



3

**TRAFFIC IMPACT STUDY/FEASIBILITY REVIEW  
POTENTIAL MAIN STREET MODIFICATIONS  
Village of Tarrytown, Westchester County, NY**

*Prepared for*  
**Village of Tarrytown**  
One Depot Plaza  
Tarrytown, NY 10591

*Prepared by*  
**Provident Design Engineering, PLLC**  
7 Skyline Drive  
Hawthorne, New York 10532

**February 25, 2021**

**PDE Project No. 20-064**

**LIST OF APPENDICES**

**Appendix A – Aerials**

**Appendix B – Traffic Figures**

**Appendix C – Level of Service Tables**

**Appendix D – Existing Parking and Concept Plans**

**Appendix E – Fire Department Timing Runs**

**Appendix F – Fire Department Turning Maneuvers**

**Appendix G – Accident Data**

**Appendix H – Synchro Capacity Analysis**

## **PROJECT DESCRIPTION**

Provident Design Engineering, PLLC (Provident), has been retained by the Village of Tarrytown to analyze the traffic impacts associated with the potential modifications of Main Street in the Village to a one-way roadway. The Village's main goal of this Feasibility Study and the Concept Sketch is to explore the workability, benefits and expenses involved for converting a portion of Main Street from a two-way roadway with parking on both sides to a one-way roadway with either no parking or parking on one side in order to widen sidewalks and allow restaurants and retailers to access expanded outdoor tables and display wares outdoors. Concept sketches of different alternatives are contained in this Study.

Due to the COVID-19 restrictions, the Village was closing off the top half of Main Street to allow the existing restaurants to add tables in the roadway on weekend evenings during the warmer months. Main Street was closed during the weekend evenings and tables were added to the sidewalks and the roadway, as barricades were installed in the middle of Main Street to provide a pedestrian area. From observations and discussions, it appeared that these events were successful as there were good crowds, people were generally able to find parking (although some people were observed circulating the municipal lots on South Washington Street), and there did not seem to be any traffic problems (although traffic was lower due to COVID-19 and the Music Hall was closed). The vehicular crossing of Main Street between North and South Washington Street was left open. However, maintaining this is not feasible due to weather conditions (rain, wind and cold weather) as well as it involved Village staff installing and removing barricades and temporary signage every weekend as well as staffing at various locations. This added costs and significant time. In addition, as Main Street in front of the Firehouse was closed, the Fire Department moved their apparatus out of the Firehouse and parked the apparatus on South Washington Street so that they would be ready to drive away without the need to move barricades. In addition, volunteers were present at the Firehouse during these times so that, in the event of an alarm, they would not have to try to reach the Firehouse and find parking with Main Street closed.

Thus, the feasibility of the potential modifications was reviewed, and general Concept Plans were developed. Prior to the preparation of this Study, discussions were held with representatives from the Village Administration as well as with the Village Fire Department. Unofficial informal discussions were held with some members of the Village Police Department and a formal discussion was held later with the Chief of Police. Various field observations were performed including during the Weekend Evening Closing of Main Street. The majority of restaurants and food establishments are located on the eastern portion of Main Street, near Broadway. There are a few just below North/South Washington Street.

One positive note regarding the potential traffic impacts is that even with the full closure of Main Street during the Weekend Evening Closing, the traffic operating conditions on the surrounding roadway network are appropriate based upon observations, even on an early Friday evening during the Peak Commuter Hour. However, it is noted that the current traffic volumes are not at normal levels and there are various developments such as Edge-on-Hudson that are under construction which will also add traffic in the future.

There are various issues to be considered. Some of the key issues are impacts to responses to calls for the Fire Department and other emergency services, will the shifting of the AM Commuter traffic have too much impact on the adjacent streets, and the amount of parking gained/lost.

For this Study, Provident examined various alternatives for Main Street. Some of these include:

- Converting Main Street to one-way eastbound for its entire length
- Converting Main Street to one-way eastbound only from North/South Washington Street to Broadway
- Converting Main Street to one-way westbound for its entire length



- Converting Main Street to one-way westbound only from Broadway to North/South Washington Street

The alternatives were further evaluated with different parking arrangements. Some of these include:

- Angle parking on the right side
- Angle parking on the left side
- Angle parking on both sides
- Angle parking on one side and parallel parking on the other
- Parallel parking on both sides
- No parking provided on Main Street

Other municipalities in the area have implemented temporary measures similar to what Tarrytown has done. Some have completely closed off the street while some have temporarily made the roadway one-way with angle parking, while using some of the parking space area for outdoor seating. Others with wider roadways and more available parking have allowed restaurant owners to lease some parking spaces in front of their establishments to provide outdoor seating. Most of these municipalities are trying to figure out a plan for the winter, including returning the roadway back to the previous condition while some are considering tents and outdoor heaters. The traffic at these locations has generally been appropriate. However, there have been some issues with them and traffic volumes are still lower than normal due to COVID-19.

### **ISSUES TO BE CONSIDERED**

Based upon Provident's experience on similar type projects, the following is a partial list of some of the major items that will need to be considered. Each of these items, as well as various others, are discussed in detail in this Study:

- Traffic flow including various alternatives
- Traffic impacts to adjacent roadways, including commuter traffic in AM utilizing Main Street
- Roadway width (including current varying width along Main Street)
- Parking availability and alternative parking locations
- ADA Access Compliance
- Fire Department Response Time (impact of diversions)
- Fire Department Apparatus Out Riggers (would impact necessary width of roadway)
- Fire Department Apparatus Turning Maneuvers
- Impact on other Emergency Services
- Enforcement of double parking/standing resulting from loading and pick-up/drop-off
- Sanitation pick up and access
- Drainage, particularly if permanent concrete barriers are installed, including catch basin locations
- Signage and striping (including modifications if only temporary)
- Traffic Signal Timing modifications
- Impact on Traffic Signal Vehicle Detection at the intersection of Broadway and Main Street including if lane is relocated. Currently there is "loop" detection along Main Street
- NYSDOT approvals
- Potential relocation of pick-up/drop-off area (including for buses) for the Tarrytown Music Hall (see photo below) such as along Kaldenberg Place
- Weather conditions including rain, wind, and snow (including snow plowing/removal)
- Grades of roadway and sidewalks including areas that are not flat
- Accident history
- Restaurant versus Retail space and needs
- County BeeLine Bus stops and route, as well as other buses including Commuter Buses and Buses to Office Properties (see photo below)
- School bus stops and routes, if applicable

- Impacts on Trucks and deliveries (see photo below)
- Need for Loading Zone(s) (see photo below)
- Provide access to existing Public Parking Lot along Main Street
- Sight distance changes resulting from modifications
- Testing Conditions



View of Main Street looking eastbound.





Drop-off and pick-up for the Music Hall will need to be taken into consideration with the Alternative chosen.



Sanitation pick-up will also need to be considered.





The grades of the road and sidewalk will have some impact.

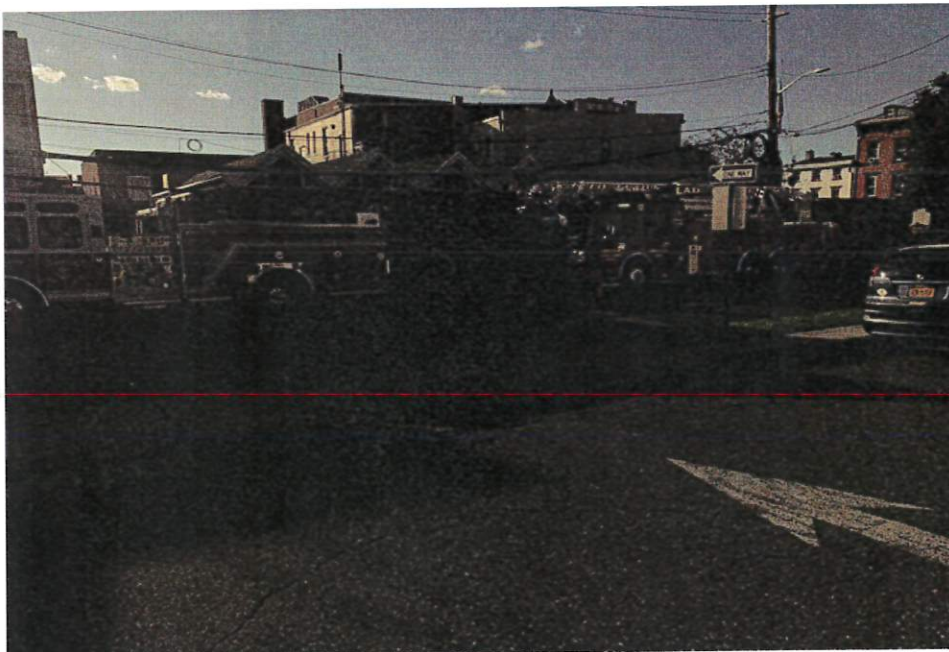


Other services will have to be accounted for. Also note bus travelling westbound on Main Street.



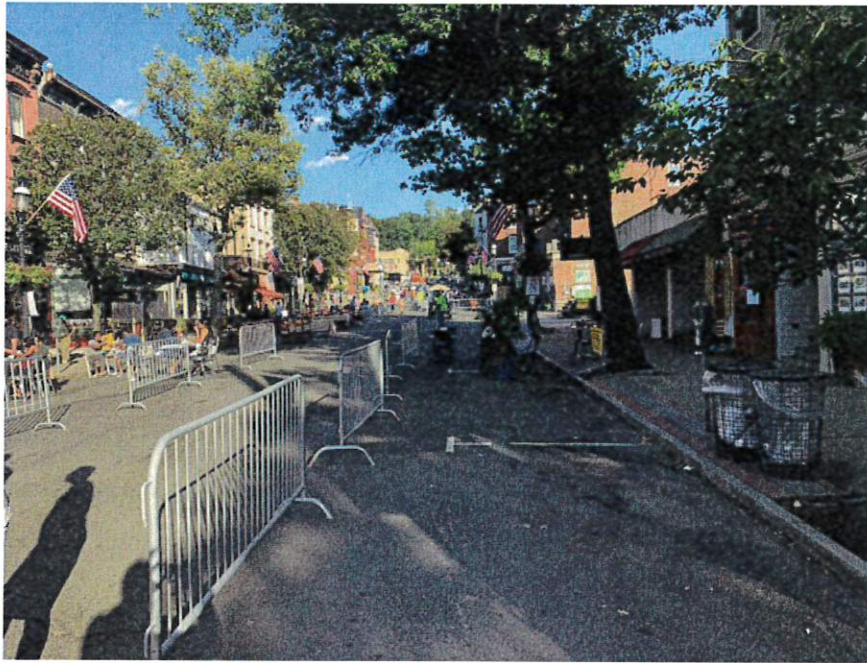


Deliveries and loading area are to be considered.



The Fire Trucks parked on South Washington Street during the Main Street closures.





Road closure and barricades being installed at beginning of weekend event.



The Washington Street crossover remained opened during the weekend events. Village Police assisted with traffic control and pedestrian crossings.

### **CURRENT CONDITIONS**

The current roadway width on Main Street varies which impacts the modifications. The Main Street Corridor from Broadway in the east to White Street to the west is illustrated on Aerial 1 in Appendix A. The majority of the businesses are indicated on the aerial. Aerial 2 is a close-up of the portion from Broadway to just west of North/South Washington Street. Aerial 3 shows a wider view of the area roadway network.

Baylis Court, which intersects Main Street is a Dead-End street so all traffic utilizing Baylis Court has to enter and exit Main Street. This required additional Village personnel during the weekend evening closures. Kaldenberg Place is a one-way roadway northbound while John Street is one-way southbound.

West Elizabeth Street, the next parallel roadway south of Main Street is one-way westbound. Central Avenue is a two-way roadway and is the next parallel road to the north of Main Street. Its intersection with Broadway is unsignalized and controlled by a Stop sign facing Central Avenue.

Franklin Street will receive a portion of the traffic diversions and does already include school traffic and train/commuter traffic. Its intersection with Broadway is unsignalized. There are no signalized intersections south of Main Street that will be impacted.

Traffic signals are located at the following intersections:

- Main Street and Broadway (US Route 9)/Neperan Road
- Main Street and North/South Washington
- Central Avenue and North Washington Street

Westchester BeeLine buses and the Hudson Link buses utilize Central Avenue in both directions. Some private buses were observed utilizing Main Street. The buses traveling in the eastbound



direction can remain but the buses traveling in the westbound direction would have to relocate, most likely to Central Avenue. There are some large buses traveling westbound to the train station and then others traveling eastbound up the hill from the train station including for Regeneron and for other companies such as Siemens for two hours on Main Street in the morning. Due to COVID-19, the number of these buses are currently limited.

If any school buses are to be routed on Main Street, these will have to be reviewed and possibly re-routed.

### **Fire Department (and other Emergency Services) Issues**

The Tarrytown Fire Department has its headquarters and a firehouse at 50 Main Street at the southeast quadrant of the intersection of Main Street and South Washington Street. The apparatus doors are fronting Main Street.

Provident held discussions with the Village and representatives of the Fire Department along with performing field investigations, time-trials, and computer-generated truck turning path maneuvers. The Fire Department has concerns with the one-way concept. Modifications to Main Street will have an impact to the Fire Department. The impacts and their degree vary depending upon the Alternatives. These impacts would occur mainly in two ways: for the volunteer firefighters to reach the firehouse to drive the apparatus and for the fire trucks to reach the emergency.

The Fire Department is an All-Volunteer Department, thus there are no drivers for the Fire Apparatus stationed at the firehouse. A key issue is for the firefighters to get to the Firehouse to drive the vehicles. Thus, firefighters have to reach the firehouse and if Main Street is made one-way eastbound, firefighters would have to either travel eastbound on Main Street from the bottom of the hill or utilize North/South Washington Street (but then would not be able to turn onto Main Street in a westbound direction, depending upon the alternative/modifications to Main

Street). There is only one parking space dedicated to the firehouse, assigned for the Chief, so the firefighters find what parking spaces they can or park illegally. Thus, there could be delays for personnel to get to the firehouse.

The possible second impact is on the response time depending upon the alternative/modifications to Main Street and the location of the potential incident. Creating the one-way roadway could limit the Department's options for their route to avoid conflicting traffic. The most frequent routes for emergencies have the fire apparatus traveling eastbound on Main Street to Broadway so making Main Street one-way eastbound would have the least amount of impact on getting to most emergencies. However, making Main Street one-way eastbound also makes it harder for firefighters to get to the firehouse. Also, for emergencies to the west, making Main Street one-way eastbound would require turning the fire engines onto North/South Washington and possibly onto Central Avenue or Franklin Street, which are difficult turns for them. The Department feels that some parking spaces on North and South Washington may need to be eliminated to help the turns be made earlier. Because of its length, the ladder truck (42 feet long with a 39 foot inside turning radius) has to get its nose out onto Main Street before it can begin to make the turn.

If Main Street is one-way eastbound and if there is only one-lane, then the apparatus may not be able to get around traffic stopped at the traffic signal at Broadway and the fire trucks do not have an Opticom or similar system to control the traffic signal and clear the intersection.

Another issue, although not as critical as responding to an emergency, but when the fire engines return, they will have to loop around to re-enter the firehouse. Also, the curbing on the north side of Main Street will need to be kept back far enough to allow the fire apparatus to enter and exit the firehouse.

Riverside Hose is the other Village Firehouse and is at the bottom of the hill on Franklin Street at Depot Plaza, so if Main Street is one-way, it must be eastbound for their operations. The Village

Police and Tarrytown Volunteer Ambulance Corps will also have similar issues if Main Street went one-way westbound.

The designs of the modifications to Main Street account for the needs of the Fire Department in the width of the roadway, even in the event for the apparatus to extend its outriggers on one side, if needed. If both riggers were to be extended, a width of 20 feet would be required. The Fire Department representatives stated that approximately a minimum of 15-16 feet would be needed if the riggers on one side of the ladder truck are utilized. Thus, the travel lane on Main Street would need to be approximately 15-16 feet wide.

Provident calculated response time runs to review the impact of the potential diversions. It is noted that these do not account for the difficulty in performing some of the turns for the fire engine, the additional traffic that will also be diverted nor do they account for the return to normal traffic volumes and peak hour potential congestion, all of which will increase the times. With Main Street one-way eastbound, to go from the Firehouse to East Franklin Street via Main Street/Broadway or South Washington Street/Franklin Street is 0.3 miles and would take approximately 2 minutes. With Main Street one-way westbound, the fire engine would need to cross over on Windle Park which will add at least another tenth of a mile and will increase the response time. Windle Park is also narrow for the fire engine to travel on but if Main Street is one-way westbound, the fire engine would not be able to turn onto South Washington Street/Franklin Street or Main Street/Broadway.

With Main Street one-way eastbound, to get to McKeel Avenue via North Washington Street/Central Avenue or Main Street/Broadway is 0.4 miles and 0.3 miles respectively. If Main Street is one-way westbound, the fire engine would have to turn onto Cottage Place to reach Central Avenue which essentially doubles the travel distance (0.7 miles) as well as the travel time from 2 minutes to 4 minutes.

The above described routes are illustrated in Appendix E.

Another concern of the Fire Department is that some of the turns that may be required depending upon the particular alternative are difficult to make, especially with the ladder truck, and indicated that some parking spaces may need to be eliminated. Provident conducted computer-generated truck turning path maneuvers for the ladder truck along different roadways which does indicate some turns will be difficult to make. The elimination of a parking space or two could be beneficial for the turns. An actual field test should be conducted to confirm the spaces that may need to be modified. Turning Analysis A in Appendix F illustrates the turns coming out of the firehouse as well from Main Street to North Washington Street and to South Washington Street along with onto Baylis Court. The turns from North Washington Street to Central Avenue are also illustrated as are the turns from Main Street onto Broadway. Turning Analysis B illustrates the turns from South Washington Street to Franklin Street.

**Retail Issues** – While some retailers are in favor of the additional parking that could be provided and they can present some of their products outdoors, there have been some concerns by retailers in another community that the conversion of the roadway limits the number of vehicles driving past their store, which they feel is critical to their business. This is somewhat offset from the additional parking as well as the potential for the restaurants to attract more patrons, and thus more potential shoppers, to the area.

**Parking Availability and Alternative Parking Locations -**

Parking along and in the vicinity of Main Street is a key issue and is discussed in detail below. There is currently on-street parallel parking on both sides of Main Street that is metered parking. There is also on-street parallel parking along both sides of Broadway and the various sides streets (some on both sides and some on only one side) along Main Street. There have also been concerns regarding double parking/standing resulting from loading and pick-ups/drop-offs along Main Street. There is some limited off-street parking provided, including two lots along South Washington Street, with one also having an entrance from Main Street. There will likely be an increase in parking demand after COVID-19.

**Double Parking/Standing** – One issue that sometimes occurs on Main Street is double parking/standing. Some drivers are double parking/standing to drop-off or pick-up people, thus causing delays for other drivers. Some trucks also double park/stand to unload as there are limited loading areas along Main Street. With the potential conversion of Main Street to only one lane eastbound, double parking/standing would cause even more issues as other vehicles will not be able to get around the stopped vehicles. Thus, enforcement will be required.

**ADA Parking Spaces** – Any ADA Parking Spaces that are removed along Main Street should be replaced. There is an ADA Parking Space at the top of Main Street and one just west of Kaldenberg Place in the westbound direction. In the eastbound direction, there is an ADA Parking Space just west of the Firehouse.

**Overnight Parking** – There is No Parking in the eastbound direction on Tuesday, Thursday and Saturday overnights from 3:00 AM to 6:00 AM. In the westbound direction, there is No Parking on Monday, Wednesday and Friday overnights from 3:00 AM to 6:00 PM.

**Parking Meters** – There are currently parking meters at each individual parking space (or one pole with double-meter heads for back-to-back spaces). If the one-way pattern is installed, the meters would then need to be relocated or multi-space meters would need to be added and sidewalk repairs would be required. There is also a Pay-by-Phone option. The meters end at Windle Park.

**Delivery Vehicles and Loading Spaces** – There are currently some areas used for loading spaces along Main Street, although there are no official loading spaces (see Photo above). Some version of loading spaces, whether it is on Main Street or on the side streets, should be provided, even if just during certain times. One issue with loading spaces is that they do not fit easily with angled spaces due to the length of the vehicle and the room needed to unload. Loading spaces take up slightly more parking spaces when the automobile parking is angular as opposed to parallel. In addition, unless they are at a corner, then they are also harder to access.

**Maintain Access to Public Parking** – There is a public parking area in the southeast quadrant of the intersection of Main Street and South Washington Street. Access to this lot is provided from both Main Street and South Washington Street. There is a desire to maintain both of these access points due to the width of the Main Street access which limits the ability to have parking and provide two-way traffic flow.

**Side for Angle Parking** – Currently there is parallel parking along both sides of Main Street while most of the potential modifications consider angle parking. An advantage of parallel parking is that it does not take up enough width.

The side of the angle parking would need to be determined. With parking only on one side, more patrons would need to cross the street. Crossing the street will be easier as traffic is only traveling in one direction. Typically angle parking is on the right side of the direction of travel, mainly because then the driver is not crossing a double yellow line. An advantage of this is that drivers are used to this type of scenario. A disadvantage of this is that it pushes the existing travel lane further over.

As Main Street could be one-way, there is no double yellow line so the angle parking could be on the left side of travel. An advantage of this is that if Main Street was to be one-way eastbound, there are less alleyways on the left (north) side and the Firehouse is on the right side, thus, more angle parking could be provided. Another potential advantage of having the angle parking on the north side is the travelway may be able to be adjusted to maintain the existing vehicle detection and traffic signal heads at the intersection with Broadway. A disadvantage to all angle parking is that it can be difficult to see when backing out, especially when there is an SUV or minivan next to the driver. It is even more difficult when a driver is backing out when parked on the left side of the road as the SUV or minivan is even closer to the driver's eyes. Also, drivers are not as used to parking on the left side.

Providing angle parking on both sides of Main Street was also reviewed as was providing angle parking on one side and parallel on the other. This would require more attention by drivers, and it does not provide additional outdoor room for restaurants unless some parking spaces are rented out.

**Impact of Driveways and Alleyways on Angle Parking** – There are some driveways along Main Street such as the access to the Municipal Parking Lot just east of South Washington Street. There are also some small alleyways that are utilized for various purposes including trash removal and private parking. Although the alleyways have very limited vehicle use, access still must be provided, the angle parking does make it more difficult, but not impossible, to exit. The alleyways also restrict where parking spaces can be added.

**Snow Ordinance** - There is currently a Snow Ordinance that prohibits parking in the westbound direction. It would need to be determined by the Village if a revised Snow Ordinance is to be provided if modifications are made to Main Street.

**Snow Removal and Placement** – Snow removal and placement procedures will eventually need to be determined by the Village if modifications are made to Main Street.

**Other Weather Conditions** – As part of the consideration of this project is to provide more outdoor seating, consideration must be given to other poor weather conditions such as rain, wind or cold. For example, would tents or outdoor heaters be permitted.

**Roadway and Sidewalk Grades** – Another consideration for outdoor seating is that Main Street is essentially a hill. Thus some portions of the grades along the roadway and sidewalk are not completely conducive to outdoor seating.

**ADA Sidewalk Ramps** – Some of the current ADA Sidewalk Ramps along Main Street do not meet the current standards and will need to be modified depending upon the alternative selected, if any.

**Drainage** – Drainage will need to be considered in the final design, especially if permanent concrete barriers or new curbs are installed. Drainage on Main Street currently essentially just flows westbound to the bottom of the hill. Some catch basins may need to be relocated depending upon the Alternative and final design.

**Sanitation Pick-up and Access** – Sanitation Pick-up must be considered. With only one lane on Main Street, vehicles will not be able to go around the truck. Also, with angle parking, the trash will need to be carried a farther distance from the curb to the sanitation truck. Some properties have private pick-up in the alleyways. It is important that access to these alleyways are maintained.

**Street Lights and Street Furniture** – Depending upon whether any of the alternatives are chosen, there are existing decorative street lights that may need to be relocated as they may interfere with drivers/passengers exiting their cars to get to the sidewalk or if the curb is relocated for more outdoor seating. This would require re-doing the underground wiring to these poles. There is also other street furniture that would be easier to move such as trash cans, benches and mailboxes (although these are cemented into the sidewalk).

**Trees** – There are various street trees along Main Street. These can be maintained but outdoor seating may need to be adjusted.

**Signage and Striping** – Depending upon the Alternative, signage and striping will need to be modified both along the connecting streets in accordance with the Manual on Uniformed Traffic Control Devices (MUTCD) and the New York State Supplemental MUTCD. For example, if Main Street is to become one-way eastbound, No Left Turn and No Right Turn signs will need to be added to Broadway at Main Street in the northbound and southbound directions, respectively,



while “No Thru Traffic” signs would need to be added to Neperan Road to ensure that drivers do not travel the wrong way on Main Street. “Do Not Enter” and “One-Way” signs would need to be added to the intersection. Supplemental signing and barricades may be required in the beginning or during a test of the changes. Similar signage will also need to be added to the other streets intersecting with Main Street. Detailed signage and striping will be incorporated into the Design Plans.

**Differences from Current Weekend Outdoor Seating Arrangements** – One of the main differences between the current Weekend Outdoor Seating Arrangements and the potential alternatives is that the current plan was only temporary and occurred only on weekend evenings. Thus, temporary barriers had to be added and removed each evening requiring Village staff. Village staff including Village Police were utilized to assist in traffic control. Another key difference is that Main Street was completely closed to vehicle traffic in certain locations. The outdoor seating was added to the sidewalk and to portions of the existing roadway. Pedestrians walked through a closed off section, mainly along the roadway centerline. There were intermediate openings for vehicles to cross Main Street at North/South Washington Street as well as to provide access to Baylis Court, as it is a Dead End street that can only be accessed from Main Street. As the portion of Main Street in front of the Firehouse was temporarily closed, the Fire Apparatus was pre-driven out of the Firehouse and parked on South Washington Street to be able to exit the area quicker in case of an emergency.

**Temporary Testing** – A live test could be performed. Provident has conducted some of these live tests in the past. A one-way alternative could be tried for a one-month period and the before and during results could be measured. To implement the test, barricades (cones, rubber curbs, barrels, etc. could be utilized) and supplemented by temporary signage and striping. A possibility for the test would be the section of Main Street from North/South Washington to Broadway to be one-way eastbound.

**Train/Commuter Traffic** – Train and commuter traffic was considered in this Study. A one-way eastbound Main Street would push some of the morning commuter traffic, including some buses, to other roadways. This was accounted for in the traffic analyses discussed below. As current traffic volumes are lower than normal due to COVID-19, more conservative traffic volumes were utilized in the analyses.

**Traffic Signals** – Along Main Street, there are existing traffic signals at the intersections with Broadway and with North/South Washington. There are a few factors to consider with the traffic signals. The first factor is whether the traffic signals should remain. It is Provident's opinion that both of these traffic signals should remain due to: the amount of traffic exiting Main Street (as well as Neperan Road) onto Broadway as well as to assist pedestrians crossing; and the amount of crossing traffic on North/South Washington Street as well as to assist pedestrians crossing.

There is vehicle detection (in-street inductive loops) on the Main Street intersection. For these to keep operating, vehicles exiting Main Street must do so from their current lane. The existing traffic signal heads facing Main Street can remain. If desired, a separate left turn lane could be added to the Main Street approach to process more traffic through the intersection, but this would depend upon the parking layout and would require additional vehicle detection and possibly an additional traffic signal head. Another advantage of making Main Street one-way is that since left and right turns from Broadway onto Main Street will be eliminated, the operation of this intersection will be improved for some movements. However, the negative is that these vehicles will then have to go to another roadway to make those turns. In addition, some alternative concepts shift the travelway to the north which would then result in the relocation of the vehicle detection and the traffic signal heads. As discussed elsewhere in this Study, signage and striping modifications will need to be added to prevent vehicles from turning onto westbound Main Street.

Signal timing modifications could be made but that should be done after the traffic volumes return to normal. The traffic signal at the intersection of Broadway and Main Street is under the

jurisdiction of the New York State Department of Transportation (NYSDOT). Any modifications to that traffic signal or traffic signal timing will need approval of the NYSDOT.

**Music Hall** – The Tarrytown Music Hall is located on the northern side of Main Street just east of Kaldenberg Place (see earlier Photo). Although not currently operating due to COVID-19 conditions, when it is operating, some parking spaces in front of the building are bagged for loading/pick-up and unloading/drop-off. Also, when the Music Hall does re-open, it will add traffic to Main Street, increase parking demand, and bring additional patrons to the restaurants. If Main Street becomes one-way eastbound, the traffic pattern for patrons of the Music Hall will change and a different area will be needed for loading and unloading for buses, taxis/Uber, and personal automobiles such as on Kaldenberg Place. Vehicles on Main Street, including buses and Ubers, would no longer be able to pull over to drop-off/pick-up passengers along Main Street with the passenger door on the right side of the road in front of the Music Hall. Also, with only the one lane, any vehicles stopping/standing will back up traffic.

**Traffic Signal Controller Unit** – The existing traffic signal controller unit at the southwest quadrant of the Main Street and South Washington Street is attached to the traffic signal pole raised off the ground. However, it is located close to the ADA curb ramp and in the path of pedestrians and could result in someone walking into it. Modifications should be made to this.

**Curb Lines** – Depending upon the Alternative, the curb lines will need to be shifted. During a final design, this shifting will need to consider items such as the alleyways, utilities including manholes, and catch basins.

**Accident/Crash History** – Accident/Crash History was obtained from the Village Police Department for the last five years, thus from September 1, 2016 to September 2, 2020. During this time period, there were 303 accidents/crashes over the adjacent roadway network. Thirty-seven of the accidents resulted in injuries, five of which involved multiple injuries and fifteen of which involved a pedestrian (there was also one accident involving a pedestrian that did not result

in an injury) while one involved a bicyclist. There were no fatal accidents listed. Most of the accidents/crashed involved another motor vehicle while some involved hitting a fixed object (tree, building, wall, curb, utility pole, or sign, etc.).

The intersections with the highest numbers of accidents over the five-year period are:

- Main Street and N/S Washington 44 accidents
- Franklin Street and Broadway 21 accidents
- N Washington St and Wildey St 26 accidents
- Main Street and Kaldenberg Place 15 accidents
- Franklin St and South Washington 15 accidents
- N Washington and Central Ave 14 accidents
- Main Street and Broadway 13 accidents
- Wildey Street and Cortlandt St 11 accidents
- Franklin St and South Washington 10 accidents

Along Main Street, the intersection of Main Street and North/South Washington had 44 accidents with 5 that resulted in injuries. Four of the accidents involved pedestrians. There were 13 accidents at Main Street and Broadway with 4 resulting in injuries as well as two pedestrian accidents. The intersection of Main Street and Kaldenberg Place had 15 accidents with 4 resulting in injuries. Two of the accidents involved pedestrians. The other intersections along Main Street had less accidents. Thus, depending upon the alternative, the amount of accidents could be reduced on Main Street due to the one-way pattern. However, the traffic would then go elsewhere such as Franklin Street and Broadway, which already has one of the highest amounts of accidents.

A detailed summary of the accident/crashes per intersection (or near the intersection) over this period, including accidents that resulted in injuries and those that involved a pedestrian/bicyclist is contained in Appendix G.

**Traffic Volumes** – Because of the COVID-19 impacts, traffic volumes are not currently at normal levels. Thus, for purposes of this Feasibility Study, traffic volumes were obtained from various sources including from the Village, Westchester County, and the New York State Department of Transportation as well as from previous Traffic Studies. The traffic volumes utilized are very conservative and incorporate traffic volumes from potential future developments such as Edge-on-Hudson. A comparison of the traffic volumes utilized versus traffic counts from other sources are contained in Appendix B.

**Traffic Diversions** – Traffic will need to divert from its current patterns due to the potential alternative modifications including the one-way pattern. Provident estimated the potential diversions, which are illustrated in Appendix B.

**Pedestrians** – If Main Street is narrowed and becomes one-way, it will be beneficial to pedestrians as there would be less distance to cross and vehicular traffic would only be flowing in one direction. If bump outs are added, the pedestrian crossings could be made shorter.

**Residential Tenants** – Above some of the retail and food establishments, there are residents living in apartments. They will not be significantly impacted by the potential modifications aside from having to divert their driving route to or from their apartment and potentially where they park.

**Sidewalk Widths** – The existing sidewalk widths vary and are slightly wider on the eastern end of Main Street.

**Sight Distance Changes from Modifications** – If one of the alternatives is eventually instituted, the sight distance changes from the modifications will need to be reviewed in the final design.

**Traffic Impacts to Adjacent Roadways** - Provident analyzed the traffic impacts to the adjacent roadways for the various alternatives including the commuter traffic in the AM utilizing Main Street by performing Synchro Capacity Analyses (copies contained in Appendix H) with the

conservative future traffic volumes with Main Street being one-way eastbound. As would be expected, there would be some benefits to Broadway northbound at Main Street as the left turns are from that approach would be eliminated, while there would be an increase in delays at Franklin Street as some more vehicles would be diverted to there. It is noted that some movements at some intersections in the vicinity will experience some Peak Hour delays, without or with the Alternatives. Franklin Street was previously projected to experience long delays exiting out onto Broadway. There would also be an increase in delays for vehicles on the westbound approach of Franklin Street at South Washington Street. The other intersections do not show any significant changes and the AM commuter traffic will not be significantly impacted. The other times of the day and week will also not result in significant impacts, but there will be some increases in delays. Levels of Service Summaries are contained in Appendix C.

### **Comparison of Alternatives**

The initial design prepared by others before this Study was performed was not feasible. The lane width shown was only 10 feet wide, which would be beneficial in conjunction with the serpentine pattern in terms of limiting travel speeds, but it would be difficult for a fire engine (ladder truck) and buses to get through and it would not provide the room needed for the Fire Department to utilize the outriggers on one side of the ladder truck, if needed. There is also no parking provided under this scenario.

For this Study, Provident examined various alternatives for Main Street. Some of these include:

- Converting Main Street to one-way eastbound for its entire length
- Converting Main Street to one-way eastbound from North/South Washington Street to Broadway
- Converting Main Street to one-way westbound for its entire length

3

- Converting Main Street to one-way westbound from Broadway to North/South Washington Street

The alternatives were further evaluated with different parking arrangements. Some of these include:

- Angle parking on the right side
- Angle parking on the left side
- Angle parking on both sides
- Angle parking on one side and parallel parking on the other
- Parallel parking on both sides
- No parking provided on Main Street

Concept Plans of some of these Alternatives are contained in Appendix D.

There are 45 parking spaces (including two ADA parking spaces) currently on the north side of Main Street and 35 parking spaces (including one ADA parking space) on the south side of Main Street for a total of 80 parking spaces (including three ADA parking spaces) between Broadway and White Street. These are illustrated on the Existing Parking Count Figure in Appendix D.

Between Broadway and North/South Washington Street, there are 21 parking spaces (including two ADA parking spaces) currently on the north side of Main Street and 14 parking spaces (with no ADA parking spaces) on the south side of Main Street for a total of 35 parking spaces (including two ADA parking spaces). These are illustrated on the Existing Parking Count Figure in Appendix D.

Eight different Concepts are illustrated on Concept Plans 1 through 8, contained in Appendix D. The Concept Plans only focus on the section of Main Street between North/South Washington Street and Broadway for comparative purposes, but the proposed concepts can be continued further

west on Main Street. Due to the width of Main Street being different depending upon the particular block, and also within the individual block itself, the width of additional sidewalk that can be provided will also vary by block. For example, the width of Main Street between Broadway and John Street is several feet narrower than the width between John Street and South Washington Street. The additional sidewalk area is illustrated on each of the concepts. If the one-way pattern was to be westbound instead of eastbound, then the Concepts would be generally similar, just with the angle parking reversed. The following is a description and brief discussion of each of these Concepts:

**Concept Plan 1** – Main Street would be one-way eastbound with angled parking on the southside of Main Street and a widened sidewalk on the northside. This plan results in 21 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces).

**Concept Plan 2** - Main Street would be one-way eastbound with angled parking on the southside of Main Street and parallel parking with a slightly widened sidewalk on the northside. This plan results in 40 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces).

**Concept Plan 3** - Main Street would be one-way eastbound with angled parking on the northside of Main Street and a widened sidewalk on the southside. This plan results in 31 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces). This plan results in 31 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces).

**Concept Plan 4** - Main Street would be one-way eastbound with angled parking on the northside of Main Street and parallel parking with a slightly widened sidewalk on the southside. This plan



results in 46 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces).

**Concept Plan 5** - Main Street would be one-way eastbound with no parking on either side of Main Street with a widened sidewalk on both sides. This plan results in no parking spaces (including a loss of 2 ADA spaces) compared to the existing 35 parking spaces (including the 2 ADA spaces).

**Concept Plan 6** - Main Street would be one-way eastbound with parallel parking on both sides of Main Street with a slightly widened sidewalk on both sides. This plan results in 37 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces).

**Concept Plan 7** - Main Street would be one-way eastbound with angle parking on both sides of Main Street but with no sidewalk widening on either side. This plan results in 52 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces). However, the roadway/travelway width in some places would narrow to 11 feet in some places and thus would not meet the Fire Department's request of 15 feet. 11 feet is also narrow for a vehicle trying to back out of the parking space. A variation of this concept would be to use parallel parking spaces instead of angle parking spaces on one side of Main Street between John Street and Broadway.

**Concept Plan 8** - Main Street would be one-way eastbound with angled parking on the northside of Main Street and with sidewalk expansions evenly provided on each side. This plan results in 31 parking spaces (and actually less spaces if the ADA spaces are added back) compared to the existing 35 parking spaces (including the 2 ADA spaces).

#### **CONCEPT PLAN ON-STREET PARKING COMPARISON**

The following Table summarizes a comparison of the on-street provided under the various Concept Plans Alternatives as well as for the Existing Conditions. It is noted that when the Project at the existing YMCA Site is completed, additional parking spaces benefiting Main Street will be

provided. As illustrated in the Table, Concept Plan 7 provides the most on-street parking spaces but it does not include an expansion of the sidewalks nor does it provide the travelway width requested by the Fire Department. Concept Plan 5 provides no on-street parking but provides the most sidewalk expansion.

ON-STREET PARKING ALONG MAIN STREET COMPARISON SUMMARY TABLE							
Concept Plan	Between South Washington Street and John Street			Between John Street and Broadway			TOTAL (per Plan)
	Northside	Southside	TOTAL	Northside	Southside	TOTAL	
Existing Plan EP-1 - Existing Parking Count	14	8	22	7	6	13	35
Concept Plan 1 - One-way eastbound with angled parking on the southside of Main Street	0	11	11	0	10	10	21
Concept Plan 2 - One-way eastbound with angled parking on the southside of Main Street and parallel parking on the northside	12	11	23	7	10	17	40
Concept Plan 3 - One-way eastbound with angled parking on the northside of Main Street	20	0	20	11	0	11	31
Concept Plan 4 - One-way eastbound with angled parking on the northside of Main Street and parallel parking on the southside	20	8	28	11	7	18	46
Concept Plan 5 - One-way eastbound with no parking on Main Street	0	0	0	0	0	0	0
Concept Plan 6 - One-way eastbound with parallel parking on on both sides of Main Street	14	9	23	7	7	14	37
Concept Plan 7 - One-way eastbound with angled parking on both sides of Main Street	20	11	31	11	10	21	52
Concept Plan 8 - One-way eastbound with angled parking on the northside of Main Street and no parking on the southside	20	0	20	11	0	11	31

3

---

## **CONCLUSIONS AND RECOMMENDATIONS**

It is the professional opinion of Provident Design Engineering that, from a Traffic perspective, the one-way pattern is viable and provides some benefits to the Village without having significant Traffic impacts. As discussed herein and below, there will be some traffic diverted to other streets. The biggest impact would be to the Fire Department response on certain calls. Thus, implementing a one-way pattern eastbound would be recommended, and to reduce the impact on the Fire Department, it could be implemented from only North/South Washington to Broadway. This area incorporates most, but not all, of the restaurants. A test of this system could be implemented by the Village at low cost to see the actual impacts. The actual Concept to be implemented would be a determination of the Village's desire of a balance between additional parking versus additional sidewalk width. Concept Plan 4 provides more parking spaces but limited sidewalk additions while Concept Plan 6 provides more sidewalk additions but about similar parking to existing conditions. While Concept Plan 7 provides the most parking, it does not provide the travel width that Fire Department had requested.

If a one-way pattern is considered, it is more appropriate that it is one-way eastbound for various reasons, including emergency services. As the eastbound approach of Main Street at Broadway is under traffic signal control and has in-pavement vehicle loop detection, shifting the top of the road to use this portion of Main Street would save money by not having to relocate the traffic signal heads or relocating the loop detection, but this would result in the loss of some parking depending upon the particular concept chosen.

One major reason for selecting eastbound as the desired one-way direction would be for the Fire Department response to emergency calls. Also because of this, as well as the limited restaurants south of North/South Washington Street, consideration could also be for only doing the one-way section from North/South Washington Street and Broadway, which would assist the Fire Department.

Going with a one-way pattern will assist pedestrians as they would only be crossing one-direction of traffic and their crossing distance could be shortened. The parking and other modifications act to provide some traffic calming.

If the sidewalks are only widened slightly, it will provide some benefits, but those benefits would be limited. The sidewalks would still need to provide general pedestrian access.

Depending upon the Concept chosen, the Village will need to determine if any additional protection aside from the curbing will be required if tables are added along Main Street such as bollards, parking meters, street trees, etc. Patrons getting in/out of parked cars, as well as fire fighters and sanitation workers, will need to go between the roadway and the sidewalk so adding certain barricades would not be appropriate. Drainage catch basins may need to be relocated or added depending upon the alternative selected.

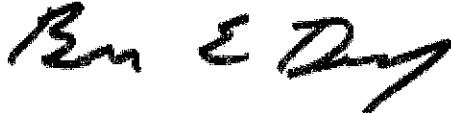
Any modifications to the roadway network would result in traffic being shifted somewhere else. Removing one direction of traffic on Main Street will add more traffic to Franklin Street and Central Avenue as well as to various side streets. There will be some increases in delays at some of these other intersections, but they do not appear to be that significant. Going one-way from North/South Washington to Broadway would be able to serve the majority of the restaurants and limit the impacts to the Fire Department emergency responses.

Eight different Concepts were provided herein. Some variations of these concepts can also be performed. It is the opinion of Provident that changing Main Street will have some impact but not a significant impact on traffic. However, the Village must decide on various factors including the impacts on emergency services, the additional sidewalk widths to be provided, the impact on parking, costs and the other items discussed herein. The various options are different balances of these factors, particularly the more parking provided, the less sidewalk expansion that can be provided. Another decision would be to start/stop the one-way pattern at North/South Washington

Street or continue the entire length of Main Street. One option that the Village could consider is the implementation of a live test of one of the Concepts. Signage and barricades would be required.

Respectfully submitted,

**PROVIDENT DESIGN ENGINEERING, PLLC**



Brian E. Dempsey, P.E., P.T.O.E., RSP1  
Senior Project Manager



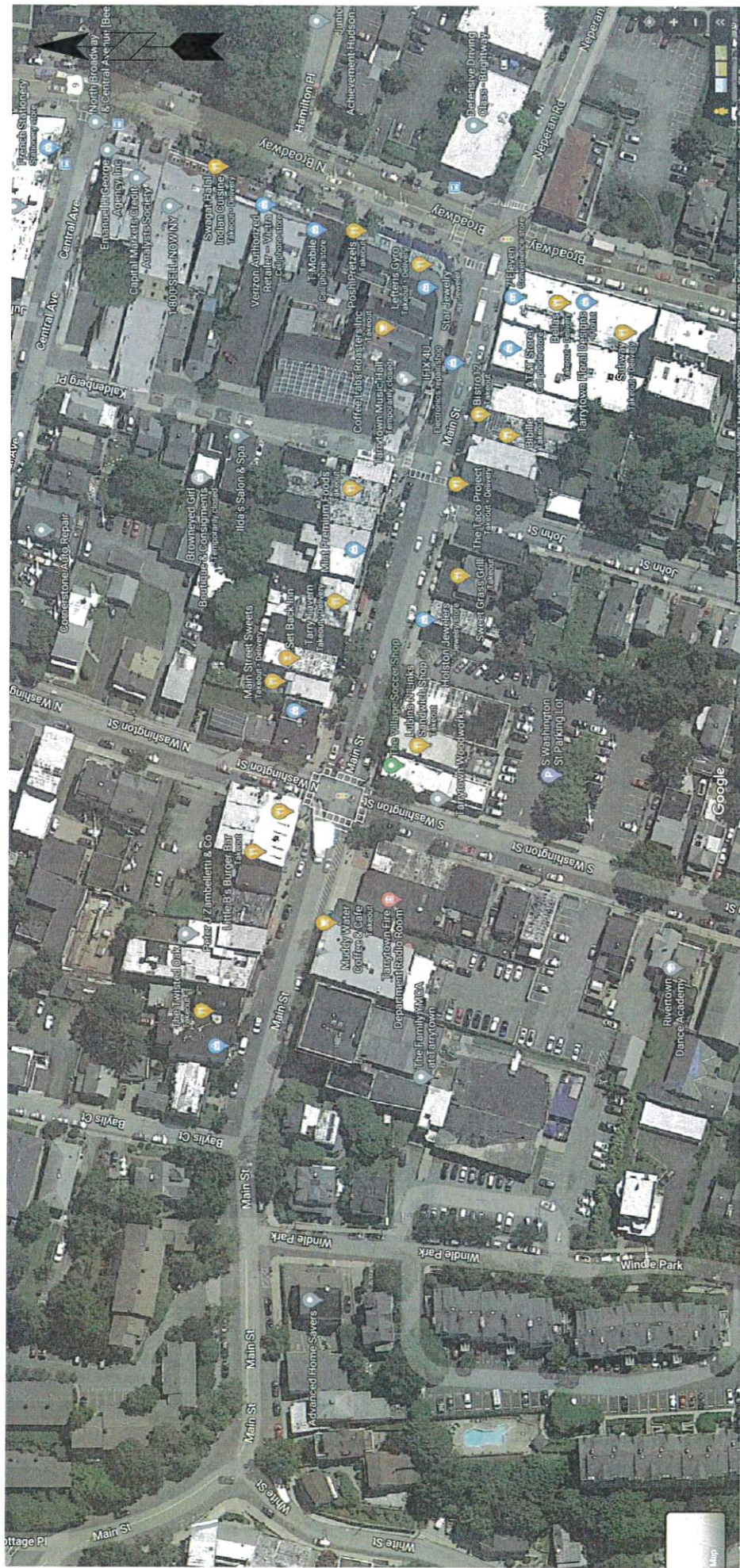
Danny Cuya, EIT  
Traffic Engineer

Q:\PROJECTS-20\20-064 Tarrytown Main Street One Way\Reports\Traffic Impact Study\Tarrytown Main Street Traffic Study 1A.docx

3

**APPENDIX A**  
**AERIALS**







## An aerial photograph of a neighborhood in Tarrytown, New York. The main thoroughfare shown is Main Street, which runs diagonally from the bottom left towards the top right. To the west of Main Street are several streets, including N Washington St, S Washington St, and Broadway. Various businesses and landmarks are labeled with colored pins. On the north side of Main Street, labels include "Posh Pretzels", "Coffee Labs Roasters Inc.", "Lefty's Gyro", "Tarrytown Music Hall", "Flying Fingers Varn Shop", "Elevate Hair Salon &amp; Spa", "Main Street Swagata", "Sed Backlinn", "TK TOKYO", "Amplified Agency", "Cafin Gallery", "Stock Market", "Little B's Burger Bar", "Pia Nik BBQ", "Mama's Place", "Tatiana La Perla Poblano", "Verizon Authorized Retailer", "Dominica's Restaurant", "T-Mobile", "Post Pretzels", "Coffee Labs Roasters Inc.", "Lefty's Gyro", "Tarrytown Music Hall", "Flying Fingers Varn Shop", "Elevate Hair Salon &amp; Spa", "Main Street Swagata", "Sed Backlinn", "TK TOKYO", "Amplified Agency", "Cafin Gallery", "Stock Market", "Little B's Burger Bar", "Pia Nik BBQ", "Mama's Place", "Tatiana La Perla Poblano". On the south side of Main Street, labels include "Shaylia Jewelry &amp; Gifts", "Hair On The Hudson", "Harry's Tavern", "The Taco Project", "Sebastian Barber Shop", "Sweet Grass Grill", "Holston Jewellers", "Phyllis Lennard Editor", "Tara Wilho Sugar Shop", "Tara Wilho Woodworks", "Hope House", "Tarrytown Fire Department Radio Room", "Kinky Water Coffee &amp; Cafe", "Main Street Swagata", "Sed Backlinn", "TK TOKYO", "Amplified Agency", "Cafin Gallery", "Stock Market", "Little B's Burger Bar", "Pia Nik BBQ", "Mama's Place", "Tatiana La Perla Poblano". The map also shows a grid of other streets and numerous parked cars along the sidewalks. A compass rose is visible in the top left corner, indicating North.



ROADWAY NETWORK AERIAL

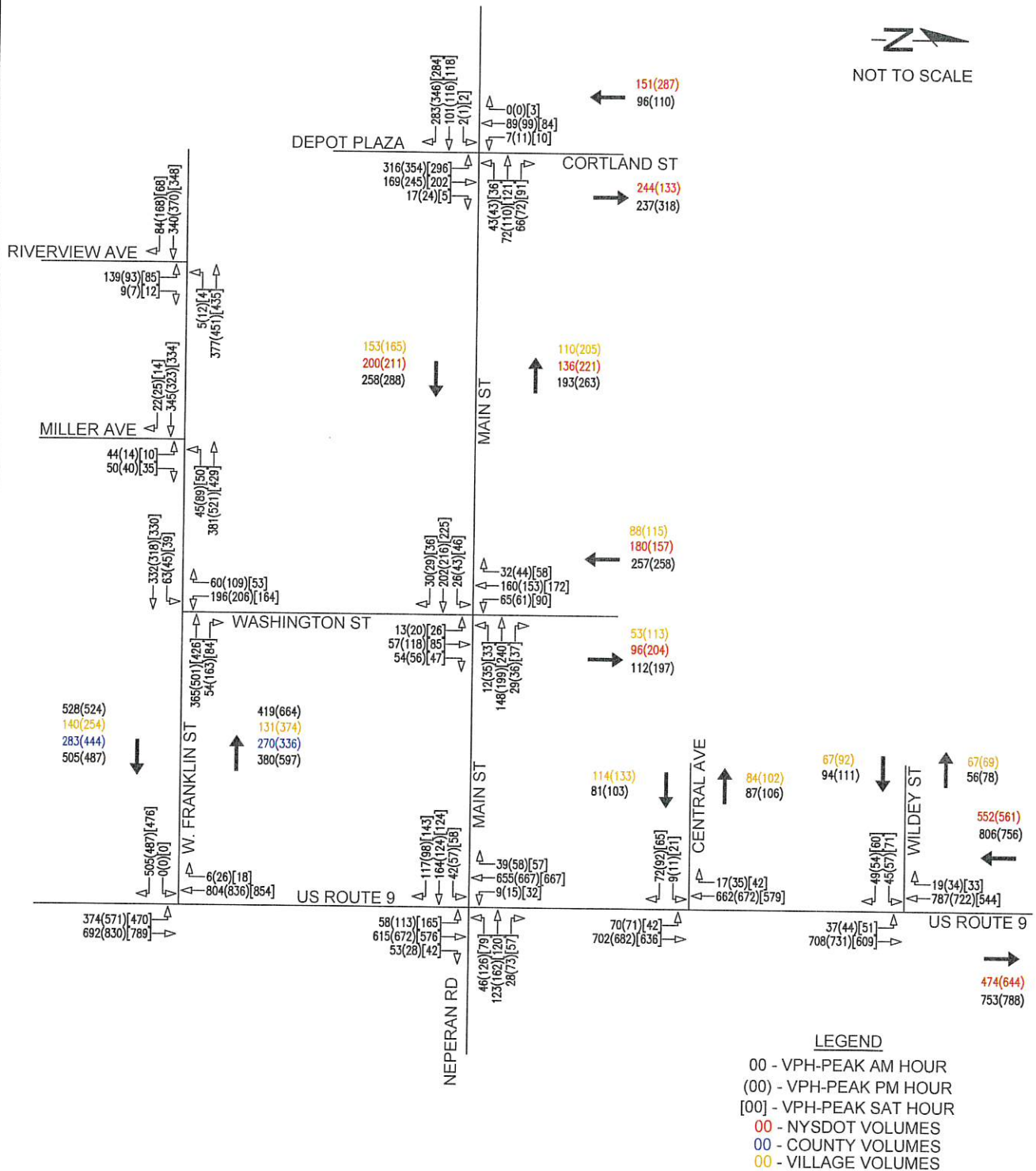


3

3

**APPENDIX B**  
**TRAFFIC FIGURES**

Q:\PROJECTS-20\20-064 Tarrytown Main Street One WayAutoCAD\Traffic\20-064 Traffic Figures.dwg



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Traffic Volume Comparison  
Tarrytown, Westchester, New York

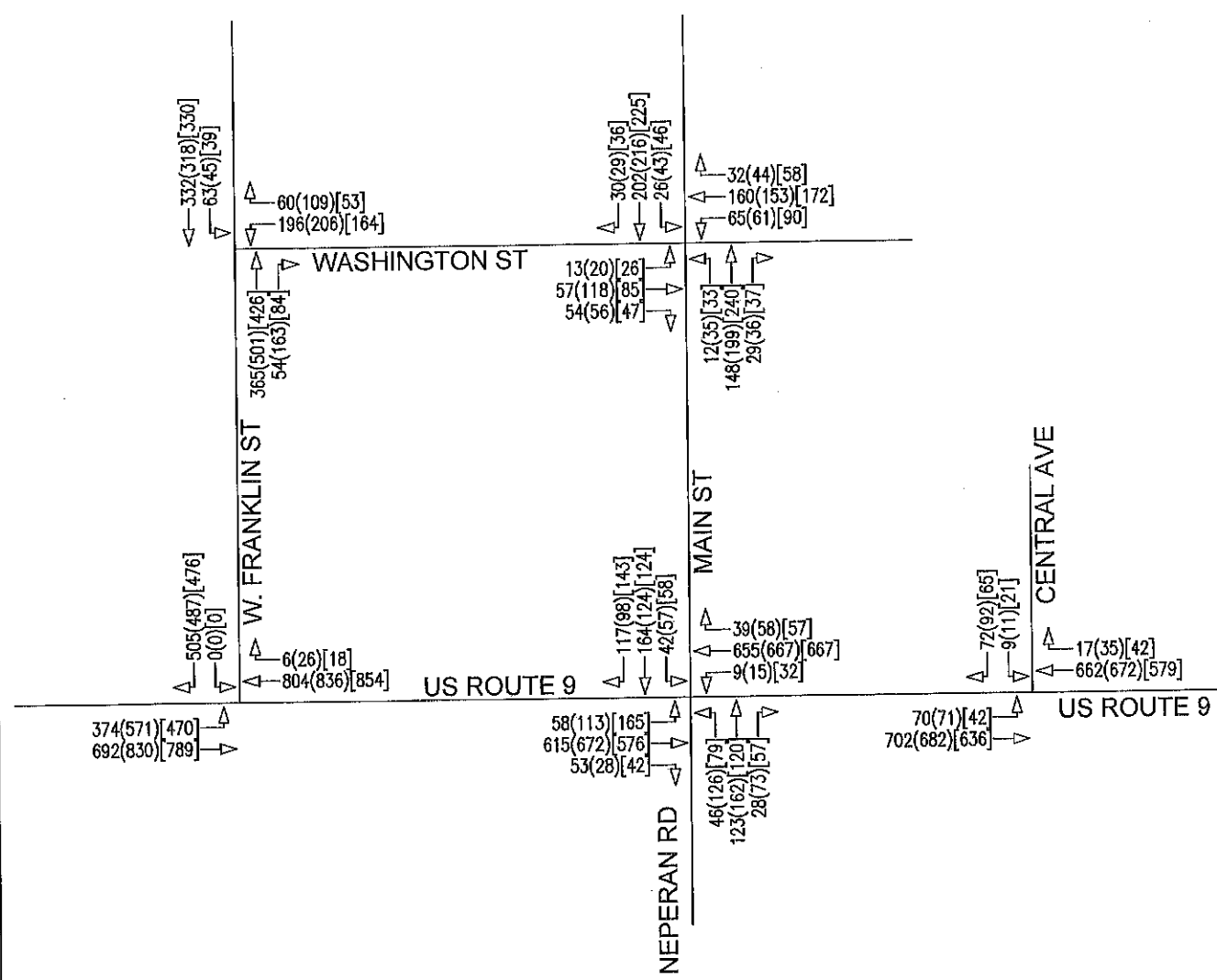
Project No. 20-064

Figure No. 01

3



NOT TO SCALE



Q:\PROJECTS-20\20-064 Tarrytown Main Street One Way\AutoCAD\Traffic\20-064 Traffic Figures.dwg

**Provident**  
design engineering

7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Base Traffic Volume Figure  
Tarrytown, Westchester, New York

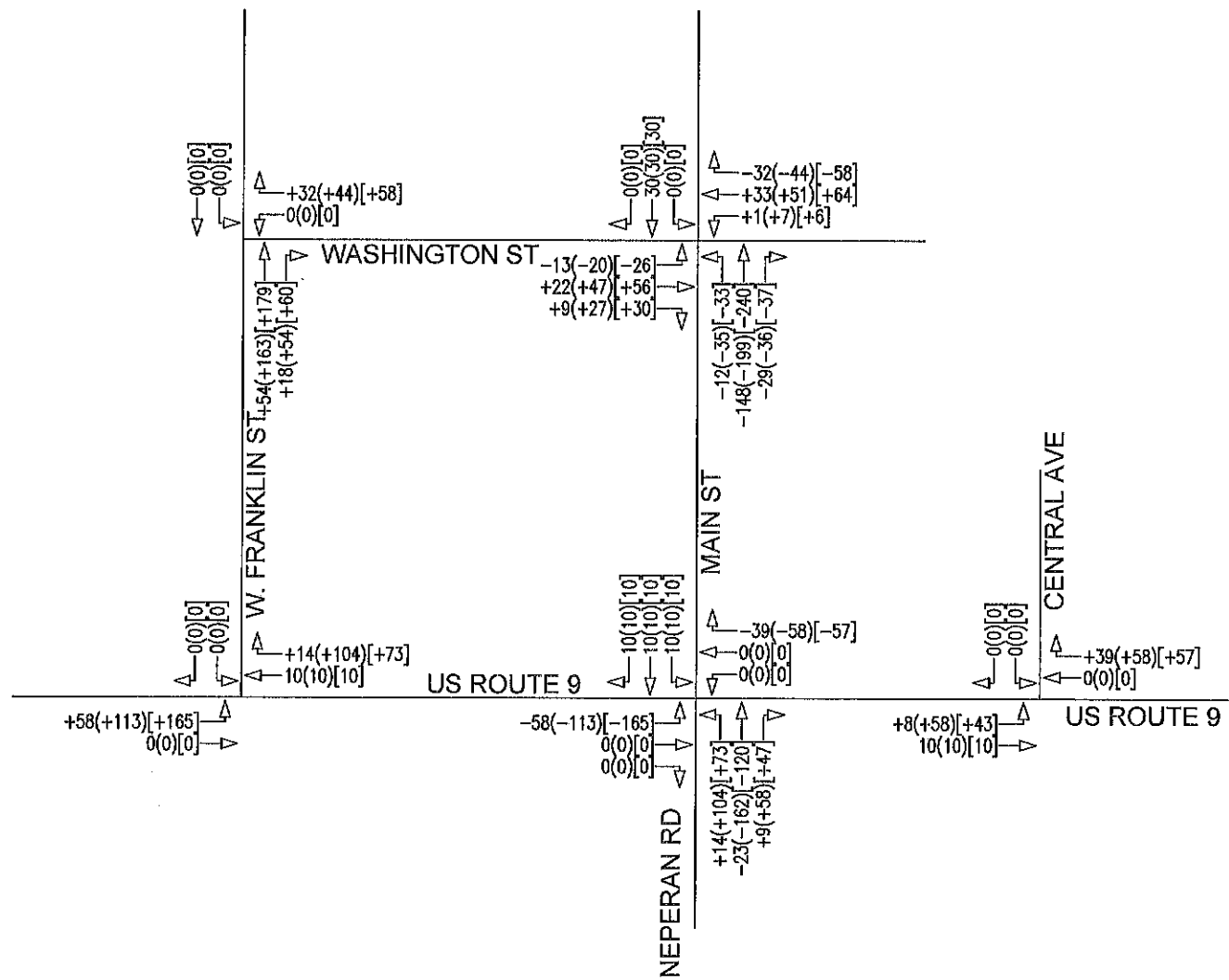
Project No. 20-064

Figure No. 02

3



NOT TO SCALE



**LEGEND**

- 00 - VPH-PEAK AM HOUR
- (00) - VPH-PEAK PM HOUR
- [00] - VPH-PEAK SAT HOUR



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Diverted Traffic Volumes  
Tarrytown, Westchester, New York

Project No. 20-064

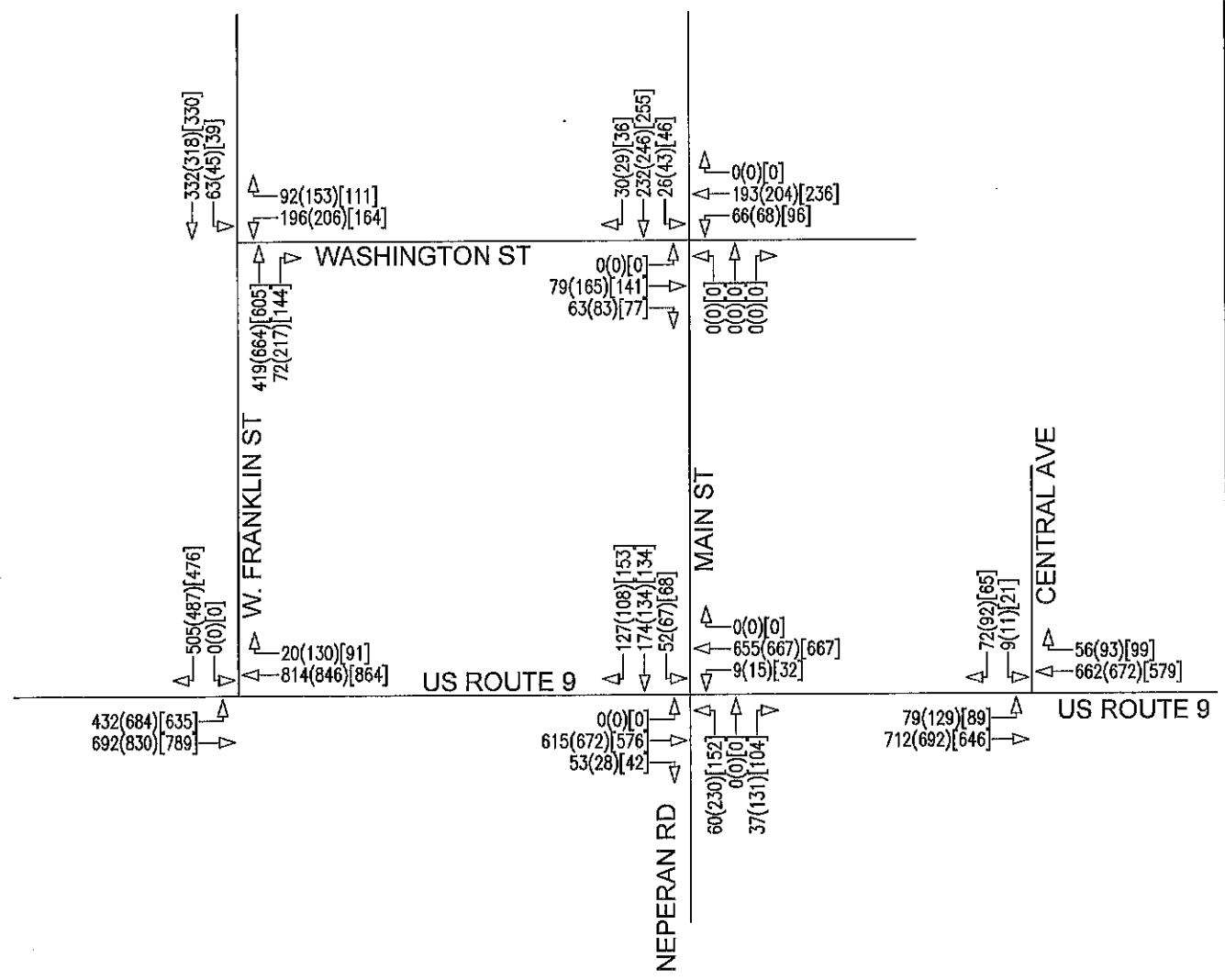
Figure No. 03

Q:\PROJECTS-20\20-064 Tarrytown Main Street One Way\AutoCAD\Traffic\20-064 Traffic Figures.dwg

3



NOT TO SCALE



**LEGEND**

- 00 - VPH-PEAK AM HOUR
- (00) - VPH-PEAK PM HOUR
- [00] - VPH-PEAK SAT HOUR

Q:\PROJECTS-2020-064 Tarrytown Main Street One Way\AutoCAD\Traffic\20-064 Traffic Figures.dwg



7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PDERESULTS.COM

© PROVIDENT DESIGN ENGINEERING, PLLC

Base Traffic Volumes  
with Diverted Trips  
Tarrytown, Westchester, New York

Project No. 20-064

Figure No. 04

**APPENDIX C**  
**LEVEL OF SERVICE TABLES**

TABLE NO. 1							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
US Route 9 and Franklin Street							
APPROACH	PEAK AM HOUR		PEAK PM HOUR		PEAK SAT HOUR		
	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	
	LOS	LOS	LOS	LOS	LOS	LOS	
	DELAY (sec)	DELAY (sec)	DELAY (sec)	DELAY (sec)	DELAY (sec)	DELAY (sec)	
<b>US Route 9</b>							
NB	b 14.9	c 17.5	d 31.1	f 100.7	c 21.0	f 67.5	
SB	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	
<b>Franklin Street</b>							
EB	f 302.9	f 319.7	f 320.8	f 389.5	f 318.4	f 372.1	
INTERSECTION	f 302.9	f 319.7	f 320.8	f 389.5	f 318.4	f 372.1	



TABLE NO. 2

## PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE

US Route 9 and Main Street/Neperan Road

APPROACH		PEAK AM HOUR		PEAK PM HOUR		PEAK SAT HOUR	
		2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS
		LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
US Route 9							
NB	LTR	C 22.0	B 16.4	E 56.9	B 17.2	F 114.4	B 15.2
SB	LTR	B 17.6	B 16.5	B 19.2	B 17.2	C 21.3	B 18.5
Main Street/Neperan Road							
EB	LTR	C 34.7	D 37.8	D 35.1	D 36.4	D 36.3	D 39.6
WB	LTR	C 23.8	C 22.2	F 88.0	F 193.8	D 40.3	F 82.5
INTERSECTION		C 22.6	C 21.0	D 46.5	D 51.2	E 60.3	C 29.8

W

TABLE NO. 3 PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE US Route 9 and Central Avenue							
APPROACH		PEAK AM HOUR		PEAK PM HOUR		PEAK SAT HOUR	
		2020 EXISTING LOS DELAY (sec)	2020 EXISTING WITH DIVERTED TRIPS LOS DELAY (sec)	2020 EXISTING LOS DELAY (sec)	2020 EXISTING WITH DIVERTED TRIPS LOS DELAY (sec)	2020 EXISTING LOS DELAY (sec)	2020 EXISTING WITH DIVERTED TRIPS LOS DELAY (sec)
<b>US Route 9</b>							
NB	LT	a 9.5	a 9.8	a 9.7	a 9.7	a 9.1	a 9.6
SB	TR	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0	- 0.0
<b>Central Avenue</b>							
EB	LR	c 21.7	c 23.0	c 23.8	d 29.3	c 23.0	d 28.2
<b>INTERSECTION</b>		c 21.7	c 23.0	c 23.8	d 29.3	c 23.0	d 28.2

TABLE NO. 4 PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE S. Washington Street and Franklin Street								
APPROACH	PEAK AM HOUR			PEAK PM HOUR			PEAK SAT HOUR	
	2020 EXISTING		2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING		2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS
	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)
S. Washington Street								
SB	b 14.9	c 17.2	c 17.2	c 20.6	d 26.5	b 13.8	c 17.9	
Franklin Street								
EB	c 19.0	c 21.6	c 21.9	c 25.0	c 21.1	c 17.1	c 21.1	
WB	c 19.7	d 30.4	f 105.2	f 284.0	f 146.7	d 26.2	f 146.7	
INTERSECTION	c 18.3	c 24.2	f 62.8	f 167.7	f 88.0	c 20.7	f 88.0	

TABLE NO. 5							
PEAK HOUR LEVEL OF SERVICE SUMMARY TABLE							
Washington Street and Main Street							
APPROACH	PEAK AM HOUR		PEAK PM HOUR		PEAK SAT HOUR		
	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	2020 EXISTING	2020 EXISTING WITH DIVERTED TRIPS	
	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	LOS DELAY (sec)	
Washington Street							
NB	LTR	A 7.9	A 7.4	B 10.7	B 11.4	A 9.8	B 10.3
SB	LTR	B 14.8	B 15.7	B 14.6	B 16.6	B 17.5	C 20.2
Main Street							
EB	LTR	B 10.4	B 10.2	B 11.3	B 11.3	B 11.7	B 11
WB	LTR	A 8.8	- 0.0	B 10.6	- 0.0	B 11.5	- 0.0
INTERSECTION		B 11.0	B 12.0	B 11.8	B 13.1	B 13.0	B 14.4

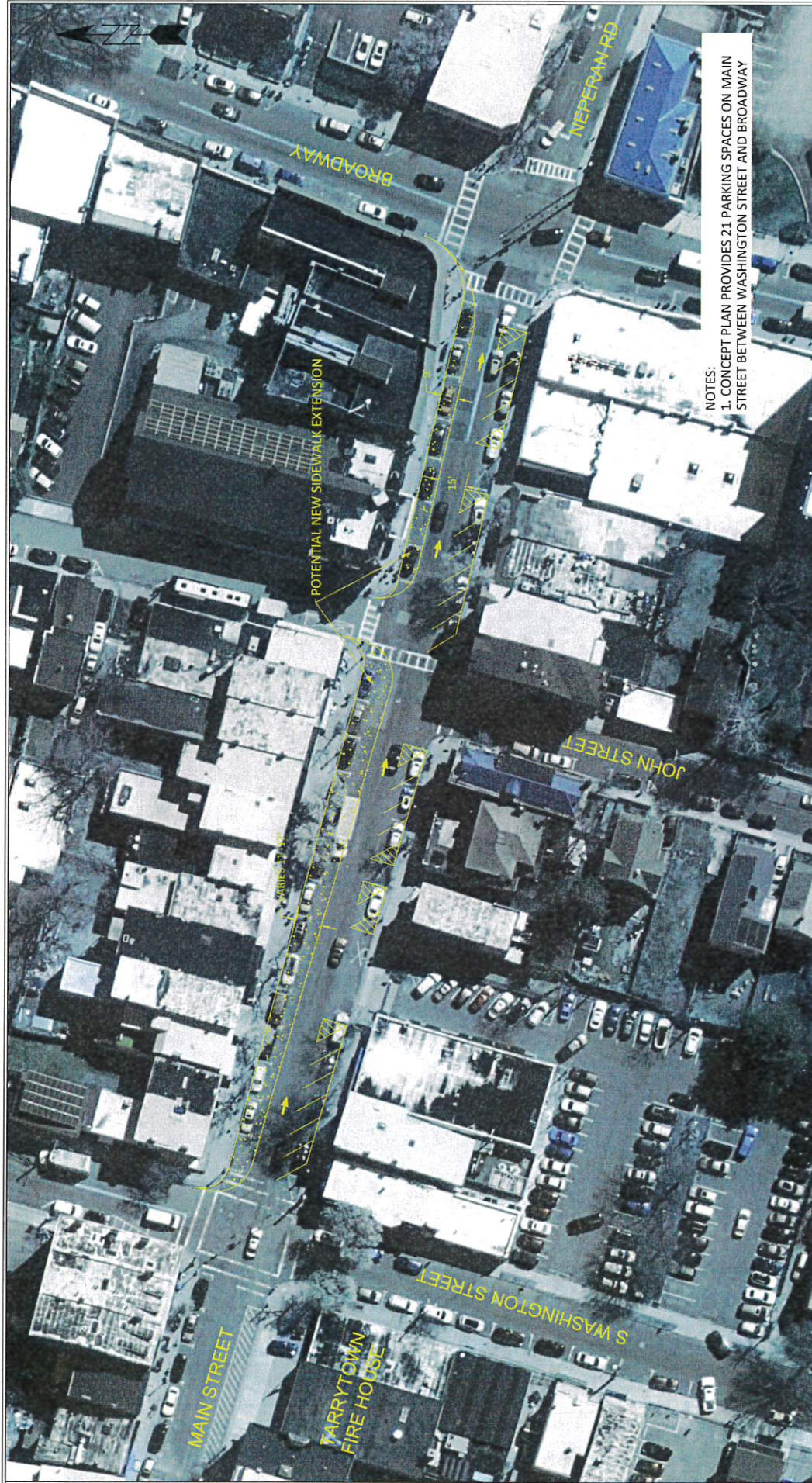
**APPENDIX D**  
**EXISTING PARKING AND CONCEPT PLANS**



Existing Parking Count







NOTES:  
1. CONCEPT PLAN PROVIDES 21 PARKING SPACES ON MAIN STREET BETWEEN WASHINGTON STREET AND BROADWAY

Project No. 20-064  
1"=50'

Figure No. 01

Concept Plan 1  
One-Way Eastbound with Angled Parking on the Southside of Main Street  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

**Provident**  
design engineering  
7 SKYLINE DRIVE HAWTHORNE, NEW YORK 10532  
TEL: (914) 552-4040 WWW.PDERESULTS.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC





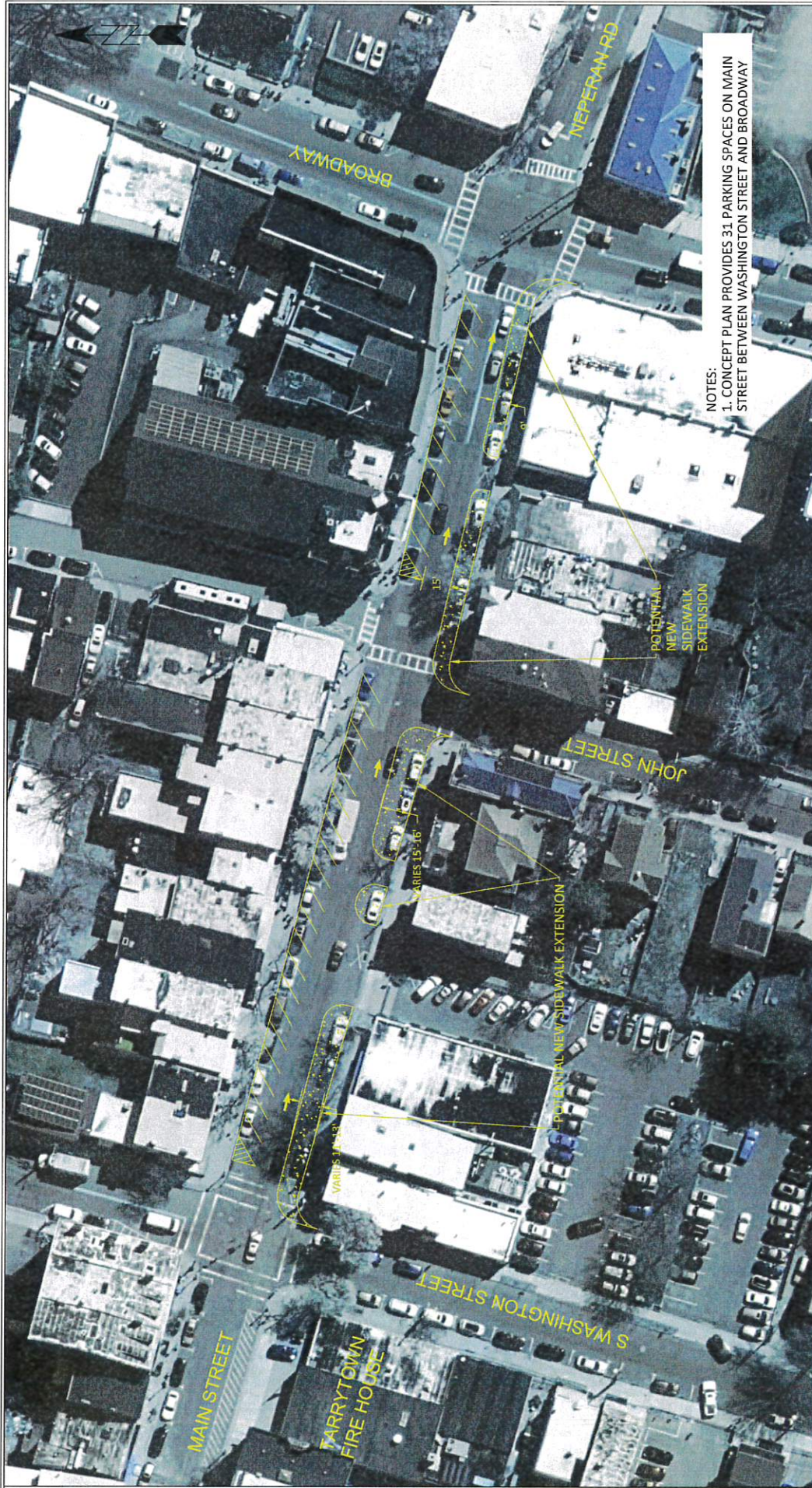
Project No. 20-064  
1"=50'

Figure No. 02

Concept Plan 2  
One-Way Eastbound with Angled Parking on the Southside  
of Main Street and Parallel Parking on the Northside  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

**Provident**  
design engineering  
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PDERESULTS.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC





NOTES:  
1. CONCEPT PLAN PROVIDES 31 PARKING SPACES ON MAIN STREET BETWEEN WASHINGTON STREET AND BROADWAY

Project No. 20-064  
1"=50'

Figure No. 03

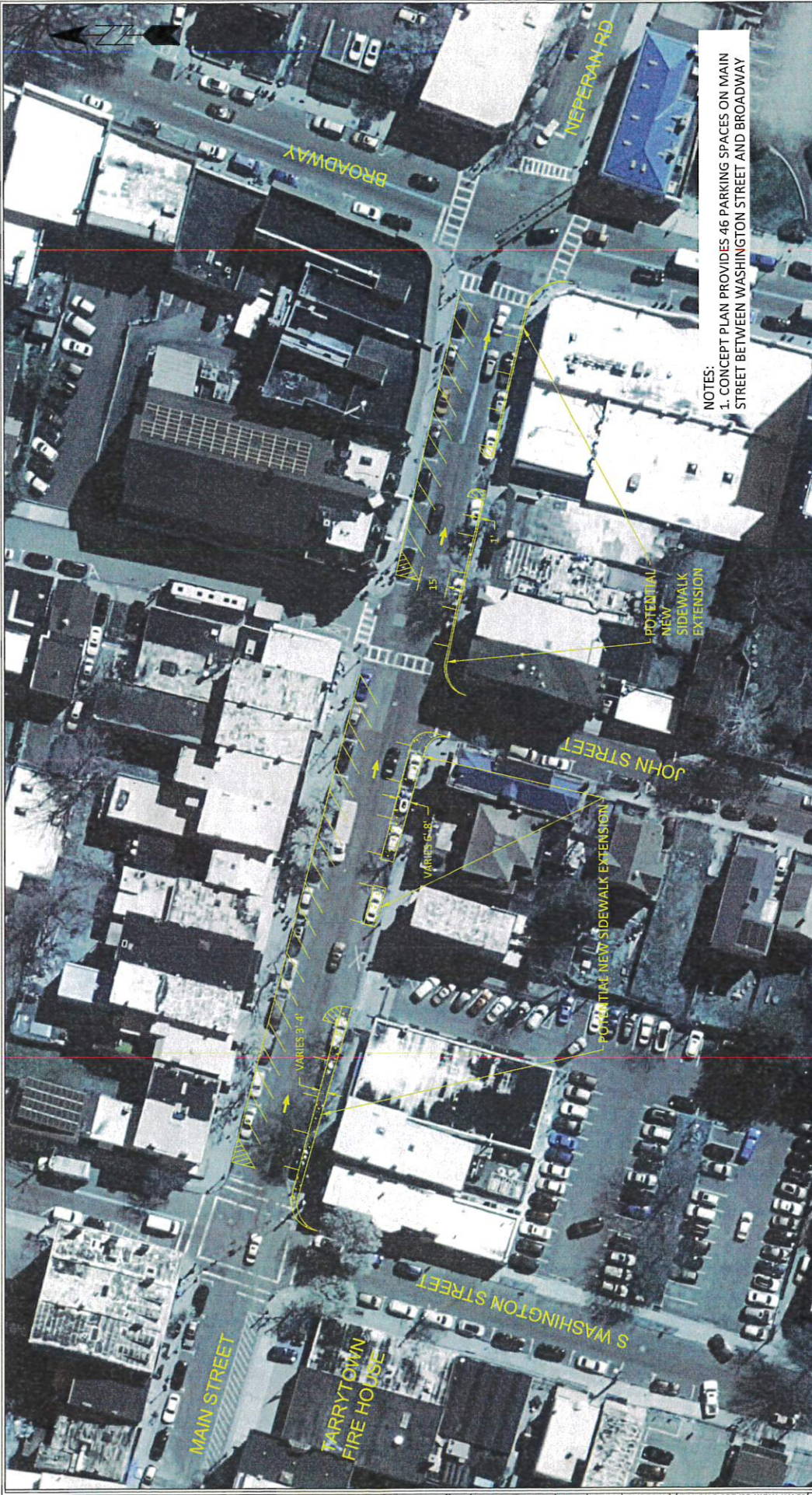
Concept Plan 3  
One-Way Eastbound with Angled Parking on the Northside  
of Main Street  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

**Provident**  
design engineering  
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10522  
TEL: (914) 592-0400 WWW.PDERESULTS.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC

3



3



Project No. 20-064  
1"=50'

Concept Plan 4  
One-Way Eastbound with Angled Parking on the Northside  
of Main Street and Parallel Parking on the Southside  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

Figure No. 04

**Provident**  
design engineering

7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PROVIDENTDESIGN.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC

PROJ\PROJECTS\20-20-064 Tarrytown Main Street One Way\AutoCAD\Traffic\Concept Plans One-Way.dwg





Project No. 20-064  
1"=50'

Concept Plan 5  
One-Way Eastbound with No Parking on Main Street  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

Figure No. 05

**Provident**  
design engineering  
7 SKYLINE DRIVE HAWTHORNE, NEW YORK 10522  
TEL: (914) 952-4040 WWW.PDERESULTS.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC

W



3



Project No. 20-064  
1"=50'

Concept Plan 6  
One-Way Eastbound with Parallel Parking on both  
sides of Main Street  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

Figure No. 06

**Provident**  
design engineering  
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 592-4040 WWW.PROVIDENTDESIGN.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC





Project No. 20-064  
1"=50'

Concept Plan 7  
One-Way Eastbound with Angled Parking on both  
side of Main Street  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

Figure No. 07

**Provident**  
design engineering  
7 SKYLINE DRIVE, HAMPTHORNE, NEW YORK 10532  
TEL: (814) 592-4040 WWW.PDERESULTS.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC



[illegible]

1. CONCEPT PLAN PROVIDES 31 PARKING SPACES ON MAIN STREET BETWEEN WASHINGTON STREET AND BROADWAY

2. THE POTENTIAL EXPANSION OF SIDEWALK HAS BEEN SPLIT EVENLY BETWEEN BOTH SIDE OF THE STREET.

Concept Plan 8  
One-Way Eastbound with Angled Parking on the Northside  
of Main Street  
Tarrytown Main Street One Way  
Tarrytown, Westchester County, NY

Project No. 20-064  
1"=50'

Figure No. 08



Provident  
design engineering

7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532  
TEL: (914) 552-4040 WWW.PDERESULTS.COM  
© PROVIDENT DESIGN ENGINEERING, PLLC