenue and have minimal impact on study intersections. Northbound through volume is low and would easily reroute elsewhere.
- The hotel requires a valet parking operation but the 44-foot "lay-by lane" near the front door is not sufficient for the hotel.
- When the hotel is at higher capacity, Evergreen Avenue becomes inundated with hotel guest vehicles which narrows the street capacity to one lane for two-way traffic. This is exacerbated by vehicles attempting U-turns to access the hotel valet.
- Multiple vehicle staging configurations are possible within the current paved roadway. The configuration illustrated in Figure 5 is preferred which can provide the hotel valet operation with eight (8) vehicle staging spaces, one-way southbound traffic flow, and adequate space for hotel guests to get in and out of vehicles outside of the travel lane.
- The queuing analysis found that seven vehicle staging spaces is expected to be sufficient for even peak vehicle demand with adequate staffing.
- Additionally, conversion to one-way southbound would provide the following benefits:
    - Pedestrians who cross Evergreen Avenue mid-block, as was observed, would only need to be concerned with traffic from one direction;
    - The northbound left and right turn movements at Albert Street would be eliminated, reducing the number of conflicts for both pedestrians and vehicles at that intersection;
    - Vehicles would not be permitted to make a U-Turn which would eliminate a concerning operational trend that is prevalent today.


Grand River Ave
Delta St
Michigan Ave
Evergreen Ave
Abbott Rd
Albert St
6 (9)
1 (0)
1 (4)
16 (39)
213 (408)
7 (6)
6 (22)
163 (497)
1 (4)
3 (7)
5 (5)
3 (8)
11 (37)
9 (26)
7 (15)
14 (8)
6 (15)
9 (10)
12 (14)
7 (10)
276 (831)
18 (22)
97 (213)
14 (35)
6 (9)
2 (12)
13 (21)
28 (102)
34 (39)
50 (84)
10 (33)
5 (8)
12 (60)
35 (144)
18 (72)
32 (131)
245 (720)
29 (117)
352 (650)
8 (20)
0 (1)
6 (53)
3 (12)
Date: Saturday June 21, 2025
AM Peak Hour (PM Peak Hour)
Existing Raw Traffic DataExi
DLZ
Figure 1


Grand River Ave
Delta St
Michigan Ave
Evergreen Ave
Abbott Rd
Albert St
31 (28)
9 (6)
5 (11)
44 (48)
573 (693)
24 (23)
11 (20)
345 (585)
7 (2)
8 (26)
9 (19)
7 (7)
22 (57)
17 (14)
18 (20)
0 (6)
5 (9)
5 (8)
16 (13)
6 (8)
657 (1122)
15 (9)
392 (250)
17 (34)
7 (21)
7 (18)
9 (20)
87 (141)
186 (70)
116 (126)
8 (26)
5 (10)
33 (72)
120 (362)
44 (69)
50 (129)
579 (924)
89 (179)
786 (1069)
36 (19)
0 (0)
26 (141)
20 (14)
Date: Tuesday June 24, 2025
AM Peak Hour (PM Peak Hour)
Existing Raw Traffic DataExi
DLZ
Figure 2

N

0 10 20
SCALE IN FEET



Graduate BY HILTON
EAST LANDING

NOTES:
1. PROPOSED ON-STREET PARKING CONCEPT.
2. ASSUMES CONVERSION OF EVERGREEN AVE. TO ONE-WAY SB AND PARKING ALLOWED ON BOTH SIDES OF THE STREET.
3. TWELVE PARALLEL PARKING SPACES.
4. DIMENSIONS APPROXIMATE.

MODEL: East Lansing
FILE NAME: X:\Projects\2025\2542\739099.A.CP Graduate Hotel\Evergreen Ave Exhibit\dgn Files\Sht-plan.dgn

DLZ

USER NAME = rgeorgescu	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 20.000 ' / In.	CHECKED -	REVISED -	
PLOT DATE = 9/5/2025	DATE -	REVISED -	

GRADUATE HOTEL EAST LANSING
AJ CAPITAL PARTNERS

PARALLEL PARKING CONCEPT PLAN – BOTH SIDES
133 EVERGREEN AVE, E LANSING, MI

SCALE:	SHEET	OF	SHEETS	STA.	TO STA.

Parking Configuration
Parallel Parking - Both Sides

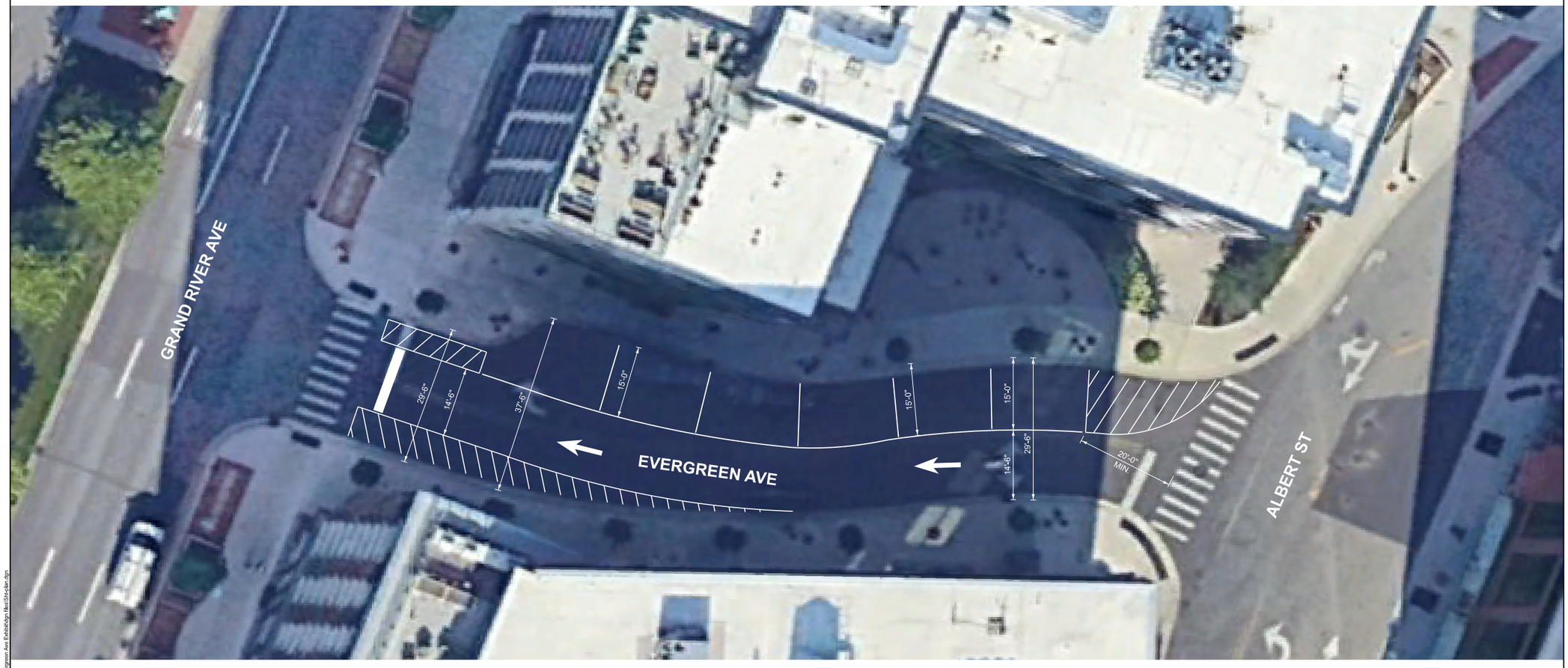
DLZ

Figure 3

N

0 10 20

SCALE IN FEET



Graduate BY HILTON
EAST LANSING

NOTES:
1. PROPOSED ON-STREET PARKING CONCEPT.
2. ASSUMES CONVERSION OF EVERGREEN AVE. TO ONE-WAY SB AND PARKING ALLOWED ON ONE SIDE OF THE STREET.
3. SIX PARALLEL PARKING SPACES SINGLE PARKED OR 12 PARALLEL PARKING SPACES DOUBLE PARKED.
4. DIMENSIONS APPROXIMATE.

MODEL - East Lansing
FILE NAME - X:\Projects\2025\254\27\0900 AJCP Graduate Hotel\Evergreen Ave Exhibit\Dgn Files\Sheet.dgn

DLZ

USER NAME = rgeorgescu	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 20.002 ' / In.	CHECKED -	REVISED -	
PLOT DATE = 9/5/2025	DATE -	REVISED -	

GRADUATE HOTEL EAST LANSING
AJ CAPITAL PARTNERS

PARALLEL PARKING CONCEPT PLAN – ONE SIDE
133 EVERGREEN AVE, E LANSING, MI

SCALE: | SHEET OF SHEETS | STA. TO STA.

Parking Configuration
Parallel Parking - One Side

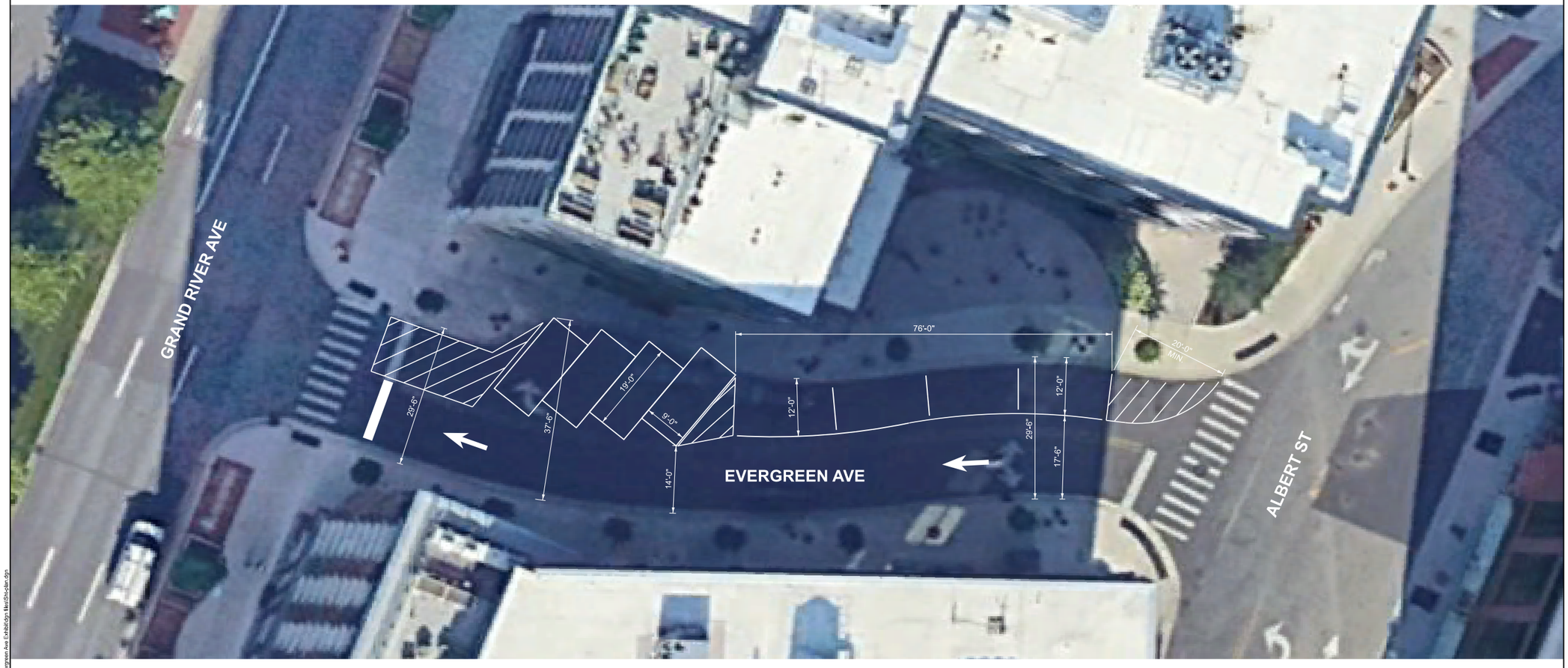
DLZ

Figure 4

N

0 10 20

SCALE IN FEET



NOT FOR CONSTRUCTION

Graduate BY HILTON EAST LANDING

NOTES:
1. PROPOSED ON-STREET PARKING CONCEPT.
2. ASSUMES CONVERSION OF EVERGREEN AVE, TO ONE-WAY SB.
3. FOUR BACK-IN ANGLED PARKING SPACES PLUS FOUR PARALLEL PARKING SPACES.
4. DIMENSIONS APPROXIMATE.

MODEL - East Lansing
FILE NAME - X:\Projects\2025\25427\39000 AJCP Graduate Hotel\Evergreen Ave Exhibit\dgn\ Mar-Sh-Dar.dgn

DLZ

USER NAME = rgeorgescu	DESIGNED -	REVISED -	
	DRAWN -	REVISED -	
PLOT SCALE = 20.000 ' / In.	CHECKED -	REVISED -	
PLOT DATE = 11/12/2025	DATE -	REVISED -	

GRADUATE HOTEL EAST LANSING
AJ CAPITAL PARTNERS

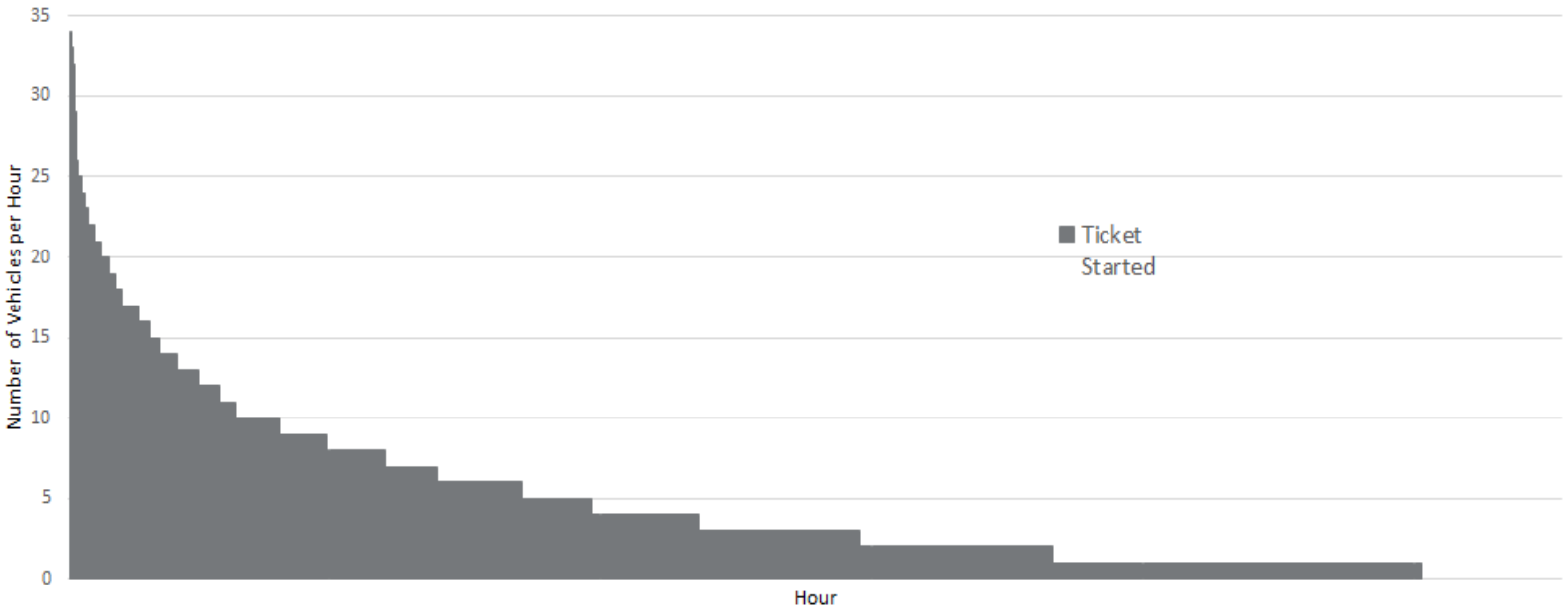
PARKING CONCEPT PLAN
133 EVERGREEN AVE, E LANSING, MI

SCALE: | SHEET OF SHEETS | STA. TO STA.

Preferred Parking Configuration
Angled and Parallel Parking

DLZ **Figure 5**

Valet Demand Curve - Hourly Vehicle Arrivals
September to November 2025



Valet Demand Curve
Hourly Vehicle Arrivals

DLZ

Figure 6

APPENDIX

Raw Traffic Count Reports

Raw Traffic Count Reports

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Unit Number:

Count Name: Abbot Rd & Albert St - Saturday
Site Code:
Start Date: 06/21/2025

Turning Movement Data

Start Time	Abbot Rd Southbound						Albert St Westbound						Abbot Rd Northbound						Albert St Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	1	9	0	0	0	10	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	11
6:15 AM	0	8	0	0	1	8	1	0	0	0	0	1	2	4	0	0	3	6	0	0	1	0	1	1	16
6:30 AM	1	8	0	0	0	9	0	1	2	0	0	3	2	3	0	0	2	5	0	0	0	0	0	0	17
6:45 AM	2	11	0	0	2	13	2	0	1	0	0	3	3	8	0	0	1	11	0	0	1	0	0	1	28
Hourly Total	4	36	0	0	3	40	3	1	4	0	0	8	7	15	0	0	6	22	0	0	2	0	1	2	72
7:00 AM	1	8	2	0	1	11	1	1	0	0	0	2	0	5	0	0	4	5	1	0	2	0	0	3	21
7:15 AM	2	13	0	0	0	15	0	0	2	0	2	2	1	4	1	0	1	6	2	0	3	0	1	5	28
7:30 AM	2	18	0	0	0	20	0	0	1	0	4	1	1	7	0	0	4	8	1	1	1	0	0	3	32
7:45 AM	5	25	1	0	0	31	3	0	1	0	2	4	2	14	0	0	4	16	1	0	1	0	0	2	53
Hourly Total	10	64	3	0	1	77	4	1	4	0	8	9	4	30	1	0	13	35	5	1	7	0	1	13	134
8:00 AM	5	28	1	0	1	34	1	1	3	0	2	5	2	8	0	0	8	10	4	1	0	0	0	5	54
8:15 AM	3	24	3	0	3	30	3	2	2	0	5	7	6	5	0	1	9	12	3	0	2	0	3	5	54
8:30 AM	3	25	4	0	2	32	3	1	3	0	6	7	3	10	0	0	11	13	1	0	2	0	2	3	55
8:45 AM	7	20	6	0	9	33	3	1	4	0	1	8	7	12	0	0	12	19	5	1	2	0	4	8	68
Hourly Total	18	97	14	0	15	129	10	5	12	0	14	27	18	35	0	1	40	54	13	2	6	0	9	21	231
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4:00 PM	3	51	7	0	13	61	9	1	14	0	17	24	9	38	0	0	19	47	4	5	3	0	1	12	144
4:15 PM	4	41	4	0	7	49	7	0	10	0	5	17	16	47	0	0	14	63	3	2	3	0	0	8	137
4:30 PM	3	47	8	0	6	58	6	2	11	0	9	19	10	44	0	0	10	54	4	4	3	0	3	11	142
4:45 PM	4	38	13	0	16	55	10	2	12	0	8	24	32	57	0	0	12	89	9	2	5	0	2	16	184
Hourly Total	14	177	32	0	42	223	32	5	47	0	39	84	67	186	0	0	55	253	20	13	14	0	6	47	607
5:00 PM	7	43	5	0	7	55	3	2	8	0	4	13	26	46	0	1	12	73	5	2	5	0	7	12	153
5:15 PM	5	36	3	0	14	44	10	2	12	0	12	24	18	32	0	0	19	50	4	1	4	0	1	9	127
5:30 PM	7	53	3	0	7	63	10	3	3	0	3	16	24	32	0	0	33	56	1	2	4	0	4	7	142
5:45 PM	7	63	9	0	7	79	8	3	13	0	2	24	21	31	1	0	34	53	5	4	4	0	3	13	169
Hourly Total	26	195	20	0	35	241	31	10	36	0	21	77	89	141	1	1	98	232	15	9	17	0	15	41	591
6:00 PM	11	43	7	0	4	61	7	2	16	0	3	25	15	43	0	0	25	58	6	1	1	0	11	8	152
6:15 PM	1	60	10	0	7	71	14	1	16	0	9	31	19	33	0	0	33	52	2	1	3	0	9	6	160
6:30 PM	3	47	9	0	4	59	4	2	15	0	5	21	17	37	0	0	32	54	8	6	1	0	10	15	149
6:45 PM	4	49	8	0	6	61	12	0	15	0	3	27	20	34	1	0	29	55	7	1	1	0	3	9	152
Hourly Total	19	199	34	0	21	252	37	5	62	0	20	104	71	147	1	0	119	219	23	9	6	0	33	38	613
7:00 PM	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
Grand Total	91	768	103	0	117	962	117	27	165	0	102	309	256	554	3	2	331	815	76	34	52	0	65	162	2248
Approach %	9.5	79.8	10.7	0.0	-	-	37.9	8.7	53.4	0.0	-	-	31.4	68.0	0.4	0.2	-	-	46.9	21.0	32.1	0.0	-	-	-
Total %	4.0	34.2	4.6	0.0	-	42.8	5.2	1.2	7.3	0.0	-	13.7	11.4	24.6	0.1	0.1	-	36.3	3.4	1.5	2.3	0.0	-	7.2	-

Lights	91	754	102	0	-	947	117	27	164	0	-	308	255	549	3	2	-	809	73	33	51	0	-	157	2221
% Lights	100.0	98.2	99.0	-	-	98.4	100.0	100.0	99.4	-	-	99.7	99.6	99.1	100.0	100.0	-	99.3	96.1	97.1	98.1	-	-	96.9	98.8
Mediums	0	8	0	0	-	8	0	0	1	0	-	1	0	4	0	0	-	4	0	0	1	0	-	1	14
% Mediums	0.0	1.0	0.0	-	-	0.8	0.0	0.0	0.6	-	-	0.3	0.0	0.7	0.0	0.0	-	0.5	0.0	0.0	1.9	-	-	0.6	0.6
Articulated Trucks	0	3	0	0	-	3	0	0	0	0	-	0	0	1	0	0	-	1	2	0	0	0	-	2	6
% Articulated Trucks	0.0	0.4	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.1	2.6	0.0	0.0	-	-	1.2	0.3
Bicycles on Road	0	3	1	0	-	4	0	0	0	0	-	0	1	0	0	0	-	1	1	1	0	0	-	2	7
% Bicycles on Road	0.0	0.4	1.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.0	0.0	-	0.1	1.3	2.9	0.0	-	-	1.2	0.3
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	9	-	-	-	-	-	3	-	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	3.4	-	-	-	-	-	8.8	-	-	-	-	-	0.9	-	-	-	-	-	9.2	-	-
Pedestrians	-	-	-	-	113	-	-	-	-	-	93	-	-	-	-	-	328	-	-	-	-	-	59	-	-
% Pedestrians	-	-	-	-	96.6	-	-	-	-	-	91.2	-	-	-	-	-	99.1	-	-	-	-	-	90.8	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Abbot Rd & Albert St - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Abbot Rd Southbound						Albert St Westbound						Abbot Rd Northbound						Albert St Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	5	28	1	0	1	34	1	1	3	0	2	5	2	8	0	0	8	10	4	1	0	0	0	5	54
8:15 AM	3	24	3	0	3	30	3	2	2	0	5	7	6	5	0	1	9	12	3	0	2	0	3	5	54
8:30 AM	3	25	4	0	2	32	3	1	3	0	6	7	3	10	0	0	11	13	1	0	2	0	2	3	55
8:45 AM	7	20	6	0	9	33	3	1	4	0	1	8	7	12	0	0	12	19	5	1	2	0	4	8	68
Total	18	97	14	0	15	129	10	5	12	0	14	27	18	35	0	1	40	54	13	2	6	0	9	21	231
Approach %	14.0	75.2	10.9	0.0	-	-	37.0	18.5	44.4	0.0	-	-	33.3	64.8	0.0	1.9	-	-	61.9	9.5	28.6	0.0	-	-	-
Total %	7.8	42.0	6.1	0.0	-	55.8	4.3	2.2	5.2	0.0	-	11.7	7.8	15.2	0.0	0.4	-	23.4	5.6	0.9	2.6	0.0	-	9.1	-
PHF	0.643	0.866	0.583	0.000	-	0.949	0.833	0.625	0.750	0.000	-	0.844	0.643	0.729	0.000	0.250	-	0.711	0.650	0.500	0.750	0.000	-	0.656	0.849
Lights	18	93	13	0	-	124	10	5	12	0	-	27	18	34	0	1	-	53	12	2	6	0	-	20	224
% Lights	100.0	95.9	92.9	-	-	96.1	100.0	100.0	100.0	-	-	100.0	100.0	97.1	-	100.0	-	98.1	92.3	100.0	100.0	-	-	95.2	97.0
Mediums	0	2	0	0	-	2	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	3
% Mediums	0.0	2.1	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.0	2.9	-	0.0	-	1.9	0.0	0.0	0.0	-	-	0.0	1.3
Articulated Trucks	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	3
% Articulated Trucks	0.0	2.1	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	0.0	-	0.0	7.7	0.0	0.0	-	-	4.8	1.3
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	7.1	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	13.3	-	-	-	-	-	14.3	-	-	-	-	-	0.0	-	-	-	-	-	22.2	-	-
Pedestrians	-	-	-	-	13	-	-	-	-	-	12	-	-	-	-	-	40	-	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	86.7	-	-	-	-	-	85.7	-	-	-	-	-	100.0	-	-	-	-	-	77.8	-	-

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Unit Number:

Count Name: Abbot Rd & Albert St - Saturday
Site Code:
Start Date: 06/21/2025

Turning Movement Peak Hour Data (5:45 PM)

Start Time	Abbot Rd Southbound						Albert St Westbound						Abbot Rd Northbound						Albert St Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
5:45 PM	7	63	9	0	7	79	8	3	13	0	2	24	21	31	1	0	34	53	5	4	4	0	3	13	169
6:00 PM	11	43	7	0	4	61	7	2	16	0	3	25	15	43	0	0	25	58	6	1	1	0	11	8	152
6:15 PM	1	60	10	0	7	71	14	1	16	0	9	31	19	33	0	0	33	52	2	1	3	0	9	6	160
6:30 PM	3	47	9	0	4	59	4	2	15	0	5	21	17	37	0	0	32	54	8	6	1	0	10	15	149
Total	22	213	35	0	22	270	33	8	60	0	19	101	72	144	1	0	124	217	21	12	9	0	33	42	630
Approach %	8.1	78.9	13.0	0.0	-	-	32.7	7.9	59.4	0.0	-	-	33.2	66.4	0.5	0.0	-	-	50.0	28.6	21.4	0.0	-	-	-
Total %	3.5	33.8	5.6	0.0	-	42.9	5.2	1.3	9.5	0.0	-	16.0	11.4	22.9	0.2	0.0	-	34.4	3.3	1.9	1.4	0.0	-	6.7	-
PHF	0.500	0.845	0.875	0.000	-	0.854	0.589	0.667	0.938	0.000	-	0.815	0.857	0.837	0.250	0.000	-	0.935	0.656	0.500	0.563	0.000	-	0.700	0.932
Lights	22	213	35	0	-	270	33	8	60	0	-	101	72	144	1	0	-	217	20	11	9	0	-	40	628
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	100.0	100.0	100.0	-	-	100.0	95.2	91.7	100.0	-	-	95.2	99.7
Mediums	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Mediums	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	4.8	8.3	0.0	-	-	4.8	0.3
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	9.1	-	-	-	-	-	15.8	-	-	-	-	-	0.8	-	-	-	-	-	3.0	-	-
Pedestrians	-	-	-	-	20	-	-	-	-	-	16	-	-	-	-	-	123	-	-	-	-	-	32	-	-
% Pedestrians	-	-	-	-	90.9	-	-	-	-	-	84.2	-	-	-	-	-	99.2	-	-	-	-	-	97.0	-	-

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Unit Number:

Count Name: Abbot Rd & Albert St - Tuesday
Site Code: 2542-7939-00
Start Date: 06/24/2025
Page No: 1

Turning Movement Data

Start Time	Abbot Rd Southbound						Albert St Westbound						Abbot Rd Northbound						Albert St Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	0	23	0	0	4	23	0	0	0	0	4	0	2	0	0	0	1	2	1	0	1	0	0	2	27
6:15 AM	2	30	0	0	0	32	0	0	0	0	1	0	0	12	1	0	0	13	2	1	0	0	0	3	48
6:30 AM	3	35	0	0	1	38	0	0	0	0	4	0	2	13	0	0	3	15	1	0	0	0	1	1	54
6:45 AM	5	46	0	0	1	51	0	0	1	0	2	1	2	17	0	0	4	19	0	1	2	0	4	3	74
Hourly Total	10	134	0	0	6	144	0	0	1	0	11	1	6	42	1	0	8	49	4	2	3	0	5	9	203
7:00 AM	4	43	0	0	3	47	1	0	2	0	2	3	1	15	0	0	2	16	1	2	0	0	0	3	69
7:15 AM	2	58	0	0	2	60	0	1	8	0	1	9	5	19	0	0	7	24	2	4	2	0	1	8	101
7:30 AM	2	80	1	0	1	83	0	0	7	0	3	7	12	28	0	0	4	40	2	1	4	0	4	7	137
7:45 AM	5	83	3	0	0	91	0	0	6	0	1	6	16	32	1	0	9	49	2	2	1	0	1	5	151
Hourly Total	13	264	4	0	6	281	1	1	23	0	7	25	34	94	1	0	22	129	7	9	7	0	6	23	458
8:00 AM	4	83	4	0	0	91	0	1	6	0	4	7	6	19	1	0	2	26	3	1	2	0	3	6	130
8:15 AM	1	72	3	0	5	76	0	1	6	0	6	7	15	35	0	0	3	50	4	2	0	0	1	6	139
8:30 AM	7	84	5	0	6	96	2	0	12	0	7	14	13	33	0	0	10	46	0	3	3	0	4	6	162
8:45 AM	3	113	5	0	9	121	6	3	9	0	9	18	10	33	0	0	8	43	2	1	2	0	4	5	187
Hourly Total	15	352	17	0	20	384	8	5	33	0	26	46	44	120	1	0	23	165	9	7	7	0	12	23	618
9:00 AM	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
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	4	48	4	0	5	56	7	4	18	0	5	29	11	91	0	0	9	102	1	1	3	0	3	5	192
4:15 PM	4	55	6	0	4	65	7	5	12	0	10	24	16	78	0	0	5	94	4	1	5	0	7	10	193
4:30 PM	2	64	7	0	3	73	7	2	21	0	3	30	12	86	1	0	12	99	4	2	2	0	8	8	210
4:45 PM	2	74	10	0	11	86	7	2	9	0	7	18	19	82	0	0	4	101	3	4	3	0	6	10	215
Hourly Total	12	241	27	0	23	280	28	13	60	0	25	101	58	337	1	0	30	396	12	8	13	0	24	33	810
5:00 PM	2	65	7	0	2	74	8	3	24	0	4	35	16	105	0	0	9	121	9	7	10	0	4	26	256
5:15 PM	3	47	10	0	2	60	4	3	18	0	8	25	22	89	0	0	22	111	4	5	6	0	0	15	211
5:30 PM	4	51	8	0	3	63	6	6	19	0	8	31	22	74	1	0	20	97	8	4	4	0	11	16	207
5:45 PM	0	52	11	0	4	63	5	0	15	0	4	20	17	58	0	0	9	75	2	4	3	0	4	9	167
Hourly Total	9	215	36	0	11	260	23	12	76	0	24	111	77	326	1	0	60	404	23	20	23	0	19	66	841
6:00 PM	3	44	5	0	9	52	5	2	14	0	3	21	21	60	0	0	16	81	2	5	3	0	6	10	164
6:15 PM	1	32	6	0	4	39	5	5	16	0	16	26	21	40	0	0	15	61	3	3	6	0	5	12	138
6:30 PM	1	46	10	0	2	57	4	1	9	0	2	14	21	50	0	0	11	71	2	1	0	0	3	3	145
6:45 PM	2	42	6	0	5	50	7	0	10	0	4	17	25	54	0	0	8	79	1	4	2	0	0	7	153
Hourly Total	7	164	27	0	20	198	21	8	49	0	25	78	88	204	0	0	50	292	8	13	11	0	14	32	600
7:00 PM	0	1	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	2
Grand Total	66	1371	111	0	86	1548	81	39	242	0	118	362	308	1123	5	0	193	1436	63	59	64	0	80	186	3532

Approach %	4.3	88.6	7.2	0.0	-	-	22.4	10.8	66.9	0.0	-	-	21.4	78.2	0.3	0.0	-	-	33.9	31.7	34.4	0.0	-	-	-
Total %	1.9	38.8	3.1	0.0	-	43.8	2.3	1.1	6.9	0.0	-	10.2	8.7	31.8	0.1	0.0	-	40.7	1.8	1.7	1.8	0.0	-	5.3	-
Lights	64	1350	110	0	-	1524	78	36	240	0	-	354	305	1108	4	0	-	1417	60	58	62	0	-	180	3475
% Lights	97.0	98.5	99.1	-	-	98.4	96.3	92.3	99.2	-	-	97.8	99.0	98.7	80.0	-	-	98.7	95.2	98.3	96.9	-	-	96.8	98.4
Mediums	2	8	0	0	-	10	0	0	0	0	-	0	1	6	0	0	-	7	1	0	1	0	-	2	19
% Mediums	3.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.3	0.5	0.0	-	-	0.5	1.6	0.0	1.6	-	-	1.1	0.5
Articulated Trucks	0	3	0	0	-	3	1	0	0	0	-	1	0	4	0	0	-	4	2	1	0	0	-	3	11
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	1.2	0.0	0.0	-	-	0.3	0.0	0.4	0.0	-	-	0.3	3.2	1.7	0.0	-	-	1.6	0.3
Bicycles on Road	0	10	1	0	-	11	2	3	2	0	-	7	2	5	1	0	-	8	0	0	1	0	-	1	27
% Bicycles on Road	0.0	0.7	0.9	-	-	0.7	2.5	7.7	0.8	-	-	1.9	0.6	0.4	20.0	-	-	0.6	0.0	0.0	1.6	-	-	0.5	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	20	-	-	-	-	-	4	-	-	-	-	-	14	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	16.9	-	-	-	-	-	2.1	-	-	-	-	-	17.5	-	-
Pedestrians	-	-	-	-	86	-	-	-	-	-	98	-	-	-	-	-	189	-	-	-	-	-	66	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	83.1	-	-	-	-	-	97.9	-	-	-	-	-	82.5	-	-

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Unit Number:

Count Name: Abbot Rd & Albert St - Tuesday
Site Code: 2542-7939-00
Start Date: 06/24/2025

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Abbot Rd Southbound						Albert St Westbound						Abbot Rd Northbound						Albert St Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	4	83	4	0	0	91	0	1	6	0	4	7	6	19	1	0	2	26	3	1	2	0	3	6	130
8:15 AM	1	72	3	0	5	76	0	1	6	0	6	7	15	35	0	0	3	50	4	2	0	0	1	6	139
8:30 AM	7	84	5	0	6	96	2	0	12	0	7	14	13	33	0	0	10	46	0	3	3	0	4	6	162
8:45 AM	3	113	5	0	9	121	6	3	9	0	9	18	10	33	0	0	8	43	2	1	2	0	4	5	187
Total	15	352	17	0	20	384	8	5	33	0	26	46	44	120	1	0	23	165	9	7	7	0	12	23	618
Approach %	3.9	91.7	4.4	0.0	-	-	17.4	10.9	71.7	0.0	-	-	26.7	72.7	0.6	0.0	-	-	39.1	30.4	30.4	0.0	-	-	-
Total %	2.4	57.0	2.8	0.0	-	62.1	1.3	0.8	5.3	0.0	-	7.4	7.1	19.4	0.2	0.0	-	26.7	1.5	1.1	1.1	0.0	-	3.7	-
PHF	0.536	0.779	0.850	0.000	-	0.793	0.333	0.417	0.688	0.000	-	0.639	0.733	0.857	0.250	0.000	-	0.825	0.563	0.583	0.583	0.000	-	0.958	0.826
Lights	14	348	16	0	-	378	7	4	33	0	-	44	43	117	1	0	-	161	9	7	7	0	-	23	606
% Lights	93.3	98.9	94.1	-	-	98.4	87.5	80.0	100.0	-	-	95.7	97.7	97.5	100.0	-	-	97.6	100.0	100.0	100.0	-	-	100.0	98.1
Mediums	1	2	0	0	-	3	0	0	0	0	-	0	1	2	0	0	-	3	0	0	0	0	-	0	6
% Mediums	6.7	0.6	0.0	-	-	0.8	0.0	0.0	0.0	-	-	0.0	2.3	1.7	0.0	-	-	1.8	0.0	0.0	0.0	-	-	0.0	1.0
Articulated Trucks	0	0	0	0	-	0	1	0	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	12.5	0.0	0.0	-	-	2.2	0.0	0.8	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	2	1	0	-	3	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	4
% Bicycles on Road	0.0	0.6	5.9	-	-	0.8	0.0	20.0	0.0	-	-	2.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	19.2	-	-	-	-	-	0.0	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	-	20	-	-	-	-	-	21	-	-	-	-	-	23	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	80.8	-	-	-	-	-	100.0	-	-	-	-	-	50.0	-	-

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Unit Number:

Count Name: Abbot Rd & Albert St - Tuesday
Site Code: 2542-7939-00
Start Date: 06/24/2025
Page No: 6

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Abbot Rd Southbound						Albert St Westbound						Abbot Rd Northbound						Albert St Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:30 PM	2	64	7	0	3	73	7	2	21	0	3	30	12	86	1	0	12	99	4	2	2	0	8	8	210
4:45 PM	2	74	10	0	11	86	7	2	9	0	7	18	19	82	0	0	4	101	3	4	3	0	6	10	215
5:00 PM	2	65	7	0	2	74	8	3	24	0	4	35	16	105	0	0	9	121	9	7	10	0	4	26	256
5:15 PM	3	47	10	0	2	60	4	3	18	0	8	25	22	89	0	0	22	111	4	5	6	0	0	15	211
Total	9	250	34	0	18	293	26	10	72	0	22	108	69	362	1	0	47	432	20	18	21	0	18	59	892
Approach %	3.1	85.3	11.6	0.0	-	-	24.1	9.3	66.7	0.0	-	-	16.0	83.8	0.2	0.0	-	-	33.9	30.5	35.6	0.0	-	-	-
Total %	1.0	28.0	3.8	0.0	-	32.8	2.9	1.1	8.1	0.0	-	12.1	7.7	40.6	0.1	0.0	-	48.4	2.2	2.0	2.4	0.0	-	6.6	-
PHF	0.750	0.845	0.850	0.000	-	0.852	0.813	0.833	0.750	0.000	-	0.771	0.784	0.862	0.250	0.000	-	0.893	0.556	0.643	0.525	0.000	-	0.567	0.871
Lights	9	247	34	0	-	290	26	9	72	0	-	107	69	361	0	0	-	430	19	18	20	0	-	57	884
% Lights	100.0	98.8	100.0	-	-	99.0	100.0	90.0	100.0	-	-	99.1	100.0	99.7	0.0	-	-	99.5	95.0	100.0	95.2	-	-	96.6	99.1
Mediums	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	2
% Mediums	0.0	0.4	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.2
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	2
% Articulated Trucks	0.0	0.4	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	5.0	0.0	0.0	-	-	1.7	0.2
Bicycles on Road	0	1	0	0	-	1	0	1	0	0	-	1	0	0	1	0	-	1	0	0	1	0	-	1	4
% Bicycles on Road	0.0	0.4	0.0	-	-	0.3	0.0	10.0	0.0	-	-	0.9	0.0	0.0	100.0	-	-	0.2	0.0	0.0	4.8	-	-	1.7	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	13.6	-	-	-	-	-	2.1	-	-	-	-	-	11.1	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	-	19	-	-	-	-	-	46	-	-	-	-	-	16	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	86.4	-	-	-	-	-	97.9	-	-	-	-	-	88.9	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Albert Rd & Evergreen St - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 1

Turning Movement Data

Start Time	Albert St Westbound					Evergreen Ave Northbound					Albert St Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 AM	0	0	0	0	0	0	1	0	2	1	1	0	0	0	1	2
6:30 AM	2	1	0	1	3	0	1	0	4	1	1	1	0	0	2	6
6:45 AM	1	1	0	0	2	0	1	0	1	1	3	0	0	2	3	6
Hourly Total	3	2	0	1	5	0	3	0	7	3	5	1	0	2	6	14
7:00 AM	1	2	0	0	3	1	0	0	2	1	3	3	0	0	6	10
7:15 AM	2	0	0	0	2	2	0	0	0	2	0	2	0	1	2	6
7:30 AM	1	2	0	0	3	1	0	0	2	1	2	2	0	3	4	8
7:45 AM	2	3	0	0	5	1	1	0	1	2	2	1	0	0	3	10
Hourly Total	6	7	0	0	13	5	1	0	5	6	7	8	0	4	15	34
8:00 AM	1	4	0	0	5	2	3	0	7	5	3	3	0	1	6	16
8:15 AM	1	4	2	0	7	4	0	0	14	4	2	1	0	2	3	14
8:30 AM	1	2	0	0	3	2	2	0	10	4	2	1	0	1	3	10
8:45 AM	4	4	0	0	8	1	1	0	13	2	2	6	0	2	8	18
Hourly Total	7	14	2	0	23	9	6	0	44	15	9	11	0	6	20	58
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	2	2	0	0	4	4	4	0	12	8	7	9	0	0	16	28
4:15 PM	3	1	0	0	4	3	5	0	30	8	4	5	0	5	9	21
4:30 PM	3	2	0	0	5	1	2	1	10	4	6	10	0	2	16	25
4:45 PM	5	1	0	1	6	4	3	1	16	8	8	12	0	1	20	34
Hourly Total	13	6	0	1	19	12	14	2	68	28	25	36	0	8	61	108
5:00 PM	4	2	1	0	7	4	4	0	27	8	5	9	1	4	15	30
5:15 PM	3	3	0	0	6	1	6	0	17	7	7	6	0	2	13	26
5:30 PM	11	0	0	0	11	1	2	0	35	3	4	5	0	1	9	23
5:45 PM	12	3	0	0	15	5	1	0	26	6	4	9	0	1	13	34
Hourly Total	30	8	1	0	39	11	13	0	105	24	20	29	1	8	50	113
6:00 PM	8	7	0	0	15	2	3	0	21	5	1	8	0	1	9	29
6:15 PM	3	0	1	0	4	4	2	1	29	7	3	3	0	2	6	17
6:30 PM	2	3	0	0	5	1	1	0	29	2	2	12	0	0	14	21
6:45 PM	1	2	0	0	3	0	1	1	21	2	5	10	0	3	15	20
Hourly Total	14	12	1	0	27	7	7	2	100	16	11	33	0	6	44	87
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	73	49	4	2	126	44	44	4	329	92	77	118	1	34	196	414
Approach %	57.9	38.9	3.2	-	-	47.8	47.8	4.3	-	-	39.3	60.2	0.5	-	-	-

Total %	17.6	11.8	1.0	-	30.4	10.6	10.6	1.0	-	22.2	18.6	28.5	0.2	-	47.3	-
Lights	71	49	4	-	124	44	44	4	-	92	76	113	1	-	190	406
% Lights	97.3	100.0	100.0	-	98.4	100.0	100.0	100.0	-	100.0	98.7	95.8	100.0	-	96.9	98.1
Mediums	0	0	0	-	0	0	0	0	-	0	0	2	0	-	2	2
% Mediums	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	1.7	0.0	-	1.0	0.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.8	0.0	-	0.5	0.2
Bicycles on Road	2	0	0	-	2	0	0	0	-	0	1	2	0	-	3	5
% Bicycles on Road	2.7	0.0	0.0	-	1.6	0.0	0.0	0.0	-	0.0	1.3	1.7	0.0	-	1.5	1.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	7	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	2.1	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	322	-	-	-	-	34	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	97.9	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Albert Rd & Evergreen St - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Albert St Westbound					Evergreen Ave Northbound					Albert St Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
8:00 AM	1	4	0	0	5	2	3	0	7	5	3	3	0	1	6	16
8:15 AM	1	4	2	0	7	4	0	0	14	4	2	1	0	2	3	14
8:30 AM	1	2	0	0	3	2	2	0	10	4	2	1	0	1	3	10
8:45 AM	4	4	0	0	8	1	1	0	13	2	2	6	0	2	8	18
Total	7	14	2	0	23	9	6	0	44	15	9	11	0	6	20	58
Approach %	30.4	60.9	8.7	-	-	60.0	40.0	0.0	-	-	45.0	55.0	0.0	-	-	-
Total %	12.1	24.1	3.4	-	39.7	15.5	10.3	0.0	-	25.9	15.5	19.0	0.0	-	34.5	-
PHF	0.438	0.875	0.250	-	0.719	0.563	0.500	0.000	-	0.750	0.750	0.458	0.000	-	0.625	0.806
Lights	7	14	2	-	23	9	6	0	-	15	8	10	0	-	18	56
% Lights	100.0	100.0	100.0	-	100.0	100.0	100.0	-	-	100.0	88.9	90.9	-	-	90.0	96.6
Mediums	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Mediums	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	9.1	-	-	5.0	1.7
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	11.1	0.0	-	-	5.0	1.7
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	2.3	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	43	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	97.7	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Albert Rd & Evergreen St - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 6

Turning Movement Peak Hour Data (4:30 PM)

Start Time	Albert St Westbound					Evergreen Ave Northbound					Albert St Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
4:30 PM	3	2	0	0	5	1	2	1	10	4	6	10	0	2	16	25
4:45 PM	5	1	0	1	6	4	3	1	16	8	8	12	0	1	20	34
5:00 PM	4	2	1	0	7	4	4	0	27	8	5	9	1	4	15	30
5:15 PM	3	3	0	0	6	1	6	0	17	7	7	6	0	2	13	26
Total	15	8	1	1	24	10	15	2	70	27	26	37	1	9	64	115
Approach %	62.5	33.3	4.2	-	-	37.0	55.6	7.4	-	-	40.6	57.8	1.6	-	-	-
Total %	13.0	7.0	0.9	-	20.9	8.7	13.0	1.7	-	23.5	22.6	32.2	0.9	-	55.7	-
PHF	0.750	0.667	0.250	-	0.857	0.625	0.625	0.500	-	0.844	0.813	0.771	0.250	-	0.800	0.846
Lights	15	8	1	-	24	10	15	2	-	27	26	37	1	-	64	115
% Lights	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0	100.0	100.0	-	100.0	100.0
Mediums	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Mediums	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
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	70	-	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Albert St & Evergreen Ave - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 1

Turning Movement Data

Start Time	Albert St Westbound					Evergreen Ave Northbound					Albert St Eastbound					Int. Total
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	1	0	1	1	1	2	0	1	3	4
6:15 AM	3	0	0	0	3	0	1	0	0	1	0	3	0	0	3	7
6:30 AM	2	2	0	0	4	0	0	0	1	0	0	1	0	1	1	5
6:45 AM	4	1	0	0	5	0	2	0	3	2	3	3	0	1	6	13
Hourly Total	9	3	0	0	12	0	4	0	5	4	4	9	0	3	13	29
7:00 AM	2	2	0	0	4	1	0	0	2	1	1	3	0	2	4	9
7:15 AM	2	0	0	0	2	1	1	0	4	2	2	6	0	1	8	12
7:30 AM	2	1	0	0	3	0	0	0	2	0	1	9	0	0	10	13
7:45 AM	7	0	0	0	7	1	1	0	4	2	8	2	0	2	10	19
Hourly Total	13	3	0	0	16	3	2	0	12	5	12	20	0	5	32	53
8:00 AM	5	0	0	0	5	2	0	0	3	2	5	4	0	3	9	16
8:15 AM	1	0	0	0	1	1	3	0	5	4	2	9	0	1	11	16
8:30 AM	5	0	0	0	5	1	1	0	7	2	2	7	0	1	9	16
8:45 AM	6	0	0	0	6	2	2	0	4	4	3	6	0	2	9	19
Hourly Total	17	0	0	0	17	6	6	0	19	12	12	26	0	7	38	67
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	9	2	0	0	11	3	2	0	6	5	5	6	0	1	11	27
4:15 PM	8	1	0	0	9	2	2	2	1	6	5	7	0	0	12	27
4:30 PM	5	1	0	1	6	2	3	0	5	5	3	8	1	0	12	23
4:45 PM	4	0	0	0	4	1	3	0	3	4	2	7	0	1	9	17
Hourly Total	26	4	0	1	30	8	10	2	15	20	15	28	1	2	44	94
5:00 PM	5	0	0	0	5	2	3	0	8	5	4	24	0	0	28	38
5:15 PM	4	1	0	0	5	3	2	0	20	5	7	12	0	2	19	29
5:30 PM	7	5	0	0	12	2	1	0	14	3	1	14	0	0	15	30
5:45 PM	0	0	0	0	0	1	1	0	12	2	1	7	1	2	9	11
Hourly Total	16	6	0	0	22	8	7	0	54	15	13	57	1	4	71	108
6:00 PM	1	2	0	0	3	3	1	0	12	4	2	7	0	0	9	16
6:15 PM	5	1	0	0	6	1	1	0	10	2	3	11	1	3	15	23
6:30 PM	2	0	0	2	2	1	2	0	16	3	4	2	0	3	6	11
6:45 PM	2	0	0	0	2	2	0	0	9	2	3	6	0	0	9	13
Hourly Total	10	3	0	2	13	7	4	0	47	11	12	26	1	6	39	63
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	91	19	0	3	110	32	33	2	152	67	68	166	3	27	237	414
Approach %	82.7	17.3	0.0	-	-	47.8	49.3	3.0	-	-	28.7	70.0	1.3	-	-	-

Total %	22.0	4.6	0.0	-	26.6	7.7	8.0	0.5	-	16.2	16.4	40.1	0.7	-	57.2	-
Lights	89	19	0	-	108	30	32	2	-	64	64	157	3	-	224	396
% Lights	97.8	100.0	-	-	98.2	93.8	97.0	100.0	-	95.5	94.1	94.6	100.0	-	94.5	95.7
Mediums	2	0	0	-	2	0	0	0	-	0	0	2	0	-	2	4
% Mediums	2.2	0.0	-	-	1.8	0.0	0.0	0.0	-	0.0	0.0	1.2	0.0	-	0.8	1.0
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	1	2	0	-	3	4
% Articulated Trucks	0.0	0.0	-	-	0.0	3.1	0.0	0.0	-	1.5	1.5	1.2	0.0	-	1.3	1.0
Bicycles on Road	0	0	0	-	0	1	1	0	-	2	3	5	0	-	8	10
% Bicycles on Road	0.0	0.0	-	-	0.0	3.1	3.0	0.0	-	3.0	4.4	3.0	0.0	-	3.4	2.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	8	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	5.3	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	3	-	-	-	-	144	-	-	-	-	27	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	94.7	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Albert St & Evergreen Ave - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 4

Turning Movement Peak Hour Data (7:45 AM)

Start Time	Albert St Westbound					Evergreen Ave Northbound					Albert St Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
7:45 AM	7	0	0	0	7	1	1	0	4	2	8	2	0	2	10	19
8:00 AM	5	0	0	0	5	2	0	0	3	2	5	4	0	3	9	16
8:15 AM	1	0	0	0	1	1	3	0	5	4	2	9	0	1	11	16
8:30 AM	5	0	0	0	5	1	1	0	7	2	2	7	0	1	9	16
Total	18	0	0	0	18	5	5	0	19	10	17	22	0	7	39	67
Approach %	100.0	0.0	0.0	-	-	50.0	50.0	0.0	-	-	43.6	56.4	0.0	-	-	-
Total %	26.9	0.0	0.0	-	26.9	7.5	7.5	0.0	-	14.9	25.4	32.8	0.0	-	58.2	-
PHF	0.643	0.000	0.000	-	0.643	0.625	0.417	0.000	-	0.625	0.531	0.611	0.000	-	0.886	0.882
Lights	18	0	0	-	18	5	5	0	-	10	15	21	0	-	36	64
% Lights	100.0	-	-	-	100.0	100.0	100.0	-	-	100.0	88.2	95.5	-	-	92.3	95.5
Mediums	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Mediums	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	2	1	0	-	3	3
% Bicycles on Road	0.0	-	-	-	0.0	0.0	0.0	-	-	0.0	11.8	4.5	-	-	7.7	4.5
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	15.8	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	16	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	-	-	-	84.2	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Albert St & Evergreen Ave - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 6

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Albert St Westbound					Evergreen Ave Northbound					Albert St Eastbound					
	Thru	Left	U-Turn	Peds	App. Total	Right	Left	U-Turn	Peds	App. Total	Right	Thru	U-Turn	Peds	App. Total	Int. Total
4:45 PM	4	0	0	0	4	1	3	0	3	4	2	7	0	1	9	17
5:00 PM	5	0	0	0	5	2	3	0	8	5	4	24	0	0	28	38
5:15 PM	4	1	0	0	5	3	2	0	20	5	7	12	0	2	19	29
5:30 PM	7	5	0	0	12	2	1	0	14	3	1	14	0	0	15	30
Total	20	6	0	0	26	8	9	0	45	17	14	57	0	3	71	114
Approach %	76.9	23.1	0.0	-	-	47.1	52.9	0.0	-	-	19.7	80.3	0.0	-	-	-
Total %	17.5	5.3	0.0	-	22.8	7.0	7.9	0.0	-	14.9	12.3	50.0	0.0	-	62.3	-
PHF	0.714	0.300	0.000	-	0.542	0.667	0.750	0.000	-	0.850	0.500	0.594	0.000	-	0.634	0.750
Lights	20	6	0	-	26	7	8	0	-	15	14	55	0	-	69	110
% Lights	100.0	100.0	-	-	100.0	87.5	88.9	-	-	88.2	100.0	96.5	-	-	97.2	96.5
Mediums	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Mediums	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	-	-	0.0	12.5	0.0	-	-	5.9	0.0	0.0	-	-	0.0	0.9
Bicycles on Road	0	0	0	-	0	0	1	0	-	1	0	2	0	-	2	3
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	11.1	-	-	5.9	0.0	3.5	-	-	2.8	2.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	4.4	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	43	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	95.6	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Abbot Rd - Saturday
Site Code:
Start Date: 06/21/2025

Turning Movement Data

Start Time	Abbot Rd Southbound						Grand River Ave Westbound						Abbot Rd Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	4	1	4	0	0	9	0	19	0	0	0	19	0	0	0	0	1	0	0	15	1	0	0	16	44
6:15 AM	1	4	3	0	0	8	3	24	0	0	0	27	0	0	0	0	3	0	1	18	3	0	0	22	57
6:30 AM	3	4	3	0	0	10	3	25	0	0	0	28	1	0	0	0	0	1	1	28	3	0	0	32	71
6:45 AM	2	5	6	0	2	13	4	33	0	0	1	37	0	1	0	0	0	1	3	47	5	0	0	55	106
Hourly Total	10	14	16	0	2	40	10	101	0	0	1	111	1	1	0	0	4	2	5	108	12	0	0	125	278
7:00 AM	1	2	4	0	0	7	2	23	0	0	0	25	0	0	0	0	0	0	0	40	4	1	0	45	77
7:15 AM	5	6	6	0	5	17	0	23	0	0	2	23	1	1	0	0	5	2	2	55	4	0	0	61	103
7:30 AM	1	10	9	0	0	20	4	39	0	0	1	43	0	0	0	0	2	0	1	62	6	0	0	69	132
7:45 AM	9	9	9	0	2	27	6	42	0	0	3	48	0	1	0	0	3	1	1	91	8	0	0	100	176
Hourly Total	16	27	28	0	7	71	12	127	0	0	6	139	1	2	0	0	10	3	4	248	22	1	0	275	488
8:00 AM	9	8	11	0	9	28	7	52	0	0	5	59	0	2	0	0	3	2	2	57	4	0	0	63	152
8:15 AM	6	8	14	0	7	28	6	47	0	0	3	53	0	0	0	0	2	0	2	89	8	0	0	99	180
8:30 AM	4	10	16	0	15	30	10	70	0	0	14	80	1	0	0	0	2	1	1	80	8	0	0	89	200
8:45 AM	9	8	9	0	10	26	9	76	0	0	8	85	2	4	0	0	6	6	3	126	9	0	0	138	255
Hourly Total	28	34	50	0	41	112	32	245	0	0	30	277	3	6	0	0	13	9	8	352	29	0	0	389	787
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
4:00 PM	26	11	28	0	25	65	25	186	0	0	17	211	4	4	0	0	5	8	2	172	28	0	0	202	486
4:15 PM	17	11	22	0	15	50	34	162	0	0	7	196	4	10	0	0	2	14	5	162	21	0	0	188	448
4:30 PM	33	13	13	0	8	59	25	180	0	0	13	205	1	12	0	0	2	13	10	148	21	0	1	179	456
4:45 PM	28	5	20	0	16	53	33	189	0	0	13	222	5	17	0	0	1	22	1	184	39	0	0	224	521
Hourly Total	104	40	83	0	64	227	117	717	0	0	50	834	14	43	0	0	10	57	18	666	109	0	1	793	1911
5:00 PM	24	10	29	0	11	63	39	189	0	0	12	228	2	14	1	0	5	17	4	156	36	0	0	196	504
5:15 PM	23	4	27	0	8	54	14	154	0	0	9	168	7	9	0	0	3	16	2	150	28	0	0	180	418
5:30 PM	26	11	19	0	2	56	26	159	0	0	12	185	5	6	0	0	5	11	1	131	37	0	0	169	421
5:45 PM	44	12	25	0	11	81	22	142	0	0	21	164	3	8	0	0	4	11	3	158	36	0	0	197	453
Hourly Total	117	37	100	0	32	254	101	644	0	0	54	745	17	37	1	0	17	55	10	595	137	0	0	742	1796
6:00 PM	28	12	21	0	14	61	27	146	0	0	19	173	3	7	0	0	12	10	3	151	23	0	0	177	421
6:15 PM	38	15	29	0	4	82	28	150	0	0	20	178	3	7	0	0	4	10	6	139	24	0	0	169	439
6:30 PM	26	17	31	0	13	74	31	172	0	0	16	203	1	7	0	0	7	8	1	175	23	0	0	199	484
6:45 PM	19	10	30	0	7	59	25	151	0	0	21	176	3	7	0	0	7	10	7	173	29	0	1	209	454
Hourly Total	111	54	111	0	38	276	111	619	0	0	76	730	10	28	0	0	30	38	17	638	99	0	1	754	1798
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	2
Grand Total	386	206	388	0	184	980	383	2453	0	0	217	2836	46	117	1	0	84	164	62	2610	408	1	2	3081	7061

Approach %	39.4	21.0	39.6	0.0	-	-	13.5	86.5	0.0	0.0	-	-	28.0	71.3	0.6	0.0	-	-	2.0	84.7	13.2	0.0	-	-	-
Total %	5.5	2.9	5.5	0.0	-	13.9	5.4	34.7	0.0	0.0	-	40.2	0.7	1.7	0.0	0.0	-	2.3	0.9	37.0	5.8	0.0	-	43.6	-
Lights	380	200	381	0	-	961	382	2408	0	0	-	2790	46	108	1	0	-	155	61	2554	405	1	-	3021	6927
% Lights	98.4	97.1	98.2	-	-	98.1	99.7	98.2	-	-	-	98.4	100.0	92.3	100.0	-	-	94.5	98.4	97.9	99.3	100.0	-	98.1	98.1
Mediums	3	1	5	0	-	9	1	40	0	0	-	41	0	3	0	0	-	3	0	52	1	0	-	53	106
% Mediums	0.8	0.5	1.3	-	-	0.9	0.3	1.6	-	-	-	1.4	0.0	2.6	0.0	-	-	1.8	0.0	2.0	0.2	0.0	-	1.7	1.5
Articulated Trucks	2	0	2	0	-	4	0	5	0	0	-	5	0	0	0	0	-	0	0	3	2	0	-	5	14
% Articulated Trucks	0.5	0.0	0.5	-	-	0.4	0.0	0.2	-	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.5	0.0	-	0.2	0.2
Bicycles on Road	1	5	0	0	-	6	0	0	0	0	-	0	0	6	0	0	-	6	1	1	0	0	-	2	14
% Bicycles on Road	0.3	2.4	0.0	-	-	0.6	0.0	0.0	-	-	-	0.0	0.0	5.1	0.0	-	-	3.7	1.6	0.0	0.0	0.0	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	-	7	-	-	-	-	-	12	-	-	-	-	-	12	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	3.8	-	-	-	-	-	5.5	-	-	-	-	-	14.3	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	-	177	-	-	-	-	-	205	-	-	-	-	-	72	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	96.2	-	-	-	-	-	94.5	-	-	-	-	-	85.7	-	-	-	-	-	50.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Abbot Rd - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Abbot Rd Southbound						Grand River Ave Westbound						Abbot Rd Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	9	8	11	0	9	28	7	52	0	0	5	59	0	2	0	0	3	2	2	57	4	0	0	63	152
8:15 AM	6	8	14	0	7	28	6	47	0	0	3	53	0	0	0	0	2	0	2	89	8	0	0	99	180
8:30 AM	4	10	16	0	15	30	10	70	0	0	14	80	1	0	0	0	2	1	1	80	8	0	0	89	200
8:45 AM	9	8	9	0	10	26	9	76	0	0	8	85	2	4	0	0	6	6	3	126	9	0	0	138	255
Total	28	34	50	0	41	112	32	245	0	0	30	277	3	6	0	0	13	9	8	352	29	0	0	389	787
Approach %	25.0	30.4	44.6	0.0	-	-	11.6	88.4	0.0	0.0	-	-	33.3	66.7	0.0	0.0	-	-	2.1	90.5	7.5	0.0	-	-	-
Total %	3.6	4.3	6.4	0.0	-	14.2	4.1	31.1	0.0	0.0	-	35.2	0.4	0.8	0.0	0.0	-	1.1	1.0	44.7	3.7	0.0	-	49.4	-
PHF	0.778	0.850	0.781	0.000	-	0.933	0.800	0.806	0.000	0.000	-	0.815	0.375	0.375	0.000	0.000	-	0.375	0.667	0.698	0.806	0.000	-	0.705	0.772
Lights	26	34	48	0	-	108	32	237	0	0	-	269	3	5	0	0	-	8	8	340	28	0	-	376	761
% Lights	92.9	100.0	96.0	-	-	96.4	100.0	96.7	-	-	-	97.1	100.0	83.3	-	-	-	88.9	100.0	96.6	96.6	-	-	96.7	96.7
Mediums	0	0	2	0	-	2	0	8	0	0	-	8	0	0	0	0	-	0	0	12	0	0	-	12	22
% Mediums	0.0	0.0	4.0	-	-	1.8	0.0	3.3	-	-	-	2.9	0.0	0.0	-	-	-	0.0	0.0	3.4	0.0	-	-	3.1	2.8
Articulated Trucks	2	0	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	3
% Articulated Trucks	7.1	0.0	0.0	-	-	1.8	0.0	0.0	-	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	3.4	-	-	0.3	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	16.7	-	-	-	11.1	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	13.3	-	-	-	-	-	15.4	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	41	-	-	-	-	-	26	-	-	-	-	-	11	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	86.7	-	-	-	-	-	84.6	-	-	-	-	-	-	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Abbot Rd - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 6

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Abbot Rd Southbound						Grand River Ave Westbound						Abbot Rd Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	17	11	22	0	15	50	34	162	0	0	7	196	4	10	0	0	2	14	5	162	21	0	0	188	448
4:30 PM	33	13	13	0	8	59	25	180	0	0	13	205	1	12	0	0	2	13	10	148	21	0	1	179	456
4:45 PM	28	5	20	0	16	53	33	189	0	0	13	222	5	17	0	0	1	22	1	184	39	0	0	224	521
5:00 PM	24	10	29	0	11	63	39	189	0	0	12	228	2	14	1	0	5	17	4	156	36	0	0	196	504
Total	102	39	84	0	50	225	131	720	0	0	45	851	12	53	1	0	10	66	20	650	117	0	1	787	1929
Approach %	45.3	17.3	37.3	0.0	-	-	15.4	84.6	0.0	0.0	-	-	18.2	80.3	1.5	0.0	-	-	2.5	82.6	14.9	0.0	-	-	-
Total %	5.3	2.0	4.4	0.0	-	11.7	6.8	37.3	0.0	0.0	-	44.1	0.6	2.7	0.1	0.0	-	3.4	1.0	33.7	6.1	0.0	-	40.8	-
PHF	0.773	0.750	0.724	0.000	-	0.893	0.840	0.952	0.000	0.000	-	0.933	0.600	0.779	0.250	0.000	-	0.750	0.500	0.883	0.750	0.000	-	0.878	0.926
Lights	100	39	82	0	-	221	131	711	0	0	-	842	12	50	1	0	-	63	20	639	116	0	-	775	1901
% Lights	98.0	100.0	97.6	-	-	98.2	100.0	98.8	-	-	-	98.9	100.0	94.3	100.0	-	-	95.5	100.0	98.3	99.1	-	-	98.5	98.5
Mediums	1	0	2	0	-	3	0	8	0	0	-	8	0	3	0	0	-	3	0	10	1	0	-	11	25
% Mediums	1.0	0.0	2.4	-	-	1.3	0.0	1.1	-	-	-	0.9	0.0	5.7	0.0	-	-	4.5	0.0	1.5	0.9	-	-	1.4	1.3
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.1	-	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	2
% Bicycles on Road	1.0	0.0	0.0	-	-	0.4	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	4.0	-	-	-	-	-	2.2	-	-	-	-	-	10.0	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	48	-	-	-	-	-	44	-	-	-	-	-	9	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	96.0	-	-	-	-	-	97.8	-	-	-	-	-	90.0	-	-	-	-	-	0.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Abbot Rd - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 1

Turning Movement Data

Start Time	Abbot Rd Southbound						Grand River Ave Westbound						Abbot Rd Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	6	15	6	0	0	27	1	43	0	0	3	44	0	2	0	0	4	2	2	39	5	0	0	46	119
6:15 AM	4	19	7	0	0	30	1	53	0	0	3	54	0	1	0	0	1	1	2	56	12	0	0	70	155
6:30 AM	4	15	11	0	3	30	3	66	0	0	4	69	0	3	0	0	0	3	7	88	10	0	0	105	207
6:45 AM	9	33	18	0	4	60	9	83	0	0	1	92	0	2	0	0	0	2	4	107	11	0	0	122	276
Hourly Total	23	82	42	0	7	147	14	245	0	0	11	259	0	8	0	0	5	8	15	290	38	0	0	343	757
7:00 AM	6	21	15	0	2	42	7	97	0	0	3	104	1	2	0	0	0	3	3	96	9	0	0	108	257
7:15 AM	14	29	21	0	10	64	9	125	0	0	10	134	3	4	0	0	4	7	9	128	7	0	0	144	349
7:30 AM	22	34	25	0	7	81	17	132	0	0	7	149	0	1	0	0	2	1	4	166	22	0	0	192	423
7:45 AM	26	48	24	0	5	98	14	152	0	0	9	166	1	3	0	0	1	4	10	195	28	0	0	233	501
Hourly Total	68	132	85	0	24	285	47	506	0	0	29	553	5	10	0	0	7	15	26	585	66	0	0	677	1530
8:00 AM	21	36	28	0	11	85	7	140	1	0	10	148	5	7	0	0	1	12	11	171	13	0	0	195	440
8:15 AM	14	41	25	0	9	80	18	139	2	0	12	159	4	6	0	0	2	10	2	200	24	0	0	226	475
8:30 AM	18	50	25	0	17	93	12	144	0	0	11	156	5	8	0	0	1	13	12	195	29	0	0	236	498
8:45 AM	34	59	38	0	5	131	13	156	0	0	11	169	6	5	0	0	0	11	11	220	23	0	0	254	565
Hourly Total	87	186	116	0	42	389	50	579	3	0	44	632	20	26	0	0	4	46	36	786	89	0	0	911	1978
9:00 AM	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
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	33	8	22	0	13	63	20	217	0	0	6	237	5	39	0	0	1	44	1	240	46	0	0	287	631
4:15 PM	29	14	27	0	11	70	31	185	0	0	2	216	3	30	0	0	2	33	1	222	40	0	0	263	582
4:30 PM	46	19	24	0	15	89	23	254	0	0	16	277	2	43	0	0	4	45	5	206	36	0	0	247	658
4:45 PM	32	22	27	0	10	81	30	221	0	0	5	251	5	35	0	0	7	40	3	262	44	0	0	309	681
Hourly Total	140	63	100	0	49	303	104	877	0	0	29	981	15	147	0	0	14	162	10	930	166	0	0	1106	2552
5:00 PM	56	14	35	0	14	105	32	221	0	0	14	253	0	40	0	0	4	40	4	269	45	0	0	318	716
5:15 PM	24	10	23	0	11	57	37	244	0	0	11	281	5	38	0	0	5	43	5	288	47	0	0	340	721
5:30 PM	29	24	41	0	21	94	30	238	0	0	5	268	4	28	0	0	4	32	7	250	43	0	0	300	694
5:45 PM	30	13	23	0	16	66	39	199	0	0	8	238	0	11	0	0	7	11	2	212	34	0	0	248	563
Hourly Total	139	61	122	0	62	322	138	902	0	0	38	1040	9	117	0	0	20	126	18	1019	169	0	0	1206	2694
6:00 PM	19	12	26	0	20	57	31	213	0	0	8	244	3	20	0	0	5	23	4	172	30	1	1	207	531
6:15 PM	22	7	23	0	10	52	30	189	0	0	17	219	4	18	0	0	6	22	2	180	21	0	0	203	496
6:30 PM	19	14	22	0	13	55	25	188	0	0	8	213	2	10	0	0	3	12	7	165	42	0	0	214	494
6:45 PM	22	11	17	0	9	50	37	187	0	0	16	224	3	16	1	0	4	20	5	136	33	0	0	174	468
Hourly Total	82	44	88	0	52	214	123	777	0	0	49	900	12	64	1	0	18	77	18	653	126	1	1	798	1989
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Grand Total	539	568	553	0	236	1660	476	3886	3	0	200	4365	61	372	1	0	68	434	123	4263	655	1	1	5042	11501

Approach %	32.5	34.2	33.3	0.0	-	-	10.9	89.0	0.1	0.0	-	-	14.1	85.7	0.2	0.0	-	-	2.4	84.5	13.0	0.0	-	-	-
Total %	4.7	4.9	4.8	0.0	-	14.4	4.1	33.8	0.0	0.0	-	38.0	0.5	3.2	0.0	0.0	-	3.8	1.1	37.1	5.7	0.0	-	43.8	-
Lights	534	553	544	0	-	1631	472	3794	0	0	-	4266	60	352	1	0	-	413	123	4180	647	1	-	4951	11261
% Lights	99.1	97.4	98.4	-	-	98.3	99.2	97.6	0.0	-	-	97.7	98.4	94.6	100.0	-	-	95.2	100.0	98.1	98.8	100.0	-	98.2	97.9
Mediums	2	3	7	0	-	12	3	74	0	0	-	77	1	1	0	0	-	2	0	71	6	0	-	77	168
% Mediums	0.4	0.5	1.3	-	-	0.7	0.6	1.9	0.0	-	-	1.8	1.6	0.3	0.0	-	-	0.5	0.0	1.7	0.9	0.0	-	1.5	1.5
Articulated Trucks	3	0	1	0	-	4	1	18	0	0	-	19	0	0	0	0	-	0	0	11	1	0	-	12	35
% Articulated Trucks	0.6	0.0	0.2	-	-	0.2	0.2	0.5	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.2	0.0	-	0.2	0.3
Bicycles on Road	0	12	1	0	-	13	0	0	3	0	-	3	0	19	0	0	-	19	0	1	1	0	-	2	37
% Bicycles on Road	0.0	2.1	0.2	-	-	0.8	0.0	0.0	100.0	-	-	0.1	0.0	5.1	0.0	-	-	4.4	0.0	0.0	0.2	0.0	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	16	-	-	-	-	-	37	-	-	-	-	-	17	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	6.8	-	-	-	-	-	18.5	-	-	-	-	-	25.0	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	220	-	-	-	-	-	163	-	-	-	-	-	51	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	93.2	-	-	-	-	-	81.5	-	-	-	-	-	75.0	-	-	-	-	-	0.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Abbot Rd - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Abbot Rd Southbound						Grand River Ave Westbound						Abbot Rd Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	21	36	28	0	11	85	7	140	1	0	10	148	5	7	0	0	1	12	11	171	13	0	0	195	440
8:15 AM	14	41	25	0	9	80	18	139	2	0	12	159	4	6	0	0	2	10	2	200	24	0	0	226	475
8:30 AM	18	50	25	0	17	93	12	144	0	0	11	156	5	8	0	0	1	13	12	195	29	0	0	236	498
8:45 AM	34	59	38	0	5	131	13	156	0	0	11	169	6	5	0	0	0	11	11	220	23	0	0	254	565
Total	87	186	116	0	42	389	50	579	3	0	44	632	20	26	0	0	4	46	36	786	89	0	0	911	1978
Approach %	22.4	47.8	29.8	0.0	-	-	7.9	91.6	0.5	0.0	-	-	43.5	56.5	0.0	0.0	-	-	4.0	86.3	9.8	0.0	-	-	-
Total %	4.4	9.4	5.9	0.0	-	19.7	2.5	29.3	0.2	0.0	-	32.0	1.0	1.3	0.0	0.0	-	2.3	1.8	39.7	4.5	0.0	-	46.1	-
PHF	0.640	0.788	0.763	0.000	-	0.742	0.694	0.928	0.375	0.000	-	0.935	0.833	0.813	0.000	0.000	-	0.885	0.750	0.893	0.767	0.000	-	0.897	0.875
Lights	86	183	114	0	-	383	50	556	0	0	-	606	20	24	0	0	-	44	36	765	85	0	-	886	1919
% Lights	98.9	98.4	98.3	-	-	98.5	100.0	96.0	0.0	-	-	95.9	100.0	92.3	-	-	-	95.7	100.0	97.3	95.5	-	-	97.3	97.0
Mediums	0	0	2	0	-	2	0	18	0	0	-	18	0	1	0	0	-	1	0	20	3	0	-	23	44
% Mediums	0.0	0.0	1.7	-	-	0.5	0.0	3.1	0.0	-	-	2.8	0.0	3.8	-	-	-	2.2	0.0	2.5	3.4	-	-	2.5	2.2
Articulated Trucks	1	0	0	0	-	1	0	5	0	0	-	5	0	0	0	0	-	0	0	1	1	0	-	2	8
% Articulated Trucks	1.1	0.0	0.0	-	-	0.3	0.0	0.9	0.0	-	-	0.8	0.0	0.0	-	-	-	0.0	0.0	0.1	1.1	-	-	0.2	0.4
Bicycles on Road	0	3	0	0	-	3	0	0	3	0	-	3	0	1	0	0	-	1	0	0	0	0	-	0	7
% Bicycles on Road	0.0	1.6	0.0	-	-	0.8	0.0	0.0	100.0	-	-	0.5	0.0	3.8	-	-	-	2.2	0.0	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	12	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	11.9	-	-	-	-	-	27.3	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	37	-	-	-	-	-	32	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	88.1	-	-	-	-	-	72.7	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Abbot Rd - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 6

Turning Movement Peak Hour Data (4:45 PM)

Start Time	Abbot Rd Southbound						Grand River Ave Westbound						Abbot Rd Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	32	22	27	0	10	81	30	221	0	0	5	251	5	35	0	0	7	40	3	262	44	0	0	309	681
5:00 PM	56	14	35	0	14	105	32	221	0	0	14	253	0	40	0	0	4	40	4	269	45	0	0	318	716
5:15 PM	24	10	23	0	11	57	37	244	0	0	11	281	5	38	0	0	5	43	5	288	47	0	0	340	721
5:30 PM	29	24	41	0	21	94	30	238	0	0	5	268	4	28	0	0	4	32	7	250	43	0	0	300	694
Total	141	70	126	0	56	337	129	924	0	0	35	1053	14	141	0	0	20	155	19	1069	179	0	0	1267	2812
Approach %	41.8	20.8	37.4	0.0	-	-	12.3	87.7	0.0	0.0	-	-	9.0	91.0	0.0	0.0	-	-	1.5	84.4	14.1	0.0	-	-	-
Total %	5.0	2.5	4.5	0.0	-	12.0	4.6	32.9	0.0	0.0	-	37.4	0.5	5.0	0.0	0.0	-	5.5	0.7	38.0	6.4	0.0	-	45.1	-
PHF	0.629	0.729	0.768	0.000	-	0.802	0.872	0.947	0.000	0.000	-	0.937	0.700	0.881	0.000	0.000	-	0.901	0.679	0.928	0.952	0.000	-	0.932	0.975
Lights	140	68	125	0	-	333	127	915	0	0	-	1042	14	136	0	0	-	150	19	1055	179	0	-	1253	2778
% Lights	99.3	97.1	99.2	-	-	98.8	98.4	99.0	-	-	-	99.0	100.0	96.5	-	-	-	96.8	100.0	98.7	100.0	-	-	98.9	98.8
Mediums	0	1	0	0	-	1	2	8	0	0	-	10	0	0	0	0	-	0	0	12	0	0	-	12	23
% Mediums	0.0	1.4	0.0	-	-	0.3	1.6	0.9	-	-	-	0.9	0.0	0.0	-	-	-	0.0	0.0	1.1	0.0	-	-	0.9	0.8
Articulated Trucks	1	0	1	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	4
% Articulated Trucks	0.7	0.0	0.8	-	-	0.6	0.0	0.1	-	-	-	0.1	0.0	0.0	-	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.1
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	5	0	0	-	5	0	1	0	0	-	1	7
% Bicycles on Road	0.0	1.4	0.0	-	-	0.3	0.0	0.0	-	-	-	0.0	0.0	3.5	-	-	-	3.2	0.0	0.1	0.0	-	-	0.1	0.2
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	8	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	5.4	-	-	-	-	-	22.9	-	-	-	-	-	20.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	53	-	-	-	-	-	27	-	-	-	-	-	16	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	94.6	-	-	-	-	-	77.1	-	-	-	-	-	80.0	-	-	-	-	-	-	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Delta St - Saturday
Site Code:
Start Date: 06/21/2025

Turning Movement Data

Start Time	Delta St Southbound						Grand River Ave Westbound						Delta St Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	0	11	0	0	0	11	0	0	0	0	0	0	0	8	1	0	0	9	20
6:15 AM	1	0	0	0	1	1	1	12	0	0	0	13	0	0	0	0	0	0	0	17	2	0	0	19	33
6:30 AM	0	1	0	0	0	1	0	13	0	0	0	13	0	0	0	0	0	0	0	24	3	0	0	27	41
6:45 AM	0	0	0	0	1	0	0	23	0	0	0	23	1	1	0	0	0	2	1	34	1	0	0	36	61
Hourly Total	1	1	0	0	2	2	1	59	0	0	0	60	1	1	0	0	0	2	1	83	7	0	0	91	155
7:00 AM	0	0	0	0	0	0	2	15	0	0	0	17	0	0	0	0	0	0	0	34	2	0	0	36	53
7:15 AM	1	0	0	0	0	1	2	14	0	0	0	16	0	0	0	0	0	0	1	42	2	0	0	45	62
7:30 AM	0	1	1	0	0	2	1	24	1	0	0	26	1	2	0	0	0	3	0	55	4	0	0	59	90
7:45 AM	1	0	0	0	0	1	2	27	0	1	0	30	1	1	2	0	0	4	2	56	1	0	0	59	94
Hourly Total	2	1	1	0	0	4	7	80	1	1	0	89	2	3	2	0	0	7	3	187	9	0	0	199	299
8:00 AM	0	0	0	0	1	0	2	42	0	0	0	44	0	3	1	0	0	4	4	38	3	0	0	45	93
8:15 AM	1	0	0	0	0	1	0	24	0	0	0	24	1	1	0	0	2	2	1	47	5	0	1	53	80
8:30 AM	1	0	0	0	0	1	1	43	1	0	0	45	0	0	1	0	0	1	2	49	3	0	0	54	101
8:45 AM	4	1	1	0	2	6	3	54	0	0	0	57	2	1	1	0	0	4	0	79	5	0	0	84	151
Hourly Total	6	1	1	0	3	8	6	163	1	0	0	170	3	5	3	0	2	11	7	213	16	0	1	236	425
9:00 AM	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
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	4	0	2	0	3	6	6	105	2	0	0	113	1	2	2	0	0	5	3	107	11	0	0	121	245
4:15 PM	1	0	2	0	3	3	5	108	3	0	0	116	3	0	1	0	0	4	0	108	7	0	0	115	238
4:30 PM	2	0	1	0	3	3	3	128	0	0	0	131	2	2	1	0	0	5	1	83	15	0	0	99	238
4:45 PM	4	0	1	0	2	5	6	140	1	0	0	147	3	1	1	0	0	5	4	110	12	0	0	126	283
Hourly Total	11	0	6	0	11	17	20	481	6	0	0	507	9	5	5	0	0	19	8	408	45	0	0	461	1004
5:00 PM	2	0	0	0	3	2	8	121	0	0	2	129	0	2	4	0	0	6	1	107	5	0	0	113	250
5:15 PM	3	1	1	0	0	5	1	94	1	0	0	96	1	3	2	0	0	6	2	105	8	0	0	115	222
5:30 PM	4	1	0	0	0	5	6	82	0	0	0	88	2	4	3	0	0	9	2	83	8	0	0	93	195
5:45 PM	7	0	3	0	6	10	6	93	0	0	0	99	1	2	0	0	0	3	4	105	6	0	1	115	227
Hourly Total	16	2	4	0	9	22	21	390	1	0	2	412	4	11	9	0	0	24	9	400	27	0	1	436	894
6:00 PM	7	1	1	0	4	9	3	104	1	0	0	108	2	3	0	0	1	5	3	95	2	0	0	100	222
6:15 PM	2	0	1	0	0	3	5	92	1	0	0	98	1	1	0	0	0	2	1	100	3	0	0	104	207
6:30 PM	3	1	1	0	0	5	3	106	2	0	0	111	2	5	1	0	3	8	5	116	8	0	0	129	253
6:45 PM	4	3	1	0	2	8	3	92	3	0	0	98	2	2	0	0	0	4	4	129	7	0	0	140	250
Hourly Total	16	5	4	0	6	25	14	394	7	0	0	415	7	11	1	0	4	19	13	440	20	0	0	473	932
7:00 PM	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
Grand Total	52	10	16	0	31	78	69	1567	16	1	2	1653	26	36	20	0	6	82	41	1731	124	0	2	1896	3709

Approach %	66.7	12.8	20.5	0.0	-	-	4.2	94.8	1.0	0.1	-	-	31.7	43.9	24.4	0.0	-	-	2.2	91.3	6.5	0.0	-	-	-
Total %	1.4	0.3	0.4	0.0	-	2.1	1.9	42.2	0.4	0.0	-	44.6	0.7	1.0	0.5	0.0	-	2.2	1.1	46.7	3.3	0.0	-	51.1	-
Lights	52	10	16	0	-	78	69	1550	16	0	-	1635	26	35	18	0	-	79	41	1708	122	0	-	1871	3663
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	98.9	100.0	0.0	-	98.9	100.0	97.2	90.0	-	-	96.3	100.0	98.7	98.4	-	-	98.7	98.8
Mediums	0	0	0	0	-	0	0	11	0	1	-	12	0	0	2	0	-	2	0	15	0	0	-	15	29
% Mediums	0.0	0.0	0.0	-	-	0.0	0.0	0.7	0.0	100.0	-	0.7	0.0	0.0	10.0	-	-	2.4	0.0	0.9	0.0	-	-	0.8	0.8
Articulated Trucks	0	0	0	0	-	0	0	6	0	0	-	6	0	0	0	0	-	0	0	4	2	0	-	6	12
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	0.0	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.2	1.6	-	-	0.3	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	4	0	0	-	4	5
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	2.8	0.0	-	-	1.2	0.0	0.2	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	16.1	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	-	26	-	-	-	-	-	2	-	-	-	-	-	6	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	83.9	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	50.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Delta St - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 4

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Delta St Southbound						Grand River Ave Westbound						Delta St Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	0	0	0	0	1	0	2	42	0	0	0	44	0	3	1	0	0	4	4	38	3	0	0	45	93
8:15 AM	1	0	0	0	0	1	0	24	0	0	0	24	1	1	0	0	2	2	1	47	5	0	1	53	80
8:30 AM	1	0	0	0	0	1	1	43	1	0	0	45	0	0	1	0	0	1	2	49	3	0	0	54	101
8:45 AM	4	1	1	0	2	6	3	54	0	0	0	57	2	1	1	0	0	4	0	79	5	0	0	84	151
Total	6	1	1	0	3	8	6	163	1	0	0	170	3	5	3	0	2	11	7	213	16	0	1	236	425
Approach %	75.0	12.5	12.5	0.0	-	-	3.5	95.9	0.6	0.0	-	-	27.3	45.5	27.3	0.0	-	-	3.0	90.3	6.8	0.0	-	-	-
Total %	1.4	0.2	0.2	0.0	-	1.9	1.4	38.4	0.2	0.0	-	40.0	0.7	1.2	0.7	0.0	-	2.6	1.6	50.1	3.8	0.0	-	55.5	-
PHF	0.375	0.250	0.250	0.000	-	0.333	0.500	0.755	0.250	0.000	-	0.746	0.375	0.417	0.750	0.000	-	0.688	0.438	0.674	0.800	0.000	-	0.702	0.704
Lights	6	1	1	0	-	8	6	157	1	0	-	164	3	5	2	0	-	10	7	205	15	0	-	227	409
% Lights	100.0	100.0	100.0	-	-	100.0	100.0	96.3	100.0	-	-	96.5	100.0	100.0	66.7	-	-	90.9	100.0	96.2	93.8	-	-	96.2	96.2
Mediums	0	0	0	0	-	0	0	5	0	0	-	5	0	0	1	0	-	1	0	6	0	0	-	6	12
% Mediums	0.0	0.0	0.0	-	-	0.0	0.0	3.1	0.0	-	-	2.9	0.0	0.0	33.3	-	-	9.1	0.0	2.8	0.0	-	-	2.5	2.8
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	1	1	0	-	2	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.5	6.3	-	-	0.8	0.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	0.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Delta St - Saturday
Site Code:
Start Date: 06/21/2025
Page No: 6

Turning Movement Peak Hour Data (4:15 PM)

Start Time	Delta St Southbound						Grand River Ave Westbound						Delta St Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:15 PM	1	0	2	0	3	3	5	108	3	0	0	116	3	0	1	0	0	4	0	108	7	0	0	115	238
4:30 PM	2	0	1	0	3	3	3	128	0	0	0	131	2	2	1	0	0	5	1	83	15	0	0	99	238
4:45 PM	4	0	1	0	2	5	6	140	1	0	0	147	3	1	1	0	0	5	4	110	12	0	0	126	283
5:00 PM	2	0	0	0	3	2	8	121	0	0	2	129	0	2	4	0	0	6	1	107	5	0	0	113	250
Total	9	0	4	0	11	13	22	497	4	0	2	523	8	5	7	0	0	20	6	408	39	0	0	453	1009
Approach %	69.2	0.0	30.8	0.0	-	-	4.2	95.0	0.8	0.0	-	-	40.0	25.0	35.0	0.0	-	-	1.3	90.1	8.6	0.0	-	-	-
Total %	0.9	0.0	0.4	0.0	-	1.3	2.2	49.3	0.4	0.0	-	51.8	0.8	0.5	0.7	0.0	-	2.0	0.6	40.4	3.9	0.0	-	44.9	-
PHF	0.563	0.000	0.500	0.000	-	0.650	0.688	0.888	0.333	0.000	-	0.889	0.667	0.625	0.438	0.000	-	0.833	0.375	0.927	0.650	0.000	-	0.899	0.891
Lights	9	0	4	0	-	13	22	495	4	0	-	521	8	4	7	0	-	19	6	407	39	0	-	452	1005
% Lights	100.0	-	100.0	-	-	100.0	100.0	99.6	100.0	-	-	99.6	100.0	80.0	100.0	-	-	95.0	100.0	99.8	100.0	-	-	99.8	99.6
Mediums	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Mediums	0.0	-	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.2
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	20.0	0.0	-	-	5.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	36.4	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	63.6	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Delta St - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 1

Turning Movement Data

Start Time	Delta St Southbound						Grand River Ave Westbound						Delta St Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
6:00 AM	0	0	0	0	0	0	0	28	0	0	0	28	0	0	0	0	3	0	3	37	3	0	1	43	71
6:15 AM	2	1	1	0	0	4	0	35	0	0	0	35	0	0	1	0	0	1	4	48	3	0	0	55	95
6:30 AM	0	2	0	0	1	2	1	44	0	0	0	45	0	2	3	0	0	5	9	67	4	0	0	80	132
6:45 AM	2	0	1	0	0	3	1	56	1	0	1	58	0	2	0	0	0	2	5	81	4	0	0	90	153
Hourly Total	4	3	2	0	1	9	2	163	1	0	1	166	0	4	4	0	3	8	21	233	14	0	1	268	451
7:00 AM	2	0	0	0	0	2	3	62	0	0	0	65	3	3	1	0	0	7	3	83	2	0	0	88	162
7:15 AM	1	0	0	0	2	1	3	74	0	0	0	77	1	1	0	0	1	2	7	95	6	0	0	108	188
7:30 AM	1	1	2	0	1	4	2	85	0	0	0	87	0	2	0	0	2	2	7	131	6	0	0	144	237
7:45 AM	6	1	0	0	1	7	1	95	0	0	0	96	0	2	2	0	0	4	9	165	8	0	0	182	289
Hourly Total	10	2	2	0	4	14	9	316	0	0	0	325	4	8	3	0	3	15	26	474	22	0	0	522	876
8:00 AM	1	3	0	0	1	4	1	91	0	0	0	92	2	2	2	0	1	6	5	123	8	0	0	136	238
8:15 AM	10	4	1	0	0	15	4	87	1	0	0	92	0	1	3	0	0	4	7	152	9	0	0	168	279
8:30 AM	10	1	1	0	1	12	2	80	3	0	1	85	3	3	1	0	2	7	9	139	9	0	0	157	261
8:45 AM	10	1	3	0	1	14	4	87	3	0	0	94	2	3	2	0	0	7	3	159	18	0	0	180	295
Hourly Total	31	9	5	0	3	45	11	345	7	0	1	363	7	9	8	0	3	24	24	573	44	0	0	641	1073
9:00 AM	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
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	13	0	0	0	0	13	0	131	1	0	0	132	1	4	4	0	0	9	4	137	15	0	0	156	310
4:15 PM	5	1	0	0	1	6	1	118	2	0	0	121	1	7	7	0	1	15	1	137	8	0	0	146	288
4:30 PM	4	0	1	0	1	5	7	130	2	0	1	139	0	4	7	0	0	11	3	138	8	0	0	149	304
4:45 PM	7	3	5	0	0	15	7	136	0	0	0	143	1	3	3	0	1	7	8	173	4	0	1	185	350
Hourly Total	29	4	6	0	2	39	15	515	5	0	1	535	3	18	21	0	2	42	16	585	35	0	1	636	1252
5:00 PM	8	1	4	0	3	13	4	139	2	0	0	145	3	5	11	0	2	19	6	184	16	0	0	206	383
5:15 PM	8	0	0	0	3	8	4	149	0	0	1	153	3	6	8	0	0	17	5	167	17	0	0	189	367
5:30 PM	5	2	2	0	2	9	5	161	0	0	0	166	0	5	4	0	4	9	4	169	11	0	0	184	368
5:45 PM	5	0	2	0	3	7	2	131	2	0	0	135	1	2	3	0	1	6	4	125	9	0	0	138	286
Hourly Total	26	3	8	0	11	37	15	580	4	0	1	599	7	18	26	0	7	51	19	645	53	0	0	717	1404
6:00 PM	7	1	0	0	0	8	6	110	0	0	0	116	2	1	2	0	1	5	1	111	14	0	0	126	255
6:15 PM	9	2	2	0	0	13	6	118	1	0	0	125	2	1	2	0	0	5	0	134	6	0	0	140	283
6:30 PM	6	3	3	0	0	12	3	104	0	0	0	107	0	2	6	0	2	8	3	118	6	0	1	127	254
6:45 PM	6	1	3	0	2	10	3	105	0	0	1	108	0	5	3	0	0	8	3	113	10	0	0	126	252
Hourly Total	28	7	8	0	2	43	18	437	1	0	1	456	4	9	13	0	3	26	7	476	36	0	1	519	1044
Grand Total	128	28	31	0	23	187	70	2356	18	0	5	2444	25	66	75	0	21	166	113	2986	204	0	3	3303	6100
Approach %	68.4	15.0	16.6	0.0	-	-	2.9	96.4	0.7	0.0	-	-	15.1	39.8	45.2	0.0	-	-	3.4	90.4	6.2	0.0	-	-	-

Total %	2.1	0.5	0.5	0.0	-	3.1	1.1	38.6	0.3	0.0	-	40.1	0.4	1.1	1.2	0.0	-	2.7	1.9	49.0	3.3	0.0	-	54.1	-
Lights	124	27	29	0	-	180	68	2324	16	0	-	2408	24	64	75	0	-	163	111	2953	199	0	-	3263	6014
% Lights	96.9	96.4	93.5	-	-	96.3	97.1	98.6	88.9	-	-	98.5	96.0	97.0	100.0	-	-	98.2	98.2	98.9	97.5	-	-	98.8	98.6
Mediums	3	0	2	0	-	5	2	20	0	0	-	22	1	0	0	0	-	1	1	18	3	0	-	22	50
% Mediums	2.3	0.0	6.5	-	-	2.7	2.9	0.8	0.0	-	-	0.9	4.0	0.0	0.0	-	-	0.6	0.9	0.6	1.5	-	-	0.7	0.8
Articulated Trucks	0	0	0	0	-	0	0	12	1	0	-	13	0	1	0	0	-	1	0	12	1	0	-	13	27
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.5	5.6	-	-	0.5	0.0	1.5	0.0	-	-	0.6	0.0	0.4	0.5	-	-	0.4	0.4
Bicycles on Road	1	1	0	0	-	2	0	0	1	0	-	1	0	1	0	0	-	1	1	3	1	0	-	5	9
% Bicycles on Road	0.8	3.6	0.0	-	-	1.1	0.0	0.0	5.6	-	-	0.0	0.0	1.5	0.0	-	-	0.6	0.9	0.1	0.5	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	17.4	-	-	-	-	-	0.0	-	-	-	-	-	9.5	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	19	-	-	-	-	-	5	-	-	-	-	-	19	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	82.6	-	-	-	-	-	100.0	-	-	-	-	-	90.5	-	-	-	-	-	100.0	-	-

Unit Number:

DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

Count Name: Grand River Ave & Delta St - Tuesday
Site Code:
Start Date: 06/24/2025

Turning Movement Peak Hour Data (8:00 AM)

Start Time	Delta St Southbound						Grand River Ave Westbound						Delta St Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
8:00 AM	1	3	0	0	1	4	1	91	0	0	0	92	2	2	2	0	1	6	5	123	8	0	0	136	238
8:15 AM	10	4	1	0	0	15	4	87	1	0	0	92	0	1	3	0	0	4	7	152	9	0	0	168	279
8:30 AM	10	1	1	0	1	12	2	80	3	0	1	85	3	3	1	0	2	7	9	139	9	0	0	157	261
8:45 AM	10	1	3	0	1	14	4	87	3	0	0	94	2	3	2	0	0	7	3	159	18	0	0	180	295
Total	31	9	5	0	3	45	11	345	7	0	1	363	7	9	8	0	3	24	24	573	44	0	0	641	1073
Approach %	68.9	20.0	11.1	0.0	-	-	3.0	95.0	1.9	0.0	-	-	29.2	37.5	33.3	0.0	-	-	3.7	89.4	6.9	0.0	-	-	-
Total %	2.9	0.8	0.5	0.0	-	4.2	1.0	32.2	0.7	0.0	-	33.8	0.7	0.8	0.7	0.0	-	2.2	2.2	53.4	4.1	0.0	-	59.7	-
PHF	0.775	0.563	0.417	0.000	-	0.750	0.688	0.948	0.583	0.000	-	0.965	0.583	0.750	0.667	0.000	-	0.857	0.667	0.901	0.611	0.000	-	0.890	0.909
Lights	30	9	3	0	-	42	9	340	7	0	-	356	7	8	8	0	-	23	22	562	43	0	-	627	1048
% Lights	96.8	100.0	60.0	-	-	93.3	81.8	98.6	100.0	-	-	98.1	100.0	88.9	100.0	-	-	95.8	91.7	98.1	97.7	-	-	97.8	97.7
Mediums	1	0	2	0	-	3	2	5	0	0	-	7	0	0	0	0	-	0	1	8	1	0	-	10	20
% Mediums	3.2	0.0	40.0	-	-	6.7	18.2	1.4	0.0	-	-	1.9	0.0	0.0	0.0	-	-	0.0	4.2	1.4	2.3	-	-	1.6	1.9
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Articulated Trucks	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	0.2	0.0	-	-	0.2	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1	2	0	0	-	3	4
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	11.1	0.0	-	-	4.2	4.2	0.3	0.0	-	-	0.5	0.4
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Unit Number:

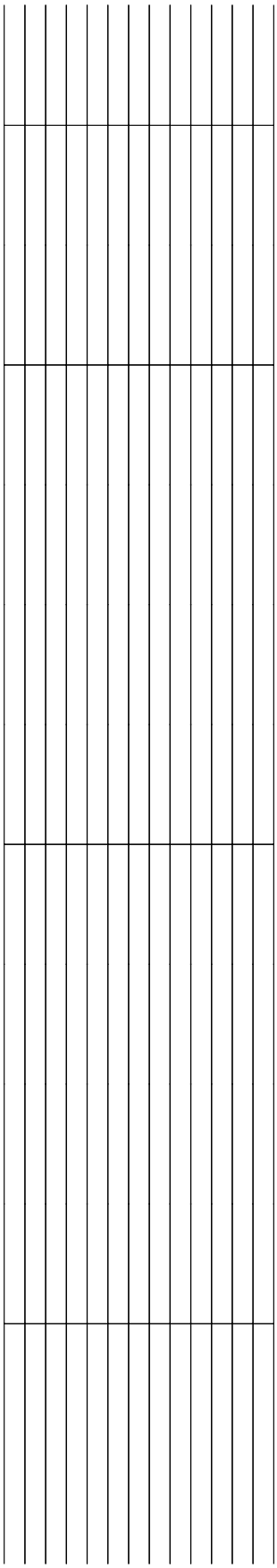
DLZ
8430 West Bryn Mawr Ave.

Chicago, Illinois, United States 60631
(773) 283-2600

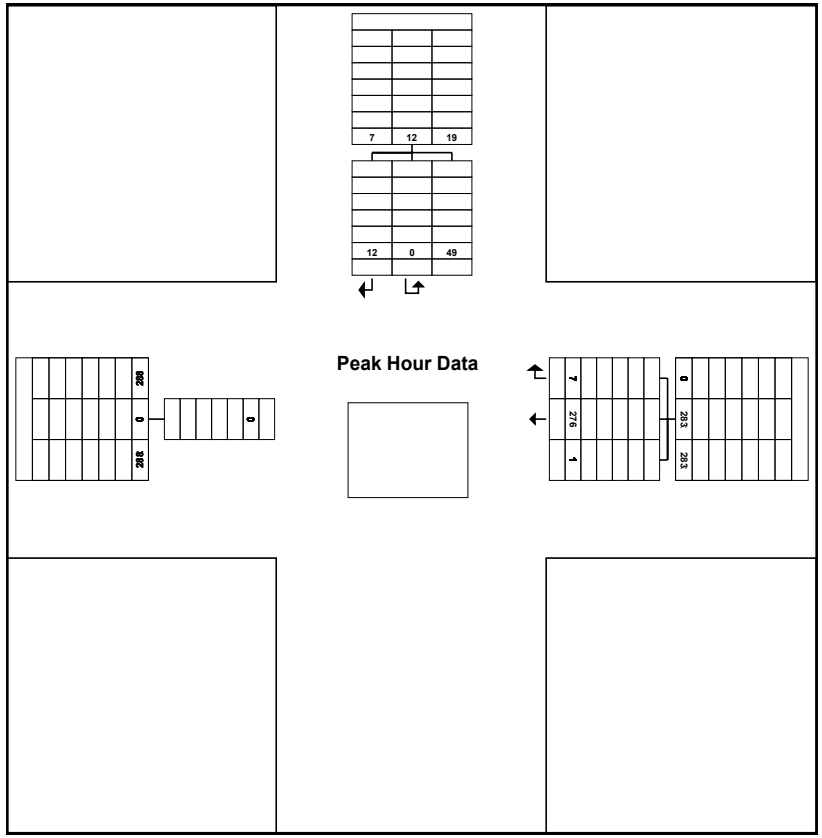
Count Name: Grand River Ave & Delta St - Tuesday
Site Code:
Start Date: 06/24/2025
Page No: 6

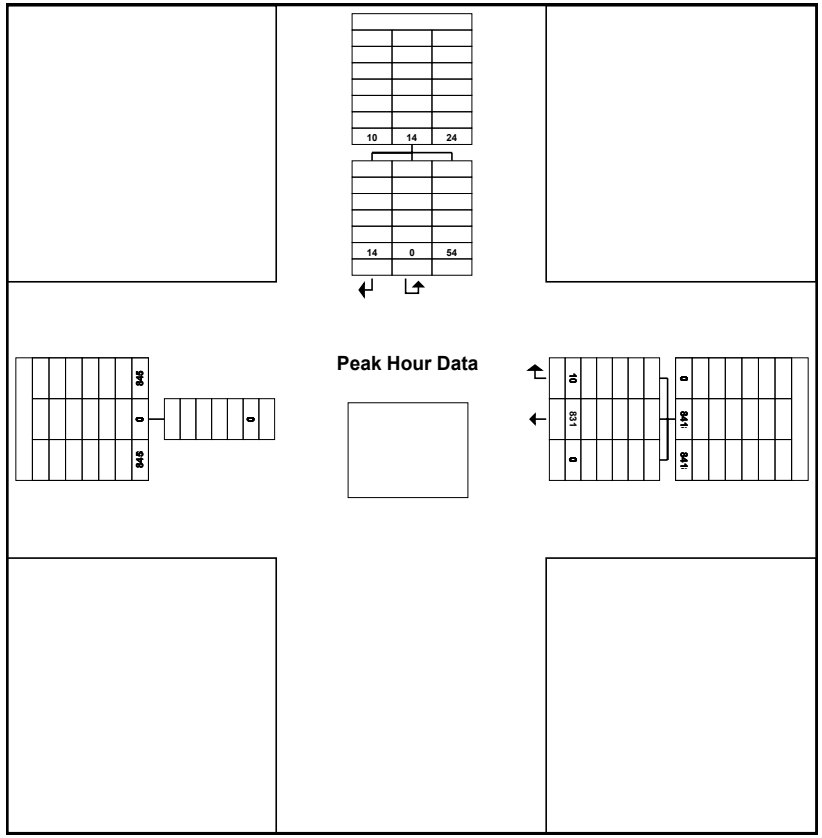
Turning Movement Peak Hour Data (4:45 PM)

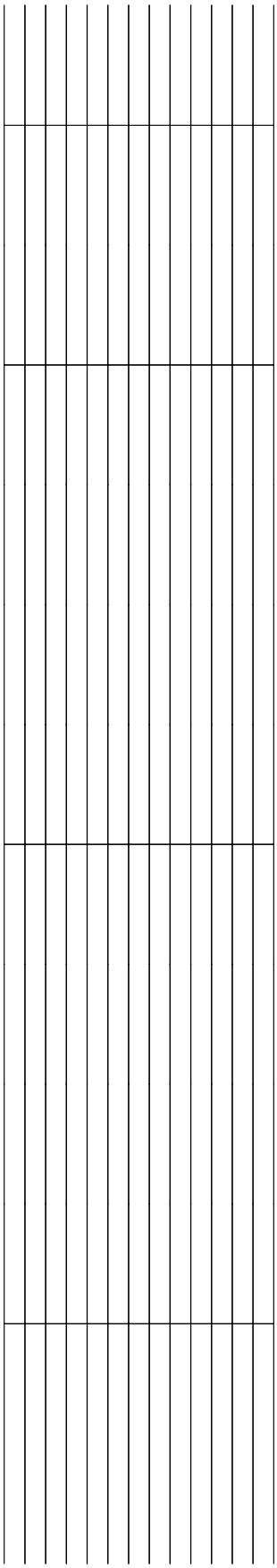
Start Time	Delta St Southbound						Grand River Ave Westbound						Delta St Northbound						Grand River Ave Eastbound						Int. Total
	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	Right	Thru	Left	U-Turn	Peds	App. Total	
4:45 PM	7	3	5	0	0	15	7	136	0	0	0	143	1	3	3	0	1	7	8	173	4	0	1	185	350
5:00 PM	8	1	4	0	3	13	4	139	2	0	0	145	3	5	11	0	2	19	6	184	16	0	0	206	383
5:15 PM	8	0	0	0	3	8	4	149	0	0	1	153	3	6	8	0	0	17	5	167	17	0	0	189	367
5:30 PM	5	2	2	0	2	9	5	161	0	0	0	166	0	5	4	0	4	9	4	169	11	0	0	184	368
Total	28	6	11	0	8	45	20	585	2	0	1	607	7	19	26	0	7	52	23	693	48	0	1	764	1468
Approach %	62.2	13.3	24.4	0.0	-	-	3.3	96.4	0.3	0.0	-	-	13.5	36.5	50.0	0.0	-	-	3.0	90.7	6.3	0.0	-	-	-
Total %	1.9	0.4	0.7	0.0	-	3.1	1.4	39.9	0.1	0.0	-	41.3	0.5	1.3	1.8	0.0	-	3.5	1.6	47.2	3.3	0.0	-	52.0	-
PHF	0.875	0.500	0.550	0.000	-	0.750	0.714	0.908	0.250	0.000	-	0.914	0.583	0.792	0.591	0.000	-	0.684	0.719	0.942	0.706	0.000	-	0.927	0.958
Lights	27	6	11	0	-	44	20	584	2	0	-	606	7	19	26	0	-	52	23	690	47	0	-	760	1462
% Lights	96.4	100.0	100.0	-	-	97.8	100.0	99.8	100.0	-	-	99.8	100.0	100.0	100.0	-	-	100.0	100.0	99.6	97.9	-	-	99.5	99.6
Mediums	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	2
% Mediums	3.6	0.0	0.0	-	-	2.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.1
Articulated Trucks	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.3	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.1	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	25.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	1	-	-	-	-	-	7	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	75.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

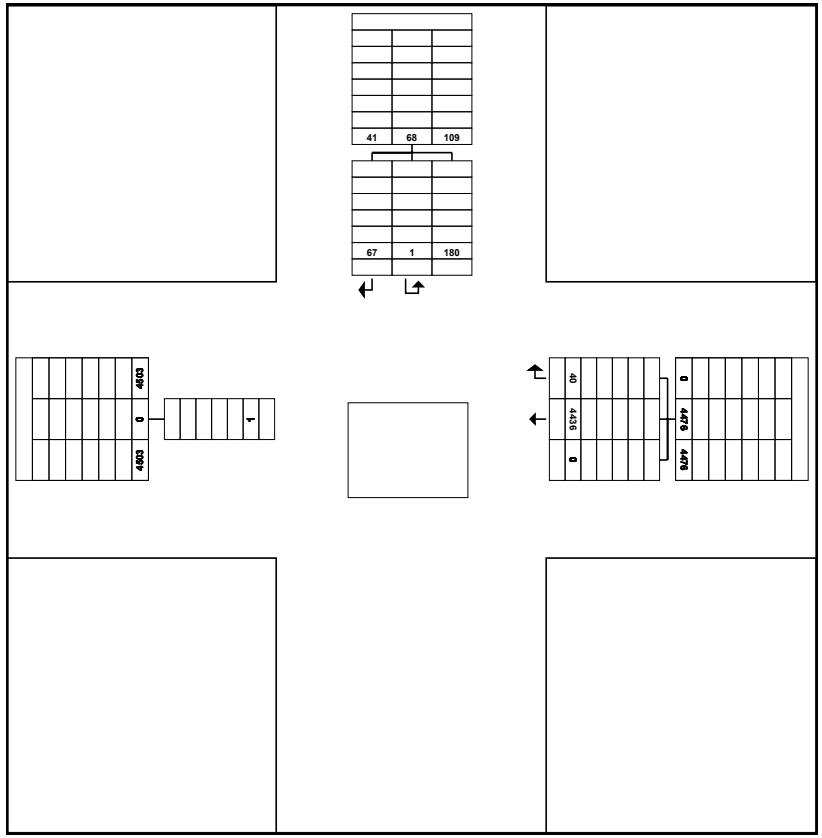


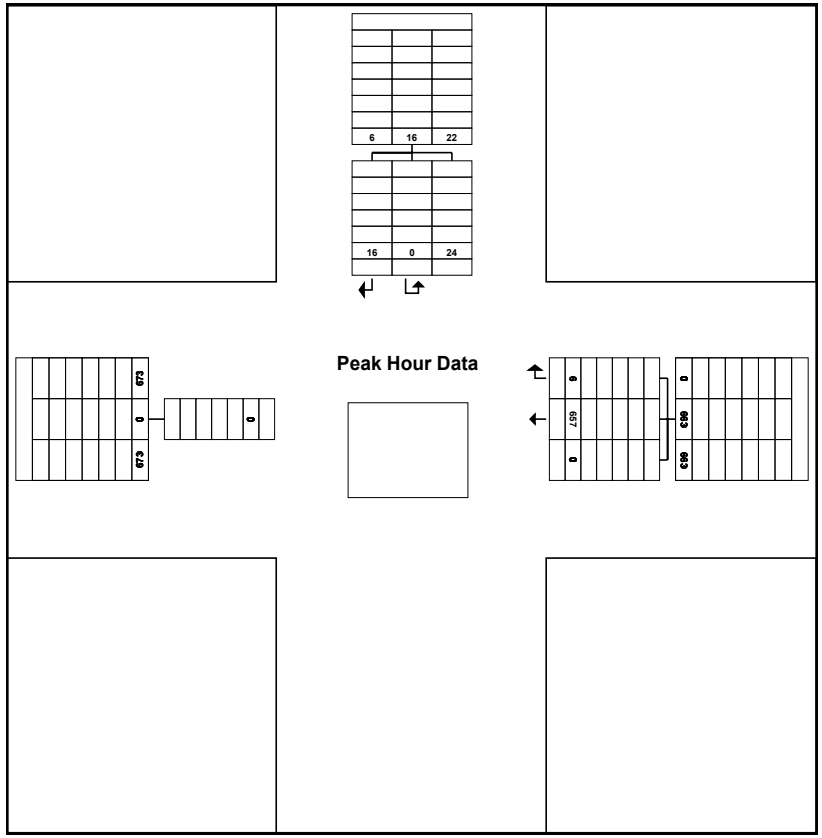
39
75
114
75
0
188
5682
0
2845
1
39
2520
1
0
2885
2886

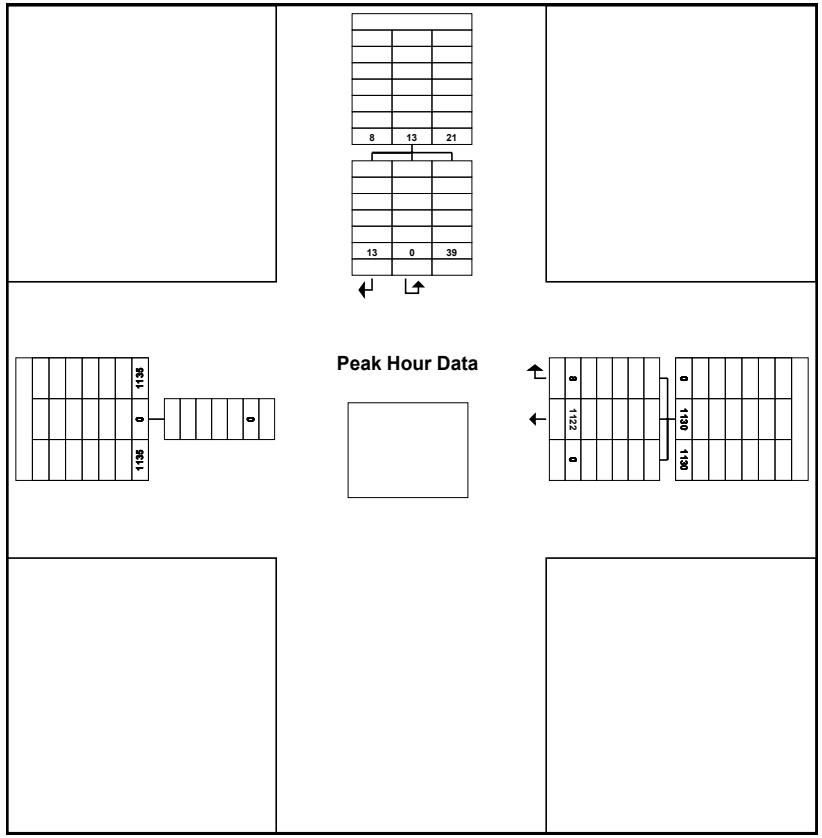

7
12
19
12
0
49
Peak Hour Data
288
0
283
0
7
276
1
0
283
283


10
14
24
14
0
54
Peak Hour Data
845
0
845
0
10
831
0
0
841
841




41
68
109
67
1
180
4503
0
4503
1
40
4436
0
0
4479
4479


6
16
22
16
0
24
673
0
673
0
Peak Hour Data
0
657
0
0
0
0


8
13
21
13
0
39
Peak Hour Data
1136
0
1136
0
8
1122
0
0
1130
1130

Queue Analysis
October 31, 2025

Queuing M/M/s (Multi-Channel)

Arrival rate, lambda	33	customers/hour
Mean service time, miu	10	customers/hour
Number of servers, s	6	(max = 50)

Economic Analysis of Queue

Waiting cost per time period per each unit, Cw	1	$/Hour
Service cost per time period for each channel, Cs	1	$/Hour

Queuing Performances

utilization single server, rho	3.3	
Utilization factor, U	55%	*OK*
Prob. Empty system, P0	4%	
Average queue length Lq	0.1745	customers
Average system length L	3.4745	customers
Average waiting in queue Wq	0.0053	hour =
Average waiting in system W	0.1053	hour =
Prob. of waiting	14.27%	
Optimum number of servers	5	

Number of customers	Probability	Sum
0	3.58%	3.58%
1	11.82%	15.40%
2	19.50%	34.90%
3	21.45%	56.35%
4	17.70%	74.05%
5	11.68%	85.73%
6	6.42%	92.15%
7	3.53%	95.68%
8	1.94%	97.63%
9	1.07%	98.69%
10	0.59%	99.28%
11	0.32%	99.60%
12	0.18%	99.78%
13	0.10%	99.88%
14	0.05%	99.93%
15	0.03%	99.96%
16	0.02%	99.98%
17	0.01%	99.99%
18	0.00%	99.99%
19	0.00%	100.00%
20	0.00%	100.00%
21	0.00%	100.00%
22	0.00%	100.00%
23	0.00%	100.00%
24	0.00%	100.00%

Queue Analysis
October 10, 2025

Queuing M/M/s (Multi-Channel)

Arrival rate, lambda	33	customers/hour
Mean service time, miu	11.5	customers/hour
Number of servers, s	5	(max = 50)

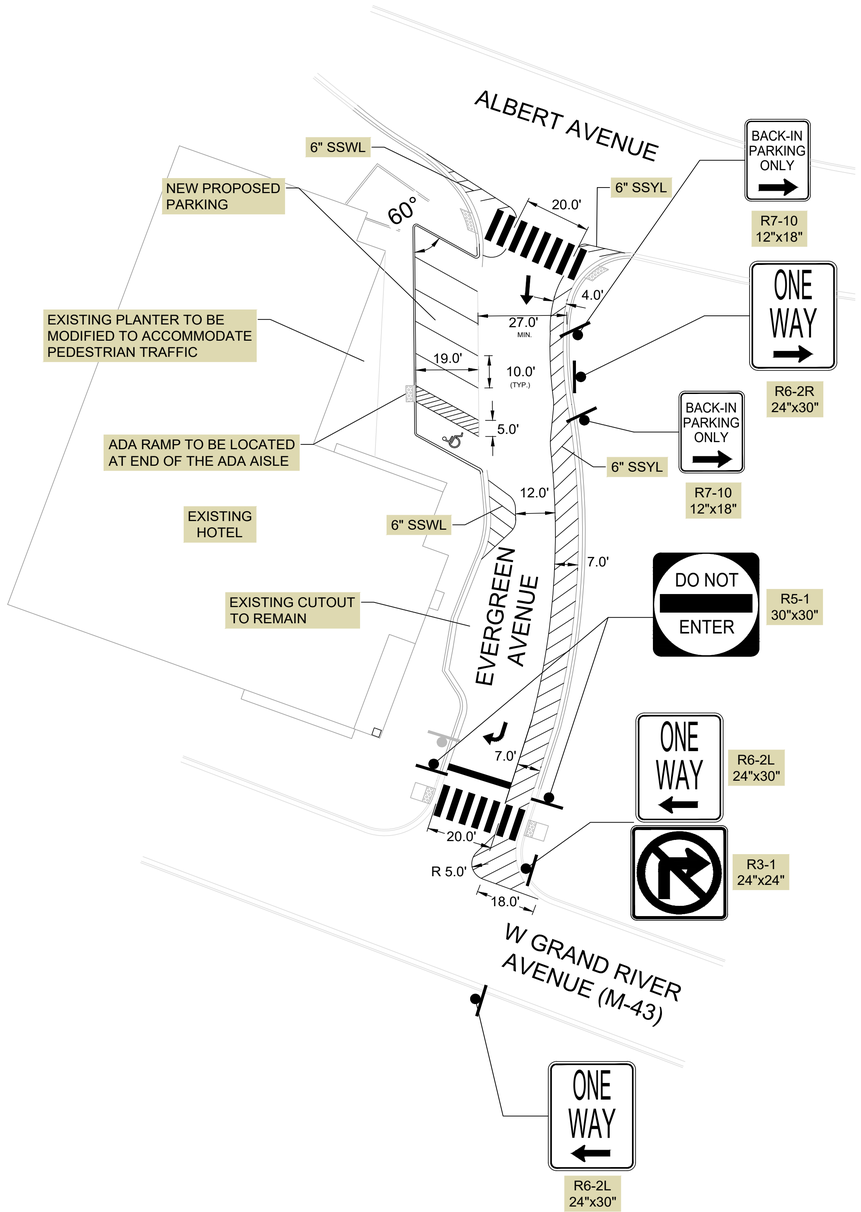
Economic Analysis of Queue

Waiting cost per time period per each unit, Cw	1	$/Hour
Service cost per time period for each channel, Cs	1	$/Hour

Queuing Performances

utilization single server, rho	2.869565217	
Utilization factor, U	57%	*OK*
Prob. Empty system, P0	5%	
Average queue length Lq	0.2762	customers
Average system length L	3.1458	customers
Average waiting in queue Wq	0.0084	hour =
Average waiting in system W	0.0953	hour =
Prob. of waiting	20.51%	
Optimum number of servers	4	

Number of customers	Probability	Sum
0	5.39%	5.39%
1	15.46%	20.85%
2	22.19%	43.04%
3	21.22%	64.27%
4	15.23%	79.49%
5	8.74%	88.23%
6	5.01%	93.25%
7	2.88%	96.12%
8	1.65%	97.78%
9	0.95%	98.72%
10	0.54%	99.27%
11	0.31%	99.58%
12	0.18%	99.76%
13	0.10%	99.86%
14	0.06%	99.92%
15	0.03%	99.95%
16	0.02%	99.97%
17	0.01%	99.98%
18	0.01%	99.99%
19	0.00%	100.00%
20	0.00%	100.00%
21	0.00%	100.00%
22	0.00%	100.00%
23	0.00%	100.00%
24	0.00%	100.00%



LEGEND

- PROPOSED STREET SIGN
- EXISTING STREET SIGN
- PROPOSED ARROW PAVEMENT MARKING
- CHANNELIZATION STRIPING

SSWL = SINGLE SOLID WHITE LINE
SSYL = SINGLE SOLID YELLOW LINE

GRAPHIC SCALE
0 10' 20' 40' 60'

FILE NO.	00055946_001
DATE:	05/06/2026
DESIGNED BY:	BJT
DRAWN BY:	KSR
CHECKED BY:	JMC

REVISION BLOCK

DATE:		

KCI TECHNOLOGIES

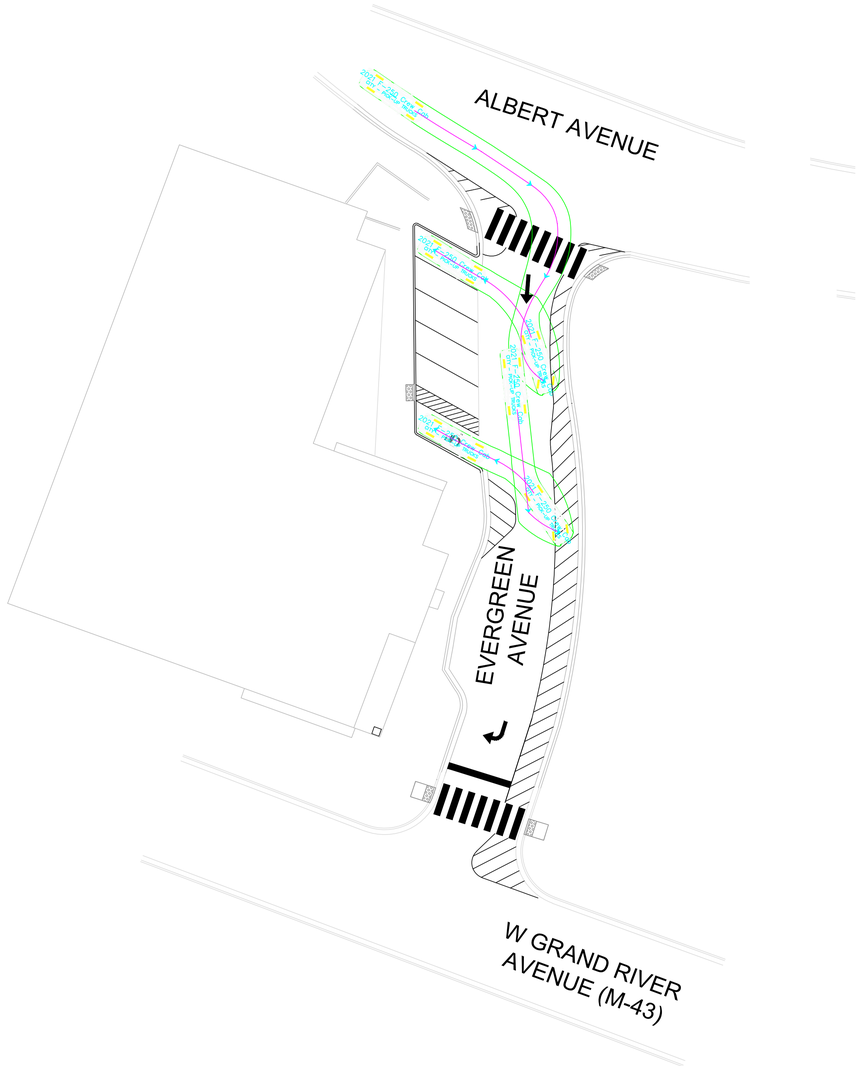
DRAFT
NOT FOR
CONSTRUCTION

ON-STREET PARKING AND ONE-WAY CONVERSION PLAN

GRADUATE HOTEL
CITY OF EAST LANSING

SCALE: 1"=20'

SHEET 1



GRAPHIC SCALE
0 10' 20' 40' 60'

FILE NO.	00055946_001
DATE:	05/06/2026
DESIGNED BY:	BJT
DRAWN BY:	KSR
CHECKED BY:	JMC

REVISION BLOCK

DATE:		

KCI TECHNOLOGIES

FOR INFORMATION ONLY

PASSENGER TRUCK AUTOTURN EXHIBIT

GRADUATE HOTEL
CITY OF EAST LANSING

SCALE: 1"=20'

SHEET 2

Transportation Commission

AGENDA ITEM REPORT

To:	Transportation Commission
Subject:	Introduction of the Traffic Impact Study for 530 Albert Avenue for the July 13th Transportation Commission meeting.
Meeting:	Transportation Commission - 01 Jun 2026
Department:	Public Works
Staff Contact:	Stephen Clayton, Engineering Administrator

BACKGROUND INFORMATION:

Staff are working with the developer to present the 530 Albert Avenue traffic study and proposed meter spaces on Albert Avenue on July 13th, 2026 for review and comment.

The most recently submitted traffic impact study, traffic engineer response letter, plan set are attached for reference.

The developer is currently working on a few minor changes to the traffic impact study. The developer will submit updated the Traffic Impact Study to address the Traffic Engineer's comments. The developer will include a cover letter describing how the intensity of use has dropped from the first study to the current plan and not change the trip generation, which staff have no concerns with.

ATTACHMENTS:

530 Albert Narrative - Update
2026-0218 530 Albert_Traffic Study
3. 26-0505_530 ALBERT AVE LAND USE SUBMITTAL 11x17
LT_530 Albert TIS Review_2026_0311

530 Albert Avenue Development

Land Use Application
East Lansing, MI
February 18, 2026

TAREEN DEVELOPMENT PARTNERS

Development Information

1. DEVELOPMENT TEAM

Applicant: **TDP Acquisitions LLC (Contact: Cody Dietrich)**

Team: TDP Acquisitions LLC, Developer
ESG Architecture and Design, Architect
Stantec, Civil Engineer, Landscape Architect and Surveyor

2. DEVELOPMENT LOCATION

This development is located on 500 block of Albert Avenue between Division Street and Bailey Street. The property has the Wild Goose Inn bed and breakfast to the west, the Bailey surface parking lot to the east, commercial uses to the south and residential uses to the north. The property currently consists of one parcel (Parcel ID # 33-20-02-18-167-010) totaling approximately 0.69 acres.

3. DEVELOPMENT DESCRIPTION AND VISION

The current property is utilized for an 86-stall public parking lot operated by the city through a lease with the private owners. Our proposed development will create a new community with 236 apartment homes and public parking in a 12-story mixed-use building. The development would primarily provide housing for students. The building will have a 2-story concrete podium at grade containing 83 public parking stalls and building amenities. There will then be 10 levels of residential units on floors 3 – 12. On the roof will be indoor and outdoor amenity areas for recreational use by the residents of the building. Additionally, there will be a third-story terrace on the alley side for the residents. The units will be a mix of Studios, alcoves, 1-bedroom, 2-bedroom and 3-bedroom apartment homes. The anticipated amenities for the development include:

- Leasing office and on-site management services
- Business center and co-working areas;
- Flex work space;
- Clubroom and game room;
- Fitness center;
- Indoor pool and spa area;
- Basketball Court;
- Bike workshop and storage;
- Grilling stations;
- Outdoor fire pits;
- Pet spa;
- Community coffee shop in the lobby

Modifications Based on Stakeholder Feedback

For this development we have made it one of our top priorities to engage with local stakeholders. Through this process, we have engaged with neighboring business owners, the Bailey Neighborhood, council members, potential council members and staff across multiple departments to ensure we are creating a lasting development in the community. We started the engagement with local business owners in April to get initial feedback based off our understanding of the last proposal that came through. The primary feedback we received from this group of stakeholders was to replace as much of the public parking as possible and activate the alley. From there we started modifying our plans and kept modifying throughout our meetings with the other stakeholders. We made these priorities and were able to replace 83 of the 86 public parking stalls on-site, while creating a vibrant area in the alley with planters, benches, murals, festoon lighting.

Other comments were to activate the street frontage, add more landscaping, step the building back on the first floor to provide a wider boulevard area, make the parking area wide open and well lit for safety. We have continued to make modifications to the plan to incorporate all of these items to try and please everyone. Additionally, we continue to work with the Wild Goose Inn to ensure we are impacting them as little as possible, while trying to deter people from walking between the buildings, car lights don't shine in their windows, enhancing the landscaping and attempting to preserve the adjacent trees.

Separately, we tried to see if there was any interest in utilizing a shared community room with other local stakeholders. This did not gain much traction, but we are currently discussing plans to incorporate a coffee shop kiosk like area in the lobby that would be open to the public. Our intent is to try and establish the building in the community in an immersive way. If these discussions come to fruition, we would have a coffee bar in the lobby similar to Poindexter Coffee in the Graduate. This would welcome the community into our building while increasing the active use in the downtown area.

4. REQUESTED ACTIONS

Applicant is requesting review and approval by city staff, the Planning Commission and City Council of the proposed housing development at 530 Albert Avenue with 236 apartment homes and an 83-stall public parking garage. Below are the applications needed for the development:

- Site Plan Approval
- Special Use Permit Approval
- Other items that will or may need consideration later:
  - Development Agreement
  - Public Parking Lease or Operating Agreement
  - Payment in Lieu of Taxes (PILOT)
    - See Diverse Housing in Section 5.

We are not requesting any variances for the development. The Special Use Permit is needed for the following items:

- Creating the public parking structure as a mixed-use building
- Multifamily as a principal use
- Increase in height above the permitted eight stories

The development is consistent with other residential developments in the B-3 zoning district downtown. The many benefits from the development include:

- Increasing the housing supply in a highly supply constrained area
- Replacement of the public parking on-site to serve local businesses
- Significant investment in public art to enhance the public realm
- Increased amount of landscaping and enhanced streetscape
- Focus on resiliency utilizing more sustainable energy source of Geothermal and providing stormwater management

5. DIVERSE HOUSING

The current ordinance is under review, and we would encourage staff, the Planning Commission and City Council to review all potential directions for this and be open to having multiple approaches to solving this issue. We ask for flexibility in how this development addresses this until the new ordinance is implemented. If no changes occur, we plan to mitigate fully or partially on-site with moderate income units at 80% AMI levels and would work with the city in how to best implement this. This would require a PILOT for those units on-site. We additionally are under contract with another site that could produce for-sale condominiums or another diverse housing type that could help with partial mitigation.

6. ARCHITECTURAL DESIGN & DESIGN GUIDELINES

The site is located in the downtown area with B-3 zoning. This area is a mixture of high-rise residential buildings, hotels and lower-scale commercial. The comprehensive plan calls for this area to see the most density in the City with goals to increase housing supply. Our design looked at other residential buildings in the downtown area, with a focus on enhancing the building environment. We heard from the Bailey Neighborhood Association that they were tired of the silver corrugated metal panel on buildings, and we have provided enhanced metal panels with a highly articulated design to provide an aesthetically pleasing building design. We focus on a masonry base with metal wrapped columns along Albert. On the residential floors, the design utilizes a mixture of metal panels with a stucco accent to provide a change in materials. Our design focuses on using more neutral colors rather than bold colors that draw unnecessary attention. We are providing a 5-foot setback on the western property line at the parking levels and 10-feet at the above residential levels, further than the 0-foot requirement. We have also pulled the building back at the grade level by 4 to 5 feet on the north and south property lines to provide a better pedestrian experience as you travel by the site.

The Urban Design Guidelines have been reviewed and implemented as part of the design. Specifically, we reviewed Page 19 of the Urban Design Guidelines with the study of the 500 Block. We have provided an enhanced boulevard with a focal brick paver section to further activate the street. We have carried enhanced design to the alley side to further serve the public realm with festoon lighting across the alley, multiple art locations and planters with bench areas. On the first story of the building along Albert Avenue, most of the façade is pulled back to allow for the expansion of the pedestrian realm with additional landscaping. We have found locations to install art that can be enjoyed by the public and will work in coordination with the Arts Commission and local artists to bring these to life.

7. PUBLIC PARKING

The public parking will be accessed from Albert Avenue into a parking garage that will be gate-operated. All stalls will be intended to be available for hourly lease by the public. Residents of the building shall park at one of the other city parking facilities. In the future if the demand is not needed for the public parking within the development part of that parking could be set aside for resident parking. This would be a joint decision with the City/DDA with consultation from the local business owners. Initial conversations have been had with Caleb Sharrow and will continue to be had regarding the structure of a lease with the City/DDA or an operating agreement between the property and City.

Loading will primarily be over a couple day period every year. As part of the lease or operating agreement, there would be a set amount of the public parking stalls set aside for a certain period to allow for resident move-in and move-out.

8. SUSTAINABLE FEATURES

We plan to use sustainable features including:

- High efficiency heating and cooling systems
- Stormwater management through an underground storage chamber;
    - Stormwater management is not required for the site due to less than one acre of disturbance.
    - We will be providing anyway to ensure a better outcome for the community, currently there is not stormwater management
- Installation of high-quality energy-efficient windows and building envelope,
    - Our planned provider partners with local non-profits to plant one tree per window in the region
- Installation of occupancy sensor lighting controls in select building locations,
- Installation of individual programmable thermostats,
- Installation of energy star (or comparable energy-efficient) appliances,
- Installation of low-flow plumbing fixtures,
- Use of low-VOC paints, and other sustainable building materials

530 Albert Avenue

Traffic Impact Study

Stantec

Prepared for:
Tareen Development Partners

Date:
February 18, 2026

Prepared by:
Stantec

Project/File:
530 Albert Avenue

Stantec Consulting Michigan Inc.

Disclaimer

The conclusions in the Report titled 530 Albert Avenue Traffic Impact Study are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Client (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared by:

Joanna Kavalaris

Printed Name

Reviewed by:

Signature

Evan Drew, PE, PTOE, RSP1

Printed Name

Approved by:

Signature

Callie Castro, PE, PTOE

Printed Name

Table of Contents

Executive Summary ..... **iii**
1 Introduction **1**
2 Existing Area Conditions **2**
2.1 Study Area Roadway System 2
2.2 Traffic Data Collection 4
2.3 Existing Traffic Operations 6
2.4 Crash History 8
3 Future Conditions **10**
3.1 Background Growth 10
3.2 No Build Capacity Analysis 13
3.3 Proposed Development 16
3.4 Site Trip Generation 17
3.5 Site Trips Distribution 17
3.6 Site Trip Volumes 19
3.7 Build Traffic Volumes 21
3.8 Build Capacity Analysis 24
4 Parking **27**
5 Conclusions **31**

List of Tables

Table 1. Signalized Intersection LOS Thresholds 6
Table 2. Unsignalized Intersection LOS Thresholds 6
Table 3. 2026 Existing Capacity Analysis Summary 7
Table 4. Crash Summary – Manner of Collision 9
Table 5. Crash Summary – Injury 9
Table 6. Crash Summary – Crash Location 9
Table 7. 2027 Opening Year No Build Conditions Summary 14
Table 8. 2032 Future Year No Build Conditions Summary 15
Table 9. Site Trip Generation 17
Table 10. 2027 Build Conditions Summary 25
Table 11. 2032 Build Conditions Summary 26
Table 12. Parking Generation 28
Table 13. Division Street Garage Parking Occupancy 28
Table 14. Existing Bailey Lot Occupancy 29
Table 15. Total Parking Occupancy 29
Table 16. Additional Parking Total Occupancy 30

List of Figures

Figure 1. Project Location 2
Figure 2. Existing Lane Configuration and Intersection Control 4
Figure 3. 2026 Existing Vehicular Traffic Volumes 5
Figure 4. Crash Locations 2020-2024 8
Figure 5. 2027 Opening Year No Build Vehicular Traffic Volumes 11
Figure 6. 2032 Future Year No Build Vehicular Traffic Volumes 12
Figure 7. Proposed Site Plan 16
Figure 8. Development Vehicular Trip Distribution 18
Figure 9. Development Vehicular Traffic Volumes 20
Figure 10. 2027 Build Vehicular Traffic Volumes 22
Figure 11. 2032 Build Vehicular Traffic Volumes 23

Figure 12. Proposed Site and Adjacent Parking Facilities 27
Figure 13. Occupancy Key 28
Figure 14. City of East Lansing Parking Areas 30

List of Appendices

Appendix A Traffic Volumes
Appendix B ITE Calculations
Appendix C Synchro Reports
Appendix D Crash Data

Executive Summary

The 530 Albert Avenue Traffic Impact Analysis evaluated the transportation impacts of a proposed mixed-use development which includes residential housing, a coffee shop, and a parking structure replacing an existing portion of the Bailey Street parking lot. In addition to traffic operational impacts, parking needs and impacts were also evaluated. The City of East Lansing's Parking Master Plan (FY2023), parking occupancy counts from Spring 2025, and the City's Downtown Parking Guide were reviewed to provide a better understanding of the City's existing parking conditions.

The proposed development will include 2 floors of parking deck with a total of 83 parking stalls and 10 floors of residential housing with a total of 236 dwelling units. An additional 6 short-term on-street metered parking spaces will also be provided along Albert Avenue fronting the proposed development. The development is projected to generate 65 and 63 new vehicular trips during both AM and PM peak hours, respectively.

Intersection capacity analysis for 2026 Existing Conditions, 2027 Opening Year No Build and Build scenarios and 2032 No Build and Build scenarios indicate minimal operational impacts. All study intersections are expected to operate at comparable LOS to background conditions, with only minor delay increases at select movements. The 95th percentile queues at the site driveway and adjacent intersections will remain within available storage, ensuring no blockage of site access. Additionally, the site is well-connected to existing sidewalk and bicycle networks providing continuous pedestrian access to nearby parking garages and transit stops. The signalized intersections of Grand River Avenue at Division Street is provided a signalized pedestrian crossing that is recalled at each cycle to guarantee pedestrian crossings of these high-volume corridors.

A review of 2020–2024 crash data identified 162 crashes within the study area, with the highest concentrations occurring along Grand River Avenue at the Division Street and Bailey Street intersections. Rear-end collisions were the most predominant crash type. Seventeen percent of crashes involved injuries, with no fatalities reported, and five pedestrian-involved crashes occurred during the analysis period. Most crashes happened under daylight and dry conditions, and none of the study intersections appear on the City's Top 10 Accident Location list.

Based on ITE methodology, the project is estimated to generate demand for 318 spaces, which can be accommodated through the on-site garage and the Division Street Garage. Additional nearby garages also maintain occupancy rates generally below 70%, providing further flexibility. Overall, the parking analysis indicated that the development can be supported without adversely affecting the surrounding parking network. Parking provided in the on-site garage will be public parking and residents of the proposed development will not be issued a permit to park within the development parking structure.

The proposed 530 Albert Avenue development is expected to have minimal impact on vehicular operations and parking occupancy within the study area. Existing infrastructure and planned improvements support safe and efficient access for all modes. No additional improvements are proposed as a result of this assessment.

1 Introduction

The purpose of this report is to evaluate the impacts to traffic operations and safety associated with the proposed development, located at 530 Albert Avenue, East Lansing, Michigan. The new development will be a mixed use development that includes a ground-floor coffee shop, residential housing with 236 dwelling units and parking structure with a total of 83 onsite parking stalls. Levels 1 and 2 will consist of the ground floor coffee shop and parking structure, and the residential housing will occupy 10 levels of the building. The new development is proposed to be built on a portion of the existing Bailey Lot adjacent to Michigan State University.

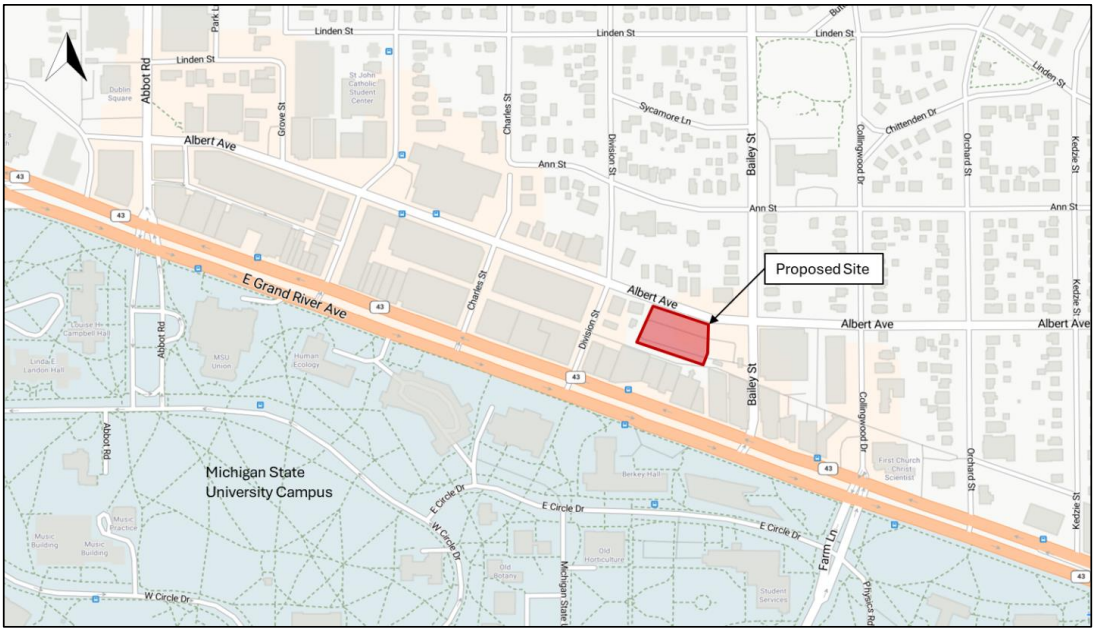
The following documents were referenced as part of this study:

- *City of East Lansing Parking Master Plan (FY2023)*
- *ITE Trip Generation Manual (12th Edition)*
- *ITE Parking Generation Manual (5th Edition)*

2 Existing Area Conditions

The site is proposed to be developed on a portion of the existing Bailey Lot adjacent to Michigan State University. The site location is outlined in red in **Figure 1**, below.

Figure 1. Project Location



2.1 Study Area Roadway System

The primary roadways serving the site include Albert Avenue, Division Street, Bailey Street and Grand River Avenue detailed below.

Albert Avenue is a two-lane, east–west roadway with 11-foot travel lanes and on-street parking. It is classified as a major collector and maintains a posted speed limit of 25 mph within the study area.

Division Street is a two-lane, north–south roadway with 11-foot-wide lanes in the study vicinity. Also classified as a major collector with a posted speed limit of 25 mph, it provides access to the Division Street Parking Garage located at the corner of Albert Avenue and Division Street.

Bailey Street is a two lane, north–south roadway featuring 11-foot-wide lanes and is similarly classified as a major collector with a posted speed limit of 25 mph. In addition to serving local traffic, Bailey Street provides access to both the Bailey Street surface parking lot and the Bailey Street parking garage adjacent to the proposed development.

Grand River Avenue is a divided five-lane, east–west principal arterial consisting of two 11-foot-wide eastbound lanes and three 10-foot-wide westbound lanes with a posted speed limit of 25 mph in the study area. Grand River Avenue runs parallel to Albert Avenue along the edge of Michigan State University.

Additionally, the study area consists of the following intersections:

1. ***Albert Avenue at Division Street*** is a four leg, all-way stop controlled intersection. The eastbound and westbound approaches on Albert Avenue each provide an exclusive right turn lane and a shared through/left turn lane. The northbound approach from Division Street includes an exclusive left turn lane and a shared through/right turn lane, while the southbound approach has a shared left/through/right lane. All legs of the intersection include marked pedestrian crosswalks.

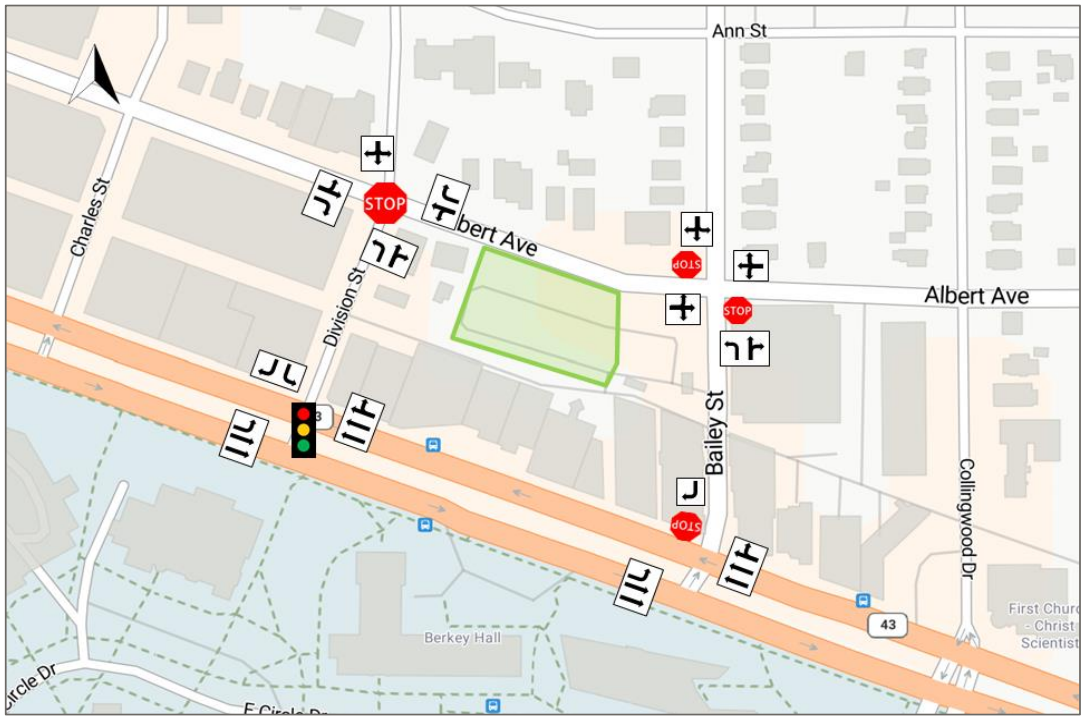
2. ***Albert Avenue at Bailey Street*** is a four leg, two-way stop-controlled intersection, with Bailey Street operating as the stop-controlled approach. There are no dedicated turn lanes along Albert Avenue. The northbound approach on Bailey Street includes an exclusive left turn lane and a shared through/right turn lane, while the southbound approach has a shared left/through/right lane. All legs of the intersection include marked pedestrian crosswalks.

3. ***Grand River Avenue at Division Street*** is a three leg, signalized intersection. The eastbound approach on Grand River Avenue provides an exclusive left turn lane and two through lanes, while the westbound approach consists of two through lanes and a shared through/right lane. The southbound approach from Division Street provides an exclusive left turn lane and an exclusive-right-turn lane. There are signalized pedestrian crossings along the east leg and north leg of the intersection.

4. ***Grand River Avenue at Bailey Street*** is a three leg, stop-controlled intersection, with Bailey Street operating as the stop-controlled approach. The eastbound approach on Grand River Avenue provides an exclusive left turn lane and two through lanes, while the westbound approach consists of two through lanes and a shared through/right lane. The southbound approach from Bailey Street provides a single right-only lane. There is an unsignalized marked pedestrian crossing just east of the intersection.

Figure 2 illustrates the existing lane configuration and traffic control at each study intersection.

Figure 2. Existing Lane Configuration and Intersection Control



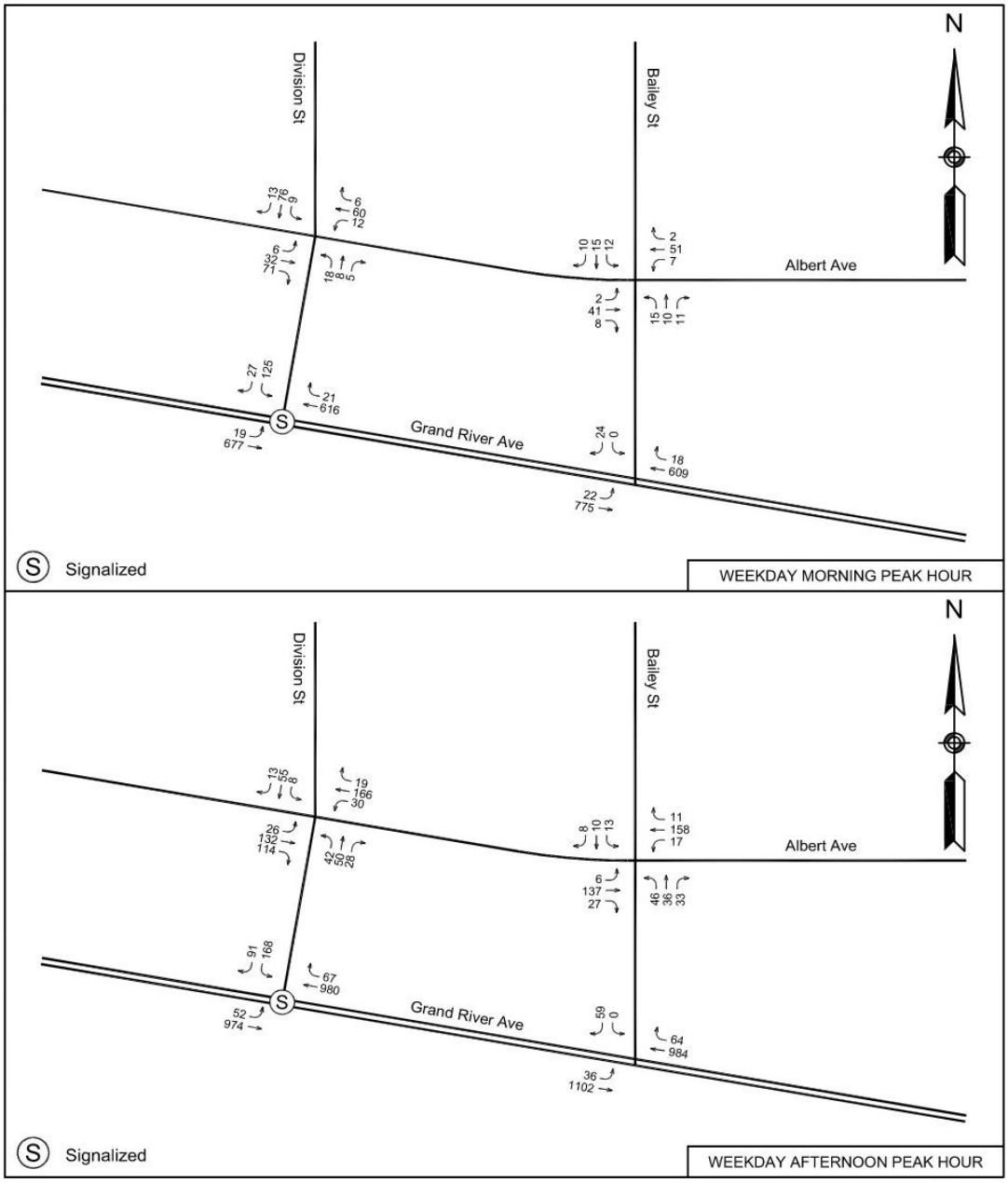
2.2 Traffic Data Collection

Intersection turning movement counts (TMCs) were collected on Thursday January 15, 2026 at the following intersections:

1. Albert Avenue at Division Street
2. Albert Avenue at Bailey Street
3. Grand River Avenue at Division Street
4. Grand River Avenue at Bailey Street

Based on the traffic count data, it was determined that the peak hours of traffic occurred from 7:45-8:45 AM and 4:00-5:00 PM. **Figure 3** presents the existing vehicular traffic volumes. Raw traffic count data is included in **Appendix A**.

Figure 3. 2026 Existing Vehicular Traffic Volumes



2.3 Existing Traffic Operations

Intersection capacity analyses were conducted to evaluate the study intersections based on methods described in the Highway Capacity Manual 7th Edition (HCM) and implemented in Synchro 12 software. Existing traffic signal phasing and timing information was provided by the City and used in this study. The analysis was used to estimate delay and Level of Service (LOS) for given traffic and geometric conditions under 2026 Existing Conditions. This scenario analyzes existing traffic operations to determine existing operating delay and LOS at each study intersection.

LOS provides a measure of the quality of traffic flow provided by a roadway facility, expressed in terms of letter grades with LOS A representing the highest quality traffic flow and minimal delay, and LOS F representing poor traffic operations and significant delay. **Table 1** and **Table 2** below detail the LOS thresholds in terms of delay per vehicle for signalized and unsignalized intersections.

Table 1. Signalized Intersection LOS Thresholds

Level of Service	Delay per Vehicle (seconds)	Description
A	< 10	Free-flow conditions; minimal delay, high comfort.
B	10 to 20	Stable flow; slight delays, good operations.
C	20 to 35	Stable flow; noticeable congestion, acceptable.
D	35 to 55	Approaching unstable flow; high delays, tolerable.
E	55 to 80	Unstable flow; near capacity, poor operations.
F	> 80	Breakdown flow; oversaturated, very poor.

Table 2. Unsignalized Intersection LOS Thresholds

Level of Service	Delay per Vehicle (seconds)	Description
A	< 10	Free-flow conditions; minimal delay, high comfort.
B	10 to 15	Stable flow; slight delays, good operations.
C	15 to 25	Stable flow; noticeable congestion, acceptable.
D	25 to 35	Approaching unstable flow; high delays, tolerable.
E	35 to 50	Unstable flow; near capacity, poor operations.
F	> 50	Breakdown flow; oversaturated, very poor.

The results of the analysis for the 2026 Existing Conditions are presented in **Table 3**.

Table 3. 2026 Existing Capacity Analysis Summary

Location	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th
SIGNALIZED INTERSECTIONS										
Division St at Grand River Ave										
Grand River Ave EB (Left)	C	30.8	0.08	9	30	C	32.7	0.22	24	57
Grand River Ave EB (Through)	A	8.6	0.35	88	120	A	9.7	0.48	135	178
Grand River Ave WB (Through-Right)	B	18.2	0.39	93	119	C	20.6	0.58	156	198
Division St SB (Left)	C	27.5	0.36	62	105	C	29.0	0.44	79	139
Division St SB (Right)	B	15.5	0.02	0	13	B	16.6	0.14	20	48
OVERALL	**B**	**14.9**				**B**	**16.9**			
UNSIGNALIZED INTERSECTIONS										
Bailey St at Albert Ave										
Bailey St NB (Left)	A	9.6	0.02	-	3	B	14.6	0.02	-	3
Bailey St NB (Through-Right)	A	9.2	0.03	-	3	B	12.5	0.32	-	35
Bailey St SB (Left-Through-Right)	A	9.6	0.05	-	5	C	15.0	0.45	-	58
Grand River Ave at Bailey St										
Bailey St SB (Left-Right)	B	12.4	0.07	-	5	C	17.9	0.25	-	25
Division St at Albert Ave										
Albert Ave EB (Left-Through)	A	8.2	0.07	-	5	A	9.6	0.24	-	23
Albert Ave EB (Right)	A	7.7	0.12	-	10	A	7.4	0.29	-	3
Albert Ave WB (Left-Through)	A	8.5	0.11	-	10	B	10.1	0.29	-	30
Albert Ave WB (Right)	A	7.1	0.01	-	0	A	7.3	0.07	-	5
Division St NB (Left)	A	8.6	0.03	-	3	A	9.4	0.09	-	8
Division St NB (Through-Right)	A	7.7	0.02	-	3	A	8.7	0.12	-	10
Division St SB (Left-Through-Right)	A	9.3	0.17	-	15	A	9.1	0.07	-	5

[1]Delay in seconds per vehicle
[2]Level of Service according to HCM
[3]Volume to Capacity Ratio (from HCM Synchro Reports)
[4]Queue in feet per lane: 50th percentile and 95th percentile

2.4 Crash History

Historical crash data for the study area was obtained from the Michigan Traffic Crash Database (Data Query Tool - Michigan Traffic Crash Facts) for 2020-2024. **Figure 4** shows the crash density within the study area. **Table 4** through **Table 6** summarizes crash data for the analysis period. The complete crash data set is provided in **Appendix D**. A total of 162 crashes were recorded in the study area from 2020–2024, with most occurring along Grand River Avenue at the Division Street and Bailey Street intersections. The predominant crash type was rear-end collisions (46%), followed by sideswipe same-direction crashes (20%). Injury crashes accounted for 17% of all crashes, with the remainder classified as property-damage-only; no fatalities occurred during the analysis period. Five pedestrian-involved crashes were reported, and most crashes took place under daylight and dry conditions. Additionally, based on information available on the City's website, none of the study intersections appear on the Top 10 Accident Location list.

Figure 4. Crash Locations 2020-2024

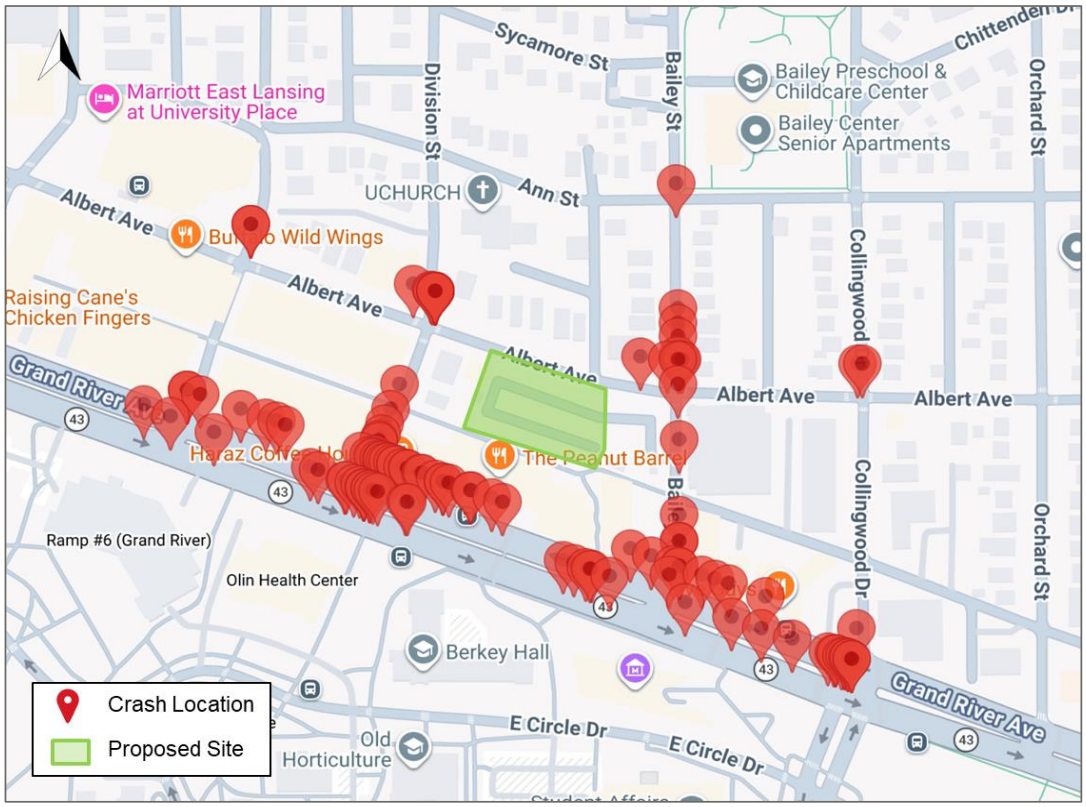


Table 4. Crash Summary – Manner of Collision

Type of Crash	2020	2021	2022	2023	2024	Total	Percent
Angle	3	0	6	7	8	*24*	**15%**
Backing	0	2	3	0	0	*5*	**3%**
Head-On	0	0	1	1	1	*3*	**2%**
Rear-End	10	17	19	20	9	*75*	**46%**
Sideswipe Same Direction	1	8	8	5	10	*32*	**20%**
Sideswipe Opposite Direction	0	0	1	1	0	*2*	**1%**
Single Motor Vehicle	0	0	6	3	2	*11*	**7%**
Pedestrian Involved	0	0	5	0	0	*5*	**3%**
Other/ Unknown	0	0	1	3	1	*5*	**3%**

Table 5. Crash Summary – Injury

Injury/PDO	2020	2021	2022	2023	2024	Total	Percent
PDO	12	23	41	33	26	*135*	**83%**
Injury	2	4	9	7	5	*27*	**17%**

Table 6. Crash Summary – Crash Location

Year	2020	2021	2022	2023	2024	Total	Percent
Intersection Related	6	8	21	17	14	*66*	**41%**
Straight Road	8	15	17	16	14	*70*	**43%**
Driveway Related	0	3	7	4	2	*16*	**10%**
Other	0	1	5	3	1	*10*	**6%**

3 Future Conditions

3.1 Background Growth

Background traffic takes into account future traffic conditions before the addition of the proposed site generated traffic, also referred to as No Build conditions. The background traffic includes the natural growth in traffic as well as additional traffic on the roadway generated by committed and approved developments in the study vicinity that are anticipated to be complete by the time the proposed site build-out occurs.

For this project, the expected Opening Year 2027 and Future Build Year 2032 (5 years beyond opening year) were analyzed. Historical traffic data was obtained along near-by roadways from the Michigan Department of Transportation (MDOT) Traffic Count Database System (TCDS) to determine an appropriate growth factor for this study area. Based on the data collected, an annual growth factor of 0.5% was assumed.

The 2026 Existing Traffic Volumes were grown 0.5% per year to develop the 2027 No Build Traffic Volumes. The 2027 No Build traffic volumes were also grown by 0.5% per year to forecast the 2032 No Build Traffic Volumes. The 2027 and 2032 No Build Vehicular Traffic Volumes are presented in **Figure 5** and **Figure 6**.

Figure 5. 2027 Opening Year No Build Vehicular Traffic Volumes

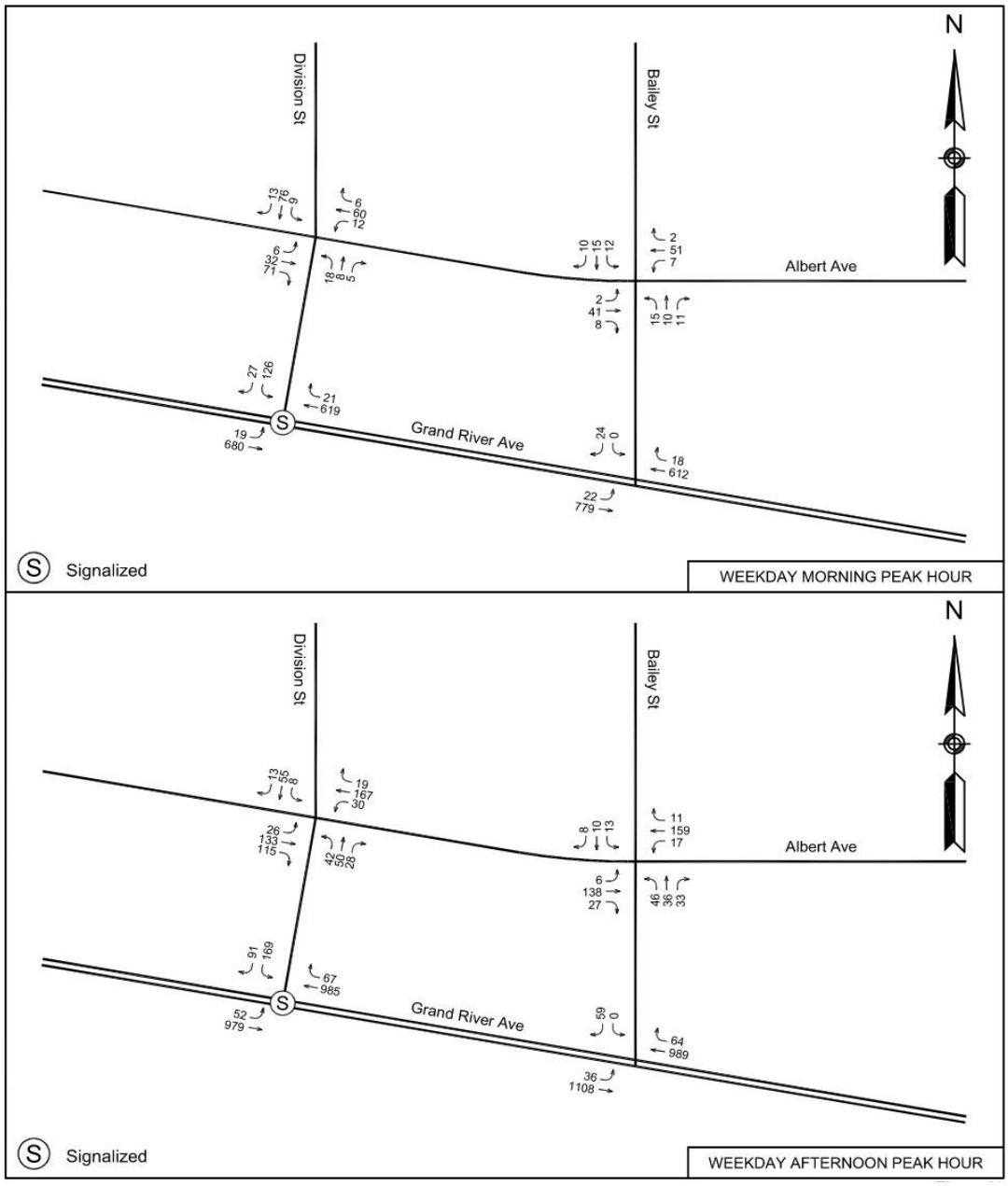
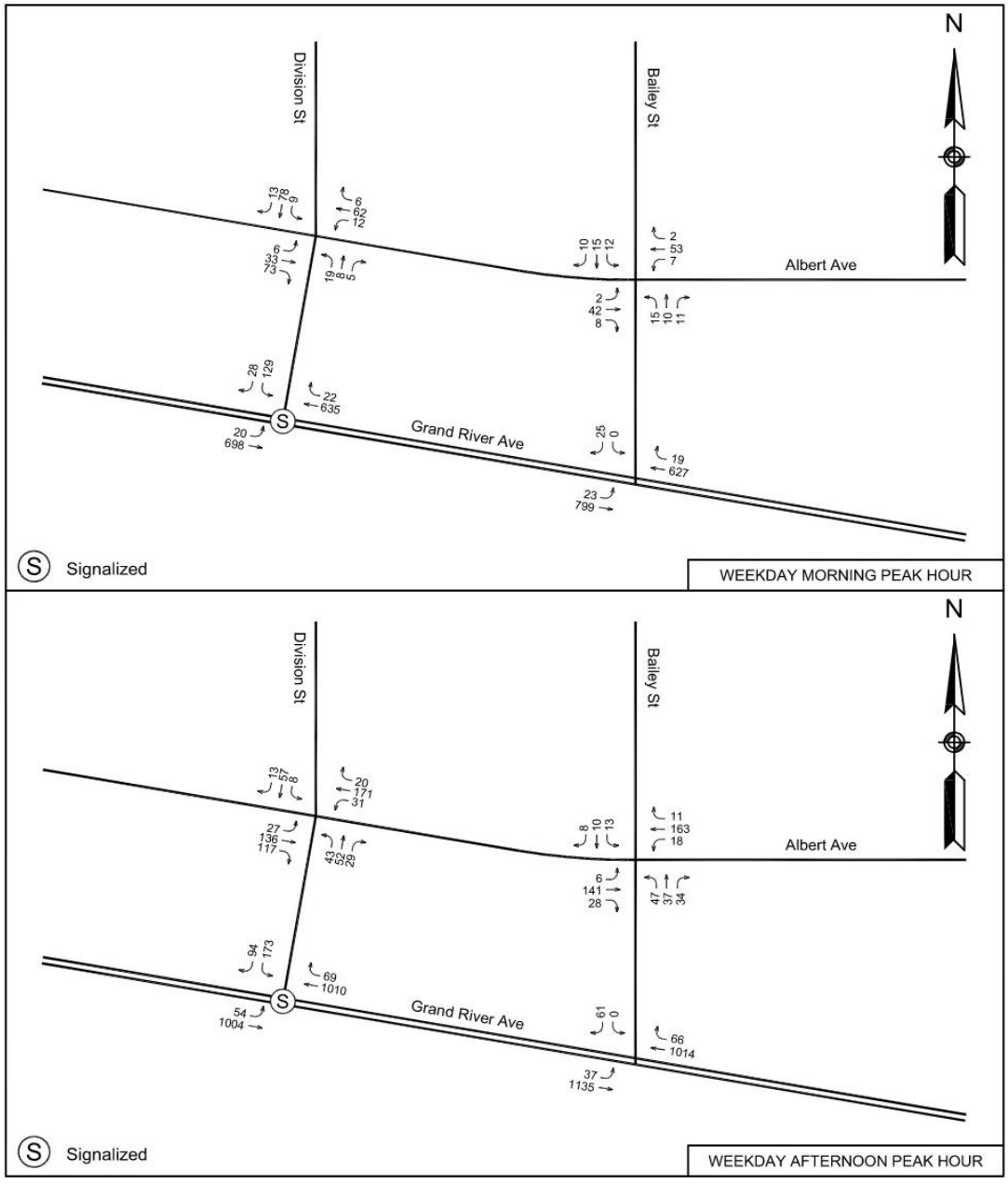


Figure 6. 2032 Future Year No Build Vehicular Traffic Volumes



3.2 No Build Capacity Analysis

Intersection capacity analyses were conducted for the future No Build scenarios, listed below.

- *2027 Opening Year No Build Conditions* – This scenario analyzed the traffic conditions during the year 2027, by growing the existing traffic volumes by the aforementioned growth rate of 0.5% per year at each study intersection.
- *2032 Future Year No Build Conditions* – This scenario analyzed the traffic conditions during the year 2032, by growing the existing traffic volumes by the aforementioned growth rate of 0.5% per year at each study intersection.

Table 7 and **Table 8** summarize the operating delay and LOS at each study intersection for these scenarios.

Table 7. 2027 Opening Year No Build Conditions Summary

Location	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th
SIGNALIZED INTERSECTIONS										
Division St at Grand River Ave										
Grand River Ave EB (Left)	C	30.8	0.08	9	30	C	32.7	0.22	24	57
Grand River Ave EB (Through)	A	8.6	0.35	88	121	A	9.8	0.48	136	180
Grand River Ave WB (Through-Right)	B	18.2	0.39	93	119	C	20.6	0.58	157	200
Division St SB (Left)	C	27.5	0.36	62	105	C	29.0	0.44	80	140
Division St SB (Right)	B	15.5	0.02	0	13	B	16.6	0.14	20	48
OVERALL	**B**	**14.9**				**B**	**16.9**			
UNSIGNALIZED INTERSECTIONS										
Bailey St at Albert Ave										
Bailey St NB (Left)	B	12.9	0.12	-	10	B	12.9	0.12	-	10
Bailey St NB (Through-Right)	B	11.5	0.15	-	13	B	11.5	0.15	-	13
Bailey St SB (Left-Through-Right)	B	12.2	0.09	-	8	B	12.2	0.09	-	8
Grand River Ave at Bailey St										
Bailey St SB (Left-Right)	C	18.0	0.25	-	25	C	18.0	0.25	-	25
Division St at Albert Ave										
Albert Ave EB (Left-Through)	A	8.2	0.07	-	5	B	10.7	0.29	-	30
Albert Ave EB (Right)	A	7.7	0.12	-	10	A	8.7	0.18	-	15
Albert Ave WB (Left-Through)	A	8.5	0.11	-	10	B	11.6	0.36	-	40
Albert Ave WB (Right)	A	7.1	0.01	-	0	A	7.8	0.03	-	3
Division St NB (Left)	A	8.6	0.03	-	3	B	10.1	0.09	-	8
Division St NB (Through-Right)	A	7.7	0.02	-	3	A	9.7	0.15	-	13
Division St SB (Left-Through-Right)	A	9.3	0.17	-	15	B	10.5	0.18	-	15

[1]Delay in seconds per vehicle
[2]Level of Service according to HCM
[3]Volume to Capacity Ratio (from HCM Synchro Reports)
[4]Queue in feet per lane: 50th percentile and 95th percentile

Table 8. 2032 Future Year No Build Conditions Summary

Location	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th
SIGNALIZED INTERSECTIONS										
Division St at Grand River Ave										
Grand River Ave EB (Left)	C	30.8	0.09	10	30	C	32.8	0.23	25	59
Grand River Ave EB (Through)	A	8.7	0.36	92	125	A	9.9	0.49	141	186
Grand River Ave WB (Through-Right)	B	18.4	0.40	96	123	C	20.8	0.59	163	206
Division St SB (Left)	C	27.7	0.37	64	108	C	29.2	0.45	82	144
Division St SB (Right)	B	15.5	0.02	0	13	B	16.7	0.14	22	50
OVERALL	**B**	**15.0**				**B**	**17.1**			
UNSIGNALIZED INTERSECTIONS										
Bailey St at Albert Ave										
Bailey St NB (Left)	A	9.6	0.02		3	B	13.1	0.13		10
Bailey St NB (Through-Right)	A	9.3	0.03		3	B	11.6	0.15		13
Bailey St SB (Left-Through-Right)	A	9.6	0.05		5	B	12.4	0.09		8
Grand River Ave at Bailey St										
Bailey St SB (Left-Right)	B	12.6	0.07		5	C	18.6	0.27		25
Division St at Albert Ave										
Albert Ave EB (Left-Through)	A	8.2	0.08		5	B	10.8	0.29		30
Albert Ave EB (Right)	A	7.7	0.12		10	A	8.8	0.18		18
Albert Ave WB (Left-Through)	A	8.5	0.11		10	B	11.9	0.37		43
Albert Ave WB (Right)	A	7.2	0.01		0	A	7.9	0.03		3
Division St NB (Left)	A	8.6	0.04		3	B	10.1	0.10		8
Division St NB (Through-Right)	A	7.8	0.02		3	A	9.8	0.16		15
Division St SB (Left-Through-Right)	A	9.4	0.17		15	B	10.6	0.18		18

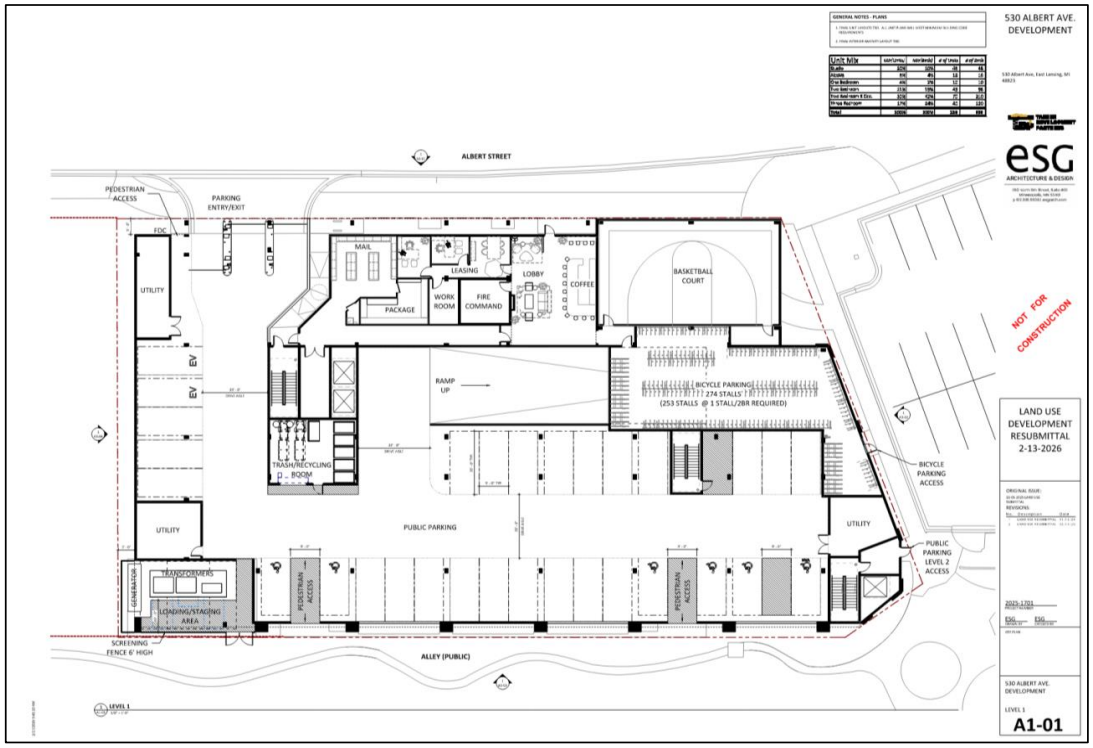
[1]Delay in seconds per vehicle
[2]Level of Service according to HCM
[3]Volume to Capacity Ratio (from HCM Synchro Reports)
[4]Queue in feet per lane: 50th percentile and 95th percentile

3.3 Proposed Development

The proposed development will consist of a mixed-use development including residential housing, a 970-square-foot coffee shop and a parking structure. Two levels of parking will be provided with a total of 83 parking along with 10 floors of residential housing with a total of 236 dwelling units. An additional 6 short-term metered street parking stalls will be provided along Albert Avenue fronting the proposed development.

The proposed site will be accessed via a single driveway along Albert Avenue that has been designed to meet the City's sight distance standards. The site plan provides adequate space for emergency vehicles and trash vehicle access. The site is well-connected to existing sidewalk and bicycle networks providing continuous pedestrian access to nearby parking garages and transit stops. A site plan is presented in **Figure 7**, below.

Figure 7. Proposed Site Plan



3.4 Site Trip Generation

Data contained in the Institute of Transportation Engineers (ITE) Trip Generation Manual (12th Edition) was utilized to estimate the site traffic generated by the proposed development. For the residential portion of the development, Land Use 221 Multifamily Housing (Mid-Rise) was used. By definition, this land use is for housing, including apartments that are between 4 and 10 floors of living space. The number of expected vehicle trips were calculated for the proposed land use based on the number of dwelling units. Trips for the coffee shop were estimated using Land Use 936 Coffee/Donut Shop without Drive-Through, based on square footage. **Table 9** presents the new site generated trips. ITE Reports are included in **Appendix B**.

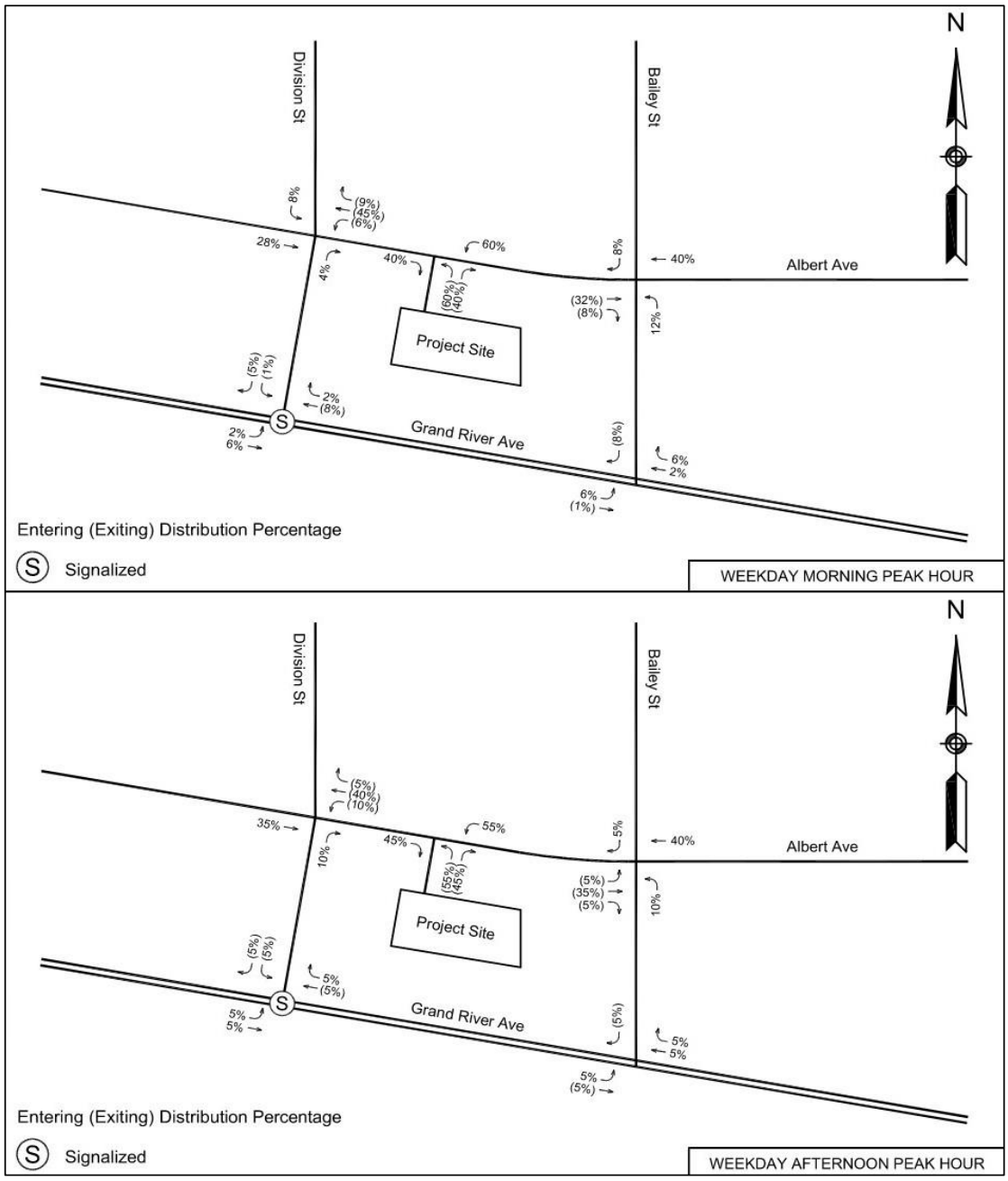
Table 9. Site Trip Generation

Land Use Code	Units	Trip Type	AM Peak Hour Trips			PM Peak Hour Trips		
			Enter	Exit	Total	Enter	Exit	Total
221 - Multifamily Housing (Mid-Rise)	236 Units	Vehicle	10	55	**65**	47	16	**63**
936 – Coffee/Donut Shop w/o Drive-Through	970 SF	Vehicle	46	43	**89**	15	16	**31**
		TOTAL	56	98	**154**	62	32	**94**

3.5 Site Trips Distribution

Based on existing traffic patterns and surrounding area land uses, the trip distribution for vehicular traffic was developed as shown in **Figure 8**.

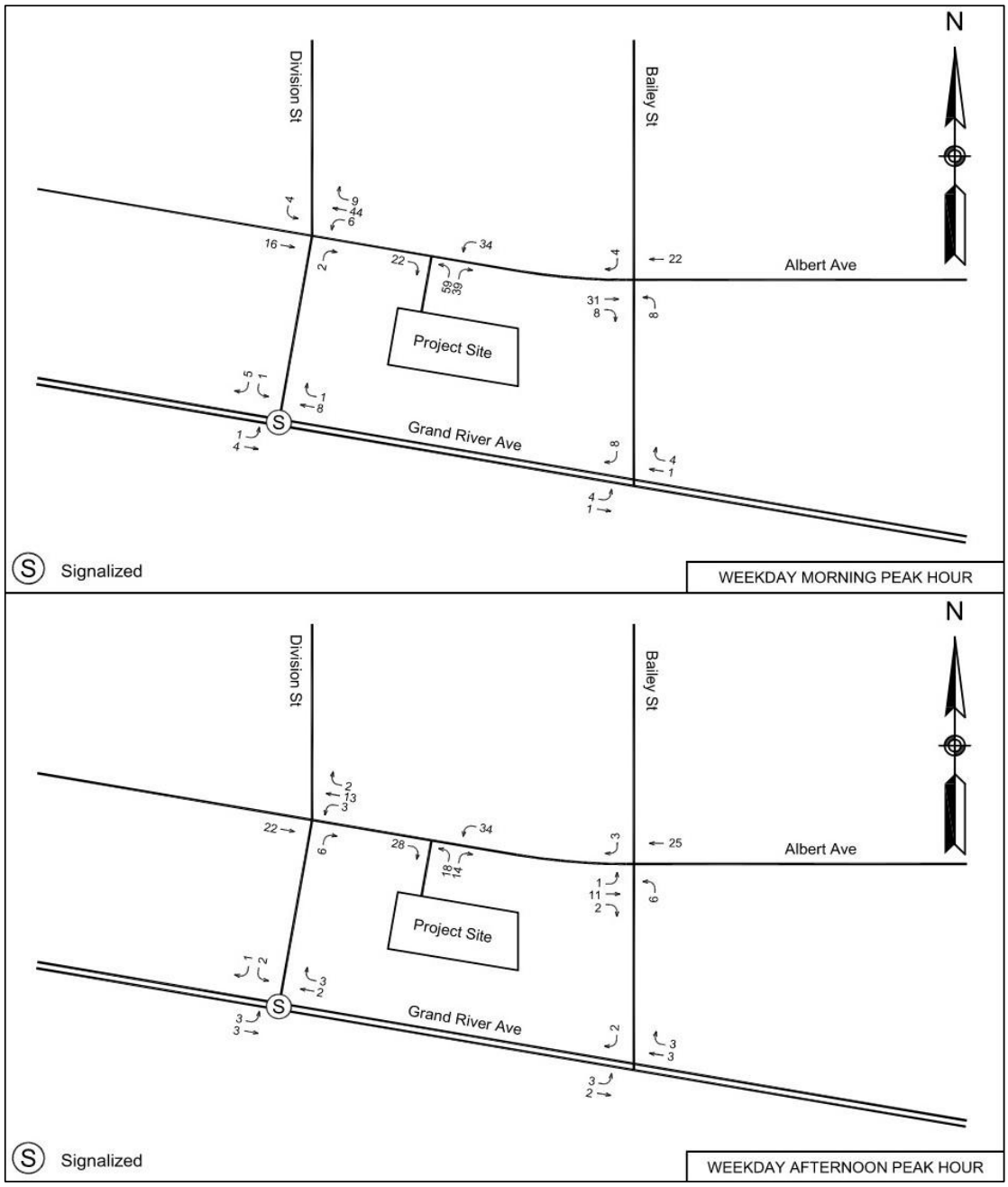
Figure 8. Development Vehicular Trip Distribution



3.6 Site Trip Volumes

Based on the proposed trip generation and trip distribution for vehicular traffic, the development-related new traffic volumes are presented in was developed as shown in **Figure 9**.

Figure 9. Development Vehicular Traffic Volumes



3.7 Build Traffic Volumes

By adding the development-related traffic volumes to the previously identified 2027 Opening Year No Build and 2032 Future Year (5 years beyond opening year) No Build conditions, this presents the 2027 Opening Year Build and 2032 Future Year Build scenarios.

The 2027 and 2032 Build Vehicular Traffic Volumes are presented in **Figure 10** and **Figure 11**.

Figure 10. 2027 Build Vehicular Traffic Volumes

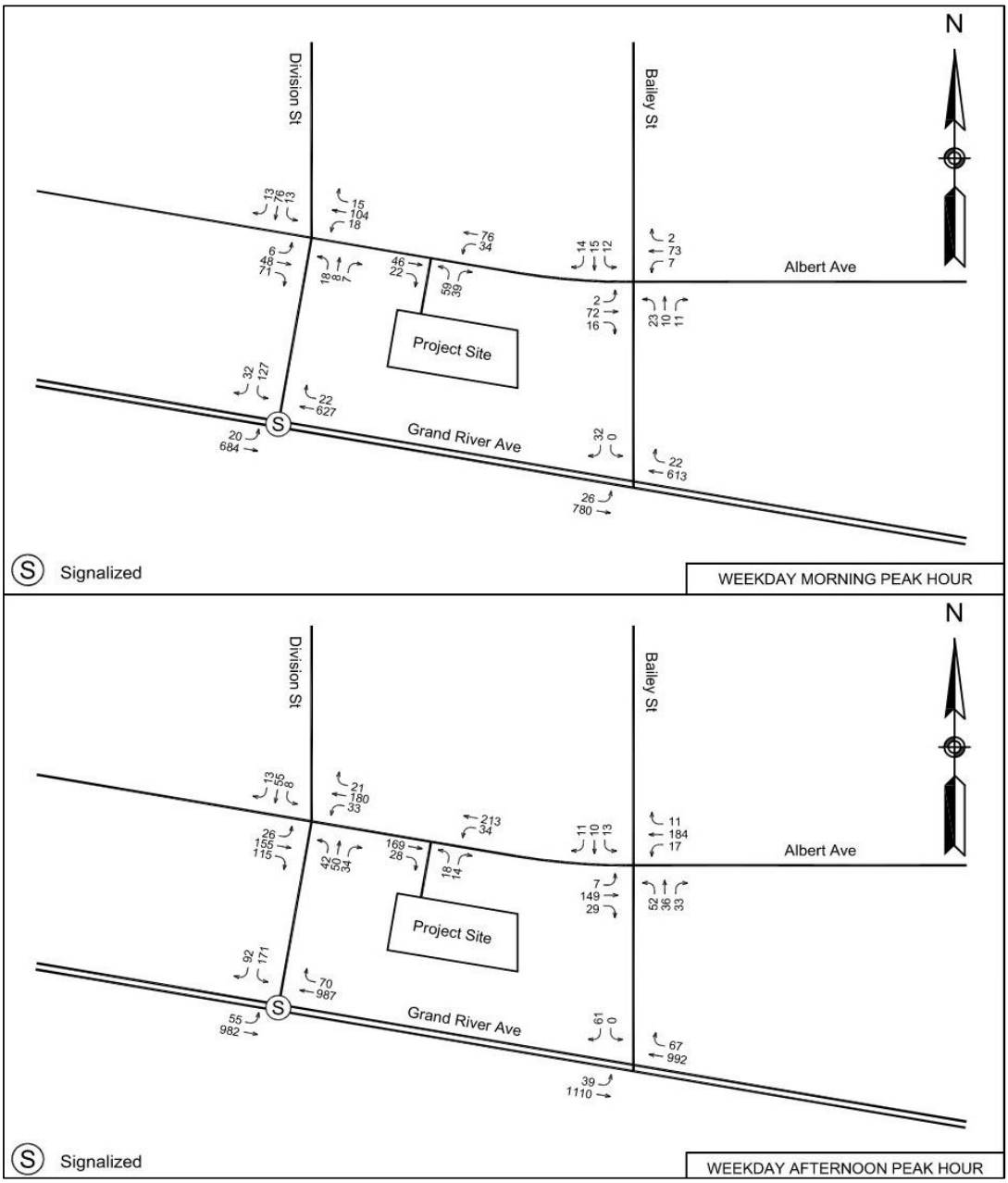
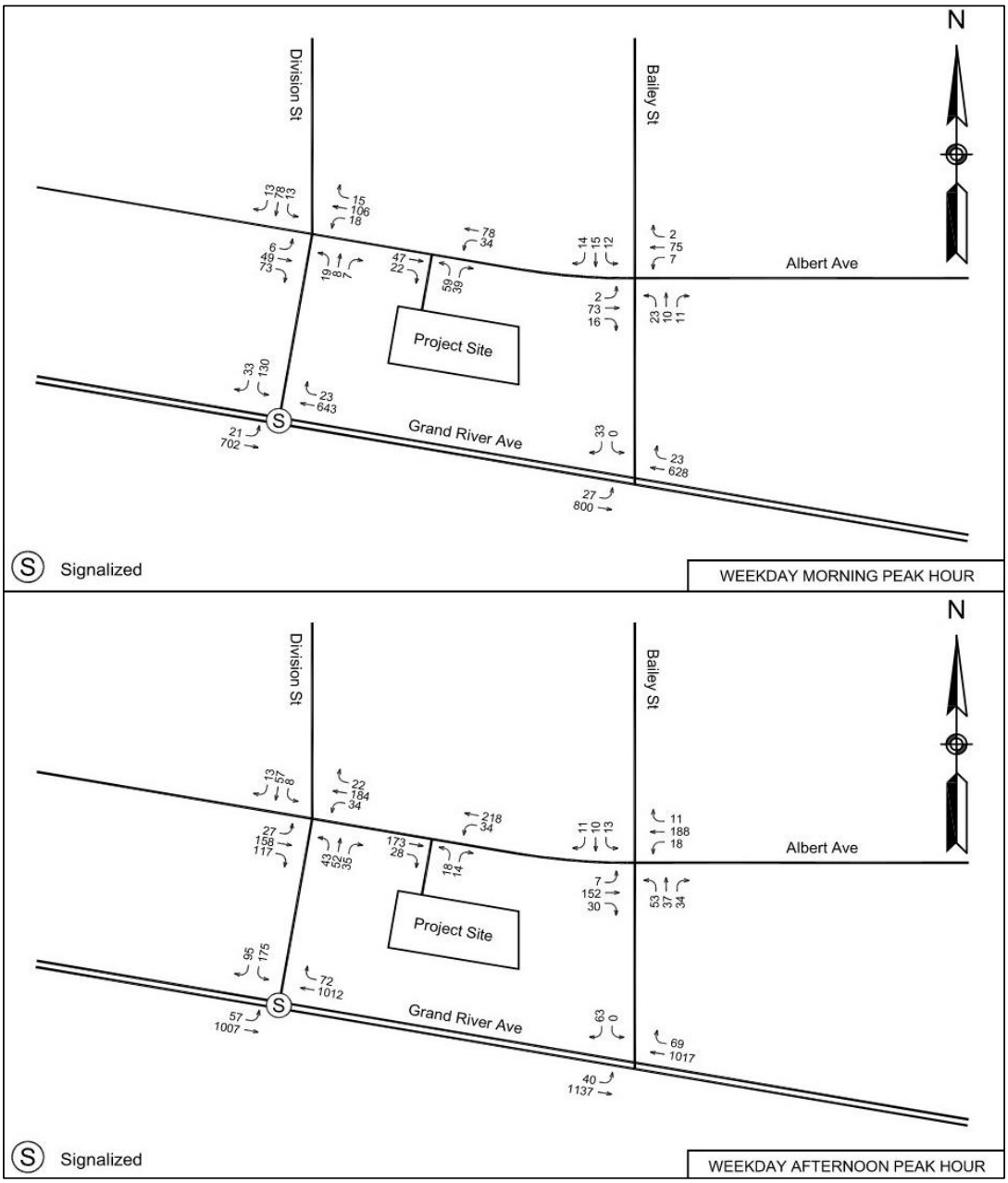


Figure 11. 2032 Build Vehicular Traffic Volumes



3.8 Build Capacity Analysis

Intersection capacity analyses were conducted for the future Build scenarios, listed below. Traffic signal timing splits were retained from existing conditions to review if future retiming would be recommended as part of this development's off-site mitigation.

- *2027 Build Conditions* – This scenario analyzed the year 2027 traffic conditions with the addition of the new site generated traffic volumes at each study intersection.
- *2032 Build Conditions* – This scenario analyzed the year 2032 traffic conditions with the addition of the new site generated traffic volumes at each study intersection.

Table 10 and Table 11 summarize the operating delay and LOS at each study intersection for these scenarios.

Table 10. 2027 Build Conditions Summary

Location	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th
SIGNALIZED INTERSECTIONS										
Division St at Grand River Ave										
Grand River Ave EB (Left)	C	30.8	0.09	10	30	C	32.9	0.23	26	59
Grand River Ave EB (Through)	A	8.6	0.35	90	122	A	9.8	0.48	136	181
Grand River Ave WB (Through-Right)	B	18.3	0.39	95	121	C	20.7	0.58	158	201
Division St SB (Left)	C	27.6	0.36	63	106	C	29.1	0.45	81	142
Division St SB (Right)	B	15.5	0.02	0	14	B	16.6	0.14	21	48
OVERALL	**B**	**15.0**				**B**	**17.0**			
UNSIGNALIZED INTERSECTIONS										
Bailey St at Albert Ave										
Bailey St NB (Left)	B	10.2	0.04	-	3	B	13.8	0.15	-	13
Bailey St NB (Through-Right)	A	9.5	0.03	-	3	B	11.8	0.15	-	13
Bailey St SB (Left-Through-Right)	A	9.9	0.06	-	5	B	12.6	0.10	-	8
Grand River Ave at Bailey St										
Bailey St SB (Left-Right)	B	12.7	0.09	-	8	C	18.3	0.26	-	25
Division St at Albert Ave										
Albert Ave EB (Left-Through)	A	8.5	0.11	-	8	B	11.2	0.33	-	35
Albert Ave EB (Right)	A	7.8	0.12	-	10	A	8.8	0.18	-	18
Albert Ave WB (Left-Through)	A	9.1	0.19	-	18	B	12.3	0.39	-	48
Albert Ave WB (Right)	A	7.3	0.02	-	3	A	7.9	0.03	-	3
Division St NB (Left)	A	8.9	0.04	-	3	B	10.2	0.10	-	8
Division St NB (Through-Right)	A	7.9	0.02	-	3	A	9.9	0.17	-	15
Division St SB (Left-Through-Right)	A	9.7	0.18	-	18	B	10.7	0.18	-	18
Site Driveway at Albert Ave										
Site Driveway NB (Left-Right)	A	9.9	0.13	-	10	B	11.2	0.06	-	5

[1]Delay in seconds per vehicle
[2]Level of Service according to HCM
[3]Volume to Capacity Ratio (from HCM Synchro Reports)
[4]Queue in feet per lane: 50th percentile and 95th percentile

Table 11. 2032 Build Conditions Summary

Location	Weekday Morning Peak Hour					Weekday Afternoon Peak Hour				
	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th	LOS[1]	Delay[2] (s/veh)	v/c[3]	Queue[4] (ft) 50th	Queue[4] (ft) 95th
SIGNALIZED INTERSECTIONS										
Division St at Grand River Ave										
Grand River Ave EB (Left)	C	30.9	0.09	10	31	C	33.0	0.24	27	61
Grand River Ave EB (Through)	A	8.7	0.36	92	125	A	9.9	0.49	141	187
Grand River Ave WB (Through-Right)	B	18.4	0.40	98	124	C	20.9	0.60	163	207
Division St SB (Left)	C	27.7	0.37	66	108	C	29.3	0.46	83	145
Division St SB (Right)	B	15.5	0.03	0	14	B	16.7	0.15	23	51
OVERALL	**B**	**15.1**				**B**	**17.2**			
UNSIGNALIZED INTERSECTIONS										
Bailey St at Albert Ave										
Bailey St NB (Left)	B	10.2	0.04	-	3	B	14.0	0.16	-	13
Bailey St NB (Through-Right)	A	9.6	0.03	-	3	B	12.0	0.16	-	15
Bailey St SB (Left-Through-Right)	A	9.9	0.06	-	5	B	12.7	0.10	-	8
Grand River Ave at Bailey St										
Bailey St SB (Left-Right)	B	12.8	0.10	-	8	C	18.8	0.28	-	28
Division St at Albert Ave										
Albert Ave EB (Left-Through)	A	8.5	0.11	-	10	B	11.4	0.34	-	38
Albert Ave EB (Right)	A	7.9	0.12	-	10	A	8.9	0.19	-	18
Albert Ave WB (Left-Through)	A	9.2	0.19	-	18	B	12.5	0.41	-	50
Albert Ave WB (Right)	A	7.3	0.02	-	3	A	7.9	0.02	-	3
Division St NB (Left)	A	8.9	0.04	-	3	B	10.3	0.10	-	8
Division St NB (Through-Right)	A	8.0	0.02	-	3	A	10.0	0.18	-	15
Division St SB (Left-Through-Right)	A	9.8	0.19	-	18	B	10.8	0.19	-	18
Site Driveway at Albert Ave										
Site Driveway NB (Left-Right)	A	9.9	0.13	-	10	B	11.2	0.06	-	5

[1]Delay in seconds per vehicle
[2]Level of Service according to HCM
[3]Volume to Capacity Ratio (from HCM Synchro Reports)
[4]Queue in feet per lane: 50th percentile and 95th percentile

4 Parking

The site is proposed to be developed on a portion of the existing Bailey Lot adjacent to Michigan State University as shown in **Figure 12.** The proposed site will provide a total of 83 public parking stalls on Level 1 and 2 of the proposed development. An additional 6 short-term on-street metered parking spaces will be provided fronting the property along Albert Avenue. With the proposed development the Bailey Lot will be reduced to 35 total parking spaces.

Figure 12. Proposed Site and Adjacent Parking Facilities

A parking generation analysis was conducted using methodologies presented in the ITE Parking Generation Manual (5th Edition) detailed in **Table 12**. Based on ITE methodologies, it is recommended a minimum of 318 total parking spaces for the development. The ITE calculations do not account for reductions in vehicle use due to multi-modal options available to residents and as such the calculations are conservative. It is anticipated that residents will primarily utilize the on-site parking garage and the Division Street garage.

The Division Street Garage as well as the impacted Bailey Lot were considered in the parking evaluation. The Division Street garage has a total of 615 parking spaces and the existing Bailey Lot has 121 parking spaces, however with the proposed development the Bailey Lot will be reduced to about 35 parking spaces.

Table 12. Parking Generation

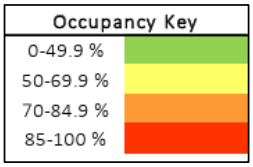
LAND USE	Formula / Avg. Rate	Unit		Parking	Notes
ITE: Land Use 221, Multifamily Housing (Mid-Rise)	P =1.34(X) - 8.73	Dwelling Units	236	308	Weekday
ITE: Land Use 936, Coffee Shop without Drive-Through Window	P = 10.49(X)	1000 SF GFA	0.97	10	Weekday

The City's Parking Master Plan Update FY23 and parking counts collected in April 2025 were referenced to estimate the existing parking demand. Parking occupancy for the Division Street garage was averaged for weekdays (Tuesday, Wednesday, Thursday) during the collection period from April 2025. The expected development parking demand was estimated based on ITE hourly parking rates (included in **Appendix B**). Based on the existing parking occupancy and the anticipated parking demand for the new development, an overall demand was determined for each time period. The new development will have 83 spaces in the parking structure and it is recommended that vehicles will also utilize the existing Division Street Garage. **Table 13** shows the parking occupancy for existing Division Street garage and the total demand including the proposed development, with the corresponding **Figure 13,** detailing the legend. The total demand spot inventory is the combination of the proposed development parking spaces and the Division Street parking garage. It is expected that the total proposed parking space between the development garage and the Division Street garage inventory will reach 77% occupancy at the PM peak and 74% occupancy during overnight hours.

Table 13. Development and Division Street Garage Parking Occupancy

Parking	Inventory	A.M. Occupancy				P.M. Occupancy												A.M.	
		8:00		10:00		12:30		2:00		4:00		6:00		8:00		10:00		12:00	
Existing Parking (Division Street Garage)	615	254	41%	293	48%	327	53%	337	55%	305	50%	263	43%	256	42%	260	42%	211	34%
New Development Parking Demand		198		172		158		151		178		206		234		277		308	
Proposed Parking (Development + Division Street Garage)	698	452	65%	465	67%	485	69%	488	70%	484	69%	469	67%	490	70%	537	77%	518	74%

Figure 13. Occupancy Key



The Bailey Street Lot was also evaluated based on the reduction of available parking stalls. Currently the Bailey Lot has 121 spaces with a peak occupancy of 65% based on April 2025 parking occupancy counts (**Table 14**).

Table 14. Existing Bailey Lot Occupancy

Parking	Inventory	A.M. Occupancy				P.M. Occupancy												A.M.	
		8:00		10:00		12:30		2:00		4:00		6:00		8:00		10:00		12:00	
Lot 11: Bailey Lot (Current)	121	28	23%	48	39%	64	53%	70	58%	65	54%	79	65%	65	54%	52	43%	33	28%

With the proposed development, the Bailey Lot will be reduced to 35 parking spaces and as such a portion of the current parking demand will need to park elsewhere. It is anticipated that these displaced vehicles will primarily park in the Bailey Street garage, the proposed development garage, or the Division Street garage. **Table 15** details the estimated total parking occupancy including the proposed development demand and reduced Bailey Lot demand. As shown below, it is expected that the total proposed parking space between the development garage, Division Street garage, Bailey Garage, and remaining Bailey Lot inventory will reach 79% occupancy at the PM peak and 74% occupancy during overnight hours indicating sufficient parking availability for the new development demand and displaced Bailey Lot parking.

Table 15. Total Parking Occupancy

Parking	Inventory	A.M. Occupancy				P.M. Occupancy												A.M.	
		8:00		10:00		12:30		2:00		4:00		6:00		8:00		10:00		12:00	
Development+Division Street Garage+ Reduced Bailey Lot+Bailey Garage	749	483	64%	516	69%	556	74%	565	75%	554	74%	553	74%	558	74%	592	79%	555	74%

Based on findings of the traffic study, it can be concluded that the development and displaced Bailey Lot occupancy can be supported without adversely affecting the surrounding parking network. In addition to the Division Street Garage, there are additional parking garages within 0.25 miles of the proposed development including the Charles Street Garage (Lot 3), Albert Avenue Garage (Lot 1), M.A.C Avenue Garage (Lot 12), and the Grove Street Garage (Lot 9) as shown in **Figure 14**. Based on averaged weekday parking counts from April 2025 (**Table 16**), all garages have a current occupancy well below 70%, with the exception of the Albert Street Garage which has an occupancy rate of 70% at peak PM.

Lastly, the City has notified the development team that approximately 215 parking passes are available for purchase by the developer to provide long-term parking security for the development. The City has clarified that the majority of these parking passes are available in the Division Street Garage and the Charles Street Garage. In addition, residents who are also Michigan State University students have the additional option to purchase a parking pass in the commuter lot for the University, which has regular bus access for convenience.

Figure 14. City of East Lansing Parking Areas

Source: City of East Lansing Downtown Parking Guide

Table 16. Additional Parking Total Occupancy

Parking Facility	Inventory	A.M. Occupancy				P.M. Occupancy												A.M.	
		8:00		10:00		12:30		2:00		4:00		6:00		8:00		10:00		12:00	
Lot 1: Albert Ave Garage	614	375	61%	407	66%	408	66%	402	65%	371	60%	362	59%	415	68%	428	70%	403	66%
Lot 3: Charles Street Garage	679	279	41%	400	59%	443	65%	450	66%	411	61%	319	47%	303	45%	277	41%	255	38%
Lot 9: Grove Street Garage	406	254	63%	262	64%	257	63%	255	63%	258	64%	237	58%	252	62%	247	61%	234	58%
Lot 12: MAC Garage	238	130	55%	143	60%	143	60%	138	58%	125	52%	90	38%	99	41%	107	45%	105	44%

5 Conclusions

Based on the study results, the following conclusions were made:

- The development is projected to generate 154 new vehicular trips during the AM peak hour (56 enter, 98 exit) and 94 new vehicular trips during the PM peak hour (62 enter, 32 exit).
- The vehicular capacity analysis results indicate that the proposed development will have negligible impact to the surrounding roadway network. All study area intersections are expected to operate at comparable LOS to background 2027 and 2032 conditions.
- Based on the vehicular capacity analysis, all site traffic can effectively enter and exit the proposed site driveway without significant delays or queues. Adjacent intersections queues will not block site driveway based on 95th percentile queue analysis.
- The multimodal analysis indicated that the proposed site will not negatively impact current multimodal traffic operations. The site plan maintains the existing sidewalk that fronts the property. A continuous sidewalk and bicycle networks are currently provided between the sidewalk and area roadways. No improvements are recommended to the existing pedestrian and bicycle infrastructure.
- A total of 162 crashes were reported within the study area between 2020-2024. Rear-end collisions were the most predominant crash type. Seventeen percent of crashes involved injuries, with no fatalities reported, and five pedestrian-involved crashes occurred during the analysis period. None of the study intersections appear on the City's Top 10 Accident Location list.
- The parking analysis indicated that the development can be supported without adversely affecting the surrounding parking network. The development is estimated to generate demand for 318 parking spaces, which can be accommodated through the on-site garage and the Division Street Garage. Additionally, nearby garages also maintain occupancy rates generally below 70%, providing further flexibility.
- Parking provided in the on-site garage will be public parking and residents of the proposed development will not be issued a permit to park within the development parking structure.
- No additional improvements are required as a result of this development.

Appendix A Traffic Volumes

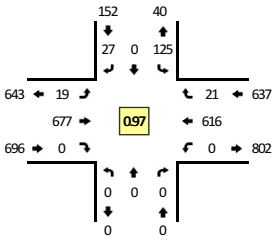
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

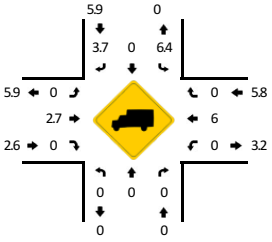
LOCATION: Division St -- Grand River Ave
CITY/STATE: East Lansing, MI

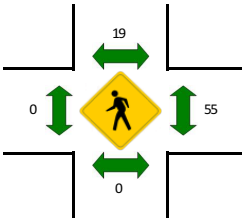
QC JOB #: 17405701
DATE: Thu, Jan 15 2026

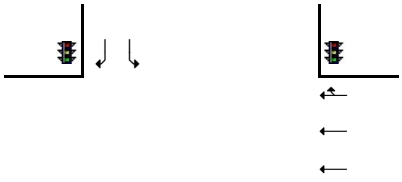
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

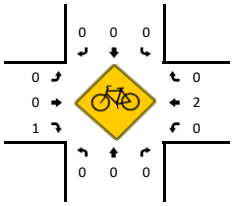


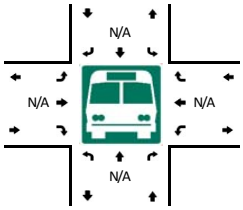
TRUE DATA TO IMPROVE MOBILITY

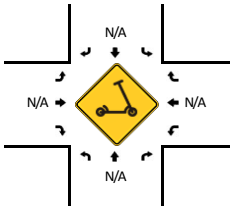












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	8	0	0	0	1	65	0	0	0	80	3	0	157	
7:15 AM	0	0	0	0	6	0	4	0	1	103	0	0	0	110	1	0	225	
7:30 AM	0	0	0	0	21	0	3	0	4	134	0	0	0	140	2	0	304	
7:45 AM	0	0	0	0	31	0	8	0	3	156	0	0	0	177	6	0	381	1067
8:00 AM	0	0	0	0	38	0	5	0	6	183	0	0	0	140	3	0	375	1285
8:15 AM	0	0	0	0	38	0	7	0	6	177	0	0	0	150	2	0	380	1440
8:30 AM	0	0	0	0	18	0	7	0	4	161	0	0	0	149	10	0	349	1485
8:45 AM	0	0	0	0	29	0	4	0	6	156	0	0	0	162	4	0	361	1465

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	124	0	32	0	12	624	0	0	0	708	24	0	1524
Heavy Trucks	0	0	0		0	0	0		0	24	0		0	20	0		44
Buses																	
Pedestrians		0				16				0				32			48
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

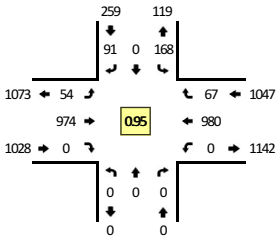
Type of peak hour being reported: Intersection Peak

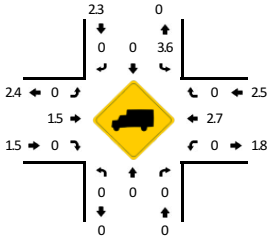
Method for determining peak hour: Total Entering Volume

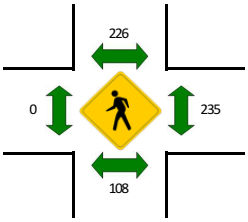
LOCATION: Division St -- Grand River Ave
CITY/STATE: East Lansing, MI

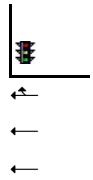
QC JOB #: 17405702
DATE: Thu, Jan 15 2026

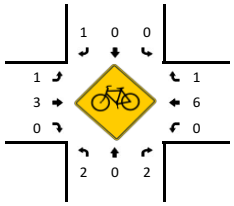
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

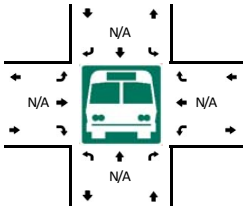


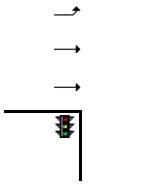


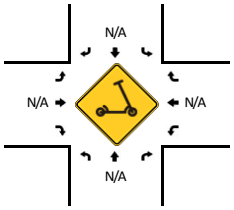












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	43	0	24	0	13	255	0	0	0	265	17	0	617	
4:15 PM	0	0	0	0	33	0	26	0	18	235	0	1	0	252	19	0	584	
4:30 PM	0	0	0	0	46	0	26	0	11	235	0	1	0	236	13	0	568	
4:45 PM	0	0	0	0	46	0	15	0	10	249	0	0	0	227	18	0	565	2334
5:00 PM	0	0	0	0	38	0	13	0	11	226	0	0	0	240	21	0	549	2266
5:15 PM	0	0	0	0	29	0	11	0	14	232	0	0	0	246	17	0	549	2231
5:30 PM	0	0	0	0	40	0	23	0	7	209	0	0	0	250	25	0	554	2217
5:45 PM	0	0	0	0	39	0	11	0	16	224	0	1	0	262	18	0	571	2223

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	172	0	96	0	52	1020	0	0	0	1060	68	0	2468
Heavy Trucks	0	0	0		4	0	0		0	24	0		0	20	0		48
Buses																	
Pedestrians		168				248				0				368			784
Bicycles	4	0	0		0	0	0		0	4	0		0	12	0		20
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

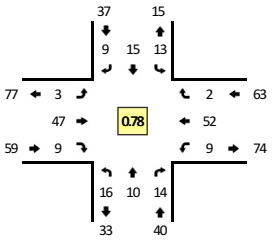
Type of peak hour being reported: Intersection Peak

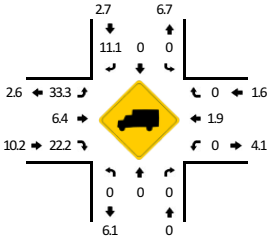
Method for determining peak hour: Total Entering Volume

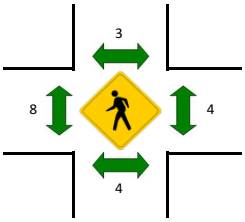
LOCATION: Bailey St -- Albert Ave
CITY/STATE: East Lansing, MI

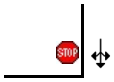
QC JOB #: 17405703
DATE: Thu, Jan 15 2026

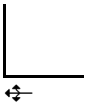
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

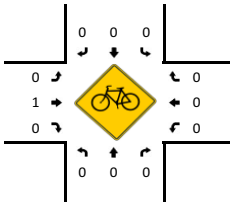


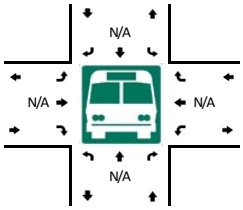


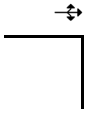


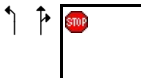


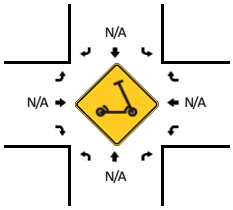












15-Min Count Period Beginning At	Bailey St (Northbound)				Bailey St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	4	1	0	2	0	1	0	0	5	1	0	0	4	0	0	18	
7:15 AM	2	1	1	0	2	0	0	0	0	4	1	0	1	2	0	0	14	
7:30 AM	4	3	2	0	0	1	0	0	1	11	3	0	1	9	1	0	36	
7:45 AM	4	3	3	0	2	4	2	0	0	11	2	0	4	14	0	0	49	117
8:00 AM	0	5	1	0	3	6	1	0	1	8	4	0	1	16	0	0	46	145
8:15 AM	5	0	4	0	3	4	2	0	1	9	1	0	0	14	0	0	43	174
8:30 AM	6	2	3	0	4	1	5	0	0	13	1	0	2	7	2	0	46	184
8:45 AM	5	3	6	0	3	4	1	0	1	17	3	0	6	15	0	0	64	199

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	12	24	0	12	16	4	0	4	68	12	0	24	60	0	0	256
Heavy Trucks	0	0	0		0	0	0		0	8	4		0	0	0		12
Buses																	
Pedestrians		0				4				20				8			32
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

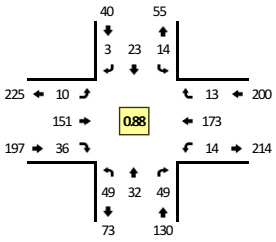
Type of peak hour being reported: Intersection Peak

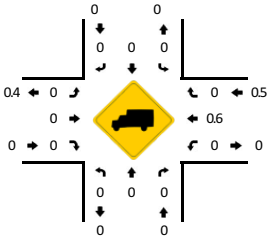
Method for determining peak hour: Total Entering Volume

LOCATION: Bailey St -- Albert Ave
CITY/STATE: East Lansing, MI

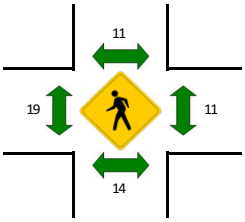
QC JOB #: 17405704
DATE: Thu, Jan 15 2026

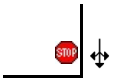
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

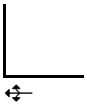


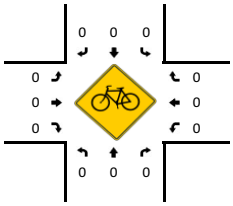


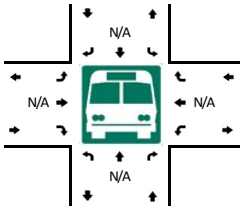
TRUE DATA TO IMPROVE MOBILITY

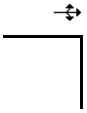


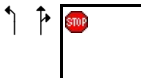


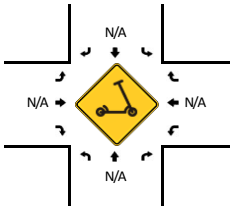












15-Min Count Period Beginning At	Bailey St (Northbound)				Bailey St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	7	8	7	0	4	4	4	0	1	31	8	0	4	39	1	0	118	
4:15 PM	14	14	12	0	2	3	1	0	2	34	8	0	5	48	2	0	145	
4:30 PM	10	9	10	0	3	3	2	0	2	39	4	0	4	45	1	0	132	
4:45 PM	15	5	4	0	4	0	1	0	1	33	7	0	4	26	7	0	107	502
5:00 PM	13	8	12	0	1	3	2	0	4	50	7	0	3	56	3	0	162	546
5:15 PM	8	12	9	0	4	12	0	0	1	36	11	0	3	37	4	0	137	538
5:30 PM	17	4	14	0	4	4	1	0	2	27	10	0	5	38	0	0	126	532
5:45 PM	11	8	14	0	5	4	0	0	3	38	8	0	3	42	6	0	142	567

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	52	32	48	0	4	12	8	0	16	200	28	0	12	224	12	0	648
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	4	0		4
Buses																	
Pedestrians		16				8				16				4			44
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

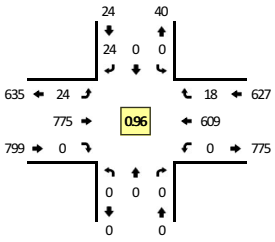
Type of peak hour being reported: Intersection Peak

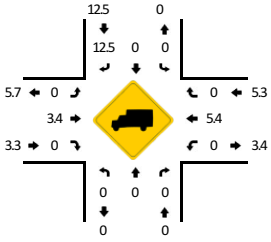
Method for determining peak hour: Total Entering Volume

LOCATION: Bailey St -- Grand River Ave
CITY/STATE: East Lansing, MI

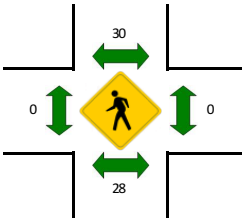
QC JOB #: 17405705
DATE: Thu, Jan 15 2026

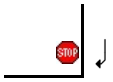
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

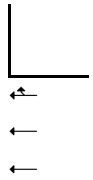


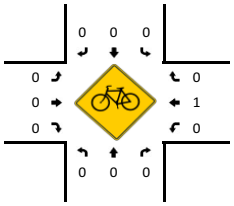


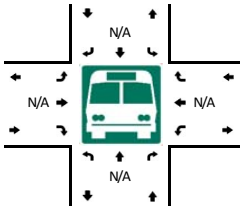
TRUE DATA TO IMPROVE MOBILITY

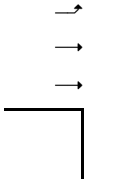


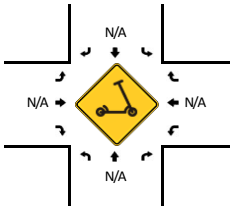












15-Min Count Period Beginning At	Bailey St (Northbound)				Bailey St (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	3	0	3	70	0	0	0	88	2	0	166	
7:15 AM	0	0	0	0	0	0	2	0	2	105	0	0	0	107	3	0	219	
7:30 AM	0	0	0	0	0	0	3	0	5	148	0	0	0	137	2	0	295	
7:45 AM	0	0	0	0	0	0	9	0	4	182	0	1	0	175	5	0	376	1056
8:00 AM	0	0	0	0	0	0	6	0	8	215	0	0	0	146	4	0	379	1269
8:15 AM	0	0	0	0	0	0	4	0	4	210	0	0	0	143	2	0	363	1413
8:30 AM	0	0	0	0	0	0	5	0	6	168	0	1	0	145	7	0	332	1450
8:45 AM	0	0	0	0	0	0	8	0	2	186	0	0	0	162	7	0	365	1439

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	24	0	32	860	0	0	0	584	16	0	1516
Heavy Trucks	0	0	0		0	0	4		0	24	0		0	36	0		64
Buses																	
Pedestrians		44				64				0				0			108
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

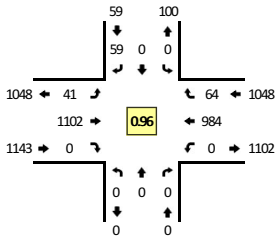
Type of peak hour being reported: Intersection Peak

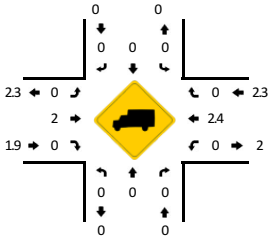
Method for determining peak hour: Total Entering Volume

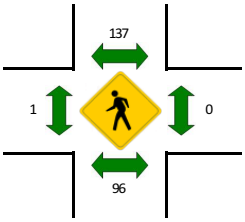
LOCATION: Bailey St -- Grand River Ave
CITY/STATE: East Lansing, MI

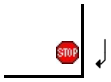
QC JOB #: 17405706
DATE: Thu, Jan 15 2026

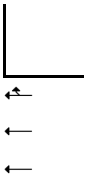
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:00 PM -- 4:15 PM

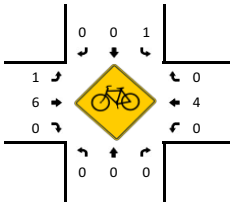


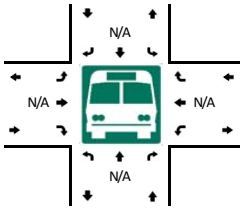


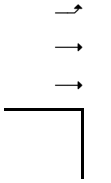


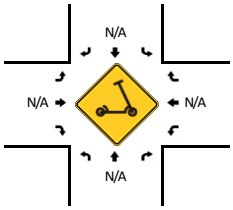












15-Min Count Period Beginning At	Bailey St (Northbound)				Bailey St (Southbound)				Grand River Ave (Eastbound)				Grand River Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	23	0	9	284	0	2	0	259	10	0	587	
4:15 PM	0	0	0	0	0	0	9	0	13	270	0	0	0	271	20	0	583	
4:30 PM	0	0	0	0	0	0	15	0	8	271	0	1	0	238	15	0	548	
4:45 PM	0	0	0	0	0	0	12	0	6	277	0	2	0	216	19	0	532	2250
5:00 PM	0	0	0	0	1	0	12	0	10	259	0	1	0	255	14	0	552	2215
5:15 PM	0	0	0	0	0	0	23	0	14	249	0	2	0	253	17	0	558	2190
5:30 PM	0	0	0	0	0	0	15	0	15	233	0	1	0	270	10	0	544	2186
5:45 PM	0	0	0	0	0	0	15	0	7	247	0	2	0	243	12	0	526	2180

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	92	0	36	1136	0	8	0	1036	40	0	2348
Heavy Trucks	0	0	0		0	0	0		0	28	0		0	16	0		44
Buses																	
Pedestrians		108				168				0				0			276
Bicycles	0	0	0		4	0	0		0	12	0		0	4	0		20
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

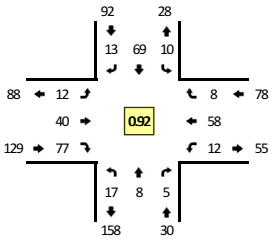
Type of peak hour being reported: Intersection Peak

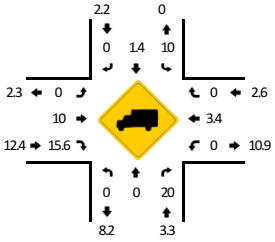
Method for determining peak hour: Total Entering Volume

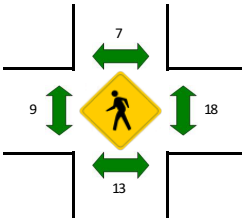
LOCATION: Division St -- Albert Ave
CITY/STATE: East Lansing, MI

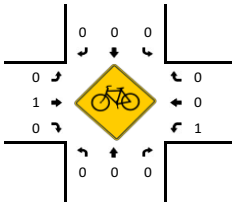
QC JOB #: 17405707
DATE: Thu, Jan 15 2026

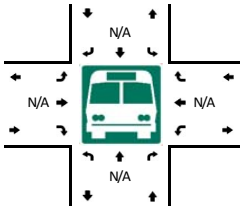
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

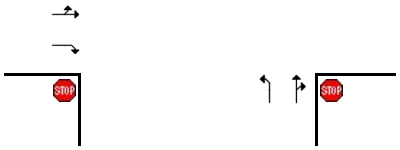


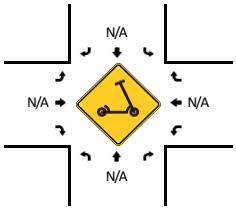












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	2	0	0	2	0	0	1	5	4	0	0	4	0	0	18	
7:15 AM	0	1	2	0	0	2	1	0	1	2	5	0	2	3	1	0	20	
7:30 AM	1	1	3	0	2	12	0	0	0	10	13	0	3	11	0	0	56	
7:45 AM	5	1	2	0	2	24	3	0	0	6	12	0	4	17	0	0	76	170
8:00 AM	3	3	0	0	3	23	3	0	3	12	18	0	3	14	0	0	85	237
8:15 AM	6	1	1	0	1	17	4	0	1	7	29	0	3	17	1	0	88	305
8:30 AM	4	3	2	0	3	12	3	0	2	7	12	0	2	12	5	0	67	316
8:45 AM	4	1	2	0	3	17	3	0	6	14	18	0	4	15	2	0	89	329

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	4	8	0	12	68	12	0	24	56	72	0	16	60	8	0	356
Heavy Trucks	0	0	4		0	4	0		0	8	16		0	0	0		32
Buses																	
Pedestrians		4				0				4				8			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

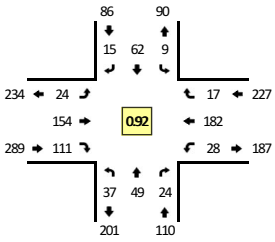
Type of peak hour being reported: Intersection Peak

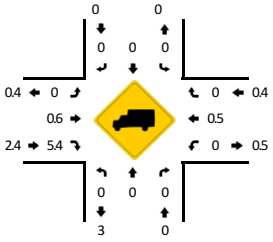
Method for determining peak hour: Total Entering Volume

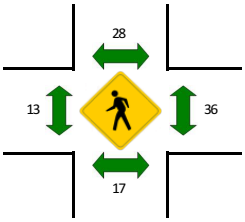
LOCATION: Division St -- Albert Ave
CITY/STATE: East Lansing, MI

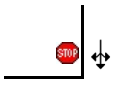
QC JOB #: 17405708
DATE: Thu, Jan 15 2026

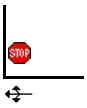
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

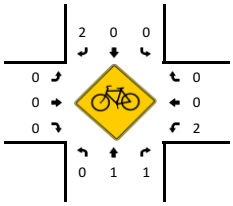


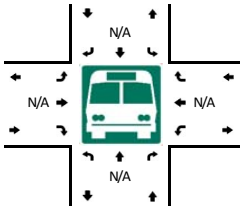


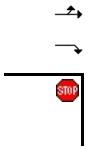


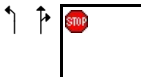


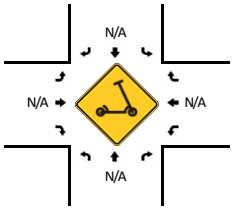












15-Min Count Period Beginning At	Division St (Northbound)				Division St (Southbound)				Albert Ave (Eastbound)				Albert Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	12	14	10	0	1	12	3	0	6	30	23	0	8	37	9	0	165	
4:15 PM	13	12	10	0	0	6	4	0	6	32	28	0	9	51	2	0	173	
4:30 PM	7	11	3	0	2	19	5	0	5	40	32	0	4	42	8	0	178	
4:45 PM	10	13	5	0	5	18	1	0	9	30	31	0	9	36	0	0	167	683
5:00 PM	7	13	6	0	2	19	5	0	4	52	20	0	6	53	7	0	194	712
5:15 PM	13	10	4	0	4	10	2	0	3	39	25	0	5	42	2	0	159	698
5:30 PM	13	6	7	0	2	22	4	0	7	33	29	0	8	36	9	0	176	696
5:45 PM	15	7	9	0	3	27	1	0	3	38	18	0	7	41	6	0	175	704

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	28	52	24	0	8	76	20	0	16	208	80	0	24	212	28	0	776
Heavy Trucks	0	0	0		0	0	0		0	0	4		0	0	0		4
Buses																	
Pedestrians		8				16				8				40			72
Bicycles	0	0	4		0	0	4		0	0	0		0	0	0		8
Scooters																	

Comments:

Report generated on 1/22/2026 10:02 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Appendix B ITE Calculations

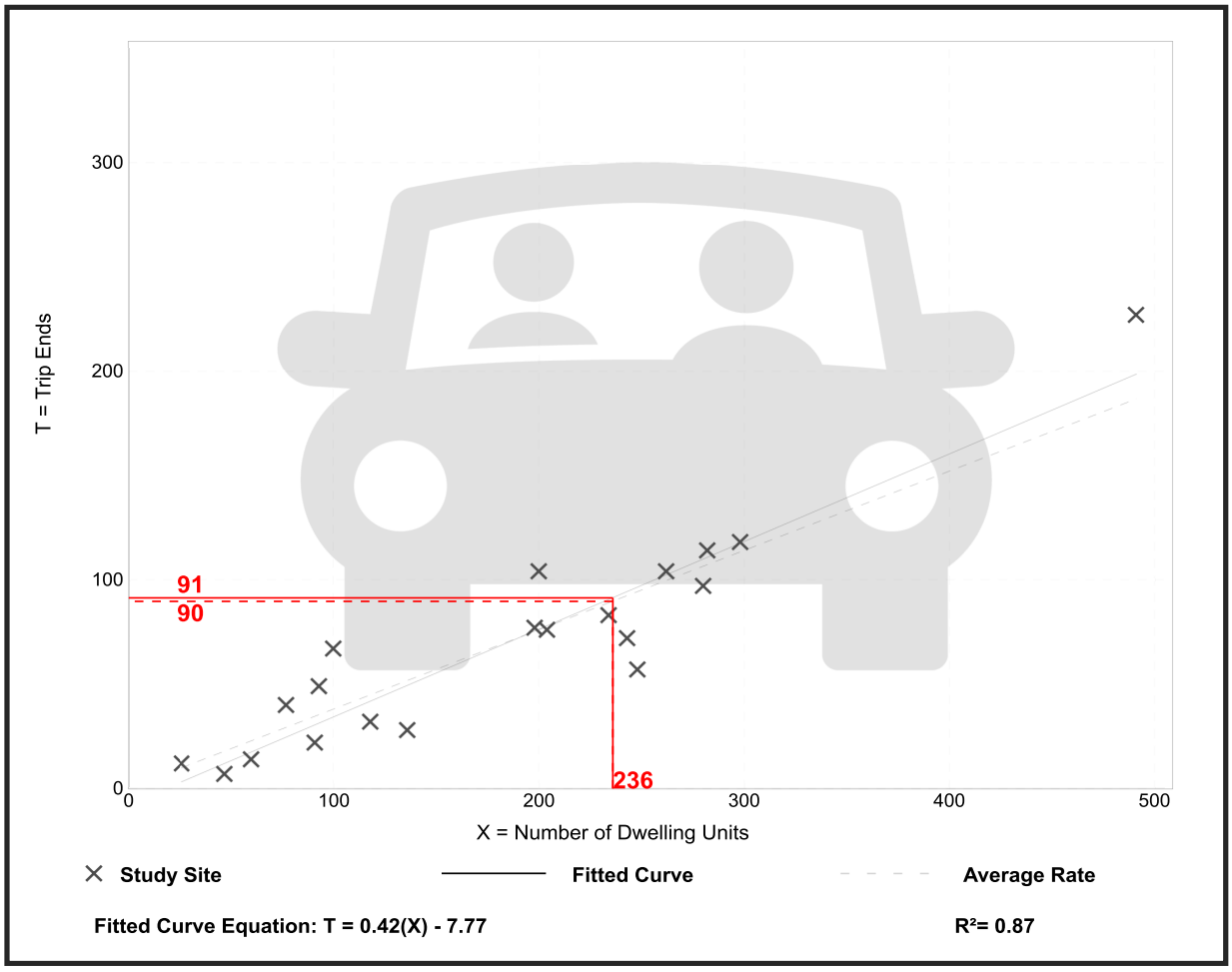
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehic Trip E vs: Dw U
O : Weekday,
Peak r Adjac Str Traffic,
O r Betw 7 9 .m.
Setting/Location: Gener Urban/Suburb
Number of Studies: 20
Avg. Num. of Dwelling Units: 184
Directional Distribution: 23% entering, 77% exiting

Vehic Trip Gener per Dw U

Average Rate	Range of Rates	Standard Deviation
0.38	0.15 - 0.67	0.10

D P Eq



Trip Gen Manual, 12th Edition • Institute of Transportation Engineers

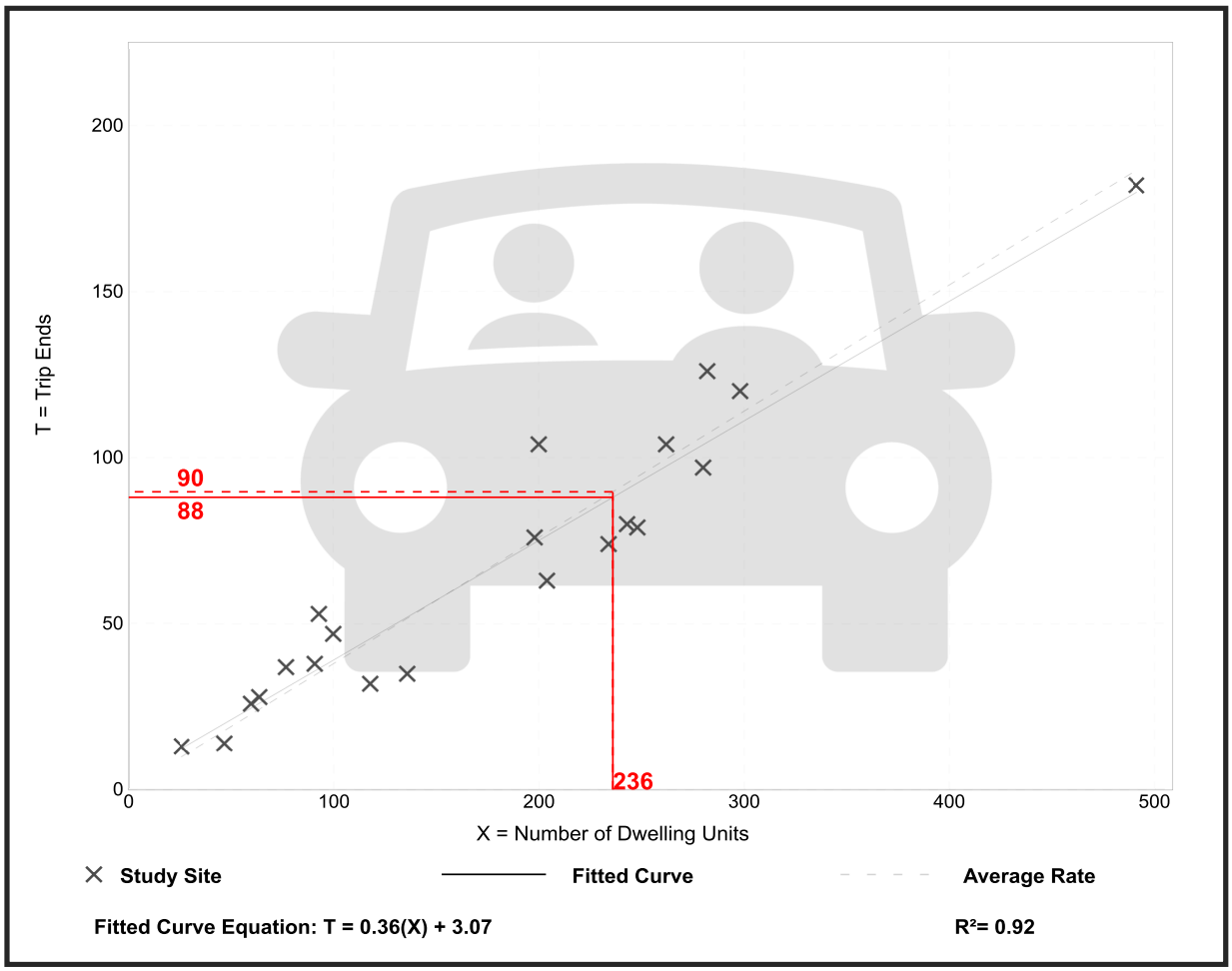
Multifamily Housing (Mid-Rise)
Not Close to Rail Transit (221)

Vehic Trip E vs: Dw U
O : Weekday,
Peak r Adjac Str Traffic,
O r Betw 4 6 p.m.
Setting/Location: Gener Urban/Suburb
Number of Studies: 21
Avg. Num. of Dwelling Units: 179
Directional Distribution: 64% entering, 36% exiting

Vehic Trip Gener per Dw U

Average Rate	Range of Rates	Standard Deviation
0.38	0.26 - 0.57	0.07

D P Eq



Coffee/Donut Shop without Drive-Through Window
(936)

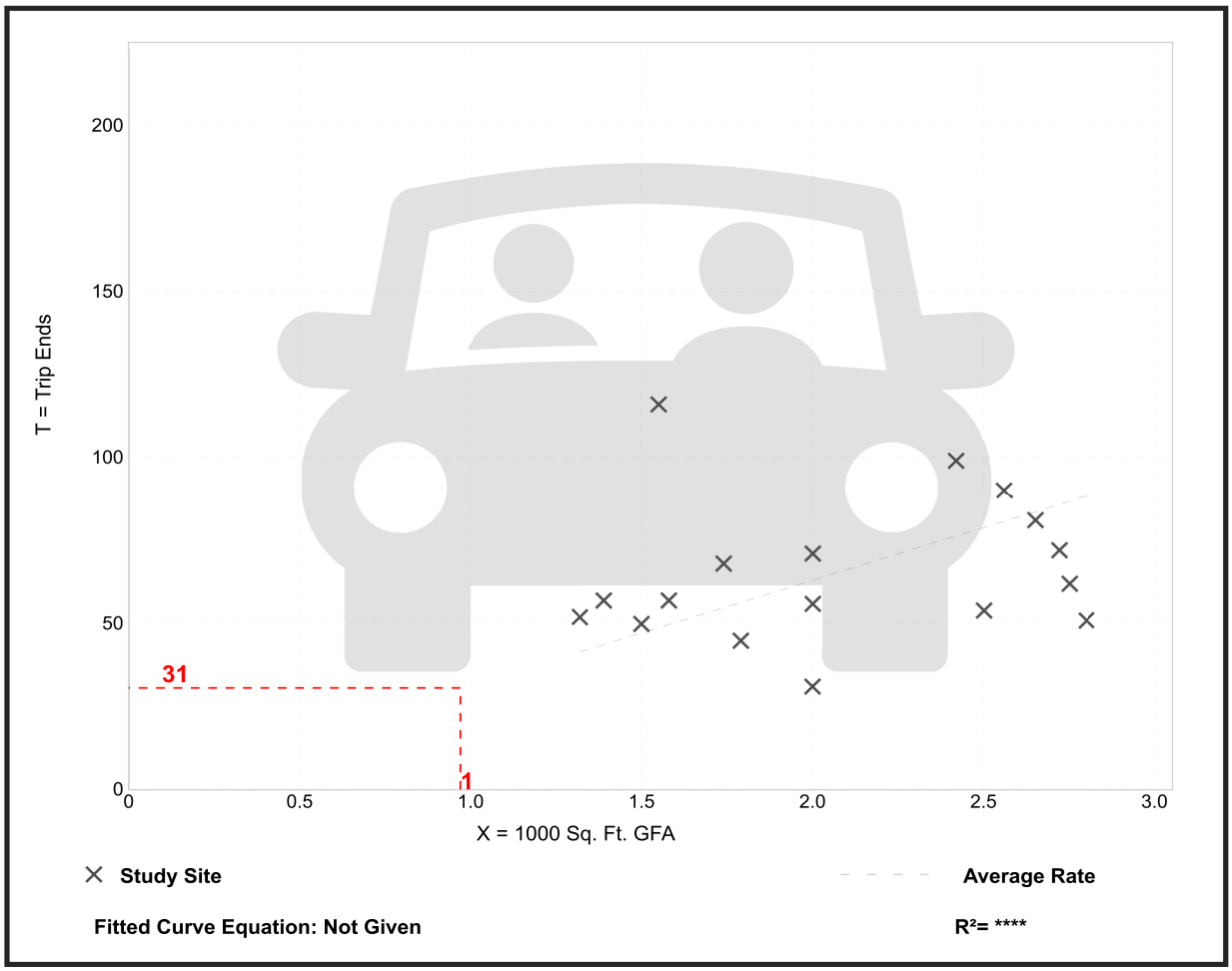
1000 q. Ft. GFA
O a kday,
Peak H Adja affic,
O H B 4 a 6 .m.
Loca Genera Urban/Suburba

Number of Studies: 17
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 50% entering, 50% exiting

Genera 1000 q. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
31.53	15.50 - 74.84	12.49

ata P a qua



Trip Gen Manual, 12th Edition • Institute of Transportation Engineers

Coffee/Donut Shop without Drive-Through Window
(936)

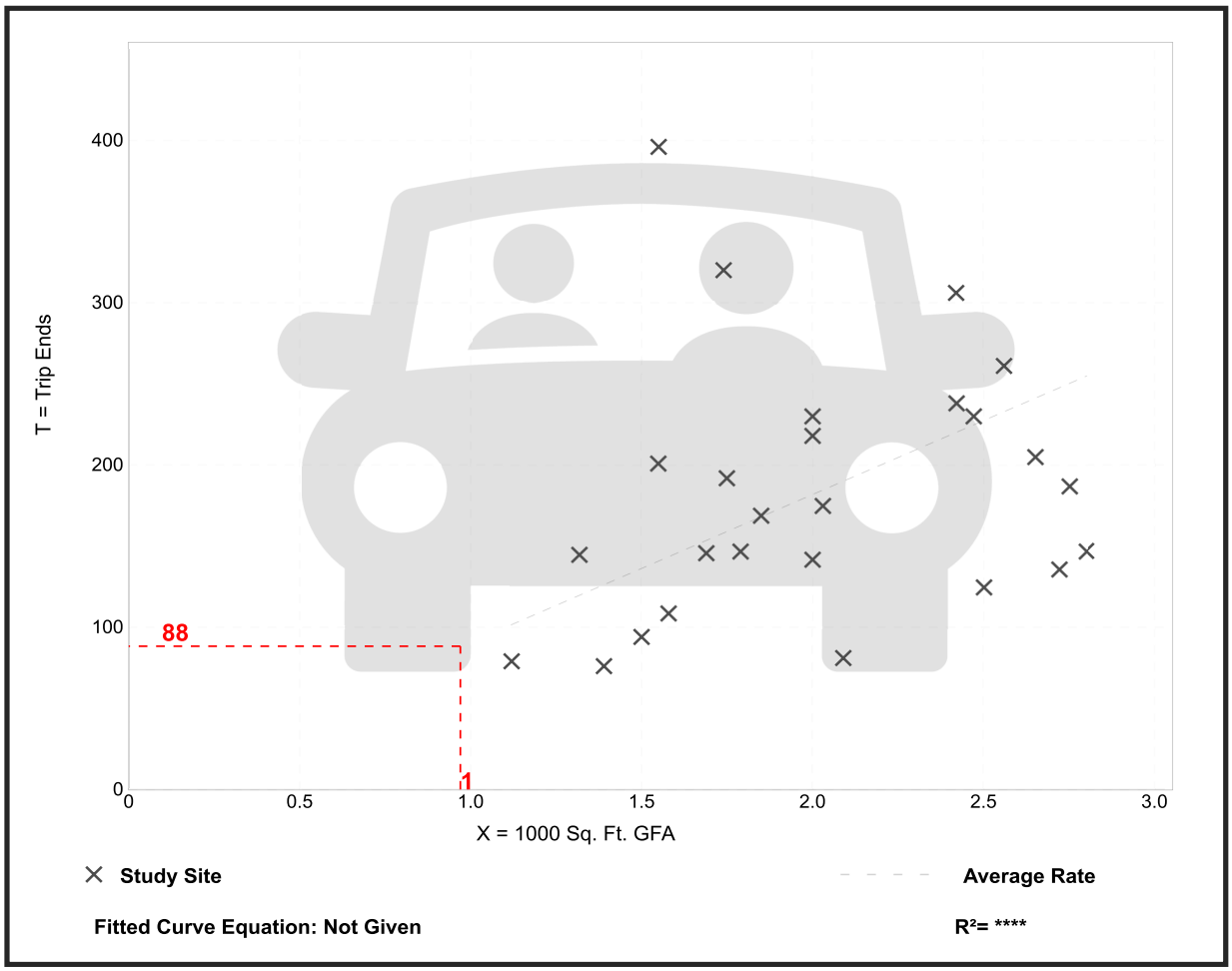
1000 q. Ft. GFA
O a kday,
Peak H Adja affic,
O H B 7 a 9 a.m.
Loca Genera Urban/Suburba

Number of Studies: 26
Avg. 1000 Sq. Ft. GFA: 2
Directional Distribution: 51% entering, 49% exiting

Genera 1000 q. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
91.02	38.76 - 255.48	42.68

ata P a qua



Trip Gen Manual, 12th Edition ● Institute of Transportation Engineers

Land Use: 221 Multifamily Housing (Mid-Rise)

Description

Mid-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and with between three and 10 levels (floors) of residence. Multifamily housing (low-rise) (Land Use 220), multifamily housing (high-rise) (Land Use 222), and affordable housing (Land Use 223) are related land uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday (one general urban/suburban study site), a Saturday (two general urban/suburban study sites), and a Sunday (one dense multi-use urban study site).

	Percent of Peak Parking Demand		
Hour Beginning	Weekday	Saturday	Sunday
12:00–4:00 a.m.	100	100	100
5:00 a.m.	94	99	–
6:00 a.m.	83	97	–
7:00 a.m.	71	95	–
8:00 a.m.	61	88	–
9:00 a.m.	55	83	–
10:00 a.m.	54	75	–
11:00 a.m.	53	71	–
12:00 p.m.	50	68	–
1:00 p.m.	49	66	33
2:00 p.m.	49	70	40
3:00 p.m.	50	69	27
4:00 p.m.	58	72	13
5:00 p.m.	64	74	33
6:00 p.m.	67	74	60
7:00 p.m.	70	73	67
8:00 p.m.	76	75	47
9:00 p.m.	83	78	53
10:00 p.m.	90	82	73
11:00 p.m.	93	88	93

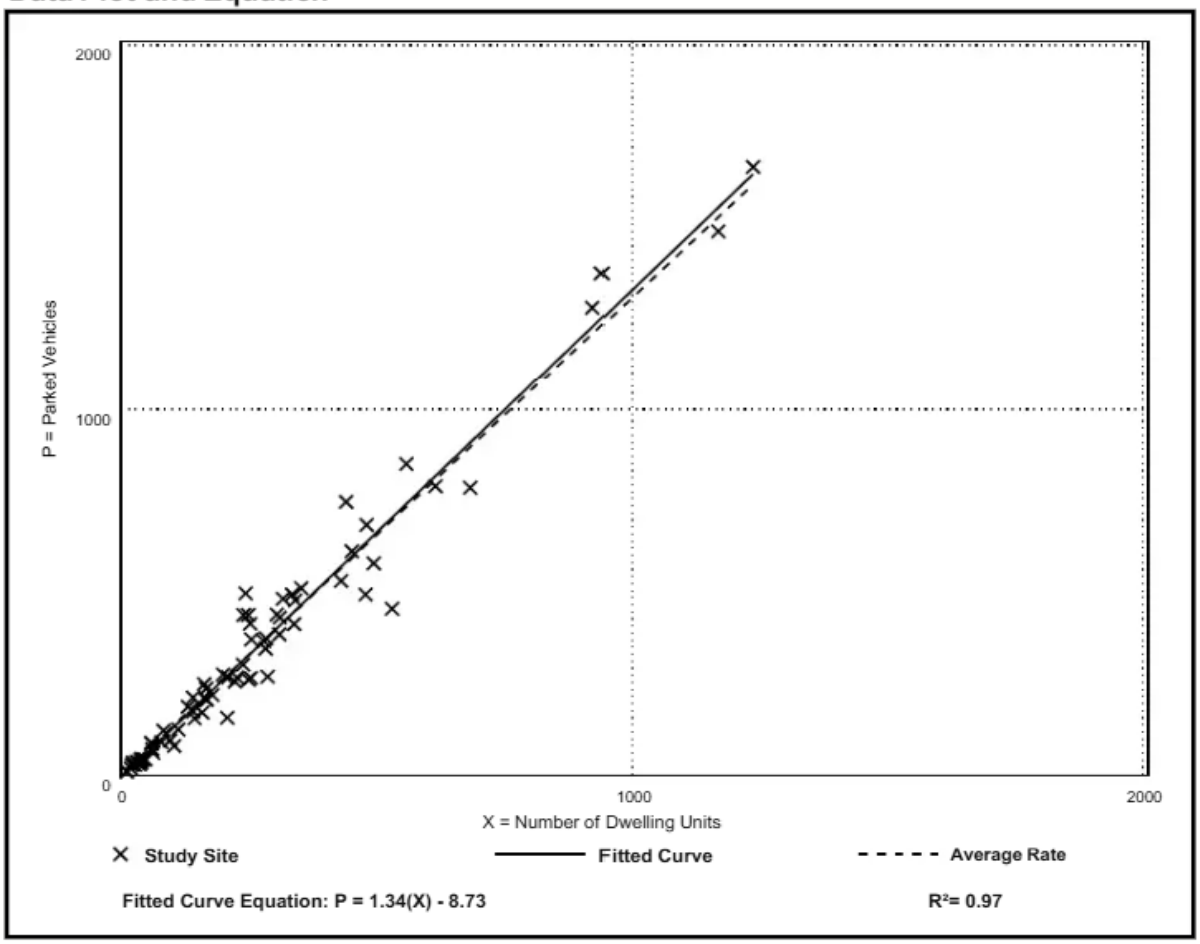
Multifamily Housing (Mid-Rise)
(221)

Peak Period Parking Demand vs: Occupied Dwelling Units
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban (no nearby rail transit)
Peak Period of Parking Demand: 10:00 p.m. - 5:00 a.m.
Number of Studies: 48
Avg. Num. of Occupied Dwelling Units: 234

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.31	0.75 - 2.03	1.13 / 1.47	1.26 - 1.36	0.22 (17%)

Data Plot and Equation



Land Use: 936 Coffee/Donut Shop without Drive-Through Window

Description

This land use includes single-tenant coffee and donut restaurants without drive-through windows. Freshly brewed coffee and a variety of coffee-related accessories are the primary retail products sold at these sites. They may also sell other refreshment items, such as donuts, bagels, muffins, cakes, sandwiches, wraps, salads, and other hot and cold beverages. Some sites may also sell newspapers, music CDs, and books. The coffee and donut shops contained in this land use typically hold long store hours (more than 15 hours) with an early morning opening. Limited indoor seating is generally provided for patrons, but table service is not provided. Coffee/donut shop with drive-through window (Land Use 937), coffee/donut shop with drive-through window and no indoor seating (Land Use 938), bread/donut/bagel shop without drive-through window (Land Use 939), and bread/donut/bagel shop with drive-through window (Land Use 940) are related uses.

Time of Day Distribution for Parking Demand

The following table presents a time-of-day distribution of parking demand on a weekday (three study sites) and a Saturday (three study sites) in a general urban/suburban setting.

	Percent of Peak Parking Demand	
Hour Beginning	Weekday	Saturday
12:00–4:00 a.m.	–	–
5:00 a.m.	–	–
6:00 a.m.	–	–
7:00 a.m.	73	100
8:00 a.m.	100	90
9:00 a.m.	63	80
10:00 a.m.	57	65
11:00 a.m.	42	62
12:00 p.m.	39	40
1:00 p.m.	27	32
2:00 p.m.	–	–
3:00 p.m.	–	–
4:00 p.m.	–	–
5:00 p.m.	–	–
6:00 p.m.	–	–
7:00 p.m.	–	–
8:00 p.m.	–	–
9:00 p.m.	–	–
10:00 p.m.	–	–
11:00 p.m.	–	–

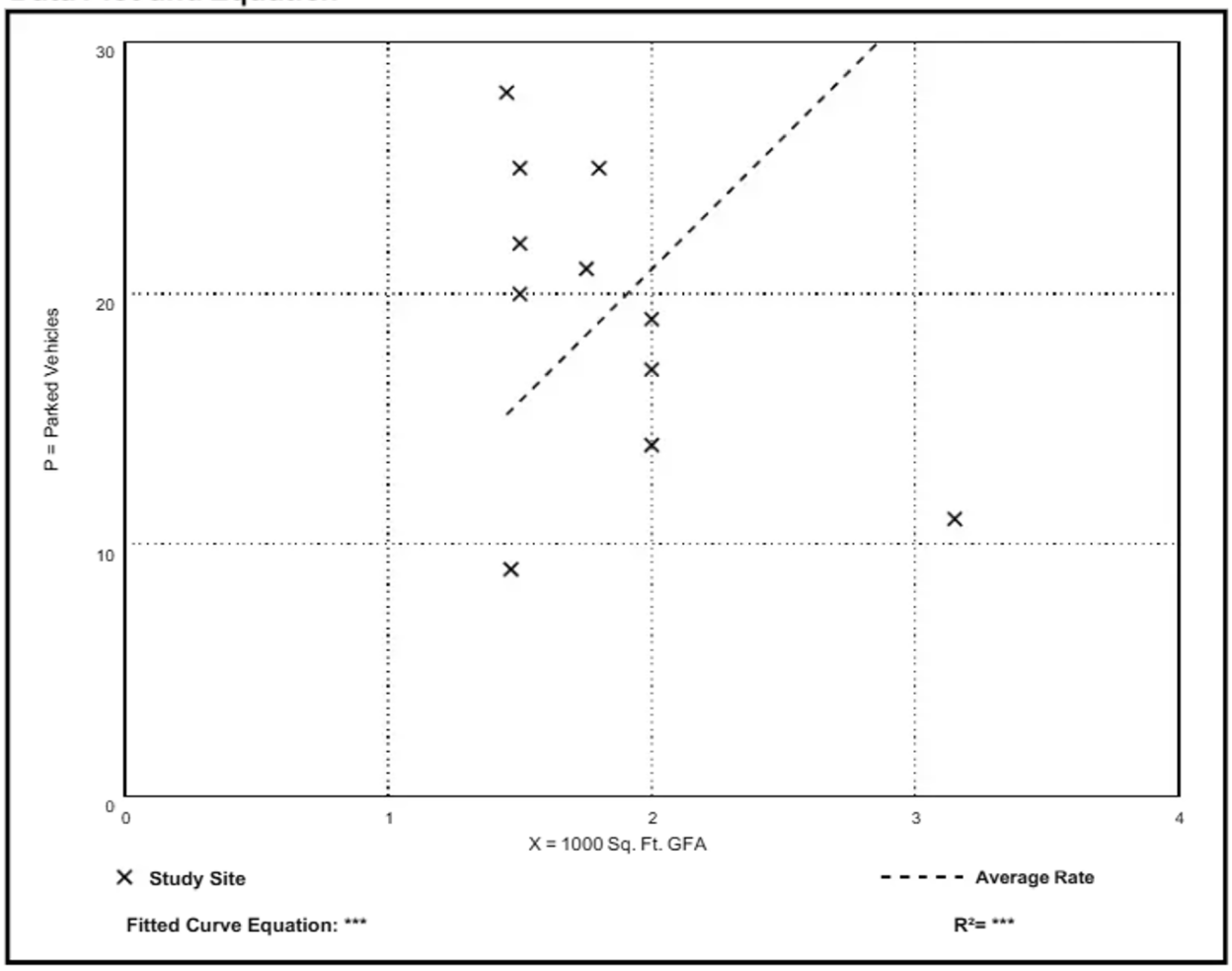
Coffee/Donut Shop without Drive-Through Window (936)

Peak Period Parking Demand vs: 1000 Sq. Ft. GFA
On a: Weekday (Monday - Friday)
Setting/Location: General Urban/Suburban
Peak Period of Parking Demand: 7:00 - 8:00 a.m.
Number of Studies: 11
Avg. 1000 Sq. Ft. GFA: 1.8

Peak Period Parking Demand per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
10.49	3.49 - 19.31	8.44 / 17.20	***	4.96 (47%)

Data Plot and Equation

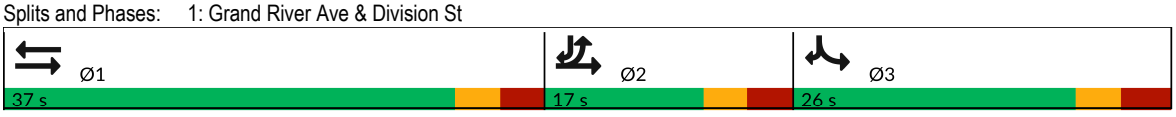


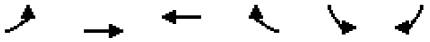
Appendix C Synchro Reports

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	19	677	616	125	27
Future Volume (vph)	19	677	616	125	27
Lane Group Flow (vph)	21	736	732	149	32
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.08	0.35	0.39	0.36	0.04
Control Delay (s/veh)	31.2	8.7	18.2	28.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.2	8.7	18.2	28.1	4.9
Queue Length 50th (ft)	9	88	93	62	0
Queue Length 95th (ft)	30	120	119	105	13
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2103	1894	415	725
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.35	0.39	0.36	0.04

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	677	616	21	125	27
Future Volume (vph)	19	677	616	21	125	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3505	4878		1703	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3505	4878		1703	1553
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.84	0.84
Adj. Flow (vph)	21	736	708	24	149	32
RTOR Reduction (vph)	0	0	4	0	0	20
Lane Group Flow (vph)	21	736	728	0	149	12
Heavy Vehicles (%)	0%	3%	6%	0%	6%	4%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2103	1890		415	592
v/s Ratio Prot	0.01	c0.21	0.15		c0.09	0.01
v/s Ratio Perm						
v/c Ratio	0.08	0.35	0.39		0.36	0.02
Uniform Delay, d1	30.1	8.1	17.6		25.1	15.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.5	0.6		2.4	0.1
Delay (s)	30.8	8.6	18.2		27.5	15.5
Level of Service	C	A	B		C	B
Approach Delay (s/veh)		9.2	18.2		25.4	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	32	71	60	6	18	8	76
Future Volume (vph)	32	71	60	6	18	8	76
Lane Group Flow (vph)	51	96	78	6	21	15	116
Sign Control	Stop		Stop			Stop	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	32	71	12	60	6	18	8	5	9	76	13
Future Vol, veh/h	6	32	71	12	60	6	18	8	5	9	76	13
Peak Hour Factor	0.74	0.74	0.74	0.93	0.93	0.93	0.86	0.86	0.86	0.84	0.84	0.84
Heavy Vehicles, %	0	6	11	0	3	0	0	0	0	11	0	0
Mvmt Flow	8	43	96	13	65	6	21	9	6	11	90	15
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	7.9	8.4	8.2	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	16%	0%	17%	0%	9%
Vol Thru, %	0%	62%	84%	0%	83%	0%	78%
Vol Right, %	0%	38%	0%	100%	0%	100%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	13	38	71	72	6	98
LT Vol	18	0	6	0	12	0	9
Through Vol	0	8	32	0	60	0	76
RT Vol	0	5	0	71	0	6	13
Lane Flow Rate	21	15	51	96	77	6	117
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.033	0.021	0.072	0.117	0.11	0.008	0.169
Departure Headway (Hd)	5.67	4.897	5.072	4.392	5.126	4.39	5.219
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	633	732	708	817	701	816	688
Service Time	3.395	2.622	2.791	2.111	2.847	2.111	3.24
HCM Lane V/C Ratio	0.033	0.02	0.072	0.118	0.11	0.007	0.17
HCM Control Delay, s/veh	8.6	7.7	8.2	7.7	8.5	7.1	9.3
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.4	0.4	0	0.6

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	41	51	15	10	15
Future Volume (vph)	41	51	15	10	15
Lane Group Flow (vph)	56	71	18	25	40
Sign Control	Free	Free		Stop	Stop

Intersection Summary

Control Type: Unsignalized

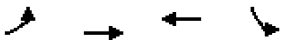
Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕						↕	
Traffic Vol, veh/h	2	41	8	7	51	2	15	10	11	12	15	10
Future Vol, veh/h	2	41	8	7	51	2	15	10	11	12	15	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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	83	83	83	82	82	82	93	93	93
Heavy Vehicles, %	50	2	13	0	2	0	0	0	0	0	0	10
Mvmt Flow	2	45	9	8	61	2	18	12	13	13	16	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	54	0	0	140	135	49	135	138	63
Stage 1	-	-	-	-	-	-	54	54	-	80	80	-
Stage 2	-	-	-	-	-	-	86	81	-	56	58	-
Critical Hdwy	4.6	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.65	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.39
Pot Cap-1 Maneuver	1282	-	-	1564	-	-	834	760	1025	841	757	980
Stage 1	-	-	-	-	-	-	964	854	-	934	833	-
Stage 2	-	-	-	-	-	-	926	832	-	962	850	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1282	-	-	1564	-	-	802	754	1025	811	751	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	802	754	-	811	751	-
Stage 1	-	-	-	-	-	-	962	852	-	929	828	-
Stage 2	-	-	-	-	-	-	893	827	-	934	849	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.31	0.85	9.39	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	802	875	68	-	-	208	-	-	823
HCM Lane V/C Ratio	0.023	0.029	0.002	-	-	0.005	-	-	0.048
HCM Ctrl Dly (s/v)	9.6	9.2	7.8	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0	-	-	0.2



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	22	775	609	0
Future Volume (vph)	22	775	609	0
Lane Group Flow (vph)	25	871	721	36
Sign Control		Yield	Free	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	775	609	18	0	24
Future Vol, veh/h	22	775	609	18	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	67	67
Heavy Vehicles, %	0	3	5	0	0	13
Mvmt Flow	25	871	700	21	0	36

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	710	360
Stage 1	-	-	710	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	437	520
Stage 1	-	-	366	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	437	520
Mov Cap-2 Maneuver	-	-	437	-
Stage 1	-	-	366	-
Stage 2	-	-	-	-

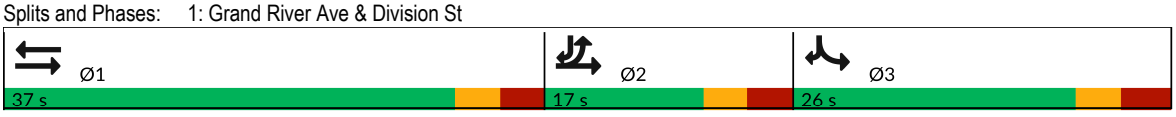
Approach	WB	SB
HCM Ctrl Dly, s/v	0	12.44
HCM LOS		B

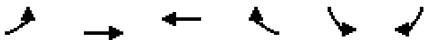
Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	520
HCM Lane V/C Ratio	-	-	0.069
HCM Ctrl Dly (s/v)	-	-	12.4
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	52	974	980	168	91
Future Volume (vph)	52	974	980	168	91
Lane Group Flow (vph)	54	1015	1126	187	101
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.22	0.48	0.58	0.44	0.13
Control Delay (s/veh)	33.2	9.9	20.5	29.6	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.2	9.9	20.5	29.6	10.0
Queue Length 50th (ft)	24	135	156	79	20
Queue Length 95th (ft)	57	178	198	139	48
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2123	1945	423	751
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.48	0.58	0.44	0.13

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	974	980	67	168	91
Future Volume (vph)	52	974	980	67	168	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3539	4997		1736	1615
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3539	4997		1736	1615
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.90	0.90
Adj. Flow (vph)	54	1015	1054	72	187	101
RTOR Reduction (vph)	0	0	10	0	0	17
Lane Group Flow (vph)	54	1015	1116	0	187	84
Heavy Vehicles (%)	0%	2%	3%	0%	4%	0%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2123	1936		423	615
v/s Ratio Prot	0.03	c0.29	c0.22		c0.11	0.05
v/s Ratio Perm						
v/c Ratio	0.22	0.48	0.58		0.44	0.14
Uniform Delay, d1	30.7	9.0	19.3		25.6	16.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.0	0.8	1.3		3.3	0.5
Delay (s)	32.7	9.7	20.6		29.0	16.6
Level of Service	C	A	C		C	B
Approach Delay (s/veh)		10.9	20.6		24.6	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	137	27	158	11	46	36	10
Future Volume (vph)	137	27	158	11	46	36	10
Lane Group Flow (vph)	163	31	202	13	55	83	43
Sign Control	Stop		Stop			Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	137	27	17	158	11	46	36	33	13	10	8
Future Vol, veh/h	6	137	27	17	158	11	46	36	33	13	10	8
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	0.73	0.73	0.73
Heavy Vehicles, %	0	1	5	0	1	0	0	0	4	0	0	0
Mvmt Flow	7	156	31	20	182	13	55	43	40	18	14	11
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	9.3	9.9	9	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	4%	0%	10%	0%	42%
Vol Thru, %	0%	52%	96%	0%	90%	0%	32%
Vol Right, %	0%	48%	0%	100%	0%	100%	26%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	46	69	143	27	175	11	31
LT Vol	46	0	6	0	17	0	13
Through Vol	0	36	137	0	158	0	10
RT Vol	0	33	0	27	0	11	8
Lane Flow Rate	55	83	163	31	201	13	42
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.093	0.121	0.236	0.038	0.292	0.016	0.067
Departure Headway (Hd)	6.061	5.221	5.224	4.516	5.229	4.493	5.644
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	589	683	686	789	686	793	631
Service Time	3.817	2.976	2.973	2.264	2.977	2.241	3.711
HCM Lane V/C Ratio	0.093	0.122	0.238	0.039	0.293	0.016	0.067
HCM Control Delay, s/veh	9.4	8.7	9.6	7.4	10.1	7.3	9.1
HCM Lane LOS	A	A	A	A	B	A	A
HCM 95th-tile Q	0.3	0.4	0.9	0.1	1.2	0	0.2

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	36	10	6	137	158
Future Volume (vph)	36	10	6	137	158
Lane Group Flow (vph)	122	36	8	228	286
Sign Control	Free	Free		Stop	Stop

Intersection Summary

Control Type: Unsignalized

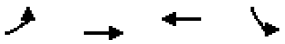
Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↱			↕	
Traffic Vol, veh/h	46	36	33	13	10	8	6	137	27	17	158	11
Future Vol, veh/h	46	36	33	13	10	8	6	137	27	17	158	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	85	85	85	72	72	72	65	65	65
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	49	38	35	15	12	9	8	190	38	26	243	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	21	0	0	73	0	0	318	205	56	278	218	16
Stage 1	-	-	-	-	-	-	154	154	-	47	47	-
Stage 2	-	-	-	-	-	-	164	52	-	231	171	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1608	-	-	1539	-	-	639	695	1016	678	683	1068
Stage 1	-	-	-	-	-	-	853	774	-	972	860	-
Stage 2	-	-	-	-	-	-	843	856	-	776	761	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1608	-	-	1539	-	-	385	666	1016	452	655	1068
Mov Cap-2 Maneuver	-	-	-	-	-	-	385	666	-	452	655	-
Stage 1	-	-	-	-	-	-	826	749	-	962	851	-
Stage 2	-	-	-	-	-	-	587	847	-	540	737	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.92	3.09	12.58	15
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	385	706	657	-	-	693	-	-	643
HCM Lane V/C Ratio	0.022	0.323	0.03	-	-	0.01	-	-	0.445
HCM Ctrl Dly (s/v)	14.6	12.5	7.3	0	-	7.4	0	-	15
HCM Lane LOS	B	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.1	1.4	0.1	-	-	0	-	-	2.3



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	36	1102	984	0
Future Volume (vph)	36	1102	984	0
Lane Group Flow (vph)	37	1136	1164	92
Sign Control		Yield	Free	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	1102	984	64	0	59
Future Vol, veh/h	36	1102	984	64	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	90	90	64	64
Heavy Vehicles, %	0	2	2	0	0	13
Mvmt Flow	37	1136	1093	71	0	92

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	1129	582
Stage 1	-	-	1129	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	271	370
Stage 1	-	-	205	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	271	370
Mov Cap-2 Maneuver	-	-	271	-
Stage 1	-	-	205	-
Stage 2	-	-	-	-

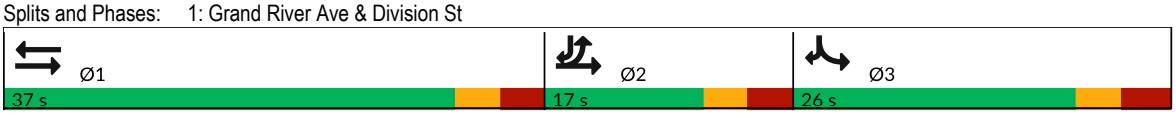
Approach	WB	SB
HCM Ctrl Dly, s/v	0	17.94
HCM LOS		C

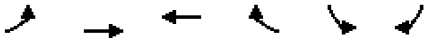
Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	370
HCM Lane V/C Ratio	-	-	0.249
HCM Ctrl Dly (s/v)	-	-	17.9
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	19	680	619	126	27
Future Volume (vph)	19	680	619	126	27
Lane Group Flow (vph)	21	739	735	150	32
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.08	0.35	0.39	0.36	0.04
Control Delay (s/veh)	31.2	8.7	18.2	28.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.2	8.7	18.2	28.1	4.9
Queue Length 50th (ft)	9	88	93	62	0
Queue Length 95th (ft)	30	121	119	105	13
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2103	1894	415	725
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.35	0.39	0.36	0.04

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	680	619	21	126	27
Future Volume (vph)	19	680	619	21	126	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3505	4878		1703	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3505	4878		1703	1553
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.84	0.84
Adj. Flow (vph)	21	739	711	24	150	32
RTOR Reduction (vph)	0	0	4	0	0	20
Lane Group Flow (vph)	21	739	731	0	150	12
Heavy Vehicles (%)	0%	3%	6%	0%	6%	4%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2103	1890		415	592
v/s Ratio Prot	0.01	c0.21	0.15		c0.09	0.01
v/s Ratio Perm						
v/c Ratio	0.08	0.35	0.39		0.36	0.02
Uniform Delay, d1	30.1	8.1	17.7		25.1	15.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.5	0.6		2.4	0.1
Delay (s)	30.8	8.6	18.2		27.5	15.5
Level of Service	C	A	B		C	B
Approach Delay (s/veh)		9.2	18.2		25.4	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	36.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	32	71	60	6	18	8	76
Future Volume (vph)	32	71	60	6	18	8	76
Lane Group Flow (vph)	51	96	78	6	21	15	116
Sign Control	Stop		Stop			Stop	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	32	71	12	60	6	18	8	5	9	76	13
Future Vol, veh/h	6	32	71	12	60	6	18	8	5	9	76	13
Peak Hour Factor	0.74	0.74	0.74	0.93	0.93	0.93	0.86	0.86	0.86	0.84	0.84	0.84
Heavy Vehicles, %	0	6	11	0	3	0	0	0	0	11	0	0
Mvmt Flow	8	43	96	13	65	6	21	9	6	11	90	15
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	7.9	8.4	8.2	9.3
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	16%	0%	17%	0%	9%
Vol Thru, %	0%	62%	84%	0%	83%	0%	78%
Vol Right, %	0%	38%	0%	100%	0%	100%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	13	38	71	72	6	98
LT Vol	18	0	6	0	12	0	9
Through Vol	0	8	32	0	60	0	76
RT Vol	0	5	0	71	0	6	13
Lane Flow Rate	21	15	51	96	77	6	117
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.033	0.021	0.072	0.117	0.11	0.008	0.169
Departure Headway (Hd)	5.67	4.897	5.072	4.392	5.126	4.39	5.219
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	633	732	708	817	701	816	688
Service Time	3.395	2.622	2.791	2.111	2.847	2.111	3.24
HCM Lane V/C Ratio	0.033	0.02	0.072	0.118	0.11	0.007	0.17
HCM Control Delay, s/veh	8.6	7.7	8.2	7.7	8.5	7.1	9.3
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.4	0.4	0	0.6

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	41	51	15	10	15
Future Volume (vph)	41	51	15	10	15
Lane Group Flow (vph)	56	71	18	25	40
Sign Control	Free	Free		Stop	Stop

Intersection Summary

Control Type: Unsignalized

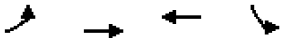
Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	41	8	7	51	2	15	10	11	12	15	10
Future Vol, veh/h	2	41	8	7	51	2	15	10	11	12	15	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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	83	83	83	82	82	82	93	93	93
Heavy Vehicles, %	50	2	13	0	2	0	0	0	0	0	0	10
Mvmt Flow	2	45	9	8	61	2	18	12	13	13	16	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	64	0	0	54	0	0	140	135	49	135	138	63
Stage 1	-	-	-	-	-	-	54	54	-	80	80	-
Stage 2	-	-	-	-	-	-	86	81	-	56	58	-
Critical Hdwy	4.6	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.65	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.39
Pot Cap-1 Maneuver	1282	-	-	1564	-	-	834	760	1025	841	757	980
Stage 1	-	-	-	-	-	-	964	854	-	934	833	-
Stage 2	-	-	-	-	-	-	926	832	-	962	850	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1282	-	-	1564	-	-	802	754	1025	811	751	980
Mov Cap-2 Maneuver	-	-	-	-	-	-	802	754	-	811	751	-
Stage 1	-	-	-	-	-	-	962	852	-	929	828	-
Stage 2	-	-	-	-	-	-	893	827	-	934	849	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.31	0.85	9.39	9.6
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	802	875	68	-	-	208	-	-	823
HCM Lane V/C Ratio	0.023	0.029	0.002	-	-	0.005	-	-	0.048
HCM Ctrl Dly (s/v)	9.6	9.2	7.8	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0	-	-	0.2



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	22	779	612	0
Future Volume (vph)	22	779	612	0
Lane Group Flow (vph)	25	875	724	36
Sign Control		Yield	Free	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	779	612	18	0	24
Future Vol, veh/h	22	779	612	18	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	67	67
Heavy Vehicles, %	0	3	5	0	0	13
Mvmt Flow	25	875	703	21	0	36

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	714	362
Stage 1	-	-	714	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	436	518
Stage 1	-	-	364	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	436	518
Mov Cap-2 Maneuver	-	-	436	-
Stage 1	-	-	364	-
Stage 2	-	-	-	-

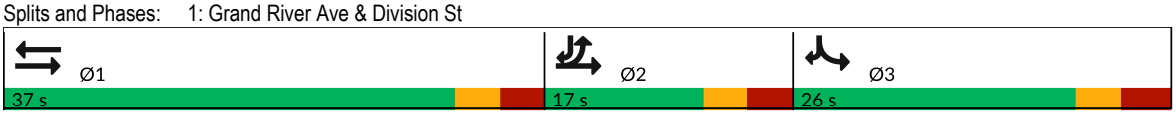
Approach	WB	SB
HCM Ctrl Dly, s/v	0	12.46
HCM LOS		B

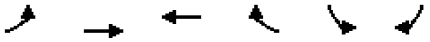
Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	518
HCM Lane V/C Ratio	-	-	0.069
HCM Ctrl Dly (s/v)	-	-	12.5
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	52	979	985	169	91
Future Volume (vph)	52	979	985	169	91
Lane Group Flow (vph)	54	1020	1131	188	101
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.22	0.48	0.58	0.44	0.13
Control Delay (s/veh)	33.2	9.9	20.6	29.6	10.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.2	9.9	20.6	29.6	10.0
Queue Length 50th (ft)	24	136	157	80	20
Queue Length 95th (ft)	57	180	200	140	48
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2123	1944	423	751
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.22	0.48	0.58	0.44	0.13

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	979	985	67	169	91
Future Volume (vph)	52	979	985	67	169	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3539	4997		1736	1615
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3539	4997		1736	1615
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.90	0.90
Adj. Flow (vph)	54	1020	1059	72	188	101
RTOR Reduction (vph)	0	0	9	0	0	17
Lane Group Flow (vph)	54	1020	1122	0	188	84
Heavy Vehicles (%)	0%	2%	3%	0%	4%	0%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2123	1936		423	615
v/s Ratio Prot	0.03	c0.29	c0.22		c0.11	0.05
v/s Ratio Perm						
v/c Ratio	0.22	0.48	0.58		0.44	0.14
Uniform Delay, d1	30.7	9.0	19.4		25.7	16.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.0	0.8	1.3		3.4	0.5
Delay (s)	32.7	9.8	20.6		29.0	16.6
Level of Service	C	A	C		C	B
Approach Delay (s/veh)		10.9	20.6		24.7	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	51.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	133	115	167	19	42	50	55
Future Volume (vph)	133	115	167	19	42	50	55
Lane Group Flow (vph)	181	131	226	22	51	94	104
Sign Control	Stop		Stop			Stop	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	133	115	30	167	19	42	50	28	8	55	13
Future Vol, veh/h	26	133	115	30	167	19	42	50	28	8	55	13
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	0.73	0.73	0.73
Heavy Vehicles, %	0	1	5	0	1	0	0	0	4	0	0	0
Mvmt Flow	30	151	131	34	192	22	51	60	34	11	75	18
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	9.9	11.3	9.8	10.5
HCM LOS	A	B	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	16%	0%	15%	0%	11%
Vol Thru, %	0%	64%	84%	0%	85%	0%	72%
Vol Right, %	0%	36%	0%	100%	0%	100%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	42	78	159	115	197	19	76
LT Vol	42	0	26	0	30	0	8
Through Vol	0	50	133	0	167	0	55
RT Vol	0	28	0	115	0	19	13
Lane Flow Rate	51	94	181	131	226	22	104
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.093	0.153	0.286	0.179	0.36	0.03	0.177
Departure Headway (Hd)	6.632	5.872	5.692	4.919	5.723	4.956	6.125
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	540	611	636	734	629	723	586
Service Time	4.368	3.607	3.392	2.619	3.449	2.681	4.16
HCM Lane V/C Ratio	0.094	0.154	0.285	0.178	0.359	0.03	0.177
HCM Control Delay, s/veh	10.1	9.7	10.7	8.7	11.6	7.8	10.5
HCM Lane LOS	B	A	B	A	B	A	B
HCM 95th-tile Q	0.3	0.5	1.2	0.6	1.6	0.1	0.6

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	138	159	46	36	10
Future Volume (vph)	138	159	46	36	10
Lane Group Flow (vph)	182	220	64	96	47
Sign Control	Free	Free		Stop	Stop

Intersection Summary

Control Type: Unsignalized

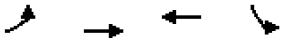
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	138	27	17	159	11	46	36	33	13	10	8
Future Vol, veh/h	6	138	27	17	159	11	46	36	33	13	10	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	85	85	85	72	72	72	65	65	65
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	147	29	20	187	13	64	50	46	20	15	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	200	0	0	176	0	0	409	414	161	418	422	194
Stage 1	-	-	-	-	-	-	174	174	-	234	234	-
Stage 2	-	-	-	-	-	-	235	240	-	185	188	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1384	-	-	1413	-	-	557	532	889	549	526	853
Stage 1	-	-	-	-	-	-	833	759	-	774	715	-
Stage 2	-	-	-	-	-	-	773	711	-	822	748	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1413	-	-	521	521	889	462	515	853
Mov Cap-2 Maneuver	-	-	-	-	-	-	521	521	-	462	515	-
Stage 1	-	-	-	-	-	-	828	755	-	762	704	-
Stage 2	-	-	-	-	-	-	733	699	-	724	744	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.27	0.69	12.05	12.25
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	521	649	61	-	-	162	-	-	544
HCM Lane V/C Ratio	0.123	0.148	0.005	-	-	0.014	-	-	0.088
HCM Ctrl Dly (s/v)	12.9	11.5	7.6	0	-	7.6	0	-	12.2
HCM Lane LOS	B	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0.5	0	-	-	0	-	-	0.3



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	36	1108	989	0
Future Volume (vph)	36	1108	989	0
Lane Group Flow (vph)	37	1142	1170	92
Sign Control		Yield	Free	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	36	1108	989	64	0	59
Future Vol, veh/h	36	1108	989	64	0	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	90	90	64	64
Heavy Vehicles, %	0	2	2	0	0	13
Mvmt Flow	37	1142	1099	71	0	92

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	1134	585
Stage 1	-	-	1134	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	270	368
Stage 1	-	-	203	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	270	368
Mov Cap-2 Maneuver	-	-	270	-
Stage 1	-	-	203	-
Stage 2	-	-	-	-

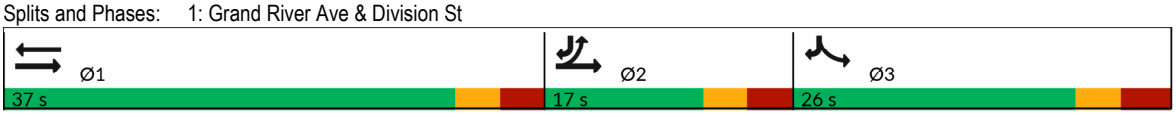
Approach	WB	SB
HCM Ctrl Dly, s/v	0	18.01
HCM LOS		C

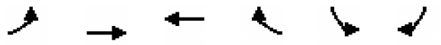
Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	368
HCM Lane V/C Ratio	-	-	0.25
HCM Ctrl Dly (s/v)	-	-	18
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	684	627	127	32
Future Volume (vph)	20	684	627	127	32
Lane Group Flow (vph)	22	743	746	151	38
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.09	0.35	0.39	0.36	0.05
Control Delay (s/veh)	31.2	8.7	18.3	28.2	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.2	8.7	18.3	28.2	4.6
Queue Length 50th (ft)	10	90	95	63	0
Queue Length 95th (ft)	30	122	121	106	14
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2103	1894	415	729
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.35	0.39	0.36	0.05

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	684	627	22	127	32
Future Volume (vph)	20	684	627	22	127	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3505	4878		1703	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3505	4878		1703	1553
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.84	0.84
Adj. Flow (vph)	22	743	721	25	151	38
RTOR Reduction (vph)	0	0	4	0	0	24
Lane Group Flow (vph)	22	743	742	0	151	14
Heavy Vehicles (%)	0%	3%	6%	0%	6%	4%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2103	1890		415	592
v/s Ratio Prot	0.01	c0.21	0.15		c0.09	0.01
v/s Ratio Perm						
v/c Ratio	0.09	0.35	0.39		0.36	0.02
Uniform Delay, d1	30.1	8.1	17.7		25.1	15.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.5	0.6		2.5	0.1
Delay (s)	30.8	8.6	18.3		27.6	15.5
Level of Service	C	A	B		C	B
Approach Delay (s/veh)		9.2	18.3		25.1	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	72	16	7	73	2	23	10	11	12	15	14
Future Vol, veh/h	2	72	16	7	73	2	23	10	11	12	15	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	83	83	83	82	82	82	93	93	93
Heavy Vehicles, %	50	2	13	0	2	0	0	0	0	0	0	10
Mvmt Flow	2	79	18	8	88	2	28	12	13	13	16	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	90	0	0	97	0	0	205	200	88	196	207	89
Stage 1	-	-	-	-	-	-	92	92	-	106	106	-
Stage 2	-	-	-	-	-	-	113	107	-	90	101	-
Critical Hdwy	4.6	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.65	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.39
Pot Cap-1 Maneuver	1251	-	-	1509	-	-	757	700	976	768	693	947
Stage 1	-	-	-	-	-	-	920	822	-	904	811	-
Stage 2	-	-	-	-	-	-	897	810	-	923	815	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1251	-	-	1509	-	-	722	694	976	738	688	947
Mov Cap-2 Maneuver	-	-	-	-	-	-	722	694	-	738	688	-
Stage 1	-	-	-	-	-	-	918	821	-	899	807	-
Stage 2	-	-	-	-	-	-	860	806	-	895	814	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.18	0.63	9.88	9.92
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	722	818	39	-	-	153	-	-	776
HCM Lane V/C Ratio	0.039	0.031	0.002	-	-	0.006	-	-	0.057
HCM Ctrl Dly (s/v)	10.2	9.5	7.9	0	-	7.4	0	-	9.9
HCM Lane LOS	B	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	780	613	22	0	32
Future Vol, veh/h	26	780	613	22	0	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	67	67
Heavy Vehicles, %	0	3	5	0	0	13
Mvmt Flow	29	876	705	25	0	48

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	717	365
Stage 1	-	-	717	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	434	516
Stage 1	-	-	363	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	434	516
Mov Cap-2 Maneuver	-	-	434	-
Stage 1	-	-	363	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Ctrl Dly, s/v	0	12.69
HCM LOS		B

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	516
HCM Lane V/C Ratio	-	-	0.093
HCM Ctrl Dly (s/v)	-	-	12.7
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	48	71	18	104	15	18	8	7	13	76	13
Future Vol, veh/h	6	48	71	18	104	15	18	8	7	13	76	13
Peak Hour Factor	0.74	0.74	0.74	0.93	0.93	0.93	0.86	0.86	0.86	0.84	0.84	0.84
Heavy Vehicles, %	0	6	11	0	3	0	0	0	0	11	0	0
Mvmt Flow	8	65	96	19	112	16	21	9	8	15	90	15
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	8.1	8.9	8.4	9.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	11%	0%	15%	0%	13%
Vol Thru, %	0%	53%	89%	0%	85%	0%	75%
Vol Right, %	0%	47%	0%	100%	0%	100%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	15	54	71	122	15	102
LT Vol	18	0	6	0	18	0	13
Through Vol	0	8	48	0	104	0	76
RT Vol	0	7	0	71	0	15	13
Lane Flow Rate	21	17	73	96	131	16	121
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.034	0.025	0.104	0.12	0.188	0.02	0.183
Departure Headway (Hd)	5.899	5.067	5.141	4.484	5.172	4.445	5.438
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	606	705	698	799	694	805	659
Service Time	3.641	2.808	2.87	2.213	2.902	2.175	3.473
HCM Lane V/C Ratio	0.035	0.024	0.105	0.12	0.189	0.02	0.184
HCM Control Delay, s/veh	8.9	7.9	8.5	7.8	9.1	7.3	9.7
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.3	0.4	0.7	0.1	0.7

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	46	22	34	76	59	39
Future Vol, veh/h	46	22	34	76	59	39
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	0	0	2	0	0
Mvmt Flow	50	24	37	83	64	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	74	0	218	62
Stage 1	-	-	-	-	62	-
Stage 2	-	-	-	-	157	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1538	-	774	1009
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	877	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1538	-	755	1009
Mov Cap-2 Maneuver	-	-	-	-	755	-
Stage 1	-	-	-	-	966	-
Stage 2	-	-	-	-	855	-

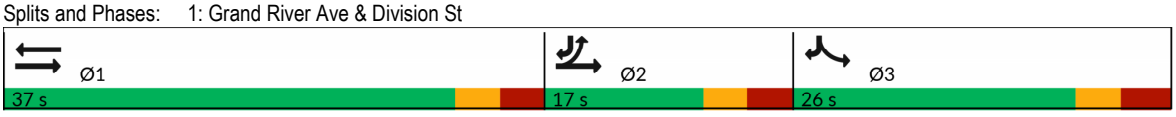
Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.29	9.92
HCM LOS			A

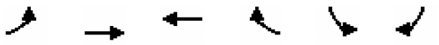
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	839	-	-	556	-
HCM Lane V/C Ratio	0.127	-	-	0.024	-
HCM Ctrl Dly (s/v)	9.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	55	982	987	171	92
Future Volume (vph)	55	982	987	171	92
Lane Group Flow (vph)	57	1023	1136	190	102
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.23	0.48	0.58	0.45	0.14
Control Delay (s/veh)	33.5	10.0	20.6	29.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.5	10.0	20.6	29.7	10.1
Queue Length 50th (ft)	26	136	158	81	21
Queue Length 95th (ft)	59	181	201	142	48
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2123	1945	423	751
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.48	0.58	0.45	0.14

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	982	987	70	171	92
Future Volume (vph)	55	982	987	70	171	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3539	4996		1736	1615
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3539	4996		1736	1615
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.90	0.90
Adj. Flow (vph)	57	1023	1061	75	190	102
RTOR Reduction (vph)	0	0	10	0	0	17
Lane Group Flow (vph)	57	1023	1126	0	190	85
Heavy Vehicles (%)	0%	2%	3%	0%	4%	0%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2123	1935		423	615
v/s Ratio Prot	0.03	c0.29	c0.23		c0.11	0.05
v/s Ratio Perm						
v/c Ratio	0.23	0.48	0.58		0.45	0.14
Uniform Delay, d1	30.7	9.0	19.4		25.7	16.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.2	0.8	1.3		3.4	0.5
Delay (s)	32.9	9.8	20.7		29.1	16.6
Level of Service	C	A	C		C	B
Approach Delay (s/veh)		11.0	20.7		24.8	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	51.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	149	29	17	184	11	52	36	33	13	10	11
Future Vol, veh/h	7	149	29	17	184	11	52	36	33	13	10	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	85	85	85	72	72	72	65	65	65
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	7	159	31	20	216	13	72	50	46	20	15	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	229	0	0	189	0	0	453	458	174	461	467	223
Stage 1	-	-	-	-	-	-	189	189	-	263	263	-
Stage 2	-	-	-	-	-	-	264	269	-	198	204	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1351	-	-	1397	-	-	520	502	875	514	496	822
Stage 1	-	-	-	-	-	-	818	748	-	747	695	-
Stage 2	-	-	-	-	-	-	745	690	-	808	736	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1351	-	-	1397	-	-	483	491	875	428	485	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	483	491	-	428	485	-
Stage 1	-	-	-	-	-	-	813	743	-	734	683	-
Stage 2	-	-	-	-	-	-	702	679	-	710	732	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.29	0.61	12.67	12.56
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	483	621	66	-	-	143	-	-	528
HCM Lane V/C Ratio	0.15	0.154	0.006	-	-	0.014	-	-	0.099
HCM Ctrl Dly (s/v)	13.8	11.8	7.7	0	-	7.6	0	-	12.6
HCM Lane LOS	B	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.5	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	39	1110	992	67	0	61
Future Vol, veh/h	39	1110	992	67	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	90	90	64	64
Heavy Vehicles, %	0	2	2	0	0	13
Mvmt Flow	40	1144	1102	74	0	95

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	1139	588
Stage 1	-	-	1139	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	268	366
Stage 1	-	-	202	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	268	366
Mov Cap-2 Maneuver	-	-	268	-
Stage 1	-	-	202	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Ctrl Dly, s/v	0	18.25
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	366
HCM Lane V/C Ratio	-	-	0.26
HCM Ctrl Dly (s/v)	-	-	18.3
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	26	155	115	33	180	21	42	50	34	8	55	13
Future Vol, veh/h	26	155	115	33	180	21	42	50	34	8	55	13
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	0.73	0.73	0.73
Heavy Vehicles, %	0	1	5	0	1	0	0	0	4	0	0	0
Mvmt Flow	30	176	131	38	207	24	51	60	41	11	75	18
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	10.3	11.9	10	10.7
HCM LOS	B	B	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	14%	0%	15%	0%	11%
Vol Thru, %	0%	60%	86%	0%	85%	0%	72%
Vol Right, %	0%	40%	0%	100%	0%	100%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	42	84	181	115	213	21	76
LT Vol	42	0	26	0	33	0	8
Through Vol	0	50	155	0	180	0	55
RT Vol	0	34	0	115	0	21	13
Lane Flow Rate	51	101	206	131	245	24	104
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.095	0.168	0.327	0.18	0.394	0.034	0.181
Departure Headway (Hd)	6.768	5.975	5.728	4.964	5.799	5.029	6.274
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	530	600	629	723	622	712	572
Service Time	4.503	3.71	3.456	2.692	3.527	2.758	4.311
HCM Lane V/C Ratio	0.096	0.168	0.328	0.181	0.394	0.034	0.182
HCM Control Delay, s/veh	10.2	9.9	11.2	8.8	12.3	7.9	10.7
HCM Lane LOS	B	A	B	A	B	A	B
HCM 95th-tile Q	0.3	0.6	1.4	0.7	1.9	0.1	0.7

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	169	28	34	213	18	14
Future Vol, veh/h	169	28	34	213	18	14
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	184	30	37	232	20	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	504	199
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	305	-
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	-	-	1356	-	527	842
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	747	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1356	-	511	842
Mov Cap-2 Maneuver	-	-	-	-	511	-
Stage 1	-	-	-	-	835	-
Stage 2	-	-	-	-	724	-

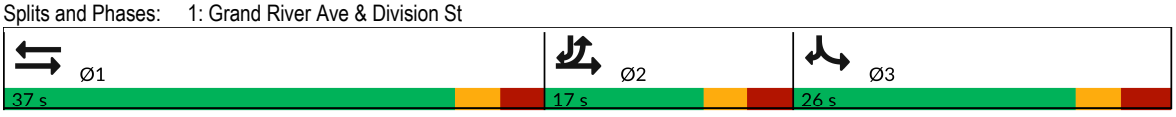
Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.06	11.18
HCM LOS			B

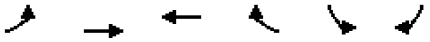
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	617	-	-	248	-
HCM Lane V/C Ratio	0.056	-	-	0.027	-
HCM Ctrl Dly (s/v)	11.2	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	20	698	635	129	28
Future Volume (vph)	20	698	635	129	28
Lane Group Flow (vph)	22	759	755	154	33
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.09	0.36	0.40	0.37	0.05
Control Delay (s/veh)	31.2	8.8	18.4	28.3	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.2	8.8	18.4	28.3	4.8
Queue Length 50th (ft)	10	92	96	64	0
Queue Length 95th (ft)	30	125	123	108	13
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2103	1894	415	726
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.36	0.40	0.37	0.05

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	20	698	635	22	129	28
Future Volume (vph)	20	698	635	22	129	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	1.00		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3505	4878		1703	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3505	4878		1703	1553
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.84	0.84
Adj. Flow (vph)	22	759	730	25	154	33
RTOR Reduction (vph)	0	0	4	0	0	20
Lane Group Flow (vph)	22	759	751	0	154	13
Heavy Vehicles (%)	0%	3%	6%	0%	6%	4%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2103	1890		415	592
v/s Ratio Prot	0.01	c0.22	0.15		c0.09	0.01
v/s Ratio Perm						
v/c Ratio	0.09	0.36	0.40		0.37	0.02
Uniform Delay, d1	30.1	8.2	17.7		25.2	15.4
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.5	0.6		2.5	0.1
Delay (s)	30.8	8.7	18.4		27.7	15.5
Level of Service	C	A	B		C	B
Approach Delay (s/veh)		9.3	18.4		25.5	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	33	73	62	6	19	8	78
Future Volume (vph)	33	73	62	6	19	8	78
Lane Group Flow (vph)	53	99	80	6	22	15	119
Sign Control	Stop		Stop			Stop	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	33	73	12	62	6	19	8	5	9	78	13
Future Vol, veh/h	6	33	73	12	62	6	19	8	5	9	78	13
Peak Hour Factor	0.74	0.74	0.74	0.93	0.93	0.93	0.86	0.86	0.86	0.84	0.84	0.84
Heavy Vehicles, %	0	6	11	0	3	0	0	0	0	11	0	0
Mvmt Flow	8	45	99	13	67	6	22	9	6	11	93	15
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	7.9	8.4	8.3	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	15%	0%	16%	0%	9%
Vol Thru, %	0%	62%	85%	0%	84%	0%	78%
Vol Right, %	0%	38%	0%	100%	0%	100%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	13	39	73	74	6	100
LT Vol	19	0	6	0	12	0	9
Through Vol	0	8	33	0	62	0	78
RT Vol	0	5	0	73	0	6	13
Lane Flow Rate	22	15	53	99	80	6	119
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.035	0.021	0.074	0.121	0.114	0.008	0.173
Departure Headway (Hd)	5.69	4.917	5.084	4.406	5.14	4.406	5.238
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	630	728	706	815	699	813	686
Service Time	3.417	2.644	2.804	2.126	2.861	2.127	3.261
HCM Lane V/C Ratio	0.035	0.021	0.075	0.121	0.114	0.007	0.173
HCM Control Delay, s/veh	8.6	7.8	8.2	7.7	8.5	7.2	9.4
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.2	0.4	0.4	0	0.6

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	42	53	15	10	15
Future Volume (vph)	42	53	15	10	15
Lane Group Flow (vph)	57	74	18	25	40
Sign Control	Free	Free		Stop	Stop

Intersection Summary

Control Type: Unsignalized

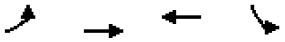
Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	2	42	8	7	53	2	15	10	11	12	15	10
Future Vol, veh/h	2	42	8	7	53	2	15	10	11	12	15	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	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	83	83	83	82	82	82	93	93	93
Heavy Vehicles, %	50	2	13	0	2	0	0	0	0	0	0	10
Mvmt Flow	2	46	9	8	64	2	18	12	13	13	16	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	66	0	0	55	0	0	144	138	51	139	141	65
Stage 1	-	-	-	-	-	-	55	55	-	82	82	-
Stage 2	-	-	-	-	-	-	89	83	-	57	59	-
Critical Hdwy	4.6	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.65	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.39
Pot Cap-1 Maneuver	1279	-	-	1563	-	-	830	757	1023	837	754	977
Stage 1	-	-	-	-	-	-	962	853	-	931	831	-
Stage 2	-	-	-	-	-	-	924	830	-	960	849	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	1563	-	-	797	751	1023	806	748	977
Mov Cap-2 Maneuver	-	-	-	-	-	-	797	751	-	806	748	-
Stage 1	-	-	-	-	-	-	961	852	-	926	826	-
Stage 2	-	-	-	-	-	-	891	825	-	933	848	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.3	0.83	9.4	9.62
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	797	873	67	-	-	202	-	-	819
HCM Lane V/C Ratio	0.023	0.029	0.002	-	-	0.005	-	-	0.049
HCM Ctrl Dly (s/v)	9.6	9.3	7.8	0	-	7.3	0	-	9.6
HCM Lane LOS	A	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0	-	-	0.2



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	23	799	627	0
Future Volume (vph)	23	799	627	0
Lane Group Flow (vph)	26	898	743	37
Sign Control		Yield	Free	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	799	627	19	0	25
Future Vol, veh/h	23	799	627	19	0	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	67	67
Heavy Vehicles, %	0	3	5	0	0	13
Mvmt Flow	26	898	721	22	0	37

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	732	371
Stage 1	-	-	732	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	427	511
Stage 1	-	-	356	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	427	511
Mov Cap-2 Maneuver	-	-	427	-
Stage 1	-	-	356	-
Stage 2	-	-	-	-

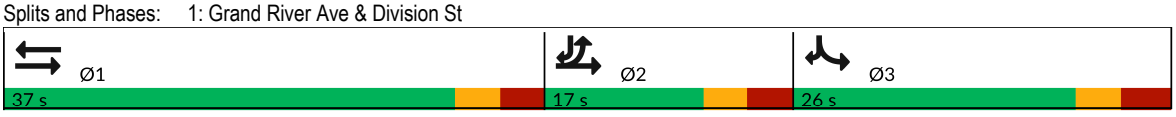
Approach	WB	SB
HCM Ctrl Dly, s/v	0	12.6
HCM LOS		B

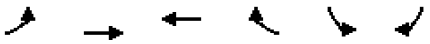
Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	511
HCM Lane V/C Ratio	-	-	0.073
HCM Ctrl Dly (s/v)	-	-	12.6
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.2

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	54	1004	1010	173	94
Future Volume (vph)	54	1004	1010	173	94
Lane Group Flow (vph)	56	1046	1160	192	104
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.23	0.49	0.60	0.45	0.14
Control Delay (s/veh)	33.4	10.1	20.8	29.8	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.4	10.1	20.8	29.8	10.4
Queue Length 50th (ft)	25	141	163	82	22
Queue Length 95th (ft)	59	186	206	144	50
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2123	1944	423	749
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.23	0.49	0.60	0.45	0.14

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	54	1004	1010	69	173	94
Future Volume (vph)	54	1004	1010	69	173	94
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3539	4997		1736	1615
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3539	4997		1736	1615
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.90	0.90
Adj. Flow (vph)	56	1046	1086	74	192	104
RTOR Reduction (vph)	0	0	9	0	0	15
Lane Group Flow (vph)	56	1046	1151	0	192	89
Heavy Vehicles (%)	0%	2%	3%	0%	4%	0%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2123	1936		423	615
v/s Ratio Prot	0.03	c0.30	c0.23		c0.11	0.06
v/s Ratio Perm						
v/c Ratio	0.23	0.49	0.59		0.45	0.14
Uniform Delay, d1	30.7	9.1	19.5		25.7	16.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.1	0.8	1.4		3.5	0.5
Delay (s)	32.8	9.9	20.8		29.2	16.7
Level of Service	C	A	C		C	B
Approach Delay (s/veh)		11.1	20.8		24.8	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	51.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBT	EBR	WBT	WBR	NBL	NBT	SBT
Lane Configurations							
Traffic Volume (vph)	136	117	171	20	43	52	57
Future Volume (vph)	136	117	171	20	43	52	57
Lane Group Flow (vph)	186	133	233	23	52	98	107
Sign Control	Stop		Stop			Stop	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	136	117	31	171	20	43	52	29	8	57	13
Future Vol, veh/h	27	136	117	31	171	20	43	52	29	8	57	13
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	0.73	0.73	0.73
Heavy Vehicles, %	0	1	5	0	1	0	0	0	4	0	0	0
Mvmt Flow	31	155	133	36	197	23	52	63	35	11	78	18
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	10	11.5	9.9	10.6
HCM LOS	A	B	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	17%	0%	15%	0%	10%
Vol Thru, %	0%	64%	83%	0%	85%	0%	73%
Vol Right, %	0%	36%	0%	100%	0%	100%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	81	163	117	202	20	78
LT Vol	43	0	27	0	31	0	8
Through Vol	0	52	136	0	171	0	57
RT Vol	0	29	0	117	0	20	13
Lane Flow Rate	52	98	185	133	232	23	107
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.096	0.161	0.294	0.182	0.372	0.032	0.183
Departure Headway (Hd)	6.682	5.922	5.712	4.937	5.764	4.996	6.18
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	537	606	630	727	625	717	581
Service Time	4.415	3.655	3.439	2.664	3.492	2.724	4.216
HCM Lane V/C Ratio	0.097	0.162	0.294	0.183	0.371	0.032	0.184
HCM Control Delay, s/veh	10.1	9.8	10.8	8.8	11.9	7.9	10.6
HCM Lane LOS	B	A	B	A	B	A	B
HCM 95th-tile Q	0.3	0.6	1.2	0.7	1.7	0.1	0.7

Lane Group	EBT	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	141	163	47	37	10
Future Volume (vph)	141	163	47	37	10
Lane Group Flow (vph)	186	226	65	98	47
Sign Control	Free	Free		Stop	Stop

Intersection Summary

Control Type: Unsignalized

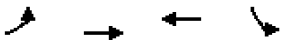
Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	141	28	18	163	11	47	37	34	13	10	8
Future Vol, veh/h	6	141	28	18	163	11	47	37	34	13	10	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	85	85	85	72	72	72	65	65	65
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	6	150	30	21	192	13	65	51	47	20	15	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	205	0	0	180	0	0	419	425	165	429	433	198
Stage 1	-	-	-	-	-	-	178	178	-	241	241	-
Stage 2	-	-	-	-	-	-	242	247	-	188	193	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1379	-	-	1408	-	-	548	524	885	540	519	848
Stage 1	-	-	-	-	-	-	829	756	-	767	710	-
Stage 2	-	-	-	-	-	-	766	706	-	818	745	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1379	-	-	1408	-	-	512	513	885	451	507	848
Mov Cap-2 Maneuver	-	-	-	-	-	-	512	513	-	451	507	-
Stage 1	-	-	-	-	-	-	825	752	-	754	698	-
Stage 2	-	-	-	-	-	-	726	694	-	718	741	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.26	0.71	12.19	12.39
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	512	642	60	-	-	167	-	-	534
HCM Lane V/C Ratio	0.127	0.154	0.005	-	-	0.015	-	-	0.089
HCM Ctrl Dly (s/v)	13.1	11.6	7.6	0	-	7.6	0	-	12.4
HCM Lane LOS	B	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0.5	0	-	-	0	-	-	0.3



Lane Group	EBL	EBT	WBT	SBL
Lane Configurations				
Traffic Volume (vph)	37	1135	1014	0
Future Volume (vph)	37	1135	1014	0
Lane Group Flow (vph)	38	1170	1200	95
Sign Control		Yield	Free	Stop

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	37	1135	1014	66	0	61
Future Vol, veh/h	37	1135	1014	66	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	90	90	64	64
Heavy Vehicles, %	0	2	2	0	0	13
Mvmt Flow	38	1170	1127	73	0	95

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	1163	600
Stage 1	-	-	1163	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	261	360
Stage 1	-	-	195	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	261	360
Mov Cap-2 Maneuver	-	-	261	-
Stage 1	-	-	195	-
Stage 2	-	-	-	-

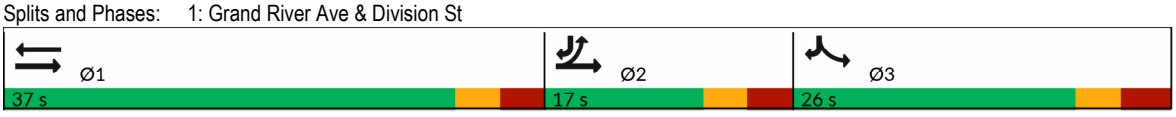
Approach	WB	SB
HCM Ctrl Dly, s/v	0	18.58
HCM LOS		C

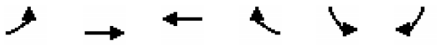
Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	360
HCM Lane V/C Ratio	-	-	0.265
HCM Ctrl Dly (s/v)	-	-	18.6
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	21	702	643	130	33
Future Volume (vph)	21	702	643	130	33
Lane Group Flow (vph)	23	763	765	155	39
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.09	0.36	0.40	0.37	0.05
Control Delay (s/veh)	31.3	8.8	18.4	28.3	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.3	8.8	18.4	28.3	4.5
Queue Length 50th (ft)	10	92	98	65	0
Queue Length 95th (ft)	31	125	124	108	14
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2103	1895	415	729
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.09	0.36	0.40	0.37	0.05

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	21	702	643	23	130	33
Future Volume (vph)	21	702	643	23	130	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3505	4878		1703	1553
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3505	4878		1703	1553
Peak-hour factor, PHF	0.92	0.92	0.87	0.87	0.84	0.84
Adj. Flow (vph)	23	763	739	26	155	39
RTOR Reduction (vph)	0	0	5	0	0	24
Lane Group Flow (vph)	23	763	760	0	155	15
Heavy Vehicles (%)	0%	3%	6%	0%	6%	4%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2103	1890		415	592
v/s Ratio Prot	0.01	c0.22	0.16		c0.09	0.01
v/s Ratio Perm						
v/c Ratio	0.09	0.36	0.40		0.37	0.03
Uniform Delay, d1	30.1	8.2	17.8		25.2	15.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.7	0.5	0.6		2.6	0.1
Delay (s)	30.9	8.7	18.4		27.7	15.5
Level of Service	C	A	B		C	B
Approach Delay (s/veh)		9.3	18.4		25.3	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	37.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	73	16	7	75	2	23	10	11	12	15	14
Future Vol, veh/h	2	73	16	7	75	2	23	10	11	12	15	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	83	83	83	82	82	82	93	93	93
Heavy Vehicles, %	50	2	13	0	2	0	0	0	0	0	0	10
Mvmt Flow	2	80	18	8	90	2	28	12	13	13	16	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	93	0	0	98	0	0	209	203	89	199	211	92
Stage 1	-	-	-	-	-	-	93	93	-	108	108	-
Stage 2	-	-	-	-	-	-	115	110	-	91	102	-
Critical Hdwy	4.6	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.65	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.39
Pot Cap-1 Maneuver	1248	-	-	1508	-	-	753	697	975	764	690	944
Stage 1	-	-	-	-	-	-	918	822	-	902	809	-
Stage 2	-	-	-	-	-	-	894	809	-	921	814	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1248	-	-	1508	-	-	718	691	975	734	685	944
Mov Cap-2 Maneuver	-	-	-	-	-	-	718	691	-	734	685	-
Stage 1	-	-	-	-	-	-	917	820	-	897	805	-
Stage 2	-	-	-	-	-	-	857	804	-	894	813	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.17	0.62	9.9	9.94
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	718	816	38	-	-	149	-	-	773
HCM Lane V/C Ratio	0.039	0.031	0.002	-	-	0.006	-	-	0.057
HCM Ctrl Dly (s/v)	10.2	9.6	7.9	0	-	7.4	0	-	9.9
HCM Lane LOS	B	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	800	628	23	0	33
Future Vol, veh/h	27	800	628	23	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	89	89	87	87	67	67
Heavy Vehicles, %	0	3	5	0	0	13
Mvmt Flow	30	899	722	26	0	49

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	735	374
Stage 1	-	-	735	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	425	509
Stage 1	-	-	354	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	425	509
Mov Cap-2 Maneuver	-	-	425	-
Stage 1	-	-	354	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Ctrl Dly, s/v	0	12.83
HCM LOS		B

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	509
HCM Lane V/C Ratio	-	-	0.097
HCM Ctrl Dly (s/v)	-	-	12.8
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.3

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	49	73	18	106	15	19	8	7	13	78	13
Future Vol, veh/h	6	49	73	18	106	15	19	8	7	13	78	13
Peak Hour Factor	0.74	0.74	0.74	0.93	0.93	0.93	0.86	0.86	0.86	0.84	0.84	0.84
Heavy Vehicles, %	0	6	11	0	3	0	0	0	0	11	0	0
Mvmt Flow	8	66	99	19	114	16	22	9	8	15	93	15
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	8.2	9	8.5	9.8
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	11%	0%	15%	0%	13%
Vol Thru, %	0%	53%	89%	0%	85%	0%	75%
Vol Right, %	0%	47%	0%	100%	0%	100%	13%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	19	15	55	73	124	15	104
LT Vol	19	0	6	0	18	0	13
Through Vol	0	8	49	0	106	0	78
RT Vol	0	7	0	73	0	15	13
Lane Flow Rate	22	17	74	99	133	16	124
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.036	0.025	0.106	0.123	0.192	0.02	0.188
Departure Headway (Hd)	5.919	5.087	5.153	4.497	5.185	4.459	5.456
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	604	702	695	796	692	801	657
Service Time	3.662	2.829	2.886	2.23	2.919	2.193	3.492
HCM Lane V/C Ratio	0.036	0.024	0.106	0.124	0.192	0.02	0.189
HCM Control Delay, s/veh	8.9	8	8.5	7.9	9.2	7.3	9.8
HCM Lane LOS	A	A	A	A	A	A	A
HCM 95th-tile Q	0.1	0.1	0.4	0.4	0.7	0.1	0.7

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	47	22	34	78	59	39
Future Vol, veh/h	47	22	34	78	59	39
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	0	0	2	0	0
Mvmt Flow	51	24	37	85	64	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	75	0	222	63
Stage 1	-	-	-	-	63	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1537	-	771	1007
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	875	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1537	-	751	1007
Mov Cap-2 Maneuver	-	-	-	-	751	-
Stage 1	-	-	-	-	965	-
Stage 2	-	-	-	-	853	-

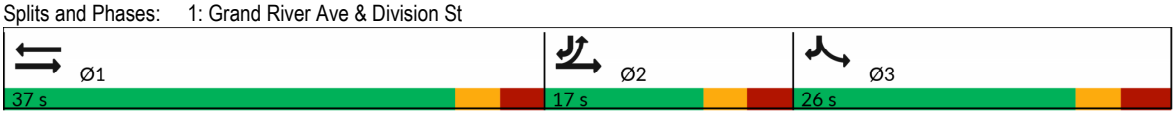
Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.25	9.93
HCM LOS			A

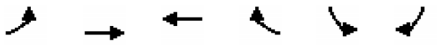
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	546	-
HCM Lane V/C Ratio	0.127	-	-	0.024	-
HCM Ctrl Dly (s/v)	9.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0.1	-

Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Configurations					
Traffic Volume (vph)	57	1007	1012	175	95
Future Volume (vph)	57	1007	1012	175	95
Lane Group Flow (vph)	59	1049	1165	194	106
Turn Type	Prot	NA	NA	Prot	pt+ov
Protected Phases	2	1 2	1	3	3 2
Permitted Phases					
Detector Phase	2	1 2	1	3	3 2
Switch Phase					
Minimum Initial (s)	7.0		10.0	7.0	
Minimum Split (s)	13.0		24.1	24.5	
Total Split (s)	17.0		37.0	26.0	
Total Split (%)	21.3%		46.3%	32.5%	
Yellow Time (s)	3.0		3.0	3.0	
All-Red Time (s)	3.0		3.0	3.5	
Lost Time Adjust (s)	0.0		0.0	0.0	
Total Lost Time (s)	6.0		6.0	6.5	
Lead/Lag	Lag		Lead		
Lead-Lag Optimize?	Yes		Yes		
Recall Mode	Max		Max	Max	
v/c Ratio	0.24	0.49	0.60	0.46	0.14
Control Delay (s/veh)	33.6	10.1	20.8	29.9	10.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.6	10.1	20.8	29.9	10.5
Queue Length 50th (ft)	27	141	163	83	23
Queue Length 95th (ft)	61	187	207	145	51
Internal Link Dist (ft)		928	531	296	
Turn Bay Length (ft)	225				
Base Capacity (vph)	248	2123	1945	423	749
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.24	0.49	0.60	0.46	0.14

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Natural Cycle: 65
Control Type: Semi Act-Uncoord

Splits and Phases: 1: Grand River Ave & Division St





Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	1007	1012	72	175	95
Future Volume (vph)	57	1007	1012	72	175	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0	6.0	6.0		6.5	6.5
Lane Util. Factor	1.00	0.95	0.91		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1805	3539	4996		1736	1615
Flt Permitted	0.95	1.00	1.00		0.95	1.00
Satd. Flow (perm)	1805	3539	4996		1736	1615
Peak-hour factor, PHF	0.96	0.96	0.93	0.93	0.90	0.90
Adj. Flow (vph)	59	1049	1088	77	194	106
RTOR Reduction (vph)	0	0	10	0	0	15
Lane Group Flow (vph)	59	1049	1155	0	194	91
Heavy Vehicles (%)	0%	2%	3%	0%	4%	0%
Turn Type	Prot	NA	NA		Prot	pt+ov
Protected Phases	2	1 2	1		3	3 2
Permitted Phases						
Actuated Green, G (s)	11.0	48.0	31.0		19.5	36.5
Effective Green, g (s)	11.0	48.0	31.0		19.5	30.5
Actuated g/C Ratio	0.14	0.60	0.39		0.24	0.38
Clearance Time (s)	6.0		6.0		6.5	
Vehicle Extension (s)	3.0		3.0		3.0	
Lane Grp Cap (vph)	248	2123	1935		423	615
v/s Ratio Prot	0.03	c0.30	c0.23		c0.11	0.06
v/s Ratio Perm						
v/c Ratio	0.24	0.49	0.60		0.46	0.15
Uniform Delay, d1	30.8	9.1	19.5		25.8	16.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	2.3	0.8	1.4		3.6	0.5
Delay (s)	33.0	9.9	20.9		29.3	16.7
Level of Service	C	A	C		C	B
Approach Delay (s/veh)		11.2	20.9		24.9	
Approach LOS		B	C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	18.5
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	152	30	18	188	11	53	37	34	13	10	11
Future Vol, veh/h	7	152	30	18	188	11	53	37	34	13	10	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	85	85	85	72	72	72	65	65	65
Heavy Vehicles, %	0	1	0	0	1	0	0	0	0	0	0	0
Mvmt Flow	7	162	32	21	221	13	74	51	47	20	15	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	234	0	0	194	0	0	464	469	178	472	479	228
Stage 1	-	-	-	-	-	-	193	193	-	270	270	-
Stage 2	-	-	-	-	-	-	271	276	-	202	209	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1345	-	-	1392	-	-	512	495	871	505	489	817
Stage 1	-	-	-	-	-	-	814	745	-	740	690	-
Stage 2	-	-	-	-	-	-	739	685	-	804	733	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1345	-	-	1392	-	-	474	483	871	418	478	817
Mov Cap-2 Maneuver	-	-	-	-	-	-	474	483	-	418	478	-
Stage 1	-	-	-	-	-	-	809	740	-	727	678	-
Stage 2	-	-	-	-	-	-	695	673	-	703	729	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.28	0.63	12.84	12.71
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	474	614	65	-	-	148	-	-	519
HCM Lane V/C Ratio	0.155	0.161	0.006	-	-	0.015	-	-	0.101
HCM Ctrl Dly (s/v)	14	12	7.7	0	-	7.6	0	-	12.7
HCM Lane LOS	B	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0.6	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	40	1137	1017	69	0	63
Future Vol, veh/h	40	1137	1017	69	0	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Yield	Yield	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	200	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	97	97	90	90	64	64
Heavy Vehicles, %	0	2	2	0	0	13
Mvmt Flow	41	1172	1130	77	0	98

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	1168	603
Stage 1	-	-	1168	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	5.7	7.36
Critical Hdwy Stg 1	-	-	6.6	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.8	4.03
Pot Cap-1 Maneuver	-	-	259	358
Stage 1	-	-	194	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	259	358
Mov Cap-2 Maneuver	-	-	259	-
Stage 1	-	-	194	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Ctrl Dly, s/v	0	18.83
HCM LOS		C

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	358
HCM Lane V/C Ratio	-	-	0.275
HCM Ctrl Dly (s/v)	-	-	18.8
HCM Lane LOS	-	-	C
HCM 95th %tile Q(veh)	-	-	1.1

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	27	158	117	34	184	11	43	52	35	8	57	13
Future Vol, veh/h	27	158	117	34	184	11	43	52	35	8	57	13
Peak Hour Factor	0.88	0.88	0.88	0.87	0.87	0.87	0.83	0.83	0.83	0.73	0.73	0.73
Heavy Vehicles, %	0	1	5	0	1	0	0	0	4	0	0	0
Mvmt Flow	31	180	133	39	211	13	52	63	42	11	78	18
Number of Lanes	0	1	1	0	1	1	1	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	2
HCM Control Delay, s/veh	10.4	12.3	10.1	10.8
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	15%	0%	16%	0%	10%
Vol Thru, %	0%	60%	85%	0%	84%	0%	73%
Vol Right, %	0%	40%	0%	100%	0%	100%	17%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	87	185	117	218	11	78
LT Vol	43	0	27	0	34	0	8
Through Vol	0	52	158	0	184	0	57
RT Vol	0	35	0	117	0	11	13
Lane Flow Rate	52	105	210	133	251	13	107
Geometry Grp	5	5	5	5	5	5	4b
Degree of Util (X)	0.098	0.175	0.336	0.184	0.407	0.018	0.187
Departure Headway (Hd)	6.794	6.002	5.758	4.993	5.842	5.071	6.31
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	527	597	624	719	616	706	568
Service Time	4.533	3.74	3.487	2.722	3.571	2.801	4.351
HCM Lane V/C Ratio	0.099	0.176	0.337	0.185	0.407	0.018	0.188
HCM Control Delay, s/veh	10.3	10	11.4	8.9	12.5	7.9	10.8
HCM Lane LOS	B	A	B	A	B	A	B
HCM 95th-tile Q	0.3	0.6	1.5	0.7	2	0.1	0.7

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	173	28	34	218	18	14
Future Vol, veh/h	173	28	34	218	18	14
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	0	0	2	0	0
Mvmt Flow	188	30	37	237	20	15

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	218	0	514	203
Stage 1	-	-	-	-	203	-
Stage 2	-	-	-	-	311	-
Critical Hdwy	-	-	4.1	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1363	-	524	843
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	748	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1363	-	508	843
Mov Cap-2 Maneuver	-	-	-	-	508	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	724	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.04	11.21
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	614	-	-	243	-
HCM Lane V/C Ratio	0.057	-	-	0.027	-
HCM Ctrl Dly (s/v)	11.2	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Appendix D Crash Data

Crash Instance	Crash Year	Highway Number	Area of Road at Crash	Road Conditions	Lighting Conditions	Weather Conditions (2016+)	Crash Type	Crash: Pedestrian	Crash: Property Damage	Crash: Injury Crash	Crash: Fatal Crash
20205156	2020	M-43	Straight Roadway (not related to other	Wet	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20206403	2020	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20216458	2021	M-43	Intersection Crash - Within Intersection	Ice	Dark - Lighted	Snow	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20217813	2021	Local Road or Unknown	Straight Roadway (not related to other	Snow	Dark - Unlighted	Snow	Backing	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20226561	2022	M-43	Straight Roadway (not related to other	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20232288	2023	M-43	Straight Roadway (not related to other	Wet	Dark - Lighted	Rain	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20233415	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
20244966	2024	Local Road or Unknown	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202012185	2020	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202017404	2020	M-43	Straight Roadway (not related to other	Wet	Dark - Lighted	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202021841	2020	Local Road or Unknown	Intersection Crash - Within Intersection	Wet	Dark - Lighted	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202038148	2020	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202041471	2020	M-43	Intersection Crash - Intersection Related	Snow	Daylight	Snow	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202050700	2020	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202059168	2020	Local Road or Unknown	Intersection Crash - Within Intersection	Wet	Dusk	Rain	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202075300	2020	Local Road or Unknown	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202135825	2021	M-43	Intersection Crash - Intersection Related	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202140029	2021	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202168937	2021	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202171465	2021	M-43	Straight Roadway (not related to other	Wet	Daylight	Rain	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202183894	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202188733	2021	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Backing	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202212151	2022	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202221003	2022	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Dark - Lighted	Clear	Head-On - Left Turn	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202222950	2022	M-43	Straight Roadway (not related to other	Ice	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202222952	2022	M-43	Straight Roadway (not related to other	Ice	Daylight	Clear	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202222953	2022	M-43	Straight Roadway (not related to other	Ice	Dark - Lighted	Clear	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202223622	2022	M-43	Other	Snow	Dark - Lighted	Snow	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202228174	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
202231395	2022	Local Road or Unknown	Intersection Crash - Within Intersection	Snow	Daylight	Snow	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202231399	2022	M-43	Intersection Crash - Intersection Related	Wet	Dark - Lighted	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202232441	2022	M-43	Straight Roadway (not related to other	Snow	Daylight	Snow	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202235294	2022	M-43	Intersection Crash - Intersection Related	Wet	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202235295	2022	M-43	Straight Roadway (not related to other	Wet	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202238519	2022	M-43	Straight Roadway (not related to other	Wet	Dark - Unlighted	Rain	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202243830	2022	M-43	Other	Wet	Daylight	Clear	Sideswipe - Opposite Directions	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202248025	2022	M-43	Intersection Crash - Intersection Related	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202249706	2022	Local Road or Unknown	Other Non-Freeway Areas - Parking Related (legal roadside)	Wet	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)

202249707	2022	M-43	Straight Roadway (not related to other	Wet	Daylight	Snow	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202257943	2022	Local Road or Unknown	Intersection Crash - Intersection Related	Wet	Dark - Lighted	Rain	Single Motor Vehicle	Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
202259237	2022	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202265118	2022	M-43	Straight Roadway (not related to other	Wet	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202265119	2022	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Backing	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202289672	2022	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202290324	2022	Local Road or Unknown	Intersection Crash - Within Intersection	Wet	Dark - Lighted	Rain	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202322470	2023	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
202322478	2023	M-43	Freeway Crash - Curved Roadway	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202333775	2023	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Dark - Lighted	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202333776	2023	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202335479	2023	Local Road or Unknown	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Unknown	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202364857	2023	M-43	Other Non-Freeway Areas - Median Crossing Related	Dry	Daylight	Cloudy	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202371942	2023	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202384203	2023	Local Road or Unknown	Intersection Crash - Within Intersection	Wet	Daylight	Cloudy	Sideswipe - Opposite Directions	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202385848	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202385849	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202393530	2023	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Cloudy	Rear-End - Right Turn	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202396016	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202410262	2024	Local Road or Unknown	Intersection Crash - Within Intersection	Snow	Dusk	Blowing Snow	Head-On	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202418486	2024	M-43	Straight Roadway (not related to other	Wet	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202425134	2024	M-43	Straight Roadway (not related to other	Dry	Dusk	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202426108	2024	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202430834	2024	M-43	Straight Roadway (not related to other	Wet	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202435701	2024	Local Road or Unknown	Straight Roadway (not related to other	Dry	Daylight	Clear	Unknown	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202435706	2024	M-43	Straight Roadway (not related to other	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202435718	2024	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202446662	2024	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Single Motor Vehicle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
202448861	2024	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202451379	2024	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202458206	2024	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202471861	2024	Local Road or Unknown	Straight Roadway (not related to other	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202474778	2024	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202475346	2024	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
202477606	2024	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2020129982	2020	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2020154168	2020	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2020157614	2020	M-43	Straight Roadway (not related to other	Dry	Dusk	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2020200118	2020	Local Road or Unknown	Straight Roadway (not related to other	Dry	Dark - Lighted	Clear	Angle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)

2021117678	2021	M-43	Straight Roadway (not related to other	Wet	Daylight	Rain	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021160078	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2021171317	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021179006	2021	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2021186343	2021	M-43	Intersection Crash - Within Intersection	Wet	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021191399	2021	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021213161	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2021213162	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021223612	2021	M-43	Straight Roadway (not related to other	Wet	Dusk	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021225265	2021	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2021227504	2021	Local Road or Unknown	Straight Roadway (not related to other	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021227505	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021232477	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021235728	2021	Local Road or Unknown	Straight Roadway (not related to other	Wet	Daylight	Cloudy	Backing	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021246789	2021	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021257075	2021	M-43	Other Non-Freeway Areas - Transition Area (increase or decrease in travel	Dry	Dark - Lighted	Clear	Rear-End - Right Turn	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021257831	2021	Local Road or Unknown	Straight Roadway (not related to other	Dry	Dark - Lighted	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021261594	2021	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Wet	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2021277288	2021	M-43	Intersection Crash - Intersection Related	Dry	Dark - Lighted	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022101225	2022	Local Road or Unknown	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Backing	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022103527	2022	M-43	Straight Roadway (not related to other	Wet	Dark - Lighted	Rain	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022106172	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2022112208	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022157833	2022	M-43	Straight Roadway (not related to other	Wet	Daylight	Rain	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022175926	2022	M-43	Intersection Crash - Intersection Related	Wet	Daylight	Rain	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022179120	2022	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022184004	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022198206	2022	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Single Motor Vehicle	Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2022199796	2022	Local Road or Unknown	Driveway Related (within 150 feet of nearest edge of intersection)	Wet	Daylight	Cloudy	Single Motor Vehicle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2022201849	2022	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Rear-End - Left Turn	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022201851	2022	Local Road or Unknown	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Dark - Lighted	Clear	Single Motor Vehicle	Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2022208617	2022	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022211737	2022	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2022217507	2022	M-43	Freeway Crash - All Other Freeway Areas	Dry	Daylight	Clear	Single Motor Vehicle	Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2022219586	2022	M-43	Intersection Crash - Intersection Related	Dry	Dark - Lighted	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022224306	2022	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Unknown	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022235405	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022246537	2022	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Cloudy	Other	Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)

2022246552	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022250436	2022	Local Road or Unknown	Intersection Crash - Intersection Related	Ice	Dark - Lighted	Snow	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022269000	2022	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022269007	2022	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Dark - Lighted	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022272334	2022	M-43	Straight Roadway (not related to other	Dry	Dark - Lighted	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022284334	2022	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2022294863	2022	Local Road or Unknown	Other Non-Freeway Areas - Parking Related (legal roadside)	Wet	Dark - Lighted	Cloudy	Backing	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023136106	2023	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2023139807	2023	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023141578	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023145863	2023	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Head-On - Left Turn	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2023146581	2023	Local Road or Unknown	Straight Roadway (not related to other	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023151599	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023173277	2023	Local Road or Unknown	Straight Roadway (not related to other	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023176074	2023	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023176957	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2023191894	2023	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Dusk	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023197933	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Other	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023197934	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023197942	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023201692	2023	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023202759	2023	M-43	Intersection Crash - Intersection Related	Dry	Dark - Lighted	Clear	Single Motor Vehicle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2023208259	2023	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Wet	Dark - Lighted	Cloudy	Single Motor Vehicle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023215850	2023	M-43	Intersection Crash - Within Intersection	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023217889	2023	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023220281	2023	M-43	Straight Roadway (not related to other	Dry	Dark - Lighted	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023231191	2023	M-43	Straight Roadway (not related to other	Wet	Dark - Lighted	Unknown	Unknown	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023241773	2023	M-43	Transition Area (increase or decrease in travel	Wet	Daylight	Rain	Rear-End	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2023244551	2023	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023264518	2023	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Daylight	Cloudy	Angle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2023273341	2023	M-43	Intersection Crash - Intersection Related	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023275289	2023	M-43	Intersection Crash - Intersection Related	Dry	Dark - Lighted	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2023283598	2023	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Daylight	Cloudy	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024127419	2024	M-43	Driveway Related (within 150 feet of nearest edge of intersection)	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024145819	2024	M-43	Straight Roadway (not related to other	Dry	Daylight	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2024150374	2024	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2024173798	2024	Local Road or Unknown	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024175430	2024	M-43	Straight Roadway (not related to other	Dry	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024177943	2024	M-43	Intersection Crash - Within Intersection	Dry	Dark - Lighted	Clear	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024185849	2024	M-43	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)

2024199433	2024	M-43	Straight Roadway (not related to other	Wet	Daylight	Cloudy	Sideswipe - Same Direction	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024211201	2024	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024231274	2024	M-43	Straight Roadway (not related to other selections)	Dry	Daylight	Cloudy	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024234656	2024	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Daylight	Clear	Angle	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)
2024246937	2024	Local Road or Unknown	Intersection Crash - Within Intersection	Dry	Dark - Lighted	Cloudy	Angle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2024252569	2024	M-43	Median Crossing Related	Dry	Daylight	Cloudy	Single Motor Vehicle	No Pedestrian Involved	Not Property Damage Only	Injury Crash (no fatalities)	No Fatalities (may be injuries)
2024253492	2024	M-43	Straight Roadway (not related to other selections)	Dry	Daylight	Clear	Rear-End	No Pedestrian Involved	Property Damage Only	No Injuries (may be fatalities)	No Fatalities (may be injuries)

With every community, we redefine what's possible.

Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

Stantec Consulting Michigan Inc.
stantec.com

SITE PLAN

FOR

530 ALBERT

530 ALBERT AVENUE, EAST LANSING,
MICHIGAN, 48823

CLIENT

TAREEN DEVELOPMENT PARTNERS

TAREEN DEVELOPMENT PARTNERS
2770 FAIRVIEW AVE N, ROSEVILLE,
MN 55113
DEVELOPMENT MANAGER: CODY DIETRICH
(E) - CODY@TDPMN.COM

ENGINEER

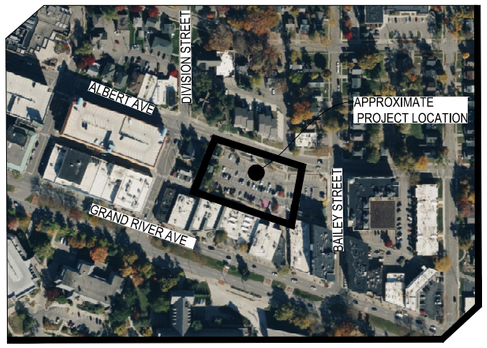
Stantec

STANTEC CONSULTING MICHIGAN, INC.
2321 CLUB MERIDIAN DRIVE SUITE E,
OKEMOS, MI 48864
PROJECT MANAGER: JOHN PENSHORN, PE
(E) - JOHN.PENSHORN@STANTEC.COM

ARCHITECT

esg

ESG ARCHITECTURE & DESIGN
350 NORTH 5TH STREET, SUITE 400,
MINNEAPOLIS, MN 55401
CONTACT: NATHAN CANTLEY, AIA
(E) - NATHAN.CANTLEY@ESGARCH.COM

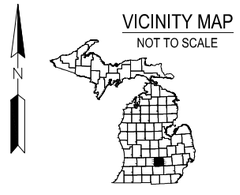


THIS SHEET SET CONTAINS 16 SHEETS

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE
G-001	COVER SHEET
G-002	GENERAL NOTES
G-003	GENERAL NOTES
C-001	EXISTING CONDITIONS
C-002	REMOVALS AND PRECONSTRUCTION EROSION CONTROL PLAN
C-101	SITE PLAN
C-201	POST-CONSTRUCTION STABILIZATION PLAN
C-301	GRADING PLAN
C-401	UTILITY PLAN
C-801	DETAILS
C-802	DETAILS
C-803	DETAILS
C-804	DETAILS
L-101	TREE PRESERVATION PLAN
L-201	LANDSCAPE PLAN
L-202	LANDSCAPE DETAILS

VICINITY MAP
NOT TO SCALE



PROJECT LOCATION
CITY: EAST LANSING
COUNTY: INGHAM

WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES, THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT MISS DIG AT 811 OR 1-800-482-7171 AT 3 BUSINESS DAYS (EXCLUDING HOLIDAYS) IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING, THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
MISS DIG 811
MICHIGAN AREA: 811
TOLL FREE 1-800-482-7171

Stantec
2321 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

TAREEN DEVELOPMENT PARTNERS

CLIENT

530 ALBERT
530 ALBERT AVENUE, EAST LANSING,
MICHIGAN, 48823

PROJECT TITLE

ISSUE NO.	DATE	DESCRIPTION
1	05/05/26	LAND USE SUBMITTAL

CERTIFICATION:

JOHN PENSHORN
LICENSED PROFESSIONAL ENGINEER

PROJECT NO.	255500018	
DWN BY: RAO	CHK'D BY: MJS	APP'D BY: JTP
ISSUE DATE:	05/05/2026	
ISSUE NO.	1	
SHEET TITLE:	COVER SHEET	
SHEET NO.:	G-001	

GOVERNING SPECIFICATIONS

1. CITY OF EAST LANSING (CITY) STANDARD SPECIFICATIONS AND REQUIREMENTS.
2. MICHIGAN DEPARTMENT OF TRANSPORTATION (MDOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION" LATEST EDITION AND SUPPLEMENTS.
3. CITY/UTILITY PROVIDER SPECIFICATIONS, LOCAL PLUMBING CODE
4. APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES

PROJECT AGENCIES/AUTHORITIES

1. MUNICIPALITY: CITY OF EAST LANSING (CITY)
2. ROW AUTHORITY: CITY OF EAST LANSING
3. UTILITY AUTHORITY: CITY OF EAST LANSING PUBLIC WORKS
4. NOTE: NOT ALL APPLICABLE AUTHORIES MAY BE LISTED.

GENERAL NOTES

1. UNTIL REVISION BLOCK STATES "ISSUED FOR CONSTRUCTION", THE PLAN SET IS NOT CERTIFIED FOR CONSTRUCTION AND CONTRACTOR IS BUILDING AT THEIR OWN RISK.
2. EXISTING CONDITIONS SHOWN ARE FROM A TOPOGRAPHIC SURVEY COMPLETED BY MIDWESTERN CONSULTING LLC. DATED AUGUST 2025. EXISTING FEATURES MAY NOT BE EXACT TO THEIR LOCATION. CONTRACTOR RESPONSIBLE FOR VERIFYING THE CONDITIONS OF THE SITE AND MUST IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF DISCREPANCIES OR VARIATIONS FROM THE DRAWINGS.
3. SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". EXACT LOCATIONDEPTH OF SUBSURFACE UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN AND THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
4. CONTRACTOR RESPONSIBLE FOR CONTACTING MISS DIG 811 (811 OR 1-800-482-7171) A MINIMUM OF THREE BUSINESS DAYS IN ADVANCE BEFORE STARTING WORK FOR LOCATIONS OF UNDERGROUND UTILITIES.
5. CONTRACTOR SHALL ANTICIPATE PRIVATE UTILITY CONFLICTS THROUGHOUT THE PROJECT SUB CUT AND TRENCH AREAS AND MUST COORDINATE THE RELOCATION OR PROTECTION OF EXISTING UTILITIES, OR INSTALLATION OF NEW UTILITIES WITH UTILITY OWNERS THAT MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE STARTING WORK. COSTS FOR SUCH WORK, INCLUDING EXTRA TIME AND EFFORT FOR PROVISIONS NECESSARY TO WORK AROUND OR UNDER UTILITIES, IS THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER. FEES OR CHARGES WHICH ARE TO BE PAID TO THE UTILITY COMPANY, INCLUDING WORK THAT MUST BE PERFORMED BY THE UTILITY COMPANY, ARE TO BE INCLUDED IN THE CONTRACTOR'S BID PRICE
6. WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
7. CONTRACTOR SHALL COORDINATE WORK WITH OTHER CONTRACTORS PERFORMING WORK AT OR NEAR THE SITE.
8. CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS TO PROPERTIES LOCATED WITHIN THE PROJECT LIMITS DURING CONSTRUCTION. ANY ACCESS RESTRICTIONS TO RESIDENTS/BUSINESSES OR ROAD CLOSURES WITHIN THE PROJECT LIMITS MUST BE COORDINATED AND NOTIFICATIONS PROVIDED A MINIMUM OF 48 HOURS PRIOR TO CREATING THE ACCESS RESTRICTION.
9. CONTRACTOR SHALL COORDINATE AND MAINTAIN MAIL, GARBAGE, AND RECYCLING SERVICES TO PROPERTIES THROUGHOUT CONSTRUCTION. COORDINATE WITH LOCAL POSTMASTER, GARBAGE AND RECYCLING SERVICES.
10. CONTRACTOR SHALL COORDINATE AND MAINTAIN STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW). CORRECTION OF DAMAGED SOILS OR CONSTRUCTED SITE FEATURES THAT ARE A RESULT OF THE CONTRACTOR'S FAILURE TO PROTECT THE SITE FROM TEMPORARY DRAINAGE CONDITIONS SHALL BE PERFORMED AT NO ADDITIONAL COSTS TO THE OWNER. THE METHOD OF SOIL CORRECTION WILL BE DETERMINED BY THE ENGINEER/GEOTECHNICAL ENGINEER.
11. CONTRACTOR SHALL COORDINATE AND MAINTAIN WATER AND SANITARY FLOW TO AND FROM PROPERTIES. PROVIDE BYPASS AND TEMPORARY SYSTEMS, AS NECESSARY.
12. CONTRACTOR SHALL COORDINATE AND MAINTAIN UTILITY SERVICES TO ADJACENT PROPERTIES AT ALL TIMES. UTILITY SERVICE MUST NOT BE INTERRUPTED WITHOUT APPROVAL FROM OWNER, CITY, AND ADJACENT PROPERTIES.
13. CONTRACTOR SHALL COORDINATE WITH UTILITY SERVICES FOR SMALL/DRY UTILITY INSTALLATION.
14. CONSTRUCTION LIMITS ARE TO PROPERTY LINE UNLESS SHOWN OR NOTED OTHERWISE. CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON PLANS WITHIN THE CONSTRUCTION LIMITS.
15. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
16. EXISTING PAVEMENT AND SITE CONDITIONS HAVE BEEN DOCUMENTED, AND ANY DAMAGE TO THE EXISTING PAVEMENT, CURBING, STRIPING, OR OTHER SITE FEATURE TO REMAIN MUST BE REPLACED BY THE CONTRACTOR, TO OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
17. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
18. CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
19. CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT, SPECIAL CONDITIONS AND PROVISIONS, ETC.) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
20. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR IMPLEMENTATION AND ENFORCEMENT OF SAFE WORK PRACTICES, INCLUDING BUT NOT LIMITED TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, SCAFFOLDING, MATERIALS HANDLING AND DRILLING; OPERATION OF EQUIPMENT; AND SAFETY OF PUBLIC DURING PROGRESS OF WORK.
21. CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH PROVISIONS OF OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
22. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT, CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.
23. HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND OTHER HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, BY THE CONTRACTOR, INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH LOCAL/STATE/FEDERAL REGULATIONS. CONTRACTOR SHALL REMOVE SPILL OF FUELS, OILS, OR OTHER CHEMICALS IMMEDIATELY UPON DETECTION.
24. IF CONSTRUCTION IS ANTICIPATED TO OCCUR DURING COLD WEATHER, IN THE EVENT THAT SNOWICE REMOVAL IS REQUIRED FOR SITE ACCESS AND CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL REMOVE SNOWICE AND COORDINATE WITH OWNER FOR ACCEPTABLE SNOWICE STORAGE AREAS ONSITE. SNOWICE REMOVAL AND STORAGE IS INCIDENTAL TO THE CONTRACT.

REMOVAL / DEMOLITION NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR DEMOLITION, REMOVAL AND DISPOSAL.
3. CONTRACTOR SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT CONFLICT WITH CONSTRUCTION WITH THE ENGINEER.
4. MATERIALS REMOVED/DEMOLISHED BY CONTRACTOR BECOME PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL LOAD AND HAUL MATERIAL OFF-SITE AND PROPERLY DISPOSE OF MATERIALS IN ACCORDANCE WITH APPLICABLE REGULATIONS. CONTRACTOR MUST LEAVE THE SITE IN A CONDITION TO THE SATISFACTION OF THE OWNER AND ENGINEER.
5. CONTRACTOR SHALL SAWCUT FULL DEPTH AT PAVEMENT REMOVAL LIMITS AND AS NECESSARY TO CREATE A SMOOTH FIT/TRANSITION ALONG MATCHING PAVEMENT AREAS.
6. CONTRACTOR SHALL COORDINATE UTILITY REMOVAL WORK WITH APPROPRIATE UTILITY OWNER.
7. CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY ENGINEER. IF SIGNS ARE DAMAGED DURING CONSTRUCTION, CONTRACTOR REQUIRED TO PROVIDE NEW SIGNS AT NO ADDITIONAL COST TO THE OWNER.
8. CONTRACTOR SHALL SALVAGE AND REINSTALL FENCE IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY ENGINEER. IF FENCE IS DAMAGED DURING CONSTRUCTION, CONTRACTOR REQUIRED TO PROVIDE NEW FENCE, TO OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
9. IN THE EVENT THAT UNKNOWN CONTAINERS OR TANKS ARE ENCOUNTERED, THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY. ALL CONTAINERS OR TANKS MUST BE DISPOSED OF PROPERLY AT A REGULATED/PERMITTED FACILITY.
10. CONTRACTOR SHALL REVIEW ALL TREE REMOVALS WITH THE OWNER AND CITY DEPARTMENT OF PUBLIC WORKS PRIOR TO REMOVAL OPERATIONS.

REMOVAL / DEMOLITION NOTES (CONT.)

11. CLEARING AND GRUBBING OPERATIONS MUST COMPLY WITH THE FOLLOWING: PROTECT ALL TREES AND PLANTS NOT DESIGNATED FOR REMOVAL. CONDUCT OPERATIONS IN SUCH A MANNER THAT DOES NOT DAMAGE PROTECTED TREES AND VEGETATION; CUT, REMOVE, AND DISPOSE OF TREES, BRUSH, SHRUBS, WINDFALLS, LOGS, STUMPS, ROOTS, FALLEN TIMBER, AND OTHER VEGETATION; BACKFILL DEPRESSIONS WITH NATIVE SOILS OR SUITABLE FILL MATERIAL AS REQUIRED BY DESIGN OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND COMPACT BACKFILL AS DIRECTED. DISPOSE OF DEBRIS IN ACCORDANCE WITH APPLICABLE REGULATIONS; CONSIDER BENEFICIAL USE DESIGNATIONS FOR UNADULTERATED WOOD, WOOD CHIPS, BARK AND SAWDUST; NO BURYING OF CLEARED AND GRUBBED WASTE WITHIN THE CONSTRUCTION LIMITS.
12. UNLESS OTHERWISE NOTED, CONTRACTOR IS RESPONSIBLE FOR REMOVAL/DEMOLITION WITHIN ALL AREAS OF PROPOSED IMPROVEMENTS. REMOVAL LIMITS ARE IDENTIFIED ON THE DRAWINGS IN ANTICIPATED LOCATIONS. CONTRACTOR RESPONSIBLE FOR REMOVALS AS NECESSARY TO CONSTRUCT NEW IMPROVEMENTS AND CONFORM TO DESIGN REQUIREMENTS. ALL FACILITIES TO BE REMOVED MUST BE UNDEROUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE FILL MATERIAL IN ACCORDANCE WITH THE SPECIFICATIONS AND AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

TRAFFIC CONTROL NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR SHALL COORDINATE CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY TO COMPLETE THE WORK. IF OFFSITE STAGING AREA IS REQUIRED, CONTRACTOR IS RESPONSIBLE TO FIND, OBTAIN, AND PAY FOR NECESSARY STAGING AREA AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A STAGING PLAN TO THE ENGINEER FOR REVIEW BEFORE STARTING WORK.
3. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL. TRAFFIC CONTROL MUST BE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE'S MUTCD, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. SUBMIT TRAFFIC CONTROL PLAN TO CITY OF EAST LANSING, AND ENGINEER FOR REVIEW BEFORE CONSTRUCTION RELATED ACTIVITIES. PLANS MUST COMPLY WITH APPLICABLE PERMIT REQUIREMENTS. TRAFFIC CONTROL ALSO INCLUDES NECESSARY SIGNAGE AND MARKINGS FOR SIDEWALKS, TRAILS, BOARDWALKS, ETC, CLOSURE. THIS MUST INCLUDE ADVANCED WARNING SIGNS AND NECESSARY FENCING AND SIGNAGE TO PREVENT PEDESTRIANS FROM ACCESSING THE PROPOSED AREA.
4. CONTRACTOR MUST SCHEDULE WORK IMPACTING ALBERT AVE OR PUBLIC ALLEYS SOUTH OF THE PROJECT WITH THE OWNER, AND CITY OF EAST LANSING. CLOSURES OR DETOURS MUST BE ACCEPTED BY OWNER, AND CITY OF EAST LANSING PRIOR TO STARTING WORK.
5. CONTRACTOR SHALL MAINTAIN TWO-WAY TRAFFIC ON ALBERT AVE AT ALL TIMES, UNLESS OTHERWISE APPROVED BY THE ROAD AUTHORITY.

SITE NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. REFER TO THE ARCHITECTURAL, STRUCTURAL, LANDSCAPE, AND MEP PLANS FOR EXACT LOCATIONS OF AND DIMENSIONS OF BUILDINGS, VESTIBULES, STOOPS, OVERHANGS, COLUMNS, RAMPS, SIDEWALKS, TRASH ENCLOSURES, TRAFFIC GATES, MONUMENT SIGNS, LANDSCAPING, PLANTINGS, TREES, SITE LIGHTING, EXTERIOR ELECTRICAL, BACKFLOW PREVENTORS AND BUILDING UTILITY ENTRANCE LOCATIONS.
3. BUILDING LINES SHOWN ARE APPROXIMATE OUTSIDE LINES OF BUILDINGS AT GRADE, MAY NOT ACCOUNT FOR EXTRUSIONS (IE. BALCONIES, OVERHANGS, LIGHTING, ETC.) ABOVE GRADE, AND ARE BASED ON INFORMATION PROVIDED PRIMARILY BY THE ARCHITECT. CONTRACTOR SHALL VERIFY FINAL BUILDING PLANS WITH ARCHITECT.
4. CONTRACTOR AND SURVEYOR SHALL FIELD VERIFY THE BUILDING FOOTPRINT/OUTLINE AND OUTER MOST EXTRUSIONS PRIOR TO CONSTRUCTION TO REVIEW POTENTIAL CONFLICTS WITH ADJACENT WORK, EXISTING SITE FEATURES, PROPERTY LINES, SETBACKS, ETC.
5. EQUIPMENT PAD ELEVATIONS SHOWN ON GRADING PLAN, EQUIPMENT PAD STRUCTURAL/CONCRETE DESIGN BY ARCHITECT/STRUCTURAL/MEP. COORDINATE WITH PROJECT PARTNERS.
6. CONCRETE GUTTER PAN TO TIP IN THE SAME DIRECTION AS THE ADJACENT PAVEMENT.
7. DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.

PAVING, PAVEMENT MARKING, AND SIGNAGE NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR SHALL MAINTAIN STREET AND TRAFFIC SIGNS AT ALL TIMES DURING CONSTRUCTION.
3. SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES MUST BE IN ACCORDANCE WITH THE STATE'S MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND THE APPLICABLE ROAD AUTHORITY STANDARDS.
4. THE PAVEMENT SURFACE SHALL BE CLEANED AT THE DIRECTION OF THE APPLICABLE ROAD AUTHORITY AND THE ENGINEER JUST PRIOR TO APPLICATION OF PAVEMENT MARKINGS. PAVEMENT CLEANING SHALL CONSIST OF AT LEAST BRUSHING WITH A ROTARY BROOM (NONMETALLIC) OR AS RECOMMENDED BY THE MATERIALS MANUFACTURER AND ACCEPTABLE TO THE APPLICABLE ROAD AUTHORITY AND THE ENGINEER.
5. THE PAVEMENT MARKING APPLICATION SHALL IMMEDIATELY FOLLOW THE PAVEMENT CLEANING.
6. PAVEMENT MARKING EDGE LINES ARE TO BE BROKEN ONLY AT INTERSECTION WITH PUBLIC ROADS AND PRIVATE ENTRANCES IF THEY ARE CONTROLLED BY A YIELD SIGN, STOP SIGN OR TRAFFIC SIGNAL, THE BREAK POINT IS TO BE AT THE START OF THE RADIUS TO THE INTERSECTION OR AT MARKED STOP LINES.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAVEMENT MARKING RELATED ACTIVITIES, SUCH AS, BUT NOT LIMITED TO, COLLECTING DATA FROM IN PLACE LANE LINES, MARKING PERMANENT MARKING ALIGNMENTS, NECESSARY 'SPOTTING' AT APPROPRIATE POINTS AND TO DETERMINE NECESSARY STARTING AND CUTOFF POINTS, EXACT LOCATION OF PAVEMENT MARKINGS TO BE FIELD LOCATED BY THE ENGINEER.
8. THE CONTRACTOR SHALL HAVE A MINIMUM OF 2 PEOPLE WITH CURRENT ACI CONCRETE FLATWORK TECHNICIAN OR FLATWORK FINISHER CERTIFICATION, AND AT LEAST ONE OF THEM MUST BE ONSITE FOR ALL CONCRETE POURS.
9. PROTECT CONCRETE PAVING FROM DAMAGE. EXCLUDE TRAFFIC FROM PAVING FOR A MINIMUM OF 14 DAYS AFTER PLACEMENT, WHEN CONSTRUCTION TRAFFIC IS PERMITTED, MAINTAIN PAVING AS CLEAN AS POSSIBLE BY REMOVING SURFACE STAINS AND SPILLAGE OF MATERIALS AS THEY OCCUR. MAINTAIN CONCRETE FREE OF STAINS, DISCOLORATION, DIRT, AND OTHER FOREIGN MATERIALS. SWEEP PAVING NOT MORE THAN TWO DAYS BEFORE DATE SCHEDULED FOR SUBSTANTIAL COMPLETION INSPECTIONS, REPAIR OR REPLACE STAINED/DISCOLORED CONCRETE TO THE SATISFACTION OF THE OWNER AT NO COST TO THE OWNER.
10. CONSTRUCTION IN AND MAINTENANCE WITHIN PUBLIC RIGHT-OF-WAY MUST BE IN ACCORDANCE WITH APPLICABLE ROAD AUTHORITY'S SPECIFICATIONS AND STANDARDS. DOT SPECIFICATIONS AND STANDARDS APPLY IF NOT COVERED BY LOCAL OR COUNTY REGULATIONS. PAVING, PAVEMENT MARKINGS, AND SIGNAGE WITHIN THE SITE SHALL MEET THE FOLLOWING REQUIREMENTS:
    A. HMA: CONFORM TO MDOT SPECS 501, 902, AND 904. AND MDOT HMA PRODUCTION MANUAL
        1) TOP COURSE MIX DESIGN: SEE DETAILS
        2) BASE COURSE MIX DESIGN: SEE DETAILS
        3) RECYCLED MATERIAL: SEE DETAILS
        4) TACK COAT: MDOT SPECS 501.03.D BOND COAT AND 904 EMULSIFIED ASPHALT, CATIONIC, CSS-1 OR CSS-1H
    B. MAXIMUM ALLOWABLE HMA LIFT THICKNESS SHALL NOT EXCEED 3 INCHES, MINIMUM LIFT THICKNESS SHALL BE IN ACCORDANCE WITH THE FOLLOWING: 1.5 INCHES FOR MIXES WITH 0.5 INCH MAX AGGREGATE SIZE; 2 INCHES FOR MIXES WITH 0.75 INCH MAX AGGREGATE SIZE ; 0.75 INCHES FOR MIXES WITH 0.375 INCH MAX AGGREGATE SIZE.
    C. PLACE TACK COAT BETWEEN OLD (1 YEAR OR OLDER) BITUMINOUS SURFACE AND NEW LIFT AT A RATE OF 0.07 GALLONS PER SQUARE YARD.
    D. PLACE TACK COAT BETWEEN MILLED SURFACE AND NEW LIFT AT A RATE OF 0.08 GALLONS PER SQUARE YARD.
    E. CONCRETE SIDEWALK/DRIVEWAYS/SLABS MATERIALS: MDOT SPECS 602, 801, 803, AND 1004
    F. CONCRETE CURB AND GUTTER MATERIALS: MDOT SPECS 802, AND 1004
        1) MANUAL PLACEMENT: MDOT SPEC 1004 GRADE 4000
        2) SLIP FORM PLACEMENT: MDOT SPEC 1004 GRADE 4000
    G. CONCRETE METAL REINFORCEMENT:
        1) REINFORCING BARS: CONFORM TO MDOT SPECS 602, 905, AND 914. AND AS SPECIFIED ON THE DRAWINGS. COATING: MDOT SPEC 905.03.C
        2) TIE WIRE: TIE WIRES IN ACCORDANCE WITH MDOT SPECIFICATIONS
        3) BAR SUPPORTS: CONFORM TO "BAR SUPPORT SPECIFICATIONS AND STANDARD NOMENCLATURE", CRSI MANUAL OF STANDARD PRACTICE.
        4) WELDED WIRE FABRIC/REINFORCEMENT: CONFORM TO MDOT SPECS 602, 905, AND 914, AND AS SPECIFIED ON THE DRAWINGS. COATING: MDOT SPEC 905.03.C
    H. CONCRETE ISOLATION/EXPANSION JOINT MATERIAL: MDOT SPEC 914 FROM MDOT'S QUALIFIED PRODUCTS LIST. PROVIDE CAULKING/JOINT SEALANT AND BACKER ROAD AS RECOMMENDED BY JOINT MANUFACTURER.
    I. CONCRETE CURING MATERIALS: MDOT SPEC 903
    J. SILANE/SILOXANE CONCRETE SEALER: SILOXA-TEK 8500, OKON 540, ARMOR SX5000, OR APPROVED EQUAL. SHALL BE APPLIED PER MANUFACTURER INSTRUCTIONS. SHALL BE APPLIED ON A CLEAN, DRY, AND ABSORBENT SURFACE THAT HAS BEEN CURED FOR AT LEAST 28 DAYS PRIOR TO APPLICATION. SHALL BE APPLIED TO A SURFACE THAT IS ABOVE 40 DEGREES FAHRENHEIT AND WILL NOT FREEZE FOR AT LEAST 24 HOURS. APPLICATION RATE SHALL BE MONITORED AND BE GREATER THAN MANUFACTURERS RECOMMENDATIONS.

PAVING, PAVEMENT MARKING, AND SIGNAGE NOTES (CONT.)

    K. CONCRETE CURING AND SEALER ALTERNATE: TK PRODUCTS ONE-STEP CURING AND SEALING PRODUCT OR EQUAL. SHALL BE APPLIED PER MANUFACTUER INSTRUCTIONS. SHALL BE APPLIED TO A SURFACE THAT IS ABOVE 40 DEGREES FAHRENHEIT AND WILL NOT FREEZE FOR AT LEAST 24 HOURS, APPLICATION RATE SHALL BE MONITORED AND BE GREATER THAN MANUFACTURERS RECOMMENDATIONS.
    L. CONCRETE PLACING, FINISHING, CURING, AND PROTECTION: CONFORM TO MDOT SPECS 602, 706, 801, 802, AND 803, AND APPLICABLE ACI STANDARDS
        1) FOR HOT WEATHER PLACEMENT, COMPLY WITH ACI 305 HOT WEATHER CONCRETING (LATEST EDITION).
        2) FOR COLD WEATHER PLACEMENT, COMPLY WITH ACI 306 COLD WEATHER CONCRETING (LATEST EDITION). DO NOT PLACE CONCRETE IN AIR TEMPERATURE LESS THAN 40 DEGREES F WITHOUT APPROVAL OF THE ENGINEER.
        3) PRIOR TO POURING ANY EXTERIOR CONCRETE FLATWORK/SLAB, CONTRACTOR MUST VERIFY THE PREDICTED COMBINATION OF AIR TEMPERATURE, RELATIVE HUMIDITY. CONCRETE TEMPERATURE AND WIND VELOCITY WILL NOT EXCEED AN EVAPORATION RATE OF 0.20 POUNDS PER SQUARE FOOT OF SURFACE AREA PER HOUR IN ACCORDANCE WITH ACI 305 (LATEST EDITION) AND MDOT SPEC 706, FIGURE 706-1, THE WEATHER MUST ALSO BE LESS THAN 30% CHANCE OF PRECIPITATION FOR THE ENTIRE PLACEMENT WINDOW, AND 2 HOURS FOLLOWING EXPECTED COMPLETION. IF EITHER OF THESE CONDITIONS ARE NOT MET, THE POUR MUST BE POSTPONED UNTIL IT CAN MEET THESE REQUIREMENTS.
        4) INSTALLATION FORM: CONTRACTOR OR INDEPENDENT TESTING AGENCY IS REQUIRED TO FILL OUT AND SUBMIT THE ENGINEER'S EXTERIOR CONCRETE INSTALLATION FORM AT THE END OF THE DAY OF EACH POUR. CONTACT THE ENGINEER TO OBTAIN THE FORM.
        5) APPLY CURING COMPOUND AT A MINIMUM RATE OF 1 GALLON PER 150 SQ FT SURFACE CURING AREA OR MANUFACTURER RECOMMENDED APPLICATION RATE, WHICHEVER IS GREATER.
        6) CONSTRUCT TEMPORARY WIND BREAKS AS NECESSARY TO REDUCE WIND VELOCITY/DRYING/EXPOSURE.
        7) CONSTRUCT TEMPORARY SUNSHADES AS NECESSARY TO REDUCE CONCRETE TEMPERATURES/EXPOSURE.
        8) CONTRACTOR SHALL PROTECT ALL CONCRETE SLABS THROUGHOUT CONSTRUCTION FROM HEAVY EQUIPMENT VIBRATIONS, ADJACENT WORK, ETC. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONCRETE DAMAGED DURING CONSTRUCTION AND SHALL REPLACE AT NO ADDITIONAL COST TO THE OWNER.
    M. AGGREGATE BASE: MDOT SPECS 302 AND 902 DENSE GRADED AGGREGATES CLASS 21A
    N. AGGREGATE SURFACING: MDOT SPECS 306, 307, AND 902 DENSE GRADED AGGREGATE CLASS 23A
    O. GRANULAR BASE: MDOT SPECS 205, 301, AND 902, GRANULAR MATERIAL CLASS II
    P. PAVEMENT MARKINGS: MDOT SPECS 811 AND 920
        1) PAVEMENT STRIPES: MDOT SPECS 811 AND 920
        2) PAVEMENT MESSAGES (ARROWS): MDOT SPECS 811 AND 920
        3) PRIOR TO APPLYING PAVEMENT MARKINGS, ALLOW NEW PAVEMENT TO CURE A MINIMUM OF 14 DAYS OR FOLLOW MANUFACTURER'S SPECIFICATION FOR PAVEMENT CURE TIME, WHICHEVER IS GREATER.
    Q. SIGNAGE: CONFORM TO MDOT SPEC 810 AND 919 , ALL SIGNS/POSTS SHALL MEET CRASHWORTHY REQUIREMENTS OF MASH-16. SIGNS SHALL INCLUDE NUMBER AND SIZE OF POSTS IN ACCORDANCE WITH MDOT WIND LOADING REQUIREMENTS. MOUNT SIGNS IN ACCORDANCE WITH SQUARE TUBE SIGN MOUNTING MDOT STANDARD PLANS AND REQUIREMENTS (STANDARD PLAN SIGN-203-E). SEE MDOT STANDARD PLANS FOR SIGN BLANK DETAILS FOR FLAT SHEET SIGN PANELS. SEE MDOT STANDARD PLANS AND REQUIREMENTS FOR DETAILS OF TRAFFIC SIGN INSTALLATION. SEE MDOT STANDARD PLANS AND MUTCD FOR SIGN MOUNTING HEIGHT AND OFFSET REQUIREMENTS.
11. CONTRACTOR SHALL PROVIDE CONCRETE JOINTS AS FOLLOWS:
    A. CONTROL JOINTS - MAINTAIN AN ASPECT RATIO (LENGTH TO WIDTH) BETWEEN CONTROL JOINTS AS CLOSE TO 1:1 AS FEASIBLE, DO NOT EXCEED ASPECT RATIO GREATER THAN 1.5:1, MATCH EXISTING PATTERN WHERE APPLICABLE. VERIFY WITH OWNER, MAXIMUM CONTROL JOINT SPACING SHALL BE 24 TIMES THE SLAB THICKNESS UP TO A MAXIMUM OF 12 FEET (I.E. 4-INCH-THICK SLAB = 96 INCH (8 FOOT) MAXIMUM CONTROL JOINT SPACING IN ANY DIRECTION, 5-INCH-THICK SLAB IS 12 FEET)
        1) JOINT INTERSECTION ANGLES LESS THAN 80 DEGREES WILL NOT BE ALLOWED
        2) PANEL WIDTHS LESS THAN 6 INCHES AT ANY POINT WILL NOT BE ALLOWED
        3) JOINTING MUST ACCOMMODATE IN-PAVEMENT STRUCTURES THROUGH JOINTING AND BOXOUTS
        4) CONTRACTOR MUST SUBMIT A JOINTING PLAN FOR ENGINEER ACCEPTANCE.
    B. EXPANSION/ISOLATION JOINTS - PROVIDE AT THE FOLLOWING:
        1) JOINT INTERSECTION ANGLES LESS THAN 80 DEGREES WILL NOT BE ALLOWED
        2) LOCATIONS WHERE CHANGES IN WIDTH OCCUR
        3) LOCATIONS WHERE ADJOINING EXISTING CONCRETE
        4) LOCATIONS THAT ABUT THE BUILDING AND OTHER SITE FEATURES INCLUDING RAMPS, STAIRS, LANDINGS, CONCRETE APRONS, ARCHITECTURAL AND LANDSCAPE FEATURES, ETC.
        5) LOCATIONS IN CHANGES IN DEPTH (INCLUDING PAVEMENT ADJACENT TO CURB).
    C. WHEREVER POSSIBLE MATCH JOINTS OF ADJACENT CONCRETE WORK.
12. FIELD QUALITY CONTROL:
    A. AGGREGATE BASE TESTING REQUIREMENTS AND FREQUENCY: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
    B. CONCRETE TESTING REQUIREMENTS AND FREQUENCY: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
    C. HMA TESTING REQUIREMENTS AND FREQUENCY: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
    D. GRANULAR BASE TESTING REQUIREMENTS AND FREQUENCY: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
13. TOLERANCES:
    A. HMA PAVEMENT: CONFORM TO MDOT SPECIFICATIONS AND THE FOLLOWING: DEVIATIONS ALONG ADA ACCESSIBLE ROUTES THAT EXCEED THE MAXIMUM SLOPES WILL BE CONSIDERED UNACCEPTABLE. HORIZONTAL/LINE DEVIATIONS GREATER THAN ±1 INCH WILL BE CONSIDERED UNACCEPTABLE, ANY SURFACE AREA ALLOWING ENTRAPMENT OF WATER AT A DEPTH OF 1/4 INCH OR GREATER WILL BE CONSIDERED UNACCEPTABLE. REMOVE AND REPLACE UNACCEPTABLE WORK AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
    B. CONCRETE PAVEMENT: CONFORM TO MDOT SPECIFICATIONS AND THE FOLLOWING: VERTICAL DEVIATIONS IN SURFACE GREATER THAN ±3/16 INCH WILL BE CONSIDERED UNACCEPTABLE, DEVIATIONS ALONG ADA ACCESSIBLE ROUTES THAT EXCEED THE MAXIMUM SLOPES WILL BE CONSIDERED UNACCEPTABLE. HORIZONTAL/LINE DEVIATIONS IN LOCATION GREATER THAN ±1

UTILITY NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS AND REQUIREMENTS OF THE CITY/UTILITY PROVIDER, MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION, COUNTY, LOCAL PLUMBING CODE, AND LOCAL REQUIREMENTS FOR MATERIALS, INSTALLATION, AND TESTING OF WATERMAIN UTILITIES.
3. CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS AND REQUIREMENTS OF CITY/UTILITY PROVIDER SPECIFICATIONS, LOCAL PLUMBING CODE FOR MATERIALS, INSTALLATION, AND TESTING OF WATER AND SANITARY UTILITIES.
4. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 5 FEET COVER ON ALL WATERLINES, UNLESS OTHERWISE NOTED, PROVIDE HYDRANT EXTENSIONS AND GATE VALVE NUT EXTENSIONS IF WATERLINE IS DEEPER THAN MINIMUM COVER, PROVIDE INSULATION OVER WATERMAIN AND SERVICES WITH PROPOSED ELEVATIONS LESS THAN MINIMUM BURY DEPTH PER PROJECT DETAILS AND UTILITY PROVIDER REQUIREMENTS.
5. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 4 FEET COVER ON ALL SANITARY SEWER AND SERVICES, UNLESS OTHERWISE NOTED, PROVIDE INSULATION OVER SANITARY SEWER AND SERVICES WITH PROPOSED ELEVATIONS LESS THAN MINIMUM BURY DEPTH PER PROJECT DETAILS AND UTILITY PROVIDER REQUIREMENTS.
6. CONTRACTOR SHALL PROVIDE 10 FEET MINIMUM HORIZONTAL SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE/STRUCTURE) BETWEEN WATER LINES AND SANITARY OR STORM LINES AND STRUCTURES
7. CONTRACTOR SHALL PROVIDE 24 INCH MINIMUM VERTICAL SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE) BETWEEN WATER LINES AND OTHER UTILITY LINE CROSSINGS.
8. PIPE LENGTH INDICATED BETWEEN STRUCTURES IS FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS NOTED OTHERWISE.
9. PIPE SIZES SHOWN ON THE PLANS ARE INTERNAL PIPE DIAMETER.
10. CONTRACTOR SHALL INSTALL TRACER WIRE ON ALL SEWER AND WATER MAINS, LATERALS, SERVICE PIPE AND CONNECTIONS TO RISERS, CURB BOXES, MANHOLES, VALVES, HYDRANTS PER CITY/UTILITY PROVIDER REQUIREMENTS AND PROJECT DETAILS AND SPECIFICATIONS.
11. IN THE EVENT OF A VERTICAL CONFLICT BETWEEN WATER LINES, SANITARY LINES, STORM LINES AND GAS LINES (EXISTING AND PROPOSED), THE WATER AND SEWER LINES MUST INCLUDE ONE FULL LENGTH OF PIPE SO BOTH JOINTS ARE AS FAR FROM THE SEWER/UTILITY AS POSSIBLE AND SHALL HAVE MECHANICAL JOINTS WITH APPROPRIATE THRUST BLOCKING AS REQUIRED TO PROVIDE MINIMUM CLEARANCE.
12. WATERMAINS AND SERVICES SHALL NOT HAVE ANY INTERMITTENT HIGH POINTS, EXCEPT AT HYDRANTS OR AS NOTED AT SPECIFIC LOCATIONS ON THE PLANS.
13. CONTRACTOR SHALL VERIFY PIPE SIZE, MATERIAL, AND ELEVATION FOR ALL CONNECTIONS. PROVIDE APPROPRIATE PIPES AND FITTINGS REQUIRED TO MAKE CONNECTIONS TO EXISTING INFRASTRUCTURE AS VERIFIED IN THE FIELD IN ACCORDANCE WITH CITY/UTILITY PROVIDER REQUIREMENTS.
14. WATER AND SANITARY SEWER SERVICES ARE SHOWN TERMINATING AT THE BUILDING FOOTPRINT BUT ARE DESIGNED TO WITHIN 5 FEET OF THE BUILDING FOOTPRINT. VERIFY WITH MEP/PLUMBING PLANS/DESIGNER FOR EXACT LOCATIONS, ELEVATIONS, AND DIMENSIONS OF BACKFLOW DEVICES (DDCV AND PRZ ASSEMBLIES), METERS, AND BUILDING UTILITY ENTRANCE LOCATIONS. SERVICE DESIGNS AND INVERTS WITHIN 5 FEET OF THE BUILDING ARE FOR ILLUSTRATIVE AND REFERENCE PURPOSES ONLY. SEE MEP/PLUMBING PLANS FOR CONTINUATION. VERIFY LOCATIONS AND INVERT ELEVATIONS WITH MEP/PLUMBING PLANS. PROVIDE A RISER PIPE AS NEEDED TO MATCH PLUMBING PIPING.
15. WATER AND SANITARY SEWER SERVICE SIZES AND ALIGNMENT ARE BASED ON MEP DESIGN. VERIFY SIZE AND ALIGNMENT W/ MEP PLANS. IN THE EVENT THE FINAL SIZE OR ALIGNMENT IS DIFFERENT THAN SHOWN, CONTRACTOR SHALL NOTIFY THE ENGINEER AND OWNER IN WRITING IMMEDIATELY.
16. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED, AND APPROVED PRIOR TO BACKFILLING IN ACCORDANCE WITH AGENCY HAVING JURISDICTION REQUIREMENTS.
17. CONTRACTOR SHALL PLACE AND COMPACT SUITABLE FILL MATERIAL BEFORE INSTALLATION OF PROPOSED UTILITIES.
18. SANITARY SEWER MAIN, SERVICE PIPES, FITTINGS, AND STRUCTURES SHALL MEET THE FOLLOWING REQUIREMENTS:
    - A. SANITARY SERVICE PIPE: PVC SCHEDULE 40 PER ASTM D1785
    - B. SANITARY PIPE FITTINGS: ASTM D2665 FOR SCH 40 PVC PIPE, INJECTION MOLDED (GRAVITY LINES ONLY)
    - C. SANITARY PIPE JOINTS: ASTM F656 AND D2564 FOR SCHEDULE 40 PIPE
    - D. SANITARY PRECAST STRUCTURE: CONFORM TO THE DETAILS/STANDARD PLATES AS SHOWN ON THE DRAWINGS, INCLUDING INTEGRAL BASE SECTIONS AND RUBBER GASKETED TONGUE AND GROOVE JOINTS, UNLESS NOTED OTHERWISE. ALL PIPE OPENINGS SHALL HAVE INTEGRALLY CAST WATERTIGHT SEAL.
    - E. SANITARY PRECAST STRUCTURE DESIGN: THE STRUCTURE BASE SLAB, PERIMETER WALLS, AND TOP SLAB SHALL BE DESIGNED FOR SHEAR STRENGTH, FLEXURAL STRENGTH, AND OTHER APPLICABLE STRENGTHS DUE TO HYDROSTATIC LOADING. THE DESIGN OF THE STRUCTURE SHALL CONFORM TO A MINIMUM FACTOR OF SAFETY OF 1.3 FOR BUOYANCY AND FLOTATION. THE HYDROSTATIC LOADING (WATER TABLE ELEVATIONS) SHALL BE ASSUMED FROM THE TOP OF THE STRUCTURE. THE STRUCTURE SHALL BE DESIGNED AND DETAILED PREPARED BY A PROFESSIONAL ENGINEER, EXPERIENCED IN PRECAST CONCRETE MANHOLE DESIGN, WHO IS LICENSED IN THE STATE OF MICHIGAN.
    - F. SANITARY PIPE/STRUCTURE CONNECTION: SEE DETAILS.
    - G. STRUCTURE ADJUSTMENT RINGS: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS
    - H. ADHESION MATERIAL: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS
    - I. EXTERNAL/INTERNAL SEALS: IN ACCORDANCE WITH CITY REQUIREMENTS
20. WATERMAIN, SERVICE PIPES AND FITTINGS TO MEET THE FOLLOWING REQUIREMENTS:
    - A. WATER SERVICE PIPING - 4 INCHES AND LARGER: DIP C900 DR 18 PER AWWA C 900
    - B. WATER SERVICE PIPE FITTINGS - 4 INCHES AND LARGER: AWWA C153, 250 PSI WORKING PRESSURE WITH INTERNAL AND EXTERNAL COATING PER AWWA C116
    - C. WATERMAIN PIPING:DIP C900 DR 18 PER AWWA C 900
    - D. WATERMAIN PIPE FITTINGS: AWWA C153 DUCTILE IRON COMPACT FITTINGS, 250 PSI WORKING PRESSURE WITH INTERNAL AND EXTERNAL COATING PER AWWA C116
    - E. WATERMAIN PIPE JOINTS: AWWA C111 WITH MECHANICAL JOINTS AND THRUST BLOCKING PER PROJECT DETAILS.
    - F. WATERMAIN STUBS: MECHANICALLY RESTRAINED JOINTS WITH THRUST BLOCKING PER PROJECT DETAILS.
    - G. WATER SYSTEM TRACER WIRE: UTILITY PROVIDER REQUIREMENTS
    - H. ENCASEMENT: POLYETHYLENE FILM PER AWWA C105. ENCASE DUCTILE IRON PIPE, FITTINGS, VALVES, AND OTHER APPURTENANCES
    - I. JOINT RESTRAINT: PROVIDE AT ALL BENDS, TEES, AND DEAD-ENDS/STUBS IN ACCORDANCE WITH THE UTILITY PROVIDER REQUIREMENTS AND EBAA IRON RESTRAINT LENGTH CALCULATOR.
    - J. THRUST BLOCKING: WATERMAIN AND SERVICES REQUIRE THRUST BLOCKING PER PROJECT DETAILS. CONCRETE MUST HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH OF 3000 PSI
    - K. HYDRANTS: PER UTILITY PROVIDER REQUIREMENTS
    - L. VALVES: PER UTILITY PROVIDER REQUIREMENTS
21. CONTRACTOR SHALL INSTALL AND PROVIDE BEDDING FOR PIPING/STRUCTURES IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS, ASTM D 2321 AND ASTM F 1668 (FOR GRAVITY SEWER), ASTM D 2774 (FOR PRESSURE PIPE), ASTM C 1479 (FOR RC PIPE), AWWA C600 (FOR DIP PIPE), AWWA C605 (FOR PVC), AND PROJECT/MANUFACTURER DETAILS AND SPECIFICATIONS.
22. IF MANUFACTURER DETAILS SPECIFY DESIGN COMPONENTS TO BE DETERMINED BY SITE DESIGN ENGINEER, CONTRACTOR IS RESPONSIBLE FOR CONTACTING SITE DESIGN ENGINEER TO VERIFY SYSTEM REQUIREMENTS PRIOR TO CONSTRUCTION IF NOT NOTED IN THE DRAWINGS.
23. CONTRACTOR SHALL COMPACT EMBANKMENT/BEDDING/BACKFILL MATERIAL IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS, THE GEOTECHNICAL REPORT, AND SITE TESTING REQUIREMENTS.
24. CONTRACTOR SHALL MEET MOISTURE CONTENT/CONTROL REQUIREMENTS IN ACCORDANCE WITH CITY/UTILITY PROVIDER REQUIREMENTS, THE GEOTECHNICAL REPORT, AND SITE TESTING REQUIREMENTS.
25. FIELD QUALITY CONTROL, TESTING, INSPECTIONS, AND CERTIFICATIONS MUST COMPLY WITH THE FOLLOWING:
    - A. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, AGENCY HAVING JURISDICTION AND UTILITY PROVIDER COMPANIES.
    - B. SANITARY LINES AND STRUCTURES, INCLUDING BUT NOT LIMITED TO:
        1) SERVICE PIPE AND STRUCTURES TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        2) LEAKAGE TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        3) DEFLECTION TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        4) TELEVISING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        5) CONDUCTIVITY/TRACING TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
    - C. WATER LINES AND STRUCTURES, INCLUDING BUT NOT LIMITED TO:
        1) SERVICE PIPE AND STRUCTURES TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS, MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION, MICHIGAN PLUMBING CODE CHAPTER 6, AND MDOT SPEC 823
        2) HYDROSTATIC PRESSURE TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS, MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION, MICHIGAN PLUMBING CODE CHAPTER 6, AND MDOT SPEC 823
        3) DISINFECTION TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS, MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) DRINKING WATER AND ENVIRONMENTAL HEALTH DIVISION, MICHIGAN PLUMBING CODE CHAPTER 6, AND MDOT SPEC 823
        4) CONDUCTIVITY/TRACING TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS

UTILITY NOTES (CONT.)

- D. SERVICE TRENCH COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
- E. SANITARY MAIN TRENCH COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
- F. SANITARY STRUCTURE COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
- G. WATERMAIN TRENCH COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
- H. WATER STRUCTURE/VALVE COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER

26. TOLERANCES:
    - A. SANITARY PIPE HORIZONTAL: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS.
    - B. SANITARY PIPE VERTICAL: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS.
    - C. SANITARY PIPE JOINT DEFLECTION: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS
    - D. SANITARY STRUCTURE RIM ELEVATIONS: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS.
    - E. WATER PIPE HORIZONTAL: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS.
    - F. WATER PIPE VERTICAL: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS,
    - G. WATER PIPE JOINT DEFLECTION: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS.
    - H. HYDRANT/VALVE/CASTING ELEVATION: IN ACCORDANCE WITH UTILITY PROVIDER REQUIREMENTS.

STORM SEWER NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS OF THE CITY/UTILITY PROVIDER, MDOT SPECS DIVISION 4, AND LOCAL PLUMBING CODE FOR MATERIALS, INSTALLATION, AND TESTING OF STORM UTILITIES.
3. CONTRACTOR SHALL PROVIDE 10 FEET SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE/STRUCTURE) BETWEEN WATER LINES AND SANITARY OR STORM LINES AND STRUCTURE.
4. CONTRACTOR SHALL PROVIDE 24 INCH MINIMUM VERTICAL SEPARATION (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE/STRUCTURE) BETWEEN WATER LINES AND OTHER UTILITY LINES. PROVIDE INSULATION WHERE WATER, SANITARY, OR STORM UTILITIES CROSS. OFFSET WATERMAIN AND SERVICES AS NECESSARY.
5. CONTRACTOR SHALL VERIFY PIPE SIZE, MATERIAL, AND ELEVATION FOR CONNECTIONS. PROVIDE APPROPRIATE PIPES AND FITTINGS REQUIRED TO MAKE CONNECTIONS TO EXISTING INFRASTRUCTURE AS VERIFIED IN THE FIELD.
6. CONTRACTOR SHALL PLACE AND COMPACT SUITABLE FILL MATERIAL BEFORE INSTALLATION OF PROPOSED UTILITIES.
7. DRAINTILE/SUBSOIL DRAIN AROUND BUILDING PERIMETER NOT SHOWN ON CIVIL DRAWINGS, CONTRACTOR SHALL VERIFY IF DRAINTILE REQUIRED WITH ARCHITECT/STRUCTURAL/MEP AND COORDINATE CONNECTION TO STORM SYSTEM WITH ENGINEER.
8. INSTALL SUBSOIL DRAINS/DRAINTILE IN ACCORDANCE WITH THE GEOTECHNICAL REPORT (LOCATIONS NOT SHOWN ON PLANS).
9. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED, AND APPROVED PRIOR TO BACKFILLING IN ACCORDANCE WITH AGENCY HAVING JURISDICTION REQUIREMENTS.
10. PIPE LENGTH INDICATED BETWEEN STRUCTURES IS FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS NOTED OTHERWISE. PIPE LENGTH INDICATED BETWEEN STRUCTURE AND FLARED END SECTION IS FROM CENTER OF STRUCTURE TO END OF FLARED END SECTION.
11. PIPE SIZES SHOWN ON THE PLANS ARE INTERNAL PIPE DIAMETER.
12. IF MANUFACTURER DETAILS SPECIFY DESIGN COMPONENTS TO BE DETERMINED BY SITE DESIGN ENGINEER, CONTRACTOR IS RESPONSIBLE FOR CONTACTING SITE DESIGN ENGINEER TO VERIFY SYSTEM REQUIREMENTS PRIOR TO CONSTRUCTION IF NOT NOTED IN THE DRAWINGS.
13. STORM SEWER MAINS, SERVICE PIPES, FITTINGS, AND STRUCTURES TO MEET THE FOLLOWING REQUIREMENTS:
    - A. REINFORCED CONCRETE PIPE: REINFORCED CONCRETE (RC) PIPE CLASS PER ACPA LRFD FILL HEIGHT TABLES (MIN CLASS II), TYPE 4 BEDDING, WALL B THICKNESS, AASHTO M 170/ASTM C76
    - B. PVC PIPE: PVC SCH 40 PER ASTM D1785 AND ASTM D2665. INJECTION MOLDED FITTINGS.
    - C. ROOF DRAIN PIPE AND FITTINGS: PVC SCH 40 PER ASTM D 1785 AND ASTM D 2665, INJECTION MOLDED FITTINGS.
    - D. PIPE JOINTS: JOINTS MUST BE CERTIFIED BY THE MANUFACTURER TO BE ABLE TO PASS THE AIR TEST OR INTERNAL HYDROSTATIC PRESSURE REQUIRED BY THE AGENCY HAVING JURISDICTION.
    - E. PIPE CONNECTION TO EXISTING STORM STRUCTURE: CONTRACTOR SHALL PROVIDE AND INSTALL A FLEXIBLE COMPRESSION JOINT TO MAKE WATERTIGHT CONNECTIONS TO MANHOLES IN ACCORDANCE WITH MICHIGAN PLUMBING CODE AND MDOT SPEC 403. RESILIENT RUBBER JOINTS MEETING ASTM C923 MAY BE USED IF APPROVED BY AGENCY HAVING JURISDICTION. SEE PROJECT DETAILS.
    - F. SUBSOIL DRAINS/DRAINTILE: PERFORATED PVC SCH 40 OR SDR 26 IN ACCORDANCE WITH ASTM D2729 - ¼ INCH PERFORATIONS AT 3 INCHES ON CENTER, 4 HOLES PER ROW CONFORMING TO ASTM F758
    - G. SUBSOIL DRAIN AGGREGATE: MDOT SPECS 404 AND 902 OPEN-GRADED AGGREGATE 34R
    - H. AREA DRAIN INLETS: SEE PLAN AND DETAILS
    - I. STORM PRECAST STRUCTURES GENERAL: ASTM C478 AND DRAWING DETAILS.
    - J. STORM PRECAST STRUCTURE JOINTS: RUBBER O-RING GASKET MEETING ASTM C443
    - K. STORM PRECAST STRUCTURE STEPS: PER DETAILS
    - L. STORM PRECAST STRUCTURE DESIGN: DETAILED AND PREPARED BY A PROFESSIONAL ENGINEER EXPERIENCED IN PRECAST CONCRETE STRUCTURE DESIGN WHO IS LICENSED IN THE STATE OF MICHIGAN. DESIGN SHALL CONFORM TO A MINIMUM SAFETY FACTOR OF 1.3 FOR BUOYANCY AND FLOTATION WITH THE HYDROSTATIC LOADING (WATER TABLE ELEVATIONS) ASSUMED FROM THE TOP OF THE STRUCTURE. THE DESIGN OF THE BASE SLAB, WALLS, AND TOP SLAB SHALL BE DESIGNED FOR SHEAR STRENGTH, FLEXURAL STRENGTH, AND OTHER APPLICABLE STRENGTHS DUE TO HYDROSTATIC LOADING. THE DESIGN SHALL BE IN ACCORDANCE WITH THE MOST CURRENT ACI 318, AASHTO, AND MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, EXCEPT AS NOTED.
    - M. STORM PRECAST STRUCTURE MORTAR MATERIALS: MDOT SPECS 403 AND 1005 AND ASTM C270 AND ASTM C387
    - N. STORM PRECAST STRUCTURE ADJUSTMENT RINGS: SIZE TO MATCH CONE OR OPENING IN TOP SLAB. CONCRETE WITH MINIMUM 3,000 PSI COMPRESSIVE STRENGTH, SINGLE HOOP 8-GAUGE STEEL WIRE REINFORCEMENT, AND 2 INCH THICKNESS EACH RING
    - O. STORM PRECAST STRUCTURE ADHESION MATERIAL: BETWEEN TOP SLAB AND BARREL SECTION - RAM-NEK OR APPROVED EQUAL, FOR CONCRETE RINGS, USE MORTAR MATERIALS.
    - P. STORM PRECAST STRUCTURE INTERNAL/EXTERNAL SEAL: IN ACCORDANCE WITH CITY REQUIREMENTS
15. STORM PIPE BEDDING: CONTRACTOR SHALL INSTALL AND PROVIDE BEDDING FOR PIPING/STORMWATER SYSTEMS/VAULTS/CHAMBERS/ STRUCTURES IN ACCORDANCE WITH UTILITY PROVIDER, ASTM D 2321 AND ASTM F 1668 (FOR GRAVITY SEWER), ASTM D 2774 (FOR PRESSURE PIPE), ASTM C 1479 (FOR RC PIPE), AWWA C600 (FOR DIP PIPE), AWWA C605 (FOR PVC), ASTM A 798 (FOR CMP), AND PROJECT/MANUFACTURER DETAILS AND SPECIFICATIONS.
16. CONTRACTOR SHALL COMPACT EMBANKMENT/BEDDING/BACKFILL MATERIAL IN ACCORDANCE WITH MDOT SPECS 401, 402, AND 403. IN ACCORDANCE WITH THE GEOTECHNICAL REPORT, AND SITE TESTING REQUIREMENTS.
17. CONTRACTOR SHALL MEET MOISTURE CONTENT/CONTROL REQUIREMENTS IN ACCORDANCE WITH MDOT SPEC 205 (MOISTURE CONTENT NO GREATER THAN 3 PERCENT ABOVE OPTIMUM AT TIME OF COMPACTION FOR COHESIVE AND MOISTURE CONTENT BELOW SATURATION FOR GRANULAR IN ACCORDANCE WITH MDOT'S DENSITY TESTING AND INSPECTION MANUAL), THE GEOTECHNICAL REPORT, AND SITE TESTING REQUIREMENTS.
18. FIELD QUALITY CONTROL, TESTING, INSPECTIONS, AND CERTIFICATIONS MUST COMPLY WITH THE FOLLOWING:
    - A. ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES, AGENCY HAVING JURISDICTION AND UTILITY SERVICE COMPANIES.
    - B. STORM LINES AND STRUCTURES, INCLUDING BUT NOT LIMITED TO:
        1) SERVICE PIPE AND ROOF DRAIN LEADERS TESTING TO COMPLY WITH LOCAL PLUMBING CODE/CITY/AGENCY HAVING JURISDICTION.
        2) ALL PORTIONS OF SYSTEM (PIPE AND STRUCTURES) THAT PASS WITHIN 10 FEET OF A WATER LINE, WITHIN 10 FEET OF A BUILDING, WITHIN 50 FEET OF WATER WELLS, OR THAT PASS THROUGH SOIL OR WATER IDENTIFIED AS BEING CONTAMINATED MUST BE TESTED IN ACCORDANCE WITH CITY/AGENCY HAVING JURISDICTION.
        3) STORM PIPE DEFLECTION TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        4) STORM PIPE LEAKAGE TESTING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        5) STORM PIPE LAMPING: VERIFY INSTALLATION IS TRUE TO LINE AND GRADE, VERIFY INSTALLED PIPE IS STRUCTURALLY SOUND, VERIFY THERE ARE NO BROKEN OR DEFLECTIVE PIPES. VERIFY THAT JOINTS ARE ALL PUSHED HOME. VERIFY STRUCTURES CONFORM TO SPECIFIED REQUIREMENTS. PROVIDE VERIFICATION OF THE ABOVE IN WRITING TO THE OWNER AND ENGINEER.
        6) STORM PIPE INFILTRATION TESTING: MDOT SPEC 825
        7) STORM PIPE CONTINUITY TESTING: IN ACCORDANCE WITH THE CITY/UTILITY PROVIDER/AUTHORITY HAVING JURISDICTION.
        8) TELEVISING: MEET CITY/UTILITY PROVIDER/AGENCY HAVING JURISDICTION REQUIREMENTS
        9) STORM PIPE TRENCH COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
        10) STORM CULVERT TRENCH COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
        11) STORM STRUCTURE COMPACTION TESTING: AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER
    - C. A COPY OF THE TEST RESULTS MUST BE PROVIDED TO THE OWNER, ENGINEER, UTILITY PROVIDER, AND AGENCY HAVING JURISDICTION.
19. CONTRACTOR SHALL CLEAN STRUCTURES AND PIPING OF DEBRIS AND SEDIMENT DURING AND AT THE END OF CONSTRUCTION UNTIL ACCEPTED BY THE OWNER AND ENGINEER.
20. REFER TO THE MEP PLANS FOR EXACT LOCATIONS, ELEVATIONS, AND DIMENSIONS OF BUILDING STORM UTILITY ENTRANCE LOCATIONS.

STORM SEWER NOTES (CONT.)

27. TOLERANCES:
    - A. STORM PIPE HORIZONTAL TOLERANCE: WITHIN 0.50 FEET OF ALIGNMENT
    - B. STORM PIPE VERTICAL TOLERANCE: ZERO PLUS AND 0.08 FEET MINUS ELEVATION SHOWN WITH NO INTERMEDIATE HIGH POINTS, LEVEL SECTION, OR REVERSE INVERT SLOPE.
    - C. STORM PIPE JOINT DEFLECTION TOLERANCE: NO MORE THAN 75% OF MAXIMUM ALLOWABLE, AS RECOMMENDED BY MANUFACTURERS OF PIPE AND JOINT MATERIAL
    - D. STORM STRUCTURE RIM ELEVATION TOLERANCE: ZERO PLUS AND 0.08 FEET MINUS ELEVATION SHOWN

TREE PRESERVATION NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. TREE PROTECTION SHALL OCCUR IN CONFORMANCE WITH THE CITY OF EAST LANSING'S TREE MANUAL, SECTION 4.3 OF THIS MANUAL PROVIDES STANDARD PROTECTION MEASURES.
3. CONTRACTOR SHALL PROTECT EXISTING TREES THAT ARE NOT TO BE REMOVED. INSTALL ORANGE MESH FENCING, 4 FEET HIGH, WITH STAKES EVERY 10 FEET, 5 FEET OUTSIDE OF THE DRIP LINE OF PRESERVED TREES, OR AT THE CONSTRUCTION LIMITS. DO NOT PERFORM ACTIONS WITHIN THE PROTECTED AREA THAT MAY HARM THE TREE AND COMPACT THE SOIL, INCLUDING EXCAVATION, STORING MATERIALS, PARKING AND TRAFFIC DURING CONSTRUCTION. WHERE CONSTRUCTION REQUIRES DISTURBANCE WITHIN THE PROTECTED AREAS, DISTURB THE ROOT ZONE AS LITTLE AS POSSIBLE.
4. TREE PROTECTION MEASURES/FENCING MUST BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION AND MUST BE REVIEWED BY OWNER AND ENGINEER BEFORE STARTING CONSTRUCTION.
5. WHEN TREE ROOTS ARE ENCOUNTERED THAT MUST BE REMOVED, CONTRACTOR SHALL CUT ROOTS CLEANLY AS FAR FROM THE TREE AS POSSIBLE AND IMMEDIATELY WATER AND BACKFILL OVER THE ROOTS TO PREVENT DRYING.
6. THE OWNER AND DEPARTMENT OF PUBLIC WOKS MUST APPROVE EACH TREE TO BE REMOVED PRIOR TO IMPACT.

HORIZONTAL AND VERTICAL CONTROL NOTES

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. THE HORIZONTAL CONTROL FOR THIS PLAN IS NAD83, MICHIGAN STATE PLANE, SOUTH ZONE, US SURVEY FOOT
3. THE VERTICAL CONTROL FOR THE PLAN IS NAVD88
4. AN ONSITE VERTICAL BENCHMARK IS AVAILABLE: FOUND RAILROAD SPIKE IN NORTH, SIDE OF THE UTILITY POLE ON THE SOUTH SIDE OF ALBERT STREET, STANDING ON EAST OF THE NE PROPERTY CORNER, WITH AN ELEVATION OF 846.93 (NAVD88).

TYPICAL PROJECT OBSERVATIONS

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR MUST NOTIFY OWNER, ENGINEER, AND CITY IN WRITING A MINIMUM OF 2 BUSINESS DAYS IN ADVANCE OF THE FOLLOWING ACTIVITIES FOR ATTENDENCE AND OBSERVATION: PRE-CONSTRUCTION MEETING, UNDERGROUND PIPING AND UTILITIES INSTALLATION, UTILITY TESTING, STRUCTURES AND APPURTENANCES INSTALLATION, SUBGRADE PREPARATION, BASE INSTALLATION, CURB INSTALLATION, AND PAVEMENT INSTALLATION.

TEST REPORTS REQUIRED

1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. COPIES OF COMPACTION/MOISTURE, CONCRETE, AND OTHER TEST RESULTS ARE TO BE SENT TO THE OWNER DIRECTLY FROM THE INDEPENDENT TESTING LABORATORY.
3. ONSITE/INPLACE GEOTECHNICAL/CONCRETE TESTING WILL BE COMPLETED BY THE OWNER'S INDEPENDENT TESTING LABORATORY, CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL REQUIRED IN-PLACE TESTS AND INSPECTIONS WITH THE GEOTECHNICAL ENGINEER/INDEPENDENT TESTING LABORATORY.
4. TEST REPORTS REQUIRED MAY INCLUDE, BUT ARE NOT NECESSARILY LIMITED TO: DENSITY TESTS OF SOIL AND PAVEMENT COMPACTION, CONCRETE COMPRESSION, AIR, AND SLUMP TESTS. BACTERIOLOGICAL TESTS OF WATER SYSTEM, MANDREL TESTS OF SANITARY AND STORM SYSTEM, PRESSURE/LEAK TESTS OF WATER/SANITARY/STORM SYSTEM, AND OTHER TESTING REQUIRED BY AGENCY/MUNICIPALITY HAVING JURISDICTION.
5. RE-WORK/RE-TESTING DUE TO FIELD TEST FAILURE ARE AT NO ADDITIONAL COST TO THE OWNER.

CITY PERMITS

1. THE FOLLOWING CITY PERMITS ARE REQUIRED PRIOR TO CONSTRUCTION:
    - 1.1. WATER AND SEWER CONNECTION AND WATER TAP PERMIT.
    - 1.2. GRADING AND SOIL EROSION SEDIMENTATION CONTROL PERMIT.
    - 1.3. OCCUPATION AND USE OF STREET/ALLEYS RIGHTS OF WAY PERMIT.
2. IN ADDITION THE DEPARTMENT OF PUBLIC WORKS SHALL APPROVE ALL TREE REMOVAL PRIOR TO IMPACT.

Stantec
2501 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

CLIENT:
TAREEN DEVELOPMENT PARTNERS

530 ALBERT

530 ALBERT AVENUE, EAST LANSING,
MICHIGAN, 48823

ISSUE NO.	DESCRIPTION	DATE
1	LAND USE SUBMITTAL	05/05/26

CERTIFICATION:
JOSEPH T. PERCHAN — 1301 — LICENSED PROFESSIONAL ENGINEER

PROJECT NO.: 255500018

DRAWN BY:	CHKD BY:	APPD BY:
RAO	MJS	JTP

ISSUE DATE: 05/05/2026
ISSUE NO.: 1
SHEET TITLE: GENERAL NOTES
SHEET NO.: G-003

C:\Users\jperchan\DOCUMENTS\Revit Central Files\255500018_530_Albert_StreetPrintV18_r24_RAO.rvt 5/5/2026 11:14:5 AM

UtB
UpA
BITUMINOUS PARKING
CONC. WALK
ALBERT AVE.
BITUMINOUS ROAD
(VARIABLE WIDTH) (PUBLIC)
ALLEY
EX. STORM CB
RIM=845.32
6" CLAY SE INV=841.77
EX. COMBINED MH
RIM=845.64
6" CLAY NW INV=841.64
EX. STORM CB
RIM=845.55
12" CLAY E. INV=842.05
ATM SHED CDR.
3.4' N. OF PROP. LINE
ATM SHED CDR.
3.9' S. OF PROP. LINE
BIKE RACK
TRASH & RECYCLING BINS
TOOL STATION
BENCHMARK
METER RACK
EX. ELEC. MH
RIM=846.21
E-W T/COND.=840.61
530 ALBERT ST.
TAX PARCEL ID:
33-20-02-18-167-010
(0.689 AC/30,024 SF)
EX. STORM MH CB
RIM=843.90
B/SLT SE DR =838.35
T/WATER=838.35
B/STRUCT=836.70
EX. STORM CB
RIM=845.77
6" PVC NE INV=843.04
BLIND TAP?
EX. STORM MH
RIM=844.85
12"PVC SW INV=837.35
12"RCP NW INV=837.85
EX. STORM CB
RIM=844.49
B/SLT SE INV=841.69
T/WATER=841.69
B/STRUCT=841.19
ASSESSOR'S PLAT OF CHASE SUBDIVISION
LOT 42
LOT 40
139 BAILEY
TAX PARCEL ID:
33-20-02-18-169-001
TAX PARCEL ID:
33-20-02-18-169-002
17 ALLEY (PUBLIC)
EX. STORM CB
RIM=844.82
8" PVC E. INV=841.27
6" PVC SE INV=841.37
8" PVC NW INV=840.02
EX. STORM MH
RIM=845.45
12"PVC SW INV=835.35
12"RCP NW INV=841.60
MULCH & SHRUBS
EX. ELEC. MH
RIM=845.99
T/COND=842.54
EX. ELEC. MH
RIM=845.31
T/N-S COND=841.91
PARKING KIOSK SHED
EX. BLDG.
ASSESSOR'S PLAT OF CHASE SUBDIVISION
LOT 13
LOT 12
LOT 11
LOT 10
LOT 9
EX. COMB. SEWER MH
RIM=844.67
12" PVC NE INV=834.07
24" RCP SE INV=831.87
24" RCP NW INV=831.87
8" PVC NW INV=840.17
EX. ELEC. MH
RIM=845.05
T/E-W COND=837.55
EX. ELEC. MH
RIM=845.49
T/E-W COND=836.16
EX. ELEC. MH
RIM=845.56
T/E-W COND=839.06
EX. ELEC. MH
RIM=845.55
T/E-W COND=841.55
EX. COMBINED SEWER MH
RIM=845.39
12" PVC NE INV=835.19
24" RCP SE INV=832.14
24" RCP NW INV=832.04
4" CLAY S INV=841.69
EX. ELEC. MH
RIM=845.81
COULD NOT OPEN
F.F.=845.68
F.F.=845.98
F.F.=845.92
F.F.=845.47
F.F.=845.97
GRAPHIC SCALE
(IN FEET)
1 inch = 10 ft.
NOTES
1. SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES.
2. EXISTING UTILITY SERVICE LINES MAY NOT BE SHOWN IN THEIR ENTIRETY ON PLANS. CONTRACTOR TO VERIFY LOCATIONS OF EXISTING UTILITY SERVICE LINES WITHIN THE LIMITS OF DISTURBANCE AND REMOVE EXISTING INFRASTRUCTURE AS NECESSARY PER CITY REQUIREMENTS TO INSTALL PROPOSED IMPROVEMENTS.
3. THIS SITE DOES NOT CONTAIN WETLAND, FLOODPLAIN, OR ANY OTHER NATURAL FEATURES. SITE SOILS, AS IDENTIFIED BY THE USDA'S WEB SOIL SURVEY MAPPER, ARE SHOWN ON THIS PLAN.
LEGEND
PROPERTY BOUNDARY
LOT LINE
EASEMENT LINE
SETBACK LINE
RIGHT OF WAY LINE
EXISTING FENCE LINE
EXISTING RETAINING WALL LINE
EXISTING STORM SEWER
EXISTING SANITARY SEWER
EXISTING WATERMAIN
EXISTING UNDERGROUND FIBER OPTIC LINE
EXISTING UNDERGROUND GAS LINE
EXISTING UNDERGROUND ELECTRIC LINE
EXISTING UNDERGROUND COMMUNICATION LINE
EXISTING EDGE OF PAVEMENT
EXISTING ASPHALT SURFACE
EXISTING CONCRETE SURFACE
EXISTING BUILDING
EXISTING BRICK SURFACE
EXISTING MINOR CONTOUR
EXISTING MAJOR CONTOUR
EXISTING COMBINED MANHOLE
EXISTING STORM CATCHBASIN
EXISTING SIGN
EXISTING BOLLARD POST
EXISTING LIGHT POLE
EXISTING DECIDUOUS TREE
EXISTING HANDICAP PARKING SPACE
Map Unit Legend (530 ALBERT SOILS MAP)
SOIL BOUNDARY LINE
Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI
UpA | Urban land-Capac-Colwood complex, 0 to 4 percent slopes | 27.1 | 57.9%
UtB | Urban land-Metamora complex, 2 to 10 percent slopes | 12.8 | 42.1%
Totals for Area of Interest | | 39.9 | 100.0%
WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.
THE CONTRACTOR SHALL CONTACT MISS DIG AT 811 OR 1-800-482-7171 AT 3 BUSINESS DAYS (EXCLUDING HOLIDAYS) IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.
CALL BEFORE YOU DIG
MISS DIG 811
MICHIGAN AREA 811
TOLL FREE 1-800-482-7171
Stantec
2321 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM
TAREEN DEVELOPMENT PARTNERS
530 ALBERT
530 ALBERT AVENUE, EAST LANSING, MICHIGAN, 48823
PROJECT TITLE
ISSUE NO. 1
DESCRIPTION: KICK-OFF SUBMITTAL
DATE: 05/05/2026
CERTIFICATION:
PROJECT NO.: 255500018
DRAWN BY: RAO
CHK'D BY: MJS
APPR'D BY: JTP
ISSUE DATE: 05/05/2026
ISSUE NO.: 1
SHEET TITLE: EXISTING CONDITIONS
SHEET NO.: C-001

ALBERT AVE.
(VARIABLE WIDTH) (PUBLIC)
ALLEY
CAUTION UNDERGROUND UTILITY LINES
BITUMINOUS PARKING
CONC. WALK
EX. BLDG.
LOT 13
LOT 12
LOT 11
LOT 10
LOT 9
LOT 8
LOT 7
LOT 6
LOT 5
LOT 4
LOT 3
LOT 2
LOT 1
EX. STORM CB
RIM=845.32
8" CLAY SE INV=841.77
EX. COMBINED MH
RIM=845.64
6" CLAY NW INV=841.64
EX. STORM CB
RIM=845.55
12" CLAY E. INV=842.05
ATM SHED CORNER 3.41' N. OF PROP. LINE
BIKE RACK
BIKE TOOL STATION
BENCHMARK
METER RACK
EX. ELEC. MH
RIM=846.21
E-W T/COND.=840.61
EX. STORM MH CB
RIM=843.90
B/SLT SE DIR =836.35
T/WATER=838.35
B/STRUCT=838.70
EX. STORM CB
RIM=845.79
6" PVC SE INV=843.04
RLND TAP
EX. STORM MH
RIM=844.85
12"PVC SW INV=837.35
12"RCP NW INV=837.85
EX. STORM CB
RIM=844.46
8" CLAY SE INV=841.69
T/WATER=841.69
B/STRUCT=841.19
EX. STORM MH
RIM=845.45
12"PVC SW INV=835.35
12"RCP NW INV=841.60
ASSESSOR'S PLAT OF CHASE SUBDIVISION
139 BAILEY
TAX PARCEL ID:
33-20-02-18-169-001
TAX PARCE
33-20-02-18-
EX. STORM CB
RIM=844.82
8" PVC E. INV=841.27
8" PVC SE INV=841.37
8" PVC NW INV=840.02
EX. ELEC. MH
RIM=845.99
T/COND=842.54
EX. ELEC. MH
RIM=845.01
T/E-S COND=841.91
EX. ELEC. MH
RIM=845.05
T/E-W COND=837.55
EX. ELEC. MH
RIM=845.46
T/E-W COND=838.16
EX. ELEC. MH
RIM=845.58
T/E-W COND=839.06
EX. ELEC. MH
RIM=845.55
T/E-W COND=841.55
EX. COMBINED SEWER MH
RIM=845.39
12" PVC NE INV=835.19
24" RCP SE INV=832.14
24" RCP NW INV=832.04
EX. ELEC. MH
RIM=845.81
EX. CB
RIM=844.22
8" PVC SE INV=841.42
EX. COMB. SEWER MH
RIM=844.67
12" PVC NE INV=834.07
24" RCP SE INV=831.87
24" RCP NW INV=831.87
8" PVC NW INV=840.17
EX. ELEC. MH
U.V.
EX. ELEC. MH
RIM=845.45
T/E-W COND=838.35
MULCH & SHRUBS
OVERHANG
WATERMAIN IS SHOWN APPROXIMATELY PER CITY RECORDS AND SHALL BE LOCATED BY THE CONTRACTOR PRIOR TO CONSTRUCTION
CAUTION UNDERGROUND GAS LINES. LOCATE PRIOR TO CONSTRUCTION AND RELOCATE AS NECESSARY FOR PROJECT CONSTRUCTION.
PARKING KIOSK SHED
BRICK DRIVE
CONC. DRIVE
F.F.=845.08
F.F.=845.58
F.F.=845.68
F.F.=845.92
F.F.=845.98
F.F.=845.88
F.F.=845.91
F.F.=845.93
F.F.=845.94
F.F.=845.97
F.F.=845.99
F.F.=846.00
F.F.=846.01
F.F.=846.02
F.F.=846.03
F.F.=846.04
F.F.=846.05
F.F.=846.06
F.F.=846.07
F.F.=846.08
F.F.=846.09
F.F.=846.10
F.F.=846.11
F.F.=846.12
F.F.=846.13
F.F.=846.14
F.F.=846.15
F.F.=846.16
F.F.=846.17
F.F.=846.18
F.F.=846.19
F.F.=846.20
F.F.=846.21
F.F.=846.22
F.F.=846.23
F.F.=846.24
F.F.=846.25
F.F.=846.26
F.F.=846.27
F.F.=846.28
F.F.=846.29
F.F.=846.30
F.F.=846.31
F.F.=846.32
F.F.=846.33
F.F.=846.34
F.F.=846.35
F.F.=846.36
F.F.=846.37
F.F.=846.38

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

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- RIGHT OF WAY LINE
- OVERHEAD BUILDING LINE
- CURB AND GUTTER
- ASPHALT PAVEMENT
- CONCRETE PAVEMENT BY OTHERS
- CONCRETE SIDEWALK
- STAMPED CONCRETE
- MOUNTED BUILDING LIGHT
- ORNAMENTAL FENCE

NOTES

1. SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES.
2. DOORS SHALL NOT CROSS PROPERTY LINE.

KEYNOTES

1. STANTEC DESIGN ITEMS
   - 1.1. MATCH EXISTING
   - 1.2. CONCRETE SIDEWALK - SEE SHEET 1/C-602
   - 1.3. STAMPED CONCRETE PAVEMENT - SEE SHEET 2/C-602
   - 1.4. PATCH ASPHALT PAVEMENT - MATCH EXISTING SECTION
   - 1.5. F4 CURB AND GUTTER - SEE SHEET C-602
   - 1.6. ORNAMENTAL FENCE - SEE L-101
   - 1.7. STAMPED CONCRETE TO MATCH EXISTING BRICK
   - 1.8. MATCH EXISTING CONCRETE DRIVE
   - 1.9. 4" WHITE PAINT STRIPE (TYP.) - SEE DETAIL 2/C-604
   - 1.10. FUTURE CONSTRUCTION EASEMENT NECESSARY
   - 1.11. LAWN AREA - SEE LANDSCAPE PLAN PLANTING AREA - SEE LANDSCAPE PLAN
   - 1.12. STAIRS - SEE SHEET C-301 AND ARCHITECTURAL/STRUCTURAL PLANS
   - 1.13. RETAINING WALL
   - 1.14. CONCRETE CAP
   - 1.15. BIKE RACKS - SEE LANDSCAPE PLAN
   - 1.16. SEATING AREA - SEE ARCH SITE PLAN
   - 1.17. PLANTING AREA - SEE LANDSCAPE PLAN
2. DESIGN BY OTHERS
   - 2.1. MOUNTED BUILDING LIGHT - SEE PHOTOMETRIC PLAN
   - 2.2. DOOR LOCATION - SEE ARCHITECTURAL PLANS
   - 2.3. SOLID WASTE AND RECYCLING COLLECTION POINT - SEE ARCH. PLANS
   - 2.4. COMMERCIAL LOADING ZONE
   - 2.5. GRILL AREA
   - 2.6. PERGOLA
   - 2.7. GATE
   - 2.8. OVERHEAD BUILDING LINE
   - 2.9. DARCY WELL LOCATION
   - 2.10. TRANSFORMER
   - 2.11. TRANSFORMER SCREENING
   - 2.12. ART LOCATION

SITE ANALYSIS TABLE	
ADDRESS	530 ALBERT STREET EAST LANSING, MICHIGAN 48823 PID (33-20-02-18-167-010)
EXISTING ZONING	B-3 CITY CENTER COMMERICAL
PROPOSED ZONING	B-3 CITY CENTER COMMERICAL
PROPOSED USE	APARTMENTS

SET BACK SUMMARY		
	REQUIRED	PROPOSED
FRONT	0'	3'
EAST SIDE	0'	1.0'
REAR	0'	1.1'
WEST SIDE	0'	10.3'
NOTES:		

WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT MISS DIG AT 811 OR 1-800-482-7171 AT 3 BUSINESS DAYS (EXCLUDING HOLIDAYS) IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
MISS DIG 811
MICHIGAN AREA: 811
TOLL FREE 1-800-482-7171

Stantec
2321 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

CLIENT: TAREEN DEVELOPMENT PARTNERS

530 ALBERT

530 ALBERT AVENUE, EAST LANSING, MICHIGAN, 48823

ISSUE NO.	DATE	DESCRIPTION
1	05/05/2026	LAND USE SUBMITTAL

CERTIFICATION:
JOHN PENSHORN
License No. 6101312281
PROFESSIONAL ENGINEER

PROJECT NO.: 255500018

DRN BY:	CHK'D BY:	APP'D BY:
RAO	MJS	JTP

ISSUE DATE: 05/05/2026
ISSUE NO.: 1
SHEET TITLE: SITE PLAN
SHEET NO.: C-101

WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT MISS DIG AT 811 OR 1-800-482-7171 AT 3 BUSINESS DAYS (EXCLUDING HOLIDAYS) IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
MISS DIG 811
MICHIGAN AREA 811
TOLL FREE 1-800-482-7171

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

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SETBACK LINE
- RIGHT OF WAY LINE
- 901 EXISTING MINOR CONTOUR
- 900 EXISTING MAJOR CONTOUR
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING COMBINED MANHOLE
- EXISTING STORM CATCHBASIN
- 901 PROPOSED MINOR CONTOUR
- 900 PROPOSED MAJOR CONTOUR
- CONSTRUCTION LIMITS
- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- COMBINED SEWER MANHOLE
- HYDRANT
- GATE VALVE
- ROCK CONSTRUCTION EXIT
- EROSION CONTROL BLANKET
- PERMANENT STABILIZATION
- SILT FENCE
- BIOROLL
- FLEX STORM INLET FILTER

NOTES

1. SEE SHEET L-201 FOR PERMANENT GROUND COVER, SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES.
2. CONTRACTOR TO CLEAR AND GRUB WITHIN CONSTRUCTION LIMITS AS REQUIRED FOR CONSTRUCTION.
2. EXISTING UTILITY SERVICE LINES MAY NOT BE SHOWN IN THEIR ENTIRETY ON PLANS. CONTRACTOR TO VERIFY LOCATIONS OF EXISTING UTILITY SERVICE LINES WITHIN THE LIMITS OF DISTURBANCE AND REMOVE EXISTING INFRASTRUCTURE AS NECESSARY PER CITY REQUIREMENTS TO INSTALL PROPOSED IMPROVEMENTS.
3. CONSTRUCTION LIMITS AND SILT FENCE ARE SHOWN OFFSET FROM PROPERTY LINE FOR CLARITY, WHERE APPLICABLE.
4. UNTRENCHED SILT FENCE OR ORANGE SNOW FENCE MAY BE USED FOR TREE PROTECTION.
5. CONSTRUCTION SITE SHALL HAVE A STABILIZED EXIT AT ALL TIMES THROUGHOUT THE DURATION OF THE PROJECT. CONTRACTOR IS ULTIMATELY RESPONSIBLE TO PROTECT DOWNSTREAM WATERS FROM CONSTRUCTION RUNOFF.
6. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL SLOPES 4H:1V OR STEEPER.

KEYNOTES

1. EROSION CONTROL ITEMS
   - 1.1. FLEX STORM INLET FILTERS - SEE DETAIL 7/SC-603
   - 1.2. ROCK CONSTRUCTION ENTRANCE - SEE DETAIL 2/C-603
   - 1.3. BIOROLL - SEE DETAIL 1/C-603
   - 1.4. PERMANENT STABILIZATION SEED

Stantec
2321 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

CLIENT: TAREEN DEVELOPMENT PARTNERS

530 ALBERT

530 ALBERT AVENUE, EAST LANSING, MICHIGAN, 48823

PROJECT TITLE

ISSUE NO.	DESCRIPTION	DATE
1	SAD DR SUBMITTAL	05/05/2026

CERTIFICATION:
JOHN PENSHORN
License No. 6201213331
PROFESSIONAL ENGINEER

PROJECT NO.:	255500018	
DRN BY: RAO	CHK'D BY: MJS	APP'D BY: JTP
ISSUE DATE:	05/05/2026	
ISSUE NO.:	1	

SHEET TITLE: POST CONSTRUCTION STABILIZATION PLAN

SHEET NO.: C-201

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

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SETBACK LINE
- 901 EXISTING MINOR CONTOUR
- 900 EXISTING MAJOR CONTOUR
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING COMBINED SEWER MANHOLE
- EXISTING STORM CATCHBASIN
- 901 PROPOSED MINOR CONTOUR
- 900 PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- CONSTRUCTION LIMITS
- FLOW LINE ELEVATION
- FINISHED GRADE ELEVATION
- MATCH EXISTING ELEVATION
- MATCH EXISTING TOP OF CURB ELEVATION
- MATCH EXISTING FLOW LINE
- SIDEWALK ELEVATION
- STRUCTURE RIM SPOT ELEVATION
- 5.00% SURFACE GRADE & FLOW DIRECTION
- 3.0:1 SURFACE SLOPE (H/V) & FLOW DIRECTION
- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- COMBINED SEWER MANHOLE
- ROOF DRAIN

NOTES

1. SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES.
2. EXISTING SPOT ELEVATIONS AT MATCH POINTS ARE BASED ON INTERPOLATED POINT TO POINT SURVEY DATA. CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR VERIFYING CONNECTION POINTS PRIOR TO INSTALLATION OF IMPROVEMENTS. CONTRACTOR SHALL NOTIFY ENGINEER BY WRITING IMMEDIATELY OF ANY FIELD DISCREPANCIES. CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR MAKING NECESSARY ADJUSTMENTS IN THE FILED FOR CONSTRUCTABILITY, REGULATORY COMPLIANCE (ADA), POSITIVE DRAINAGE, AND TO ENSURE SMOOTH TRANSITIONS TO FIELD CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR REWORK OF A DISCREPANCY THAT IS NOT COMMUNICATED TO THE ENGINEER IN WRITING.
3. CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
4. ALL SPOT ELEVATION LABELS AT RETAINING WALLS ARE THE SURFACE GRADE ADJACENT TO WALL TOP AND BOTTOM. SEE STRUCTURAL PLANS FOR WALL HEIGHT/ DESIGN.
5. ALL PAVEMENT PATCHES SHALL BE CONSTRUCTED TO MATCH EXISTING GRADE. ENSURE POSITIVE DRAINAGE.

Stantec
2321 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

CLIENT
TAREEN DEVELOPMENT PARTNERS

PROJECT TITLE
530 ALBERT
530 ALBERT AVENUE, EAST LANSING, MICHIGAN, 48823

ISSUE NO.	DATE	DESCRIPTION
1	05/05/2026	LAND USE SUBMITTAL

CERTIFICATION:
JOHN PENSHORN
License No. 6001312331

PROJECT NO.:	255500018
DWN BY: RAO	CHKD BY: MJS
APPD BY: JTP	
ISSUE DATE:	05/05/2026
ISSUE NO.:	1
SHEET TITLE:	GRADING PLAN
SHEET NO.:	C-301

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

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- EASEMENT LINE
- SETBACK LINE
- 901 EXISTING MINOR CONTOUR
- 900 EXISTING MAJOR CONTOUR
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING SANITARY MANHOLE
- 901 PROPOSED MINOR CONTOUR
- 900 PROPOSED MAJOR CONTOUR
- GRADING LIMITS
- WATERMAIN
- STORM SEWER
- SANITARY SEWER
- STORM MANHOLE
- SANITARY MANHOLE
- ROOF DRAIN
- GATE VALVE
- STORM WATER VAULT

NOTES

1. SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES.
2. MAINTAIN 18" VERTICAL SEPARATION AT ALL UTILITY CROSSINGS.
3. HYDRANT COVERAGE: THERE IS A PROPOSED HYDRANT AT THE SOUTH EAST CORNER AT THE BUILDING. THERE IS AN EXISTING HYDRANT AT THE CORNER OF ALBERT AVE AND BAILEY STREET WHICH IS APPROXIMATELY 192 FT FROM THE NORTH EAST CORNER OF THE BUILDING.
4. ALL ROOF DOWNSPOUTS ARE TO DRAIN TO UNDERGROUND DETENTION SYSTEM IN CENTRAL COURTYARD.
5. TRENCH DRAIN IS TO BE CONNECTED TO STORMTRAP SYSTEM WITH VERTICAL PVC RISER WITH WATERTIGHT CONNECTION. CONNECTION LOCATION TO BE COORDINATED WITH STORMTRAP.

STORM STRUCTURE SCHEDULE			
STRUCTURE ID	SIZE*	CASTING*	DETAIL
OCS 102	48" Ø	1040 A	SEE SHEET 2/C-804
CB 103	12" Ø	1256CGD	SEE SHEET 3/C-804

* STRUCTURE SIZES ARE APPROXIMATE. PRECAST MANUFACTURER TO CONFIRM SIZES AND ADJUST AS NECESSARY. PRIOR TO BID OPENING
* NEENAH OR APPROVED EQUAL

THIS PROJECT DOES NOT TRIGGER THE CITY RULES WHICH REQUIRE STORMWATER IMPROVEMENTS.

UNDERGROUND DETENTION BMP IS PROPOSED TO PROVIDE RATE CONTROL AGAINST EXISTING CONDITIONS, IN AN EFFORT TO BE GOOD STEWARDS OF THE LOCAL UTILITY SYSTEM AND REDUCE LOCAL POTENTIAL FOR FLOODING

SEE ATTACHED HYDROLOGY REPORT AND C-805 FOR DETAILS

WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT MISS DIG AT 811 OR 1-800-482-7171 AT 3 BUSINESS DAYS (EXCLUDING HOLIDAYS) IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
MISS DIG 811
MICHIGAN AREA: 811
TOLL FREE 1-800-482-7171

Stantec
2321 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

CLIENT
TAREEN DEVELOPMENT PARTNERS

530 ALBERT
530 ALBERT AVENUE, EAST LANSING, MICHIGAN, 48823

PROJECT TITLE

ISSUE NO.	DESCRIPTION	DATE
1	LAND USE SUBMITTAL	08/02/25

CERTIFICATION:

PROJECT NO.:	255500018	
DWN BY: RAO	CHKD BY: MJS	APP'D BY: JTP
ISSUE DATE:	05/05/2026	
ISSUE NO.:	1	
SHEET TITLE:	UTILITY PLAN	
SHEET NO.:	C-401	

LEGEND

- PROPERTY BOUNDARY
- LOT LINE
- CURB AND GUTTER
- BITUMINOUS PAVEMENT
- CONCRETE SIDEWALK
- BRICK PAVERS
- GRASS / LANDSCAPING
- FENCE
- EXISTING TREE TO BE REMOVED
- EXISTING TREE TO REMAIN

TREE INVENTORY

Tree ID	Species	DBH	Condition	Remove Y/N
1	Acer platanoides	10.7	Good	N
2	Gingko biloba	6	Good	N
3	Acer saccharinum	9.8	Good	Y
4	Acer saccharinum	6.7	Good	Y
5	Amelanchier arborea	4.2	Good, multi trunk	Y
6	Amelanchier arborea	3.8	Good	Y
7	Amelanchier arborea	2.9	Good, multi trunk	Y
8	Acer platanoides	7.6	Poor	Y
9	Thuja occidentalis	2.1	Good	N
10	Acer platanoides	7.7	Good	Y
11	Thuja occidentalis	4.5	Good	N
12	Acer platanoides	5.4	Poor	Y
13	Acer platanoides	6.3	Poor	N
14	Acer platanoides	8.2	Poor	N
15	Acer negundo	7.4	Good	N
16	Juglans nigra	4.5	Good	N
17	Celtis occidentalis	4.9	Good, multi trunk	N
18	Ulmus americana	14.0	Good, multi trunk	Y
19	Rhamnus cathartica	11.8	Good	Y
20	Quercus macrocarpa	1.0	Good	N
21	Fraxinus pennsylvanica	16	Good	Y
22	Fraxinus pennsylvanica	19.7	Good	Y
23	Acer platanoides	3.1	Good	N
24	Gingko biloba	8.3	Good	N
			Total Trees Removed	13
			Total DBH Removed	116

WARNING:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT MISS DIG AT 811 OR 1-800-482-7171 AT 3 BUSINESS DAYS (EXCLUDING HOLIDAYS) IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG
MISS DIG 811
MICHIGAN AREA: 811
TOLL FREE 1-800-482-7171

Stantec
2021 CLUB MERIDIAN DRIVE
SUITE E
OKEMOS, MI 48864
WWW.STANTEC.COM

TAREEN DEVELOPMENT PARTNERS

530 ALBERT

530 ALBERT AVENUE, EAST LANSING, MICHIGAN, 48823

ISSUE NO.	DESCRIPTION	DATE
1	LAND USE SUBMITTAL	05/05/2026

CERTIFICATION:

PROJECT NO.:	255500018	
DWN BY: RAQ	CHK'D BY: MJS	APP'D BY: JTP
ISSUE DATE:	05/05/2026	
ISSUE NO.:	1	
SHEET TITLE:	TREE PRESERVATION PLAN	
SHEET NO.:	L-101	

fishbeck
Engineers | Architects | Scientists | Constructors

5913 Executive Drive, Suite 100
Lansing, Michigan 48911

517.882.0383 | fishbeck.com

March 11, 2026
Project No. 2500792

Stephen Clayton, PE
Engineering Administrator
City of East Lansing
1800 East State Road
East Lansing, MI 48823

530 Albert Avenue Residential
530 Albert Avenue, East Lansing, MI
Traffic Impact Study Review

At the request of the City of East Lansing (City), Fishbeck has reviewed the Traffic Impact Study (TIS), completed by Stantec, and dated February 18, 2026, for the proposed residential development located at 530 Albert Avenue. Based on our review, Fishbeck offers the following comments and findings:

1. The proposed development will be located at 530 Albert Avenue, along Albert Avenue between Division Street and Bailey Street. Albert Avenue, Division Street, and Bailey Street are under the jurisdiction of the City. The site currently contains the Bailey Street Parking Lot, which contains 121 parking spaces. The parking lot will be partially demolished, and 35 parking spaces will remain in the Bailey Street Parking Lot.
2. The development will include 10 stories of residential space with 236 dwelling units, a 970 square foot coffee shop, and 83 public parking spaces. Access to the development will be provided via one proposed driveway on Albert Avenue.
3. Trip generation for the site was forecast using the 12th Edition of the Institute of Transportation Engineers (ITE) *Trip Generation Manual*. The trip generation forecast was completed for vehicle trips only. According to the main body of the TIS, the site will generate 154 trips during the a.m. peak hour (56 inbound, 98 outbound) and 94 trips during the p.m. peak hour (62 inbound, 32 outbound). The data plots provided in Appendix B show that the site will generate 179 trips during the a.m. peak hour and 119 trips during the p.m. peak hour.
    a. The data plots provided in Appendix B represent the correct trip generation forecast. Please update the study report and analyses to utilize the correct trip generation forecast or provide additional information on how the trip generation forecast in the main body of the report was calculated and why it differs from the ITE data.
    b. Given the location of the development on the campus of Michigan State University, a multimodal trip generation forecast and analysis should be provided.
4. The existing Synchro models were prepared in partial accordance with the Michigan Electronic Traffic Control Device Guidelines (ETCDG). While it is anticipated these will result in minimal differences in the analysis, the guidelines should be followed. The following items were not completed in accordance with the ETCDG and should be revised:
    a. Heavy Vehicle Percentage
        - Should be by approach, not movement.
    b. Speed Limits
        - Left at default value of 30 mph, all roadways have posted speed limit of 25 mph.

c. Conflicting Pedestrians and Bicyclists
   - No volumes entered, pedestrian calls were coded.

d. Volume Imbalances
   - Volume imbalances are present between the counted intersections. Volumes should be balanced in accordance with the ETCDG.

e. EB Approach at Grand River Avenue and Bailey Street
   - Approach was modeled as yield control, should be free flow.

f. Signalized intersection of Grand River Avenue and Division Street
   - Intersection was coded as Semi-Actuated-Uncoordinated, with maximum recall on all approaches and pedestrian calls. According to the timing permit dated October 15, 2025, there is no detection present, there is coordination, and the signal operates as pretimed.
   - Push buttons are present; however, the pushbuttons have been disabled, and the pedestrian phase calls each time. No pedestrian calls should be input in the phasing settings.

g. SimTraffic Calibration
   - SimTraffic should be calibrated in accordance with the ETCDG. The 95th percentile queue lengths should be reported from SimTraffic simulations.

5. Under existing conditions, no-build 2027 conditions, 2027 build conditions, 2032 no-build conditions, and 2032 build conditions, all movements and intersections would operate at an acceptable Level of Service (LOS) C or better during both peak hours. No approach delays were included in the report. Additionally, 50th percentile and 95th percentile queue lengths were acceptable in all scenarios. The analysis output reports provided in Appendix C are not consistently labeled, and it was not possible to confirm that the information provided in the tables matches the output reports provided.
   a. For future submittals, please update the header/footer information on the LOS reports to clearly label which scenario and intersection each report applies to. Not all of the reports are currently labeled.
   b. For future submittals, please provide the approach delays/LOS for each approach in the report tables.
6. A crash analysis was completed for the study area using the most recent five years of available crash data. The predominant crash types were rear-end (46%) and sideswipe same-direction (20%). It was reported that 17% of crashes involved an injury and five crashes involved a pedestrian.
   a. No information was provided on the severity of the injury crashes or if any fatal crashes occurred within the study area. Please provide a breakdown of crashes by injury level (Fatal, A-Level, B-Level, C-Level).
   b. No additional information was provided about the pedestrian crashes. Additionally, it was not reported if any crash involved a cyclist. Please provide a narrative and location for each pedestrian- or cyclist-involved crash, and identify any improvements, if any, that could be implemented to improve non-motorized safety.
7. A parking analysis was completed to quantify the impacts of the development and the removal of a majority of the Bailey Street parking lot. Parking demand was forecast using the 5th Edition of the ITE *Parking Generation Manual*. The site will have a parking demand of 318 parking spaces. Review of existing parking demand at the Division Street Garage revealed excess capacity. With the addition of the proposed development and the associated reduction in parking at the Bailey Street parking lot, peak parking occupancy at the Division Street Garage, Bailey Parking Lot, nearby Bailey Parking Garage, and the development parking spaces would be 79%.
   a. The 6th Edition of the ITE *Parking Generation Manual* was released in November 2023. The 6th Edition data should be utilized in this analysis.
8. The conclusions section of the TIS stated that the multimodal analysis indicated that the proposed site will not negatively impact current multimodal traffic operations. No multimodal analysis was provided.
   a. Please provide a multimodal analysis to support this conclusion. The analysis in the report is based on vehicular traffic only.

At this time, Fishbeck does not recommend approval of the TIS and requests the items in teal be addressed.

If you have any questions or require additional information, please contact me at 616.464.3793 or kreidsma@fishbeck.com.

Sincerely,

Kyle M. Reidsma, PE, PTOE
Vice President/Senior Traffic Engineer/Project Manager

By email
Copy: Alyssa Wambold, PE, PTOE, RSP1 – Fishbeck