



MEMORANDUM

To: Mr. Shahin Yavari, Director of Development
Monday Properties

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Date: September 25, 2023

Subject: **Revised Traffic Assessment for Proposed Residential Development**
900 Long Ridge Road
City of Stamford, CT

On July 11th, 2023, Kimley-Horn and Associates, Inc. (“Kimley-Horn”) prepared a Memorandum to provide a Traffic Assessment of potential impacts associated with the proposed redevelopment of an existing office development located on 900 Long Ridge Road in the City of Stamford, Connecticut. On August 18th, 2023, the City’s Transportation, Traffic & Parking (“TTP”) Department issued an Interoffice Memorandum reviewing the Kimley-Horn Traffic Assessment and provided several comments that should be considered.

Upon reviewing the TTP Department comments, Kimley-Horn has prepared this Memorandum to provide a revised Traffic Assessment for the redevelopment of 900 Long Ridge Road. A notable change in this revised Traffic Assessment is that the intersection of Long Ridge Road & Wire Mill Road/Northbound Merritt Parkway (CT Route 15) Off-Ramp is now also being evaluated (in addition to the Long Ridge Road & Site Driveway intersection).

The subject property is located on the west side of Long Ridge Road (CT Route 104), to the south of Merritt Parkway (CT Route 15), and is currently developed with two office buildings, totaling 230,000 square feet (“SF”)¹, and associated parking (surface parking lots and a parking garage). Existing access to the property is provided by one signalized driveway on Long Ridge Road. The property location is shown on **Figure 1**, appended. A recently approved zoning text amendment permits residential multi-family development on the property.

It is proposed to demolish the existing office buildings and construct a mixed-use multifamily residential development (the “Project”) consisting of up to 508 residential units (457 market rate and 51 affordable units). The ground floor of the development will have approximately 20,200 square feet of commercial

¹ It is noted that the site maintains development rights for an additional 323,800 SF (+/-) of commercial floor area, which were not analyzed herein, but would significantly increase vehicles trips to and from the site.

space. A total of 820 parking spaces are proposed in a combination of structured parking and surface parking lots, which meets the Code-required parking of 781 spaces for the proposed residential units. The existing access driveway will remain unchanged.

This revised Memorandum evaluates existing conditions, as well as future conditions without the Project (“No-Build”) and with the Project (“Build”). The intersections that were evaluated are:

1. Long Ridge Road & Site Driveway
2. Long Ridge Road & Wire Mill Road/Northbound Merritt Parkway (CT Route 15) Off-Ramp

The No-Build condition is the benchmark against which the potential impacts of the proposed Project are compared. As detailed below, the change in use from office to mixed-use commercial and residential will reduce traffic and generally improve traffic operating conditions.

Existing Traffic Conditions

Description of Study Area

Long Ridge Road is a north/south oriented State highway (CT Route 104) that is classified as a “Principal Arterial Other” and travels from the New York State line in the north to High Ridge Road (CT Route 137) in the south. In the study area, Long Ridge Road provides two 11-foot-wide through lanes and a 2-foot-wide paved shoulder in each direction and has a posted speed limit of 40 MPH. To the north of the site driveway, a third northbound through lane is added. The pavement is in generally good condition and there are no sidewalks provided along Long Ridge Road. The Connecticut Department of Transportation (“CTDOT”) reports a 2017 estimated annual average daily traffic (“AADT”) volume of 26,200 on Long Ridge Road in the vicinity of the site.

Wire Mill Road is a northeast/southwest oriented local roadway that travels from High Ridge Road (CT Route 137) in the northeast and the Northbound Merritt Parkway (CT Route 15) Off-Ramp in the southwest. In the study area, Wire Mill Road provides one 10-foot-wide through lane and a 2-foot-wide to 5-foot-wide shoulder in each direction, though the shoulders quickly taper off as one travels northeast. The speed limit is 25 MPH. The pavement is in generally good condition and there are no sidewalks provided along Wire Mill Road.

The intersection of the Site Driveway & Long Ridge Road is a signalized, four-way, offset intersection with the site driveway forming the west leg, Long Ridge Road forming the north and south legs, and a private driveway to a daycare center forming the east leg. The daycare center generates minimal traffic, and its driveway is offset approximately 50 feet to the south of the site driveway. The northbound approach of Long Ridge Road provides one exclusive left-turn lane and two through lanes, while the southbound approach provides a left-through lane, a through lane and an exclusive right-turn lane. The site driveway provides one exclusive left-turn lane and one shared left-turn/right-turn lane, and the daycare center driveway provides one shared left-turn/through/right-turn lane. All approaches to the intersection are controlled by a three-phase traffic signal.

The intersection of Wire Mill Road/Northbound Merritt Parkway (CT Route 15) Off-Ramp & Long Ridge Road is a signalized, four-legged intersection with northbound off-ramp forming the west leg, Long

Ridge Road forming the north and south legs, and Wire Mill Road forming the east leg. The northbound approach of Long Ridge Road provides two through lanes and one through/right-turn lane, while the southbound approach provides one left-turn lane and two through lanes. The northbound off-ramp approach provides one left-turn/through lane and one exclusive right-turn lane, and the westbound approach one left-turn lane and one right-turn lane. All approaches to the intersection are controlled by a four-phase traffic signal.

Public Transportation

Public transportation in the area is provided by CT Transit which operates Route #336 on weekdays and Saturdays along Long Ridge Road between Rock Rimmon Road to the north and the Stewart B. McKinney Transportation Center in downtown Stamford to the south. Route #336 runs 30 buses each weekday (15 northbound and 15 southbound buses) and 4 buses on Saturdays (2 northbound, 2 southbound buses). Connections to other CT Transit bus routes and commuter rail service at the Stamford station of Metro-North Railroad are available from the McKinney Transportation Center. Bus stops are provided to the south of the site driveway, near the adjacent Loughran Avenue intersection.

Existing Traffic Volumes

To assess existing traffic conditions at the intersection of Long Ridge Road with the site driveway and daycare center driveway, turning movement counts were conducted on a typical weekday on Wednesday, September 21st, 2022, from 7:00 AM to 9:00 AM and from 4:00 PM to 6:00 PM. The counts were tabulated which revealed that the weekday morning peak hour occurred from 7:45 AM to 8:45 AM and the weekday evening peak hour occurred from 4:45 PM to 5:45 PM.

The counted peak hour traffic volumes were submitted to the CTDOT to determine if any adjustments would be required due to the COVID-19 pandemic. The CTDOT determined that no adjustments to the counted volumes would be needed.

In this revised Traffic Assessment, traffic data at the intersection of Long Ridge Road with the northbound off-ramp and Wire Mill Road was incorporated from the 16 Wire Mill Road Traffic Study as a supplement to the data at the site driveway intersection. These supplementary turning movement counts were conducted on a typical weekday on Tuesday, March 28th, 2023, during the morning and evening peak hours². The supplementary data reveals the same peak hours as described above. Therefore, both intersections have a weekday morning peak hour from 7:45 AM to 8:45 AM and a weekday evening peak hour from 4:45 PM to 5:45 PM.

As these turning movement counts were completed approximately six months apart, Kimley-Horn conservatively adjusted the turning movements only by increasing volumes to provide better north-south volume consistency on Long Ridge Road between the Site Driveway and Wire Mill Road.

The newly balanced Existing traffic volumes are provided on **Figures 2A and 2P** for the weekday AM and PM Peak Hours, respectively.

² Before the closure of Cedar Heights Road in April 2023.

Crash Analysis

An accident analysis was conducted along Long Ridge Road using crash records obtained from the *UCONN Connecticut Crash Data Repository* for the period from January 2017 through October 2022. There was a total of 11 crashes that occurred along Long Ridge Road within 500 feet of the site driveway intersection, however, only one crash was associated with the study intersection. That crash was a rear end collision involving two northbound vehicles on Long Ridge Road with one vehicle hitting another vehicle that was stopped in traffic. The crash occurred in the afternoon on a wet road and there were no injuries reported. Based on a review of the crash history, the Project is not anticipated to result in a change in the number of crashes at the subject intersection.

Future Traffic Volumes

No-Build Traffic Volumes

The future No-Build traffic volumes are the forecast traffic conditions that are expected to occur in the year 2026 without the proposed Project. This includes background traffic growth, traffic associated with any other planned/approved developments and traffic that could be expected from full occupancy of the office buildings on the site.

Background traffic growth represents typical traffic growth not associated with any planned development. CTDOT recommended that a 0.70% annual growth rate be applied to the traffic volumes along Long Ridge Road. Therefore, the Existing volumes were grown from the year 2023 to the year 2026 by total of 2.11% (0.70% growth per year for 3 years). The Grown traffic volumes are shown on **Figures 2A and 2P** for the AM and PM Peak Hours, respectively.

Per the CTDOT, there are no vicinity developments proposed in the study area. Kimley-Horn also contacted the City of Stamford Planning and Zoning Department to determine whether there are developments that have received approval or are under review. However, Kimley-Horn was informed of a vicinity development located at 16 Wire Mill Road, which is situated on the intersection of Wire Mill Road and Long Ridge Road. The proposed traffic from this vicinity development has been included in this revised Traffic Assessment and is shown in **Figures 2A and 2P**.

The property is currently developed with 230,000 SF of office space which was duly reviewed and approved by all agencies having jurisdiction, which is believed to have constructed transportation infrastructure to accommodate its current and former traffic activity at considerable expense³, and the owner of which has the right to lease out the entire 230,000 SF of space without the need for any discretionary approval from governmental agencies.

As the building is only partially occupied, the future action without the Project assumes full occupancy of the current office space⁴. To account for this, traffic generated by the full 230,000 SF of office space

³ Traffic signal and turn lanes at the site driveway.

⁴ The property owner has a vested interest in the fact that the building is approved, built, mitigated, and certified, and that, therefore, the baseline future condition would be full occupancy of the building's current permitted use;

was determined based on trip rates provided in the Institute of Transportation Engineers' ("ITE") publication, *Trip Generation Manual*, 11th Edition. The trip generations were calculated using ITE rates for Land Use Code 710 "General Office Building". The vacant space trips were determined by subtracting the counted driveway trips from the calculated ITE full-occupancy trips, as shown in **Table 1**, below. The vacant space trips were distributed to the study intersection based on the existing driveway counts. These vacant space trips, along with existing office trips, are shown in **Figure 3**.

Table 1 - Office Vacant Space Trip Calculation						
Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Fully Occupied Office Trips (ITE Rates)	307	42	349	56	274	330
Existing Occupied Office (Counted Driveway Trips)	73	10	83	6	66	72
Vacant Space Office Trips (ITE - Counted)	234	32	266	50	208	258

The office vacant space trips and vicinity development trips were added to the 2026 Grown volumes to obtain the 2026 No-Build volumes, which are shown on **Figures 2A and 2P**. It is noted that other uses of the existing building could generate considerably more traffic⁵.

Build Traffic Volumes

The future Build traffic volumes are the forecast traffic conditions that are expected to occur in the year 2026 with the proposed Project. The Project is to consist of 508 residential apartments (457 market rate and 51 affordable units) and 20,200 SF of commercial space⁶. ITE *Trip Generation Manual*, 11th Edition, was used to determine the number of vehicle trips generated by the proposed development. This widely utilized reference source contains trip generation rates for the related uses: "Multifamily Housing – Mid-Rise" (Land Use Code "LUC" 221), "Small Office Building" (LUC 712), "Medical-/Dental Office Building" (LUC 720), Daycare Center (LUC 565), "Variety Store" (LUC 814), "Fast Casual Restaurant" (LUC 930), and "High-Turnover (Sit-Down) Restaurant" (LUC 932).

the alternative would be an abrogation of the owner's vested interest in the property. This approach was shared with and reviewed by the Office of the State Traffic Administration (correspondence provided in the Appendix).
⁵ If the project does not proceed, the potential exists for the owner to convert the buildings to other uses, such as daycare, medical office, etc. For example, with an 8,000 SF daycare facility, 75,000 SF of medical office, and 147,000 SF of office space, the building would generate 412 and 463 AM and PM Peak Hour trips, respectively.
⁶ The commercial space is proposed to have uses including Small Office Building (3,500 SF), Medical/Dental Office Building (4,000 SF), Day-Care Center (8,000 SF), Sundries Shop (3,500 SF), and a Café/Restaurant (1,200 SF).

Approximately 9.3% of trips were removed as an internal trip credit between the office, café/restaurant, Sundries, daycare, and residences⁷. Approximately 18.8% of the combined daycare, Sundries, and café/restaurant trips were determined to be pass-by trips, or trips that exist on the road today that will stop by the proposed development once operational. The 18.8% pass-by credit applied to the daycare and café/restaurant is lower than the ITE recommended values of 44% pass-by (daycare), 43% pass-by (café/restaurant), and 34% pass-by (Sundries). Pass-by trips were based on traffic patterns as observed in turning movement counts. Although it is expected that some trips to the site will use the nearby CT Transit bus service on Long Ridge Road, no credits were taken for public transit usage. **Table 2** below highlights the trip generations for each proposed use, and the internal trip and pass-by credits taken.

Table 2 - Trip Generation Summary						
Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Multifamily Residential (508 units)	49	163	212	121	77	198
<i>Internal Trip Credits</i>	<i>-1</i>	<i>-4</i>	<i>-5</i>	<i>-6</i>	<i>-5</i>	<i>-11</i>
New Residential Trips	48	159	207	115	72	187
Small Office Building (3,500 SF)	5	1	6	3	5	8
Medical/Dental Office Building (4,000 SF)	10	2	12	5	11	16
Daycare Center (8,000 SF)	47	41	88	42	47	89
Sundries Shop (3,500 SF)	6	5	11	12	11	23
Café/Restaurant (1,200 SF)	6	5	11	8	7	15
<i>Internal Trip Credits</i>	<i>-12</i>	<i>-9</i>	<i>-21</i>	<i>-13</i>	<i>-14</i>	<i>-27</i>
<i>Pass-By Credit</i>	<i>-9</i>	<i>-9</i>	<i>-18</i>	<i>-10</i>	<i>-10</i>	<i>-20</i>
New Commercial Trips	53	36	89	47	57	104
New Mixed-Use Trips	101	195	296	162	129	291

Note: Multifamily residential based on ITE LUC 221, "Multifamily Housing (Mid-Rise)". Proposed office trips based on ITE LUC 712, "Small Office Building". Medical-Dental office trips based on ITE LUC 720, "Medical Dental Office Building". Sundries Shop based on ITE LUC 814, "Variety Store". The restaurant/café trip generations used the higher value of either ITE LUC 932, "High-Turnover (Sit-Down) Restaurant or ITE LUC

⁷ Residential, Retail, and Café/Restaurant internal trip credits were calculated using the ITE Internal Capture Calculation spreadsheet, appended. Daycare internal trip credits were assumed to be approximately 5%, which is extremely conservative as almost all parents who drop their children off do so as either a pass-by or a diverted-link trip. See appended worksheet.

930, “Fast Casual Restaurant” (AM Peak Hour trips based on ITE LUC 932; PM Peak Hour trips based on LUC 930).

As shown in **Table 2**, the proposed mixed-use development is projected to generate 296 new trips during the weekday AM Peak Hour and 291 new trips during the weekday PM Peak Hour. Previous trip generation calculations have previously been shared with and reviewed by the Office of the State Traffic Administration (“OSTA”). A copy of the correspondence is provided in the Appendix.

Table 3, below, provides a comparison of the projected peak-hour traffic that would be generated by the 230,000 SF existing office space if it was fully occupied and the proposed development.

Table 3 - Trip Generation Comparison ⁸						
Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	Enter	Exit	Total	Enter	Exit	Total
Existing Uses						
Existing Office, Fully Occupied (230,000 SF)	307	42	349	56	274	330
New Uses						
New Residential Trips (508 units)	48	159	207	115	72	187
New Commercial Trips (20,200 SF)	53	36	89	47	57	104
Total New Mixed-Use Trips (Residential Plus Commercial)	101	195	296	162	129	291
Change in Trips						
Existing Fully Occupied Office Minus New Mixed-Use Trips	-206	153	-53	106	-145	-39

Note: Existing office trips based on ITE LUC 710, “General Office Building”.

As shown in **Table 3**, the existing office development, when fully occupied, generates 349 trips during the AM Peak Hour and 330 trips during the PM Peak Hour. Thus, replacement of the existing office buildings with the proposed development will result in 53 fewer trips being added to the surrounding roadways during the weekday AM Peak Hour and 39 fewer trips during the weekday PM Peak Hour. The methodology used to determine the change in trip generations for the subject property for the existing and proposed uses was previously submitted to and approved by OSTA (see Appendix for

⁸ If the project does not proceed, the potential exists for the owner to convert the buildings to other uses, such as daycare, medical office, etc. For example, with an 8,000 SF daycare facility, 75,000 SF of medical office, and 147,000 SF of office space, the building would generate 412 and 463 AM and PM Peak Hour trips, respectively.

correspondence). As noted in the footnotes, were this application not to proceed, there are other uses for which the Applicant could apply that might generate even more traffic than the former office use.

Project trips were distributed to the intersection turning movements based on the arrival and departure patterns developed for each use. Trip arrival and departure distributions were developed separately for each use considering various combinations of:

- Current traffic patterns on Long Ridge Road
- Current traffic patterns at the Site Driveway
- Census data for the City of Stamford
- Employment opportunities

The trip distribution for the various uses are as follows.

- **Residential:**
 - **AM & PM:** 55% to/from the south, 45% to/from the north
- **Office**
 - **AM & PM:** 32% to/from the south, 68% to/from the north
- **Daycare:**
 - **AM:** 73% to the south, 43% from the south, 27% to the north, 57% from the north
 - **PM:** 43% to the south, 73% from the south, 57% to the north, 27% from the north
- **Sundries Shop & Café/Restaurant:**
 - **AM & PM (Primary Purpose):** 70% to/from the south, 30% to/from the north
 - **AM & PM (Pass-By):** 60% from the north, 40% from the south

The trip distributions for all of the Project’s residential and commercial trips are shown on **Figures 4.1 to 4.5** for the AM and PM Peak Hours. The total commercial trips, total Project trips, 2026 Build traffic volumes, and net change in site trips from a fully-occupied office use to the proposed Project use are all shown in **Figures 5A and 5B** for the AM and PM Peak Hours, respectively. The Project trips were added to the No-Build volumes (less the existing and vacant office trips) resulting in the 2026 Build traffic volumes.

Intersection Capacity Analysis

An intersection capacity analysis was conducted with the Existing, No-Build, and Build peak-hour traffic volumes to assess the quality of the traffic flow at the site driveway intersection with Long Ridge Road.

The criteria used to analyze the study intersections is based on the evaluation criteria contained in the Transportation Research Board’s Highway Capacity Manual (“HCM”) 6th Edition. The term “level of service” (“LOS”) is used to denote the different operating conditions that occur at an intersection under various traffic volume loads. It is a qualitative measure that considers a number of factors including roadway geometry, speed, travel delay, and freedom to maneuver. LOS designations are based on delay, and they range from “A” to “F”, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. For signalized intersections, LOS is based on the average control delay per vehicle for the various lane group movements within the intersection. LOS can be reported for individual turning movements, approaches, or for the intersection as a whole.

Synchro 11 software was used to model the study intersections based on the parameters mentioned above. Synchro 11 software is widely used by traffic engineering professionals, and is consistent with the procedures in the HCM. The LOS delay criteria for signalized intersections are shown below in **Table 4**.

Table 4 – LOS Criteria for Signalized Intersections	
Level-of-Service (LOS)	Control Delay Per Vehicle
A	≤ 10.0 seconds
B	>10.0 and ≤ 20.0 seconds
C	>20.0 and ≤ 35.0 seconds
D	>35.0 and ≤ 55.0 seconds
E	>55.0 and ≤ 80.0 seconds
F	>80.0 seconds

Source: Transportation Research Board. *Highway Capacity Manual*.

The results of the intersection analysis for the Existing, No-Build, and the Build volume conditions for the peak hours are summarized in **Tables 5 and 6** below. The traffic signal timings used in the analysis were based on signal timing plans provided by CTDOT and the 16 Wire Mill Road Traffic Study. The Synchro worksheets are provided in the Appendix.

Table 5 - Level of Service Summary - Weekday AM Peak Hour							
Intersection	Approach	Existing Conditions		No-Build Conditions		Build Conditions	
		AM Peak Hour		AM Peak Hour		AM Peak Hour	
		Delay (secs)	LOS	Delay (secs)	LOS	Delay (secs)	LOS
Long Ridge Road & Site Driveway / Day-Care Facility (Signalized)	EB L*	40.0	D	42.8	D	76.1	E
	EB LTR*	0.5	A	2.1	A	34.7	C
	WB LTR	0.5	A	0.5	A	1.0	A
	NBL	1.1	A	9.4	A	3.9	A
	NB TR	1.3	A	2.8	A	3.9	A
	SB LT	4.7	A	11.4	B	12.5	B
	SB R	1.0	A	1.1	A	1.3	A
	INT	3.2	A	7.3	A	10.6	B
Long Ridge Road & Wire Mill Road/Eastbound Off Ramp (Signalized)	EB LT	47.0	D	41.2	D	48.0	D
	EB R	33.2	C	45.9	D	32.4	C
	WB L	81.6	F	96.8	F	87.6	F
	WB R	6.6	A	6.8	A	6.8	A
	NBTR	31.2	C	32.5	C	34.3	C
	SB L	13.4	B	17.1	B	14.2	B
	SB T	19.3	B	26.1	C	20.1	C
	INT	28.3	C	33.3	C	30.3	C

LOS = Level of Service. Delay is expressed in seconds per vehicle.

* Movements from within the subject site that do not affect public roadways

Table 6 - Level of Service Summary - Weekday PM Peak Hour							
Intersection	Approach	Existing Conditions		No-Build Conditions		Build Conditions	
		PM Peak Hour		PM Peak Hour		PM Peak Hour	
		Delay (secs)	LOS	Delay (secs)	LOS	Delay (secs)	LOS
Long Ridge Road & Site Driveway / Day-Care Facility (Signalized)	EB L*	43.6	D	59.6	E	45.0	D
	EB LTR*	4.5	A	35.6	D	20.7	C
	WB LTR	0.6	A	0.3	A	0.5	A
	NB L	1.7	A	2.7	A	4.2	A
	NB TR	5.5	A	9.1	A	6.4	A
	SB LT	5.8	A	10.0	A	10.0	A
	SB R	0.0	A	1.6	A	1.6	A
	INT	5.9	A	12.3	B	8.5	A
Long Ridge Road & Wire Mill Road/Eastbound Off Ramp (Signalized)	EB LT	66.5	E	70.6	E	70.6	E
	EB R	26.8	C	33.5	C	35.5	D
	WB L	65.2	E	68.1	E	71.6	E
	WB R	6.3	A	6.4	A	6.3	A
	NBTR	54.1	D	90.3	F	63.7	E
	SB L	25.2	C	27.3	C	27.5	C
	SB T	16.7	B	17.2	B	17.4	B
	INT	41.9	D	61.8	E	48.0	D

LOS = Level of Service. Delay is expressed in seconds per vehicle.

* Movements from within the subject site that do not affect public roadways

Overall, the complementary nature of the slightly-lower traffic volumes associated with the Project will result in improved operating conditions on those movements projected to have the longest delays. At the intersection of Long Ridge Road and Wire Mill Road, the Project will reduce delays in the AM and PM Peak Hours by 3.0 seconds and 13.8 seconds, respectively.

A detailed description of the analysis results for the Long Ridge Road & Site Driveway intersection, as well as the Long Ridge Road & Wire Mill Road/Northbound Off-Ramp intersection, is provided below.

Existing Traffic Conditions – Under Existing conditions, Long Ridge Road & Site Driveway intersection currently operates at an overall Level of Service (“LOS”) A during both peak hours. All individual movements operate at LOS A except for the site driveway’s eastbound left-turn movement which operates at LOS D during the AM and PM Peak Hours.

The Long Ridge Road & Wire Mill Road/Northbound Off-Ramp intersection currently overall operates at LOS C in the AM Peak Hour and LOS D in the PM Peak Hour. Notable LOS results are that the westbound left-turn movement currently operates at LOS F and LOS E for the AM and PM Peak Hours, respectively, and that the northbound off-ramp left-turn/through movement currently operates at LOS D and LOS E in the AM and PM Peak Hours, respectively. The northbound through/right-turn movement currently operates at LOS C in the AM Peak Hour and LOS D in the PM Peak Hour.

No-Build Traffic Conditions - In the future under No-Build conditions (without the proposed Project, but with forecast increases in existing traffic volumes and traffic from the full re-occupancy of the existing office buildings at the site), the Long Ridge Road & Site Driveway intersection will continue to operate acceptably at Existing LOS during the AM Peak Hour (LOS A). However, a 6.4 second increase in delay will result in a threshold change in overall LOS from LOS A to LOS B during the PM Peak Hour. This is largely attributed to the site driveway approach movements degrading in LOS in the PM Peak Hour, with the eastbound left-turn movement change from LOS D to LOS E from a 16.0 second increase in delay and the eastbound shared left-turn/through/right-turn movement change from LOS A to LOS D due to a 31.1 second increase in delay. This increase in delay is associated with the additional traffic that would be generated by the re-occupancy of the office buildings, which would be leaving the site at this hour. The southbound shared left-turn/through movements will see a drop from LOS A to LOS B in the AM Peak Hour due to a 6.7 second increase in delay. This increase in delay is also associated with the additional traffic that would be generated by the re-occupancy of the office buildings, as the exiting traffic would require more of the traffic signal's green time, reducing the green time available for the Long Ridge Road traffic.

The Long Ridge Road & Wire Mill Road/Northbound Off-Ramp intersection, under No-Build conditions, operates at overall LOS C in the AM Peak Hour (no LOS change) but overall degrades from LOS D to LOS E in the PM Peak Hour. In the AM Peak Hour, the eastbound right-turn movement went from Existing LOS C to LOS D because of a 12.7 second increase in delay and the southbound through movement went from Existing LOS B to LOS C from a 6.8 second increase in delay. In the PM Peak Hour, the northbound through/right-turn degrades from Existing LOS D to LOS F due to an increase in delay of 36.2 seconds due to the large amount of traffic departing the re-occupied office and headed towards the northbound on-ramp for Merritt Parkway (CT Route 15) or elsewhere in the north.

Build Traffic Conditions – In the future under AM Peak Hour Build conditions (with the replacement of the office trips with trips generated by the Project), the Long Ridge Road & Site Driveway intersection and individual movements will continue to operate at generally acceptable levels, with the exception of the internal site driveway's eastbound approach, as the eastbound left-turn and the eastbound shared left-turn/through/right-turn movement degrade from a No-Build LOS D to LOS E and from a No-Build LOS A to LOS C, respectively. This is due to the re-development of the Project, replacing the office use (which typically has little departing trips in the AM Peak Hour) with a mixed-use development with a substantial residential component (which typically has a significant number of departing trips in the AM Peak Hour). This also explains why the northbound left-turn into the site driveway experiences a 5.5 second decrease in delay. The slight 3.3 second increase at the Long Ridge Road & Site Driveway intersection changes the overall intersection LOS from a No-Build LOS A (7.3 seconds delay) to LOS B (10.6 seconds delay), exceeding the LOS A/LOS B threshold by less than a second. While the eastbound delays are not optimal, they are limited to movements exiting the site driveway and therefore, not an impact to the general traveling public. The eastbound left-turn movement will operate with a v/c ratio of 0.66 in the Build AM Peak Hour, indicating that there is plenty of queuing capacity remaining.

In the PM Peak Hour Build conditions, the Long Ridge Road & Site Driveway will experience significant decreases in delays and, overall, will go from a No-Build LOS B to LOS A, from an overall intersection delay reduction of 3.8 seconds. Notably, the eastbound left-turn movement will go from No-Build LOS

E to LOS D (14.6 second delay reduction) and the eastbound shared left-turn/through/right-turn movement will go from a No-Build LOS D to LOS C (14.9 second delay reduction), as there would be reduced exiting traffic without the existing office buildings.

For the Long Ridge Road & Wire Mill Road/Northbound Off-Ramp intersection during the AM Peak Hour, the intersection operates at LOS C just like in the AM No-Build; however, the overall intersection delay has decreased by 3.0 seconds. All the movements operate at the same LOS as the AM No-Build except the eastbound right-turn movement, where a 13.5 second delay reduction improved it from No-Build LOS D to LOS C. In general, there are significant reductions in delay across multiple movements, most notably on the Wire Mill Road westbound left-turn, where the No-Build delay of 96.8 seconds will be reduced by 9.2 seconds. There will be only a slight increase in delay for a couple of movements.

In the PM Build conditions for the Long Ridge Road & Wire Mill Road/Northbound Off-Ramp intersection, the overall intersection LOS will improve from No-Build LOS E to LOS D due to an overall decrease in delay by 13.8 seconds. The previously problematic northbound through/right-turn movement in the PM No-Build condition at LOS F has been improved to LOS E with a 26.6 second reduction in delay. All the other movements during the PM Build condition at this intersection have negligible changes in delay or have slight delay increases by no more than 3.5 seconds.

Queuing

A queuing summary is provided in **Tables 7 and 8**. The analysis indicates that all movements will have adequate queue-storage capacity with one exception, the westbound left-turn movement from Wire Mill Road onto Long Ridge Road. Queues longer than the available storage on this movement is an existing condition. This is the same movement that experiences LOS F conditions in the AM Build condition and which is improved if the redevelopment occurs, as opposed to new office tenants. Further, it is noted that there appears to be sufficient pavement width on westbound Wire Mill Road to restripe the road and extend the right-turn lane to improve queuing.

Table 7 - 95th Percentile Queue Summary - Weekday AM Peak Hour (in feet)					
Intersection	Approach	Available Storage	Existing Condition	No-Build Conditions	Build Conditions
Long Ridge Road & Site Driveway / Day-Care Facility (Signalized)	EB L*	180	8	31	98
	EB LTR*	1000+	0	0	120
	WB LTR	75	0	0	0
	NB L	85	3	36	6
	NB TR	1000+	136	142	142
	SB LT	860	421	540	462
	SB R	325	9	21	10
Long Ridge Road & Wire Mill Road/Eastbound Off Ramp (Signalized)	EB LT	500	124	129	129
	EB R	500	142	237	139
	WB L	50	230	260	246
	WB R	1000+	27	29	29
	NB TR	860	356	375	397
	SB L	315	58	63	63
	SB T	1000+	510	645	533

* Movements from within the subject site that do not affect public roadways

Table 8 - 95th Percentile Queue Summary - Weekday PM Peak Hour (in feet)					
Intersection	Approach	Available Storage	Existing Condition	No-Build Conditions	Build Conditions
Long Ridge Road & Site Driveway / Day-Care Facility (Signalized)	EB L*	180	43	143	57
	EB LTR*	1000+	8	138	60
	WB LTR	75	0	0	0
	NB L	85	1	6	20
	NB TR	1000+	285	357	336
	SB LT	860	281	323	321
	SB R	325	0	9	14
Long Ridge Road & Wire Mill Road/Eastbound Off Ramp (Signalized)	EB LT	500	346	361	361
	EB R	500	173	212	237
	WB L	50	168	184	195
	WB R	1000+	24	26	26
	NB TR	860	551	650	583
	SB L	315	101	109	109
	SB T	1000+	254	267	274

* Movements from within the subject site that do not affect public roadways

Shared Parking Analysis

The Urban Land Institute (“ULI”) has developed a shared-use parking methodology that is a widely recognized, data-based methodology to evaluate the effectiveness of the joint/shared use parking⁹. Shared parking is defined as a parking space that can be used to serve two or more individual land uses without conflict or encroachment. Peak parking accumulations for individual land uses in a mixed-land use development can occur at different times during the day. This is also true for weekdays versus weekends and seasonal (monthly) variations.

The proposed mixed-use Project will have residential, general office, medical-dental office, restaurant, daycare center, and retail uses that would be conducive to application of shared parking principles. A shared parking analysis was conducted to determine the maximum parking demand for the Project by applying the shared parking factors and temporal distributions from the Third Edition of ULI’s *Shared Parking* to the Code-required parking (provided in the Appendix). The base parking ratios were determined through the *City of Stamford’s Zoning Regulations, Section 12 – Mobility*. The base parking numbers determine the minimum required parking spaces that are mandated by the City’s Zoning Regulations and the base parking ratios are shown in **Table 9**. The base parking numbers below are highlighted in the shared parking analyses tables (provided in the Appendix) discussed later.

⁹ Section 12.I of the City’s Code states that “the shared use of parking may be permitted by administrative approval of the Zoning Board...”.

Table 9 - City of Stamford, Required Parking Per Zoning Regulations								
Zoning Required Parking for Residential								
Residential Breakdown		BMR Units/Spaces			Market Rate Units/Spaces			Residential Spaces
Unit Type	No. of Units	BMR Parking Rate	BMR Units	BMR Spaces	MR Parking Rate	MR Units	MR Spaces	
Studio	56	0.75	6	4.50	1.00	50	50.00	54.50
1 Bedroom	235	1.25	24	30.00	1.50	211	316.50	346.50
2 Bedroom	194	1.50	19	28.50	1.75	175	306.25	334.75
3 Bedroom	23	1.50	2	3.00	2.00	21	42.00	45.00
Total	508	-	51	66.00	-	457	714.75	780.75
Total Code-Required Parking for Residential								781
Zoning Required Parking for Commercial Uses								
Commercial Use	KSF or Employees		Parking Rate			Commercial Spaces		
Retail (Sundries Shop)	3.5	KSF	4.0	spaces per KSF			14.00	
Small Office	3.5	KSF	1.0	space per 500 SF			7.00	
Medical Office	4.0	KSF	3.0	spaces per KSF			12.00	
Daycare Center	22	employees	1.25	spaces per employee			27.50	
Restaurant/Café	1.2	KSF	1.0	space per 100 SF			12.00	
Total							72.50	
Total Code-Required Parking for Commercial Uses								73
Zoning Required Parking for Project								
Zoning Required Parking for Residential								781
Zoning Required Parking for Commercial								73
Total Zoning Required Parking for Project								854

BMR = Below Market Rate; MR = Market Rate

10% of each unit type total are BMR, remaining 90% of each unit type total are MR.

The results of the shared parking analysis (provided in the Appendix) reveal that the peak parking demand will occur on a weekend night in December at 12:00 AM (midnight) with a total demand of 782 parked vehicles. During this hour, there will be 780 residential vehicles (736 residents and 44 visitors) and 2 café/restaurant vehicles parked (1 customer/1 employee). A total of 820 parking spaces are proposed in a combination of structured parking and surface parking lots, which meets the peak parking demand of 782 spaces and meets the required residential parking of 781 spaces per City of Stamford Zoning Regulations.

Peak parking demand for the commercial component of the development will occur on a weekday in December at 4:00 PM when 61 customer or employee vehicles are parked. For the residential parking

demand during this hour, there will be 344 vehicles parked (332 residents and 12 visitors), for a total peak parking demand of 405 spaces.

Peak parking demand for the individual commercial components of the developments occur at different times. For the retail component, peak parking demand will occur on a weekend in December between 12:00 PM and 3:00 PM when the 14 Code-required retail vehicles are parked (11 customers and 3 employees). For the restaurant component, peak parking demand will occur on both a weekday and a weekend in December at 12:00 PM when the 12 Code-required restaurant vehicles are parked (10 customers and 2 employees). For the general office and medical/dental office components, peak parking demand will occur on a weekday at 10:00 AM and 2:00 PM when the 7 Code-required general office (1 visitor and 6 employees) and the 12 Code-required medical/dental office vehicles (8 visitors and 4 employees) are parked. For the daycare component, peak parking demand will occur on a weekday at 4:00 PM when the 28 Code-required daycare vehicles are parked (13 parents and 15 employees).

It is proposed to provide parking for commercial users in Buildings A and C (40 spaces will be set aside in each garage for sharing with residential users). As shown in the shared parking analysis, during the peak commercial parking demand period, there will be at least 80 spaces set aside (and 396 other available spaces) for use by the 61 commercial parkers.

Impacts 24-Hour

Traffic operations are most constrained during the peak hours (weekdays from 8:00 AM to 9:00 AM and from 5:00 PM to 6:00 PM and Saturdays at 12:00 PM), because that is when there is the most traffic, as can be seen from the following graphs and tables.

Long Ridge Road

As can be seen from **Graph 1** and **Table 10**, in the peak hours on a weekday, the Project is projected to add between 116 and 128 vehicles to Long Ridge Road between the Site Driveway and Wire Mill Road. This reflects an increase of between 4% and 5% and will be almost imperceptible, particularly when compared to conditions if the existing office buildings are re-tenanted (which would increase traffic volumes by 7%).

During the off-peak hours on a weekday (middle of the day), the Project is projected to add between 64 and 113 fewer vehicles to Long Ridge Road than the existing office buildings would if they were re-tenanted. Only after the PM rush hour will the Project generate more traffic (up to 48 additional vehicles) on Long Ridge Road.

Over the course of the entire day, the Project is expected to add 779 fewer trips to Long Ridge Road than if the office space were re-occupied.

Graph 1:

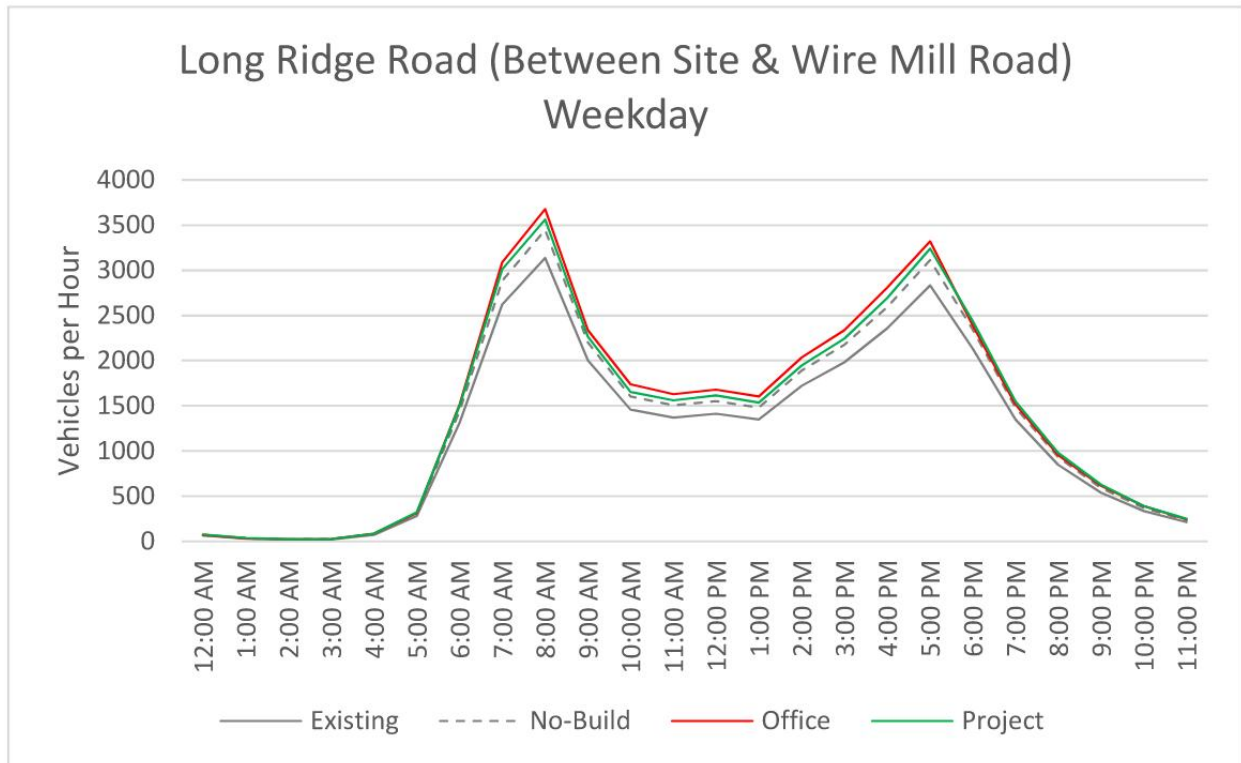


Table 10 – Long Ridge Road (Between Site & Wire Mill Road) Weekday Volumes				
	Existing	Non-Project Increases in Traffic	Office	Project
12:00 AM	64	6	4	8
1:00 AM	30	3	1	5
2:00 AM	21	2	1	2
3:00 AM	23	2	2	3
4:00 AM	75	7	4	4
5:00 AM	280	28	8	15
6:00 AM	1314	130	69	58
7:00 AM	2623	259	203	128
8:00 AM	3136	310	231	116
9:00 AM	2002	198	139	67
10:00 AM	1458	144	135	53
11:00 AM	1371	136	121	54
12:00 PM	1412	140	128	63
1:00 PM	1348	133	121	56
2:00 PM	1721	170	146	55
3:00 PM	1979	196	163	70
4:00 PM	2360	233	214	101
5:00 PM	2834	280	206	128
6:00 PM	2135	211	45	93
7:00 PM	1348	133	34	68
8:00 PM	848	84	21	50
9:00 PM	539	53	22	36
10:00 PM	335	33	25	24
11:00 PM	215	21	7	13
Total	29471	2913	2048	1269

It is noted that, on Long Ridge Road, peak-hour volumes on Saturday are 32% to 38% lower than weekday peak-hour volumes, indicating that traffic operating conditions, even during the peak hour on Saturdays (and Sundays, which have even lower volumes) will be considerably better than during the weekday peak hours.

On Saturdays, when traffic volumes are lower, the Project is projected to add up to 81 more trips to Long Ridge Road in any one hour than the existing office buildings would if they were re-tenanted, as can be seen from **Graph 2** and **Table 11**. This will be almost imperceptible.

Graph 2:

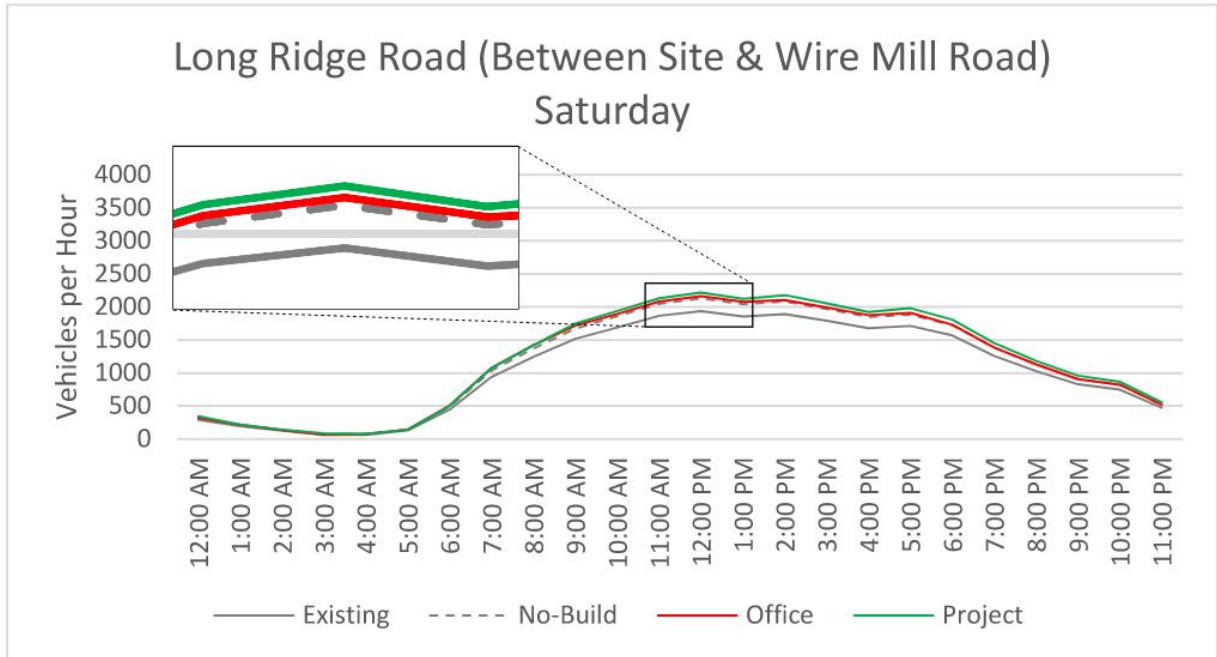


Table 11 – Long Ridge Road (Between Site & Wire Mill Road) Saturday Volumes				
	Existing	Non-Project Increases in Traffic	Office	Project
12:00 AM	291	29	0	22
1:00 AM	192	19	0	4
2:00 AM	126	12	0	6
3:00 AM	61	6	0	21
4:00 AM	66	6	1	4
5:00 AM	130	13	3	3
6:00 AM	446	44	16	15
7:00 AM	943	93	45	45
8:00 AM	1244	123	52	51
9:00 AM	1520	150	44	77
10:00 AM	1690	167	38	83
11:00 AM	1863	184	35	84
12:00 PM	1937	192	36	86
1:00 PM	1857	184	35	83
2:00 PM	1895	187	20	94
3:00 PM	1791	177	23	86
4:00 PM	1680	166	34	79
5:00 PM	1712	169	32	98
6:00 PM	1567	155	4	85
7:00 PM	1262	125	0	67
8:00 PM	1027	101	0	54
9:00 PM	826	82	0	50
10:00 PM	747	74	0	48
11:00 PM	473	47	0	36
Total	25345	2505	417	1281

Over the course of the entire day on a Saturday, the Project is expected to add 864 more vehicles to Long Ridge Road.

Wire Mill Road

As can be seen from **Graph 3** and **Table 12**, in the peak hours on a weekday, the Project is projected to add between 15 and 16 vehicles to Wire Mill Road, west of Hunting Lane. This reflects an increase of 3% and will be almost imperceptible, particularly when compared to conditions if the existing office buildings are re-tenanted (which would increase traffic volumes by between 3% and 4%).

During the off-peak hours on a weekday (middle of the day), the Project is projected to add between 1 to 3 fewer vehicles to Wire Mill Road than the existing office buildings would if they were re-tenanted. Only after the PM rush hour will the Project generate more traffic (up to 8 additional vehicles) on Wire Mill Road.

Graph 3:

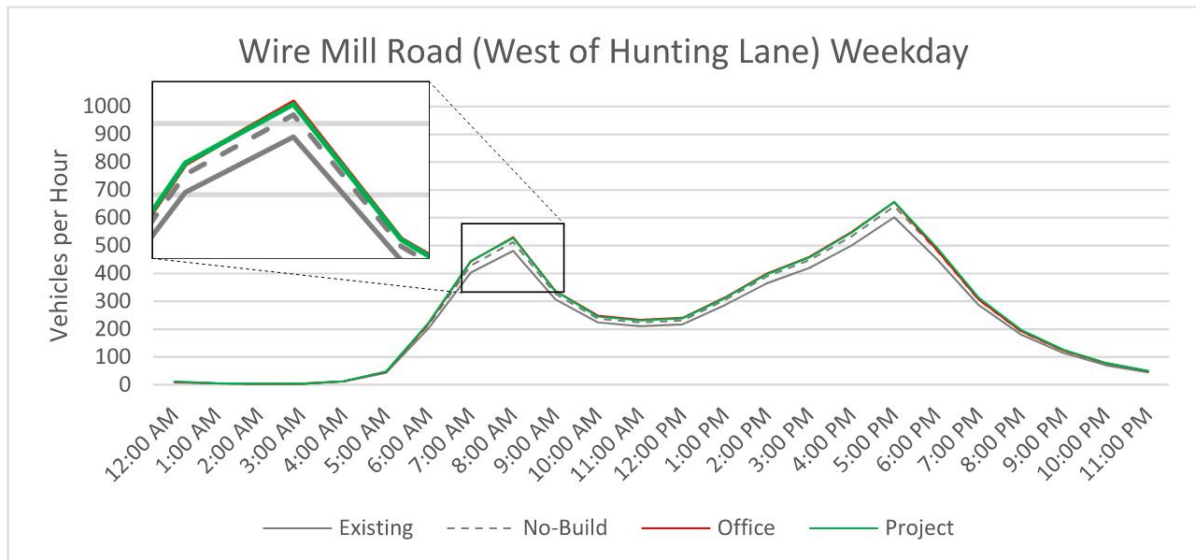


Table 12 – Wire Mill Road (West of Hunting Lane) Weekday Volumes				
	Existing	Non-Project Increases in Traffic	Office	Project
12:00 AM	10	1	0	1
1:00 AM	5	0	0	1
2:00 AM	3	0	0	0
3:00 AM	4	0	0	0
4:00 AM	12	1	0	0
5:00 AM	43	3	1	2
6:00 AM	202	13	5	7
7:00 AM	403	26	15	16
8:00 AM	481	32	17	15
9:00 AM	307	20	10	8
10:00 AM	224	15	10	7
11:00 AM	210	14	9	7
12:00 PM	217	14	9	8
1:00 PM	286	19	9	7
2:00 PM	365	24	11	7
3:00 PM	420	28	12	9
4:00 PM	501	33	16	13
5:00 PM	602	40	15	16
6:00 PM	453	30	3	11
7:00 PM	286	19	2	8
8:00 PM	180	12	2	6
9:00 PM	114	8	2	4
10:00 PM	71	5	2	3
11:00 PM	46	3	1	1
Total	5444	358	150	158

It is noted that, on Wire Mill Road, peak-hour volumes on Saturday are 15% to 32% lower than weekday peak-hour volumes, indicating that traffic operating conditions, even during the peak hour on Saturdays (and Sundays, which have even lower volumes) will be considerably better than during the weekday peak hours.

Over the course of the entire day, the Project is forecast to add just 8 more trips to Wire Mill Road than the office space would, if re-tenanted.

On Saturdays, when traffic volumes lower, the Project is projected to add up to 10 more trips to Wire Mill Road in any hour than the existing office buildings would if they were re-tenanted, as can be seen from **Graph 4** and **Table 13**. This will be almost imperceptible.

Graph 4:

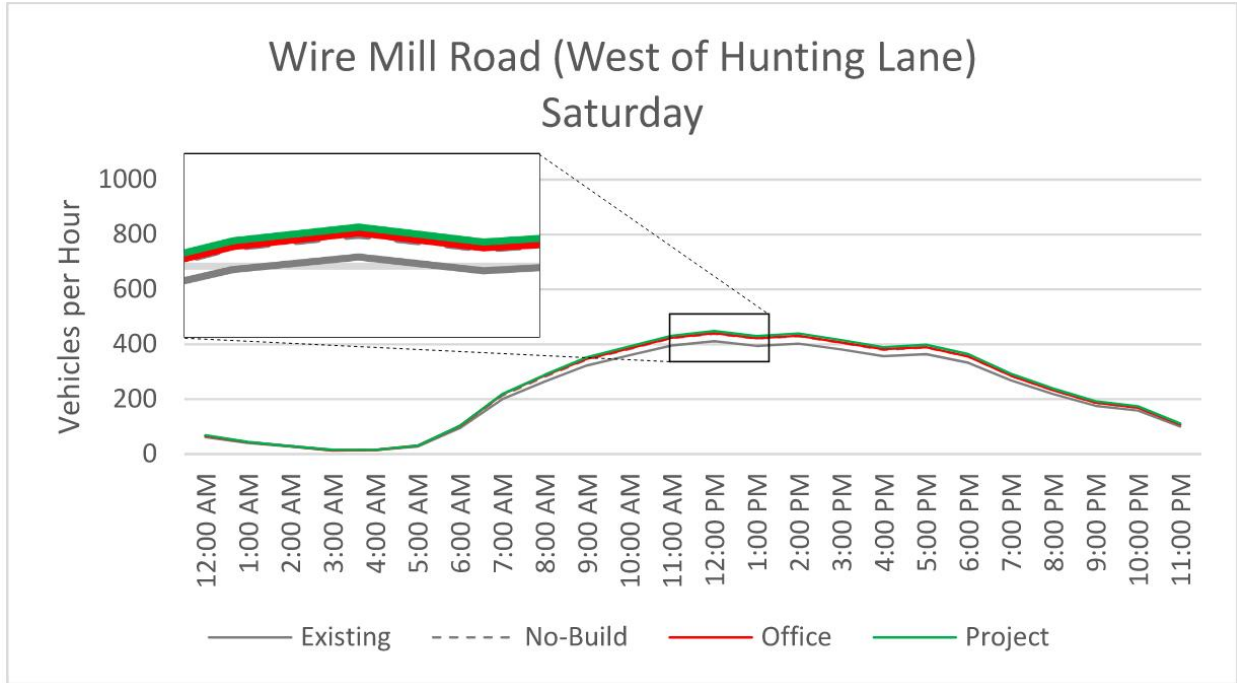


Table 13 – Wire Mill Road (West of Hunting Lane) Saturday Volumes				
	Existing	Non-Project Increases in Traffic	Office	Project
12:00 AM	62	4	0	2
1:00 AM	41	3	0	0
2:00 AM	27	2	0	1
3:00 AM	13	1	0	2
4:00 AM	14	1	0	0
5:00 AM	28	2	0	0
6:00 AM	95	6	1	2
7:00 AM	200	13	3	5
8:00 AM	264	17	4	6
9:00 AM	323	21	3	9
10:00 AM	359	24	3	10
11:00 AM	396	26	3	10
12:00 PM	411	27	3	10
1:00 PM	394	26	3	10
2:00 PM	402	26	1	11
3:00 PM	380	25	2	10
4:00 PM	357	23	2	9
5:00 PM	363	24	2	11
6:00 PM	333	22	0	10
7:00 PM	268	18	0	8
8:00 PM	218	14	0	6
9:00 PM	175	12	0	6
10:00 PM	159	10	0	5
11:00 PM	100	7	0	4
Total	5380	354	30	147

On Saturdays, the Project is forecast to add 117 more trips over the entire day to Wire Mill Road than if the office were re-tenanted.

Conclusions

Based on the analysis provided herein, it is concluded that the change in use from office to mixed-use development will generally have a positive, not an adverse impact, on traffic conditions in the public domain. The Project will generate fewer trips than the current office use on the property and the analysis reveals that the intersection of Long Ridge Road and the site driveway will operate acceptably and with generally similar delays during the peak hours.

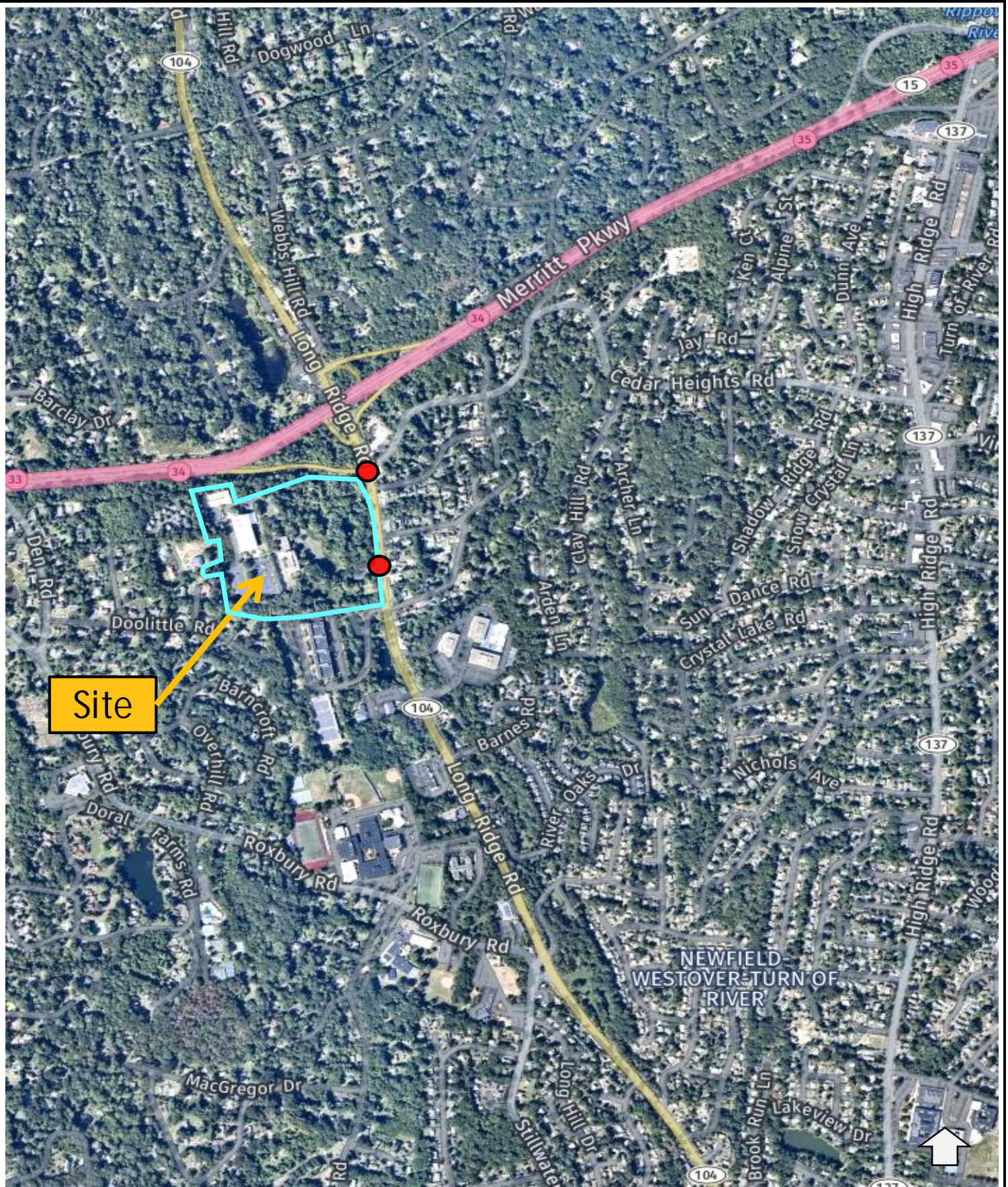
At the intersection of Long Ridge Road with Wire Mill Road, the complementary nature of the residential traffic volumes will actually reduce delays of the worst performing movements and will reduce the overall intersection delay during both peak hours. It is noted by Kimley-Horn, and SLR International Corporation in their 16 Wire Mill Road Traffic Study, that the City of Stamford can improve performance at this movement with minor adjustments to signal timings.

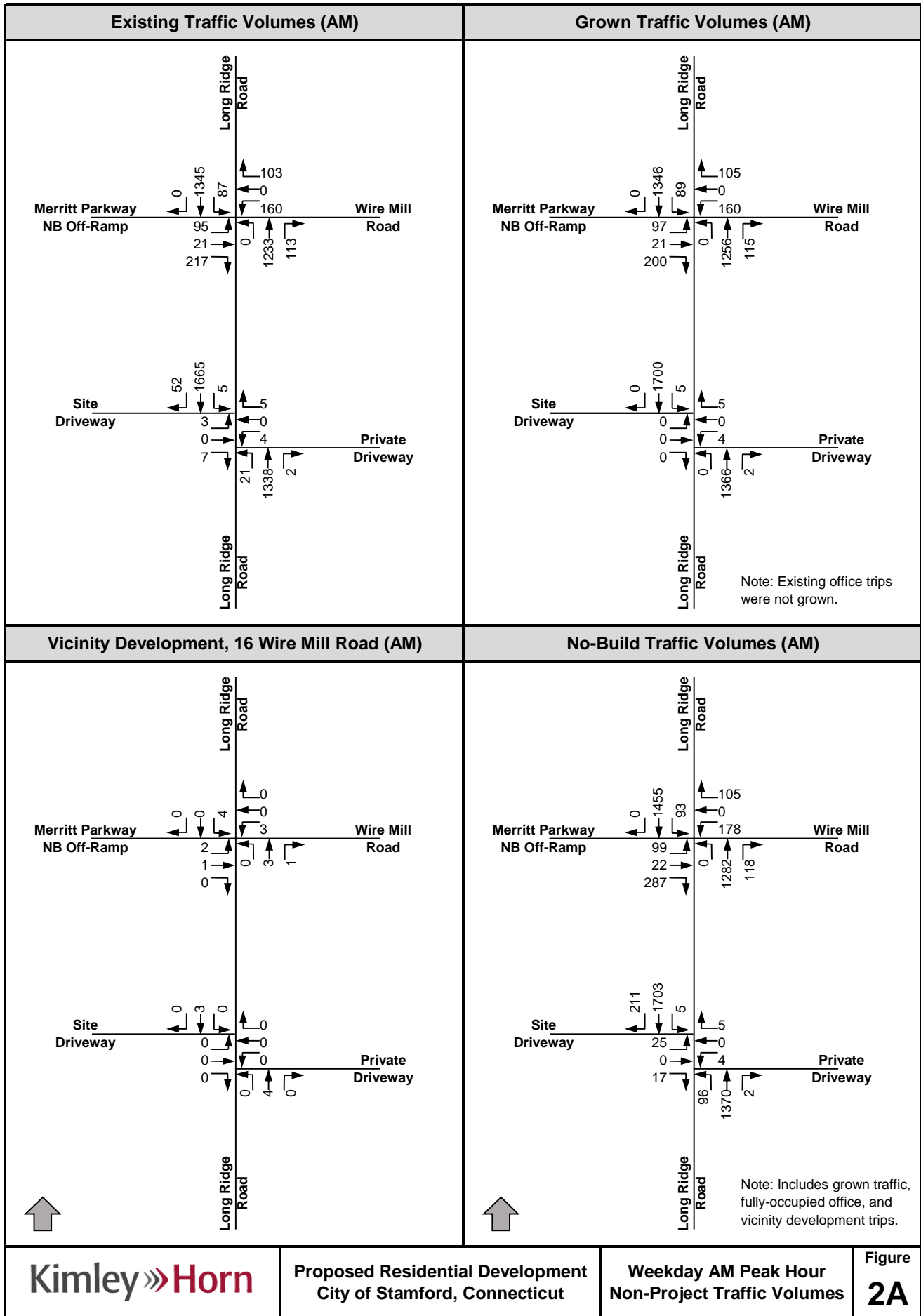
The shared parking analysis reveals that the Project will have sufficient parking to accommodate the anticipated peak parking demand.

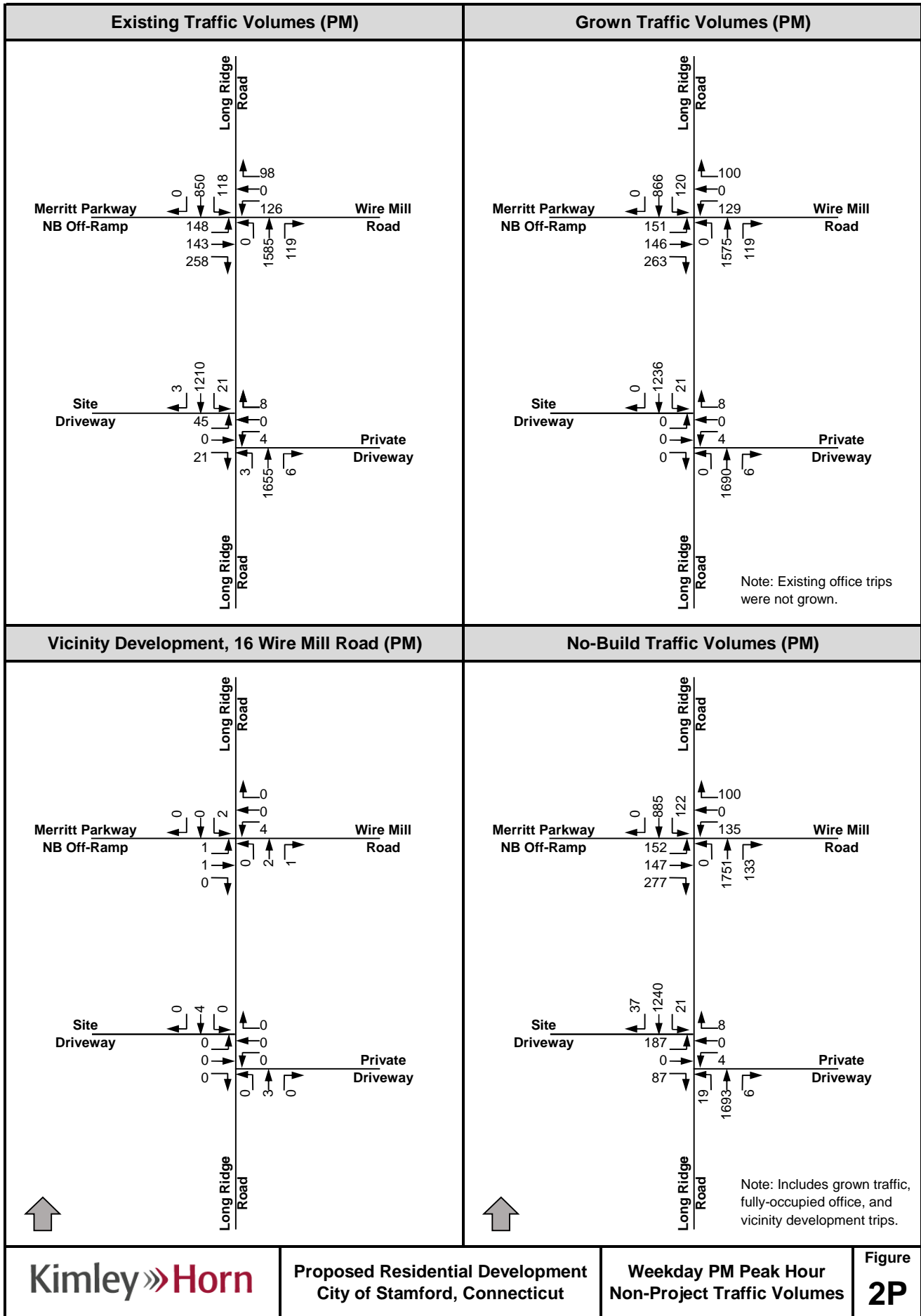
Appendix

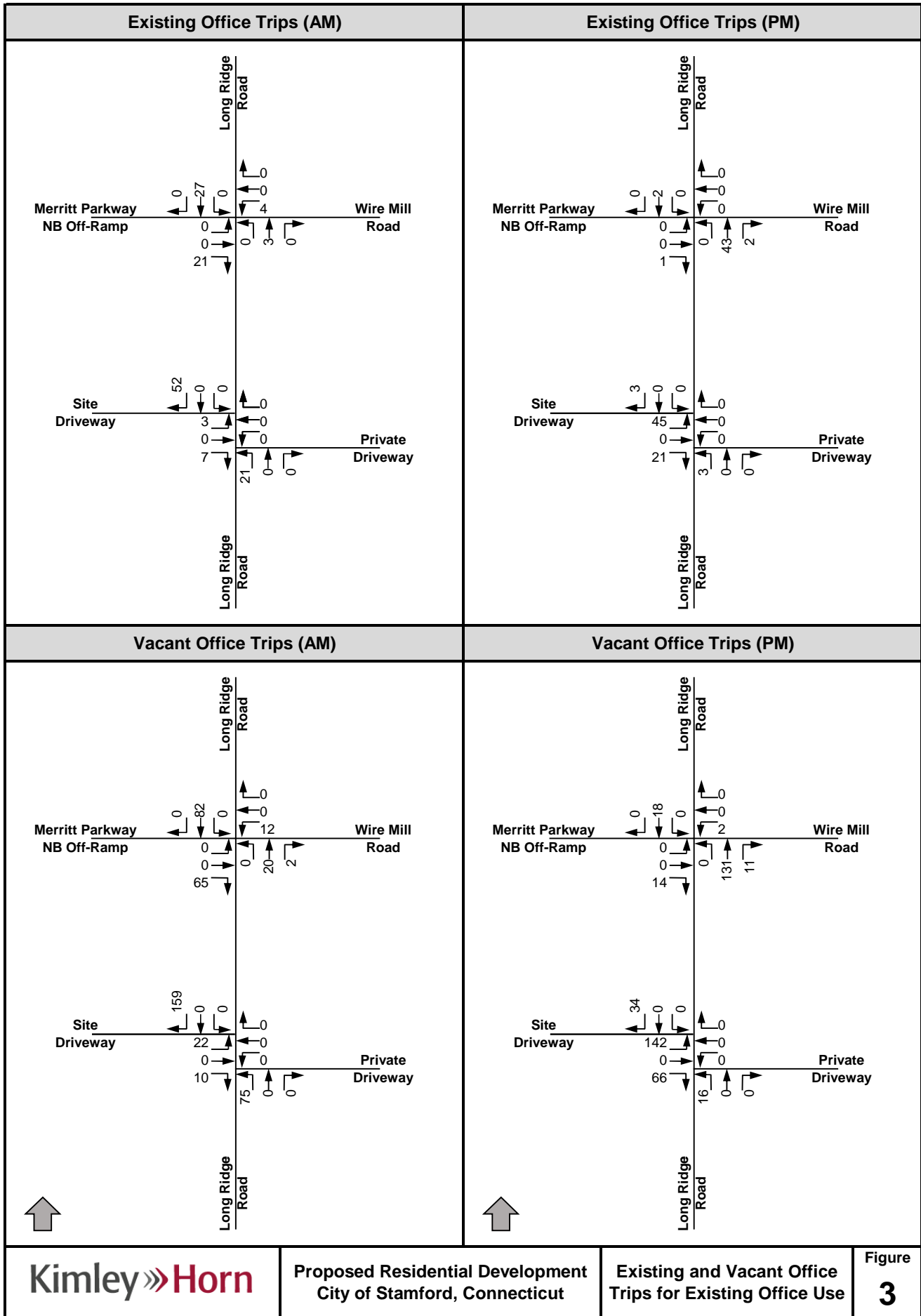
- OSTA Approved Trip Generation Table & Correspondence
 - Traffic Volume Figures
 - Internal Trip Worksheet
 - Synchro Analysis Reports
 - Shared Parking Analysis

Traffic Volume Figures

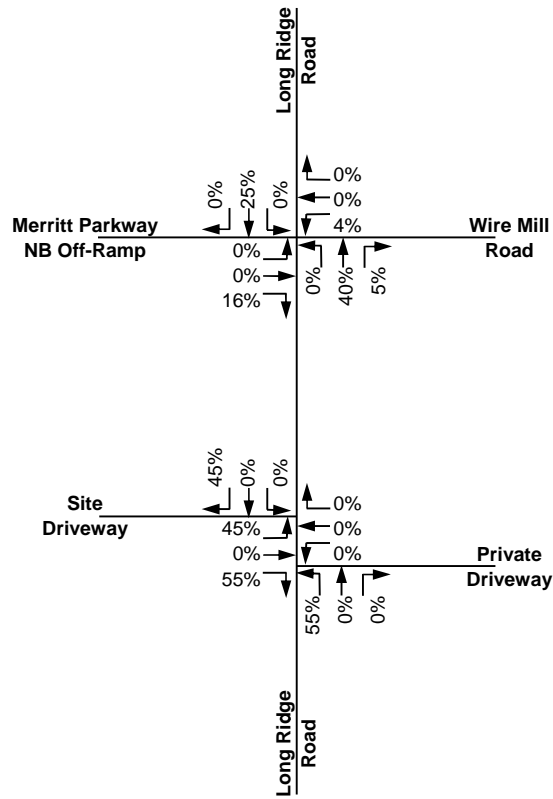




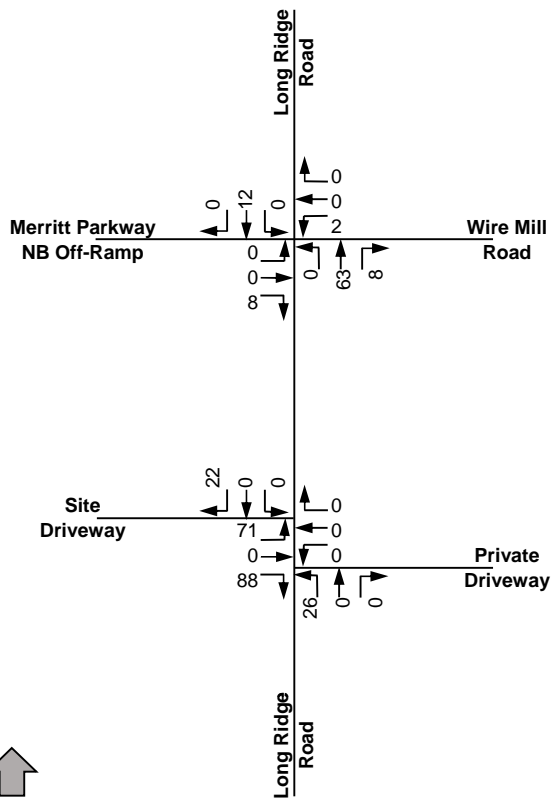




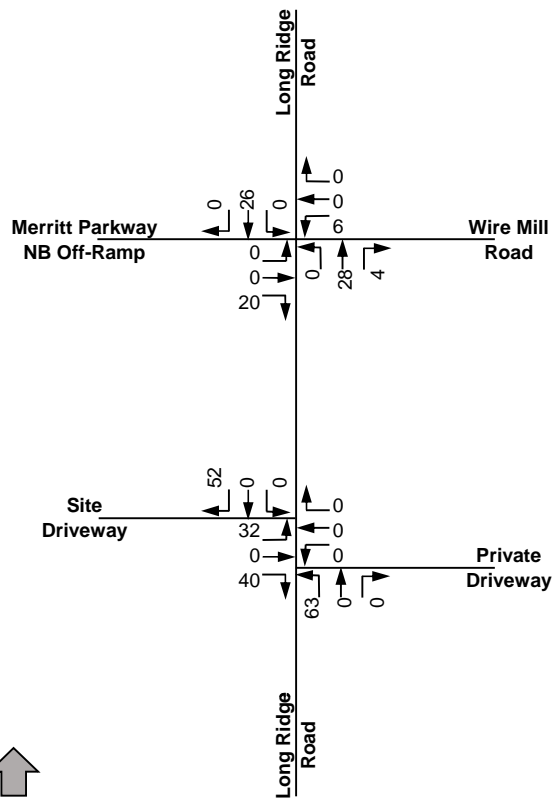
Residential Trip Distributions



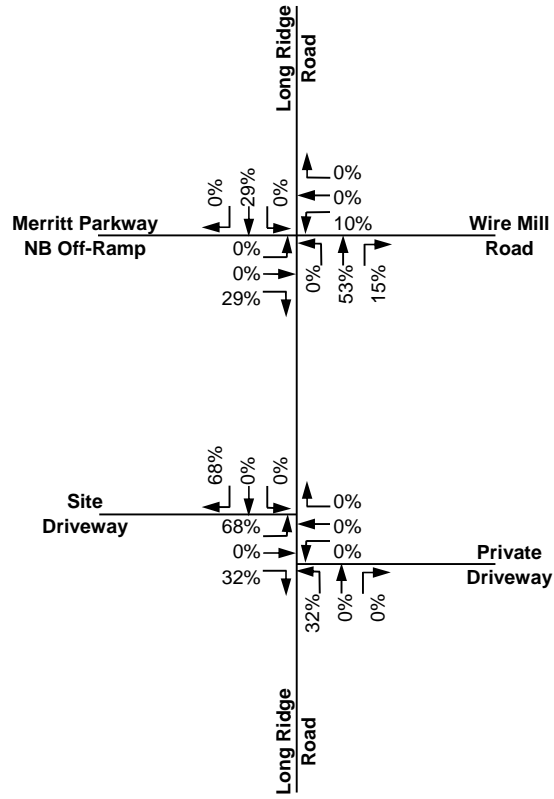
Residential Project Trips (AM)



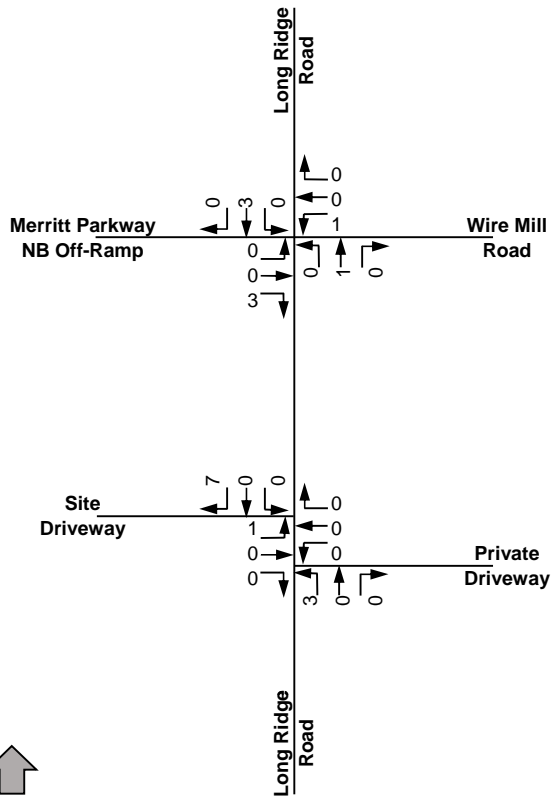
Residential Project Trips (PM)



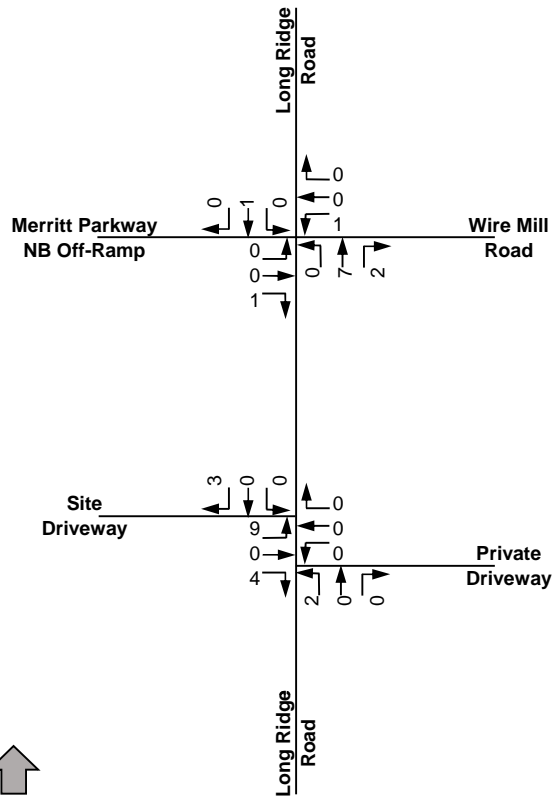
Office Trip Distributions (Small Office and Medical/Dental Office Combined)



Office Project Trips (AM)

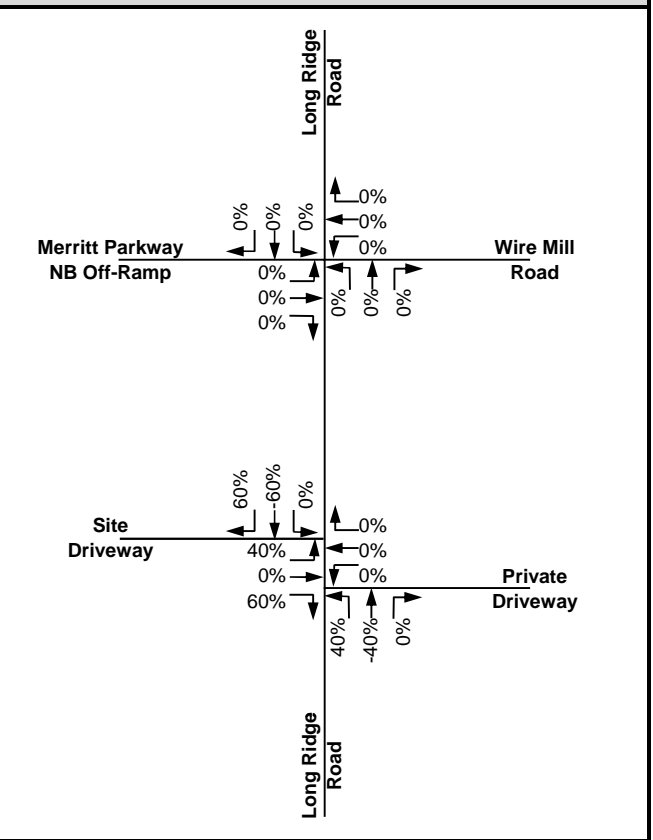
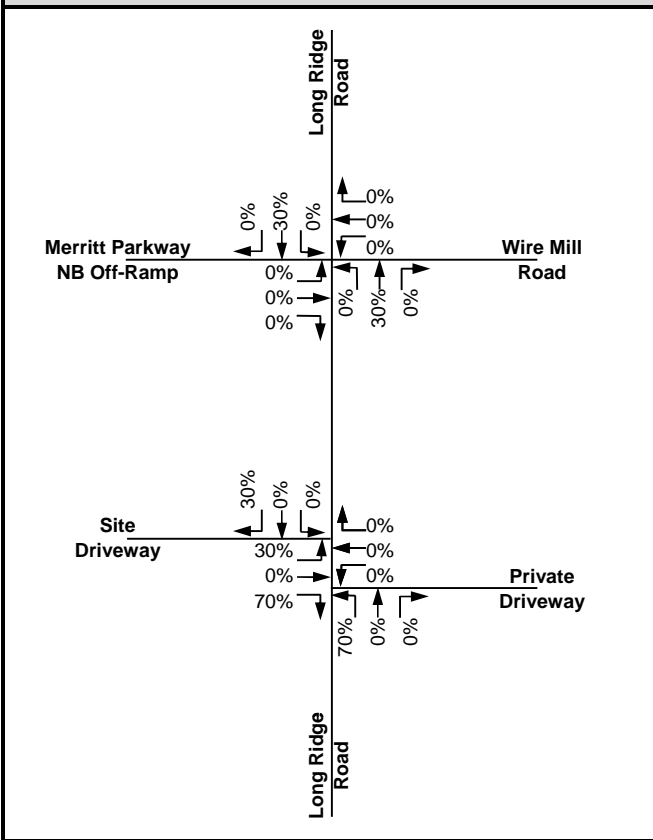


Office Project Trips (PM)



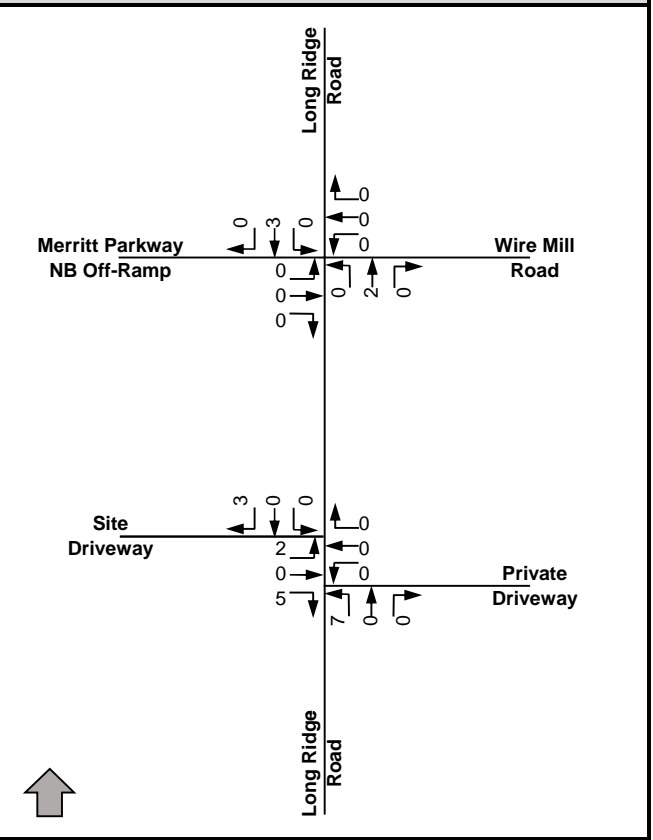
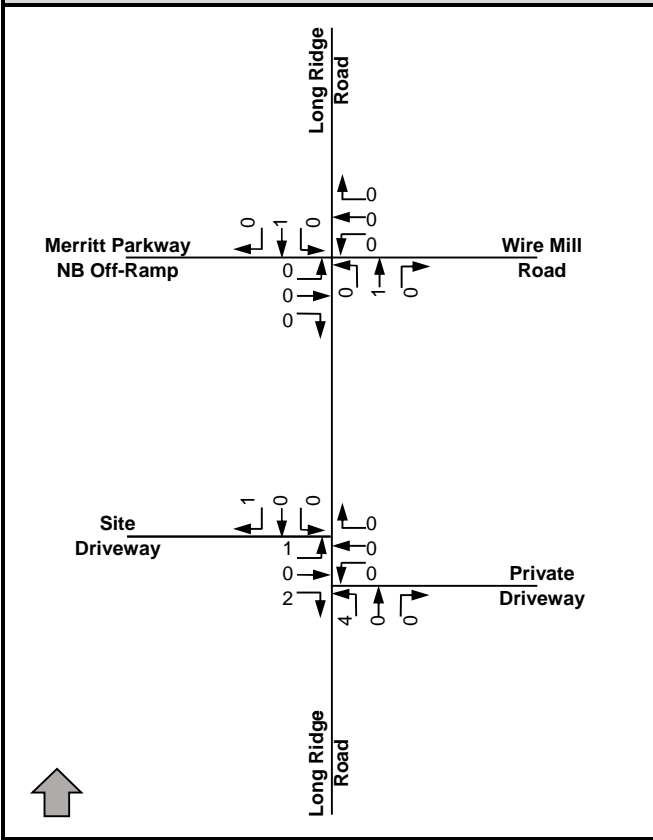
Sundries/Café Primary Purpose Trip Distributions

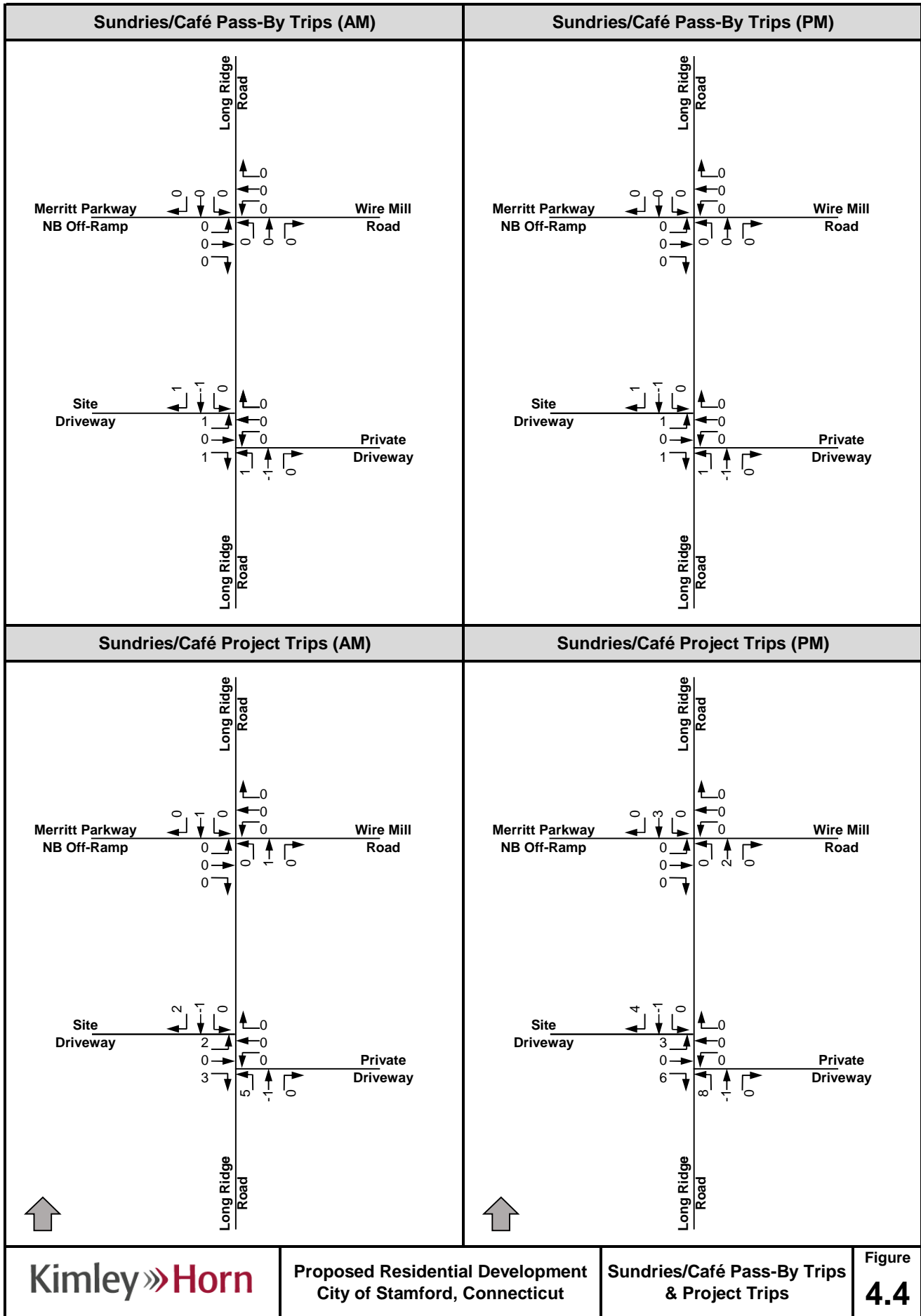
Sundries/Café Pass-By Trip Distributions

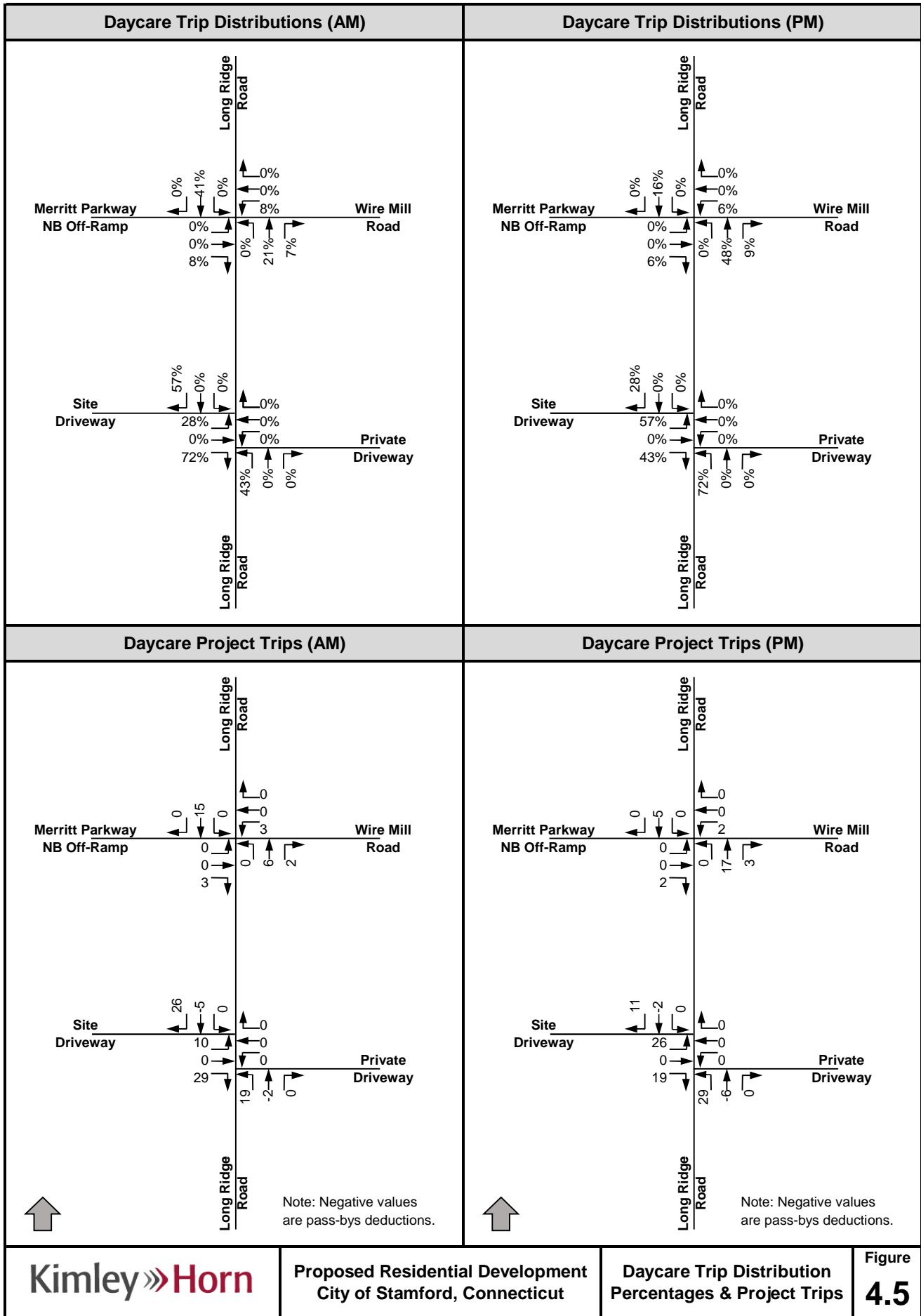


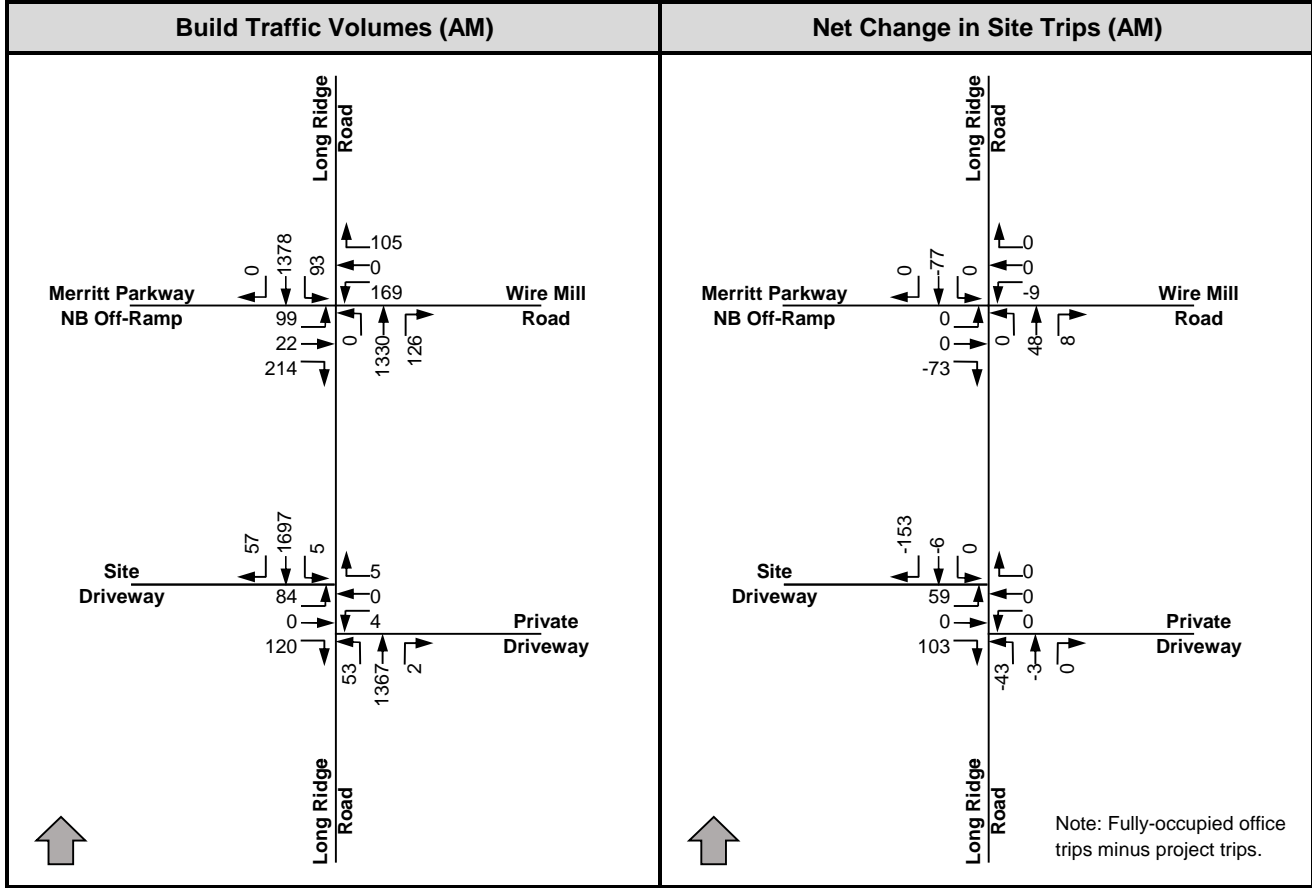
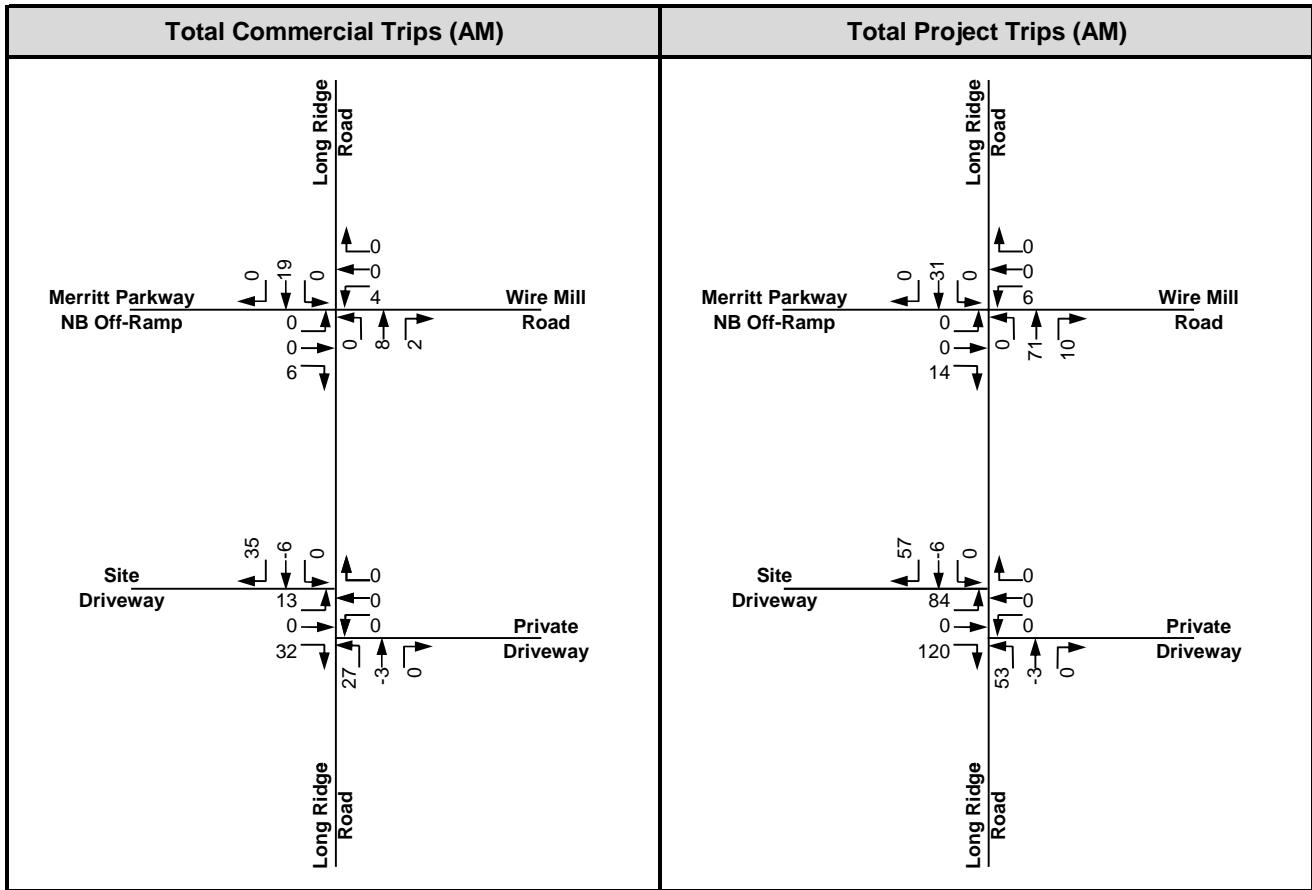
Sundries/Café Primary Purpose Trips (AM)

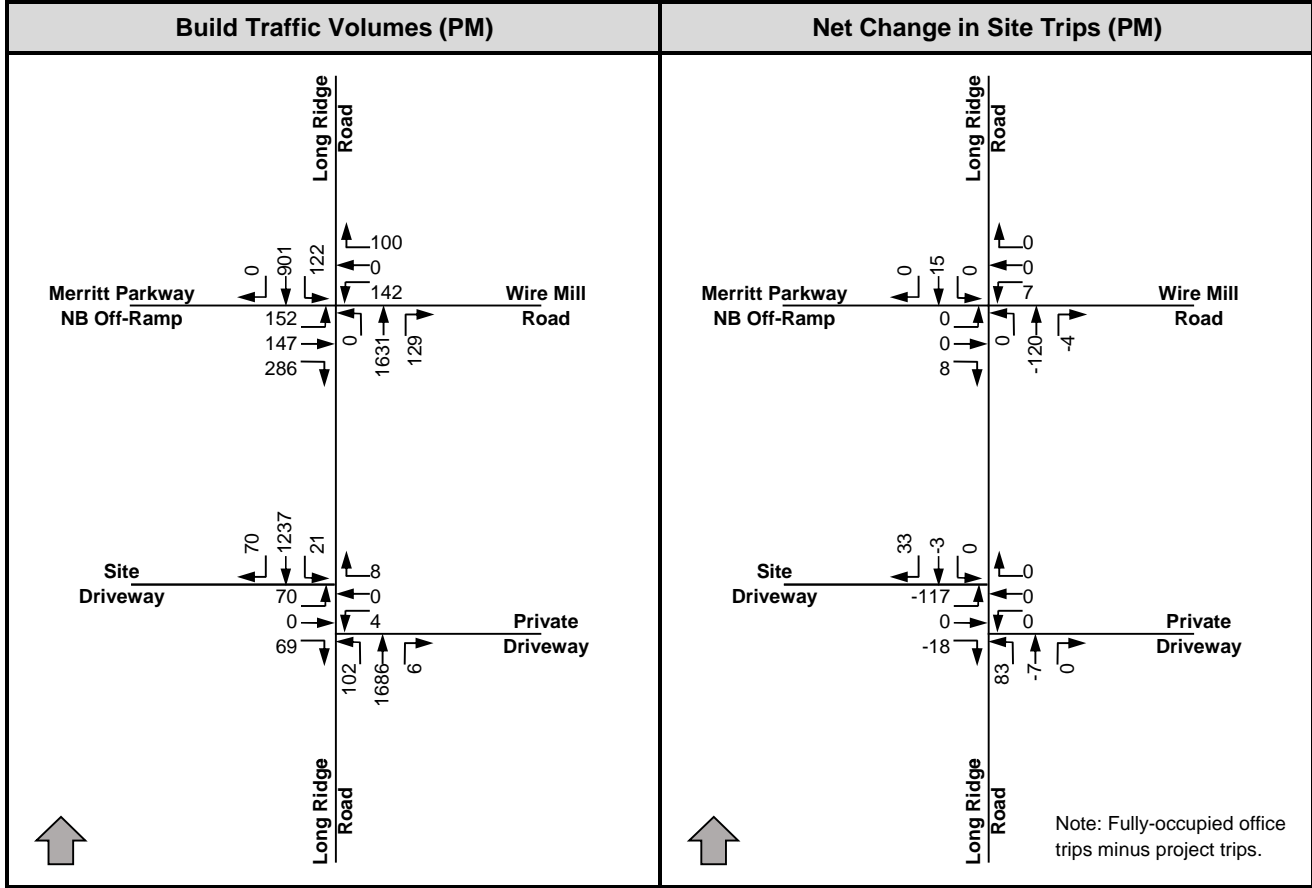
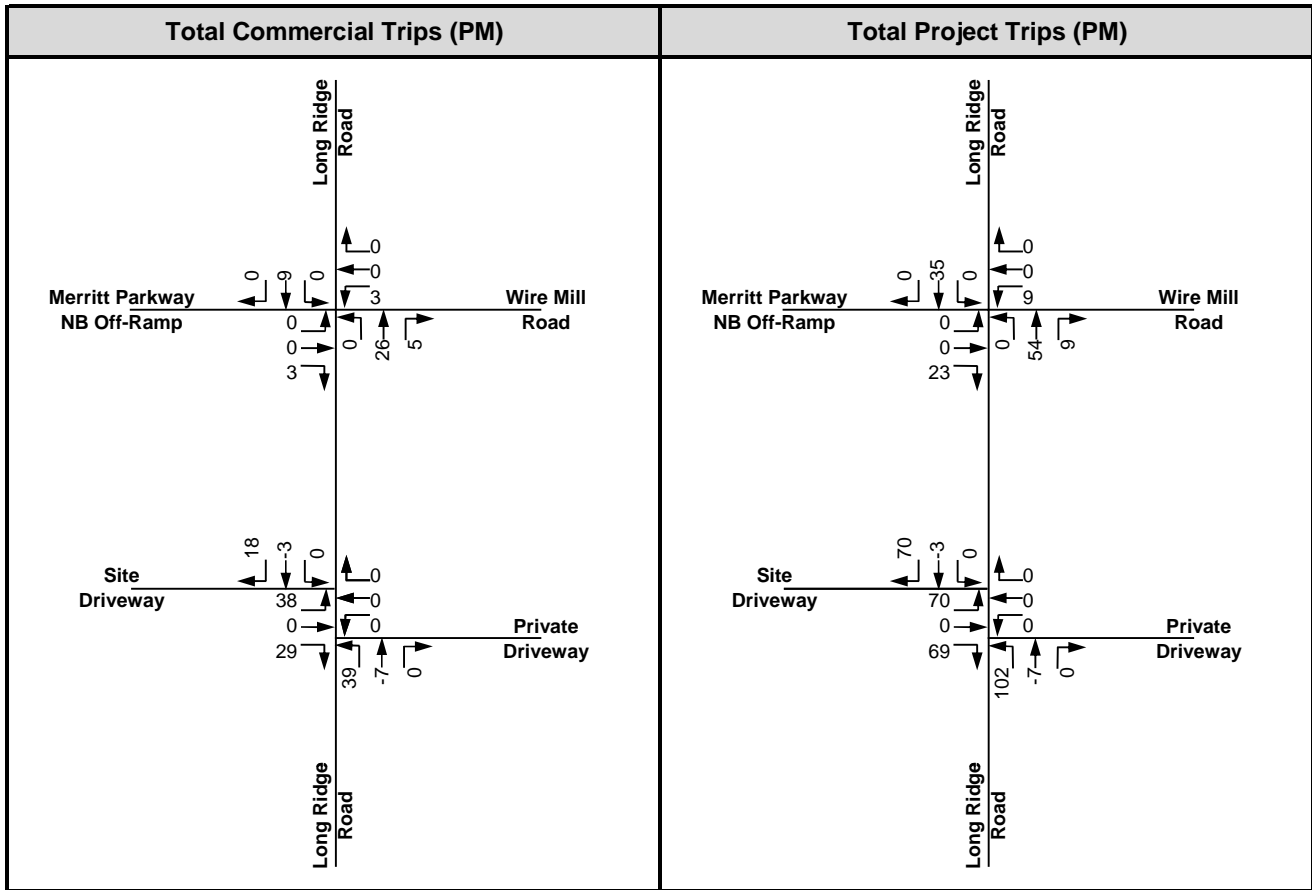
Sundries/Café Primary Purpose Trips (PM)











Note: Fully-occupied office trips minus project trips.

OSTA Approved Trip Generation Table & Correspondence

From: Sojka, Gary J <Gary.Sojka@ct.gov>
Sent: Friday, June 23, 2023 9:31 AM
To: Connell, Andrea
Cc: Pothering, Ryan J; Padlo, Pat; Canning, John
Subject: RE: OSTA Trip generation methodology for land use change

Categories: External

Yes Andrea the trip gen table is acceptable.

Gary J. Sojka

*Transportation Supervising Planner
Connecticut Department of Transportation
Bureau of Policy and Planning
2800 Berlin Turnpike
Newington, CT 06111
Email: gary.sojka@ct.gov
telephone: (860) 594-2025*

From: Connell, Andrea <Andrea.CConnell@kimley-horn.com>
Sent: Friday, June 23, 2023 9:27 AM
To: Sojka, Gary J <Gary.Sojka@ct.gov>
Cc: Pothering, Ryan J <Ryan.Pothering@ct.gov>; Padlo, Pat <Pat.Padlo@ct.gov>; Canning, John <John.Canning@kimley-horn.com>
Subject: RE: OSTA Trip generation methodology for land use change

Some people who received this message don't often get email from andrea.connell@kimley-horn.com. [Learn why this is important](#)

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Good morning, Gary,

Just checking in to see if you've had a chance to review the attached trip generation table (as described in my email below) that compares the trips generated by the existing and proposed uses of the property at 900 Long Ridge Road in Stamford.

Please let me know if you need anything further.

Best regards,
Andrea

Andrea M. Connell, Road Safety Professional, LEED Green Associate
Kimley-Horn Engineering and Landscape Architecture of New York, P.C.
1 North Lexington Avenue, Suite 505, White Plains, NY 10601
Direct: 914 368 9191 Main: 914 368 9200

Peak Hour Trip Generations					
			Dev't Program	AM	PM
SF	DU	ITE Code			
3.500		712	Small Office Building	6	8
4.000		720	Med-Dental Office Bldg	12	16
8.000		565	Day Care Center	88	89
	4	220	Guest Lodging*	2	2
1.200		932	High-Turnover (Sit-Down) Restaurant	11	15
16.700			TOTAL Commercial*	120	130
	512	221	Multifamily Housing (Mid-Rise)	189	200
Total DU	516		TOTAL Res + Comm	309	330

Notes: ITE 11th Ed. Rates. No internal credit applied.

229.294		710	Existing Office (based on ITE rates)	349	330
Net Change in Trips (Existing - Proposed)				-40	0

* Guest Lodging has been replaced by 3,500 sf sundry shop.
New Trips: 280 AM at Driveway, 270 AM beyond Driveway
300 PM at Driveway, 290 PM beyond Driveway

September 19th, 2023 Update

AM Multifamily Housing (Mid-Rise) trip generation has been updated to reflect City of Stamford TTP Comment (dated August 18th, 2023). Rounding discrepancies were resolved as well.

New Trips: 305 AM at Driveway, 296 AM beyond Driveway
301 AM at Driveway, 291 AM beyond Driveway

Internal Trip Worksheet

Internal Capture Reduction Calculations

Methodology for A.M. Peak Hour and P.M. Peak Hour
based on the *Trip Generation Handbook*, 3rd Edition, published by the Institute of Transportation Engineers

Methodology for Daily
based on the average of the Unconstrained Rates for the A.M. Peak Hour and P.M. Peak Hour

SUMMARY

GROSS TRIP GENERATION

INPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office			15	3	8	16
Retail			6	5	12	11	
Restaurant			6	5	8	7	
Day Care			47	41	42	47	
Residential			49	163	121	77	
Hotel							
		0	0	123	217	191	158

INTERNAL TRIPS

OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	0	0	5	2	3	3
Retail	0	0	2	3	5	5	
Restaurant	0	0	3	2	3	4	
Day Car	0	0	2	2	2	2	
Residential	0	0	1	4	6	5	
Hotel	0	0	0	0	0	0	
		0	0	13	13	19	19
% Reduction		0.0%		7.6%		10.9%	

EXTERNAL TRIPS

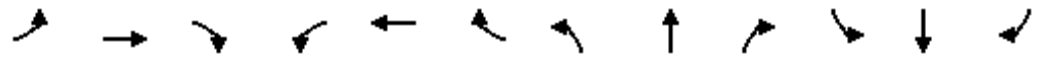
OUTPUT	Land Use	Daily		A.M. Peak Hour		P.M. Peak Hour	
		Enter	Exit	Enter	Exit	Enter	Exit
	Office	0	0	10	1	5	13
Retail	0	0	4	2	7	6	
Restaurant	0	0	3	3	5	3	
Day Care	0	0	45	39	40	45	
Residential	0	0	48	159	115	72	
Hotel	0	0	0	0	0	0	
		0	0	110	204	172	139

Synchro Analysis Reports

Existing, No-Build, and Build

AM Existing Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

AM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	0	7	4	0	5	21	1338	2	5	1665	52
Future Volume (vph)	3	0	7	4	0	5	21	1338	2	5	1665	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		-1%			0%			1%			0%	
Storage Length (ft)	180		0	0		0	85		0	0		325
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1673	1518	0	0	1719	0	1686	3276	0	0	3293	1516
Flt Permitted							0.099				0.951	
Satd. Flow (perm)	1761	1527	0	0	1758	0	176	3276	0	0	3131	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			85			1				57
Link Speed (mph)		25			25			40				40
Link Distance (ft)		314			164			580				940
Travel Time (s)		8.6			4.5			9.9				16.0
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
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	6%	0%	0%	6%	3%
Shared Lane Traffic (%)	41%											
Lane Group Flow (vph)	2	9	0	0	9	0	23	1456	0	0	1815	57
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		1.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	5.0		5.0	5.0		4.0	26.0		26.0	26.0	26.0
Total Split (s)	10.0	10.0		10.0	10.0		13.0	80.0		67.0	67.0	67.0
Total Split (%)	11.1%	11.1%		11.1%	11.1%		14.4%	88.9%		74.4%	74.4%	74.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0		3.0	7.0			7.0	7.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)	5.7	5.7			5.6		85.0	86.6			81.7	81.7
Actuated g/C Ratio	0.06	0.06			0.06		0.94	0.96			0.91	0.91
v/c Ratio	0.02	0.05			0.05		0.09	0.46			0.64	0.04
Control Delay	40.0	0.5			0.5		1.1	1.3			4.7	1.0
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	40.0	0.5			0.5		1.1	1.3			4.7	1.0
LOS	D	A			A		A	A			A	A
Approach Delay		7.7			0.5			1.3			4.6	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	1	0			0		0	0			0	0
Queue Length 95th (ft)	8	0			0		3	136			421	9
Internal Link Dist (ft)		234			84			500			860	

AM Existing Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

AM Peak Hour
 09/11/2023

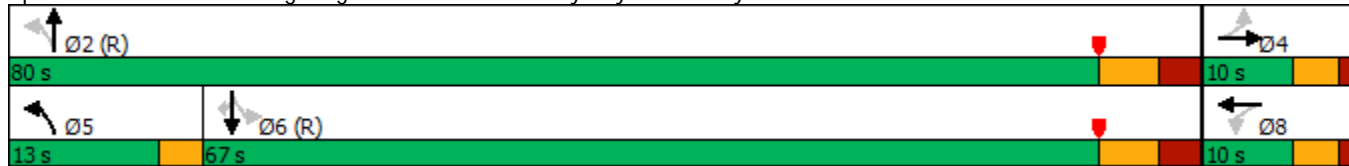


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180						85					325
Base Capacity (vph)	117	181			196		333	3152			2843	1382
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.02	0.05			0.05		0.07	0.46			0.64	0.04

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	11 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.64
Intersection Signal Delay:	3.2
Intersection LOS:	A
Intersection Capacity Utilization	62.8%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 1: Long Ridge Road & Site Driveway/Daycare Facility

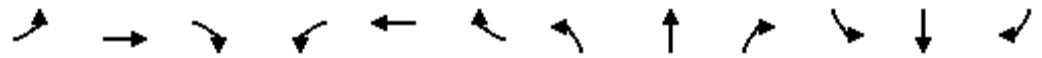


AM Existing Conditions - Sensitivity Analysis

AM Peak Hour

2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕↕↕		↖	↕↕	
Traffic Volume (vph)	95	21	217	160	0	103	0	1233	113	87	1345	0
Future Volume (vph)	95	21	217	160	0	103	0	1233	113	87	1345	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	9	12	9	12	11	11	10	10	12
Grade (%)		-3%			-3%			2%			0%	
Storage Length (ft)	0		0	100		0	0		0	315		0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1756	1554	1617	0	1446	0	4803	0	1652	3303	0
Flt Permitted		0.961		0.950						0.105		
Satd. Flow (perm)	0	1756	1554	1617	0	1446	0	4803	0	183	3303	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			147		17				
Link Speed (mph)		40			25			35				35
Link Distance (ft)		280			216			940				274
Travel Time (s)		4.8			5.9			18.3				5.3
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	126	236	174	0	112	0	1463	0	95	1462	0
Turn Type	Split	NA	Prot	Prot		Prot		NA		pm+pt	NA	
Protected Phases	4	4	4	3		3		2		1	1 2	
Permitted Phases										1 2		
Detector Phase	4	4	4	3		3		2		1	1 2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		25.0		3.0		
Minimum Split (s)	13.5	13.5	13.5	17.0		17.0		31.0		7.0		
Total Split (s)	27.0	27.0	27.0	17.0		17.0		44.0		12.0		
Total Split (%)	27.0%	27.0%	27.0%	17.0%		17.0%		44.0%		12.0%		
Yellow Time (s)	4.4	4.4	4.4	3.0		3.0		4.4		3.0		
All-Red Time (s)	2.1	2.1	2.1	1.4		1.4		1.6		1.0		
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0		0.0		
Total Lost Time (s)		6.5	6.5	4.4		4.4		6.0		4.0		
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Recall Mode	None	None	None	None		None		C-Min		None		
Act Effect Green (s)		13.6	13.6	12.4		12.4		38.0		55.1	59.1	
Actuated g/C Ratio		0.14	0.14	0.12		0.12		0.38		0.55	0.59	
v/c Ratio		0.53	0.74	0.87		0.36		0.80		0.30	0.75	
Control Delay		47.0	33.2	81.6		6.6		31.2		13.4	19.3	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		47.0	33.2	81.6		6.6		31.2		13.4	19.3	
LOS		D	C	F		A		C		B	B	
Approach Delay		38.0				52.2		31.2				18.9
Approach LOS		D				D		C				B
Queue Length 50th (ft)		76	68	110		0		295		24	332	
Queue Length 95th (ft)		124	142	#230		27		356		58	510	
Internal Link Dist (ft)		200				136		860			194	
Turn Bay Length (ft)				100						315		

AM Existing Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

AM Peak Hour
 09/11/2023

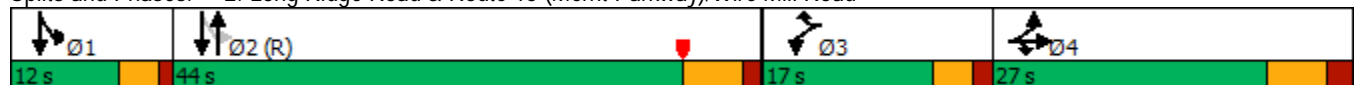


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		359	417	203		310		1835		322	1950	
Starvation Cap Reductn		0	0	0		0		0		0	0	
Spillback Cap Reductn		0	0	0		0		0		0	0	
Storage Cap Reductn		0	0	0		0		0		0	0	
Reduced v/c Ratio		0.35	0.57	0.86		0.36		0.80		0.30	0.75	

Intersection Summary

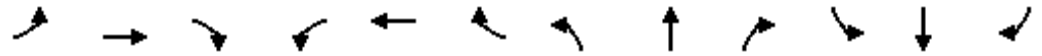
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 28.3
 Intersection LOS: C
 Intersection Capacity Utilization 71.6%
 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: 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road



PM Existing Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

PM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	0	21	4	0	8	3	1655	6	21	1210	3
Future Volume (vph)	45	0	21	4	0	8	3	1655	6	21	1210	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		-1%			0%			1%			0%	
Storage Length (ft)	180		0	0		0	85		0	0		325
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1673	1583	0	0	1697	0	1686	3273	0	0	3292	1516
Flt Permitted	0.749	0.845			0.903		0.179				0.882	
Satd. Flow (perm)	1319	1369	0	0	1556	0	318	3273	0	0	2907	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			85			1				48
Link Speed (mph)		25			25			40				40
Link Distance (ft)		314			164			580				940
Travel Time (s)		8.6			4.5			9.9				16.0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	6%	0%	0%	6%	3%
Shared Lane Traffic (%)	41%											
Lane Group Flow (vph)	28	43	0	0	13	0	3	1786	0	0	1324	3
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		1.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	5.0		5.0	5.0		4.0	26.0		26.0	26.0	26.0
Total Split (s)	17.0	17.0		17.0	17.0		8.0	73.0		65.0	65.0	65.0
Total Split (%)	18.9%	18.9%		18.9%	18.9%		8.9%	81.1%		72.2%	72.2%	72.2%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0		3.0	7.0			7.0	7.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)	7.5	7.5			7.5		77.4	74.8			73.1	73.1
Actuated g/C Ratio	0.08	0.08			0.08		0.86	0.83			0.81	0.81
v/c Ratio	0.26	0.22			0.06		0.01	0.66			0.56	0.00
Control Delay	43.6	4.5			0.6		1.7	5.5			5.8	0.0
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	43.6	4.5			0.6		1.7	5.5			5.8	0.0
LOS	D	A			A		A	A			A	A
Approach Delay		19.9			0.6			5.5			5.8	
Approach LOS		B			A			A			A	
Queue Length 50th (ft)	15	0			0		0	177			109	0
Queue Length 95th (ft)	43	8			0		1	285			281	0
Internal Link Dist (ft)		234			84			500			860	

PM Existing Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

PM Peak Hour
 09/11/2023

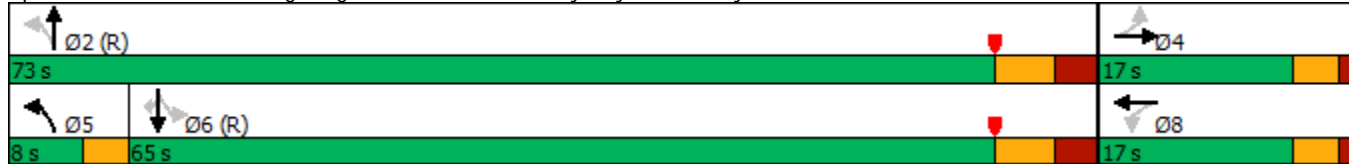


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180						85					325
Base Capacity (vph)	190	270			297		357	2720			2360	1240
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.15	0.16			0.04		0.01	0.66			0.56	0.00

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	6 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	45
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.66
Intersection Signal Delay:	5.9
Intersection LOS:	A
Intersection Capacity Utilization	68.4%
ICU Level of Service	C
Analysis Period (min)	15

Splits and Phases: 1: Long Ridge Road & Site Driveway/Daycare Facility

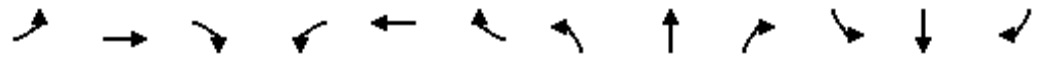


PM Existing Conditions - Sensitivity Analysis

PM Peak Hour

2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕↕↕		↖	↕↕	
Traffic Volume (vph)	148	143	258	126	0	98	0	1585	119	118	850	0
Future Volume (vph)	148	143	258	126	0	98	0	1585	119	118	850	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	9	12	9	12	11	11	10	10	12
Grade (%)		-3%			-3%			2%			0%	
Storage Length (ft)	0		0	100		0	0		0	315		0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1782	1554	1617	0	1446	0	4818	0	1652	3303	0
Flt Permitted		0.975		0.950						0.105		
Satd. Flow (perm)	0	1782	1554	1617	0	1446	0	4818	0	183	3303	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			138			147		14				
Link Speed (mph)		40			25			35				35
Link Distance (ft)		280			216			940				274
Travel Time (s)		4.8			5.9			18.3				5.3
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	316	280	137	0	107	0	1852	0	128	924	0
Turn Type	Split	NA	Prot	Prot		Prot		NA		pm+pt	NA	
Protected Phases	4	4	4	3		3		2		1	1 2	
Permitted Phases										1 2		
Detector Phase	4	4	4	3		3		2		1	1 2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		25.0		3.0		
Minimum Split (s)	13.5	13.5	13.5	17.0		17.0		31.0		7.0		
Total Split (s)	27.0	27.0	27.0	17.0		17.0		44.0		12.0		
Total Split (%)	27.0%	27.0%	27.0%	17.0%		17.0%		44.0%		12.0%		
Yellow Time (s)	4.4	4.4	4.4	3.0		3.0		4.4		3.0		
All-Red Time (s)	2.1	2.1	2.1	1.4		1.4		1.6		1.0		
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0		0.0		
Total Lost Time (s)		6.5	6.5	4.4		4.4		6.0		4.0		
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Recall Mode	None	None	None	None		None		C-Min		None		
Act Effect Green (s)		20.0	20.0	11.6		11.6		38.0		49.5	53.5	
Actuated g/C Ratio		0.20	0.20	0.12		0.12		0.38		0.50	0.54	
v/c Ratio		0.89	0.67	0.73		0.36		1.01		0.56	0.52	
Control Delay		66.5	26.8	65.2		6.3		54.1		25.2	16.7	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		66.5	26.8	65.2		6.3		54.1		25.2	16.7	
LOS		E	C	E		A		D		C	B	
Approach Delay		47.8				39.4		54.1				17.8
Approach LOS		D				D		D				B
Queue Length 50th (ft)		196	81	85		0		~430		41	196	
Queue Length 95th (ft)		#346	173	#168		24		#551		#101	254	
Internal Link Dist (ft)		200				136		860			194	
Turn Bay Length (ft)				100						315		

PM Existing Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

PM Peak Hour
 09/11/2023

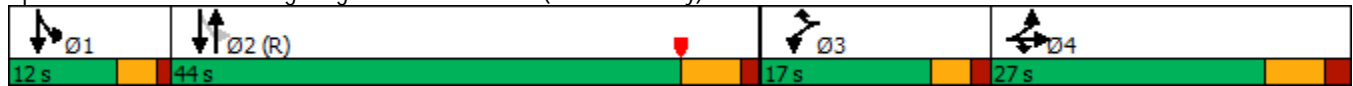


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		368	430	203		310		1839		230	1767	
Starvation Cap Reductn		0	0	0		0		0		0	0	
Spillback Cap Reductn		0	0	0		0		0		0	0	
Storage Cap Reductn		0	0	0		0		0		0	0	
Reduced v/c Ratio		0.86	0.65	0.67		0.35		1.01		0.56	0.52	

Intersection Summary

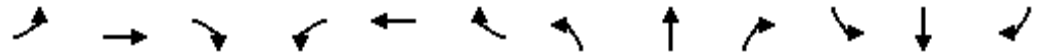
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 41.9
 Intersection LOS: D
 Intersection Capacity Utilization 79.6%
 ICU Level of Service D
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road



AM No Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

AM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↕			↕		↖	↕			↕	↖
Traffic Volume (vph)	25	0	17	4	0	5	96	1370	2	5	1703	211
Future Volume (vph)	25	0	17	4	0	5	96	1370	2	5	1703	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		-1%			0%			1%			0%	
Storage Length (ft)	180		0	0		0	85		0	0		325
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1673	1563	0	0	1719	0	1686	3276	0	0	3293	1516
Flt Permitted		0.878			0.843		0.079				0.951	
Satd. Flow (perm)	1761	1398	0	0	1482	0	140	3276	0	0	3131	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			85			1				229
Link Speed (mph)		25			25			40				40
Link Distance (ft)		314			164			580				940
Travel Time (s)		8.6			4.5			9.9				16.0
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
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	6%	0%	0%	6%	3%
Shared Lane Traffic (%)	36%											
Lane Group Flow (vph)	17	28	0	0	9	0	104	1491	0	0	1856	229
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		1.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	5.0		5.0	5.0		4.0	26.0		26.0	26.0	26.0
Total Split (s)	10.0	10.0		10.0	10.0		13.0	80.0		67.0	67.0	67.0
Total Split (%)	11.1%	11.1%		11.1%	11.1%		14.4%	88.9%		74.4%	74.4%	74.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0		3.0	7.0			7.0	7.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)	5.8	5.8			5.8		81.0	79.8			70.1	70.1
Actuated g/C Ratio	0.06	0.06			0.06		0.90	0.89			0.78	0.78
v/c Ratio	0.15	0.17			0.05		0.42	0.51			0.76	0.19
Control Delay	42.8	2.1			0.5		9.4	2.8			11.4	1.1
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	42.8	2.1			0.5		9.4	2.8			11.4	1.1
LOS	D	A			A		A	A			B	A
Approach Delay		17.5			0.5			3.2			10.3	
Approach LOS		B			A			A			B	
Queue Length 50th (ft)	9	0			0		5	110			338	0
Queue Length 95th (ft)	31	0			0		36	142			540	21
Internal Link Dist (ft)		234			84			500			860	

AM No Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

AM Peak Hour
 09/11/2023

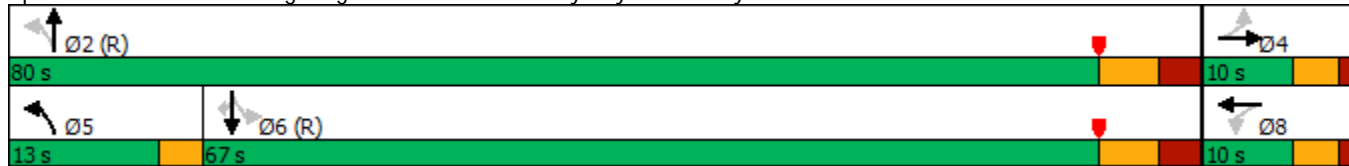


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180						85					325
Base Capacity (vph)	117	172			178		297	2905			2438	1231
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.15	0.16			0.05		0.35	0.51			0.76	0.19

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	11 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	7.3
Intersection LOS:	A
Intersection Capacity Utilization	93.1%
ICU Level of Service	F
Analysis Period (min)	15

Splits and Phases: 1: Long Ridge Road & Site Driveway/Daycare Facility

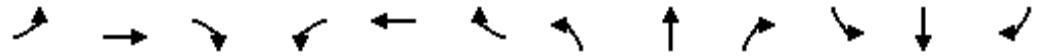




Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕↕↕		↖	↕↕	
Traffic Volume (vph)	99	22	287	178	0	105	0	1282	118	93	1455	0
Future Volume (vph)	99	22	287	178	0	105	0	1282	118	93	1455	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	9	12	9	12	11	11	10	10	12
Grade (%)		-3%			-3%			2%				0%
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1756	1554	1617	0	1446	0	4803	0	1652	3303	0
Flt Permitted		0.961		0.950						0.105		
Satd. Flow (perm)	0	1756	1554	1617	0	1446	0	4803	0	183	3303	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			147		17				
Link Speed (mph)		40			25			35				35
Link Distance (ft)		280			216			940				274
Travel Time (s)		4.8			5.9			18.3				5.3
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	312	193	0	114	0	1521	0	101	1582	0
Turn Type	Split	NA	Prot	Prot		Prot		NA		pm+pt	NA	
Protected Phases	4	4	4	3		3		2		1	1 2	
Permitted Phases										1 2		
Detector Phase	4	4	4	3		3		2		1	1 2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		25.0		3.0		
Minimum Split (s)	13.5	13.5	13.5	17.0		17.0		31.0		7.0		
Total Split (s)	27.0	27.0	27.0	17.0		17.0		44.0		12.0		
Total Split (%)	27.0%	27.0%	27.0%	17.0%		17.0%		44.0%		12.0%		
Yellow Time (s)	4.4	4.4	4.4	3.0		3.0		4.4		3.0		
All-Red Time (s)	2.1	2.1	2.1	1.4		1.4		1.6		1.0		
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0		0.0		
Total Lost Time (s)		6.5	6.5	4.4		4.4		6.0		4.0		
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Recall Mode	None	None	None	None		None		C-Min		None		
Act Effect Green (s)		16.9	16.9	12.6		12.6		38.0		51.6	55.6	
Actuated g/C Ratio		0.17	0.17	0.13		0.13		0.38		0.52	0.56	
v/c Ratio		0.45	0.85	0.95		0.37		0.83		0.38	0.86	
Control Delay		41.2	45.9	96.8		6.8		32.5		17.1	26.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		41.2	45.9	96.8		6.8		32.5		17.1	26.1	
LOS		D	D	F		A		C		B	C	
Approach Delay		44.5				63.4		32.5				25.6
Approach LOS		D				E		C				C
Queue Length 50th (ft)		74	116	124		0		313		30	447	
Queue Length 95th (ft)		129	#237	#260		29		375		63	#645	
Internal Link Dist (ft)		200				136		860			194	
Turn Bay Length (ft)				100								

AM No Build Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

AM Peak Hour
 09/11/2023

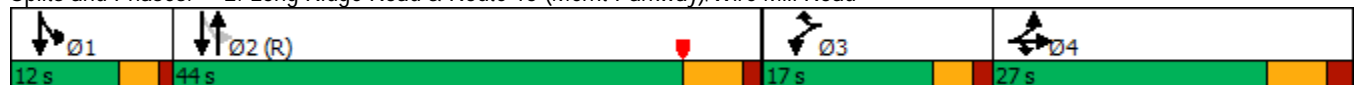


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		359	417	203		310		1835		265	1837	
Starvation Cap Reductn		0	0	0		0		0		0	0	
Spillback Cap Reductn		0	0	0		0		0		0	0	
Storage Cap Reductn		0	0	0		0		0		0	0	
Reduced v/c Ratio		0.37	0.75	0.95		0.37		0.83		0.38	0.86	

Intersection Summary

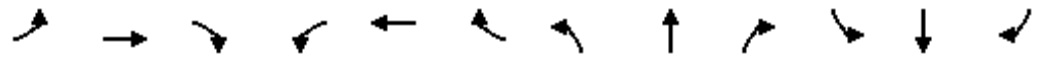
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 33.3
 Intersection LOS: C
 Intersection Capacity Utilization 79.9%
 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: 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road



PM No Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

PM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	187	0	87	4	0	8	19	1693	6	21	1240	37
Future Volume (vph)	187	0	87	4	0	8	19	1693	6	21	1240	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		-1%			0%			1%			0%	
Storage Length (ft)	180		0	0		0	85		0	0		325
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1673	1583	0	0	1697	0	1686	3276	0	0	3292	1516
Flt Permitted	0.749	0.845			0.910		0.157				0.879	
Satd. Flow (perm)	1319	1369	0	0	1568	0	279	3276	0	0	2897	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			85			1				48
Link Speed (mph)		25			25			40				40
Link Distance (ft)		314			164			580				940
Travel Time (s)		8.6			4.5			9.9				16.0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	6%	0%	0%	6%	3%
Shared Lane Traffic (%)	41%											
Lane Group Flow (vph)	119	176	0	0	13	0	20	1826	0	0	1356	40
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		1.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	5.0		5.0	5.0		4.0	26.0		26.0	26.0	26.0
Total Split (s)	17.0	17.0		17.0	17.0		8.0	73.0		65.0	65.0	65.0
Total Split (%)	18.9%	18.9%		18.9%	18.9%		8.9%	81.1%		72.2%	72.2%	72.2%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0		3.0	7.0			7.0	7.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)	11.6	11.6			11.6		71.4	67.4			64.2	64.2
Actuated g/C Ratio	0.13	0.13			0.13		0.79	0.75			0.71	0.71
v/c Ratio	0.70	0.70			0.05		0.07	0.74			0.66	0.04
Control Delay	59.6	35.6			0.3		2.7	9.1			10.0	1.6
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	59.6	35.6			0.3		2.7	9.1			10.0	1.6
LOS	E	D			A		A	A			A	A
Approach Delay		45.3			0.3			9.1			9.7	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)	68	50			0		2	272			168	0
Queue Length 95th (ft)	#143	#138			0		6	357			323	9
Internal Link Dist (ft)		234			84			500			860	

PM No Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

PM Peak Hour
 09/11/2023

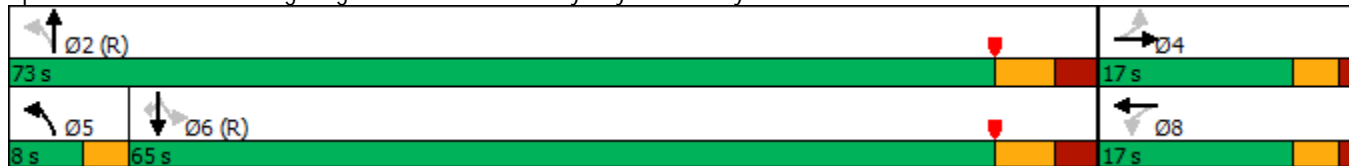


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180						85					325
Base Capacity (vph)	190	270			299		302	2453			2066	1095
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.63	0.65			0.04		0.07	0.74			0.66	0.04

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 6 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 12.3
 Intersection LOS: B
 Intersection Capacity Utilization 72.8%
 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: Long Ridge Road & Site Driveway/Daycare Facility



PM No Build Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

PM Peak Hour
 09/11/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	147	277	135	0	100	0	1751	133	122	885	0
Future Volume (vph)	152	147	277	135	0	100	0	1751	133	122	885	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	9	12	9	12	11	11	10	10	12
Grade (%)		-3%			-3%			2%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1782	1554	1617	0	1446	0	4813	0	1652	3303	0
Flt Permitted		0.975		0.950						0.105		
Satd. Flow (perm)	0	1782	1554	1617	0	1446	0	4813	0	183	3303	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			147		14				
Link Speed (mph)		40			25			35				35
Link Distance (ft)		280			216			940				274
Travel Time (s)		4.8			5.9			18.3				5.3
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	301	147	0	109	0	2048	0	133	962	0
Turn Type	Split	NA	Prot	Prot		Prot		NA		pm+pt	NA	
Protected Phases	4	4	4	3		3		2		1	1 2	
Permitted Phases										1 2		
Detector Phase	4	4	4	3		3		2		1	1 2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		25.0		3.0		
Minimum Split (s)	13.5	13.5	13.5	17.0		17.0		31.0		7.0		
Total Split (s)	27.0	27.0	27.0	17.0		17.0		44.0		12.0		
Total Split (%)	27.0%	27.0%	27.0%	17.0%		17.0%		44.0%		12.0%		
Yellow Time (s)	4.4	4.4	4.4	3.0		3.0		4.4		3.0		
All-Red Time (s)	2.1	2.1	2.1	1.4		1.4		1.6		1.0		
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0		0.0		
Total Lost Time (s)		6.5	6.5	4.4		4.4		6.0		4.0		
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Recall Mode	None	None	None	None		None		C-Min		None		
Act Effect Green (s)		20.0	20.0	11.9		11.9		38.0		49.2	53.2	
Actuated g/C Ratio		0.20	0.20	0.12		0.12		0.38		0.49	0.53	
v/c Ratio		0.92	0.74	0.77		0.36		1.11		0.59	0.55	
Control Delay		70.6	33.5	68.1		6.4		90.3		27.3	17.2	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		70.6	33.5	68.1		6.4		90.3		27.3	17.2	
LOS		E	C	E		A		F		C	B	
Approach Delay		52.7				41.8		90.3			18.5	
Approach LOS		D				D		F			B	
Queue Length 50th (ft)		203	106	91		0		~551		42	208	
Queue Length 95th (ft)		#361	#212	#184		26		#650		#109	267	
Internal Link Dist (ft)		200				136		860			194	
Turn Bay Length (ft)				100								

PM No Build Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

PM Peak Hour
 09/11/2023

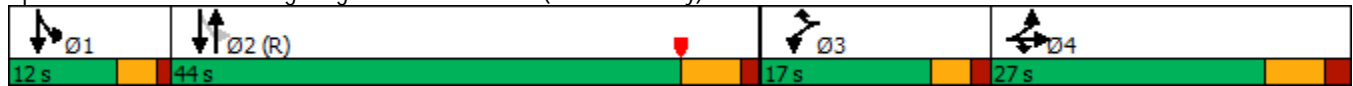


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		365	417	203		310		1837		225	1757	
Starvation Cap Reductn		0	0	0		0		0		0	0	
Spillback Cap Reductn		0	0	0		0		0		0	0	
Storage Cap Reductn		0	0	0		0		0		0	0	
Reduced v/c Ratio		0.89	0.72	0.72		0.35		1.11		0.59	0.55	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.11
 Intersection Signal Delay: 61.8
 Intersection LOS: E
 Intersection Capacity Utilization 84.3%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road



AM Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

AM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	0	120	4	0	5	53	1367	2	5	1697	57
Future Volume (vph)	84	0	120	4	0	5	53	1367	2	5	1697	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		-1%			0%			1%			0%	
Storage Length (ft)	180		0	0		0	85		0	0		325
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1673	1534	0	0	1719	0	1686	3276	0	0	3293	1516
Flt Permitted	0.752	0.927			0.481		0.076				0.951	
Satd. Flow (perm)	1324	1437	0	0	845	0	135	3276	0	0	3131	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		130			85			1				62
Link Speed (mph)		25			25			40				40
Link Distance (ft)		314			164			580				940
Travel Time (s)		8.6			4.5			9.9				16.0
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
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	6%	0%	0%	6%	3%
Shared Lane Traffic (%)	36%											
Lane Group Flow (vph)	58	163	0	0	9	0	58	1488	0	0	1850	62
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		1.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	5.0		5.0	5.0		4.0	26.0		26.0	26.0	26.0
Total Split (s)	10.0	10.0		10.0	10.0		13.0	80.0		67.0	67.0	67.0
Total Split (%)	11.1%	11.1%		11.1%	11.1%		14.4%	88.9%		74.4%	74.4%	74.4%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0		3.0	7.0			7.0	7.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)	6.0	6.0			6.0		77.0	73.0			65.7	65.7
Actuated g/C Ratio	0.07	0.07			0.07		0.86	0.81			0.73	0.73
v/c Ratio	0.66	0.75			0.07		0.27	0.56			0.81	0.06
Control Delay	76.1	34.7			1.0		3.9	3.9			12.5	1.3
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	76.1	34.7			1.0		3.9	3.9			12.5	1.3
LOS	E	C			A		A	A			B	A
Approach Delay		45.6			1.0			3.9			12.1	
Approach LOS		D			A			A			B	
Queue Length 50th (ft)	34	18			0		3	110			329	0
Queue Length 95th (ft)	#98	#120			0		6	142			462	10
Internal Link Dist (ft)		234			84			500			860	

AM Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

AM Peak Hour
 09/11/2023

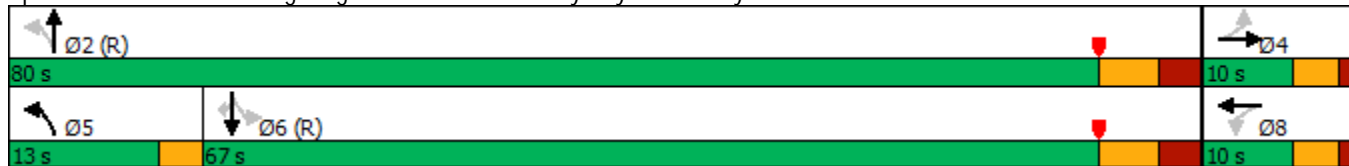


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180						85					325
Base Capacity (vph)	88	217			135		287	2657			2285	1123
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.66	0.75			0.07		0.20	0.56			0.81	0.06

Intersection Summary

Area Type: Other
 Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 11 (12%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 10.6
 Intersection LOS: B
 Intersection Capacity Utilization 67.0%
 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: Long Ridge Road & Site Driveway/Daycare Facility



AM Build Conditions - Sensitivity Analysis

AM Peak Hour

2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕↕↕		↖	↕↕	
Traffic Volume (vph)	99	22	214	169	0	105	0	1330	126	93	1378	0
Future Volume (vph)	99	22	214	169	0	105	0	1330	126	93	1378	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	9	12	9	12	11	11	10	10	12
Grade (%)		-3%			-3%			2%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1756	1554	1617	0	1446	0	4803	0	1652	3303	0
Flt Permitted		0.961		0.950						0.105		
Satd. Flow (perm)	0	1756	1554	1617	0	1446	0	4803	0	183	3303	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			147		18				
Link Speed (mph)		40			25			35				35
Link Distance (ft)		280			216			940				274
Travel Time (s)		4.8			5.9			18.3				5.3
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	233	184	0	114	0	1583	0	101	1498	0
Turn Type	Split	NA	Prot	Prot		Prot		NA		pm+pt	NA	
Protected Phases	4	4	4	3		3		2		1	1 2	
Permitted Phases										1 2		
Detector Phase	4	4	4	3		3		2		1	1 2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		25.0		3.0		
Minimum Split (s)	13.5	13.5	13.5	17.0		17.0		31.0		7.0		
Total Split (s)	27.0	27.0	27.0	17.0		17.0		44.0		12.0		
Total Split (%)	27.0%	27.0%	27.0%	17.0%		17.0%		44.0%		12.0%		
Yellow Time (s)	4.4	4.4	4.4	3.0		3.0		4.4		3.0		
All-Red Time (s)	2.1	2.1	2.1	1.4		1.4		1.6		1.0		
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0		0.0		
Total Lost Time (s)		6.5	6.5	4.4		4.4		6.0		4.0		
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Recall Mode	None	None	None	None		None		C-Min		None		
Act Effect Green (s)		13.7	13.7	12.6		12.6		38.0		54.8	58.8	
Actuated g/C Ratio		0.14	0.14	0.13		0.13		0.38		0.55	0.59	
v/c Ratio		0.55	0.73	0.91		0.37		0.86		0.32	0.77	
Control Delay		48.0	32.4	87.6		6.8		34.3		14.2	20.1	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		48.0	32.4	87.6		6.8		34.3		14.2	20.1	
LOS		D	C	F		A		C		B	C	
Approach Delay		38.0				56.7		34.3				19.7
Approach LOS		D				E		C				B
Queue Length 50th (ft)		80	66	117		0		332		26	344	
Queue Length 95th (ft)		129	139	#246		29		397		63	533	
Internal Link Dist (ft)		200				136		860			194	
Turn Bay Length (ft)				100								

AM Build Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

AM Peak Hour
 09/11/2023

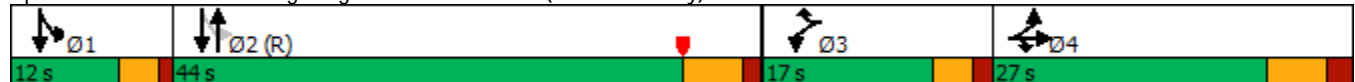


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		359	417	203		310		1836		318	1943	
Starvation Cap Reductn		0	0	0		0		0		0	0	
Spillback Cap Reductn		0	0	0		0		0		0	0	
Storage Cap Reductn		0	0	0		0		0		0	0	
Reduced v/c Ratio		0.37	0.56	0.91		0.37		0.86		0.32	0.77	

Intersection Summary

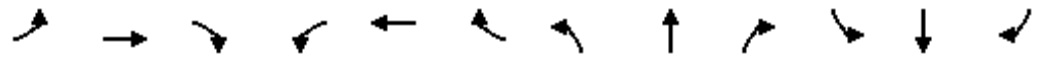
Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 30.3
 Intersection LOS: C
 Intersection Capacity Utilization 72.8%
 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: 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road



PM Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

PM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	0	69	4	0	8	102	1686	6	21	1237	70
Future Volume (vph)	70	0	69	4	0	8	102	1686	6	21	1237	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	11	11	11	11	11
Grade (%)		-1%			0%			1%			0%	
Storage Length (ft)	180		0	0		0	85		0	0		325
Storage Lanes	1		0	0		0	1		0	0		1
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	1673	1551	0	0	1697	0	1686	3276	0	0	3292	1516
Flt Permitted	0.749	0.896			0.896		0.161				0.880	
Satd. Flow (perm)	1319	1411	0	0	1544	0	286	3276	0	0	2900	1516
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		85			85			1				75
Link Speed (mph)		25			25			40				40
Link Distance (ft)		314			164			580				940
Travel Time (s)		8.6			4.5			9.9				16.0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	3%	3%	3%	0%	0%	0%	3%	6%	0%	0%	6%	3%
Shared Lane Traffic (%)	41%											
Lane Group Flow (vph)	44	105	0	0	13	0	110	1819	0	0	1353	75
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	Perm
Protected Phases		4			8		5	2				6
Permitted Phases	4			8			2			6		6
Detector Phase	4	4		8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		1.0	5.0		5.0	5.0	5.0
Minimum Split (s)	5.0	5.0		5.0	5.0		4.0	26.0		26.0	26.0	26.0
Total Split (s)	17.0	17.0		17.0	17.0		8.0	73.0		65.0	65.0	65.0
Total Split (%)	18.9%	18.9%		18.9%	18.9%		8.9%	81.1%		72.2%	72.2%	72.2%
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0		0.0	3.0		3.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	4.0	4.0			4.0		3.0	7.0			7.0	7.0
Lead/Lag							Lead			Lag	Lag	Lag
Lead-Lag Optimize?							Yes			Yes	Yes	Yes
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	C-Max
Act Effect Green (s)	8.5	8.5			8.5		76.4	73.8			66.3	66.3
Actuated g/C Ratio	0.09	0.09			0.09		0.85	0.82			0.74	0.74
v/c Ratio	0.35	0.50			0.06		0.32	0.68			0.63	0.07
Control Delay	45.0	20.7			0.5		4.2	6.4			10.0	1.6
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	45.0	20.7			0.5		4.2	6.4			10.0	1.6
LOS	D	C			A		A	A			B	A
Approach Delay		27.8			0.5			6.2			9.6	
Approach LOS		C			A			A			A	
Queue Length 50th (ft)	25	11			0		8	201			212	0
Queue Length 95th (ft)	57	60			0		20	336			321	14
Internal Link Dist (ft)		234			84			500			860	

PM Build Conditions - Sensitivity Analysis
 1: Long Ridge Road & Site Driveway/Daycare Facility

PM Peak Hour
 09/11/2023

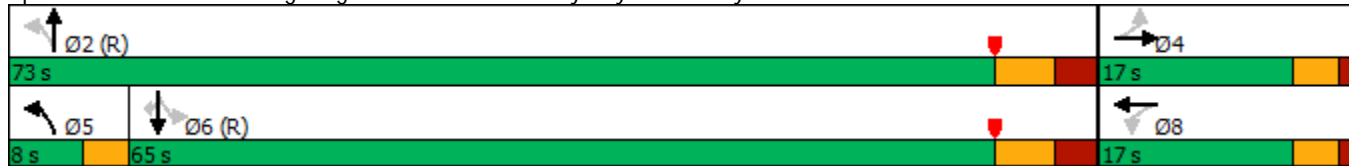


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)	180						85					325
Base Capacity (vph)	190	276			295		339	2685			2135	1135
Starvation Cap Reductn	0	0			0		0	0			0	0
Spillback Cap Reductn	0	0			0		0	0			0	0
Storage Cap Reductn	0	0			0		0	0			0	0
Reduced v/c Ratio	0.23	0.38			0.04		0.32	0.68			0.63	0.07

Intersection Summary

Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	90
Offset:	6 (7%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle:	50
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	8.5
Intersection LOS:	A
Intersection Capacity Utilization	100.3%
ICU Level of Service	G
Analysis Period (min)	15

Splits and Phases: 1: Long Ridge Road & Site Driveway/Daycare Facility



PM Build Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

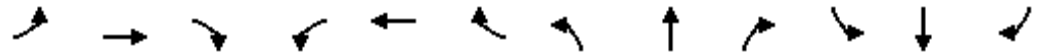
PM Peak Hour
 09/11/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕↕↕		↖	↕↕	
Traffic Volume (vph)	152	147	286	142	0	100	0	1631	129	122	901	0
Future Volume (vph)	152	147	286	142	0	100	0	1631	129	122	901	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	9	12	9	12	11	11	10	10	12
Grade (%)		-3%			-3%			2%			0%	
Storage Length (ft)	0		0	100		0	0		0	0		0
Storage Lanes	0		1	1		1	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	1782	1554	1617	0	1446	0	4813	0	1652	3303	0
Flt Permitted		0.975		0.950						0.105		
Satd. Flow (perm)	0	1782	1554	1617	0	1446	0	4813	0	183	3303	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			124			147		14				
Link Speed (mph)		40			25			35				35
Link Distance (ft)		280			216			940				274
Travel Time (s)		4.8			5.9			18.3				5.3
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
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	325	311	154	0	109	0	1913	0	133	979	0
Turn Type	Split	NA	Prot	Prot		Prot		NA		pm+pt	NA	
Protected Phases	4	4	4	3		3		2		1	1 2	
Permitted Phases										1 2		
Detector Phase	4	4	4	3		3		2		1	1 2	
Switch Phase												
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0		25.0		3.0		
Minimum Split (s)	13.5	13.5	13.5	17.0		17.0		31.0		7.0		
Total Split (s)	27.0	27.0	27.0	17.0		17.0		44.0		12.0		
Total Split (%)	27.0%	27.0%	27.0%	17.0%		17.0%		44.0%		12.0%		
Yellow Time (s)	4.4	4.4	4.4	3.0		3.0		4.4		3.0		
All-Red Time (s)	2.1	2.1	2.1	1.4		1.4		1.6		1.0		
Lost Time Adjust (s)		0.0	0.0	0.0		0.0		0.0		0.0		
Total Lost Time (s)		6.5	6.5	4.4		4.4		6.0		4.0		
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lag		Lead		
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes		
Recall Mode	None	None	None	None		None		C-Min		None		
Act Effect Green (s)		20.0	20.0	12.0		12.0		38.0		49.1	53.1	
Actuated g/C Ratio		0.20	0.20	0.12		0.12		0.38		0.49	0.53	
v/c Ratio		0.92	0.76	0.79		0.36		1.04		0.60	0.56	
Control Delay		70.6	35.5	71.6		6.3		63.7		27.5	17.4	
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0	
Total Delay		70.6	35.5	71.6		6.3		63.7		27.5	17.4	
LOS		E	D	E		A		E		C	B	
Approach Delay		53.4				44.5		63.7			18.6	
Approach LOS		D				D		E			B	
Queue Length 50th (ft)		203	113	96		0		~484		42	213	
Queue Length 95th (ft)		#361	#237	#195		26		#583		#109	274	
Internal Link Dist (ft)		200				136		860			194	
Turn Bay Length (ft)				100								

PM Build Conditions - Sensitivity Analysis
 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road

PM Peak Hour
 09/11/2023

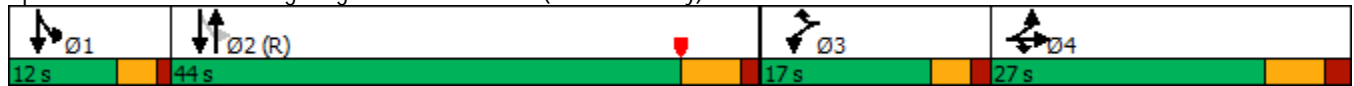


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		365	417	203		310		1837		223	1754	
Starvation Cap Reductn		0	0	0		0		0		0	0	
Spillback Cap Reductn		0	0	0		0		0		0	0	
Storage Cap Reductn		0	0	0		0		0		0	0	
Reduced v/c Ratio		0.89	0.75	0.76		0.35		1.04		0.60	0.56	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:NBSB, Start of Yellow
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 48.0
 Intersection LOS: D
 Intersection Capacity Utilization 82.2%
 ICU Level of Service E
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Long Ridge Road & Route 15 (Merrit Parkway)/Wire Mill Road



Shared Parking Analysis

Project: 900 Long Ridge Road
 Description: Shared Parking Analysis

Monthly Comparison Summary								
Month	Weekday							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	12 AM	769	6 AM	703	5 PM	443	12 AM	769
February	12 AM	769	6 AM	703	5 PM	443	12 AM	769
March	12 AM	769	6 AM	703	5 PM	445	12 AM	769
April	12 AM	769	6 AM	703	5 PM	445	12 AM	769
May	12 AM	769	6 AM	703	5 PM	445	12 AM	769
June	12 AM	769	6 AM	703	5 PM	445	12 AM	769
July	12 AM	731	6 AM	668	5 PM	424	12 AM	731
August	12 AM	731	6 AM	668	5 PM	668	12 AM	731
September	12 AM	769	6 AM	703	5 PM	444	12 AM	769
October	12 AM	769	6 AM	703	5 PM	445	12 AM	769
November	12 AM	769	6 AM	703	5 PM	445	12 AM	769
December	10 PM	770	6 AM	703	5 PM	449	10 PM	770
Late December	12 AM	769	6 AM	703	5 PM	440	12 AM	769

Monthly Comparison Summary								
Month	Weekend							
	Overall Pk		AM Peak Hr		PM Peak Hr		Eve Peak Hr	
	Time	Demand	Time	Demand	Time	Demand	Time	Demand
January	12 AM	782	6 AM	738	5 PM	595	12 AM	782
February	12 AM	782	6 AM	738	5 PM	595	12 AM	782
March	12 AM	782	6 AM	738	5 PM	597	12 AM	782
April	12 AM	782	6 AM	738	5 PM	596	12 AM	782
May	12 AM	782	6 AM	738	5 PM	597	12 AM	782
June	12 AM	782	6 AM	738	5 PM	597	12 AM	782
July	12 AM	743	6 AM	701	5 PM	567	12 AM	743
August	12 AM	743	6 AM	701	5 PM	568	12 AM	743
September	12 AM	782	6 AM	738	5 PM	596	12 AM	782
October	12 AM	782	6 AM	738	5 PM	596	12 AM	782
November	12 AM	782	6 AM	738	5 PM	597	12 AM	782
December	12 AM	782	6 AM	738	5 PM	600	12 AM	782
Late December	12 AM	782	6 AM	738	5 PM	599	12 AM	782

Devt Program:

- Gen'l Office 3500 sf
- Medical Office 4000 sf
- Day Care Center 8000 sf
- Retail (sundry shop) 3500 sf
- Family Restaurant 1200 sf
- Residential 508 units (457 market rate, 51 BMR)

December																					
Weekday Estimated Peak-Hour Parking Demand																					
Land Use	Monthly Adjustment	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM	Overall Pk 10 PM
Retail																					
Retail (<400 ksf)	100%	0	1	2	3	6	8	9	10	10	10	8	9	9	9	9	5	3	1	0	3
Employee	100%	0	0	1	1	2	3	3	3	3	3	3	3	3	3	3	2	1	1	0	1
Food and Beverage																					
Family Restaurant	100%	3	5	6	8	9	9	10	9	5	5	4	8	8	8	8	6	6	5	3	6
Employee	100%	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Entertainment and Institutions																					
Hotel and Residential																					
Residential, Suburban																					-
Studio Efficiency	100%	54	46	38	31	29	26	23	23	23	23	26	29	34	40	46	48	54	55	57	54
1 Bedroom	100%	234	197	166	135	123	111	98	98	98	98	111	123	148	172	197	209	234	239	246	234
2 Bedrooms	100%	369	310	262	213	194	175	155	155	155	155	175	194	233	272	310	330	369	376	388	369
3+ Bedrooms	100%	43	36	30	25	23	20	18	18	18	18	20	23	27	32	36	38	43	44	45	43
Reserved	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Visitor	100%	0	6	12	12	12	12	12	12	12	12	12	24	36	60	60	60	60	48	30	60
Office																					
Office <25 ksf	100%	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Reserved	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Employee	100%	0	1	3	5	6	6	5	5	6	6	5	4	2	1	0	0	0	0	0	0
Medical/Dental Office	100%	0	0	7	7	8	8	2	7	8	8	7	6	5	2	1	0	0	0	0	0
Employee	100%	0	1	4	4	4	4	4	4	4	4	4	4	3	1	1	0	0	0	0	0
Day Care Center	100%	0	0	3	10	3	3	3	3	3	3	13	7	3	1	0	0	0	0	0	0
Employee	100%	0	8	11	14	14	14	14	14	14	15	15	15	9	6	2	0	0	0	0	0
Additional Land Uses																					
Customer/Visitor		3	12	30	40	38	40	36	41	39	37	45	53	61	80	78	71	69	54	33	69
Employee/Resident		701	600	518	431	396	360	322	322	323	324	360	396	460	528	596	629	702	716	737	702
Reserved		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		703	612	548	471	433	399	358	363	361	361	405	449	521	608	674	700	770	770	769	770

December																					
Weekend Estimated Peak-Hour Parking Demand																					
Land Use	Monthly Adjustment	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM	12 AM	Overall Pk 12 AM
Retail																					
Retail (<400 ksf)	100%	0	1	1	4	7	9	11	11	11	11	10	9	7	7	6	4	2	0	0	0
Employee	100%	0	0	1	2	3	3	3	3	3	3	3	3	3	2	2	2	1	0	0	0
Food and Beverage																					
Family Restaurant	100%	1	3	5	7	9	9	10	9	7	4	5	6	7	7	3	3	2	1	1	1
Employee	100%	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
Entertainment and Institutions																					
Hotel and Residential																					
Residential, Suburban																					-
Studio Efficiency	100%	57	54	50	46	43	40	39	37	37	39	40	42	44	46	47	49	51	52	57	57
1 Bedroom	100%	246	234	216	197	185	172	167	160	160	167	175	182	189	197	204	212	219	226	246	246
2 Bedrooms	100%	388	369	341	310	291	272	264	252	252	264	275	287	299	310	322	334	345	357	388	388
3+ Bedrooms	100%	45	43	40	36	34	32	31	29	29	31	32	33	35	36	37	39	40	41	45	45
Reserved	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Visitor	100%	0	18	18	18	18	18	18	18	18	18	18	36	53	89	89	89	89	71	44	44
Office																					
Office <25 ksf	100%	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Reserved	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-
Employee	100%	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Medical/Dental Office	100%	0	0	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Employee	100%	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Additional Land Uses																					
Customer/Visitor		1	21	26	31	36	39	40	38	36	33	32	51	68	103	102	98	95	74	46	46
Employee/Resident		737	702	652	595	558	522	507	484	484	505	527	549	571	593	615	637	658	679	737	737
Reserved		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		738	723	678	626	595	561	548	522	520	539	560	600	639	696	717	734	753	753	782	782

FIGURE 2-1 Shared Parking Methodology

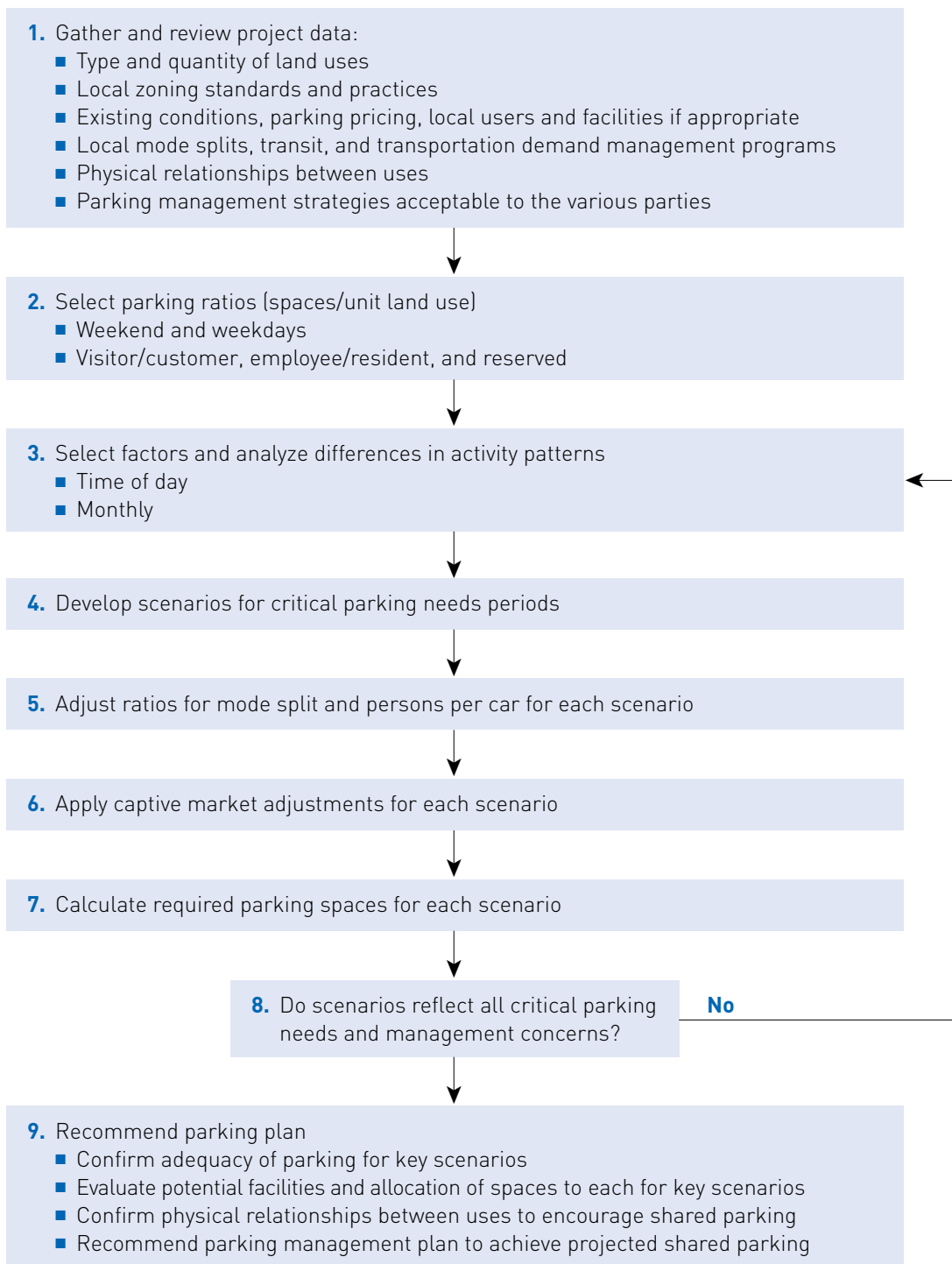


FIGURE 2-3 Monthly Adjustment Factors

Land use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Late Dec ¹	Notes
Retail														
Retail	59%	61%	70%	67%	72%	72%	70%	73%	66%	69%	76%	100%	85%	5
Employee	69%	71%	79%	77%	82%	82%	80%	83%	76%	78%	86%	100%	95%	
Supermarket/grocery	93%	86%	94%	92%	97%	94%	96%	95%	92%	95%	95%	100%	95%	6
Employee	100%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Pharmacy	89%	85%	92%	89%	91%	89%	89%	90%	88%	92%	89%	100%	95%	6
Employee	99%	95%	100%	99%	100%	98%	98%	99%	98%	100%	98%	100%	100%	
Discount stores/ superstores	72%	72%	79%	76%	81%	79%	79%	81%	74%	79%	85%	100%	90%	6
Employee	82%	82%	88%	86%	91%	89%	89%	91%	84%	89%	95%	100%	100%	
Home improvement stores/garden	63%	62%	79%	90%	100%	92%	87%	84%	80%	85%	80%	75%	65%	6
Employee	72%	71%	89%	100%	100%	100%	97%	94%	90%	94%	90%	85%	75%	
Food and beverage														
Fine/casual dining	88%	87%	98%	94%	99%	94%	96%	96%	89%	93%	89%	100%	95%	6
Employee	99%	98%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	
Family restaurant	88%	87%	98%	94%	99%	94%	96%	96%	89%	93%	89%	100%	95%	6
Employee	99%	98%	100%	100%	100%	100%	100%	100%	99%	100%	100%	100%	100%	
Fast casual/fast food/ food court/food halls	85%	85%	97%	95%	99%	98%	100%	100%	93%	96%	92%	96%	95%	6
Employee	96%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Bar/lounge/nightclub	87%	87%	100%	93%	97%	94%	97%	96%	94%	98%	92%	96%	95%	7
Employee	95%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Entertainment and institutions														
Family entertainment (weekdays) ²	20%	26%	36%	50%	23%	45%	87%	68%	22%	25%	20%	48%	100%	8
Employee	50%	50%	50%	60%	50%	55%	97%	78%	50%	50%	50%	58%	100%	
Family entertainment (weekends)	79%	90%	91%	100%	60%	70%	72%	76%	70%	72%	74%	60%	80%	8
Employee	89%	100%	100%	100%	70%	80%	82%	86%	80%	82%	84%	70%	90%	
Active entertainment	79%	90%	91%	100%	60%	70%	72%	76%	70%	72%	74%	60%	100%	8
Employee	89%	100%	100%	100%	70%	80%	82%	86%	80%	82%	84%	70%	100%	
Amusement park/ water park	79%	90%	91%	100%	60%	70%	72%	76%	70%	72%	74%	60%	100%	8
Employee	89%	100%	100%	100%	70%	80%	82%	86%	80%	82%	84%	70%	100%	
Adult active entertainment	85%	86%	95%	92%	96%	95%	98%	99%	91%	96%	93%	100%	95%	8
Employee	95%	96%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
All movies (weekdays) ³	50%	50%	45%	33%	55%	50%	75%	55%	25%	25%	55%	55%	100%	5
Employee	60%	60%	55%	50%	65%	60%	85%	65%	50%	50%	65%	65%	100%	
All movies (weekends)	25%	40%	60%	35%	70%	75%	75%	45%	35%	40%	80%	90%	100%	
Employee	50%	50%	70%	50%	80%	85%	85%	55%	50%	50%	90%	100%	100%	
Live theater	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	90%	100%	100%	5
Employee	75%	70%	90%	100%	95%	90%	85%	80%	75%	85%	90%	85%	100%	
Outdoor amphitheater	0%	0%	0%	10%	100%	100%	100%	100%	100%	50%	10%	10%	0%	5
Employee	10%	10%	10%	50%	100%	100%	100%	100%	100%	60%	50%	50%	10%	

(continued on next page)

FIGURE 2-3 (continued)

Land use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Late Dec ¹	Notes
Entertainment and institutions (continued)														
Public park/ destination open space	25%	25%	50%	75%	100%	100%	100%	100%	100%	100%	75%	75%	25%	5
Employee	50%	50%	60%	85%	100%	100%	100%	100%	100%	100%	85%	85%	50%	
Museum/aquarium (weekdays) ²	20%	26%	36%	50%	23%	45%	87%	68%	22%	25%	20%	48%	100%	8
Employee	50%	50%	50%	60%	50%	55%	97%	78%	50%	50%	50%	58%	100%	
Museum/aquarium (weekends)	79%	90%	91%	100%	60%	70%	72%	76%	70%	72%	74%	60%	80%	
Employee	89%	100%	100%	100%	70%	80%	82%	86%	80%	82%	84%	70%	90%	
Arena	90%	100%	100%	100%	100%	75%	0%	0%	60%	65%	90%	100%	95%	8
Employee	100%	100%	100%	100%	100%	100%	10%	10%	75%	75%	100%	100%	100%	
Pro football stadium ³	0%	0%	0%	0%	90%	90%	90%	90%	100%	100%	100%	100%	100%	8
Employee	10%	10%	10%	10%	10%	10%	10%	100%	100%	100%	100%	100%	100%	
Pro baseball stadium	0%	0%	0%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	8
Employee	10%	10%	25%	90%	100%	100%	100%	100%	100%	100%	10%	10%	10%	
Health club	100%	95%	85%	70%	65%	65%	65%	70%	80%	85%	85%	100%	95%	9
Employee	100%	100%	95%	80%	75%	75%	75%	80%	90%	95%	95%	100%	10%	
Public library	75%	75%	80%	85%	90%	90%	90%	90%	95%	95%	90%	65%	50%	8
Employee	85%	85%	85%	90%	95%	95%	90%	95%	100%	100%	95%	65%	50%	
Convention center ⁴	75%	100%	90%	55%	60%	50%	45%	75%	80%	85%	100%	100%	0%	8
Employee	85%	100%	100%	65%	70%	60%	55%	85%	90%	95%	100%	100%	0%	
Hotel and residential														
Hotel-business	60%	75%	90%	100%	95%	95%	95%	85%	90%	95%	80%	60%	55%	10,11
Hotel-leisure	80%	90%	100%	100%	90%	90%	100%	100%	75%	75%	75%	50%	100%	
Hotel employees	Use same factor as guests for type of hotel													
Restaurant/lounge	85%	86%	95%	92%	96%	95%	98%	99%	91%	96%	93%	100%	95%	
All meeting banquet (<100 sq ft/key)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Convention (>100 sq ft/key)	75%	100%	90%	55%	60%	50%	45%	75%	80%	85%	100%	100%	0%	
Restaurant/meeting employees	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Residential unreserved residents	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	100%	8
Reserved residents	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Visitor	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	100%	
Active senior housing	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	8
Residents	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

(continued on next page)

FIGURE 2-3 (continued)

Land use	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Late Dec ¹	Notes
Office														
Office	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	12
Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Employee	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	
Open plan/ high-density office	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	12
Reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Employee	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	
Medical/dental office	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	5
Employee	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	
Daycare center	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	5
Employee	100%	100%	100%	100%	100%	100%	95%	95%	100%	100%	100%	100%	80%	
Bank (drive-in branch)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	5
Employee	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	

1. December = December 1–24; Late December = December 25–31.
2. Land uses particularly affected by school year on weekdays.
3. Because there is only one weeknight game and no Saturday games per NFL team September through November, and activity patterns are modified at adjacent uses, this category is not considered a design day for parking planning.
4. Many convention centers are completely dark in Late December.
5. Developed by team members from a combination of sources.
6. U.S. Census Bureau Unadjusted Estimates of Retail Sales, 2008–2017.
7. U.S. Census Bureau Unadjusted Estimates of Retail Sales, 2012–2017.
8. Confidential data provided by facility managers.
9. John W. Dorsett, "Parking Requirements for Health Clubs," *The Parking Professional*, April 2004.
10. <https://catalog.data.gov/dataset/monthly-hotel-occupancy-b2f97>.
11. <https://www.statista.com/statistics/206546/us-hotels-occupancy-rate-by-month/>.
12. Parking Study conducted by Patton Harris Rust & Associates for the Peterson Companies, 2001.

FIGURE 2-4 **Weekday Time-of-Day Adjustments**

Land use		6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	12 a.m.
Retail typical	Visitors	1%	5%	15%	35%	60%	75%	100%	100%	95%	85%	85%	85%	90%	80%	65%	45%	15%	5%	0%
December	Visitors	1%	5%	15%	30%	55%	75%	90%	100%	100%	95%	80%	85%	90%	90%	85%	50%	30%	10%	0%
Late December	Visitors	1%	5%	10%	20%	40%	65%	90%	100%	100%	100%	95%	85%	70%	55%	40%	25%	15%	5%	0%
All	Employees	10%	15%	25%	45%	75%	95%	100%	100%	100%	100%	100%	100%	100%	100%	90%	60%	40%	20%	0%
Supermarket/ grocery	Visitors	5%	20%	30%	50%	60%	67%	85%	90%	95%	97%	100%	100%	100%	85%	55%	35%	20%	5%	5%
	Employees	20%	30%	40%	80%	90%	100%	100%	100%	100%	100%	100%	100%	100%	80%	50%	35%	20%	20%	20%
Pharmacy	Visitors	5%	20%	30%	60%	60%	67%	85%	90%	95%	97%	100%	100%	100%	85%	55%	35%	20%	5%	5%
	Employees	20%	30%	40%	80%	90%	100%	100%	100%	100%	100%	100%	100%	100%	80%	50%	35%	20%	20%	20%
Discount stores/ superstores	Visitors	15%	35%	45%	65%	75%	85%	100%	100%	100%	100%	95%	85%	75%	60%	45%	30%	10%	5%	1%
	Employees	25%	45%	55%	75%	85%	100%	100%	100%	100%	100%	100%	95%	85%	70%	55%	40%	20%	20%	20%
Home improvement stores/garden	Visitors	15%	20%	35%	55%	85%	99%	100%	99%	98%	90%	85%	80%	75%	60%	50%	30%	10%	0%	0%
	Employees	25%	30%	45%	65%	95%	100%	100%	100%	100%	100%	95%	90%	85%	70%	60%	40%	20%	0%	0%
Food and beverage																				
Fine/casual dining	Visitors	0%	0%	0%	0%	15%	40%	75%	75%	65%	40%	50%	75%	95%	100%	100%	100%	95%	75%	25%
	Employees	0%	20%	50%	75%	90%	90%	90%	90%	90%	75%	75%	100%	100%	100%	100%	100%	100%	85%	35%
Family restaurant	Visitors	25%	50%	60%	75%	85%	90%	100%	90%	50%	45%	45%	75%	80%	80%	80%	60%	55%	75%	25%
	Employees	50%	75%	90%	90%	100%	100%	100%	100%	100%	75%	75%	95%	95%	95%	95%	80%	65%	65%	35%
Fast casual/ fast food/food court/food halls	Visitors	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%	55%	60%	85%	80%	50%	30%	20%	10%	5%
	Employees	20%	20%	30%	40%	75%	100%	100%	100%	95%	70%	60%	70%	90%	90%	60%	40%	30%	20%	20%
Bar/lounge/ nightclub	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	75%	50%
	Employees	0%	0%	0%	5%	5%	5%	5%	10%	10%	10%	20%	45%	70%	100%	100%	100%	100%	90%	60%
Entertainment																				
Family entertainment	Visitors	0%	0%	0%	0%	45%	65%	85%	95%	100%	95%	90%	70%	60%	45%	0%	0%	0%	0%	0%
	Employees	0%	0%	5%	25%	75%	100%	100%	100%	100%	100%	100%	80%	70%	55%	10%	5%	5%	5%	5%
Active entertainment	Visitors	0%	0%	0%	0%	25%	65%	85%	90%	95%	95%	90%	95%	100%	95%	90%	65%	10%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	75%	10%	5%	5%
Adult active entertainment	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	100%	100%
	Employees	0%	0%	0%	5%	5%	5%	5%	10%	10%	10%	20%	45%	70%	100%	100%	100%	100%	100%	100%
All movies typical	Visitors	0%	0%	0%	0%	0%	0%	20%	45%	55%	55%	55%	60%	60%	80%	100%	100%	80%	65%	40%
	Late December	Visitors	0%	0%	0%	0%	0%	35%	60%	75%	80%	80%	80%	70%	80%	100%	100%	85%	70%	55%
	All	Employees	0%	0%	0%	0%	10%	50%	60%	60%	75%	75%	100%	100%	100%	100%	100%	100%	70%	50%
Live theater	Visitors	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	25%	100%	100%	0%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	30%	100%	100%	100%	30%	10%	5%
Outdoor amphitheater	Visitors	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	25%	100%	100%	0%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	30%	100%	100%	100%	30%	10%	5%
Public park/ destination open space	Visitors	1%	5%	10%	25%	50%	65%	85%	95%	100%	95%	90%	70%	90%	100%	100%	100%	80%	50%	10%
	Employees	5%	10%	25%	50%	75%	100%	100%	100%	100%	100%	100%	80%	100%	100%	100%	100%	60%	20%	
Museum/ aquarium	Visitors	0%	0%	0%	0%	45%	65%	85%	95%	100%	95%	90%	85%	60%	30%	10%	0%	0%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	100%	80%	75%	10%	5%	0%	0%	5%	5%
Arena No matinee	Visitors	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	10%	25%	100%	100%	85%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	30%	10%	5%

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FIGURE 2-4 (continued)

Land use		6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	12 a.m.
Entertainment (continued)																				
Pro football stadium 8 p.m. start	Visitors	0%	0%	0%	1%	1%	1%	5%	5%	5%	5%	5%	5%	10%	50%	100%	100%	85%	25%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	100%	25%	10%
Pro baseball stadium	Visitors	0%	0%	0%	1%	1%	1%	5%	5%	5%	5%	5%	5%	10%	50%	100%	100%	85%	25%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	30%	30%	30%	30%	30%	100%	100%	100%	100%	100%	25%	10%
Health club	Visitors	70%	40%	40%	70%	70%	80%	60%	70%	70%	70%	80%	90%	100%	90%	80%	70%	35%	10%	0%
	Employees	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	100%	100%	75%	50%	20%	20%	20%	0%
Public library	Visitors	0%	0%	0%	100%	100%	98%	98%	78%	72%	65%	70%	79%	60%	50%	40%	0%	0%	0%	0%
	Employees	0%	10%	50%	100%	100%	100%	100%	100%	100%	100%	100%	90%	75%	50%	20%	10%	0%	0%	0%
Daycare center	Visitors	0%	2%	25%	75%	20%	20%	20%	20%	20%	20%	100%	50%	20%	5%	0%	0%	0%	0%	0%
	Employees	0%	50%	75%	90%	90%	90%	90%	90%	90%	90%	100%	100%	100%	60%	40%	10%	0%	0%	0%
Convention center	Visitors	0%	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	30%	30%	10%	0%	0%	0%
	Employees	5%	30%	33%	33%	100%	100%	100%	100%	100%	100%	90%	70%	40%	25%	20%	20%	5%	0%	0%
Hotel and residential																				
Hotel-business	Visitors	95%	90%	80%	70%	60%	60%	55%	55%	60%	60%	65%	70%	75%	75%	80%	85%	95%	100%	100%
Hotel-leisure	Visitors	95%	95%	90%	80%	70%	70%	65%	65%	70%	70%	75%	80%	85%	85%	90%	95%	95%	100%	100%
Employee	Employees	10%	30%	100%	100%	100%	100%	100%	100%	100%	100%	70%	70%	40%	20%	20%	20%	10%	5%	
Restaurant/ lounge	Visitors	0%	10%	30%	10%	10%	5%	100%	100%	33%	10%	10%	30%	55%	60%	70%	67%	60%	40%	30%
Meeting/banquet (<100 sq ft/key)	Visitors	0%	0%	30%	60%	60%	60%	65%	65%	65%	65%	65%	100%	100%	100%	100%	100%	50%	0%	0%
Convention (>100 sq ft/key)	Visitors	0%	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	30%	30%	10%	0%	0%	0%
Employee	Employees	10%	10%	60%	100%	100%	100%	100%	100%	100%	100%	100%	100%	60%	40%	40%	20%	0%	0%	0%
Residential guest	Visitors	0%	10%	20%	20%	20%	20%	20%	20%	20%	20%	20%	40%	60%	100%	100%	100%	100%	80%	50%
Resident reserved	Residents	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Residential suburban	Residents	95%	80%	67%	55%	50%	45%	40%	40%	40%	40%	45%	50%	60%	70%	80%	85%	95%	97%	100%
Residential urban	Residents	95%	85%	75%	65%	60%	55%	50%	50%	50%	55%	60%	65%	70%	75%	80%	85%	95%	97%	100%
Active senior housing	Visitors & employees	95%	97%	100%	100%	99%	98%	98%	99%	98%	100%	99%	94%	96%	98%	97%	97%	97%	98%	98%
	Residents	95%	97%	100%	100%	99%	98%	98%	99%	98%	100%	99%	94%	96%	98%	97%	97%	97%	98%	98%
Office																				
Office	Visitors	0%	1%	20%	60%	100%	45%	15%	45%	95%	45%	15%	10%	5%	2%	1%	0%	0%	0%	0%
	Employees unreserved	3%	15%	50%	90%	100%	100%	85%	85%	95%	95%	85%	60%	25%	15%	5%	3%	1%	0%	0%
	Employees reserved	00%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Medical/ dental office	Visitors	0%	0%	90%	90%	100%	100%	30%	90%	100%	100%	90%	80%	67%	30%	15%	0%	0%	0%	0%
	Employees	0%	20%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	67%	30%	15%	0%	0%	0%	0%
Bank (drive-in branch)	Visitors	0%	0%	50%	90%	100%	50%	50%	50%	70%	50%	80%	100%	0%	0%	0%	0%	0%	0%	0%
	Employees	0%	0%	60%	100%	100%	100%	100%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%

Source: See chapter 4 discussions for each land use.

FIGURE 2-5 **Weekend Time-of-Day Adjustments**

Land use		6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	12 a.m.
Retail typical	Visitors	1%	5%	30%	50%	70%	90%	95%	100%	100%	95%	90%	80%	75%	70%	65%	50%	30%	10%	0%
December	Visitors	1%	5%	10%	35%	60%	85%	100%	100%	100%	100%	90%	80%	65%	60%	55%	50%	35%	15%	1%
Late December	Visitors	1%	5%	10%	20%	40%	60%	80%	95%	100%	100%	95%	85%	70%	60%	50%	30%	20%	10%	0%
All	Employees	10%	15%	40%	75%	85%	95%	100%	100%	100%	100%	100%	95%	85%	80%	75%	65%	45%	15%	0%
Supermarket/ grocery	Visitors	10%	25%	50%	75%	95%	100%	100%	100%	100%	100%	100%	90%	50%	33%	25%	15%	5%	4%	3%
	Employees	15%	35%	70%	85%	100%	100%	100%	100%	85%	75%	60%	55%	45%	40%	30%	20%	10%	10%	5%
Pharmacy	Visitors	8%	25%	50%	75%	95%	100%	100%	100%	100%	100%	100%	90%	50%	33%	25%	15%	5%	4%	3%
	Employees	15%	35%	70%	85%	100%	100%	100%	100%	85%	75%	60%	55%	45%	40%	30%	20%	10%	10%	5%
Discount stores/ superstores	Visitors	10%	15%	20%	30%	45%	65%	85%	95%	100%	100%	100%	95%	80%	60%	45%	30%	10%	5%	1%
	Employees	20%	25%	30%	40%	55%	75%	95%	100%	100%	100%	100%	100%	90%	70%	55%	40%	20%	15%	0%
Home improvement stores/garden	Visitors	15%	20%	35%	55%	60%	80%	95%	100%	95%	95%	80%	75%	75%	80%	90%	70%	10%	0%	9%
	Employees	25%	30%	45%	65%	70%	90%	100%	100%	100%	100%	90%	85%	85%	90%	100%	80%	20%	0%	0%
Food and beverage																				
Fine/casual dining	Visitors	0%	0%	0%	0%	15%	50%	55%	45%	45%	45%	60%	90%	95%	100%	90%	90%	90%	90%	50%
	Employees	0%	20%	30%	60%	75%	75%	75%	75%	75%	75%	100%	100%	100%	100%	100%	100%	85%	50%	
Family restaurant	Visitors	10%	25%	45%	70%	90%	90%	100%	85%	65%	40%	45%	60%	70%	70%	65%	30%	25%	15%	10%
	Employees	50%	75%	90%	90%	100%	100%	100%	100%	100%	75%	75%	95%	95%	95%	95%	80%	65%	65%	35%
Fast casual/ fast food/food court/food halls	Visitors	5%	10%	20%	30%	55%	85%	100%	100%	90%	60%	55%	60%	85%	80%	50%	30%	20%	10%	5%
	Employees	15%	20%	30%	40%	75%	100%	100%	100%	95%	70%	60%	70%	90%	90%	60%	40%	30%	20%	20%
Bar/lounge/ nightclub	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	100%	100%	100%
	Employees	0%	0%	0%	5%	5%	5%	5%	10%	10%	10%	20%	45%	70%	100%	100%	100%	100%	100%	100%
Entertainment																				
Family entertainment	Visitors	0%	0%	0%	0%	25%	65%	85%	90%	95%	95%	90%	95%	100%	95%	90%	65%	10%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	75%	10%	5%	5%
Active entertainment	Visitors	0%	0%	0%	0%	25%	65%	85%	90%	95%	95%	90%	95%	100%	95%	90%	65%	10%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	90%	100%	100%	100%	100%	75%	10%	5%	5%
Adult active entertainment	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	75%	100%	100%	100%	100%	100%
	Employees	0%	0%	0%	5%	5%	5%	5%	10%	10%	10%	20%	45%	70%	100%	100%	100%	100%	100%	100%
All movies typical	Visitors	0%	0%	0%	0%	0%	0%	20%	45%	55%	55%	55%	60%	60%	80%	100%	100%	100%	80%	50%
Late December	Visitors	0%	0%	0%	0%	0%	0%	35%	60%	75%	80%	80%	80%	70%	80%	100%	100%	100%	85%	70%
All	Employees	0%	0%	0%	0%	0%	0%	50%	60%	60%	75%	75%	100%	100%	100%	100%	100%	100%	70%	50%
Live theater	Visitors	0%	0%	0%	1%	1%	1%	1%	17%	67%	67%	1%	1%	1%	25%	100%	100%	0%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	100%	100%	100%	30%	30%	100%	100%	100%	100%	30%	10%	5%
Outdoor amphitheater	Visitors	0%	0%	0%	1%	1%	1%	1%	17%	67%	67%	1%	1%	1%	25%	100%	100%	0%	0%	0%
	Employees	0%	10%	10%	20%	20%	20%	30%	100%	100%	100%	30%	30%	100%	100%	100%	100%	30%	10%	5%
Public park/ destination open space	Visitors	0%	0%	0%	1%	30%	60%	75%	90%	97%	100%	98%	85%	70%	80%	100%	100%	95%	50%	10%
	Employees	0%	0%	10%	25%	75%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	90%	80%
Museum/ aquarium	Visitors	0%	0%	0%	0%	45%	65%	85%	95%	100%	95%	90%	85%	60%	30%	10%	0%	0%	0%	0%
	Employees	5%	5%	5%	25%	75%	100%	100%	100%	100%	100%	100%	80%	75%	10%	5%	0%	0%	5%	5%
Arena	Visitors	0%	0%	0%	1%	1%	1%	1%	25%	95%	95%	81%	1%	1%	25%	100%	100%	0%	0%	0%
No matinee	Employees	0%	10%	10%	20%	20%	20%	30%	100%	100%	100%	100%	30%	100%	100%	100%	100%	30%	10%	5%

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FIGURE 2-5 (continued)

Land use		6 a.m.	7 a.m.	8 a.m.	9 a.m.	10 a.m.	11 a.m.	12 p.m.	1 p.m.	2 p.m.	3 p.m.	4 p.m.	5 p.m.	6 p.m.	7 p.m.	8 p.m.	9 p.m.	10 p.m.	11 p.m.	12 a.m.
Entertainment (continued)																				
Pro football stadium 8 p.m. start	Visitors	0%	0%	1%	1%	5%	5%	50%	100%	100%	85%	25%	0%	0%	0%	0%	0%	0%	0%	0%
	Employees	0%	5%	10%	20%	30%	30%	100%	100%	100%	100%	25%	10%	5%	5%	0%	0%	0%	0%	0%
Pro baseball stadium	Visitors	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	50%	90%	100%	100%	100%	0%	0%
	Employees	0%	0%	0%	5%	5%	5%	5%	5%	5%	5%	20%	75%	75%	100%	100%	100%	100%	100%	100%
Health club	Visitors	80%	45%	35%	50%	35%	50%	50%	30%	25%	30%	55%	100%	95%	60%	30%	10%	1%	1%	0%
	Employees	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	75%	100%	100%	75%	50%	20%	20%	20%	0%
Public library	Visitors	0%	0%	0%	0%	100%	90%	80%	65%	50%	35%	11%	5%	5%	0%	0%	0%	0%	0%	0%
	Employees	0%	0%	10%	50%	100%	100%	100%	100%	100%	50%	10%	10%	10%	10%	0%	0%	0%	0%	0%
Daycare center	Visitors	0%	2%	25%	75%	20%	20%	20%	20%	20%	20%	100%	50%	20%	5%	0%	0%	0%	0%	0%
	Employees	0%	50%	75%	90%	90%	90%	90%	90%	90%	100%	100%	100%	60%	40%	10%	0%	0%	0%	0%
Convention center	Visitors	0%	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	30%	30%	10%	0%	0%	0%
	Employees	5%	30%	33%	33%	100%	100%	100%	100%	100%	100%	90%	70%	40%	25%	20%	20%	5%	0%	0%
Hotel and residential																				
Hotel-business	Visitors	95%	90%	80%	70%	60%	60%	55%	55%	60%	60%	65%	70%	75%	75%	80%	85%	95%	100%	100%
Hotel-leisure	Visitors	95%	95%	90%	80%	70%	70%	65%	65%	70%	70%	75%	80%	85%	85%	90%	95%	95%	100%	100%
Employee	Employees	10%	30%	100%	100%	100%	100%	100%	100%	100%	100%	70%	70%	40%	20%	20%	20%	20%	10%	5%
Restaurant/ lounge	Visitors	0%	10%	30%	10%	10%	5%	100%	100%	33%	10%	10%	30%	55%	60%	70%	67%	60%	40%	30%
Meeting/banquet (<100 sq ft/key)	Visitors	0%	0%	30%	60%	60%	60%	65%	65%	65%	65%	65%	100%	100%	100%	100%	100%	50%	0%	0%
Convention (>100 sq ft/key)	Visitors	0%	0%	50%	100%	100%	100%	100%	100%	100%	100%	100%	100%	50%	30%	30%	10%	0%	0%	0%
Employee	Employees	10%	10%	60%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	60%	10%	10%
Residential guest	Visitors	0%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	40%	60%	100%	100%	100%	100%	80%	50%
Resident reserved	Residents	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Residential suburban	Residents	100%	95%	88%	80%	75%	70%	68%	65%	65%	68%	71%	74%	77%	80%	83%	86%	89%	92%	100%
Residential urban	Residents	90%	85%	80%	75%	70%	69%	68%	67%	66%	55%	60%	55%	50%	55%	65%	75%	85%	90%	100%
Active senior housing	Visitors	94%	98%	97%	95%	93%	94%	97%	99%	100%	100%	99%	98%	98%	98%	97%	95%	94%	98%	98%
	Employees	94%	98%	97%	95%	93%	94%	97%	99%	100%	100%	99%	98%	98%	98%	97%	95%	94%	98%	98%
Office																				
Office	Visitors	0%	20%	60%	80%	90%	100%	90%	80%	60%	40%	20%	10%	5%	0%	0%	0%	0%	0%	0%
	Employees unreserved	0%	20%	60%	80%	90%	100%	90%	80%	60%	40%	20%	10%	5%	0%	0%	0%	0%	0%	0%
	Employees reserved	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Medical/ dental office	Visitors	0%	0%	90%	90%	100%	100%	30%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Employees	0%	20%	100%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bank (drive-in branch)	Visitors	0%	0%	25%	40%	75%	100%	90%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Employees	0%	0%	90%	100%	100%	100%	100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: See chapter 4 discussions for each land use.