

Traffic Impact Study

240 Deming Street South Windsor, Connecticut

June 2023

Town of South Windsor
Land Use Applications



FUSS & O'NEILL

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Manchester, CT 06040

Prepared for:
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Traffic Impact Study 240 Deming Street South Windsor, Connecticut

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Summary Sheet

As an aid to reviewers, this Summary Sheet has been included to outline the various study parameters utilized in this report. Although a full explanation of the study methodologies is included in the text of the report, this summary can serve as a useful reference for reviewers.

Applicant:

Metro Realty, Ltd.

Site Acreage:

6.3 Acres

Development Size/Type:

72 apartment units

Parking:

136 parking spaces including 6 accessible spaces

Applications:

Town of South Windsor Land Use Applications

Build Year:

2025

Background Traffic Growth Factor:

1%

Traffic Counts:

NE Traffic Counts – 06/13/2023 (Turning Movement Counts)

Peak Hours Analyzed:

Morning Peak Hour – 8:00AM to 9:00AM

Afternoon Peak Hour – 4:00PM to 5:00PM

Saturday Peak Hour – 11:45AM to 12:45PM

Expected Trip Generation:

Morning Peak Hour – 25 (7 entering, 18 exiting)

Afternoon Peak Hour – 28 (17 entering, 11 exiting)

Saturday Peak Hour – 28 (14 entering, 14 exiting)

Capacity Analysis:

Technique – Highway Capacity Manual 6th Edition

Execution – Synchro and SimTraffic Professional Software, Version 11.0

1 Introduction

Metro Realty, Ltd. proposes to construct 72 apartment units at 240 Deming Street in South Windsor, Connecticut as shown on the site location map, *Figure No.1* of *Appendix B*. The existing site is currently occupied by the Calvary Church and surface level parking. The existing church will be demolished to accommodate the proposed residential development and the site access driveway will be reconstructed in approximately the same location as the existing driveway.

Fuss & O'Neill has been retained to study the impact of the proposed development on traffic conditions throughout the adjacent roadway network. This report has been prepared to document the findings of the study and is being submitted to the Town of South Windsor Planning and Zoning Commission in support of the project's land use applications.

2 Existing Condition

2.1 Site of Development

The existing property is currently occupied by the Calvary Church which is no longer in operation. There are currently 50 surface parking spaces on the property. The site is accessible through a driveway entrance on Deming Street approximately 530 feet east of the intersection of Buckland Road and Deming Street. The site is also accessible via a sidewalk on Deming Street for pedestrians. The site is neighbored by The Residence at South Windsor Farms to the west, the Village at Buckland Court to the north, Deming Street to the south, and the Berry Patch community as well as a residential home at 260 Deming Street to the east.

2.2 Adjacent Roadway Network

The adjacent roadway network consists of the following roadways:

Deming Street is an east/west, town-owned, roadway that stretches approximately two and one-half miles between Clark Street to the west and Tolland Turnpike (Route 30) to the east. In the area of the site, Deming Street provides one travel lane in each direction plus turn lanes at the driveway to Evergreen Walk and at the Buckland Road intersection. From its intersection with Clark Street to its intersection with Buckland Road, Deming Street is classified by the CTDOT as an urban minor arterial roadway. East of its intersection with Buckland Road to its terminus, Deming Street is classified as an urban local roadway that provides access to land primarily zoned for commercial and residential uses. The posted speed limit of the roadway is 25 miles per hour for its entire length.

Buckland Road is a north/south, town-owned, roadway that stretches approximately one and one quarter mile between Sullivan Avenue (Route 194) to the north and Buckland Street in Manchester in the south. Buckland Road carries two lanes of travel in each direction with sidewalks on both sides of the street in the vicinity of the site. The roadway widens for turn lanes at signalized intersections. This roadway is classified by CTDOT as an urban minor arterial roadway, providing access to land generally

zoned for commercial and residential uses. The posted speed limit of the roadway is 40 miles per hour for its entire length.

2.3 Study Area Intersections

The following study area intersections were reviewed:

- Deming Street and the Existing Church Site Access Driveway
- Buckland Road and Deming Street

Deming Street and the Existing Church Site Access Driveway is an unsignalized intersection that provides eastbound and westbound approaches onto Deming Street. The site access driveway is a southbound approach onto Deming Street. The Deming Street approaches to the intersection provide one lane of travel in each direction with a sidewalk along the north side of Deming Street. There are no traffic control signs at the intersection.

Buckland Road and Deming Street is a four-way signalized intersection with Buckland Road providing the northbound and southbound approaches and Deming Street providing the eastbound and westbound approaches. Buckland Road provides one shared through/right turn lane, one dedicated through lane, and one dedicated left turn lane in both the northbound and southbound approaches. The eastbound approach on Deming Street offers one dedicated left turn lane, one dedicated through lane, and one dedicated right turn lane. The westbound direction on Deming Street offers a two-lane approach at this intersection, a dedicated left turn lane and a shared through/right turn lane. Each approach provides sidewalks and crosswalk connections throughout the intersection in addition to an exclusive pedestrian phase.

2.4 Traffic Volumes, Speeds and Counts

The greatest potential for traffic impact on the roadway network by the proposed residential development will occur during the weekday morning, weekday afternoon, and Saturday peak hours which are the periods when commuter and surrounding retail related trips are at their highest levels. In order to determine the traffic impact of the proposed development on adjacent street traffic, representatives of Fuss & O'Neill, Inc. conducted peak hour manual turning movement counts (TMC's) on Friday, June 02, 2023, and Saturday, June 03, 2023 at the Buckland Road and Deming Street intersection in the study area. The traffic count data collected indicates that the weekday morning peak hour of traffic is 8:00AM to 9:00AM, the weekday afternoon peak hour is 4:00PM to 5:00PM, and Saturday peak hour is 11:45AM to 12:45AM. These peak hours were subsequently analyzed for impacts.

3 Background Traffic Conditions

3.1 Growth Rate

Upon consultation with the Connecticut Department of Transportation (CTDOT) the 2023 existing traffic volumes were projected to the 2025 design year using a 1.0 percent per year peak hour growth factor to account for normal traffic growth in the study area. These grown (baseline) volumes for the 2025 design year peak hours are shown in *Figure No. 2 of Appendix B*.

3.2 Other Developments

Fuss & O'Neill contacted the Connecticut Department of Transportation (CTDOT) Bureau of Policy and Planning Office to identify any other pending or approved developments having site related traffic in the study area. There is a proposed redevelopment of the northern portion of The Promenade Shops at Evergreen Walk in South Windsor, Connecticut. The proposed building will be a 40,000 square foot grocer and an adjacent 10,000 square foot retail space that will include associated parking improvements, loading area, and the reconfiguration of the Evergreen Way. This redevelopment is substantially complete and anticipated to be operational later in 2023. Traffic volumes for this expansion/change of use at Evergreen Walk (shown in *Figure No. 3 of Appendix B*) were added to the grown 2025 traffic volumes to obtain the 2025 Background traffic volumes which are defined as design year traffic without the proposed residential development. These projected Background traffic volumes are shown in *Figure No. 4 of Appendix B*.

4 Proposed Conditions

4.1 Development

Metro Realty Ltd. Proposes to construct a multi-family development of 72 total dwelling units at 240 Deming Street in South Windsor, Connecticut as shown on the site location map, *Figure No.1 of Appendix B*. There will be a total of 7 buildings with 3 buildings that that will house 8 units and 4 buildings that that will house 12 units. All 7 proposed buildings are 2 story buildings. A total of 136 parking spaces, including 6 accessible parking spaces, will be provided on site. The development is expected to be completed and fully occupied in 2025.

4.2 Site Access and Circulation

Access to the site will be provided by one full-access driveway located on Deming Street. The driveway will be located approximately 530 feet away from the intersection of Buckland Road and Deming Street in approximately the same location as the existing church driveway. The driveway is proposed to be expanded to a 20-foot-wide entrance lane and 20-foot-wide exit lane each with an 8-foot median. The radii are proposed to be increased to accommodate larger vehicle turns into and out of the driveway and to improve safety at the intersection with Deming Street. In addition, there is a proposed bus shelter that will be located on the exit side of the driveway. The proposed bus shelter will be accessible to

pedestrians through the existing sidewalk that runs along the north side of Deming Street and adjacent to the proposed site development. Internal traffic circulation through the site will be accommodated by a 24-foot wide circulating drive around the parking lot.

4.3 Trip Generation

The expected site generated traffic data was calculated using existing empirical data from the Institute of Transportation Engineers (ITE) publication Trip Generation, 11th edition, 2021. This publication is an industry-accepted resource for determining trip generation. Trip generation for the weekday morning, weekday afternoon, and Saturday peak hour was calculated using the ITE land use code 221, "Multifamily Housing (Mid-Rise)". A 72 dwelling unit development is expected to generate a total of only 25 trips (7 entering, 18 exiting) in the morning weekday peak hour, 28 trips (17 entering, 11 exiting) in the afternoon weekday peak hour, and 28 trips (14 entering, 14 exiting) in the Saturday peak hour. A summary of the peak hour trip generation information for the proposed development is provided in *Table 1 of Appendix A*.

In comparison to other allowable land uses that could feasibly be constructed on the site in this zone, the proposed residential development would generate substantially less traffic. Trip generation for a medical office use was calculated by using the ITE land use code 720 "Medical-Dental Office Building". A 61,200 square foot medical office building on this site would generate a total of 229 trips (135 entering, 94 exiting) in the weekday morning peak hour, 293 trips (117 entering, 176 exiting) in the weekday afternoon peak hour, and 185 trips (105 entering, 80 exiting) in the Saturday peak hour. A summary of the peak hour trip generation information for medical office use is provided in *Table 2 of Appendix A*.

Trip generation for a mixed-use development on this site that includes a quick service restaurant (QSR), a sit-down restaurant, and coffee shop was calculated by using the following ITE land use codes: 932 "High-Turnover Sit-Down Restaurant", 934 "Fast-Food Restaurant with Drive-Through", and 936 "Coffee/Donut Shop without Drive-Through". This 12,500 square foot mixed use development on this site would generate a total of 507 trips (266 entering, 241 exiting) in the weekday morning peak hour, 365 trips (186 entering, 180 exiting) in the weekday afternoon peak hour, and 407 trips (205 entering, 202 exiting) in the Saturday peak hour. A summary of the peak hour trip generation information for this type of mixed-use development is provided in *Table 3 of Appendix A*.

As noted above, the proposed multifamily residential development will be a de minimis traffic generator and would produce hundreds of fewer trips than a medical office use or mixed retail use that are allowed by zoning and could feasibly be constructed on this site.

4.4 Trip Distribution

The distribution of traffic entering and exiting the proposed site was applied to the road network based on the existing regional traffic distributions and the layout of the adjacent roadway network. During the peak hours, the following arrival distributions of traffic are anticipated:

- 40% from Buckland Road from the south
- 30% from Buckland Road from the north
- 15% from Deming Street from the west
- 15% from Deming Street from the east

A regional arrival/departure distribution for the new site generated traffic traveling to and from the project site is shown in *Figure No. 5 of Appendix B*.

4.5 Combined Volumes

The site generated traffic was distributed to the roadway system based on the arrival/departure distributions with the results shown in *Figure No. 6 of Appendix B*. These volumes were then added to the background volumes to yield the year 2025 peak hour Combined traffic volumes shown in *Figure No. 7 of Appendix B*.

5 Analyses

5.1 Crash Analysis

Crash data was gathered from the UCONN Crash Repository for the following intersections:

- Buckland Road and Deming Street
- Deming Street and the Existing Site Access Driveway

The records were gathered for the most recent 3 years of available data, 2020 through 2022. A summary of the crash data per intersection is provided in *Table 4 of Appendix A*. Copies of the crash data records have been provided in *Appendix F*.

The intersection of Buckland Road and Deming Street experienced an average of over 6 crashes per year between 2020 and 2022. Most crashes at this intersection were front to rear crashes for a total of 10 out of the 19 crashes. These crash patterns and frequencies are not abnormal for a signalized arterial intersection of this size. Of all the vehicles reported in a collision, 15 vehicles were traveling southbound, 12 vehicles were traveling northbound, 5 were traveling eastbound, and 5 were traveling westbound. Over 50 percent of all reported crashes were property damage only.

The intersection of Deming Street and the existing site access driveway has not had any reported crashes in the most recent 3 years of data collected between 2020 and 2022.

The type and frequency of crashes reported at the study area intersections are not considered abnormal for the traffic volumes and geometric characteristics of the study intersections.

5.2 Intersection Sight Distance Analysis

Intersection sight distances were measured at the proposed site driveway location in accordance with criteria set forth in the 2003 CTDOT *Highway Design Manual*. Using the CTDOT Highway Design Manual it was determined that the intersection sight distance required at the proposed site access driveway is 320 feet for passenger cars and 420 feet for single-unit trucks. These distances correlate with a design speed of 30 miles per hour which is 5 miles per hour above the posted speed limit of 25 miles per hour currently on Deming Street.

Field measurements confirmed that greater than 420 feet of intersection sight distance is available looking both left and right from the proposed site driveway location. Therefore, the sight distances will exceed CTDOT criteria for safe egress from the site driveway.

5.3 Intersection Capacity Analysis

Capacity analyses for both signalized and unsignalized intersections were conducted using Synchro Professional Software, version 11.0.

In discussing intersection capacity analyses results, two terms are used to describe the operating condition of the road or intersection. These two terms are volume to capacity ratio (v/c) and level of service (LOS).

The v/c ratio is a ratio of the volume of traffic using an intersection to the total capacity of the intersection (the maximum number of vehicles that can utilize the intersection during an hour). The v/c ratio can be used to describe the percentage of capacity utilized by a single intersection movement, a combination of movements, an entire intersection approach, or the intersection as a whole.

LOS is a measure of the delay experienced by stopped vehicles at an intersection. LOS is rated on a scale from A to F, with A describing a condition of very low delay (less than 10 seconds per vehicle), and F describing a condition where delays will exceed 50 seconds per vehicle for unsignalized intersections and 80 seconds per vehicle for signalized intersections. Delay is described as a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Therefore, intersections with longer delay times are less acceptable to most drivers.

LOS is generally used to describe the operation (based on delay time) of both signalized and unsignalized intersections, while v/c ratio is applied to signalized intersections only. These definitions for v/c ratio and LOS, as well as the methodology for conducting signalized and unsignalized intersection capacity analyses, are taken from the "Highway Capacity Manual 6th Edition" published by the Transportation Research Board.

In discussing two-way stop controlled unsignalized intersection capacity analyses, LOS is used to provide a description of the delay and operational characteristics of the turns from the minor street (stop sign controlled) to the major street and turns from the major street to the minor street. Through

vehicles are not delayed by the minor street and do not experience delay, therefore they are not rated with a level of service.

Using the above referenced methodologies, weekday morning, weekday afternoon, and Saturday peak hour capacity analyses were conducted at the following signalized intersection:

- Buckland Road at Deming Street

Weekday morning, weekday afternoon, and Saturday peak hour capacity analyses were also conducted at the following unsignalized intersection:

- Deming Street at the Proposed Site Driveway

Tables No. 5 and 6 of Appendix A present a summary of the levels of service at the unsignalized and signalized intersections, for both Background and Combined Conditions traffic volumes. Copies of the analysis worksheets can be found in *Appendices C and D*, for the weekday morning, weekday afternoon, and Saturday peak hours respectively.

The determination of the traffic impact from the proposed development is made through a comparison of the Background Conditions LOS (without the proposed residential development) versus the Combined Conditions LOS (with the proposed residential development).

The signalized intersection of Buckland Road and Deming Street operates acceptably at a LOS B during the weekday morning and Saturday peak hours for both Background and Combined conditions. During the weekday afternoon peak hour, the intersection operates acceptably at LOS C for both Background and Combined conditions. There will be no reduction in LOS at this intersection as a result of the proposed residential development traffic.

The unsignalized intersection of Deming Street and the site access driveway operates efficiently at LOS A for the Deming Street westbound and eastbound approaches in the Combined conditions. The southbound site driveway approach to the intersection operates efficiently at LOS A during the weekday morning peak hour and LOS B during the weekday afternoon and Saturday peak hours in the Combined condition.

5.4 Queue Analysis

Background and Combined Condition 95th percentile (design) queue lengths were reviewed at each intersection in the study area. The 95th percentile (design) vehicle queue lengths represent the maximum queue lengths that can be expected at each of the critical approach lanes of the study area intersections. The queue lengths are provided in the Synchro capacity analysis worksheets, which are located in *Appendix C and D*. *Tables 5 and 6 of Appendix A* provide a summary of the queue lengths for the critical lanes at each intersection.

During the weekday morning, weekday afternoon, and Saturday peak hours, the 95th percentile queue lengths at the unsignalized Deming Street at site driveway intersection is expected to be less than one vehicle length exiting the site and turning left into the site from the eastbound approach.

During the weekday morning, weekday afternoon, and Saturday peak hours, the 95th percentile queue lengths at the signalized intersection of Buckland and Deming Street are expected to increase by less than one vehicle length during all peak hours.

The design queue lengths in the combined condition can be accommodated in the available storage at each of the intersection approach lanes.

6 Conclusions & Recommendations

The purpose of preparing a Traffic Impact Study is to identify the impact of the proposed residential development's site generated traffic. The study efforts have indicated that the proposed development will generate 25 new entering and exiting trips in the weekday morning peak hour, 28 new entering and exiting trips in the weekday afternoon peak hour, and 28 new entering and exiting trips in the Saturday peak hour. These de minimis site generated traffic volumes from the proposed residential development are substantially lower than many other land uses that are allowable by zoning and could feasibly be constructed on site.

Capacity analysis revealed that the unsignalized site access driveway will operate acceptably in the combined condition for weekday morning, weekday afternoon, and Saturday peak hours. The southbound site access driveway approach will experience efficient LOS A operations during the weekday morning peak hour and LOS B operations during the weekday afternoon and Saturday peak hours. Additionally, the signalized intersection of Buckland Road at Deming Street will operate acceptably at LOS B in the weekday morning peak hour and Saturday peak hour, and LOS C in the weekday afternoon peak hour for both background and combined conditions. There will be no reduction in LOS at this intersection as a result of the proposed residential development traffic.

The 95th percentile queue lengths for all movements at the three study area intersections are expected to increase by no more than one vehicle length as a result of the site generated traffic. The design queue lengths in the combined condition can be accommodated in the available storage at each of the intersection approach lanes.

The location of the site driveway provides sufficient intersection sight distance for vehicles exiting the development in both directions. Intersection sight distances from the proposed driveway location exceed the minimum sight distances required by CTDOT for safe egress from the site driveway.

A review of the crash data provided by the UConn Crash Repository Database indicated that there were no abnormal crash patterns or frequencies in the study area. No crashes were reported on Deming Street at or near the existing site access driveway of the development in the past three years.

Based on the results of the foregoing analysis, it is the professional opinion of Fuss & O'Neill, Inc. that the proposed residential development will not have a significant impact to traffic operations within the study area.

Appendix A

Tables

Table 1

**Peak Hour Site Generated Traffic Volumes
Proposed Residential Use
240 Deming Street
South Windsor, CT**

72 Dwelling Units	Total Trips	Trips Entering	Trips Exiting
Morning Weekday Peak Hour	25	7	18
Afternoon Weekday Peak Hour	28	17	11
Saturday Peak Hour	28	14	14

Note: Trip generation based on Rate per Land use Code 221 (Multifamily Housing (Mid-rise)), as published in *Trip Generation*, 11th Edition, 2021.

Table 2

**Peak Hour Site Generated Traffic Volumes
Allowable Medical Office Use Comparison
240 Deming Street
South Windsor, CT**

Medical Office 61,200 Sq. Ft	Total Trips	Trips Entering	Trips Exiting
Morning Weekday Peak Hour	229	135	94
Afternoon Weekday Peak Hour	293	117	176
Saturday Peak Hour	185	105	80

Note: Trip generation based on Rate per Land use Code 720 (Medical-Dental Office Building), as published in *Trip Generation*, 11th Edition, 2021.

Table 3

**Peak Hour Site Generated Traffic Volumes
Allowable Mixed Commercial Use Comparison
240 Deming Street
South Windsor, CT**

QSR, Sit-down Restaurant, and Coffee Shop 12,500 Sq. Ft	Total Trips	Trips Entering	Trips Exiting
Morning Weekday Peak Hour	507	266	241
Afternoon Weekday Peak Hour	365	186	180
Saturday Peak Hour	407	205	202

Note: Trip generation based on Rate per Land use Code 932 (Fast Food Restaurant with Drive-Through), 934 (High-Turnover (Sit-Down) Restaurant), 936 (Coffee/Donut Shop without Drive-Through) as published in *Trip Generation*, 11th Edition, 2021.

Table 4

**Intersection Crash Data Summary
240 Deming Street
South Windsor, CT**

Intersections	Crashes Per Year			
	2020	2021	2022	Average/Year
Buckland Road and Deming Street	4*	8	7	6
Deming Street and the Existing Site Access Driveway	0	0	0	0

*Values indicated are number of crashes within 200 feet of each intersection during time period shown.
Data provided by the UCONN Crash Repository

Table 5

**Unsignalized Intersection Level Of Service Summary
240 Deming Street
South Windsor, CT**

Unsignalized Intersection (Critical Movements)	2025 Weekday Morning Peak Hour		2025 Weekday Afternoon Peak Hour		2025 Saturday Peak Hour	
	Background	Combined	Background	Combined	Background	Combined
Deming Street and the Site Access Driveway						
Eastbound Deming Street Left	LOS A*	LOS A	LOS A	LOS A	LOS A	LOS A
Southbound Driveway Left	N/A	LOS A	N/A	LOS B	N/A	LOS B
Southbound Driveway Right	N/A	LOS A	N/A	LOS B	N/A	LOS B

*Values indicated are critical movement Level of Service (LOS)

Table 6

**Signalized Intersection Level of Service Summary
240 Deming Street
South Windsor, CT**

Signalized Intersections	2025 Weekday Morning Peak Hour		2025 Weekday Afternoon Peak Hour		2025 Saturday Peak Hour	
	Background	Combined	Background	Combined	Background	Combined
Buckland Road and Deming Street	0.37/LOS B*	0.38/LOS B	0.61/LOS C	0.62/LOS C	0.54/LOS B	0.55/LOS B

*Values indicated are intersection v/c Ratio/LOS

Table 7

**Weekday Morning Peak Hour Queue Length Summary
240 Deming Street
South Windsor, CT**

Intersection	Approach Lane	2025 Background Queue	2025 Combined Queue	Available Storage
Buckland Road and Deming Street	EB Left	30 Feet	30 Feet	150 Feet
	EB Through/	50 Feet	50 Feet	-
	EB Right	0 Feet	0 Feet	385 Feet
	WB Left	35 Feet	40 Feet	130 Feet
	WB Through/Right	50 Feet	55 Feet	-
	NB Left	25 Feet	25 Feet	150 Feet
	NB Through/Right	90 Feet	95 Feet	-
	SB Left	10 Feet	10 Feet	300 Feet
	SB Through/Right	155 Feet	155 Feet	-
Deming Street and the Site Access Driveway	EB Through/Left	N/A	0 Feet	-
	SB Left/Right	N/A	5 Feet	-

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.

Table 8

**Weekday Afternoon Peak Hour Queue Length Summary
240 Deming Street
South Windsor, CT**

Intersection	Approach Lane	2025 Background Queue	2025 Combined Queue	Available Storage
Buckland Road and Deming Street	EB Left	55 Feet	55 Feet	150 Feet
	EB Through	60 Feet	60 Feet	-
	EB Right	0 Feet	0 Feet	385 Feet
	WB Left	100 Feet	100 Feet	130 Feet
	WB Through/Right	120 Feet	125 Feet	-
	NB Left	35 Feet	35 Feet	150 Feet
	NB Through/Right	215 Feet	220 Feet	-
	SB Left	20 Feet	20 Feet	300 Feet
	SB Through/Right	300 Feet	300 Feet	-
Deming Street and the Site Access Driveway	EB Through/Left	N/A	0 Feet	-
	SB Left/Right	N/A	5 Feet	-

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.

Table 9

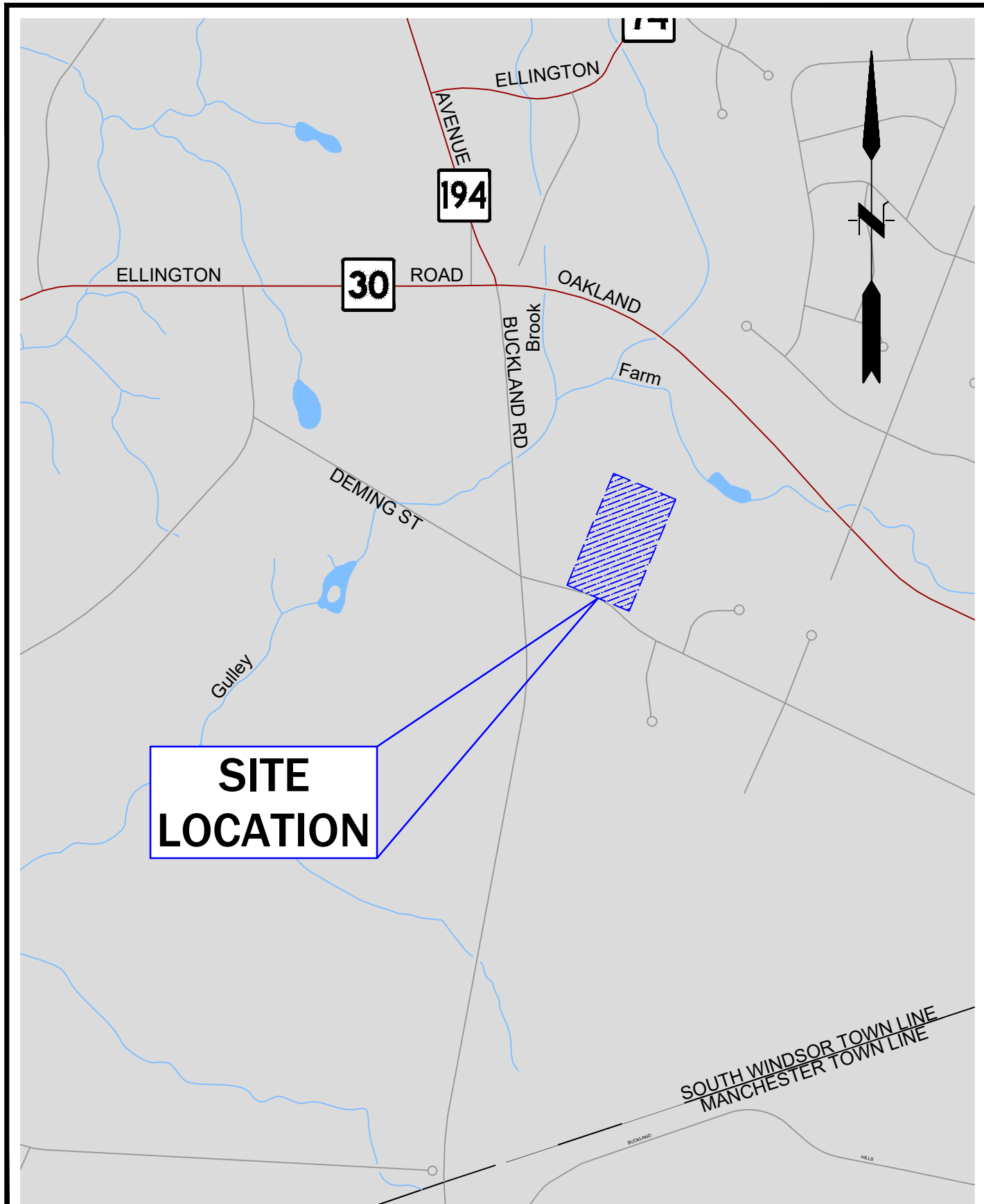
**Saturday Peak Hour Queue Length Summary
240 Deming Street
South Windsor, CT**

Intersection	Approach Lane	2025 Background Queue	2025 Combined Queue	Available Storage
Buckland Road and Deming Street	EB Left	70 Feet	70 Feet	150 Feet
	EB Through	65 Feet	65 Feet	-
	EB Right	0 Feet	0 Feet	385 Feet
	WB Left	75 Feet	80 Feet	130 Feet
	WB Through/Right	110 Feet	115 Feet	-
	NB Left	30 Feet	30 Feet	150 Feet
	NB Through/Right	170 Feet	170 Feet	-
	SB Left	20 Feet	20 Feet	300 Feet
	SB Through/Right	245 Feet	250 Feet	-
Deming Street and the Site Access Driveway	EB Through/Left	N/A	0 Feet	-
	SB Left/Right	N/A	5 Feet	-

NOTE: Values indicated represent 95th percentile (design) vehicle queue lengths. Values are rounded to the nearest 5 feet.

Appendix B

Figures



SCALE:
HORZ.: 1" = 1000'
VERT.:
DATUM:
HORZ.:
VERT.:
0 1 1000
GRAPHIC SCALE



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146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860.646.2469
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METRO REALTY LTD.

MULTIFAMILY DEVELOPMENT

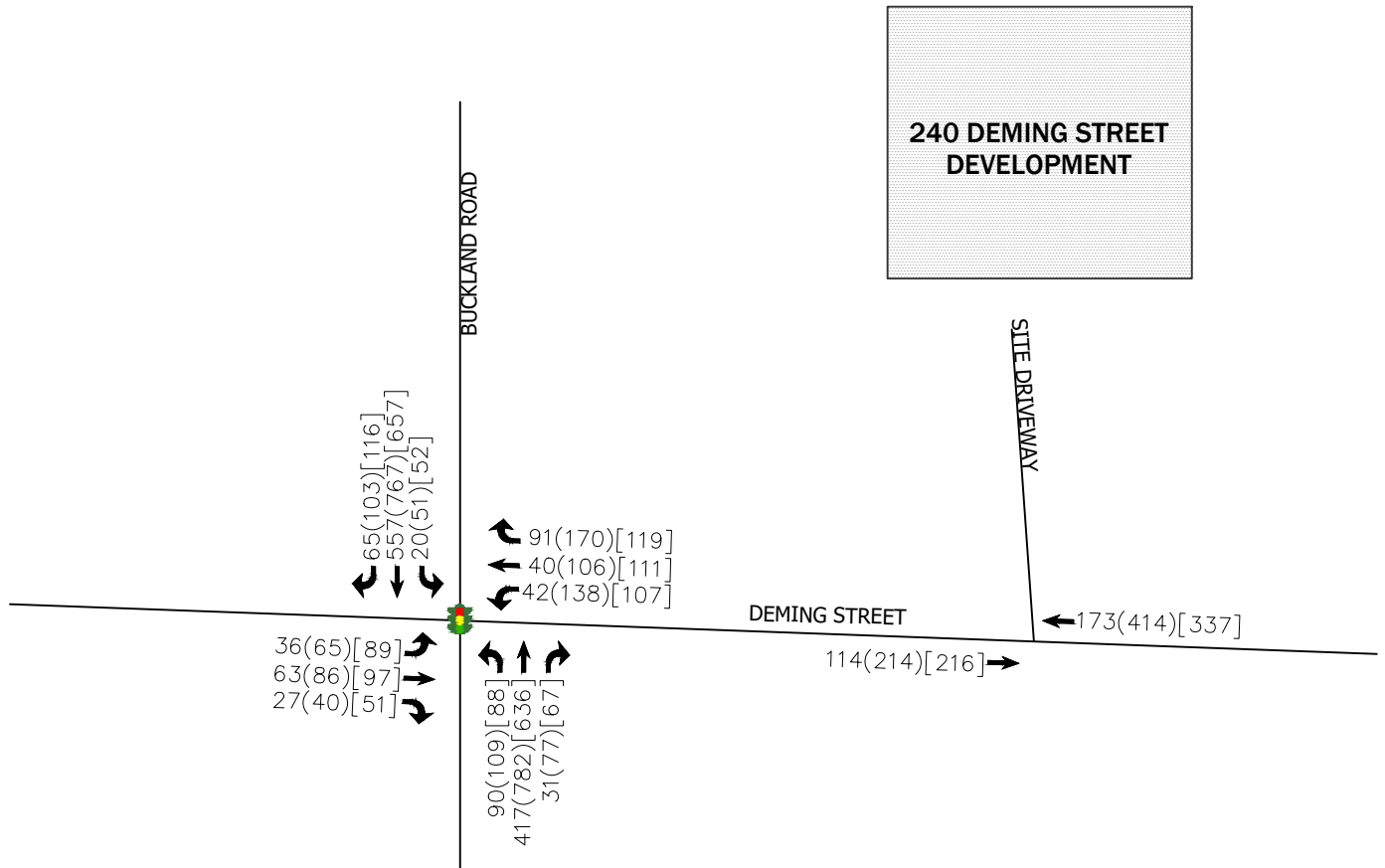
240 DEMING STREET

SOUTH WINDSOR

CONNECTICUT

PROJ. No.: 20230453.A10
DATE: JUNE 2023

FIGURE 1



XX(XX)[XX] = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR) [SATURDAY PEAK HOUR]



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FIGURE 2: 2025 BASELINE TRAFFIC VOLUMES

PROJ. NO: 20230453.A10

240 DEMING STREET - SOUTH WINSOR, CT

JUNE 2023



XX(XX)[XX] = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR) [SATURDAY PEAK HOUR]



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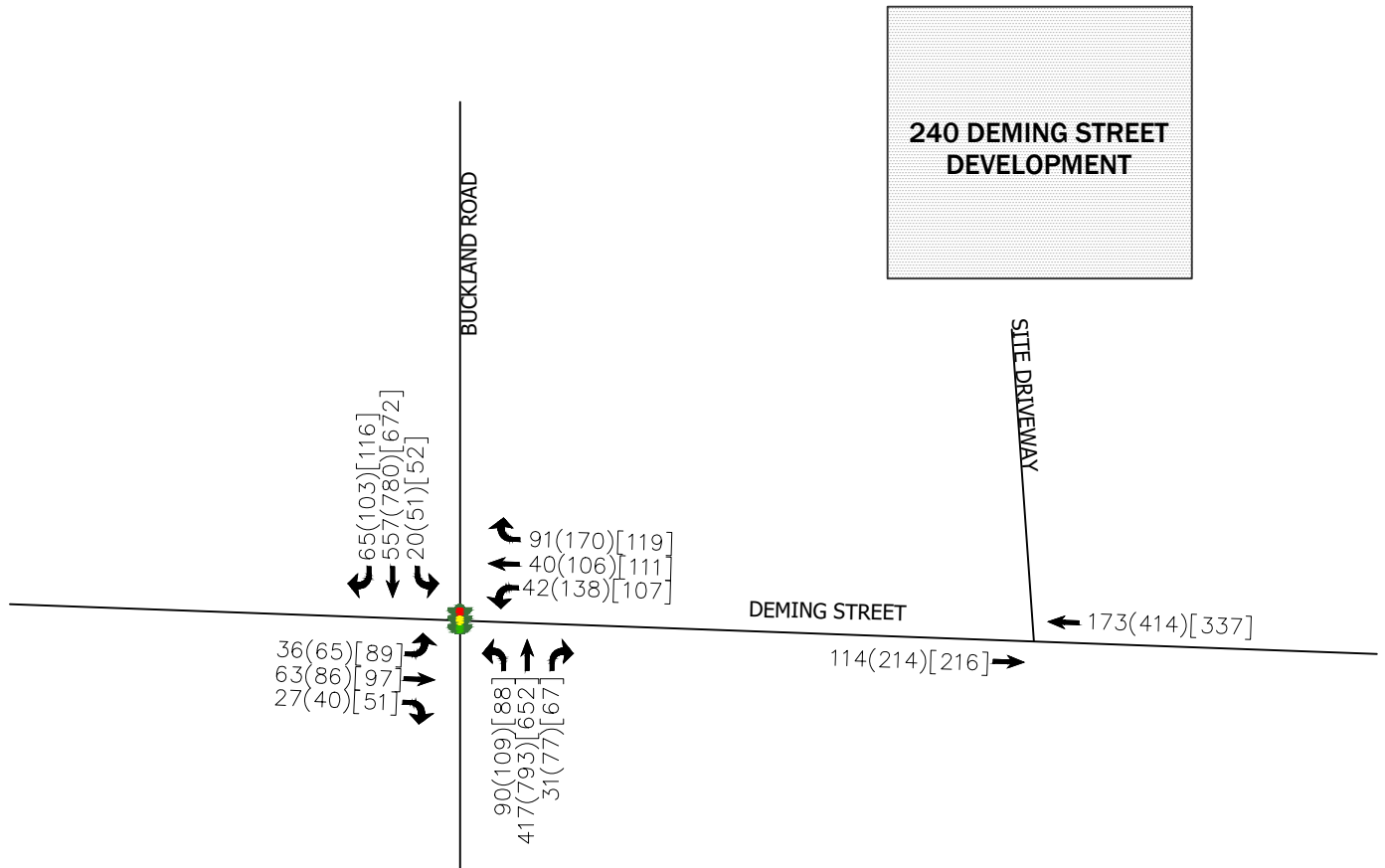
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FIGURE 3: OTHER GENERATORS - EVERGREEN WALK

PROJ. NO: 20230453.A10

240 DEMING STREET - SOUTH WINDSOR, CT

JUNE 2023



XX(XX)[XX] = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR) [SATURDAY PEAK HOUR]



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FIGURE 4: 2025 BACKGROUND TRAFFIC VOLUMES

PROJ. NO: 20230453.A10

240 DEMING STREET - SOUTH WINDSOR, CT

JUNE 2023



XX(XX) = ENTERING TRAFFIC (EXITING TRAFFIC)



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FIGURE 5: TRIP DISTRIBUTION

PROJ. NO: 20230453.A10

240 DEMING STREET - SOUTH WINDSOR, CT

JUNE 2023



XX(XX)[XX] = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)
[SATURDAY PEAK HOUR]

SITE GENERATED TRAFFIC VOLUMES

	ENTER	EXIT	TOTAL
MORNING	7	18	25
AFTERNOON	17	11	28
SATURDAY	14	14	28



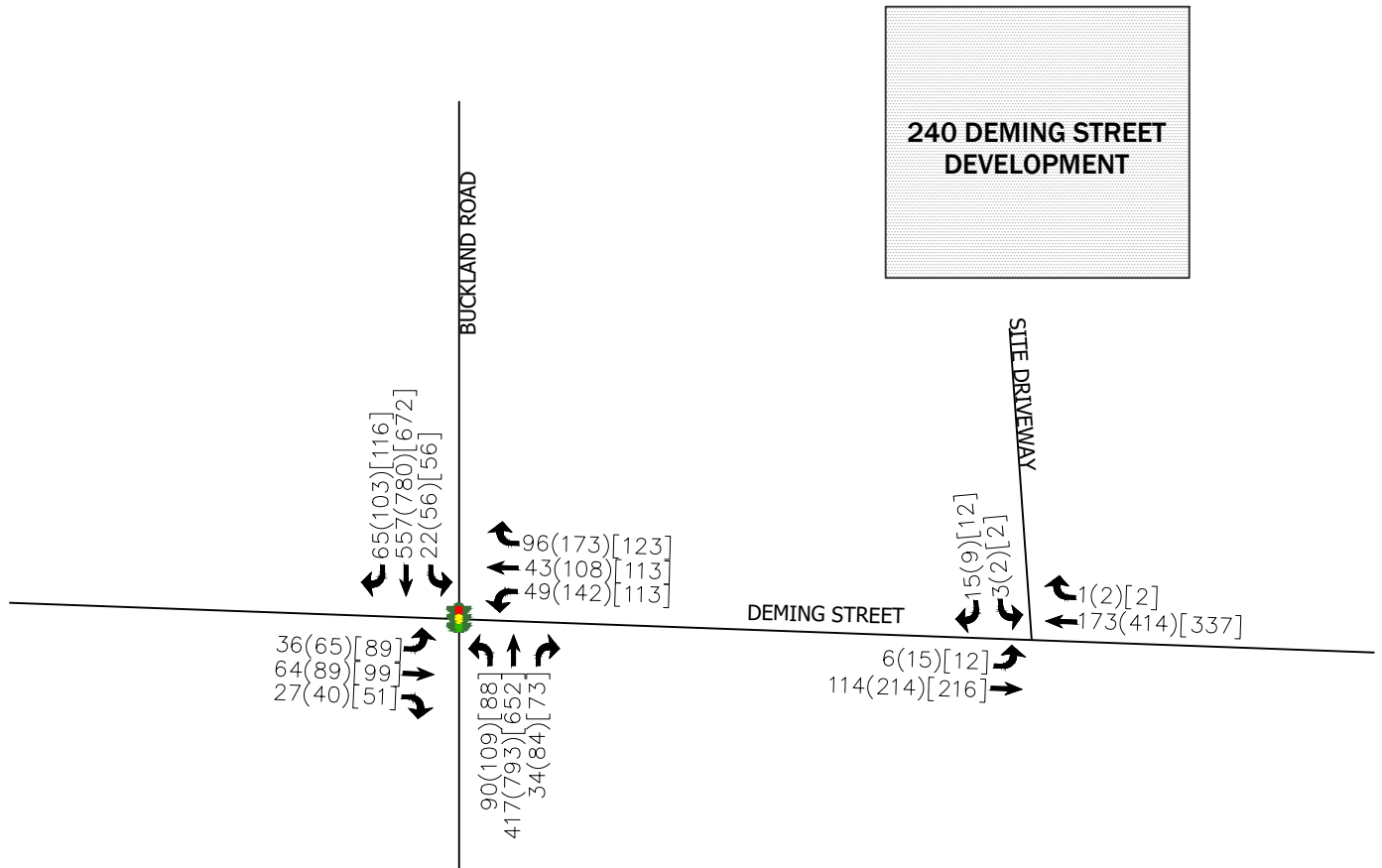
FUSS & O'NEILL
146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
860.646.2469
www.fando.com

FIGURE 6: TRIP GENERATION

PROJ. NO: 20230453.A10

240 DEMING STREET - SOUTH WINDSOR, CT

JUNE 2023



XX(XX) = WEEKDAY MORNING PEAK HOUR (WEEKDAY PM PEAK HOUR)
[SATURDAY PEAK HOUR]



FUSS & O'NEILL

146 HARTFORD ROAD
MANCHESTER, CONNECTICUT 06040
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FIGURE 7: 2025 COMBINED TRAFFIC VOLUMES

PROJ. NO: 20230453.A10

240 DEMING STREET - SOUTH WINDSOR, CT

JUNE 2023

Appendix C

Intersection Capacity Analysis Worksheets
2025 Background Traffic Volumes
Weekday AM Peak Hour

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 AM Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	63	27	42	40	91	90	417	31	20	557	65
Future Volume (vph)	36	63	27	42	40	91	90	417	31	20	557	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	130		0	150		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.895			0.990			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1667	0	1770	3504	0	1770	3483	0
Flt Permitted	0.666			0.713			0.277			0.475		
Satd. Flow (perm)	1241	1863	1583	1328	1667	0	516	3504	0	885	3483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		99			14			20	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		293			623			564			246	
Travel Time (s)		6.7			14.2			12.8			5.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	68	29	46	43	99	98	453	34	22	605	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	68	29	46	142	0	98	487	0	22	676	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Detector Phase	4	4	4	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0		15.0	15.0		10.0	15.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		19.0	24.2		14.0	24.2	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		17.0	27.0		12.0	22.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		28.3%	45.0%		20.0%	36.7%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		13.0	20.8		8.0	15.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.2		3.0	4.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Max		Min	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effect Green (s)	10.0	10.0	10.0	10.0	10.0		37.8	23.4		28.7	18.3	
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.71	0.44		0.54	0.34	
v/c Ratio	0.17	0.20	0.06	0.19	0.36		0.14	0.32		0.04	0.56	
Control Delay	21.4	21.1	0.3	21.6	11.3		4.2	11.4		4.5	17.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.4	21.1	0.3	21.6	11.3		4.2	11.4		4.5	17.2	

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 AM Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	C	B		A	B		A	B	
Approach Delay		16.8			13.8			10.2			16.8	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	11	20	0	13	12		9	52		2	92	
Queue Length 95th (ft)	33	48	0	37	52		25	93		9	154	
Internal Link Dist (ft)		213			543			484			166	
Turn Bay Length (ft)	150			130			150			300		
Base Capacity (vph)	378	568	624	404	577		677	1544		611	1208	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.12	0.05	0.11	0.25		0.14	0.32		0.04	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 53.3

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.1

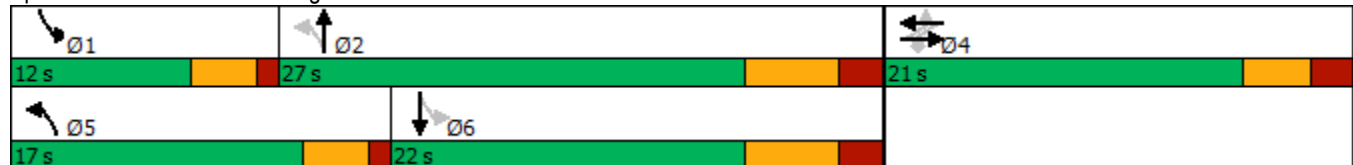
Intersection LOS: B

Intersection Capacity Utilization 62.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Deming Street & Buckland Road



HCM Signalized Intersection Capacity Analysis

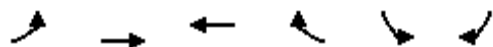
1: Deming Street & Buckland Road

240 Deming Street
2025 AM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	63	27	42	40	91	90	417	31	20	557	65
Future Volume (vph)	36	63	27	42	40	91	90	417	31	20	557	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1668		1770	3502		1770	3483	
Flt Permitted	0.67	1.00	1.00	0.71	1.00		0.28	1.00		0.47	1.00	
Satd. Flow (perm)	1241	1863	1583	1328	1668		515	3502		884	3483	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	68	29	46	43	99	98	453	34	22	605	71
RTOR Reduction (vph)	0	0	25	0	85	0	0	8	0	0	13	0
Lane Group Flow (vph)	39	68	4	46	57	0	98	479	0	22	663	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	7.6	7.6	7.6	7.6	7.6		35.5	23.4		26.4	18.3	
Effective Green, g (s)	7.6	7.6	7.6	7.6	7.6		35.5	23.4		26.4	18.3	
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.65	0.43		0.49	0.34	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	173	260	221	185	233		641	1509		561	1173	
v/s Ratio Prot		c0.04			0.03		c0.04	c0.14		0.01	c0.19	
v/s Ratio Perm	0.03		0.00	0.03			0.06			0.01		
v/c Ratio	0.23	0.26	0.02	0.25	0.24		0.15	0.32		0.04	0.56	
Uniform Delay, d1	20.7	20.8	20.1	20.8	20.8		3.9	10.2		7.3	14.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.5	0.0	0.7	0.5		0.1	0.6		0.0	2.0	
Delay (s)	21.4	21.4	20.2	21.5	21.3		4.0	10.7		7.3	16.7	
Level of Service	C	C	C	C	C		A	B		A	B	
Approach Delay (s)		21.1			21.4			9.6			16.4	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			14.9			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			54.3			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			62.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Deming Street & Site Driveway

240 Deming Street
2025 AM Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↱		↰	↱
Traffic Volume (vph)	0	114	173	0	0	0
Future Volume (vph)	0	114	173	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Flt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	1863	1863
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	1863	1863
Link Speed (mph)		30	30		30	
Link Distance (ft)		623	262		110	
Travel Time (s)		14.2	6.0		2.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	124	188	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	124	188	0	0	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 12.4% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: Deming Street & Site Driveway

240 Deming Street
2025 AM Background



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	114	173	0	0	0
Future Volume (Veh/h)	0	114	173	0	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)	0	124	188	0	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)		623				
pX, platoon unblocked						
vC, conflicting volume	188				312	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	188				312	188
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1386				681	854
Direction, Lane #	EB 1	WB 1	SB 1	SB 2		
Volume Total	124	188	0	0		
Volume Left	0	0	0	0		
Volume Right	0	0	0	0		
cSH	1386	1700	1700	1700		
Volume to Capacity	0.00	0.11	0.00	0.00		
Queue Length 95th (ft)	0	0	0	0		
Control Delay (s)	0.0	0.0	0.0	0.0		
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			12.4%		ICU Level of Service	A
Analysis Period (min)			15			

Appendix C

Intersection Capacity Analysis Worksheets 2025 Combined Traffic Volumes Weekday AM Peak Hour

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 AM Combined

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	64	27	49	43	96	90	417	34	22	557	65
Future Volume (vph)	36	64	27	49	43	96	90	417	34	22	557	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	130		0	150		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.897			0.989			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1671	0	1770	3500	0	1770	3483	0
Flt Permitted	0.661			0.711			0.276			0.473		
Satd. Flow (perm)	1231	1863	1583	1324	1671	0	514	3500	0	881	3483	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		104			15			20	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		243			625			564			263	
Travel Time (s)		5.5			14.2			12.8			6.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	70	29	53	47	104	98	453	37	24	605	71
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	70	29	53	151	0	98	490	0	24	676	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Detector Phase	4	4	4	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0		15.0	15.0		10.0	15.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		19.0	24.2		14.0	24.2	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		17.0	27.0		12.0	22.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		28.3%	45.0%		20.0%	36.7%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		13.0	20.8		8.0	15.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.2		3.0	4.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Max		Min	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effect Green (s)	10.1	10.1	10.1	10.1	10.1		37.8	23.4		28.7	18.3	
Actuated g/C Ratio	0.19	0.19	0.19	0.19	0.19		0.71	0.44		0.54	0.34	
v/c Ratio	0.17	0.20	0.06	0.21	0.38		0.15	0.32		0.04	0.56	
Control Delay	21.4	21.1	0.3	22.0	11.4		4.3	11.5		4.6	17.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	21.4	21.1	0.3	22.0	11.4		4.3	11.5		4.6	17.3	

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 AM Combined

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	C	B		A	B		A	B	
Approach Delay		16.8			14.2			10.3			16.9	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)	11	20	0	15	14		9	52		2	92	
Queue Length 95th (ft)	33	49	0	41	54		26	94		9	155	
Internal Link Dist (ft)		163			545			484			183	
Turn Bay Length (ft)	150			130			150			300		
Base Capacity (vph)	375	567	623	403	581		675	1541		608	1206	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.10	0.12	0.05	0.13	0.26		0.15	0.32		0.04	0.56	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 53.4

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.2

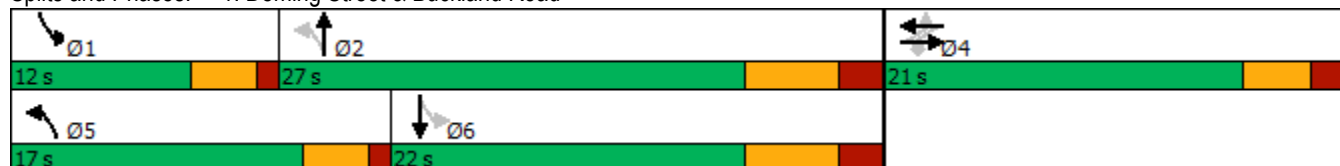
Intersection LOS: B

Intersection Capacity Utilization 62.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Deming Street & Buckland Road



HCM Signalized Intersection Capacity Analysis

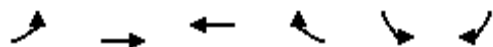
1: Deming Street & Buckland Road

240 Deming Street
2025 AM Combined

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	64	27	49	43	96	90	417	34	22	557	65
Future Volume (vph)	36	64	27	49	43	96	90	417	34	22	557	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.90		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1670		1770	3499		1770	3483	
Flt Permitted	0.66	1.00	1.00	0.71	1.00		0.28	1.00		0.47	1.00	
Satd. Flow (perm)	1231	1863	1583	1325	1670		514	3499		881	3483	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	39	70	29	53	47	104	98	453	37	24	605	71
RTOR Reduction (vph)	0	0	25	0	89	0	0	9	0	0	13	0
Lane Group Flow (vph)	39	70	4	53	62	0	98	481	0	24	663	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	7.7	7.7	7.7	7.7	7.7		35.5	23.4		26.4	18.3	
Effective Green, g (s)	7.7	7.7	7.7	7.7	7.7		35.5	23.4		26.4	18.3	
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14		0.65	0.43		0.49	0.34	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	263	224	187	236		640	1505		559	1171	
v/s Ratio Prot		0.04			0.04		c0.04	c0.14		0.01	c0.19	
v/s Ratio Perm	0.03		0.00	c0.04			0.06			0.01		
v/c Ratio	0.22	0.27	0.02	0.28	0.26		0.15	0.32		0.04	0.57	
Uniform Delay, d1	20.7	20.8	20.1	20.9	20.8		4.0	10.2		7.3	14.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.5	0.0	0.8	0.6		0.1	0.6		0.0	2.0	
Delay (s)	21.4	21.4	20.1	21.7	21.4		4.1	10.8		7.3	16.8	
Level of Service	C	C	C	C	C		A	B		A	B	
Approach Delay (s)		21.1			21.5			9.7			16.5	
Approach LOS		C			C			A			B	
Intersection Summary												
HCM 2000 Control Delay			15.0			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			54.4			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			62.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Deming Street & Site Driveway

240 Deming Street
2025 AM Combined



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	6	114	173	1	3	15
Future Volume (vph)	6	114	173	1	3	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.886	
Flt Protected		0.997			0.992	
Satd. Flow (prot)	0	1857	1861	0	1637	0
Flt Permitted		0.997			0.992	
Satd. Flow (perm)	0	1857	1861	0	1637	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		625	300		155	
Travel Time (s)		14.2	6.8		3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	124	188	1	3	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	131	189	0	19	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 20.9% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: Deming Street & Site Driveway

240 Deming Street
2025 AM Combined



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	114	173	1	3	15
Future Volume (Veh/h)	6	114	173	1	3	15
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)	7	124	188	1	3	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)		625				
pX, platoon unblocked						
vC, conflicting volume	189				326	188
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	189				326	188
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	98
cM capacity (veh/h)	1385				664	853
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	131	189	19			
Volume Left	7	0	3			
Volume Right	0	1	16			
cSH	1385	1700	817			
Volume to Capacity	0.01	0.11	0.02			
Queue Length 95th (ft)	0	0	2			
Control Delay (s)	0.4	0.0	9.5			
Lane LOS	A		A			
Approach Delay (s)	0.4	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			20.9%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix D

Intersection Capacity Analysis Worksheets 2025 Background Traffic Volumes Weekday PM Peak Hour

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 PM Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	86	40	138	106	170	109	793	77	51	780	103
Future Volume (vph)	65	86	40	138	106	170	109	793	77	51	780	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	130		0	150		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.907			0.987			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1690	0	1770	3493	0	1770	3476	0
Flt Permitted	0.383			0.697			0.181			0.260		
Satd. Flow (perm)	713	1863	1583	1298	1690	0	337	3493	0	484	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		132			19			23	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		152			625			564			183	
Travel Time (s)		3.5			14.2			12.8			4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	93	43	150	115	185	118	862	84	55	848	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	93	43	150	300	0	118	946	0	55	960	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Detector Phase	4	4	4	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0		15.0	15.0		10.0	15.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		19.0	24.2		14.0	24.2	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		17.0	27.0		12.0	22.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		28.3%	45.0%		20.0%	36.7%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		13.0	20.8		8.0	15.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.2		3.0	4.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Max		Min	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effect Green (s)	12.7	12.7	12.7	12.7	12.7		37.3	23.1		28.3	18.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.63	0.39		0.48	0.31	
v/c Ratio	0.46	0.23	0.09	0.54	0.64		0.22	0.69		0.14	0.89	
Control Delay	30.5	20.2	0.3	28.0	18.4		6.1	18.4		6.5	32.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.5	20.2	0.3	28.0	18.4		6.1	18.4		6.5	32.9	

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 PM Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	C	B		A	B		A	C	
Approach Delay		19.6			21.6			17.0			31.4	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	22	27	0	47	52		15	143		7	169	
Queue Length 95th (ft)	57	60	0	97	121		35	217		19	#297	
Internal Link Dist (ft)		72			545			484			103	
Turn Bay Length (ft)	150			130			150			300		
Base Capacity (vph)	193	506	578	352	555		529	1375		406	1078	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.37	0.18	0.07	0.43	0.54		0.22	0.69		0.14	0.89	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 59.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.3

Intersection LOS: C

Intersection Capacity Utilization 77.7%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Deming Street & Buckland Road

 Ø1	 Ø2	 Ø4
12 s	27 s	21 s
 Ø5	 Ø6	
17 s	22 s	

HCM Signalized Intersection Capacity Analysis

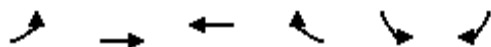
1: Deming Street & Buckland Road

240 Deming Street
2025 PM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	86	40	138	106	170	109	793	77	51	780	103
Future Volume (vph)	65	86	40	138	106	170	109	793	77	51	780	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1690		1770	3492		1770	3477	
Flt Permitted	0.38	1.00	1.00	0.70	1.00		0.18	1.00		0.26	1.00	
Satd. Flow (perm)	714	1863	1583	1298	1690		337	3492		485	3477	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	93	43	150	115	185	118	862	84	55	848	112
RTOR Reduction (vph)	0	0	34	0	104	0	0	12	0	0	16	0
Lane Group Flow (vph)	71	93	9	150	196	0	118	934	0	55	944	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	12.7	12.7	12.7	12.7	12.7		35.1	23.1		26.1	18.1	
Effective Green, g (s)	12.7	12.7	12.7	12.7	12.7		35.1	23.1		26.1	18.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.59	0.39		0.44	0.31	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	401	340	279	363		516	1367		388	1066	
v/s Ratio Prot		0.05			c0.12		c0.05	c0.27		0.02	c0.27	
v/s Ratio Perm	0.10		0.01	0.12			0.09			0.04		
v/c Ratio	0.46	0.23	0.03	0.54	0.54		0.23	0.68		0.14	0.89	
Uniform Delay, d1	20.2	19.1	18.3	20.5	20.6		7.0	14.9		9.5	19.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.3	0.0	2.0	1.6		0.2	2.8		0.2	10.8	
Delay (s)	22.4	19.4	18.3	22.5	22.2		7.3	17.7		9.7	30.3	
Level of Service	C	B	B	C	C		A	B		A	C	
Approach Delay (s)		20.2			22.3			16.5			29.2	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.4			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			59.0			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			77.7%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Deming Street & Site Driveway

240 Deming Street
2025 PM Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	214	414	0	0	0
Future Volume (vph)	0	214	414	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	1863	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	1863	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		625	300		155	
Travel Time (s)		14.2	6.8		3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	233	450	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	233	450	0	0	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 25.1%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

2: Deming Street & Site Driveway

240 Deming Street
2025 PM Background



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	0	214	414	0	0	0
Future Volume (Veh/h)	0	214	414	0	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)	0	233	450	0	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)		625				
pX, platoon unblocked						
vC, conflicting volume	450				683	450
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450				683	450
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1110				415	609
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	233	450	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1110	1700	1700			
Volume to Capacity	0.00	0.26	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			25.1%	ICU Level of Service		A
Analysis Period (min)			15			

Appendix D

Intersection Capacity Analysis Worksheets 2025 Combined Traffic Volumes Weekday PM Peak Hour

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 PM Combined

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	89	40	142	108	173	109	793	84	56	780	103
Future Volume (vph)	65	89	40	142	108	173	109	793	84	56	780	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	130		0	150		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.908			0.986			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1691	0	1770	3490	0	1770	3476	0
Flt Permitted	0.375			0.694			0.181			0.255		
Satd. Flow (perm)	699	1863	1583	1293	1691	0	337	3490	0	475	3476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		131			20			23	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		152			625			564			183	
Travel Time (s)		3.5			14.2			12.8			4.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	97	43	154	117	188	118	862	91	61	848	112
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	97	43	154	305	0	118	953	0	61	960	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Detector Phase	4	4	4	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0		15.0	15.0		10.0	15.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		19.0	24.2		14.0	24.2	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		17.0	27.0		12.0	22.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		28.3%	45.0%		20.0%	36.7%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		13.0	20.8		8.0	15.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.2		3.0	4.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Max		Min	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effect Green (s)	12.8	12.8	12.8	12.8	12.8		37.3	23.0		28.3	18.0	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.63	0.39		0.48	0.30	
v/c Ratio	0.47	0.24	0.09	0.55	0.65		0.22	0.69		0.15	0.89	
Control Delay	31.0	20.3	0.3	28.4	18.8		6.1	18.6		6.7	33.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.0	20.3	0.3	28.4	18.8		6.1	18.6		6.7	33.0	

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 PM Combined

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	C	B		A	B		A	C	
Approach Delay		19.8			22.0			17.2			31.5	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)	22	29	0	49	54		15	145		8	170	
Queue Length 95th (ft)	57	62	0	99	125		35	219		21	#297	
Internal Link Dist (ft)		72			545			484			103	
Turn Bay Length (ft)	150			130			150			300		
Base Capacity (vph)	189	505	577	350	554		528	1373		402	1076	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.38	0.19	0.07	0.44	0.55		0.22	0.69		0.15	0.89	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 59.1

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.5

Intersection LOS: C

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Deming Street & Buckland Road

 Ø1	 Ø2	 Ø4
12 s	27 s	21 s
 Ø5	 Ø6	
17 s	22 s	

HCM Signalized Intersection Capacity Analysis

1: Deming Street & Buckland Road

240 Deming Street
2025 PM Combined

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	89	40	142	108	173	109	793	84	56	780	103
Future Volume (vph)	65	89	40	142	108	173	109	793	84	56	780	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.91		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1691		1770	3489		1770	3477	
Flt Permitted	0.37	1.00	1.00	0.69	1.00		0.18	1.00		0.26	1.00	
Satd. Flow (perm)	698	1863	1583	1293	1691		337	3489		476	3477	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	97	43	154	117	188	118	862	91	61	848	112
RTOR Reduction (vph)	0	0	34	0	103	0	0	12	0	0	16	0
Lane Group Flow (vph)	71	97	9	154	202	0	118	941	0	61	944	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	12.8	12.8	12.8	12.8	12.8		35.1	23.1		26.1	18.1	
Effective Green, g (s)	12.8	12.8	12.8	12.8	12.8		35.1	23.1		26.1	18.1	
Actuated g/C Ratio	0.22	0.22	0.22	0.22	0.22		0.59	0.39		0.44	0.31	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	403	342	280	366		515	1363		385	1064	
v/s Ratio Prot		0.05			c0.12		c0.05	c0.27		0.02	c0.27	
v/s Ratio Perm	0.10		0.01	0.12			0.09			0.05		
v/c Ratio	0.47	0.24	0.03	0.55	0.55		0.23	0.69		0.16	0.89	
Uniform Delay, d1	20.2	19.1	18.2	20.6	20.6		7.1	15.0		9.6	19.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.3	0.0	2.3	1.8		0.2	2.9		0.2	11.0	
Delay (s)	22.5	19.4	18.3	22.9	22.4		7.3	17.9		9.8	30.5	
Level of Service	C	B	B	C	C		A	B		A	C	
Approach Delay (s)		20.2			22.6			16.7			29.2	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.6			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.62									
Actuated Cycle Length (s)			59.1			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			78.0%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Deming Street & Site Driveway

240 Deming Street
2025 PM Combined



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	214	414	2	2	9
Future Volume (vph)	15	214	414	2	2	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.887	
Flt Protected		0.997			0.992	
Satd. Flow (prot)	0	1857	1861	0	1639	0
Flt Permitted		0.997			0.992	
Satd. Flow (perm)	0	1857	1861	0	1639	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		625	300		155	
Travel Time (s)		14.2	6.8		3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	16	233	450	2	2	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	249	452	0	12	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 33.6% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: Deming Street & Site Driveway

240 Deming Street
2025 PM Combined



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	214	414	2	2	9
Future Volume (Veh/h)	15	214	414	2	2	9
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)	16	233	450	2	2	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)		625				
pX, platoon unblocked						
vC, conflicting volume	452				716	451
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	452				716	451
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1109				391	608
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	249	452	12			
Volume Left	16	0	2			
Volume Right	0	2	10			
cSH	1109	1700	557			
Volume to Capacity	0.01	0.27	0.02			
Queue Length 95th (ft)	1	0	2			
Control Delay (s)	0.7	0.0	11.6			
Lane LOS	A		B			
Approach Delay (s)	0.7	0.0	11.6			
Approach LOS			B			
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			33.6%		ICU Level of Service	
Analysis Period (min)			15			
			A			

Appendix E

Intersection Capacity Analysis Worksheets 2025 Background Traffic Volumes Saturday Peak Hour

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 Saturday Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	97	51	107	111	119	88	652	67	52	672	116
Future Volume (vph)	89	97	51	107	111	119	88	652	67	52	672	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	130		0	150		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.923			0.986			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1719	0	1770	3490	0	1770	3461	0
Flt Permitted	0.482			0.689			0.181			0.356		
Satd. Flow (perm)	898	1863	1583	1283	1719	0	337	3490	0	663	3461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		87			20			32	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		289			625			564			229	
Travel Time (s)		6.6			14.2			12.8			5.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	105	55	116	121	129	96	709	73	57	730	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	105	55	116	250	0	96	782	0	57	856	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Detector Phase	4	4	4	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0		15.0	15.0		10.0	15.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		19.0	24.2		14.0	24.2	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		17.0	27.0		12.0	22.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		28.3%	45.0%		20.0%	36.7%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		13.0	20.8		8.0	15.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.2		3.0	4.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Max		Min	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effect Green (s)	12.3	12.3	12.3	12.3	12.3		37.3	23.1		28.3	18.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.64	0.39		0.48	0.31	
v/c Ratio	0.52	0.27	0.11	0.43	0.58		0.18	0.56		0.12	0.79	
Control Delay	30.9	20.9	0.5	25.3	19.1		5.7	15.9		6.2	25.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	30.9	20.9	0.5	25.3	19.1		5.7	15.9		6.2	25.2	

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 Saturday Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	C	B		A	B		A	C	
Approach Delay		20.3			21.1			14.8			24.1	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	30	31	0	36	50		11	103		6	135	
Queue Length 95th (ft)	71	66	0	77	110		29	170		19	#246	
Internal Link Dist (ft)		209			545			484			149	
Turn Bay Length (ft)	150			130			150			300		
Base Capacity (vph)	245	510	581	351	534		533	1386		471	1088	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.40	0.21	0.09	0.33	0.47		0.18	0.56		0.12	0.79	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 58.6

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 19.8

Intersection LOS: B

Intersection Capacity Utilization 72.2%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Deming Street & Buckland Road

 Ø1	 Ø2	 Ø4
12 s	27 s	21 s
 Ø5	 Ø6	
17 s	22 s	

HCM Signalized Intersection Capacity Analysis

1: Deming Street & Buckland Road

240 Deming Street
2025 Saturday Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	97	51	107	111	119	88	652	67	52	672	116
Future Volume (vph)	89	97	51	107	111	119	88	652	67	52	672	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1719		1770	3490		1770	3461	
Flt Permitted	0.48	1.00	1.00	0.69	1.00		0.18	1.00		0.36	1.00	
Satd. Flow (perm)	898	1863	1583	1284	1719		337	3490		662	3461	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	105	55	116	121	129	96	709	73	57	730	126
RTOR Reduction (vph)	0	0	44	0	69	0	0	12	0	0	22	0
Lane Group Flow (vph)	97	105	11	116	181	0	96	770	0	57	834	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	12.2	12.2	12.2	12.2	12.2		35.1	23.1		26.1	18.1	
Effective Green, g (s)	12.2	12.2	12.2	12.2	12.2		35.1	23.1		26.1	18.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.60	0.39		0.45	0.31	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	187	388	330	267	358		520	1378		446	1070	
v/s Ratio Prot		0.06			0.11		c0.04	c0.22		0.02	c0.24	
v/s Ratio Perm	c0.11		0.01	0.09			0.07			0.04		
v/c Ratio	0.52	0.27	0.03	0.43	0.51		0.18	0.56		0.13	0.78	
Uniform Delay, d1	20.5	19.4	18.5	20.1	20.5		6.2	13.7		9.3	18.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	0.4	0.0	1.1	1.1		0.2	1.6		0.1	5.6	
Delay (s)	23.0	19.8	18.5	21.3	21.6		6.4	15.4		9.4	24.0	
Level of Service	C	B	B	C	C		A	B		A	C	
Approach Delay (s)		20.7			21.5			14.4			23.1	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			19.4			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			58.5			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			72.2%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Deming Street & Site Driveway

240 Deming Street
2025 Saturday Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	216	414	0	0	0
Future Volume (vph)	0	216	414	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1863	1863	0	1863	0
Flt Permitted						
Satd. Flow (perm)	0	1863	1863	0	1863	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		625	300		155	
Travel Time (s)		14.2	6.8		3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	235	450	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	235	450	0	0	0
Sign Control		Free	Free		Stop	
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization 25.1%				ICU Level of Service A		
Analysis Period (min) 15						

HCM Unsignalized Intersection Capacity Analysis

2: Deming Street & Site Driveway

240 Deming Street
2025 Saturday Background



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	216	414	0	0	0
Future Volume (Veh/h)	0	216	414	0	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)	0	235	450	0	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)		625				
pX, platoon unblocked						
vC, conflicting volume	450				685	450
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	450				685	450
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1110				414	609
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	235	450	0			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1110	1700	1700			
Volume to Capacity	0.00	0.26	0.00			
Queue Length 95th (ft)	0	0	0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS			A			
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			25.1%		ICU Level of Service	
Analysis Period (min)			15		A	

Appendix E

Intersection Capacity Analysis Worksheets 2025 Combined Traffic Volumes Saturday Peak Hour

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 Saturday Combined

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	99	51	113	113	123	88	652	73	56	672	116
Future Volume (vph)	89	99	51	113	113	123	88	652	73	56	672	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	150		0	130		0	150		0	300		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.922			0.985			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1717	0	1770	3486	0	1770	3461	0
Flt Permitted	0.470			0.687			0.181			0.354		
Satd. Flow (perm)	875	1863	1583	1280	1717	0	337	3486	0	659	3461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			204		89			22			32	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		273			625			564			270	
Travel Time (s)		6.2			14.2			12.8			6.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	108	55	123	123	134	96	709	79	61	730	126
Shared Lane Traffic (%)												
Lane Group Flow (vph)	97	108	55	123	257	0	96	788	0	61	856	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Detector Phase	4	4	4	4	4		5	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0		15.0	15.0		10.0	15.0	
Minimum Split (s)	23.0	23.0	23.0	23.0	23.0		19.0	24.2		14.0	24.2	
Total Split (s)	21.0	21.0	21.0	21.0	21.0		17.0	27.0		12.0	22.0	
Total Split (%)	35.0%	35.0%	35.0%	35.0%	35.0%		28.3%	45.0%		20.0%	36.7%	
Maximum Green (s)	16.0	16.0	16.0	16.0	16.0		13.0	20.8		8.0	15.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	4.2		3.0	4.2	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		1.0	2.0		1.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		Min	Max		Min	Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0			11.0			11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effect Green (s)	12.5	12.5	12.5	12.5	12.5		37.3	23.1		28.3	18.0	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.63	0.39		0.48	0.31	
v/c Ratio	0.52	0.27	0.11	0.45	0.59		0.18	0.57		0.13	0.79	
Control Delay	31.2	20.9	0.5	25.7	19.2		5.8	16.1		6.3	25.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.2	20.9	0.5	25.7	19.2		5.8	16.1		6.3	25.5	

Lanes, Volumes, Timings
1: Deming Street & Buckland Road

240 Deming Street
2025 Saturday Combined

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	C	C	A	C	B		A	B		A	C	
Approach Delay		20.4			21.3			15.0			24.2	
Approach LOS		C			C			B			C	
Queue Length 50th (ft)	31	32	0	38	52		11	109		7	140	
Queue Length 95th (ft)	72	67	0	81	114		29	171		21	#246	
Internal Link Dist (ft)		193			545			484			190	
Turn Bay Length (ft)	150			130			150			300		
Base Capacity (vph)	238	508	580	349	532		531	1380		468	1084	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.41	0.21	0.09	0.35	0.48		0.18	0.57		0.13	0.79	

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 58.8

Natural Cycle: 70

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 20.0

Intersection LOS: C

Intersection Capacity Utilization 72.6%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Deming Street & Buckland Road

 Ø1	 Ø2	 Ø4
12 s	27 s	21 s
 Ø5	 Ø6	
17 s	22 s	

HCM Signalized Intersection Capacity Analysis

1: Deming Street & Buckland Road

240 Deming Street
2025 Saturday Combined

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	99	51	113	113	123	88	652	73	56	672	116
Future Volume (vph)	89	99	51	113	113	123	88	652	73	56	672	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.92		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1717		1770	3486		1770	3461	
Flt Permitted	0.47	1.00	1.00	0.69	1.00		0.18	1.00		0.35	1.00	
Satd. Flow (perm)	875	1863	1583	1280	1717		337	3486		659	3461	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	97	108	55	123	123	134	96	709	79	61	730	126
RTOR Reduction (vph)	0	0	43	0	70	0	0	13	0	0	22	0
Lane Group Flow (vph)	97	108	12	123	187	0	96	775	0	61	834	0
Turn Type	Perm	NA	Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			4		5	2		1	6	
Permitted Phases	4		4	4			2			6		
Actuated Green, G (s)	12.5	12.5	12.5	12.5	12.5		35.1	23.1		26.1	18.1	
Effective Green, g (s)	12.5	12.5	12.5	12.5	12.5		35.1	23.1		26.1	18.1	
Actuated g/C Ratio	0.21	0.21	0.21	0.21	0.21		0.60	0.39		0.44	0.31	
Clearance Time (s)	5.0	5.0	5.0	5.0	5.0		4.0	6.2		4.0	6.2	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	186	396	336	272	365		517	1369		443	1065	
v/s Ratio Prot		0.06			0.11		c0.04	c0.22		0.02	c0.24	
v/s Ratio Perm	c0.11		0.01	0.10			0.07			0.04		
v/c Ratio	0.52	0.27	0.03	0.45	0.51		0.19	0.57		0.14	0.78	
Uniform Delay, d1	20.5	19.4	18.4	20.2	20.5		6.3	13.9		9.4	18.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	0.4	0.0	1.2	1.2		0.2	1.7		0.1	5.8	
Delay (s)	23.1	19.7	18.4	21.4	21.7		6.5	15.6		9.6	24.3	
Level of Service	C	B	B	C	C		A	B		A	C	
Approach Delay (s)		20.7			21.6			14.6			23.3	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			19.6			HCM 2000 Level of Service				B		
HCM 2000 Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			58.8			Sum of lost time (s)				15.2		
Intersection Capacity Utilization			72.6%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings
2: Deming Street & Site Driveway

240 Deming Street
2025 Saturday Combined



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	216	337	2	12	2
Future Volume (vph)	12	216	337	2	12	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.982	
Flt Protected		0.997			0.958	
Satd. Flow (prot)	0	1857	1861	0	1752	0
Flt Permitted		0.997			0.958	
Satd. Flow (perm)	0	1857	1861	0	1752	0
Link Speed (mph)		30	30		30	
Link Distance (ft)		625	300		155	
Travel Time (s)		14.2	6.8		3.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	235	366	2	13	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	248	368	0	15	0
Sign Control		Free	Free		Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 31.2% ICU Level of Service A

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis

2: Deming Street & Site Driveway

240 Deming Street
2025 Saturday Combined



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	12	216	337	2	12	2
Future Volume (Veh/h)	12	216	337	2	12	2
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)	13	235	366	2	13	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)		625				
pX, platoon unblocked						
vC, conflicting volume	368				628	367
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	368				628	367
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				97	100
cM capacity (veh/h)	1191				442	678
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	248	368	15			
Volume Left	13	0	13			
Volume Right	0	2	2			
cSH	1191	1700	463			
Volume to Capacity	0.01	0.22	0.03			
Queue Length 95th (ft)	1	0	3			
Control Delay (s)	0.5	0.0	13.0			
Lane LOS	A		B			
Approach Delay (s)	0.5	0.0	13.0			
Approach LOS			B			
Intersection Summary						
Average Delay		0.5				
Intersection Capacity Utilization		31.2%		ICU Level of Service		A
Analysis Period (min)		15				

Appendix F

Turning Movement Count (TMC) Data

CLIENT	Fuss & O'Neill
CITY/TOWN	South Windsor, CT
WEATHER	Sunny
INTERSECTION #	1

STREET 1	Buckland Road
STREET 2	Deming Street
DATE	06/02/2023, 06/03/2023

Passenger Cars & Heavy Vehicles Combined

	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	10	82	3	0	6	110	13	0	6	6	14	0	9	6	17
7:15 AM	0	12	89	1	0	11	122	6	0	0	6	8	0	3	12	12
7:30 AM	0	15	105	7	0	5	160	23	0	4	9	14	0	7	15	6
7:45 AM	0	34	121	5	0	2	139	22	0	5	8	12	0	4	19	10
8:00 AM	0	28	94	6	0	3	124	17	0	7	8	19	0	13	16	5
8:15 AM	0	26	82	3	0	6	139	16	0	7	5	19	0	7	18	7
8:30 AM	0	12	109	9	0	3	160	11	0	10	11	17	0	0	19	5
8:45 AM	0	22	124	12	0	8	123	20	0	17	15	31	0	15	9	9
PM																
4:00 PM	0	24	197	28	0	14	206	28	0	34	22	47	0	14	22	12
4:15 PM	0	31	201	15	0	16	176	25	0	33	24	43	0	11	21	13
4:30 PM	0	24	177	16	0	10	205	26	0	29	27	36	0	13	17	7
4:45 PM	0	28	192	16	0	10	165	22	0	39	31	41	0	26	24	7
5:00 PM	0	30	170	23	0	8	180	17	0	39	37	36	0	20	17	15
5:15 PM	0	13	173	18	0	6	200	21	0	30	40	37	0	16	22	12
5:30 PM	0	31	219	27	0	8	142	29	0	23	27	33	0	13	21	9
5:45 PM	0	31	186	20	0	10	156	20	0	28	19	20	0	10	36	13
SAT																
11:00 AM	0	21	113	14	0	7	110	26	0	26	30	20	0	13	29	10
11:15 AM	0	23	143	13	0	10	154	23	0	41	26	35	0	14	25	12
11:30 AM	0	21	155	20	0	19	146	22	0	30	21	33	0	15	21	7
11:45 AM	0	21	176	17	0	15	137	29	0	23	22	25	0	24	26	12
12:00 PM	0	16	132	24	0	14	188	35	0	24	28	37	0	16	20	13
12:15 PM	0	22	138	14	0	11	177	28	0	26	28	26	0	27	28	12
12:30 PM	0	27	177	11	0	11	142	22	0	32	31	29	0	20	21	13
12:45 PM	0	28	159	16	0	8	129	21	0	34	30	23	0	31	21	12
1:00 PM	0	32	175	17	0	17	158	22	0	22	19	24	0	16	20	8
1:15 PM	1	25	154	27	0	14	167	23	0	29	23	21	0	10	13	13
1:30 PM	0	25	163	21	0	17	126	27	0	21	15	21	0	17	21	7
1:45 PM	0	28	167	17	0	13	144	25	0	36	30	27	0	18	25	14

AM PEAK HOURS 8:00 AM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	88	409	30	0	20	546	64	0	41	39	86	0	35	62	26
	0.83				0.91				0.66				0.90			
PHF																
HV%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

PM PEAK HOURS 4:00 PM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	107	767	75	0	50	752	101	0	135	104	167	0	64	84	39
	0.95				0.91				0.91				0.82			
PHF																
HV%	0.0%	0.0%	0.7%	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%

SAT PEAK HOURS 11:45 AM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	86	623	66	0	51	644	114	0	105	109	117	0	87	95	50
	0.90				0.85				0.90				0.87			
PHF																
HV%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%	0.0%

CLIENT	Fuss & O'Neill
CITY/TOWN	South Windsor, CT
WEATHER	Sunny
INTERSECTION #	1

STREET 1	Buckland Road
STREET 2	Deming Street
DATE	06/02/2023, 06/03/2023

Heavy Vehicles

	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0
7:15 AM	0	0	3	0	0	0	1	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	2	0	0	0	3	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	1	3	0	0	0	1	0	0	1	0	0	0	0	0	0
11:15 AM	0	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	0
12:00 PM	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 PM	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0
1:30 PM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOURS 8:00 AM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	0

PM PEAK HOURS 4:00 PM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOURS 11:45 AM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	5	0	0	0	6	0	0	0	0	1	0	0	0	0

CLIENT	Fuss & O'Neill
CITY/TOWN	South Windsor, CT
WEATHER	Sunny
INTERSECTION #	1

STREET 1	Buckland Road
STREET 2	Deming Street
DATE	06/02/2023, 06/03/2023

Pedestrians and Bicycles

	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
Start Time	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
12:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
1:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOURS 8:00 AM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOURS 4:00 PM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOURS 11:45 AM	Buckland Rd - Northbound				Buckland Rd - Southbound				Deming St - Eastbound				Deming St - Westbound			
	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right
	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0

Appendix G

Crash Data Records

UConn Crash Data Repository

240 Deming Street
South Windsor, Connecticut
1/1/2020 - 12/31/2022

[illegible]