April 9, 2021

Mr. Randy Salvatore
RMS Companies
1 Landmark Square, 2nd Floor
Stamford, CT 06901

RE: Traffic Impact and Parking Study
Residential Development
154 Broad Street
Stamford, Connecticut
SLR #141.13608.00016

Dear Mr. Salvatore:

At your request, we have undertaken this study to evaluate the traffic and parking-related implications associated with the proposed residential development to be located at 154 Broad Street in Stamford, Connecticut. **Figure 1** displays the site location map. The site is currently vacant but has a driveway off Greyrock Place. The proposed project plans to construct a residential building with 228 multi-family units and 8,000 square feet of office space. The office space includes existing driveway will be maintained and provide the main access to the site. **Figure 2** displays the proposed site plan.

The work comprising the study consisted of several tasks including field reconnaissance, data collection, review of roadway and traffic conditions, estimation of site-generated traffic volumes, and assessment of future traffic operations. For this study, the following intersections were evaluated:

1. Forest Street at Greyrock Place
2. Broad Street at Bedford Street/Atlantic Street
3. Broad Street at Greyrock Place
4. Broad Street at Grove Street
5. Main Street at Greyrock Place
6. Development Driveway at Greyrock Place

Figure 3 displays the study area.

EXISTING CONDITIONS

The existing information involving the vehicle volumes, transit, and accident history was collected to determine the existing conditions of the area around the proposed development.

Site Environs

Broad Street is a minor arterial that runs east/west through downtown Stamford from Washington Boulevard (Route 137) to East Main Street/Tresser Boulevard (US Route 1). The arterial has two lanes in

each direction with a raised median. On-street parallel parking is permitted on some blocks. Sidewalks are also present on both sides of the roadway and sharrows are painted on the outer travel lanes.

Greyrock Place is a collector that runs north/south from Grove Street to Tresser Boulevard (US Route 1) where it turns into Canal Street and continues to Interstate 95 (I-95). North of Broad Street, the collector has one lane in each direction. On-street parking is not permitted but sidewalks and sharrows are present on both sides of the roadway. South of Broad Street, the collector has two lanes in each direction. On-street parking is permitted on both sides of the roadway. Sidewalks are also present on both sides of the roadway. As stated previously, the main access to the proposed residential development will be provided off Greyrock Place via an existing driveway, approximately 175 feet north of the intersection of Broad Street and Greyrock Place.

Crash Data Summary

Information on traffic accident statistics for the study intersections was obtained from the Connecticut Crash Data Repository for the 3-year period of January 1, 2018, to March 4, 2021. The accident data collected for this period is shown in **Table 1**, summarized by location.

A total of 162 crashes were reported at the study intersections for the 3-year period. More than 75% of the total crashes resulted in property damage only. No fatalities were reported. The most common collision type was rear-end collisions, comprising 33% of reported crashes, followed by angle collisions at 31%, and sideswipe (same direction) collisions at 27%. The most crashes occurred at the intersection of Broad Street at Bedford Street and Atlantic Street.

A total of 49 crashes were reported along Broad Street between Bedford Street and Grove Street for the 3-year period (not including the crashes reported at the study intersections). Approximately 80% of the total crashes resulted in property damage only. No fatalities were reported. The most common collision type was rear-end collisions, comprising 45% of reported crashes, followed by sideswipe (same direction) collisions at 31. A total of 8 crashes were reported along Greyrock Place between Forest Street and Main Street for the 3-year period (not including the crashes reported at the study intersections). All crashes resulted in property damage only. Over 60% of the reported crashes were rear-end collisions.

Six pedestrian-related collisions were reported; one at the intersection of Forest Street at Greyrock Place, one at the intersection of Broad Street at Bedford Street and Atlantic Street, one at the intersection of Broad Street at Greyrock Place, two at the intersection of Broad Street at Grove Street, and one along Broad Street between Bedford Street and Greyrock Place. According to the Connecticut Crash Data Repository, in most of the collisions, the drivers either failed to yield to the pedestrian or ran a red light. All pedestrians had suspected minor or serious injuries, the drivers had no apparent injuries. One bicycle-related collision was reported at the intersection of Forest Street at Greyrock Place. The driver was traveling northbound, turning right, and failed to yield to the bicyclist.

TABLE 1
Crash Data Summary

LOCATION		CRASH SEVERITY					TYPE OF COLLISION										
		PROPERTY DAMAGE ONLY	POSSIBLE INJURY	SUSPECTED MINOR INJURY	SUSPECTED SERIOUS INJURY	TOTAL	REAR-END	SIDESWIPE (SAME DIRECTION)	ANGLE	PEDESTRIAN	HEAD-ON	HIT TREE	BACKING	BICYCLE	HIT SIGN	UNKNOWN	TOTAL
INTERSECTIONS																	
1	Forest St @ Greyrock Pl	1	1	1	0	**3**	0	0	1	1	0	0	0	1	0	0	**3**
2	Broad St @ Bedford St	56	3	4	0	**63**	20	22	16	1	1	0	1	0	0	2	**63**
3	Broad St @ Greyrock Pl	20	5	4	0	**29**	16	2	10	1	0	0	0	0	0	0	**29**
4	Broad St @ Grove St	39	8	9	1	**57**	17	13	19	2	3	3	0	0	0	0	**57**
5	Main St @ Greyrock Pl	9	1	0	0	**10**	0	6	4	0	0	0	0	0	0	0	**10**
Intersection Totals		***125***	***18***	***18***	***1***	**162**	***53***	***43***	***50***	***5***	***4***	***3***	***1***	***1***	***0***	***2***	**162**
BROAD STREET																	
Bedford St – Greyrock Pl		31	4	2	0	***37***	15	12	6	1	1	0	1	0	0	1	***37***
Greyrock Pl – Grove St		8	3	1	0	***12***	7	3	2	0	0	0	0	0	0	0	***12***
GREYROCK PLACE																	
Forest St – Broad St		5	0	0	0	***5***	3	1	0	0	0	0	0	0	0	1	***5***
Broad St – Main St		3	0	0	0	***3***	2	0	0	0	0	0	0	0	1	0	***3***
TOTAL		**172**	**25**	**21**	**1**	**219**	**80**	**59**	**58**	**6**	**5**	**3**	**2**	**1**	**1**	**4**	**219**

Source: Connecticut Crash Data Repository from January 1, 2018, to March 4, 2021.

Existing Transit Routes

CTtransit is Connecticut Department of Transportation's (CTDOT) bus service. CTtransit Stamford operates 15 local bus routes. Buses connect with other state-subsidized services in Norwalk, with the New Haven Line in several locations, the Harlem Line on Metro-North Railroad, and with Bee-Line buses in Westchester County, New York. CTtransit Stamford also operates the I-Bus, an express service between downtown Stamford and White Plains, New York. CTtransit Stamford bus routes 333, 334, 341, 342, 344, 345, and 351 all have stops at the study intersections.

Route 333 (Newfield Avenue) operates between the Stamford Transportation Center and Stamford's Belltown neighborhood. All buses operate via Strawberry Hill and Newfield Avenues to Newfield Green Shopping Center. The route operates from approximately 6:00 a.m. to midnight (12:00 a.m.) on weekdays and 7:00 a.m. to 8:00 p.m. on weekends. Route 333 has stops at the intersections of Broad Street at Greyrock Place and Grove Street.

Route 334 (Hope Street) operates between the Stamford Transportation Center and Stamford's Springdale neighborhood. All buses travel via Broad Street, Glenbrook Road, and Hope Street to Springdale Railroad Station. The route operates from approximately 5:30 a.m. to midnight (12:00 a.m.) on weekdays, 6:30 a.m. to 8:00 p.m. on Saturday, and 8:00 a.m. to 7:00 p.m. on Sundays. Route 334 has stops at the intersections of Broad Street at Greyrock Place and Grove Street.

Route 341 (Norwalk) operates between the Stamford Transportation Center and the Norwalk WHEELS Hub. The route operates from approximately 5:00 a.m. to midnight (12:00 a.m.) on weekdays and 5:30 a.m. to 11:00 p.m. on weekends. Route 341 has stops at the intersections of Broad Street at Greyrock Place and Grove Street.

Route 342 (East Main Street) provides additional service between the Stamford Transportation Center and East Main Street in Stamford. The route follows the same route as 341. The route operates from approximately 5:00 a.m. to midnight (12:00 a.m.) on weekdays and 5:30 a.m. to 11:00 p.m. on weekends. Route 342 has stops at the intersections of Broad Street at Greyrock Place and Grove Street.

Route 344 (Glenbrook Road) operates between the Stamford Transportation Center, Glenbrook Railroad Station, Noroton Heights Railroad Station, and Darien Railroad Station. All buses travel the full route via Broad Street, East Main Street, Lawn Avenue, Hamilton Avenue, Glenbrook Road, Crescent Street, Maple Tree Avenue, Heights Road, and West Avenue. The route operates from approximately 5:30 a.m. to 11:00 p.m. on weekdays and 7:00 a.m. to 8:00 p.m. on Saturdays. There is no Sunday service. Route 344 has stops at the intersections of Broad Street at Greyrock Place and Grove Street.

Route 345 (NCC Flyer) operates to Norwalk Community College. The route operates from approximately 7:00 a.m. to 4:30 p.m. There is no service Fridays, Saturdays, Sundays, Holidays, or non-class days. Route 345 has stops at the intersection of Broad Street at Greyrock Place.

Route 351 (Stamford Connector Downtown Loop) provides service between Stamford Railroad Station and Stamford's central business district on weekdays during the morning and afternoon rush hours. Buses are timed to meet certain CTrail New Haven Line (Metro-North), CTrail Shore Line East, and Amtrak Northeast Regional and Acela Express trains at the station. All destinations served by Route 351 are also served by other Stamford local bus routes. Route 351 has stops at the intersections of Greyrock Place at Broad Street and Main Street.

Existing Traffic Volumes

Due to the COVID-19 pandemic and its overall effect on reducing current travel and traffic patterns, new intersection turning movement traffic counts were unable to be conducted at the study intersections. Instead, baseline intersection peak-hour counts were assembled from the most recent past data sources available.

Volumes from the Stamford Traffic Signalization Optimization Data Collection efforts were used at the intersections of Broad Street at Bedford Street/Atlantic Street, Greyrock Place, and Grove Street and the intersection of Greyrock Place at Main Street. Manual turning movement counts for this effort were conducted in May 2017. Volumes from the City of Stamford conducted on February 2, 2020, were used at the intersection of Greyrock Avenue at Forest Street. The volumes are included in the Appendix.

PROPOSED DEVELOPMENT

As stated previously, the proposed project plans to construct a residential building with 228 multi-family units and 8,000 square feet of office space on the vacant parcel at the northwest corner of the intersection of Broad Street at Greyrock Place. The existing driveway will be maintained and provide the main access to the site.

Proposed Development Trip Generation

The proposed new site-generated peak-hour trips were estimated using statistical data published by the Institute of Transportation Engineers (ITE).[1] **Table 2** summarizes the site-generated traffic estimates for the proposed development during the study peak hours.

TABLE 2
Proposed Development New Site Traffic Estimates

LAND USE	UNITS	A.M. PEAK HOUR				P.M. PEAK HOUR			
		TRIP RATE	IN	OUT	TOTAL	TRIP RATE	IN	OUT	TOTAL
Proposed Development									
221 – Multi-family Housing (Mid-Rise)	228 DU	0.36/DU	21	61	82	0.44/DU	61	39	100
710 – General Office Building	8 KSF	1.16/KSF	7	2	9	1.15/KSF	1	8	9
Proposed Total			***28***	***63***	***91***		***62***	***47***	***109***

Notes:
1. *Trip Generation*, 10th Edition, Institute of Transportation Engineers
2. DU = Dwelling Units
3. KSF = Thousand Square Feet

[1] *Trip Generation, 10th Edition*, Institute of Transportation Engineers, 2017

It is important to note, the statistical data published by ITE is based on areas without the public transportation attributes and access to the train station of Stamford. Therefore, this analysis should be considered conservative. As shown in Table 2, the proposed development is estimated to generate 91 new vehicle trips (28 vehicles entering and 63 vehicles exiting) during the morning peak hour and 109 total new vehicle trips (62 vehicles entering and 47 vehicles exiting) during the afternoon peak hour.

Proposed Development Trip Distribution

The geographic distribution of the new site-generated traffic was estimated based on review of the roadway traffic patterns in the vicinity of the site, as well as review of census commuting data. **Figure 4** illustrates the distribution for the proposed site-generated traffic through the study area.

Based on the proposed development trip generation and trip distribution, the proposed new site-generated trips were assigned to the study area intersections. **Figure 5** displays the resulting proposed development trip assignment.

FUTURE (2023) CONDITIONS

The proposed development is anticipated to be completed by 2023. Future (2023) Conditions were evaluated both with and without the proposed development in order to determine possible traffic impacts.

Background Traffic Volumes

The background traffic scenario is reflective of future (2023) conditions if the proposed development was not built. Background (2023) Conditions includes traffic associated with other nearby expected upcoming developments as well as general traffic growth.

Based on correspondence with the City of Stamford and CTDOT, the proposed Silverback Development at 777 Summer Street should be included in Background (2023) Conditions. The Silverback Development peak-hour trip assignment is included in the Appendix.

Based on correspondence with CTDOT, the existing traffic volumes were projected to Future (2023) Conditions using a growth rate of 0.6 percent. Background (2023) Conditions peak-hour traffic volumes were estimated by applying the growth rate to the existing/baseline peak-hour traffic volumes and adding the estimated peak-hour total trip assignment from the proposed Silverback Development. The resultant Background (2023) Conditions peak-hour traffic volumes are shown in **Figure 6**.

Combined Traffic Volumes

The combined traffic scenario is reflective of future (2023) conditions once the proposed development is completed. Combined (2023) Conditions peak-hour traffic volumes were estimated by adding the estimated proposed development trip assignment (shown in Figure 5) to the Background (2023) Conditions traffic volumes (shown in Figure 6). The resultant Combined (2023) Conditions peak-hour traffic volumes are shown in **Figure 7**.

INTERSECTION CAPACITY ANALYSIS

Intersection capacity analysis was performed at the study intersections under Background (2023) and Combined (2023) Conditions to evaluate each intersection's ability to process traffic volumes. These evaluations were used to determine possible traffic impacts from the proposed development, based on the comparison of background and combined traffic operations.

Intersection operation results are expressed as a level of service (LOS). LOS is used to provide a qualitative evaluation of the efficiency of operations of an intersection in terms of delay and inconvenience based on certain quantitative calculations. A description of the various LOS designations, A through F, is given in the Appendix. LOS A describes operations with very low average control delay per vehicle while LOS F describes operations with long average delays. The study intersections were evaluated using *Synchro 10* (*Trafficware*) traffic analysis software package. **Table 3** summarizes the capacity analysis findings under Background and Combined (2023) Conditions. The *Synchro* analysis worksheets are included in the Appendix.

It is important to note LOS A to LOS D are generally considered acceptable conditions. However, in some areas, LOS E during peak hours is often deemed acceptable and can indicate an efficient tradeoff between traffic flow and the amount of land devoted to the movement of motor vehicles.

As shown in Table 3, all signalized study intersections are not expected to experience changes in overall LOS because of the increase in site traffic. All movements at the study intersections are expected to operate at acceptable LOS (LOS A to LOS E) under Background (2023) and Combined (2023) Conditions during both peak periods except for the southbound approach at the intersection of Broad Street at Greyrock Place and the northbound approach at the intersection of Forest Street at Greyrock Place during the p.m. peak period.

At the intersection of Forest Street at Greyrock Place, the northbound approach is expected to operate at a LOS F under Background (2023) Conditions during the p.m. peak period. With the increase in site traffic under Combined (2023) Conditions, the approach is expected to continue to operate at a LOS F. The installation of stop control at the eastbound and westbound approaches to convert the intersection to multi-way stop control could improve the LOS at all the approaches to LOS C or better during the p.m. peak period.

The *Manual on Uniform Traffic Control Devices* (MUTCD) lists four criteria that should be considered with an engineering study for a multi-way STOP sign installation. After reviewing all criteria listed in Section 2B.07, it is recommended to install a multi-way stop at the intersection of Forest Street at Greyrock Place. The intersection meets the minimum volume criteria required. As stated previously, there was one pedestrian and one bicycle collision reported at the intersection of Forest Street at Greyrock Place in the 3-year period. In addition to improving the vehicular operations at the intersection, the installation of a multi-way stop could improve pedestrian and bicycle mobility and safety. The conversion of the intersection of Forest Street at Greyrock Place to all-way stop controlled will be discussed with the City of Stamford.

TABLE 3
Capacity Analysis Summary
Future (2023) Conditions

INTERSECTION/LANE GROUP	LEVEL OF SERVICE			
	A.M. PEAK HOUR		P.M. PEAK HOUR	
	BACKGROUND	COMBINED	BACKGROUND	COMBINED
Unsignalized				
1. Forest Street at Greyrock Place				
Northbound Left/Through/Right	C	C	F	F
Westbound Left	A	A	A	A
6. Development Driveway at Greyrock Place				
Eastbound Left/Right		B		B
Northbound Left		A		A
Signalized				
2. Broad Street at Bedford Street/Atlantic Street				
Eastbound Left	B	B	B	B
Eastbound Through/Right	C	C	C	C
Westbound Left	C	C	C	C
Westbound Through/Right	B	B	D	D
Northbound Left	D	D	D	D
Northbound Through/Right	D	D	D	D
Overall	***C***	***C***	***D***	***D***
3. Broad Street at Greyrock Place				
Eastbound Left	C	C	B	B
Eastbound Through	D	D	C	C
Eastbound Right	B	B	A	A
Westbound Left	B	C	C	C
Westbound Through/Right	C	C	C	C
Northbound Left	E	E	E	E
Northbound Through	B	B	C	D
Northbound Right	B	B	B	C
Southbound Left/Through/Right	E	F	D	E
Overall	***D***	***D***	***C***	***C***

Notes: LOS calculations were performed using *Synchro 10*.

TABLE 3 (Continued)
Capacity Analysis Summary
Future (2023) Conditions

INTERSECTION/LANE GROUP	LEVEL OF SERVICE			
	A.M. PEAK HOUR		P.M. PEAK HOUR	
	BACKGROUND	COMBINED	BACKGROUND	COMBINED
4. Broad Street at Grove Street				
Eastbound Left	E	E	E	E
Eastbound Through	E	E	D	D
Eastbound Right	C	C	B	B
Westbound Left	C	C	C	C
Westbound Through/Right	D	D	D	D
Northbound Left	C	C	C	C
Northbound Through/Right	C	C	C	C
Southbound Left	B	B	C	C
Southbound Through/Right	C	C	C	C
Overall	***D***	***D***	***D***	***D***
5. Main Street at Greyrock Place				
Eastbound Left/Through/Right	A	A	B	C
Westbound Left/Through	D	D	D	D
Westbound Right	A	B	A	B
Northbound Left	B	B	B	B
Northbound Through/Right	B	B	C	C
Southbound Left	A	A	B	B
Southbound Through/Right	B	B	B	B
Overall	***B***	***B***	***C***	***C***

Notes: LOS calculations were performed using *Synchro 10*.

At the intersection of Broad Street at Greyrock Place, the intersection is expected to operate at an overall LOS D or better under Background and Combined (2023) Conditions during both peak periods. However, the southbound approach is expected to degrade to a LOS F under Combined (2023) Conditions during the morning peak hour and the southbound average queues are expected to extend past the proposed development driveway during the morning peak period. Minor changes to the signal timings could improve the southbound approach to a LOS E or better without affecting the overall intersection operations at the intersection of Broad Street at Greyrock Place. Signal timing changes could also improve the southbound queues. However, with the signal timing changes the average southbound queues are still expected to extend past the proposed development driveway during the morning peak period. The City of Stamford may wish to fine-tune the traffic signal timings at the intersection of Broad Street at Greyrock Place after the development is built and opened. We understand that the City of Stamford periodically adjusts and fine-tunes signal timings as traffic patterns change while the city grows and should continue to do so when

appropriate, and may wish to consult the suggested timing changes.

INTERSECTION SIGHT DISTANCE ANALYSIS

As stated previously, the existing driveway off Greyrock Place will be maintained and provide the main access to the site. Intersection sight distance was measured at the existing driveway. Intersection sight distance is determined through the creation of clear sight triangles. Each quadrant of the intersection should contain a triangular area free of obstructions. For vehicles approaching an intersection, the length of the legs of the triangle should be long enough such that the driver can see any potentially conflicting vehicles in sufficient time to slow or stop before colliding. For vehicles departing from an intersection, the length of the legs of the triangle should be sufficient for a stopped driver to depart from the intersection and turn onto the main road safely.

Intersection sight distances were measured in accordance with criteria set forth in the 2003 CTDOT *Highway Design Manual.* For a design speed of 25 mph, 280 feet of sight distance is required for a passenger car turning left or right onto a two-lane facility without a median. There is adequate sight distance based on CTDOT minimum requirements at the existing driveway off Greyrock Place. It is important to note that vegetation within clear sight triangles must be kept trimmed, especially during the spring and summer, to ensure that sufficient intersection sight distance is provided throughout the year.

PARKING ASSESSMENT

As part of the proposed development, a 228-parking space attached garage is being constructed. In addition to the on-site parking spaces in the proposed garage, there are approximately 10 surface parking spaces that will be shared with Hibernian Hall. Furthermore, the 134 Broad Street Public Parking Garage is adjacent to the proposed site. The expected adequacy of the proposed parking supply to accommodate the anticipated site-generated parking demands was assessed.

Estimated Residential Parking Demand

SLR has collected and assembled peak parking use data at many similar developments in Stamford over the past decade. The empirical data on overnight parking use at multi-family residential developments in downtown Stamford is shown in the Appendix. Of the data that has been collected, residential developments in the center of Stamford were found to have parking use ratios (total number of parked cars at each site/number of occupied residential units) that range from around 0.74 to 1.42 spaces per unit. Additionally, none of the sites were found to have overflows of parking caused by lack of supply; overnight utilization of the parking supplies at the separate sites ranged 23% to 86%.

It has been found that the residential parking use in downtown Stamford is well correlated with both site-specific and neighborhood-specific variables. For example, it has been found that residential buildings with high percentages of single-bedroom units or studio units use less parking than those with high percentages of two- and three-bedroom units. Additionally, it has been found that the closer a residential multi-family building is to the Stamford Train Station, the lower their parking use is. SLR has developed a multi-variable regression model, using both the percentage of single-bedroom units within the development and the

distance of the development to the train station, to predict residential parking use at the proposed development. The multi-variable regression statistics can be found in the Appendix.

Using the multiple-variable regression model, it is predicted that the overnight residential parking use on a per-unit basis at the proposed development will be approximately 0.92 parked vehicles per unit. With 228 residential units, these statistics predict that there will be approximately 210 parked vehicles overnight (peak time) at the proposed development. This is less than the proposed on-site parking garage supply of 228 parking spaces.

To supplement the parking data assembled in downtown Stamford, review was made of statistical data published by ITE.[2] The *Parking Generation Manual* published by ITE is an industry standard resource that uses statistical data to forecast parking demands for specific land uses. The *Parking Generation Manual* includes Center City Core, Dense Multi-Use Urban, and General Urban/Suburban Parking Supply Ratios. Dense Multi-Use Urban within ½ mile of rail transit rates were used to reflect the transit and active transportation conditions of Stamford. Per ITE, the residential component of the proposed development is estimated to have an average weekday peak parking demand of approximately 162 parked vehicles. This is considerably less than the overnight parking demand estimated by the regression model and the proposed on-site parking garage supply of 228 parking spaces. **Table 4** summarizes the parking demand estimates associated with the residential component of proposed development based on the industry data and the regression model.

TABLE 4
Residential Parking Demand Estimates

UNITS	SETTING/LOCATION	PARKING DEMAND RATIO	PARKING DEMAND
Stamford Regression Model[1]			
228 DU	Multi-family Housing	0.92/DU	210
ITE Parking Generation Manual [2]			
228 DU	221 – Multi-family Housing (Mid-Rise)	0.71/DU	162

Sources:
1. The multi regression statistics used can be found in the Appendix. Assumed 65% single bedroom units and 0.65 miles from the Stamford Train Station.
2. Parking Generation Manual, 5th Edition, Institute of Transportation Engineers, 2019. Weekday average Dense Multi-Use Urban rates were used.

Estimated Office Parking Demand

As stated previously, the proposed project plans to construct 8,000 square feet of office space underneath the residential units. Per the City of Stamford Zoning Regulations, one vehicle for each 500 square feet of floor space, which is used for professional offices where such floor space is clearly accessory to the principal use of the building is required. As such, per zoning regulations, the office space is required to need 16 parking spaces. Per ITE, the office space is estimated to have an average weekday peak parking

[2] *Parking Generation Manual, 5th Edition,* Institute of Transportation Engineers, 2019.

demand of 13 parking spaces. **Table 5** summarizes the parking demand estimates associated with the office component of proposed development based on the zoning regulations and industry data.

TABLE 5
Office Parking Demand Estimates

UNITS	SETTING/LOCATION	PARKING DEMAND RATIO	PARKING DEMAND
***Stamford Zoning Regulations*[1]**			
8,000 SF	Professional Office	1/500 SF	16
***ITE Parking Generation Manual*[2]**			
8,000 SF	710 – General Office Building	1.63/1,000 SF	13

Sources:
1. Rate from Section 12.D.4 of the Stamford Zoning Regulations.
2. *Parking Generation Manual, 5th Edition*, Institute of Transportation Engineers, 2019. Weekday average Dense Multi-Use Urban rates were used.

Shared Parking Analysis

Under the City of Stamford Zoning Regulations, the shared use of parking may be permitted by administrative approval of the Zoning Board, where a finding is made by the Zoning Board that individual uses such as residential, office, and retail experience peak parking demands at different times, or would reduce the number of curb cuts. Shared parking is the use of parking spaces to serve two or more individual land uses without conflict or encroachment. The ability to share parking spaces is the result of two conditions:

- Variations in the accumulation of vehicles by hour, by day, or by season at the individual land uses
- Relationship among the land uses that results in visiting multiple land uses on the same automobile trip

A shared parking analysis was completed for the proposed development using methodologies outlined in Urban Land Institute's (ULI) *Shared Parking* 3rd Edition (2020). Time-of-day adjustments included in ULI's *Shared (*given from 6:00 a.m. to 12:00 a.m.) were applied to the zoning minimums and the estimated peak parking demands to determine the hourly parking demands of the proposed development. **Table 6** summarizes the resulting hourly parking demands using the City of Stamford Zoning Regulation rates. **Table 7** summarizes the resulting hourly parking demands using the estimated peak parking demands. **Figure 8** displays the resulting hourly parking demands using both methodologies.

As shown in the figure and tables, on weekdays when the office space is in use and the parking demand is higher, the residential parking demand is considerably lower. Sharing the on-site parking between the residential and office uses will optimize the on-site parking space utilization. Using both the City of Stamford Zoning Regulation rates and the estimated peak parking demands as the base, the proposed on-site parking garage supply of 228 parking spaces is expected to be adequate for both the residential and office uses.

It is important to note that in addition to the on-site parking spaces in the proposed garage, there are approximately 10 surface parking spaces that will be shared with Hibernian Hall. Other than 3 days a year, the 10 surface spaces are empty from 6am to 6pm daily. As such, the on-site parking supply will likely be 238 parking spaces which is expected to be more than adequate for both the residential and office uses.

TABLE 6
Shared Parking Hourly Parking Demand Summary (Using City of Stamford Zoning Regulation Rates)

TIME OF DAY[1]	RESIDENTIAL DEMAND[2]	OFFICE DEMAND[2]	TOTAL DEMAND	EMPTY PARKING SPACES
6:00 AM	195	0	195	34
7:00 AM	177	2	179	50
8:00 AM	158	8	166	63
9:00 AM	138	14	152	77
10:00 AM	128	16	144	85
11:00 AM	117	15	133	96
12:00 PM	107	13	120	109
1:00 PM	107	13	120	109
2:00 PM	107	15	122	107
3:00 PM	117	15	132	97
4:00 PM	128	13	141	89
5:00 PM	142	9	152	77
6:00 PM	157	4	161	68
7:00 PM	177	2	179	50
8:00 PM	187	1	188	41
9:00 PM	197	0	198	31
10:00 PM	218	0	218	11
11:00 PM	217	0	217	12
12:00 AM	217	0	217	13

Sources:
1. Urban Land Institute's (ULI), *Shared Parking* ,3rd Edition, 2020
2. City of Stamford Zoning Regulations, Section 12

TABLE 7
Shared Parking Hourly Parking Demand Summary (Using Estimated Peak Parking Demand Totals)

TIME OF DAY[1]	RESIDENTIAL DEMAND[2]	OFFICE DEMAND[3]	TOTAL DEMAND	EMPTY PARKING SPACES
6:00 AM	180	0	180	49
7:00 AM	163	2	165	64
8:00 AM	146	6	152	77
9:00 AM	127	11	138	91
10:00 AM	118	13	131	98
11:00 AM	108	12	121	108
12:00 PM	99	10	109	120
1:00 PM	99	11	109	120
2:00 PM	99	12	111	118
3:00 PM	108	12	120	109
4:00 PM	118	10	128	101
5:00 PM	131	7	139	90
6:00 PM	145	3	148	81
7:00 PM	163	2	165	64
8:00 PM	172	1	173	56
9:00 PM	182	0	182	47
10:00 PM	201	0	201	28
11:00 PM	200	0	200	29
12:00 AM	200	0	200	30

Sources:
1. Urban Land Institute's (ULI), *Shared Parking* ,3rd Edition, 2020
2. The multi-regression statistics used can be found in the Appendix. Assumed 65% single-bedroom units and 0.65 miles from the Stamford Train Station.
3. *Parking Generation Manual, 5th Edition*, Institute of Transportation Engineers, 2019. Weekday average Dense Multi-Use Urban rates were used.

SUMMARY

This study was conducted to assess the traffic and parking impacts of the proposed development at the northwest corner of the intersection of Greyrock Place and Broad Street. The proposed project plans to construct a residential building with 228 multi-family units and 8,000 square feet of office space on the vacant parcel. The existing driveway off Greyrock Place will be maintained and provide the main access to the site. Based on the results of the capacity analysis, it is our opinion that the increase in traffic, as a result of the proposed development, can be accommodated by the surrounding roadway system with minor offsite mitigation.

At the intersection of Forest Street at Greyrock Place, it is recommended to install stop control at the eastbound and westbound approaches to convert the intersection to multi-way stop control. The intersection meets the minimum volume criteria required for a multi-way STOP sign installation per

MUTCD criteria. Additionally, the installation of multi-way stop control at the intersection is expected to improve the LOS at all the approaches to LOS C or better and improve pedestrian and bicycle safety. The conversion of the intersection of Forest Street at Greyrock Place to all-way stop controlled will be discussed with the City of Stamford.

While the intersection capacity analysis results show that the proposed development is not expected to perceptibly impact overall operations at the intersection of Broad Street at Greyrock Place, it should be noted that minor changes to the signal timings could improve operations at the southbound approach. The City of Stamford may wish to fine-tune the traffic signal timings at the intersection after this development is built and opened.

To understand the adequacy of the parking supply of the proposed project, multiple resources were assessed to estimate the site-generate parking demands. Based on a multi-variable regression model developed by SLR using peak parking use data collected at many similar developments in Stamford over the past decade, it is predicted that there will be approximately 210 parked vehicles overnight (peak time) at the proposed development. Based on the statistical data published in the ITE *Parking Generation Manual*, the residential component of the proposed development is estimated to have an average weekday peak parking demand of approximately 162 parked vehicles. Finally, based on the shared parking methodology included in ULI's *Shared Parking* 3rd Edition, the City of Stamford Zoning Regulations, and estimated peak parking demands using ITE Parking Generation Manual and the multi-regression model, the proposed on-site parking garage supply of 228 parking spaces and the additional 10 shared surface parking spaces will be adequate for both the residential and office uses.

We hope this report is useful to you and the City of Stamford. If you have any questions or need anything further, please do not hesitate to contact either of the undersigned.

Sincerely,

SLR International Corporation

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Attachments

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Figures

- Figure 1 – Site Location Map
- Figure 2 – Proposed Site Plan
- Figure 3 – Study Area
- Figure 4 – Proposed Development Distribution
- Figure 5 – Proposed Development Peak Hour Trip Assignment
- Figure 6 – Background (2023) Conditions Peak Hour Traffic Volumes
- Figure 7 – Combined (2023) Conditions Peak Hour Traffic Volumes
- Figure 8 – Shared Parking Hourly Parking Demands

Appendix

- Peak Hour Traffic Volumes
- Silverback Development Peak Hour Trip Assignment
- LOS Designation Descriptions
- Synchro Analysis Worksheets
- Empirical Data Collected on Overnight Parking Use at Multifamily Residential Developments in Downtown Stamford
- Multi-variable Regression Statistics
- ULI Shared Parking Time-of-Day Adjustments and Totals

Figure 1
Site Location Map

Source: Lessard Design, 04/07/2021

Figure 2
Proposed Site Plan

Figure 3
Study Area

Figure 4
Proposed Development Distribution

Figure 5
Proposed Development Peak Hour Trip Assignment

Figure 6
Background (2023) Conditions Peak Hour Traffic Volumes

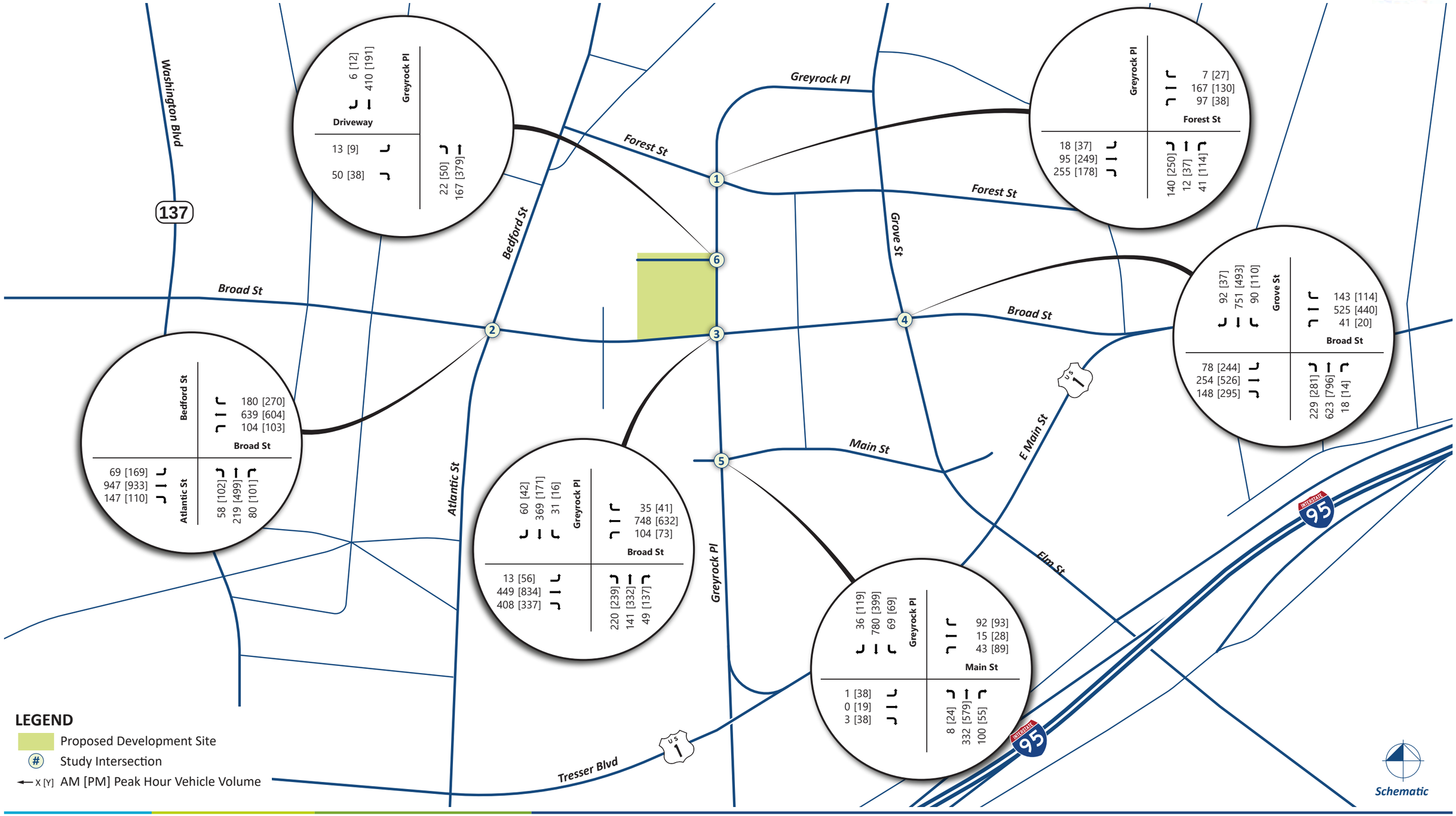

Figure 7
Combined (2023) Conditions Peak Hour Traffic Volumes

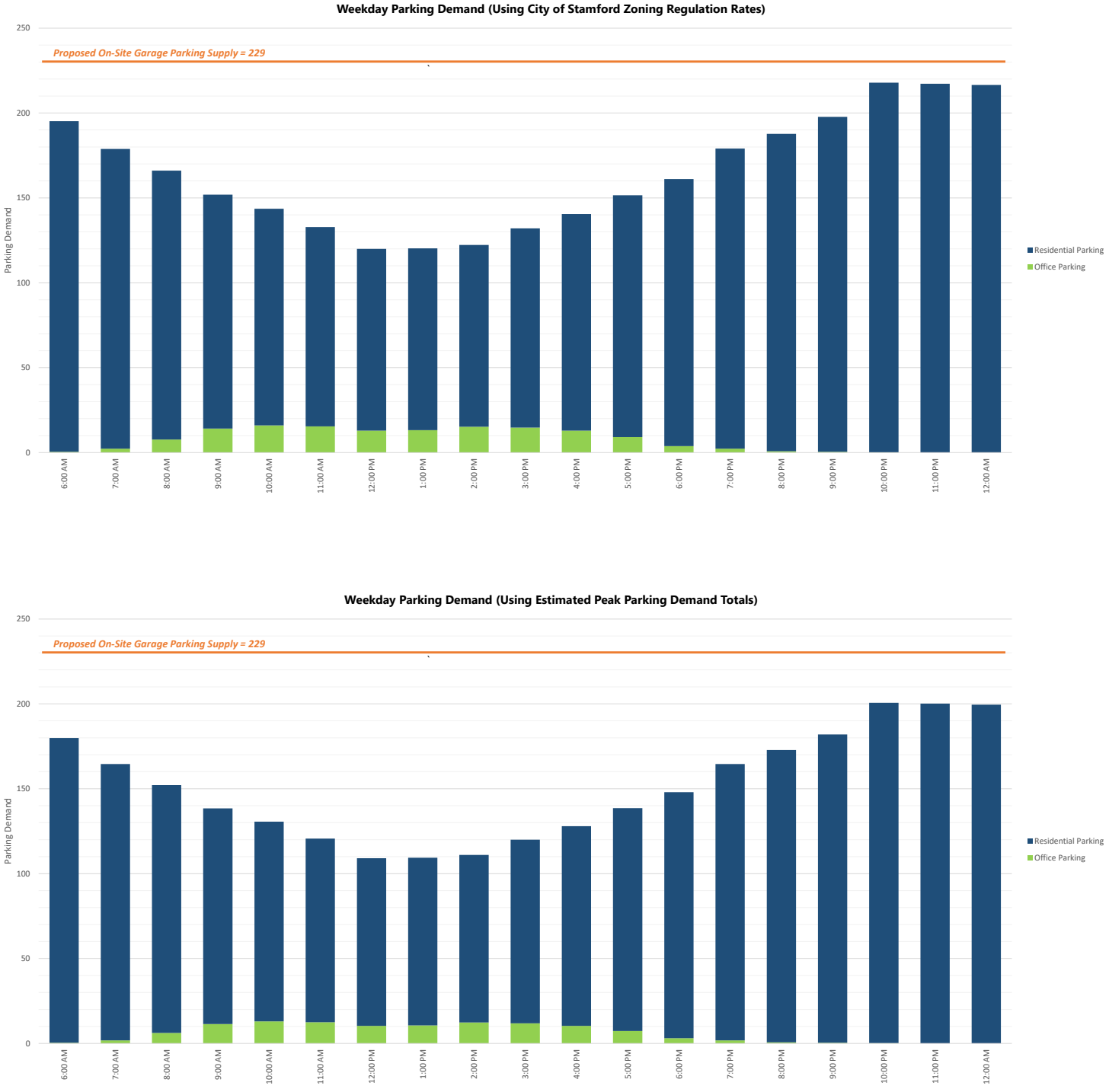

Figure 8
Shared Parking Hourly Parking Demands