



ARLINGTON MAIN STREET REDESIGN INITIATIVE

EXISTING CONDITIONS TECHNICAL MEMORANDUM

February 2020 / Revised March 2020

Prepared by: MJ Engineering and Land Surveying, P.C.

DRAFT



TABLE OF CONTENTS

INTRODUCTION	3
DATA COLLECTION	3
PHYSICAL CHARACTERISTICS	4
CAPACITY ANALYSIS	8
CRASH ANALYSIS	9
PEDESTRIAN AND BICYCLE TRAFFIC.....	14
ZONING	15
LAND USES	16
PROPERTY OWNERSHIP	16
PARKING.....	17
PARKING UTILIZATION	17

APPENDICES

APPENDIX A: DATA COLLECTION PLAN	
APPENDIX B: VOLUME DIAGRAMS	
APPENDIX C: PEDESTRIAN AND BICYCLE ACTIVITY	
APPENDIX D: SYNCHRO ANALYSIS OUTPUT	
APPENDIX E: CRASH SUMMARY TABLE	
APPENDIX F: PARKING INVENTORY AND UTILIZATION	



Introduction

The Arlington Main Street Corridor Redesign Initiative is administered by the Dutchess County Transportation Council (DCTC). M. J. Engineering and Land Surveying, P.C. (MJ) conducted this study on behalf of DCTC in conjunction with an Advisory Committee consisting of members of DCTC, Dutchess County Department of Public Works, Town of Poughkeepsie Planning Department, Town of Poughkeepsie Town Board and the Arlington Business Improvement District (BID). This study explores the Main Street corridor in the Town of Poughkeepsie to determine how best to incorporate Complete Streets elements. The study also investigates possible gateway treatments at the Grand Avenue intersection and the Taft/Fairmont Avenues intersection. Public engagement continues throughout the project to understand what the community and key stakeholders would like to see to improve the corridor.

The intent of the study is to determine feasible concepts along with cost estimates that will be used to obtain funding to ultimately design and construct a selection of the improvements identified. The concepts expand upon the recommendations suggested for Main Street in the 2017 [Arlington Town Center Pedestrian Plan](#). That plan identified potential improvements to the Main Street corridor that would enhance its walkability and bikeability, calm traffic, and improve its appearance, making the area more appealing to everyone.

MJ prepared this technical memorandum to summarize the results of the existing conditions inventory performed along Main Street between North/South Grand Avenue and Taft/Fairmont Avenue. This technical memorandum is the first step in the effort to identify where improvements can be implemented to increase the safety and comfort for all modes of transportation and provide an improved appearance along the corridor.

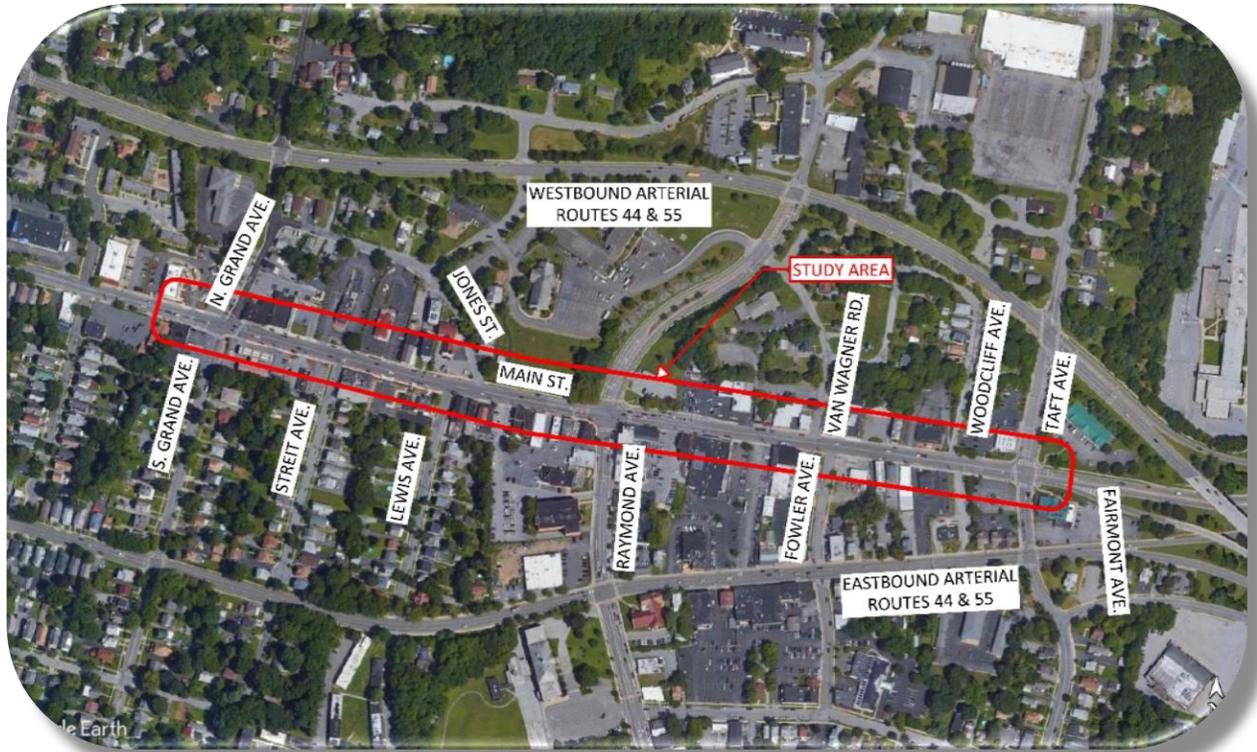
Data Collection

The study area consists of a half mile segment of Main Street in the Town of Poughkeepsie and includes the intersections of Main Street with North/South Grand Avenue, Raymond Avenue, and Taft/Fairmont Avenue. The study area location and data collection plan are presented in **Appendix A**. An inventory of the physical characteristics of the study site was performed, along with a crash analysis, capacity analysis and parking inventory along the length of the study area. Turning movement and pedestrian/bicycle counts were taken at four (4) times: 8:00 to 9:00 am, 12:00 to 1:00 pm, and 4:00 to 5:00 pm during a weekday, and on a Saturday between 12:00 and 2:00 pm. Turning movement and pedestrian/bicycle counts were recorded at the three (3) study area intersections in addition to screen lines at two (2) midblock locations.

Complete Streets

A Complete Street is a roadway planned and designed to consider the safe, convenient access and mobility of all roadway users of all ages and abilities. This includes pedestrians, bicyclists, public transportation riders, and motorists; it includes children, the elderly, and persons with disabilities.

- NYSDOT



Study Area Map

Physical Characteristics

The Main Street corridor is in an urban area in the Town of Poughkeepsie and serves east-west travel. Main Street is a County highway (CR 114) and has a functional classification of Urban Major Collector meaning it provides both land access and traffic circulation within residential, commercial and industrial areas, accommodates shorter trip lengths and feeds the arterial roadways. The right-of-way width in this corridor generally varies from 60 to 66 feet with a maximum of 72 feet immediately east of Raymond Avenue. Most of the buildings are commercial storefronts or restaurants with the notable exception of the Holy Trinity Catholic Church. Sidewalks are present along both sides for the entire length of the study area. A double yellow center pavement marking is present, but other striping is limited as white edge lines are only present in isolated areas east and west of the Raymond Ave intersection. The three (3) study area intersections have pavement markings and symbols for turning lanes and are the only signalized intersections within the study area.

The travel lanes on Main Street vary in width from 10.3 feet on the west approach to the intersection with Raymond Avenue to 15 feet between Jones Street and Raymond Avenue. Sidewalk widths vary from 4.2 feet to 9.2 feet with the wider sidewalks present in front of the store fronts. On-street parking lane widths vary from 8.5 to 8.8 feet adjacent to Raymond Avenue where they are delineated. On the remainder of the corridor parking lanes are not delineated but are assumed to be 8 feet wide; this width was utilized to determine travel lane widths.

There are three unsignalized intersections between Grand Avenue and Raymond Avenue at Streit Avenue, Lewis Avenue and Jones Street, and three unsignalized intersections between Raymond Avenue and Taft/Fairmont Avenues at Van Wagner Road, Fowler Avenue, and Woodcliff Avenue.



Intersection 1: Main Street and North/South Grand Avenue



The Main Street/Grand Avenue intersection is located at the western limit of the study area. The eastbound approach consists of 10.6 feet wide through/left and 10 feet wide right turn only lanes and no crosswalk. The northbound approach, South Grand Avenue, consists of one 16.7 foot wide lane serving all turning movements with a crosswalk. The westbound approach consists of one 20.2 feet wide lane for all turning movements with on-street parking and a crosswalk. The southbound approach, North Grand Avenue, consists of a 15.4 foot wide lane serving all turning movements and a faded crosswalk. There are no vehicle detectors for the traffic signal at this location nor any pedestrian signals or push buttons. North and South Grand Avenue are offset with separate signal phases for these two approaches.



Intersection No. 1: Main Street and N/S Grand Ave – Looking East



Intersection 2: Main Street and Raymond Avenue



The Main Street/Raymond Avenue intersection is located at the midway point of the study area. On both sides of the intersection, Main Street has a striped parking lane with the narrowest width measured at 8.7 feet. The eastbound approach has 9.6 feet wide left turn and 10.2 feet wide through/right lanes. The northbound approach has 11 feet wide left and 11.3 feet wide through/right lanes. The westbound approach consists of 10.8 feet wide left and 11.8 feet wide through/right lanes. The southbound approach consists of 11 feet wide left and 12.3 feet wide through/right lanes. This approach has a 11 feet wide median barrier separating the inbound and outbound directions. Each approach has a crosswalk with pedestrian signals and pushbuttons which activate a 20 second exclusive pedestrian phase when all traffic signals turn red. There are detectable warnings at each crosswalk, however they are in poor condition. The traffic signal utilizes four phases and has vehicular detection on all four approaches allowing for the signal to be fully actuated. This allows the signal to adjust phases according to changes in traffic volumes, which increases efficiency.



Intersection No. 2: Main Street and Raymond Avenue – Looking West



Intersection 3: Main Street and Taft/Fairmont Avenue



The Main Street/Fairmont Avenue intersection is at the eastern end of the study area. The eastbound approach consists of a 11.5 foot wide left/through lane and a 10.8 foot wide through/right lane. Fairmont Avenue is the northbound approach which has two unmarked lanes measuring 10 and 10.5 feet wide. There are two (2) six (6) foot long vehicle detector loops in the pavement. The westbound approach consists of a 9.2 foot wide left turn and 10 foot wide through/right lanes. There is a six (6) foot long vehicle detector located at the stop bar. The final approach is southbound Taft Avenue. There are three (3) lanes: 10.3 foot wide left, 10.0 foot wide through, and a 10.9 foot right turn lane. As with Fairmont, there is a six (6) foot long loop detector at the stop bar and a five (5) foot loop located 95 feet back. There are crosswalks with pedestrian signals and pushbuttons at each approach, however the detectable warnings are in poor condition. There are pedestrian signals for each crossing.



Intersection No. 3 – Looking East



Capacity Analysis

The Average Annual Daily Traffic (AADT) volumes, heavy vehicle (HV) percentages, and speeds along Main Street are summarized in **Table 1**.

TABLE 1
Main Street Traffic Characteristics

Segment	AADT	Distribution	HV %	85% Speed*
West of Grand Ave	11,813	53% EB	2.25%	27.8
Grand to Raymond	12,441	52% EB	3.15%	28.4
Raymond to Taft/Fairmont	10,085	51% WB	6.55%	33.0

* the speed that 85 percent of drivers are at or below.

Turning movements were recorded at the Grand Avenue, Raymond Avenue, and Taft/Fairmont Avenue intersections with Main Street. Midweek and Saturday counts were collected on:

- Wednesday, September 18, 2019, from 8:00 to 9:00 AM.
- Wednesday, September 18, 2019, from 12:00 to 1:00 PM.
- Wednesday, September 18, 2019, from 4:00 to 5:00 PM.
- Saturday, September 28, 2019, from 12:00 to 2:00 PM.

For each intersection a Level of Service (LOS) was determined using the traffic analysis software Synchro 10©. Level of Service is defined by the NYSDOT HDM, Section 5.2.3.4 as “a qualitative measure describing operational conditions with a traffic stream, based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort, and convenience. Levels of Service are given letter designations, from A to F with LOS A representing the best operating conditions LOS F the worst.” LOS A represents free flow conditions where all queues clear and there is minimal to no delay while LOS F represents congested conditions with long delays. **Table 2** summarizes the Level of Service ranges for signalized intersections.

TABLE 2
Level of Service Ranges (Signalized Intersections)

Level of Service	Stopped Delay Per Vehicle (seconds)
A	0 – 10.0
B	10.1 – 20.0
C	20.1 – 35.0
D	35.1 – 55.0
E	55.1 – 80.0
F	80.1 +



For an urban location, current NYSDOT standards recommend a minimum of LOS D , with LOS C preferred, for the overall intersection. On Main Street, the three study intersections operate at LOS C or better during the time periods studied, with the highest delays at the North/South Grand Avenue intersection. The PM peak hour exhibits the highest delays across all the intersections. Under existing conditions, the only turning movement with LOS worse than D is the westbound left turn at the Taft/Fairmont Avenue intersection during the PM and Saturday peak hours. This approach has a left turn only lane and a protected left turn phase with a five (5) second green time. The results of the existing conditions analysis are included in **Table 3**, volume diagrams are provided in **Appendix B** and the Synchro Analysis files are provided in **Appendix D**.

TABLE 3

Overall Intersection LOS Table (Delay in Seconds)

No.	Location	Existing			
		AM	Midday	PM	Sat
1	Main Street & N/S Grand Avenue	C (27.2)	C (30.0)	C (31.1)	C (29.5)
2	Main Street & Raymond Avenue	B (19.4)	C (23.3)	C (23.6)	B (18.0)
3	Main Street & Taft/Fairmont Avenue	B (19.2)	C (20.3)	C (26.2)	C (25.7)

Crash Analysis

A crash analysis of the study area was performed using data from January 2014 to November 2018 as provided by the Dutchess County Transportation Council and summarized in the Crash Summary Table included in **Appendix E**. The crash data supplied by the County came from the Accident Location Information System (ALIS) which is a statewide database of vehicle crashes collected from the following sources:

- Traffic and Criminal Software (TraCS) – installed in most police cars
- NYSDMV Report of Motor Vehicle Accident forms (Form MV-104)

Crash rates were calculated according to the New York State Department of Transportation (NYSDOT) Highway Design Manual Chapter 5 and compared to the statewide average crash rate for similar facilities. The statewide average crash rates are recalculated on a yearly basis and based on the data for the previous two full calendar years. The rates currently available from NYSDOT are calculated using data from the 2017 and 2018 calendar years. Crash rates are measured in Crashes per Million Vehicle Miles (MVM) for linear segments of roadways or Million Entering Vehicles (MEV) for intersections and calculated using the following formulas:



$$\text{Segment Crash Rate (c/MVM):} \quad \frac{1,000,000 \times \text{No. of Crashes per Year}}{365 \times \text{AADT} \times \text{Segment Length (miles)}}$$

$$\text{Intersection Crash Rate (c/MEV):} \quad \frac{1,000,000 \times \text{No. of Crashes per Year}}{365 \times \text{Sum of directional AADTs on all approaches}}$$

where:

- AADT is the average annual daily traffic volume, and
- directional AADT is the average annual daily traffic volume entering the intersection.

The corridor had 163 reported crashes between January 2014 and November 2018. A review of the reported crashes showed 47% occurred along segments of Main Street and the remaining 53% occurred at intersections. Most crashes occurred at the Taft/Fairmont Avenue intersection. The predominant crash types were Right Angle (21%), Rear End (20%), and Overtaking (11%), with 21% of crashes recorded as “Other.” There were no fatal crashes and only 1% of crashes were considered “serious injury”. This implies that most crashes were at low speeds. There were eight (8) crashes involving pedestrians and four (4) involving bicyclists. Most of the crashes (69%) occurred between 10:00 am and 7:00 pm. Wet or slippery roads were present in 18% of crashes and snow/icy roads were present in only 1%. **Table 4** shows a breakdown of all the crashes by type and **Table 5** shows the breakdown of segment and intersection accidents.

The crash rate for this segment of Main Street is more than twice the statewide average. The intersections range from 1.5 to nine times the statewide average. The Raymond Avenue intersection has the lowest crash rate (and is the only intersection in the study area with curb extensions and parking delineation). The Taft/Fairmont Avenue intersection has the highest crash rate, at more than 9 times the statewide average. Most of these crashes are right-angle collisions caused by drivers attempting to make left turns onto Taft Avenue or Fairmont Avenue from Main Street. The crash rate for the Grand Avenue intersection is 4.7 times the statewide average. **Table 6** compares the segment and intersection crash rates with the statewide average rates for similar facilities.

The crash map below shows the location of the crashes within the study area. There is a noticeable concentration around the Grand Avenue intersection and on the adjacent segment of Main Street. This intersection does not have the highest accident rate and the concentration is a combination of segment crashes in addition to crashes occurring in parking lots. The concentration at the Taft/Fairmont Avenue intersection can be misleading as most of the accidents at this location occurred in the middle of the intersection.



TABLE 4
Crash Types

Crash Type	Number	Percent
Overtaking	18	11%
Rear End	32	20%
Right Angle	35	21%
Left Turn	15	9%
Sideswipe	3	2%
Run Off Road	0	0%
Fixed Object	9	6%
Pedestrian	8	5%
Bicycle	4	2%
Animal	0	0%
Right Turn	4	2%
Head On	0	0%
Other	35	21%
Total	163	100



TABLE 5

Crash Locations

Segment	Number of Crashes
Main Street Total	52
Main Street – Grand Ave to Raymond Ave	28
Main Street –Raymond Ave to Taft/Fairmont Ave	13
Intersection	Number of Crashes
Grand Ave	29
Raymond Ave	10
Van Wagner Rd/Fowler Ave	6
Taft/Fairmont Ave	46

TABLE 6

Crash Rates

Segment	Crash Rate (c/MVM)	Roadway Type	Average Crash Rate (c/MVM)
Main Street	5.27	Urban 2 lane Undivided	2.25
Intersection	Crash Rate (c/MEV)	Roadway Type	Average Crash Rate (c/MEV)
Grand Ave	0.94	Urban 4-Leg Signal w/o Left Turn, 5<> Lanes	0.2
Raymond Ave	0.37	Urban 4-Leg Signal w/ Left Turn, 5<> Lanes	0.23
Van Wagner Rd/Fowler Ave	0.41	Urban 4-Leg Sign, 4 <> Lanes	0.15
Taft/Fairmont Ave	2.12	Urban 4-Leg Signal w/ Left Turn, 5<> Lanes	0.23



Crash Map



Pedestrian and Bicycle Traffic

Pedestrian and bicycle counts were performed at the study area intersections in addition to two midblock screenlines: Midblock 1 is west of the Dunkin' Donuts between Grand Avenue and Raymond Avenue; Midblock 2 is at Fowler Avenue between Raymond Avenue and Taft/Fairmont Avenue. Crosswalks are marked at all the intersection crossing movements except for the eastbound leg of the Grand Avenue intersection. However, the crosswalk on the southbound leg at Grand Ave is severely faded and only barely visible immediately adjacent to the curb.

Pedestrian activity was generally higher throughout the corridor during the PM peak hours. The highest movements were in the east-west direction with minimal north-south crossings at the intersections. The Grand Avenue intersection had the most pedestrian activity of the three study intersections. The section of the corridor with the most pedestrian activity is between Grand Ave and Dunkin Donuts. The Midblock 1 screen line at Dunkin Donuts indicates that a significant amount of the pedestrian traffic from the Grand Avenue and Raymond Avenue intersections do not cross the screen line, indicating that many of the origins and destinations for pedestrians are located within the segments between Grand Avenue and Dunkin Donuts and Dunkin Donuts to Raymond Avenue. A figure showing pedestrian volumes is located below. Pedestrian and bicycle volumes are summarized in **Appendix C**.

The corridor has multiple generators of pedestrian traffic including local and fast food restaurants, hair salons/barber shops, numerous commercial/retail businesses, and a laundromat. These locations can be assumed to be the main draws of pedestrian and bicycle traffic in the study area.





Crosswalk – Looking South Across Main Street at Raymond Avenue



Zoning

The study area is located within the Arlington Town Center District (ATC). The existing zoning is illustrated in the **Zoning Map** below. The following table identifies permitted uses and uses allowed with a special permit in the ATC District.



TABLE 6

Permitted Uses	Special Uses
(Note: "*" designates a use which is subject to site plan approval by the Planning Board)	(Note: "*" designates a use which is subject to both special use permit and site plan approval by the Planning Board; "+" designates a use that is subject to special use permit approval by the Zoning Board of Appeals.)
*Art galleries	+Accessory apartment within a single-family dwelling
*Bank and financial services.	*Day-care center
*Bakeries.	*Bed-and-breakfast
*Bed-and-breakfasts.	*Clinics
*Boutiques with or without goods processed or assembled on site	*Adaptive reuse of existing residential structure for nonresidential use.
*Delicatessens	*Funeral home
*Dwellings, two-family	Home occupations
Dwellings, single-family	*Hotel, motel
*Family day-care homes	*Inn
*Laundries, laundromats	*Nursery school
*Libraries	*Motor vehicle accessory sales facilities
*Museums	*School-age child-care facility
*Offices	*Multifamily dwellings, new construction, and mixed residential and nonresidential uses within multistory structures as part of a unified development on a single lot.
*Supermarkets	
*Personal service businesses, no drive-in or drive-through	
*Theaters	
*Restaurants, no drive-in or drive-through	
*Places of religious worship	
*Retail businesses, no drive-in or drive-through.	
*Service businesses, no drive-in or drive-through	

Source: Poughkeepsie Town Code § 210-22

The ATC District also includes design standards that must be applied during site plan and subdivision review for any development project involving undeveloped land. For redevelopment projects, the Planning Board can use its discretion as to the applicability of these guidelines. The design standards take into consideration land use type, building height, landscaping, parking lot design, setback requirements, sidewalks, façade design, architectural design, and mobility and connectivity.

Land Uses

The study area is located with the Arlington Business Improvement District (BID). As expected within a BID, land uses along the corridor are primarily commercial with some religious and residential uses interspersed. Businesses, restaurants, gas stations and other retail establishments are the primary land uses found along the corridor.

Property Ownership

Properties along the Main Street corridor are privately owned. There is a total of 47 parcels that front Main Street within the study area and a total of 36 individual property owners. The ownership is illustrated on the **Ownership Map** that follows.



Parking

Both sides of Main Street from Taft Avenue to the boundary with the City of Poughkeepsie (just west of Grand Avenue) are limited to 2-hour parking from 9:00 am to 6:00 pm, Monday through Saturday. Public parking is also available in a municipal parking lot owned by Dutchess County and maintained by the Town of Poughkeepsie, located at the northeast corner of Main Street and Raymond Avenue. The parking lot is limited to 2-hour parking between the hours of 9:00 am and 6:00 pm, Monday through Saturday, except for 12 designated all-day parking spaces.¹ The Town of Poughkeepsie has seasonal parking restrictions that prohibit overnight parking to allow for better snow removal during the winter months. Poughkeepsie Town Code § 195-30 states that from November 1 to April 1, vehicles are not permitted to be parked or stopped on any street, road or highway in the Town of Poughkeepsie or in the Town-maintained parking lot at Main Street and Raymond Avenue between the hours of 12:00 am and 8:00 am. The only exceptions to this are emergency vehicles or vehicles of a physician on a call.²

Parking Utilization

An inventory of the parking utilization along Main Street was performed between the morning and midday peaks from 9:00 am to 11:00 am, between the midday and afternoon peaks from 1:00 pm to 3:00 pm and after the Saturday midday peak from 2:00 pm to 3:00 pm. There are 115 existing on-street parking spaces between North/South Grand Avenue and Taft/Fairmont Avenue; these were determined by dividing the available parking length by 20 feet (the average length of a space). There are very few signs limiting parking. “No Parking To Corner” signs are located in three locations: on the northeast corner of the Main Street/North Grand Avenue intersection, on the southeast corner of the same intersection on S Grand Avenue, and at the southeast corner of the Main Street/Streit Avenue intersection. There are “2 Hour Parking” signs throughout the corridor. The only location where parking lanes are striped are on the west, east, and south approaches to the Raymond Avenue intersection.

Most of the parked vehicles were identified near the Grand Avenue intersection, which also had the highest pedestrian activity. During the three studied times, the parking utilization (percent of spaces that were occupied) was relatively consistent. The morning had 15% utilization, the afternoon had a slightly lower 12% utilization, and Saturday had 16% utilization. These results are summarized in **Table 7** and maps of the parking utilization inventory are included in **Appendix F**.

¹General Legislation / Vehicles and Traffic Town of Poughkeepsie, Dutchess County, New York § 195-54

²General Legislation / Vehicles and Traffic Town of Poughkeepsie, Dutchess County, New York § 195-30



**TABLE 7
Parking Inventory**

Location	Available Spaces	Morning 9:00 am to 11:00 am		Afternoon 1:00 pm to 3:00 pm		Saturday 2:00 pm to 3:00 pm	
		Utilized Spaces	% Utilization	Utilized Spaces	% Utilization	Utilized Spaces	% Utilization
		North/South Grand Ave to Streit Ave	20	3	15%	2	10%
Streit Ave to Lewis Ave	23	8	35%	5	22%	3	13%
Lewis Ave to Raymond Ave	25	1	4%	2	8%	0	0%
Raymond Ave to Van Wagner Rd	30	3	10%	1	3%	3	10%
Van Wagner Rd to Taft/Fairmont Ave	17	2	12%	4	24%	2	12%
Entire Project Area	115	17	15%	14	12%	18	16%