

Borough of Wenonah Downtown Traffic Circulation and Parking Management Study

June 29, 2012

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Preparation of this report has been financed by the Delaware Valley Regional Planning Commission Transportation Community Development Initiative (TCDI) program and The Borough of Wenonah.

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EXECUTIVE SUMMARY

BACKGROUND

The Borough of Wenonah is located in central Gloucester County and is bounded by Mantua Township to the south and Deptford Township to the north, east and west. The Borough is a well established, primarily residential community consisting of over 850 dwellings within an area of approximately one square mile. (See Figure 1)

The central portion of the Borough of Wenonah is traversed by Mantua Avenue (Gloucester County Route #632), a County roadway that provides access to multiple neighboring municipalities but also plays host to the Borough's downtown area which supports various commercial, medical professional, civic, and multi-family residential uses. The remaining portions of the Borough which lie outside of the downtown area sustain the Borough's residential population. As such, it is evident that layout of the Borough of Wenonah has been planned in general accordance with the concept of *Transect*, where the density of development and types of land uses intensify as one travels from the outer limits of the Borough to the center of town.

PROJECT AREA DESCRIPTION

The Borough has identified an inherent need to create a more user friendly downtown area while enhancing commerce and maintaining the current small town charm. With this in mind, the area surrounding "Downtown" is the focus of this Parking Management and Traffic Circulation study (See Figure 2), and for reasons described in further detail within this report, the focus of this study has been narrowed down to include the area specifically bounded by Marion Avenue to the east, Monroe Avenue to the west, Poplar Street to the north, and Cherry Street to the south, with Mantua Avenue as the centerpiece (See Figure 3).

Within this "focus" study area exists a variety of Land Uses including municipal-civic, commercial-retail, medical and professional office, and single and multi-family residential uses. All of which must maintain a harmonious relationship despite the limited resources available for adequate parking and access.

IDENTIFICATION OF THE PROBLEM & PROJECT PURPOSE

The Borough of Wenonah was planned over 140 years ago and unfortunately; the subdivision of land into individual properties did not include provisions for adequate off-street parking to support the present day commercial, professional, civic, and multi-family uses which are primarily located along Mantua Avenue. Furthermore, since its inception in 1871, a number of land use modifications have increased both the residential and commercial density in the downtown area thus further exacerbating the Borough's existing parking deficiencies.

FIGURE 1: BOROUGH OF WENONAH ON USGS QUAD MAP

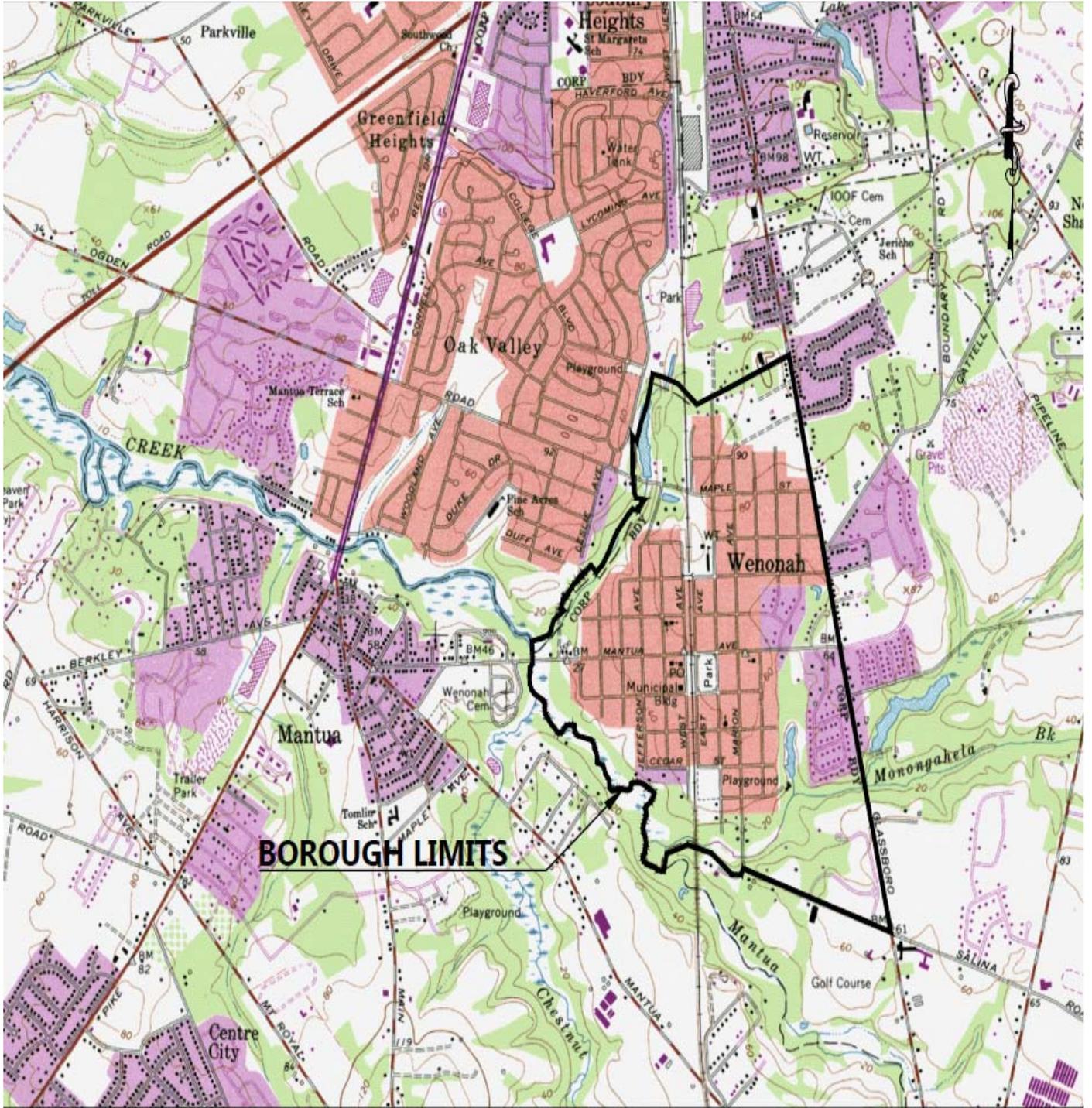
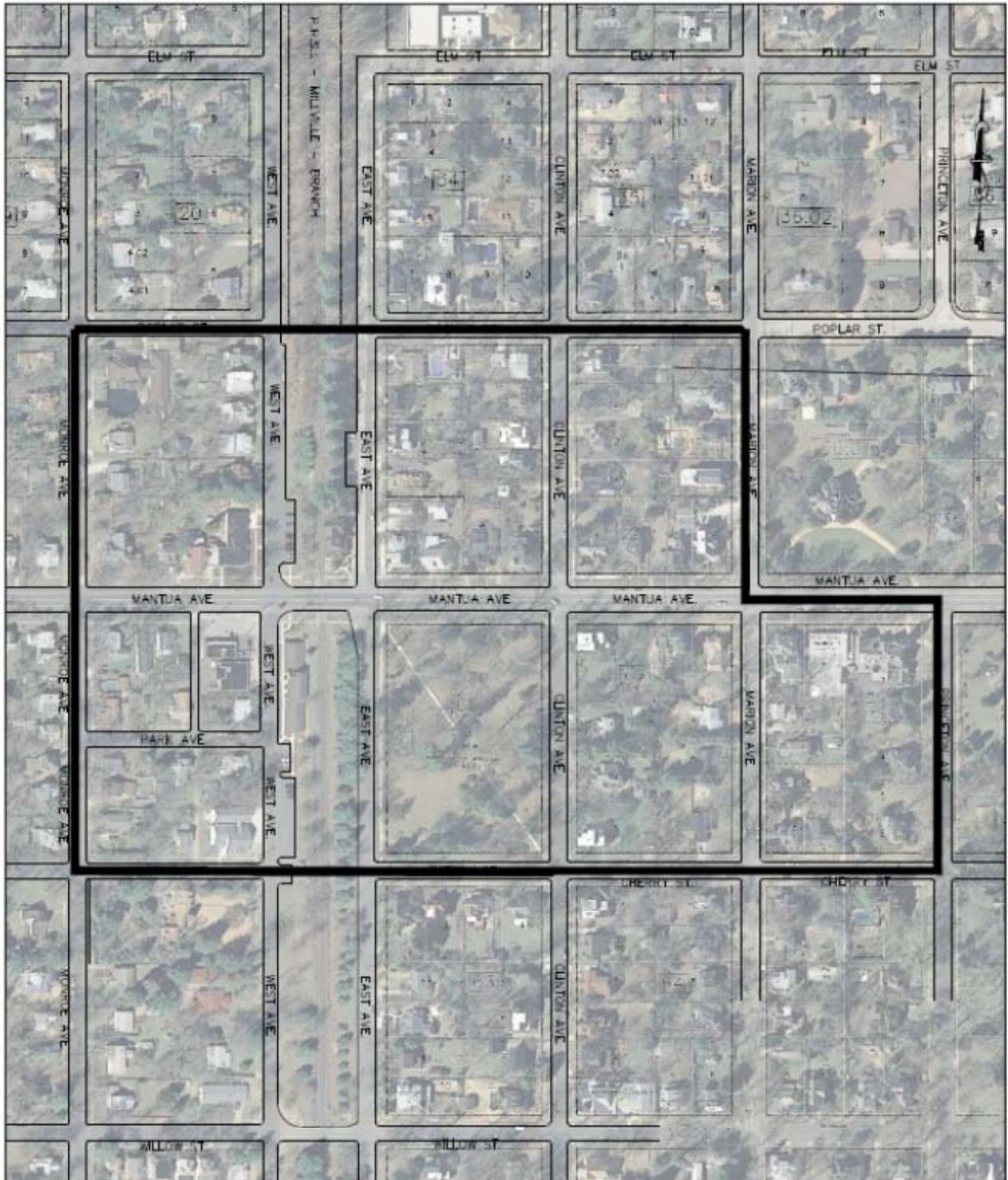


FIGURE 2: AERIAL MAP OF OVERALL TCDI STUDY AREA



FIGURE 3: AERIAL MAP OF FOCUS TCDI STUDY AREA



In addition to the current lack of adequate off-street parking, the Borough has recently experienced a significant increase in cut-through vehicular traffic on Mantua Avenue as a result of the expansion of residential development within the surrounding municipalities, such as Mantua, Deptford, and East Greenwich Townships. With an existing 50 foot wide travelway and little conflict with hard structure, it has been found that driver tendencies often exceed the 35 MPH speed limit in Mantua Avenue, as evidenced by frequent public complaints and Police enforcement records. This increase in vehicular traffic, combined with the lack of adequate off-street parking, has resulted in frequent conflicts between motor vehicles and pedestrians.

Although the problems have been clearly identified, the Borough has struggled in its attempts to implement effective policies to address the deficiencies in the interaction between vehicular thru traffic, parking for local residents and business, and the safety of pedestrian mobility within the downtown area. All of which can be reasonably attributed to the ongoing difficulties in attracting new commerce and sustaining existing businesses. As a result, the Borough's desire to improve access to, from, and within the existing downtown area has been identified as an inherent need.

To address the existing parking deficiencies, the study begins with an analysis of the current parking demands and a subsequent comparison to the inventory of currently existing available on-street and off-street parking facilities. Once these parking deficits were identified, measures to address them were developed and incorporated into the study.

Similarly, with respect to traffic circulation and accessibility, the adequacy of the existing facilities for vehicular, pedestrian, bicycle, and public transportation were analyzed and recommendations were developed for improvements that would increase accessibility and the efficiency of circulation within the downtown area.

Public participation in the study was a vital component in the analysis of the problems and the subsequent development of recommendations for improvements. K2 Consulting Engineers, Inc. solicited specific information from existing business owners and residents about their current parking and transportation needs, their concerns, and their experience in the interaction with other businesses and residents regarding same. A total of three (3) Public Meetings were held to obtain and incorporate public input with respect to 1) the results of the various analyses, 2) the preliminary plans for improvements, and 3) the final plans for improvements.

K2 Consulting Engineers, Inc. also solicited input from the Gloucester County Engineering Department with respect to the proposed improvements to Mantua Avenue, a.k.a. County Route #632, including the incorporation of the County Master Bicycle Plan and the assignment of maintenance responsibilities.

Finally, the preliminary plans for improvements were also presented to Borough Council where Council's input was obtained and incorporated into the final plans and report.

CHAPTER 1: PARKING MANAGEMENT AND DESIGN

I. NEEDS ASSESSMENT

The first step in determining the existing parking needs within the study area was to obtain the necessary data required to identify the existing parking demands. Therefore, the study began with a detailed inventory of properties located within the study area and the collection of specific data relative to each. The work also included an inventory of the available off-street and on-street parking within the study area.

Once all data was compiled, the existing parking demands for each property were calculated based upon their use and related parking requirements, as mandated by the Borough of Wenonah Land Use Ordinance. When certain specific uses were not addressed within the Borough's Land Use Ordinance, various other resources were utilized as the basis for calculating the required parking demands.

Upon identification of the existing parking demands, the existing parking deficits were determined based upon the difference between the number of parking spaces required by each separate land use and the number of existing off-street and on-street parking spaces which are available to accommodate same.

DATA COLLECTION

For the purposes of calculating the existing parking demands, all properties within the study area were initially categorized by their specific use, i.e. Commercial, Institutional/Civic, and both Single and Multi-Family Residential (See Figure 4). Upon identification of the various use(s), the study proceeded with the solicitation of specific information from each existing Commercial, Institutional/Civic, and Multi-Family Residential property owners with respect to the following:

1. The type of use.
2. The building square footages of the Commercial & Civic uses.
3. The hours of operation for the existing Commercial & Civic uses.
4. The number of employees and their shifts for the existing Commercial & Civic uses.
5. The number of dwelling units and bedrooms for the Multi-Family Residential uses.
6. The number of existing parking spaces which are available within the respective property limits.
7. Additional comments that may be helpful in understanding the current parking and traffic circulation problems that have affected the use of each property.

Questionnaires were prepared and mailed directly to the property owners with a self-addressed stamped envelope and all solicitations were completed and returned.

FIGURE 4: BOROUGH OF WENONAH LAND USES IN STUDY AREA



As the completed questionnaires were being reviewed, it was noted that the existing business activities for the Commercial and Institutional/Civic uses varied based upon the time of day as well as the day of the week. Therefore, in order to develop a more accurate assessment of the existing parking demands, it was decided that the parking needs analysis would need to be further broken down into three (3) separate time frames, as follows:

1. Weekdays 8AM to 5PM.
2. Weeknight 6PM to 10PM.
3. Weekends.

Subsequent to obtaining the necessary criteria for use in determining the existing parking demands as described above, the existing number of available off-street parking spaces for each property were determined based upon the data provided by each respective property owner, and further confirmed via field inspection.

Unfortunately, it was found that the Borough of Wenonah's existing Commercial, Civic, and Multi-Family Residential properties maintain a limited ability to provide for any off-street parking facilities due to the sizes of the lots.

As a consequence, the data collection phase proceeded with an inventory of the existing available "on-street" parking to determine if the current off-street parking deficits can be addressed by the availability of on-street parking on public streets. To assist in obtaining this information, the Borough Public Works Department measured the linear footages of each side of each street within the overall study area. During this process, documentation of restricted parking areas resulting from the proximity to fire hydrants, stop signs, driveways, and intersections were noted in accordance with the *NJ State No Parking Statute, i.e. Title 39*.

Using the measurements provided by the Borough Public Works Department, the number of available on-street parking spaces was identified on a street frontage by street frontage basis in accordance with the criteria provided within the "*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*", as collectively issued by the New Jersey Department of Transportation (NJDOT) and the Pennsylvania Department of Transportation (PennDOT), dated March 2008, which recommends a parallel parking space length between 22 and 24 feet long, by 8 feet wide.

ANALYSIS

Using the data described above, calculations to determine the existing parking demands on an individual property by property basis were performed using the parking standards provided within the *Borough of Wenonah Land Use Ordinance* for Commercial and Institutional/Civic properties, and the *New Jersey Residential Site Improvement Standards* for residential properties. Where parking requirements for specific Commercial and Institutional/Civic uses were not addressed within the Borough's Land Use Ordinance, additional resources including *American Planning Association Publications* and Zoning Codes from neighboring municipalities, i.e. Mantua Township and Woolwich Township, were utilized as a reference. While performing these calculations, it should be noted that all existing Single Family dwellings were assumed to maintain a total of three (3) bedrooms.

Upon calculation of the parking demands described above, an initial parking deficit was determined for each property as the difference between the number of off-street parking spaces required and the number of off-street parking spaces available within the property limits. While performing these calculations, it should be noted that each driveway for a single family residence was designated as one (1) off-street parking space.

With the understanding that the existing Commercial, Institutional/Civic, and Multi-Family Residential properties fall short in providing any significant off-street parking, the analysis proceeded to incorporate the available on-street parking as potential for satisfying the previously identified parking deficits. In doing so, parking deficits were re-analyzed after incorporating the availability of on-street parking, on a block by block basis, by grouping adjacent properties together. During this analysis, it should be noted that parking deficits for corner lots were proportionately split between available street frontages.

This analysis was further broken down into the three (3) separate time frames, i.e. Weekdays 8AM to 5PM, Weeknight 6PM to 10PM, and Weekends. (See Figures 5a, 5b, and 5c)

FIGURE 5A: ON-STREET PARKING DEFICIENCIES (WEEKDAYS 8AM-5PM)

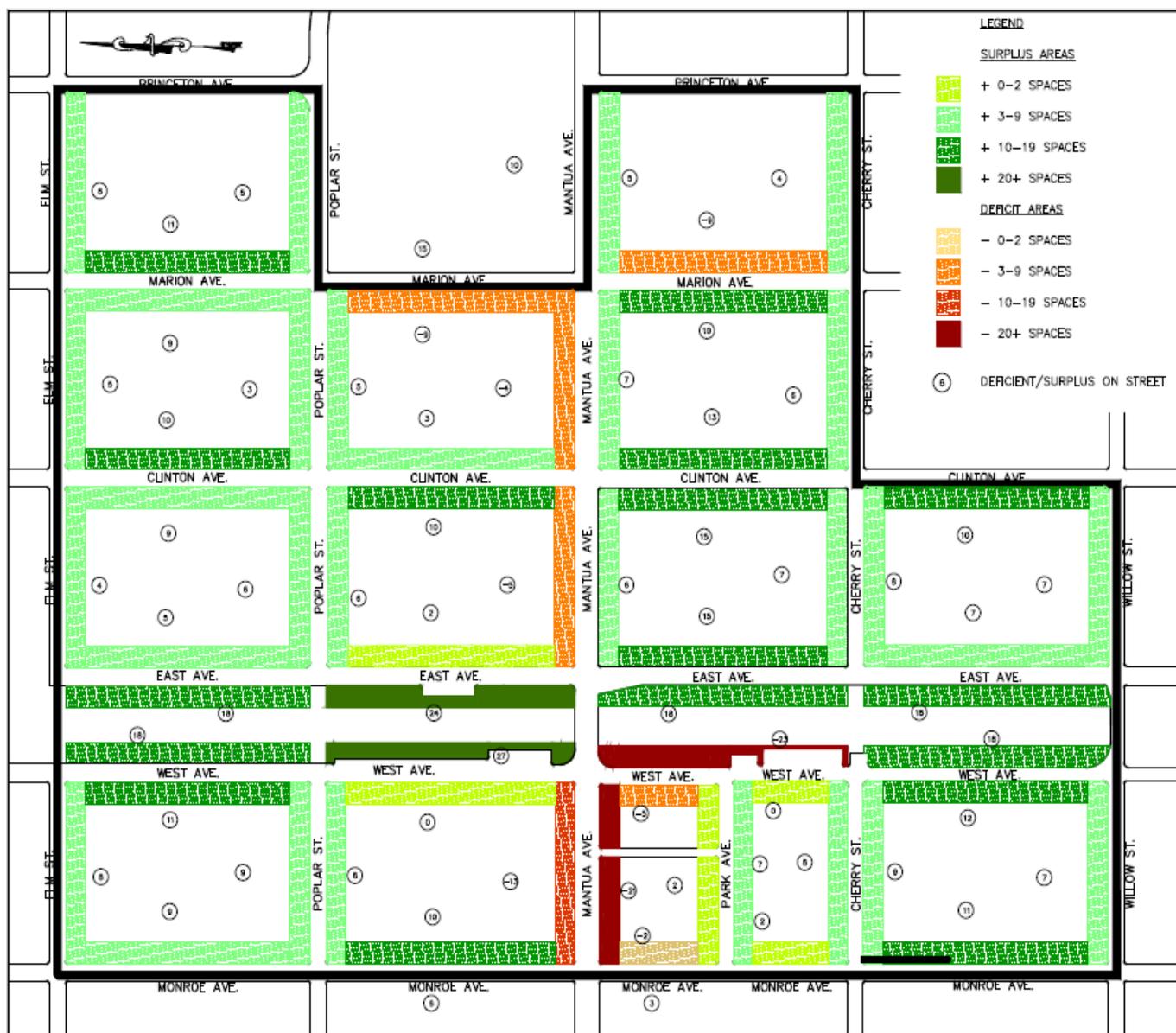


FIGURE 5B: ON-STREET PARKING DEFICIENCIES (WEEKDAYS 6PM-10PM)

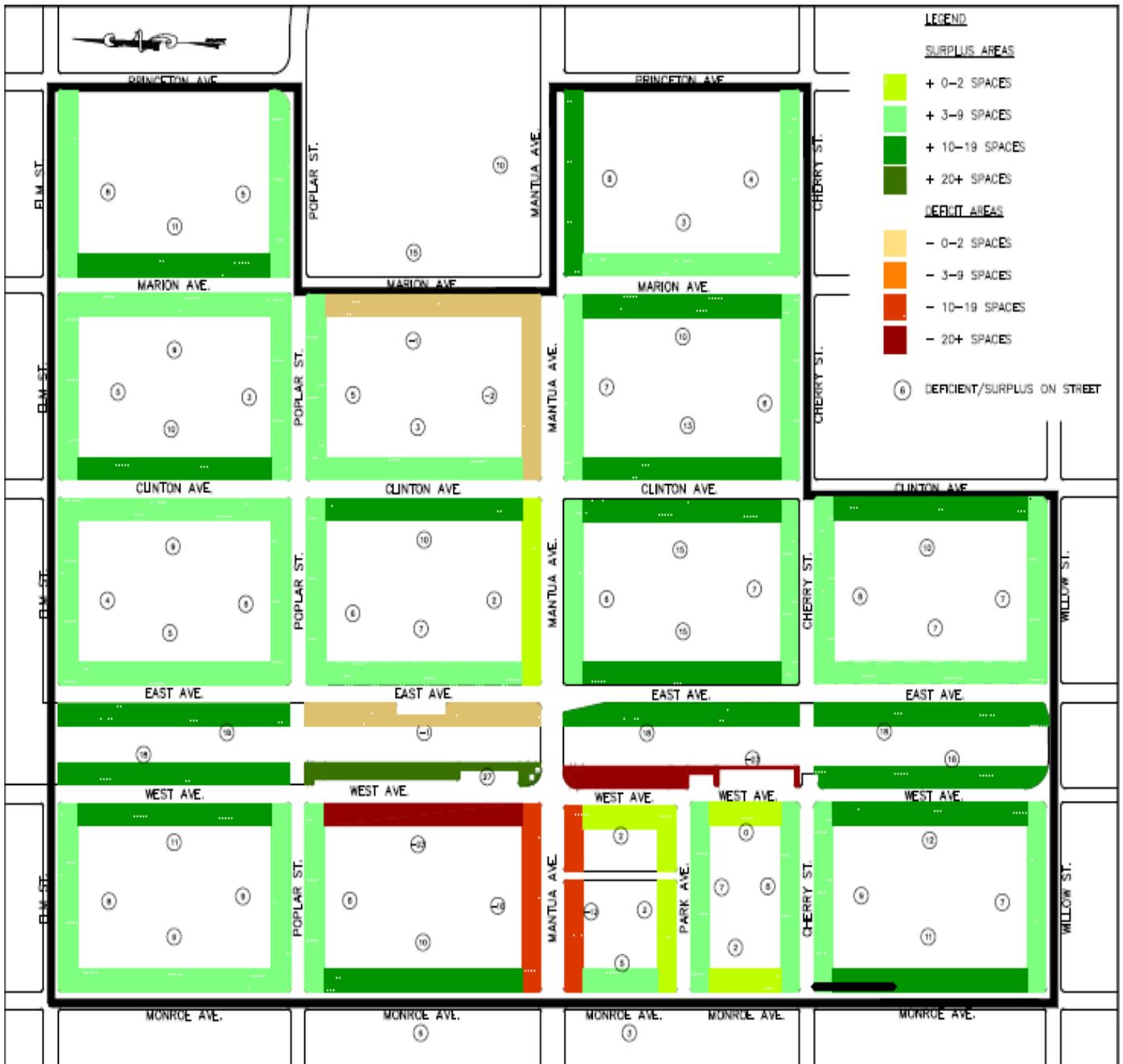
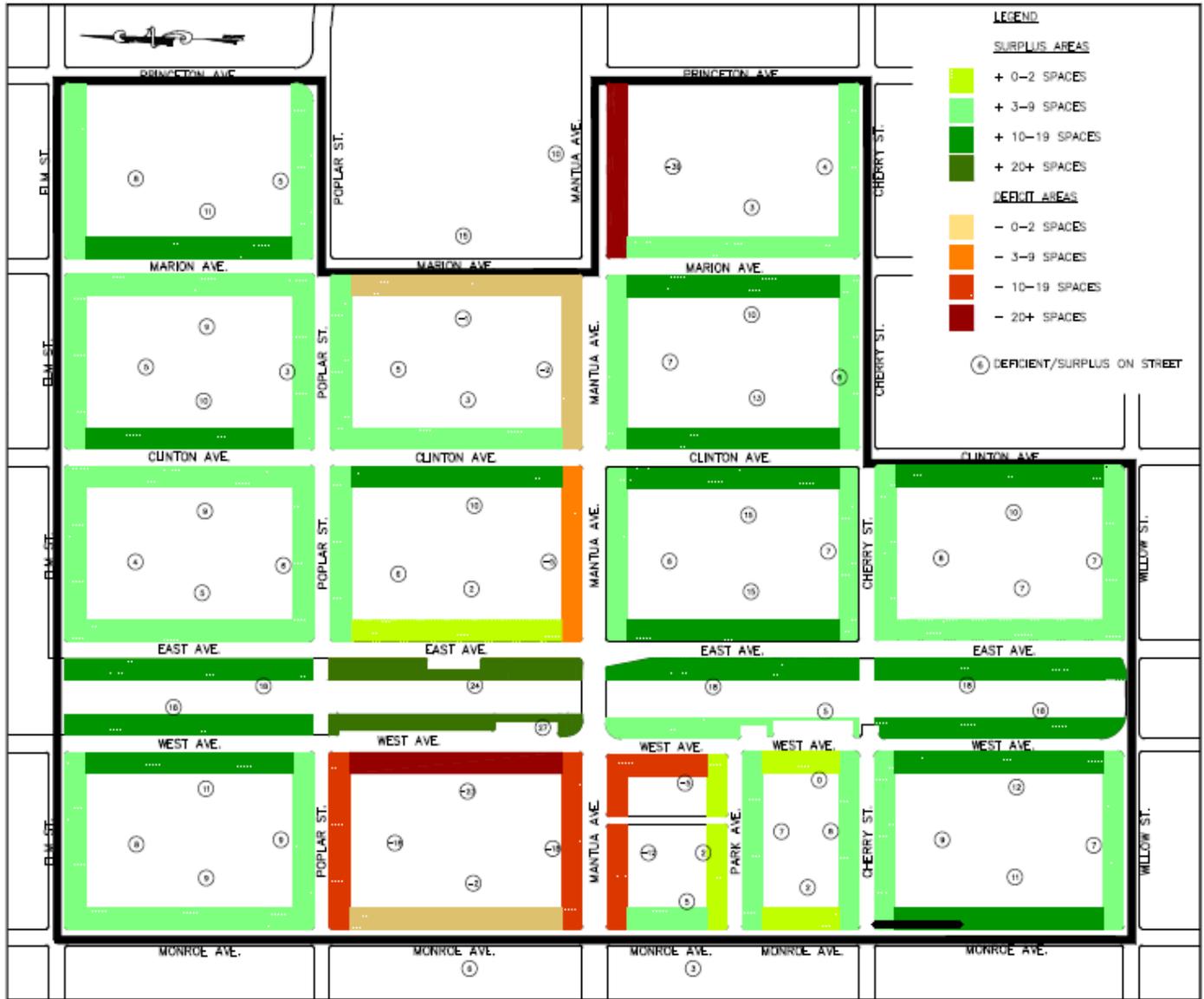


FIGURE 5C: ON-STREET PARKING DEFICIENCIES (WEEKENDS)



RESULTS

The results of needs assessment throughout the overall study area indicate that there are no parking deficits in the perimeter blocks, as these areas are primarily residential in nature with driveways and ample availability for on-street parking to supplement any deficit. However, the needs assessment clearly identified the area bounded by Marion Avenue to the east, Monroe Avenue to the west, Poplar Street to the north, and Cherry Street to the south, as areas which maintain parking deficits. Therefore, we have narrowed down the focus of the study area accordingly (See Figure 3).

Within the area described above, i.e. focus area, the results of needs assessment revealed a varying pattern of parking deficits based upon typical business hours of operation, as follows:

Monday - Friday 8AM to 5PM (See Figure 5a)

During this time frame the blocks that maintain existing parking deficits are as follows:

Table 1: On-Street Parking Deficits (Weekdays 8AM to 5PM)

Street	Side	From	To	Parking Deficit
Mantua Ave.	North	N. Monroe Ave.	Northwest Ave.	13
Mantua Ave.	South	S. Monroe Ave.	Southwest Ave.	21
Mantua Ave.	North	Northeast Ave.	N. Clinton Ave.	5
Mantua Ave.	North	N. Clinton Ave.	N. Marion Ave.	4
S. Monroe Ave.	East	Mantua Ave.	Park Ave.	2
Southwest Ave.	East	Mantua Ave.	W. Cherry St.	23
Southwest Ave.	West	Mantua Ave.	Park Ave.	5
N. Marion Ave	West	E. Poplar St.	Mantua Ave.	9
S. Marion Ave	East	Mantua Ave.	E. Cherry St.	9

As indicated in Table 1 above, the greatest parking deficit is twenty-three (23) spaces located on east side of Southwest Avenue, between Mantua Avenue (County Route #632) and West Cherry Street. This deficit is primarily the result of the parking demands for the Borough Municipal Building.

Monday - Friday 6PM to 10PM (See Figure 5b)

During this time frame the blocks that maintain existing parking deficits are as follows:

Table 2: On-Street Parking Deficits (Weekdays 6PM to 10PM)

Street	Side	From	To	Parking Deficit
Mantua Ave.	North	N. Monroe Ave.	Northwest Ave.	18
Mantua Ave.	South	S. Monroe Ave.	Southwest Ave.	12
Mantua Ave.	North	N. Clinton Ave.	N. Marion Ave.	2
Northwest Ave.	West	W. Poplar St.	Mantua Ave.	23
Southwest Ave.	East	Mantua Ave.	W. Cherry St.	23
Northeast Ave	West	E. Poplar St.	Mantua Ave.	1
N. Marion Ave	West	E. Poplar St.	Mantua Ave.	1

As indicated in Table 2 above, the greatest parking deficit is twenty-three (23) spaces located on east side of Southwest Avenue between Mantua Avenue (County Route

#632) and West Cherry Street. This deficit is primarily the result of the parking demands for the Borough Municipal Building. In addition, a deficit of twenty three (23) spaces was also found evident in the west side of Northwest Avenue, from West Poplar Street to Mantua Avenue (CR #632). This deficit is primarily the result of the mixture of residential properties and the Tricia Sloan Dance Center.

Weekends (See Figure 5c)

During this time frame the blocks that maintain existing parking deficits are as follows:

Table 3: On-Street Parking Deficits (Weekends)

Street	Side	From	To	Parking Deficit
W. Poplar St.	South	N. Monroe Ave.	Northwest Ave.	18
Mantua Ave.	North	N. Monroe Ave.	Northwest Ave.	18
Mantua Ave.	South	S. Monroe Ave.	Southwest Ave.	12
Mantua Ave.	North	Northeast Ave.	N. Clinton Ave.	5
Mantua Ave.	North	N. Clinton Ave.	N. Marion Ave.	2
Mantua Ave.	South	S. Marion Ave.	S. Princeton Ave.	36
N. Monroe Ave.	East	W. Poplar St.	Mantua Ave.	2
Northwest Ave	West	W. Poplar St.	Mantua Ave.	23
Southwest Ave.	West	Mantua Ave.	Park Ave.	5
N. Marion Ave	West	E. Poplar St.	Mantua Ave.	1

As indicated in Table 3 above, the greatest parking deficit is thirty-six (36) spaces located on the south side of Mantua Avenue, from S. Marion Avenue to S. Princeton Avenue. However, this deficit is specific to the Sunday services of the Presbyterian Church located at the intersection of S. Princeton Avenue and Mantua Avenue and it has been demonstrated that adequate parking is provided on the adjacent public streets during these services.

The second greatest parking deficit is twenty-one (21) spaces located along west side of Northwest Avenue between Mantua Avenue (County Route #632) and West Poplar Street. This deficit is primarily the result of the parking demands for the existing residential properties combined with the Tricia Sloan Dance Studio.

SUMMARY

Based upon the results of the Needs Assessment, the existing parking deficits appear to be concentrated between the area bounded by Marion Avenue to the east, Monroe Avenue to the west, Poplar Street to the north, and Cherry Street to the south, which has been previously identified as the focus of the study area.

In addition, it is also noted that the extent of the parking deficits vary based upon the day of the week (i.e. weekday or weekend) and furthermore for weekdays, the existing parking deficits vary based upon the time of day (i.e. 8AM – 5PM and/or 6PM – 10PM). Table 4 below indicates the overall parking deficits within the study area for each separate block and for each separate timeframe:

Table 4: Summary of Existing On-Street Parking Deficits

Street	Side	From	To	Weekday Deficit (8-5)	Weekday Deficit (6-10)	Weekend Deficit
W. Poplar St.	North	Monroe Ave.	Northwest Ave.	+9	+9	+9
	South	Monroe Ave.	Northwest Ave.	+8	+8	-18*
			TOTAL	+17	+17	-9*
Mantua Ave.	North	Monroe Ave.	Northwest Ave.	-13	-18	-18
	South	Monroe Ave	Southwest Ave	-21	-12	-12
			TOTAL	-34	-30	-30
Mantua Ave.	North	Northeast Ave.	Clinton Ave.	-5	+2	-5
	South	Southeast Ave.	Clinton Ave.	+6	+6	+6
			TOTAL	+1	+8	+1
Mantua Ave.	North	Clinton Ave.	Marion Ave.	-4	-2	-2
	South	Clinton Ave.	Marion Ave.	+7	+7	+7
			TOTAL	+3	+5	+5
Mantua Ave.	North	Marion Ave.	Princeton Ave.	+10	+10	+10
	South	Marion Ave.	Princeton Ave.	+5	+8	-36*
			TOTAL	+15	+18	-26*
N. Monroe Ave.	East	W. Poplar St.	Mantua Ave.	+10	+10	-2
	West	W. Poplar St.	Mantua Ave.	+6	+6	+6
			TOTAL	+16	+16	+4
S. Monroe Ave.	East	Mantua Ave.	Park Ave.	-2	+5	+5
	West	Mantua Ave.	Park Ave.	+3	+3	+3
			TOTAL	+1	+8	+8
Northwest Ave	East	W. Poplar St.	Mantua Ave.	+27	+27	+27
	West	W. Poplar St.	Mantua Ave.	0	-23/16**	-23/16**
			TOTAL	+27	+11	+11
Southwest Ave.	East	Mantua Ave.	Cherry St.	-23/3***	-23	+5
	West	Mantua Ave.	Cherry St.	-5	+2	-5

			TOTAL	-8	-21	0
Northeast Ave	East	E. Poplar St.	Mantua Ave.	+2	+7	+2
	West	E. Poplar St.	Mantua Ave.	+24	-1	+24
			TOTAL	+26	+6	+26
N. Marion Ave	East	E. Poplar St.	Mantua Ave.	+15	+15	+15
	West	E. Poplar St.	Mantua Ave.	-9	-1	-1
			TOTAL	+6	+14	+14
S. Marion Ave	East	Mantua Ave.	E. Cherry St.	-9	+3	+3
	West	Mantua Ave.	E. Cherry St.	+10	+10	+10
			TOTAL	+1	+13	+13

* Parking Deficits in W. Poplar Street, from Monroe Avenue to Northwest Avenue, and in Mantua Avenue, from Marion Avenue to Princeton Avenue

The parking deficits on the aforementioned blocks are strictly a function of the Sunday services for the Episcopal Church, located at the intersection of W. Poplar Street and Monroe Avenue, and the Presbyterian Church, located at the intersection of Princeton Avenue and Mantua Avenue. It has been demonstrated that adequate parking is provided among the adjacent public streets during the specific time frames for when Sunday services are performed.

** Parking Deficits in the west side of Northwest Ave., from Poplar St. to Mantua Ave.

The parking deficit of 23 spaces is partially based upon the parking demand for the Tricia Sloan Dance Center as calculated in accordance with the American Planning Association's ratio of 1 space per 150 SF. However, a typical retail/office use would be subject to a ratio of 1 space per 200 SF in accordance with the Borough Land Use Ordinance. With a floor area of 4,500 SF, the parking demand for a retail/office use would be seven (7) spaces less than that which is required for the Tricia Sloan Dance Center. Furthermore, the Dance Center has been provided with a drop-off zone in the east side of Northwest Avenue which would imply that many patrons drop off the students and do not park their vehicles during classes. In light of the above, it would be reasonable to justify a reduction in the parking demand for the Tricia Sloan Dance Center by a total of seven (7) spaces.

*** Parking Deficits in the east side of Southwest Ave., from Mantua Ave. to Cherry St.

The parking deficit of 23 spaces is partially based upon the parking demand for the Borough Municipal Building as calculated in accordance with the Borough Zoning Code. However, based upon the realistic parking demand for the Borough Municipal Building during the Weekday hours of 8AM to 5PM, the deficit may be reduced by a total of 20 spaces, thus resulting in a realistic deficit of three (3) parking spaces.

II. MITIGATION OF PARKING DEFICITS & PLAN DEVELOPMENT

In order to address the previously identified parking deficits, the study move forward with the identification of potential solutions for providing additional parking facilities, as follows:

- A) Potential for additional off-street parking within existing commercial and multi-family residential properties

Although the availability of existing off-street parking spaces have been incorporated into the parking deficit analysis, the study included a field check of all existing commercial and multi-family residential properties in an attempt to identify the potential for providing additional off-street parking. Based upon this field investigation it was determined that there is little to no opportunity to provide additional off-street parking on the existing commercial and multi-family residential properties.

- B) Potential for additional parking on Borough property & within Public Rights of Way

With little to no potential for the existing commercial and multi-family residential properties to provide additional off-street parking, an investigation into the possibility of providing parking on Borough owned property was performed. During the investigation it was noted that Borough maintains existing parking facilities along the following Borough owned property and/or Right of Way:

- 1) Northwest Avenue, from W. Poplar Street to Mantua Avenue
- 2) Northeast Avenue, from E. Poplar Street to Mantua Avenue
- 3) Southwest Avenue, from Park Avenue to W. Cherry Street

However, the parking capacity made available by these facilities is insufficient in addressing the Borough's maximum parking needs. Therefore, an investigation into the potential to expand the existing Borough owned parking areas was performed in addition to an investigation into the potential for the creation of new on-street parking areas. Based upon these investigations, the following was noted:

- Expansion of existing parking facility in the east side of Northwest Avenue, adjacent to the Railroad Right of Way:

Northwest Avenue, from W. Poplar Street to Mantua Avenue, maintains sufficient Borough Property and/or Right of Way to accommodate existing angled parking for thirteen (13) spaces. Due to the existing 75 foot wide public Right of Way, the ability to expand this public parking area northward towards W. Poplar Street is a feasible proposal.

- Expansion of existing parking facility in west side of Northeast Avenue, adjacent to the Railroad Right of Way:

Northeast Avenue, from E. Poplar Street to Mantua Avenue, maintains sufficient Borough Property and/or Right of Way to accommodate existing angled parking for twelve (12) spaces. Due to the existing 97 foot wide public Right of Way, the ability to expand this public parking area northward towards W. Poplar Street is a feasible proposal.

- Expansion of existing parking facility in the east side of Southwest Avenue Right of Way, adjacent to the Railroad Right of Way:

Southwest Avenue, from Mantua Avenue to W. Cherry Street, maintains sufficient Borough Property and/or Right of Way to accommodate existing angled parking for twenty-four (24) spaces. The investigation revealed the potential to expand the existing parking area southward from W. Cherry Street towards W. Willow Street. However, such an expansion would place the parking area outside of the focus study area and greater than 450 feet from the nearest destination point. Therefore, this option has been determined to be too remote and would be under-utilized and ineffective.

- Creation of new parking area in the west side of Southeast Avenue, adjacent to railroad right of way:

Southeast Avenue, from Mantua Avenue to E. Cherry Street, maintains a 92 foot wide Right of Way and therefore, the potential for the addition of new angled on-street parking area in Southeast Avenue from Mantua Avenue to E. Cherry Street is a feasible proposal.

- Borough Park, located at Mantua Avenue & Southeast Avenue

Although the Borough Park provides the potential for the construction of an off-street parking lot, the Park is frequently used for community events and therefore, such an endeavor is infeasible.

Due to limitations presented by the existing Right of Way widths on the other Borough streets located within the focus study area and due to the lack of Borough owned open space, it was concluded that there is no potential to provide for additional parking on Borough owned property and/or Rights of Way.

C) Potential for angled parking in Mantua Avenue (County Route #632)

Mantua Avenue (CR #632) maintains a 100' wide Right of Way, with parallel parking on each side. In order to expand upon the currently available parking capacity, an investigation into the potential for angled parking was performed.

It should be noted that Mantua Avenue is under jurisdiction of Gloucester County and therefore, any proposed improvements would have to be approved by the County Engineer.

D.) Formal parallel parking in Mantua Avenue (County Route #632)

As indicated above, Mantua Ave currently supports parallel parking on both sides of the street. Based upon comments from the local residents & business owners, the existing parallel parking is not efficiently utilized as parked vehicles often encumber more the one parallel parking space, thus reducing the optimum on-street parking capacity.

Furthermore, the imposition of parking restrictions resulting from the legal requirement to maintain the minimum statutory distances from intersections (i.e. 25') further reduces the on-street parallel parking capacity. Therefore, an investigation was performed to determine potential for increasing on-street parking capacity by the simple addition of striping improvements for the purposes of formally identifying parallel parking stalls. In addition, the incorporation of curb extensions at the street intersections along Mantua Avenue was considered for

the purpose of expanding the capability to accommodate additional on-street parallel parking spaces.

Now that the potential areas for providing additional parking facilities have been identified, the project proceeded to the development of planning and design options to address the previously identified parking deficits.

III. DEVELOPMENT OF PLANNING AND DESIGN OPTIONS

The Needs Analysis identified that the locations in need of additional parking are primarily located within the area bounded by Marion Avenue to the east, Monroe Avenue to the west, Poplar Street to the north, and Cherry Street to the south, with the largest parking deficits indicated in Table 5 below.

Table 5: Blocks with the Greatest Existing On-Street Parking Deficits

Street	From	To	Time Period	Deficit
Mantua Ave.	Monroe Ave.	Southwest Ave.	Weekday 8-5	34
Mantua Ave.	Monroe Ave.	Northwest Ave.	Weekday 6-10 & Weekends	30
Southwest Ave.	Mantua Ave.	W. Cherry St.	Weekday 8-5	8
Southwest Ave.	Mantua Ave.	W. Cherry St.	Weekday 6-10	21

Without the opportunity to provide for off-street parking facilities within existing commercial and multi-family properties, the planning & development of design options focused upon measures to increase on-street parking capacity within a one block radius of the areas indicated in Table 5.

Expansion of existing on-street angled parking in east side of Northwest Avenue, from Mantua Avenue to W. Poplar Street, and incorporation of formal parallel parking.

Table 5 indicates that a number of the areas in need of additional parking are located within close proximity to this existing parking facility. Therefore, the expansion of the existing parking area northward toward Poplar Street, combined with formalized parallel parking on both sides of the street, was incorporated into the project as an option for providing additional parking. These improvements were found to increase the parking capacity in this block by six (6) parking spaces, and include landscaped islands for purposes of aesthetics and to provide adequate lighting. Although this potential improvement does not address the existing parking deficits in totality, the additional parking capacity may be used in combination with supplemental measures to meet the area's overall parking needs (See Figure 6).

It should be noted that alternatives for addressing the most severe of the identified parking deficits would include the further expansion of this on-street parking area as shown in Figure 6A.

FIGURE 6: NORTHWEST AVENUE PARKING LOT EXPANSION

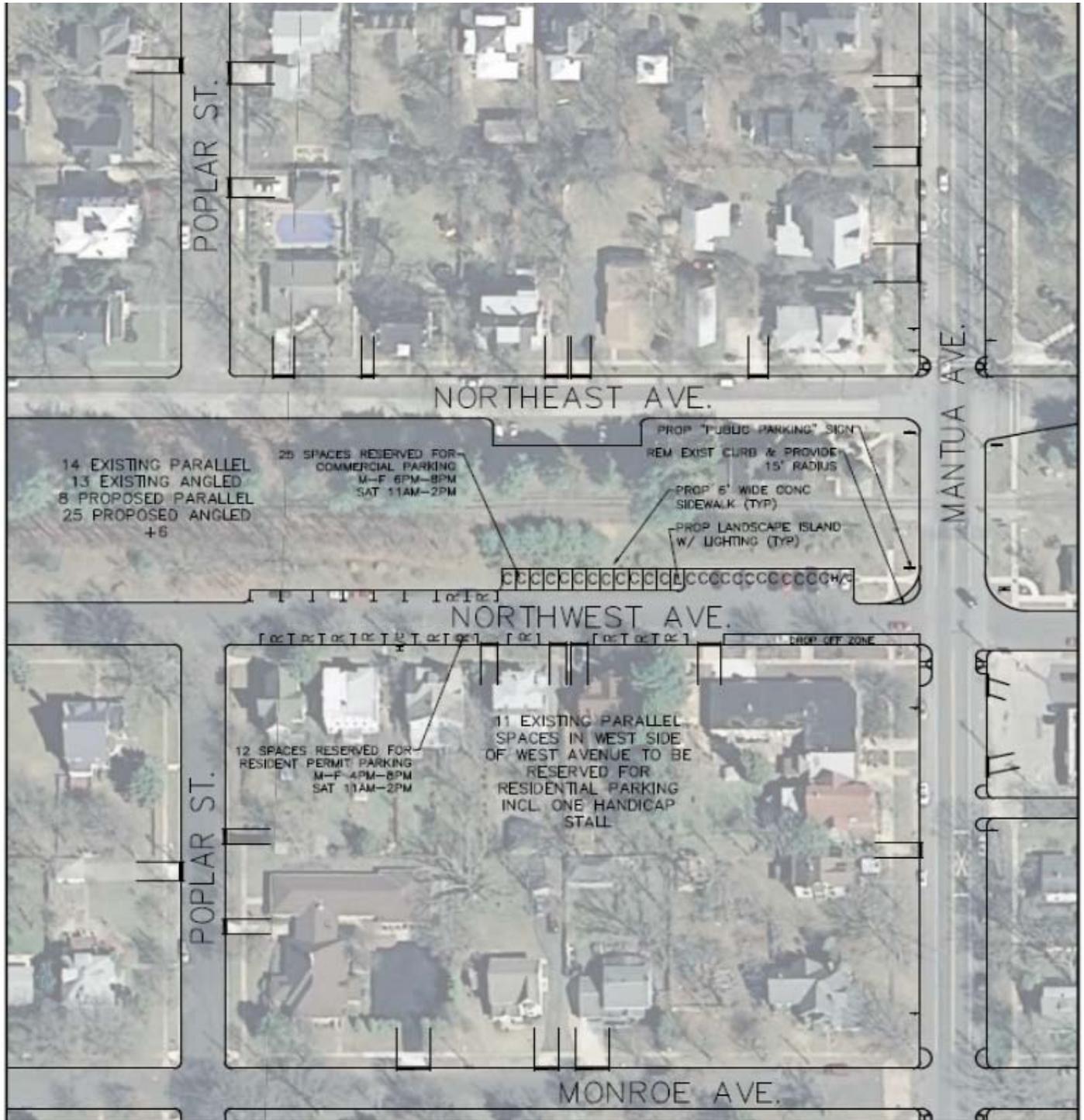


FIGURE 6A: NORTHWEST AVENUE PARKING LOT EXPANSION (ALTERNATE)



Expansion of existing on-street angled parking in west side of Northeast Avenue, from Mantua Avenue to W. Poplar Street

Upon review of Table 4, the parking deficits for the blocks located within close proximity to this existing parking area do not indicate a need for additional parking that could not be more appropriately accommodated by another one of the design options described herein. Therefore, it was concluded that the expansion of this on-street angled parking area would not be the most ideal for increasing the parking capacity as other alternatives were found to be more suitable and less costly.

However, in order to optimize the capacity of the existing available parallel parking in the west side of Northeast Avenue, striping improvements to formally identify parallel parking stalls is being considered as a design option. (See Figure 7)

FIGURE 7: NORTHEAST AVENUE PARKING IMPROVEMENTS



Expansion of existing on-street angled parking in east side of Southwest Avenue, from Mantua Avenue to W. Cherry Street

Table 5 indicates that Southwest Avenue, from Mantua Avenue to W. Cherry Street, is one of the primary blocks in need of additional parking. The Borough currently maintains existing on-street angled parking in Southwest Avenue, from Park Avenue to W. Cherry Street. However, the majority of these parking spaces are reserved for Borough emergency service personnel with a total of only three (3) stalls available for public parking. Due to the fact that this angled parking already extends south to W. Cherry Street, it was determined that the southward expansion of this parking area would result in those additional stalls being located too distant from the nearest destination point (i.e. Municipal Building) and therefore, would be underutilized and ineffective.

The potential relocation of existing parking stalls which are presently reserved for Emergency Management Services was reviewed with Borough EMS personnel. Such a relocation would allow for a number of additional parking opportunities for the public wishing to access the Borough Municipal Building, Post Office, and/or the existing businesses on the south side of Mantua Avenue, from S. Monroe Avenue to Southwest Avenue. However, it was subsequently determined that it is in the best interest of public safety not to relocate the EMS reserved stalls further away from both the Fire Station and the Police Station.

Although the expansion of the on-street angled parking in Southwest Avenue is not being pursued as described above, striping improvements to formally identify parallel parking stalls in the west side of Southwest Avenue, from Mantua Avenue to Park Avenue, is being considered as a design option for maximizing the parallel parking capacity. (See Figure 8)

FIGURE 8: SOUTHWEST AVENUE PARKING IMPROVEMENTS



On-street angled parking in west side of Southeast Avenue, from Mantua Avenue to E. Cherry Street

Table 5 indicates that there is a significant need for additional parking in close proximity to this location, primarily due to the parking deficits created by the Borough Municipal Building, Post Office, and the businesses on the south side of Mantua Avenue from S. Monroe Avenue to Southwest Avenue. In light of the fact that the extension of the existing on-street parking in Southwest Avenue is not being pursued, the construction of on-street angled parking in Southeast Avenue, from Mantua Avenue to E. Cherry Street, was considered as one of the design options for providing additional on-street parking capacity. (See Figure 9)

FIGURE 9: SOUTHEAST AVE. ON-STREET ANGLED PARKING IMPROVEMENTS



Due to the extent of disturbance and potential costs to construct the on-street angled parking shown in Figure 9, a less expensive and intrusive alternative was also considered. This alternative included the incorporation of formalized parallel parking in both the east and west sides of Southeast Avenue, from Mantua Avenue to E. Cherry Street, as shown in (See Figure 9A).

FIGURE 9A: SOUTHEAST AVENUE PARALLEL PARKING IMPROVEMENTS



On-street angled parking in the north and south sides of Mantua Avenue (County Route #632), from Monroe Avenue to Marion Avenue

Table 4 indicates that that Mantua Avenue, from Monroe Avenue to Marion Avenue, is consistently in need of additional parking during all studied timeframes. Furthermore, Mantua Avenue provides the street frontage for the majority of the commercial businesses and professional offices in the downtown area.

With a 100' wide Right of Way, Mantua Avenue is capable of supporting angled on-street parking that is common to a suburban Main Street concept. The potential for this improvement to provide additional parking capacity was pursued and conceptual plans were developed for the north and south sides of Mantua Avenue, from Monroe Avenue to Marion Avenue, for the purposes of identifying the impacts to the County Right of Way. The plans included 45° angled parking with curb extensions (bump-outs) at the intersections to protect parked vehicles from traffic and to provide the opportunity to park within 10 feet of an intersection as permitted by the *NJ State No Parking Statute, i.e. Title 39*.

Based upon the plans, the angled parking concept will provide a total of 29 additional on-street parking spaces above the current parallel parking condition (See Figure 10). However, the plans will require the relocation of existing curblines, utility service boxes, and signs, as well as the removal of mature trees, and a certain amount of underground drainage improvements. Therefore, the benefits of providing 29 additional parking spaces must be weighed against the impacts to the existing County Right of Way and the resulting construction costs. Furthermore, the plans must be endorsed by the Office of the Gloucester County Engineer.

FIGURE 10: ANGLED PARKING IMPROVEMENTS IN MANTUA AVENUE



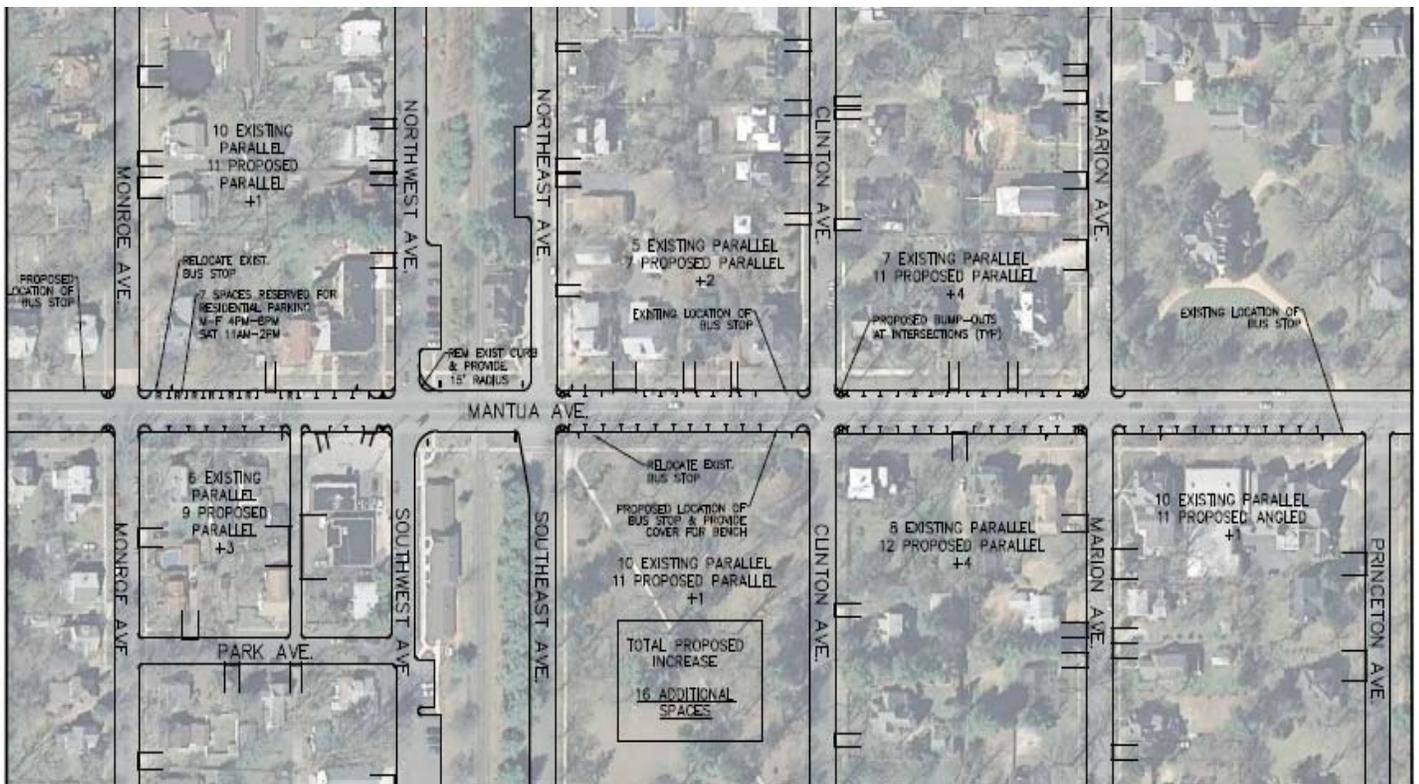
Formalized parallel parking in the north and south sides of Mantua Avenue (County Route #632), from S. Monroe Avenue to S. Marion Avenue

As an alternative to angled parking, the concept of providing formalized parallel parking in Mantua Avenue, from Monroe Avenue to Marion Avenue, was also pursued. The investigation into this option was primarily the result of comments received from the public regarding “wasted” space, as parked vehicles frequently encumber more than one “unmarked” parallel parking stall, thus limiting the optimum on-street parking capacity.

In response, a conceptual plan was developed which incorporates painted parallel parking stalls on the north and south sides of Mantua Avenue. The plan also includes curb extensions (bump-outs) at the intersections for the purposes of decreasing the statutory twenty-five (25) foot clear distance between a parked vehicle and an intersecting street to a clear distance of only ten (10) feet, as permitted by the *NJ State No Parking Statute, i.e. Title 39*.

Based upon these plans, the formalized parallel parking concept will provide a total of fifteen (15) additional on-street parking spaces above the current optimum parallel parking condition (See Figure 11). It should be noted that this alternative results in far less impact to the County Right of Way, while providing a total of only fourteen (14) fewer parking spaces than the angled parking option described above. Once again, the plans must be endorsed by the Office of the Gloucester County Engineer.

FIGURE 11: PARALLEL PARKING IMPROVEMENTS IN MANTUA AVENUE



Supplemental improvements

1. Identification and recognition of available public parking

Most visitors to, and travelers through, the Borough of Wenonah use Mantua Avenue (County Route #632) as the primary route of travel. With a 100' wide Right of Way and a speed limit of 35 MPH, the ability to identify the available public parking on the intersecting streets is difficult without the benefit of appropriate signage. Therefore, in order to efficiently utilize the available public parking in Northwest Avenue, Northeast Avenue, Southwest Avenue and Southeast Avenue, signage is being proposed to assist the public in locating the available public parking.

2. Pedestrian accommodations

With the expansion of the existing parking areas and incorporation of formalized parallel parking, provisions must be made to accommodate pedestrian movements between the parking areas and the downtown destination points. Therefore, a certain extent of pedestrian improvements will be required to promote safe and efficient travel. These improvements shall include sidewalks, crosswalks, and lighting, as described in further detail within this report.

3. Reserved Parking

Due to the limited ability of the local business establishments to provide for their own off-street parking, Borough Council has been approached on numerous occasions by the local residents and business owners with requests to address conflicts between residential parking and business patron parking. In response, a number Ordinances have been adopted to allow for reserved residential parking during certain time frames where these conflicts are found to be most apparent. However, based upon comments received through written correspondence and at the Public Meetings, these conflicts still exist and therefore, additional reserved parking for residents and businesses shall be incorporated into the plan for future improvements.

IV. PUBLIC OUTREACH

Public involvement throughout all phases of the Parking Management Study was integral in the identification of deficiencies and subsequent development of solutions. A total of three (3) meetings were publicly advertised and scheduled to coincide with the completion of the major phases of the project, i.e. Needs Assessment, Preliminary Plan Development, and Final Plan Development.

During the Needs Assessment phase, each commercial business owner and a number of the multi-family property owners were sent a questionnaire requesting specific information about current practices that would assist in the understanding of the existing parking needs. Such inquiries included questions about the types of commercial uses and their square footage, number of employees, hours of operation, number of residential units and their bedroom counts, and availability of off-street parking on premises. In addition to these quantifiable questions, individuals were asked to provide comments on their current parking experiences and problems inherent thereto. All of this data was compiled and used to formulate the current parking demand within the focus study area.

Upon completion of a comparison between parking demands and the existing parking capacities, the current parking deficits were identified and the first of the three (3) public meetings was scheduled to reveal the results of the Needs Assessment to the public and to solicit suggestions for improvements to address said needs. These suggestions included angled parking in Mantua Avenue, extension of existing parking areas in Northwest Avenue and in Northeast Avenue, and the construction of angled on-street parking in Southeast Avenue.

During this first meeting, it was noted that there is frequent conflict between residents and businesses which are located within close proximity to one another and are competing for the limited amount of available on-street parking. As a result, considerations towards residential parking permits were discussed and shall be addressed within the recommendations provided within this report.

The second public meeting was held subsequent to the development of the preliminary plans to mitigate the existing parking deficits. The proposed parking improvements were reviewed with the public, including the method in which the proposed parking areas will address the previously identified deficits.

A number of comments and suggestions were provided by the public, including a suggestion for formalized parallel parking, i.e. striping, in the west side of Southwest Avenue (in front of the post office) and in the west side of Northeast Avenue (in front of the Community Center). Additional comments provided by the public included requests for reserved parking for residents, as well as businesses, within certain timeframes which are critical to each. These comments were taken into consideration in the development of the final plans and recommendations for improvements.

The preliminary parking plans were also presented to Borough Council at a regularly scheduled public Council Meeting. Concerns from Council were centered around the fact that the Borough parking needs vary with the time of day and between weekdays and weekends, and although the preliminary parking improvement plans were designed to address the highest possible parking deficits, those deficits are only apparent during relatively small and specific timeframes. Therefore, the preliminary parking improvements may be considered as excessive and will most likely be underutilized during the majority of the time. Upon review of the existing parking demands and corresponding deficits, these concerns were found to be valid and therefore, will be addressed in the development of the final parking improvement plans and recommendations.

The third public meeting was held upon incorporation of all public comments and subsequent development of final parking improvement plans. The proposed parking improvements were reviewed with the public and were met with general satisfaction. Comments provided at the meeting included a request from the Fire Department not to relocate their sixteen (16) reserved parking stalls in the east side of Southwest Avenue, between Park Avenue and W. Cherry Street and therefore, this potential idea was withdrawn. Additional comments included a request for the incorporation of lighting improvements to ensure pedestrian safety. These concerns have been addressed within the final parking improvement plans.

Due to the fact that Mantua Avenue is under County jurisdiction, the plans were also reviewed by the County Engineers Office. Comments from the County Engineer were primarily centered upon the following:

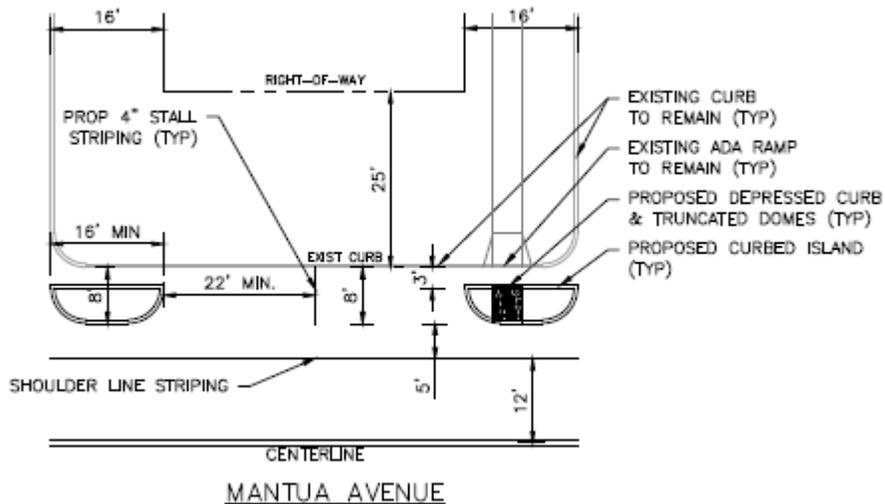
1. Concerns for adequate drainage along the gutterline as a result of the construction of the proposed curb extensions, i.e. bump-outs.

This concern was addressed in the design of the proposed bump-outs where a 3 foot width of the existing gutterline shall remain at current grade to facilitate the flow of runoff along the gutterline. (See Figure 12)

2. Concerns regarding maintenance responsibilities for the new improvements in Mantua Avenue, including snow removal.

As a condition of County endorsement and permission to modify the existing Mantua Avenue Right of Way, the County has requested that formal agreements between the Borough of Wenonah and the County of Gloucester be adopted to assign maintenance responsibilities for the new improvements, and for the plowing of snow from the proposed parking areas located between the proposed curb extensions (bump-outs), to the Borough of Wenonah.

FIGURE 12: TYPICAL CURB EXTENSION, I.E. BUMP-OUTS, AT INTERSECTIONS



V. RECOMMENDATIONS FOR IMPLEMENTATION

As indicated herein, a number of factors were considered during the evaluation of the various Design Options described above. These factors primarily included the ability to address the identified needs and the mitigating impacts with respect to land disturbance, drainage, environmental impacts, potential construction costs, and the general safety and welfare of the public. Based upon the evaluation of the various factors, we offer the following recommendations for the implementation of improvements to address the existing parking deficiencies:

Expansion of existing on-street angled parking in east side of Northwest Avenue, from Mantua Avenue to W. Poplar Street

Ability to meet needs

The parking needs in this block are generated by both the residential dwellings and the existing commercial business located at the intersection of Northwest Avenue and Mantua Avenue, i.e. Tricia Sloan Dance Center. Although Table 4 demonstrates that adequate parking capacity exists specific to this block, it should be noted that a portion of the parking demands for the Tricia Sloan Dance Center have been allocated to the North side of Mantua Avenue, from Monroe Avenue to Northwest Avenue, where significant parking deficits are realized during all studied timeframes, and more specifically during Weekdays from 6PM-10PM and during Weekends when the Dance Center is in operation. Based upon the parking demands analysis and taking into consideration the limited amount of available off-street parking, the total on-street parking demand for the combined residential and commercial business uses located in Northwest Avenue, from Poplar Street to Mantua Avenue, has been allocated at a total of thirty-three (33) spaces.

In addition to the *existing* parking needs specific to this block, there is an additional **proposed* parking deficit of seventeen (17) spaces for the existing uses located in the north side of Mantua Avenue, from N. Monroe Avenue to Northwest Avenue, that cannot be accommodated by the proposed on-street parking improvements in that particular block. Therefore, the total on-street parking demand to be accommodated in Northwest Avenue, from Mantua Avenue to W. Poplar Street is fifty (50) parking spaces, i.e. (17) spaces + (33) spaces.

** The proposed parking deficit of 17 spaces is reflective of the proposed parallel parking improvements in Mantua Avenue, as described further within this report.*

As indicated in Figure 6, one of the proposed measures for addressing the existing parking deficits includes the expansion of the on-street angled parking in east side of Northwest Avenue, from Mantua Avenue to W. Poplar Street, to provide an additional twelve (12) angled parking stalls. This improvement combined with the incorporation of formally striped parallel parking stalls in the east and west sides of the street will increase the parking capacity on this block from the existing 37 spaces to a proposed total of forty-three (43) spaces, as six (6) existing parallel parking spaces on the east side of the street must be sacrificed for the proposed twelve (12) angled parking stalls.

It is recognized that there is a shortfall of seven (7) parking spaces between the need of fifty (50) and the forty-three (43) spaces provided by the proposed improvements. However, it is our opinion that the forty-three (43) proposed parking spaces are adequate based upon the following factors:

1. The Tricia Sloan Dance Center is provided with a drop-off zone in the east side of Northwest Avenue which would imply that many patrons drop the students off and do not park their vehicles during classes.
2. The parking demand calculations for the Dance Center are based upon the American Planning Association's ratio of 1 space per 150 SF of studio use. However, a typical retail/office use would be subject to a ratio of 1 space per 200 SF in accordance with the Borough Land Use Ordinance. Therefore, with a floor area of 4,500 SF, the parking demand for a retail/office use would be seven (7) spaces less than that which is required for the Tricia Sloan Dance Center.

In light of the above, it would be reasonable to justify a reduction in the parking demand for the Tricia Sloan Dance Center by a total of seven (7) spaces and therefore, the forty-three (43) proposed parking spaces can be considered as adequate.

Mitigating Impacts

The improvements proposed in Figure 6 will result in approximately 4,900 SF of land disturbance and will add approximately 3,200 SF of new impervious surface. Drainage can be easily achieved by grading the angled parking stalls towards the existing roadway. A field inspection of the area proposed to be disturbed indicated that no existing mature trees will be significantly impacted and there appear to be no sensitive environmental areas, as this location lies between a paved public roadway and an existing railroad right of way.

Based upon the above, it is our opinion that there are no significant adverse impacts resulting from the implementation of the recommended improvements.

Identification Signage

Due to the fact that this public parking area is located off of the main thoroughfare, i.e. Mantua Avenue, the ability for motorists to easily identify this parking area while driving can be difficult without the benefit of appropriate signage. Therefore, it is recommended that informational signage be posted at the intersection of Mantua Avenue and Northwest Avenue to alert drivers of this available public parking area.

Pedestrian Accommodations

The existing parking area currently has no adjacent sidewalk and therefore, pedestrians leaving their parked vehicles frequently use the street while walking to their destination point, thus creating a conflict with vehicular traffic and compromising safety. Therefore, in order to facilitate safe pedestrian movements and reduce conflicts with vehicular traffic, it is recommended that the existing and expanded parking area on the east side of Northwest Avenue be provided with an adjacent sidewalk. In addition, pedestrian level lighting improvements are recommended as there are no existing lighting facilities to illuminate this area at night.

Reserved Parking

With a combination of residential and commercial uses and a limited amount of off-street parking facilities to accommodate them, conflicts between resident and business patron parking have been widely documented in Northwest Avenue, from Mantua Avenue to W. Poplar Street. Borough Council has attempted to address these conflicts through the passing of Ordinances which incorporate residential

permit parking in the west side of Northwest Avenue, along the frontages of the residential properties. However, it is our understanding that a total of twelve (12) residential parking permits were issued and there are generally eight (8) parallel parking spaces available on the west side of the street. This deficiency will be partially addressed through the recommendation for formally striped parallel parking stalls in the west side of the street to increase the yield to a total of ten (10) parking spaces, excluding one space which has been reserved for handicapped parking.

Based upon comments received at the public meetings, it was noted that residents are frequently parking their permitted vehicles on the opposite side of the street, i.e. east side. At times, this is a function of the fact that there are more residential parking permits (12) than there are available parking spaces on the west side of the street (8). However, this has also resulted in the inefficient use of the limited parking resources in this block as the business patrons do not have the option of parking in the available spaces on the west side of the street, thus leaving the reserved residential parking area as often under-utilized. Furthermore, it would appear as if this conflict is primarily apparent during the days and hours of the highest business activity and consequently, the greatest parking needs, i.e. Weekdays 6PM to 10PM and Saturday 11AM to 2PM. To address this concern, it is recommended that the twenty-five (25) angled parking spaces, both the thirteen (13) existing and twelve (12) proposed, be reserved for commercial use during the hours of Weekdays 6PM to 10PM and Saturday 11AM to 2PM.

Residents shall continue to maintain reserved parking on the west side of the street and through the efficient use of formally striped parallel parking stalls, the number of available parking spaces will increase from eight (8) to a total of ten (10). However, due to the fact that there are a total of twelve (12) residential parking permits, it is further recommended that an additional two (2) parallel parking spaces out of the proposed eight (8) located on the east side of the street be reserved for residential permit parking. The remaining six (6) parallel parking spaces on the east side of the street may then be used by both residents and/or business patrons regardless of time of day.

Recommendation

It is recommended that the proposed improvements as described above and as indicated in Figure 6 will assist in addressing the Borough's overall parking needs and therefore, should be incorporated into any future plans for improvements to the Borough's Downtown area.

Alternative Plans

It should be noted that the recommended plans for improvements to Northwest Avenue, from Mantua Avenue to W. Poplar Street, do recognize a shortfall of seven (7) parking spaces. Therefore, an alternate plan for addressing this calculated parking deficit was prepared. This alternate plan incorporates the further expansion of the on-street angled parking area, as shown in Figure 6A, to provide the fifty (50) parking stalls which were calculated during the needs analysis. However, we refrain from recommending such an improvement until such time that it is discovered that a parking problem persists after the implementation of the less expensive and intrusive measures indicated in Figure 6.

Expansion of existing on-street angled parking in west side of Northeast Avenue, from Mantua Avenue to W. Poplar Street

Ability to meet needs

Due to its location, the parking deficits for the blocks located nearest to this existing parking area can be more appropriately accommodated by another one of the design options as described herein. Therefore, it was concluded that the expansion of this parking area would not be the most ideal for increasing the parking capacity as other alternatives were found to be more suitable and less costly.

However, in order to optimize the capacity of the existing available parallel parking in the west side of Northeast Avenue, striping improvements to formally identify parallel parking stalls across the frontage of the Borough Community Center is being proposed. (See Figure 7)

Mitigating Impacts

The improvements proposed in Figure 7 simply include the striping of existing asphalt pavement and therefore, there are no adverse impacts.

Identification Signage

It is recognized that this public parking area is located off of the main thoroughfare, i.e. Mantua Avenue, and therefore, the ability for motorists to easily identify this parking area while driving can be difficult without the benefit of appropriate signage. Consequently, it is recommended that informational signage be posted at the intersection of Mantua Avenue and Northeast Avenue to alert drivers of this available public parking area.

Pedestrian Accommodations

There is currently no sidewalk across the length of the angled parking area. However, there is an existing public sidewalk that extends from the Community Center to the angled parking area and this sidewalk accommodates access for the one (1) handicap parking stall that lies within. Furthermore, this public sidewalk extends across the frontage of the Community Center, and lies adjacent to the parallel parking stalls on the west side of the street. Due to the fact that the existing angled parking lot has been in service for many years without an adjacent sidewalk, combined with the limited extent vehicular traffic in this block, the need to add a new sidewalk and the land disturbance resulting therefrom does not appear to be warranted at this time.

Reserved Parking

There have been no records of conflicts between resident and business patron parking and therefore, reserved parking is not a warranted consideration.

Recommendation

Due to the minimal anticipated construction costs and mitigating impacts, it is recommended that the proposed improvements as described above and as indicated in Figure 7 will be beneficial in addressing the Borough's overall parking needs and therefore, should be incorporated into any future plans for improvements to the Borough's Downtown area.

Expansion of existing on-street angled parking in east side of Southwest Avenue, from Mantua Avenue to W. Cherry Street

Ability to meet needs

The parking needs in this block are generated by a multitude of uses which include the following:

1. The Borough Municipal Building;
2. The Borough Police Departments;
3. The Borough Fire Departments;
4. The Borough Post Office;
5. The existing commercial business located at the intersection of Southwest Avenue and Mantua Avenue;
6. Two (2) residential dwellings.

To accommodate the existing parking needs, the Borough maintains an existing angled on-street parking lot located in the east side of Southwest Avenue, from Park Avenue to W. Cherry Street. However, a total of only three (3) of those spaces are available for public use as the remaining parking spaces are reserved for Borough Emergency Personnel, i.e. Police Department (6 spaces) and Fire Department (16 spaces).

Based upon the parking demands analysis and taking into consideration the available on-street parallel and angled parking located in Southwest Avenue, from Mantua Avenue to W. Cherry Street, the highest combined on-street parking deficit was found to be twenty-one (21) spaces, realized during the weekday hours of 6PM to 10PM (See Table 5).

In addition to the *existing* parking deficit specific to this block of Southwest Avenue, there is an additional **proposed* parking deficit of nine (9) spaces for the existing adjacent uses located in the south side of Mantua Avenue, from S. Monroe Avenue to Southwest Avenue, that cannot be accommodated by the proposed on-street parking improvements in that block. Therefore, the total on-street parking deficit to be allocated to Southwest Avenue, from Mantua Avenue to W. Cherry Street, is thirty (30) parking spaces, i.e. (21) spaces + (9) spaces.

** The proposed parking deficit of 9 spaces is reflective of the proposed parallel parking improvements in Mantua Avenue, as described further within this report.*

As previously described herein, the existing on-street angled parking lot in Southwest Avenue already extends to W. Cherry Street. Consequently, it was concluded that the southward expansion of this existing parking lot would result in the additional parking stalls being located too distant from the nearest destination point (i.e. Municipal Building) and therefore, such an expansion should not be pursued.

Although the identified parking need of thirty (30) spaces cannot be fully addressed, the capacity of the existing available parallel parking can be optimized by the implementation of striping improvements to formally identify parallel parking stalls in the west side of Southwest Avenue, from Mantua Avenue to Park Avenue. (See Figure 8)

Mitigating Impacts

The improvements proposed in Figure 8 simply include the striping of existing asphalt pavement and therefore, there are no adverse impacts.

Identification Signage

Once again, the ability for motorists to easily identify this existing parking area while driving can be difficult without the benefit of appropriate signage. Therefore, it is recommended that informational signage be posted at the intersection of Mantua Avenue and Southwest Avenue to alert drivers of this available public parking area.

Pedestrian Accommodations

A portion of the existing parking area currently has no adjacent sidewalk and therefore, pedestrians frequently use the street when leaving parked vehicles to walk to their destination point, thus creating a conflict with vehicular traffic and compromising safety. In order to facilitate safe pedestrian movements and reduce these conflicts with vehicular traffic, it is recommended that the portion of the existing parking area that is available for public parking be provided with an adjacent sidewalk. This sidewalk shall extend out to the existing sidewalk which leads pedestrians to the doors of the Borough Municipal Building. (See Figure 8)

Reserved Parking

There have been no documented records of conflicts between resident and business patron parking and therefore, reserved parking is not a warranted consideration at this time.

Recommendation

It is recommended that the proposed improvements, as described above and as indicated in Figure 8, will assist in addressing the Borough's overall parking needs and therefore, should be incorporated into any future plans for improvements to the Borough's Downtown area.

Unmet Parking Deficits

In recognition of the inability of Southwest Avenue to fully address the existing parking deficits, it is further recommended that the use of nearby Southeast Avenue, from Mantua Avenue to Cherry Street, be considered as a potential location for providing additional public parking facilities. (See Below)

On-street angled parking in west side of Southeast Avenue, from Mantua Avenue to E. Cherry Street

Ability to meet needs

There are no specific parking needs in this block as there is no development along the street frontages other than the Borough's Public Park on the east side of the street and the Railroad Right of way on the west side of the street. However, to assist in addressing the previously identified parking deficit of thirty parking (30) spaces in Southwest Avenue, from Mantua Avenue to Cherry Street, it was determined that this block was the most suitable location for providing additional on-street public parking due to its proximity and availability of space.

As indicated in Figure 9, one of the proposed measures for addressing the existing parking deficits included the incorporation of on-street angled parking in the west

side of Southeast Avenue, from Mantua Avenue to Cherry Street. This design yielded a total of thirty-six (36) on-street angled parking stalls which would suffice in addressing parking deficit in Southwest Avenue.

However, upon review of the existing parallel parking capacity in Southeast Avenue, from Mantua Avenue to Cherry Street, it was noted that a combined total of thirty-four (34) parallel parking stalls can be provided in both sides of this block to offset the deficit of thirty (30) parking stalls in Southwest Avenue. (See Figure 9A)

Mitigating Impacts

On-street Angled Parking Option (See Figure 9)

The improvements proposed in Figure 9 will result in approximately 14,000 SF of land disturbance and will add approximately 10,000 SF of new impervious surface. Drainage can be easily achieved by grading the angled parking stalls towards the existing roadway. A field inspection of the area proposed to be disturbed indicated the potential that a number of existing mature trees will be significantly impacted by the proposed installation of on-street angled parking in Southeast Avenue. These factors must be taken into consideration in the formulation of recommendations for implementation.

Formal Parallel Parking (See Figure 9A)

Due to the mitigating factors described above, the alternative of providing formally striped parallel parking stalls on both sides of Southeast Avenue was also considered. This improvement will not only require the striping of existing asphalt pavement but will require the relocation of the easterly curbline in order to provide a 36' wide roadway for accommodating two-way travel with parallel parking on both sides of the street, as per the *New Jersey Residential Site Improvement Standards* for a Minor Collector Road with two parking lanes. Consequently, this option results in far less land disturbance and new impervious surface and furthermore, will not adversely impact the existing mature trees.

Based upon the above, it is our opinion that significant impacts will result from the implementation of the on-street angled parking improvements. However, it is also our opinion that there are limited impacts associated with the implementation of formalized parallel parking improvements.

Identification Signage

Due to the fact that this proposed public parking area is located off of the main thoroughfare, i.e. Mantua Avenue, the ability for motorists to easily identify this parking area while driving can be difficult without the benefit of appropriate signage. Therefore, it is recommended that informational signage be posted at the intersection of Mantua Avenue and Southeast Avenue to alert drivers of this available public parking area.

Pedestrian Accommodations

The east side of the existing roadway currently has no adjacent sidewalk. Therefore, in order to facilitate safe pedestrian movements, it is recommended that the east side of Southeast Avenue be provided with a sidewalk, across the full length of proposed parking stalls, and extending out to the existing sidewalk in Mantua Avenue. In addition, pedestrian level lighting improvements are recommended as there are no existing lighting facilities to illuminate this area at night.

Reserved Parking

Reserved parking is not a warranted consideration in this area as there are no residential uses that maintain frontage on Southeast Avenue, from Mantua Avenue to Cherry Street.

Recommendation

Due to the minimal anticipated construction costs and mitigating impacts, it is recommended that the proposed improvements as described above and as indicated in Figure 9A will be beneficial in addressing the Borough's overall parking needs and therefore, should be incorporated into any future plans for improvements to the Borough's Downtown area.

On-street angled parking in the north and south sides of Mantua Avenue (County Route #632), from Monroe Avenue to Marion Avenue

It has been demonstrated that Mantua Avenue, from Monroe Avenue to Northwest/Southwest Avenue, is consistently in need of additional parking during all studied timeframes. Furthermore, Mantua Avenue, from Monroe Avenue to Marion Avenue, provides the street frontage for the majority of the commercial and professional office businesses in the downtown area.

Therefore, conceptual plans for providing on-street angled parking for the north and south sides of Mantua Avenue were developed, from Monroe Avenue to Marion Avenue, for the purposes of identifying the potential increase in parking capacity and the impacts to the County Right of Way. The plans included 45° angled parking with curb extensions at the intersections to protect parked vehicles from traffic and to provide the opportunity to park within 10 feet of an intersection, as permitted by the *NJ State No Parking Statute, i.e. Title 39*.

Based upon the plans, the angled parking concept was able to provide a total of 29 additional on-street parking spaces above the current parallel parking condition (See Figure 10). However, the plans will require the relocation of existing curblines, utility service boxes, and signs, the removal of mature trees, and a significant amount of underground drainage improvements.

The Conceptual Plans were reviewed with the Office of the Gloucester County Engineer for the purposes of assessing the impacts to the existing County Right of Way. Upon review by the County Engineer, it was determined that the mitigating impacts were too excessive and, as a result, the plan was not endorsed by the County Engineer and we were directed to seek an alternative.

On-street formalized parallel parking in the north and south sides of Mantua Avenue (County Route #632), from Monroe Avenue to Marion Avenue

As an alternative to angled parking in Mantua Avenue, the concept of providing formalized parallel parking in Mantua Avenue, from Monroe Avenue to Marion Avenue, was pursued (See Figure 11). The Plan incorporates painted parallel parking stalls on the north and south sides of Mantua Avenue. The plan also includes curb extensions (bump-outs) at the intersections for the purposes of decreasing the statutory twenty-five (25) foot clear distance between a parked vehicle and an intersecting street to a clear distance of only ten (10) feet, as permitted by the *NJ State No Parking Statute, i.e. Title 39*.

Ability to meet needs

The formalized parallel parking plan for Mantua Avenue, from Monroe Avenue to Marion Avenue, will provide a total of sixteen (16) additional on-street parking spaces above the current optimum parallel parking condition. These additional spaces are distributed throughout the entire length of the street, with the highest increase being realized between Clinton Avenue and Marion Avenue, i.e. eight (8) additional spaces.

Although this plan does not fully address the overall existing parking deficits in totality, the additional parking capacity, in combination with the supplemental measures described herein, is integral in addressing the focus study area's overall parking needs.

Mitigating Impacts

The alternative of providing formally striped parallel parking stalls on both sides of Mantua Avenue will not only require the striping of existing asphalt pavement but will require the installation of curb extensions, or bump-outs, to allow for the parking stalls to be located closer to each intersecting street (See Figure 12). Regardless, this option results in far less disturbance to the County Right of Way and consequently, far less cost than the on-street angled parking option described above.

Therefore, it is our opinion that there are limited impacts associated with the implementation of formalized parallel parking improvements in Mantua Avenue.

Identification Signage

Due to the fact that this proposed public parking area is located within Mantua Avenue, identification signage will not be necessary as these available public parking spaces will be easily located by passing motorists.

Pedestrian Accommodations

Pedestrian accommodations associated with this particular improvement consist of providing proposed curb extensions (bump-outs) at the intersecting streets, the upgrading of handicap ramps, the widening of existing sidewalks, and pedestrian level lighting improvements throughout the entire length, i.e. Monroe Avenue to Marion Avenue. These improvements are described in more detail elsewhere within this report.

Reserved Parking

Mantua Avenue, from Monroe Avenue to Northwest Avenue

With a combination of residential and commercial uses and a limited amount of off-street parking facilities to accommodate them, conflicts between resident and business patron parking have been widely documented in the north side of Mantua Avenue, from Monroe Avenue to Northwest Avenue. Borough Council has been approached on numerous occasions with requests to address these conflicts through the passing of Ordinances to incorporate reserved permit parking along the residential property frontages located on the north side of this block.

Based upon review of the responses to the questionnaires which were sent to the various business and multi-tenant residential property owners, combined with comments provided at the Public Meetings, it was determined that a total of

seven (7) reserved residential parking spaces will suffice in addressing the ongoing parking conflicts between residents and businesses in the north side of Mantua Avenue, from Monroe Avenue to Northwest Avenue.

Furthermore, it would appear as if this conflict is primarily apparent during the days and hours of the highest business activity in the north side of Mantua Avenue, i.e. Weekdays 4PM to 10PM and Saturday 11AM to 2PM. To address this concern, it is recommended that a total of seven (7) on-street parallel parking spaces be reserved for residential use during the days and hours indicated above (See Figure 11).

With respect to the ability to provide adequate parking for the commercial businesses in this block, it should be noted that a total of twenty-five (25) angled parking spaces in Northwest Avenue, from Mantua Avenue to Poplar Street, have been recommended to be reserved for commercial use during the Weekday hours 6PM to 10PM and on Saturday 11AM to 2PM.

Aside from the reserved parking spaces, it should be noted that there shall be an additional six (6) unencumbered parking spaces in the east side of Northwest Avenue, and an additional four (4) unencumbered parking spaces in the north side of Mantua Avenue, which may be used by both residents and/or business patrons regardless of time of day.

Mantua Avenue, from Northeast/Southeast Avenue to Marion Avenue

There have been no documented records of conflicts between resident and business patron parking in these blocks and therefore, reserved parking is not a warranted consideration at this time.

Recommendation

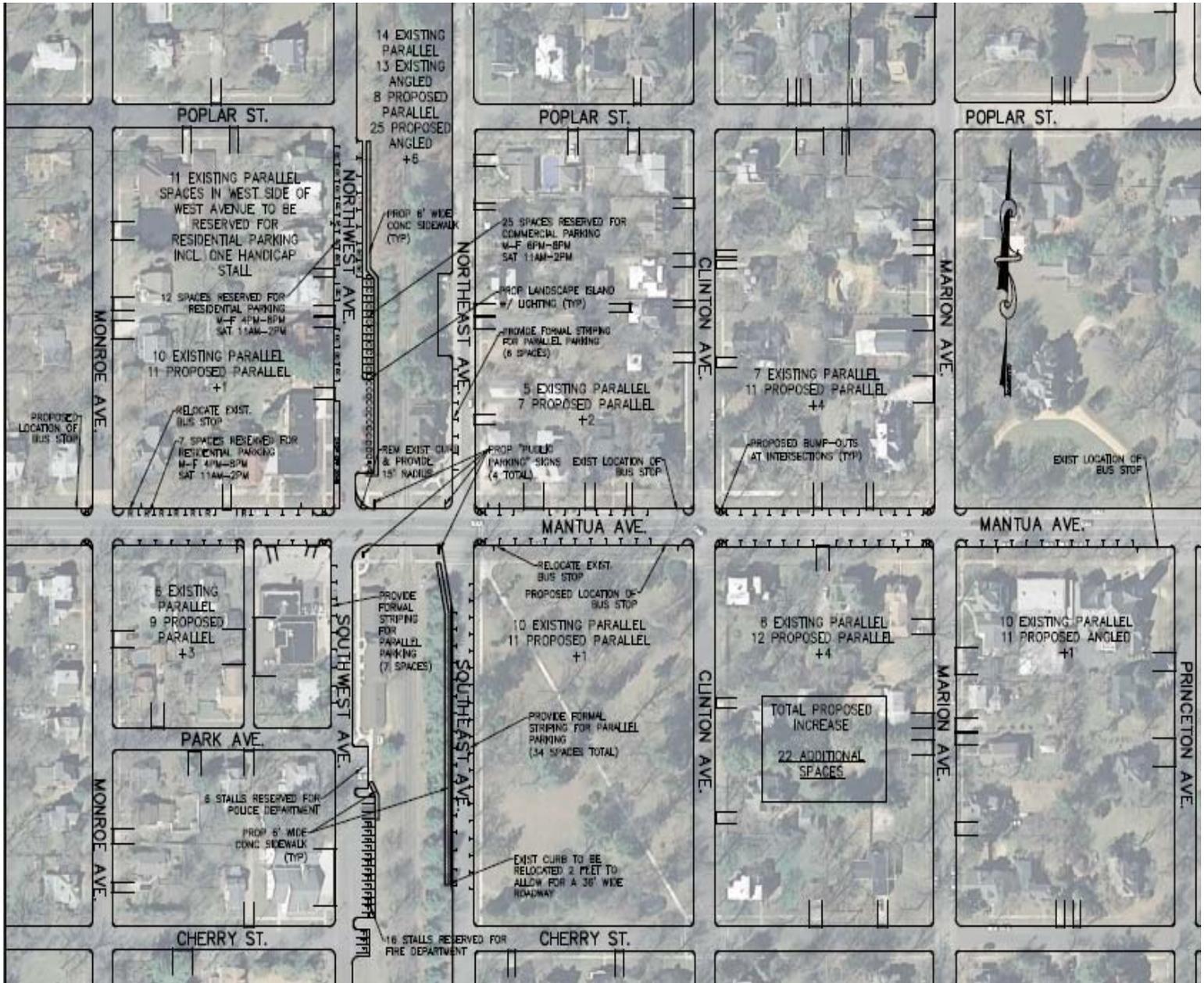
Due to the fact that this alternative results in a far lesser impact to the County Right of Way, it is recommended that the proposed improvements as described above and as indicated in Figure 11 should be incorporated into any future plans for improvements to the Borough's Downtown area.

The Plans were also reviewed with the Office of the Gloucester County Engineer for the purposes of assessing the impacts to the existing County Right of Way. Upon review by the County Engineer, it was determined that the mitigating impacts were far less excessive than the angled parking option and, as a result, the plan was endorsed by the County Engineer, with the following conditions:

1. Provisions must be made to allow for stormwater runoff to continue to flow along the gutterline of Mantua Avenue, through the proposed curb extensions. (See Figure 12)
2. Provisions must be made to allow for the installation of bike lanes on the north and south sides of Mantua Avenue, in accordance with the Gloucester County Master Bicycle Plan.
3. A Maintenance Agreement between the County and the Borough of Wenonah must be entered into for the purposes of assigning all maintenance responsibilities for the parallel parking areas located between the proposed curb extensions to the Borough of Wenonah, including the snow plowing of the parallel parking stalls.

In accordance with the recommendations provided above, an Overall Parking Improvement Plan was developed for the TCDI Focus Study Area (See Figure 13)

FIGURE 13: OVERALL PARKING IMPROVEMENT PLAN



CHAPTER 2: TRAFFIC CIRCULATION

2.1 VEHICULAR CIRCULATION

The Borough maintains a grid-like roadway system primarily consisting of 34 foot wide asphalt paved roadways with 66 foot wide Right of Ways. Exceptions to this typical layout are the local roadways which lie adjacent to the Railroad Right of Way that bisects the Borough in a north-south direction. These local roadways maintain wider Right of Ways, i.e. between 75 and 92 feet in width, and wider paved roadways with provisions for on-street angled parking.

In addition to the local roadways, the Borough of Wenonah is bisected in an east-west direction by Mantua Avenue, a.k.a. County Route #632, which maintains a 100 foot wide Right of Way and a 50 foot wide paved roadway. It should also be noted that Mantua Avenue is a “through route” that provides access to a number of surrounding municipalities, such as Mantua, Deptford, and East Greenwich Townships.

The intersection of Mantua Avenue and the abovementioned Railroad Right of Way essentially defines the center of the Borough’s downtown area, where the municipal services, community center (former train station), commercial businesses, and the post office are conveniently located. Therefore, the scope of study will include an assessment of the efficiency and safety of vehicular travel both within and through the Borough’s Downtown Area, the identification of deficiencies associated therewith, and the development of methods to address any identified deficiencies.

I. NEEDS ASSESSMENT

The first step in determining the existing vehicular traffic circulation needs within the study area was to obtain the necessary data required to identify the issues. Therefore, this phase of the project began with the compilation of available traffic data as well as obtaining the input from the Public and the local Police Department.

Data Collection

Historical Traffic Count Data for Mantua Avenue (County Route #632) was obtained from the *Delaware Valley Regional Planning Commission (DVRPC) Website*. A total of five (5) separate traffic count reports were found to be available between May of 2000 and as recently as March of 2012. The peak hour traffic counts and adjusted average daily traffic (AADT) for the various study dates are summarized in Table 6:

Table 6: DVRPC Traffic Counts for Mantua Avenue

STUDY DATE	PEAK COUNTS (5PM)			AADT
	EAST	WEST	BOTH	
May 23, 2000	--	--	641	6,803
April 16, 2002	--	--	601	6,699
Nov. 11 & 25, 2008	287	305	592	6,793
March 22, 2012	305	336	641	6,920

As indicated in Table 6 above, the peak hour traffic volume and average daily traffic volume in Mantua Avenue have remained fairly steady over the past twelve (12) years despite the expansion of residential development within the surrounding municipalities, such as Mantua, Deptford, and East Greenwich Townships.

In addition to the traffic counts, critical information was also solicited from the Public and the local Borough Officials to aid in identifying vehicular circulation issues within the study area, as follows:

1. The Borough of Wenonah does not experience a great deal of vehicular traffic congestion with exception to two (2) specific areas, during specific timeframes, as a result of two (2) specific and separate activities.
2. Travelling speeds along Mantua Avenue often exceed the 35 mile per hour speed limit.
3. The sight distance for vehicles approaching Mantua Avenue, from the local Borough side streets, is compromised as a consequence of the wide shoulders in Mantua Avenue and their corresponding cross-slopes

Traffic congestion

The first of those activities that results in traffic congestion within the Borough is during student drop-off and pick-up at the Wenonah Elementary School, located at the intersection of North Clinton Avenue and East Elm Street. To address this issue, the Borough has implemented and is enforcing a number of restrictions to the locations of parking and drop-off areas at the school. Although difficulties were experienced during the initial implementation of such restrictions, the issues have subsided as a result of Police enforcement and public familiarity and acceptance of said restrictions, albeit there is an occasional violation.

The second of those activities is during student drop-off and pick-up at the Tricia Sloan Dance Center, located at the intersection of Northwest Avenue and Mantua Avenue (County Route #632). To address this issue, the Borough has also implemented and is enforcing a number of restrictions to the locations of parking and drop-off areas at the Dance Center. Based upon comments received by the owners of the Dance Center, the traffic circulation difficulties continue to be experienced. Furthermore, the owner of the Dance Center has expressed a safety concern with respect to the speed of vehicles negotiating a right hand turn, from the westbound lane of Mantua Avenue, onto the northbound lane of Northwest Avenue during the pick-up and drop-off activities.

Vehicle Travelling Speeds

It has been noted that the travelling speed of vehicles in Mantua Avenue often exceed the posted 35 mile per hour speed limit. With an existing 50 foot wide paved roadway and little conflict with hard structure, driver tendencies seem to exceed the speed limit on a relatively routine basis. Police enforcement has resulted in a certain degree of success in reducing vehicle speeds. However, this is only a temporary solution to the problem and a more permanent solution is warranted.

Clear Sight Distance

Lastly, it has been noted that the clear sight distance for vehicles approaching Mantua Avenue from the local Borough side streets is compromised as a consequence of the wide shoulders in Mantua Avenue and their corresponding cross-slopes. This has frequently resulted in the need for approaching vehicles to extend into the intersection in order to identify on-coming traffic. Such driver tendencies have subsequently resulted in frequent conflicts between their vehicles and the pedestrians attempting to cross the side streets.

II. MITIGATION & PLAN DEVELOPMENT

In order to address the previously identified vehicular circulation issues, the study move forward with the identification of potential solutions for addressing same, as follows:

A) Traffic congestion at Wenonah Elementary School

Due to the fact that the vehicular traffic circulation issues experienced at the Wenonah Elementary School are specifically limited to certain times of the day and year, and the efforts to address these issues have been relatively successful, it is our opinion that vehicular circulation improvements at the Elementary School are not warranted at this time. Furthermore, it should be noted that the Elementary School lies along the fringes of the TCDI Study Area and is isolated from the Borough's Downtown Area.

B) Traffic congestion at Tricia Sloan Dance Center (Northwest Avenue, from Poplar Street to Mantua Avenue)

Similar to the Wenonah Elementary School, the vehicular traffic circulation issues experienced at the Tricia Sloan Dance Center are specifically limited to certain times of the day and year. However, unlike the Elementary School, the efforts to address these issues have not necessarily been met with a great deal of success and require further consideration.

Based upon input from the owner of the Dance Center, it was suggested that the traffic flow patterns in Northwest Avenue be revised to a one-way flow in a southerly direction, from Poplar Street to Mantua Avenue. This option shall be further investigated in consultation with Borough Officials.

A second issue which was brought to our attention by the owner of the Dance Center was a concern regarding the safety of turning movements from the westbound lane of Mantua Avenue, onto the northbound lane of Northwest Avenue, during the pick-up and drop-off activities. It was suggested that a reduction in the curb return radius, at the northeast corner of the intersection Mantua Avenue and Northwest Avenue, could serve to slow the speed of the turning traffic as it approaches the area of activity in Northwest Avenue. This option shall also be further investigated as to its suitability.

C) Excessive Vehicle Speeds and Clear Sight Distance on approaches to Mantua Avenue

With respect to addressing excessive vehicle speeds in Mantua Avenue, the "*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*" provides a number of potential solutions, including:

1. Horizontal and Vertical Curvature
 - *This particular option would require complete roadway reconstruction and therefore, should not be considered.*
2. Reduction in Sight Distance thorough street tree and shrubbery plantings
 - *The 50 foot paved width of Mantua Avenue would prevent proposed plantings from having any impact to sight distance. Furthermore, in light*

of the potential interaction between vehicular and pedestrian traffic, this particular option should not be considered as it is not in the best interest of public safety.

3. Narrowing Roadway Widths

- *Although full length narrowing of the Mantua Avenue Roadway should not be considered due to the overall potential construction costs and other mitigating factors such as utilities and drainage, the installation of curb extensions, i.e. "bump-outs" should be considered as an option for addressing vehicular speeds in Mantua Avenue. Furthermore, such an improvement could also both facilitate and increase safety for pedestrian crossing in Mantua Avenue and therefore, warrants special consideration as it is a single solution for addressing a number of issues.*

4. Narrowing Clear Zones

- *With an existing 50 foot wide paved roadway, the narrowing of clear zones would have no material impact and therefore, should not be pursued as an option for addressing vehicular speeds in Mantua Avenue.*

5. Increasing Uncontrolled Driveway Access Density

- *Due to the fact that all properties located along Mantua Avenue have already been fully developed, the potential for increasing uncontrolled driveway access density should not be considered as a viable option for addressing vehicular speed in Mantua Avenue*

6. Increasing Traffic Signal Density

- *This particular option should not be considered as the volume of traffic in the Borough side streets would not meet the warrants for a new traffic signal in the Wenonah Downtown area.*

7. Center Median

- *The full length construction of a centerline median strip in the Mantua Avenue Roadway should not be considered due to the access limitations that it would place on existing properties located on the north and south sides of the street.*

8. On-Street Parking

- *This is an existing condition in Mantua Avenue.*

9. Curbs

- *This is an existing condition in Mantua Avenue*

10. Pedestrian Activity

- *This is an existing condition in Mantua Avenue and the safety of which is addressed elsewhere within this report.*

11. Roadside Development

- *Due to the fact that all properties located along Mantua Avenue have already been fully developed, the potential for addressing vehicle speeds with additional Roadside Development should not be pursued.*

12. Traffic Calming Measures

- Speed Humps: *Due to a number of factors including the posted speed limit (35 mph), the amount of daily traffic, combined with the fact that the roadway is a higher order County Roadway that provides through access to a number of neighboring municipalities, this particular option is too intrusive and therefore, should not be considered as a design option.*

- Curb Extensions: *This improvement has already been recommended for purposes of addressing on-street parking and should be considered for traffic calming purposes as well. In addition, this improvement shall also serve to address concerns regarding the safety of pedestrians by decreasing the length of crossing in Mantua Avenue.*

Furthermore, the implementation of curb extensions at the intersections can also be considered as option for addressing the existing sight distance deficiencies for vehicles attempting to gain access to Mantua Avenue, from the local Borough side streets.

13. Curb Return Radii

- *This particular option should be considered as a possible solution for addressing excessive speeds on right turns off of Mantua Avenue and onto the local Borough Roadways*

14. Reduction in posted speed limit

- *The portion of Mantua Avenue that lies within the TCDI Focus Study area essentially mimics a suburban "Main Street" concept, as evidenced by the presence of civic and commercial uses and facilities to accommodate pedestrian and alternate means of travel. Therefore, considerations should be made for petitioning Gloucester County to reduce the speed limit from 35 mph to 30 mph.*

Upon evaluation of the information obtained, the most apparent and universal vehicular circulation needs are primarily focused around the safety of access to, from, and within Mantua Avenue (County Route #632). Now that the potential for addressing the vehicular circulation needs have been identified, the study proceeded to the development of the appropriate planning and design options.

III. DEVELOPMENT OF PLANNING AND DESIGN OPTIONS

Traffic congestion at Tricia Sloan Dance Center (Northwest Avenue, from Poplar Street to Mantua Avenue)

The potential solution of revising Northwest Avenue traffic flows to one-way, from Poplar Street to Mantua Avenue, was evaluated by the Borough Engineer and the Borough EMS Personnel.

From an engineering standpoint, it was agreed that such a revision in traffic patterns would facilitate the congestion issues. However, it was ultimately determined that such a drastic change in the typical traffic flow patterns are not warranted for addressing a traffic circulation problem that is so site and especially time specific.

Similar concerns were brought forward from an Emergency Services standpoint and therefore, it was concluded that such a revision in traffic flow patterns in Northwest Avenue, from Poplar Street to Mantua Avenue, would not be the most appropriate solution for addressing this particular site and time specific congestion problem.

Furthermore, it is reasonably assumed that a contributor to the existing vehicle congestion problem in Northwest Avenue, from Poplar Street to Mantua Avenue, is the result of the lack of sufficient parking which would allow vehicles to pull off of the roadway to pick up and/or drop off students. Therefore, it is anticipated that the traffic congestion issues in this block will be alleviated by the implementation of the proposed parking improvements, as indicated in Figure 6.

Upon evaluation of the safety of the turning movements from the westbound lane of Mantua Avenue, onto the northbound lane of Northwest Avenue, it was determined that a reduction in the northeast corner curb return radius is a feasible design option for reducing the speed of the turning traffic. See Figure 14

FIGURE 14: MODIFIED CURB RETURN RADIUS AT NORTHWEST AVENUE AND MANTUA AVENUE



Excessive Vehicle Speeds and Clear Sight Distance on approach to Mantua Ave.

A number of design options were pursued and Conceptual Plans were developed for the purposes of addressing excessive vehicular speeds in Mantua Avenue, as follows:

Curb Extensions (See Figure 12)

The addition of curb extensions at the intersections of Mantua Avenue, from Monroe Avenue to Marion Avenue, is a feasible solution for addressing the following:

- 1) *The existing sight distance issues for vehicles attempting to gain access to Mantua Avenue from the local Borough side streets by allowing vehicles to safely encroach further into the Mantua Avenue Roadway for adequate visibility.*

- 2) *Pedestrian safety concerns by decreasing the length of crossing the existing fifty (50) foot wide Mantua Avenue roadway.*
- 3) *Curb Extensions have already been recommended for purposes of increasing the capacity of on-street parallel parking.*

Curb Return Radii (See Figure 14)

This particular option was found to be a feasible solution for addressing excessive speeds on right turns off of Mantua Avenue and onto the local Borough Roadways

Reduction in posted speed limit

Due to the fact that the existing conditions, combined with the improvements recommended within this report, promote a suburban Main Street condition for the portion of Mantua Avenue that lies within the TCDI Focus Study area, the petitioning of Gloucester County to reduce the posted speed limit from 35 mph to 30 mph is a feasible solution for addressing excessive vehicle speeds.

On-Street Parking

Measures to address the adequacy of on-street parking have been discussed in detail elsewhere within this report.

IV. PUBLIC OUTREACH

Public involvement throughout all phases of the Traffic Circulation Study was integral in the identification of deficiencies and subsequent development of solutions. A total of three (3) meetings were publicly advertised and scheduled to coincide with the completion of the major phases of the project, i.e. Needs Assessment, Preliminary Plan Development, and Final Plan Development.

During the meetings, the public provided valuable input with respect to their past and present experiences with respect to the circulation of vehicular traffic through the Borough's Downtown area. One resounding theme was a concern regarding the speed of vehicles travelling along Mantua Avenue through the center of town, and the potential conflicts between those vehicles and pedestrians attempting to cross the 50 foot wide roadway. This information was critical in the identification of the appropriate traffic calming measures.

In addition, certain specific circumstances were brought forward during Public comment, i.e. excessive and unsafe travelling speeds for vehicles negotiating a northbound turn onto Northwest Avenue, from Mantua Avenue. These concerns have been addressed within the content of this report and within the final plans for traffic circulation improvements to the downtown area.

Due to the fact that Mantua Avenue is under County jurisdiction, the plans for improvements were also reviewed by the County Engineers Office. Comments from the County Engineer were primarily centered upon the following:

1. Concerns for adequate drainage along the gutterline as a result of the construction of the proposed curb extensions, i.e. bump-outs.

This concern was addressed in the design of the proposed bump-outs where a 3 foot width of the existing gutterline shall remain at current grade to facilitate the flow of runoff along the gutterline. (See Figure 12)

2. Concerns regarding maintenance responsibilities for the new improvements in Mantua Avenue, including snow removal.

As a condition of County endorsement and for permission to modify the existing Mantua Avenue Right of Way, the County has requested that formal agreements between the Borough of Wenonah and the County of Gloucester be adopted to assign maintenance responsibilities for the new improvements, and for the plowing of snow from the proposed parking areas located between bump-outs, to the Borough of Wenonah.

3. Provisions must be made to allow for the installation of bike lanes on the north and south sides of Mantua Avenue, in accordance with the Gloucester County Master Bicycle Plan.

V. RECOMMENDATIONS FOR IMPLEMENTATION

A number of factors were considered during the evaluation of the various Design Options for addressing vehicular circulation issues. These factors primarily included the ability to meet the identified needs and the mitigating impacts with respect to land disturbance, drainage, environmental impacts, potential construction costs, and the general safety and welfare of the public. Based upon the evaluation of the various factors, we offer the following recommendations for the implementation of improvements to address vehicular traffic circulation within the Borough of Wenonah's Downtown area:

Curb Extensions

Ability to meet needs

As indicated in the "*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*", the addition of curb extensions are a recognized method for reducing vehicular speeds by promoting the perception of a narrowing roadway. This improvement is especially effective in light of the fact that the existing Mantua Avenue Roadway is exceptionally wide, i.e. 50 feet, and is made more effective by the presence of on-street parallel parking.

Furthermore, the proposed curb extensions assist in addressing the existing sight distance issues for vehicles attempting to gain access to Mantua Avenue, from the local Borough side streets, by allowing vehicles to safely encroach further into the Mantua Avenue Roadway for adequate visibility.

Additional benefits provided by the proposed curb extensions include decreasing the distance that a pedestrian has to travel from one side of Mantua Avenue to the other, thus offering an additional measure of safety.

Mitigating Impacts

The installation of curb extensions, or bump-outs, will result in far less disturbance to the County Right of Way than a number of the other options which were investigated, i.e. roadway narrowing, median strips, speed humps, etc. and consequently, come at a far less cost and inconvenience than the other alternatives described above. The primary recognized impacts are related to drainage along the Mantua Avenue gutterline and therefore, design features have been incorporated to address this concern.

Therefore, it is our opinion that there are limited impacts associated with the implementation of curb extensions in Mantua Avenue.

Recommendation

For reasons stated herein, it is recommended that the proposed curb extensions, as indicated in detail in Figure 12 and as indicated in layout in Figure 13, should be incorporated into any future plans for improvements to the Borough's Downtown area.

The Plans were also reviewed with the Office of the Gloucester County Engineer for the purposes of assessing the impacts to the existing County Right of Way. Upon review by the County Engineer, it was determined that the mitigating impacts were relatively insignificant, as a result, the curb extensions were endorsed by the County Engineer, with the same conditions as previously

indicated within this report with respect to adequate drainage, maintenance responsibilities, and incorporation of the County's proposed Bicycle Path.

Curb Return Radius Modification

Ability to meet needs

As indicated in the "*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*", the reduction of curb return radii are a recognized method for reducing the speeds of turning vehicles.

Mitigating Impacts

The installation of a smaller curb return radii at the northeast corner of Mantua Avenue and Northwest Avenue will cause an insignificant amount of disturbance to the County Right of Way, especially when weighed against the corresponding safety benefit.

Accordingly, it is our opinion that there are limited impacts associated with the modification of the curb return radii at the northeast corner of Mantua Avenue and Northwest Avenue.

Recommendation

For reasons of public safety, it is recommended that the proposed curb return radius modification, as indicated in Figure 14, be incorporated into any future plans for improvements to the Borough's Downtown area.

The Office of the Gloucester County Engineer had no specific comment regarding this proposed improvement.

Reduction in posted speed limit

Ability to meet needs

A reduction in the posted speed limit, from 35 mph to 30 mph, will assist in remediating excessive vehicle speeds in Mantua Avenue.

Mitigating Impacts

None.

Recommendation

Borough Council should petition the County to reduce the speed limit in Mantua Avenue, from Monroe Avenue to Marion Avenue, from 35 mph to 30 mph as part of any plans for improvements to the Borough's Downtown area.

The Office of the Gloucester County Engineer indicated that it would entertain such a request.

2.2 PEDESTRIAN CIRCULATION

The Borough of Wenonah maintains an existing system of sidewalks to promote pedestrian travel. The focus of this section is to address the adequacy of existing pedestrian mobility within the TCDI Study Area. Particular attention will be directed to the identification of methods for making the Borough's downtown area, i.e. along Mantua Avenue, a more pedestrian safe and friendly atmosphere.

I. NEEDS ASSESSMENT

The first step in determining the pedestrian circulation needs within the study area was to obtain the necessary data required to identify any deficiencies. Therefore, this phase of the project began with the compilation of an inventory of the existing pedestrian features as well as a general assessment of their condition, including handicap accessibility.

Data Collection

Sidewalks and Handicapped Ramps in TCDI Study Area

An inventory of the locations of existing sidewalks and handicapped ramps was performed within the TCDI Study Area. The following streets within the TCDI Study Area were found to lack sidewalk improvements:

1. South side of Elm Street, from Princeton Avenue to Marion Avenue.
2. East side of Marion Avenue, from Poplar Street to Elm Street.
3. West side of Clinton Avenue, from Cherry Street to Mantua Avenue.
4. North side of Cherry Street, from Southeast Avenue to Clinton Avenue.
5. North side of Willow Street, from Monroe Avenue to Southwest Avenue.
6. North side of Cherry Street, from Monroe Avenue to Southwest Avenue.
7. South side of Park Avenue, from Monroe Avenue to Southwest Avenue.
8. North side of Park Avenue, from Corsons Alley to Southwest Avenue.
9. East and West sides of Corsons Alley, from Mantua Avenue to Park Avenue.

In addition, a cursory evaluation of each existing handicap ramp was performed to determine general compliance with ADA Regulations. (See Figure 15)

FIGURE 15: EXISTING SIDEWALK CIRCULATION MAP



Sidewalks in Mantua Avenue, from Monroe Avenue to Marion Avenue

Due to the fact that Mantua Avenue provides the street frontage for the majority of the existing business and civic uses in the downtown area, the condition of the existing sidewalks in Mantua Avenue was evaluated as to their suitability for a high level of pedestrian travel.

Pedestrian Crosswalks in Mantua Avenue

The existing pedestrian crosswalks in Mantua Avenue were evaluated with respect to their safety and effectiveness. Additional locations for crosswalks in Mantua were also evaluated based upon proximity of destination points and distance between crosswalks.

Lighting in Mantua Avenue

The lighting illumination levels for existing pedestrian facilities in Mantua Avenue were evaluated as to their adequacy by the performance of a night light meter survey.

Analysis

Upon compilation of the data described above, each of the existing features was analyzed for their adequacy and their effectiveness with respect to the ability to provide for safe and efficient pedestrian travel.

Sidewalks and Handicapped Ramps in TCDI Study Area

As indicated in Figure 15, a number of streets within the TCDI Study Area do not contain sidewalks and/or handicapped ramps. Furthermore, upon cursory review, a number of the existing handicapped ramps are not in compliance with current ADA Regulations. Table 7 provides a breakdown of these findings:

***Table 7: Existing Handicap Ramp Inventory & Evaluation in TCDI Area**

CATEGORY	Number
Existing Compliant Ramps	33
Existing Non-Compliant Ramps	56
Ramps Required where none exist	33

* It should be noted that this cursory evaluation did not include the necessary detailed topographic surveys to determine compliance with the various minimum slope requirements. Therefore, a more detailed engineering analysis will be required during the design stages of any project that is developed for the purpose of addressing the adequacy of the existing facilities for the handicapped.

Sidewalks in Mantua Avenue, from Monroe Avenue to Marion Avenue

The evaluation of the condition of the existing sidewalks in Mantua Avenue revealed a varying pattern of sidewalk widths and types. Sidewalk widths range from 4 feet to 7 feet wide and sidewalk types range from concrete to slate.

The condition of the existing sidewalks in Mantua Avenue varies from good to poor. The worst conditions were found in the slate sidewalks, where numerous potential tripping hazards were noted as a result of the buckling of the slate blocks.

Pedestrian Crosswalks in Mantua Avenue

A total of three (3) existing un-signalized pedestrian crosswalks were found in Mantua Avenue at the following intersections:

1. Northwest Avenue

This crosswalk is located in close proximity to The Borough Municipal Building, Tino’s Restaurant, and the Tricia Sloan Dance Center.

2. Northeast Avenue

This crosswalk is located in close proximity to The Borough Community Center (former Train Station), Borough Park, NJ Transit Bus Stop #412, and is used as one of the pedestrian routes to the Wenonah Elementary School, which is located at the intersection of Clinton Avenue and Elm Street.

3. Clinton Avenue

This crosswalk is located in close proximity to The Borough Library, the Borough Park, NJ Transit Bus Stop #412, and is also used as one of the pedestrian routes to the Wenonah Elementary School.

Although these crosswalks are appropriately located for providing pedestrian access to the facilities described above, there are a number of other frequented destinations in Mantua Avenue that do not have the benefit of a crosswalk. More specifically, these destinations are the Wenonah Medical Associates and Wycoff-Nester Dental Office located at the intersection of Mantua Avenue and Marion Avenue. Furthermore, there is an existing NJ Transit Bus Stop located at the intersection of Mantua Avenue and Monroe Avenue.

A physical evaluation of the safety and effectiveness of the existing crosswalks revealed the following:

Spacing

The crosswalks spacing distance between Northwest Avenue and Northeast Avenue is approximately 240 Feet, with a 100 foot wide Railroad Right of Way located in between.

The crosswalks spacing distance between Northeast Avenue and Clinton Avenue is approximately 360 Feet

Crossing Distance

The existing crossing distance in Mantua Avenue is fifty (50) feet.

Signage

Two (2) of the crosswalks have “in-street” pedestrian crossing signs. It would appear as if the local Police Department periodically rotates these signs between the three (3) existing crosswalks. There is no other signage associated with the existing crosswalks.

In addition to the physical evaluation of the crosswalks, critical information was obtained from the Public regarding concerns for the safety of pedestrians attempting to cross the 50 foot wide Mantua Avenue roadway and the conflicts between those pedestrians and travelling vehicles.

The combination of a fifty (50) foot wide roadway, 35 mile per hour speed limit, parking lanes on both sides of the street, and steep cross slopes in the roadway shoulder, present difficulties in the recognition of pedestrians who are attempting to cross Mantua Avenue. Oftentimes, drivers do not identify the pedestrians until it is too late to safely stop their vehicle and allow them to cross the roadway. This was found to be a significant safety concern that must be addressed.

Lighting in Mantua Avenue

A night light meter test was conducted along the sidewalks in the north and south sides Mantua Avenue, from Monroe Avenue to Marion Avenue. The test indicated that the majority of Mantua Avenue maintains insufficient lighting levels for pedestrian travel with readings of less than one (1) footcandle along the sidewalks. These low level readings appear to be attributable to the low intensity street lighting combined with a significant amount of tree cover.

SUMMARY

Based upon the results of the Needs Assessment, it is apparent that the existing pedestrian circulation deficiencies appear to be concentrated between the area bounded by Marion Avenue to the east, Monroe Avenue to the west, Poplar Street to the north, and Cherry Street to the south, with Mantua Avenue as the centerpiece. It should be noted that this area has been previously identified as the focus of the study area.

II. MITIGATION & PLAN DEVELOPMENT

In order to address the previously identified pedestrian circulation issues, the study move forward with the identification of potential solutions, as follows:

A) Existing Sidewalks and Handicapped Ramps in TCDI Study Area

As indicated in Figure 15, there are a number of locations within the Study Area that lack sidewalks. Although the simple solution would be to construct sidewalks where there currently are none, the surrounding environment should be taken into consideration when determining the true need for sidewalks. Accordingly, we offer the following:

1. South side of Elm Street, from Princeton Avenue to Marion Avenue.
2. East side of Marion Avenue, from Poplar Street to Elm Street.

Both of these streets are located within 2 blocks of the Wenonah Elementary School and therefore, the installation of sidewalks should be considered as a design option for facilitating safe pedestrian travel.

3. West side of Clinton Avenue, from Cherry Street to Mantua Avenue.
4. North side of Cherry Street, from Southeast Avenue to Clinton Avenue.
5. North side of Willow Street, from Monroe Avenue to Southwest Avenue.
6. North side of Cherry Street, from Monroe Avenue to Southwest Avenue.

With exception to the west side of Clinton Avenue, from Cherry Street to Mantua Avenue, these streets are located on the fringes of the area of the highest anticipated pedestrian activity. In addition, existing sidewalks are located on the opposite sides of all of the abovementioned streets. Furthermore, these streets are wide local residential streets that can support pedestrian movements. Therefore, the installation of sidewalks in these streets is not essential to providing safe and adequate pedestrian mobility.

7. South side of Park Avenue, from Monroe Avenue to Southwest Avenue.

Park Avenue is one block in length and maintains a narrow roadway. Therefore, the addition of a new sidewalk on the south side of this block is not essential to providing safe and adequate pedestrian mobility. However, this determination has been made with the assumption that the north side of Park Avenue, from Corsons Alley to Southwest Avenue, is provided with sidewalk improvements (see below).

8. North side of Park Avenue, from Corsons Alley to Southwest Avenue.

This street is essentially located within 1 block of the center of the Downtown area. In addition, a sidewalk currently exists in the North side of Park Avenue, from Monroe Avenue to Corsons Alley. Therefore, the installation of sidewalk in the North side of Park Avenue, from Corsons Alley to Southwest Avenue should be considered as a design option for facilitating safe pedestrian travel.

9. East and West sides of Corsons Alley, from Mantua Avenue to Park Avenue.

This location is an uncurbed alleyway that is not suitable for safe pedestrian travel and therefore, the installation of sidewalks should not be considered as a design option.

With respect to the handicapped ramps, it is understood that compliance with ADA Regulations should be performed when implementing public improvements, especially when utilizing federal funding. Therefore, all areas that require handicap ramps should be so provided. In addition, the identification and subsequent reconstruction of all non-compliant handicap ramps should be performed as mandated by federal regulations.

Should the construction of the various improvements ultimately be pursued, a detailed engineering analysis will be required during the design stages to verify the adequacy of all existing facilities for the handicapped.

B) Existing Sidewalks in Mantua Avenue, from Monroe Avenue to Marion Avenue

Due to their existing width and condition, the replacement of existing sidewalks in Mantua Avenue should be considered as a design option for increasing pedestrian mobility, especially in light of the promotion of a "Main Street" Concept.

C) Pedestrian Crosswalks in Mantua Avenue

It is recognized that the locations of the existing crosswalks in Mantua Avenue are appropriately located for facilitating pedestrian access to popular destination points in the Downtown area. However, considerations should be made for providing additional crosswalks at the following intersections:

1. Monroe Avenue

Monroe Avenue and Mantua Avenue is the westernmost intersection in Wenonah's Downtown commercial area and supports an NJ Transit Bus Stop for Route #412. The distance to nearest existing crosswalk is approximately 340 feet, at Northwest Avenue.

2. Marion Avenue

Marion Avenue and Mantua Avenue is the easternmost intersection in Wenonah's Downtown commercial area and is the location of Wenonah Medical Associates and Wycoff-Nester Dental Office. The distance to nearest existing crosswalk is approximately 340 feet, at Clinton Avenue.

Furthermore, a number of safety concerns have been identified in the evaluation of the existing un-signalized crosswalks in Mantua Avenue. These concerns include excessive crossing distances, lack of adequate signage, and difficulties in driver recognition of pedestrians approaching the crosswalk. Therefore, the "*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*" was consulted to provide a number of potential solutions, as follows:

1. Raised Median

- *This particular option is primarily a consideration for multi-lane roadways and higher order streets, whereas Mantua Avenue is classified as a Community Collector Street and therefore, a raised median should not be considered as an optimal design option.*

2. Advance markings and signage
 - *The lack of signage is well documented and the addition of adequate signage is a feasible option for increasing the safety and effectiveness of the existing crosswalks.*
3. Overhead Flashing Beacons
 - *This particular option is primarily a consideration for higher order streets and therefore, should not be considered as a suitable design option.*
4. Overhead lighted sign
 - *This particular option is primarily a consideration for higher order streets and therefore, should not be considered as a suitable design option.*
5. In-pavement lights
 - *Although this option can be considered a feasible option for a Community Collector roadway such as Mantua Avenue, the small town charm of the Borough of Wenonah is not conducive to a solution that would be more appropriate in an urban type setting.*
6. In-street "Yield to Pedestrian" signage
 - *This particular option is recommended for a "Main Street" type of roadway by the Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities and should be considered as a design option.*
7. Curb Extensions
 - *This improvement has already been recommended for purposes of addressing on-street parking and traffic calming.*
This improvement is also recommended by the Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities for a "Main Street" type of setting and should be strongly considered as a design option as it serves to decrease the length of pedestrian crossing in Mantua Avenue.

D) Lighting in Mantua Avenue

Due to the lack of adequate illumination for the pedestrian walkways in Mantua Avenue, the installation of low level pedestrian lighting should be considered as a design option for optimizing the general safety and welfare of the walking public, especially in light of the promotion of a "Main Street" Concept in Mantua Avenue.

Now that the potential for addressing the pedestrian circulation needs have been identified, the study proceeded to the development of the appropriate planning and design options.

III. DEVELOPMENT OF PLANNING AND DESIGN OPTIONS

Sidewalks and Handicapped Ramps in TCDI Study Area

The following streets should be provided with sidewalks in order to facilitate safe and adequate pedestrian travel:

1. South side of Elm Street, from Princeton Avenue to Marion Avenue.
2. East side of Marion Avenue, from Poplar Street to Elm Street.
3. North side of Park Avenue, from Corsons Alley to Southwest Avenue.

Furthermore, new handicap ramps should be provided where required and where none currently exist.

In addition, the identification and subsequent reconstruction of all non-compliant handicap ramps should be performed as mandated by federal regulations.

Sidewalks in Mantua Avenue, from Monroe Avenue to Marion Avenue

The replacement of existing sidewalks in Mantua Avenue will serve to increase the efficiency of pedestrian mobility and is consistent with a “Main Street” Concept.

Pedestrian Crosswalks in Mantua Avenue

Due to the distance to the nearest existing crosswalks, i.e. 340 feet, the installation of proposed un-signalized crosswalks at the following intersections are a feasible solution for facilitating pedestrian access to popular destination points in Wenonah’s Downtown area:

1. Mantua Avenue, at Monroe Avenue
Monroe Avenue and Mantua Avenue is the westernmost intersection in Wenonah’s Downtown commercial area and also supports an NJ Transit Bus Stop for Route #412.
2. Mantua Avenue, at Marion Avenue
Marion Avenue and Mantua Avenue is the easternmost intersection in Wenonah’s Downtown commercial area and is also the location of Wenonah Medical Associates and Wycoff-Nester Dental Office.

Furthermore, various design options were pursued for the purposes of addressing the safety of existing and proposed pedestrian road crossings in Mantua Avenue, as follows:

Advance markings and signage (See Figures 16 & 17)

In-street Yield to pedestrian signage (See Figure 16 & 17)

- *These particular options were found to be suitable solutions for increasing the safety of the existing and proposed crosswalks.*

Curb Extensions (See Figure 16)

The addition of curb extensions in Mantua Avenue, at all existing and proposed pedestrian road crossings, were found to be appropriate solutions for addressing the following:

- 1) Decreasing the roadway crossing distance.
- 2) Increasing the ability for drivers to recognize pedestrians attempting to cross the roadway.
- 3) This improvement has already been recommended for purposes of addressing on-street parking and traffic calming.

Figure 16 provides a typical illustration of the proposed pedestrian road crossing improvements described above. These improvements shall also be supplemented with advance warning signs (W11-2 & W16-9P) posted at the eastern and western limits of Wenonah's Downtown area (See Figure 17)

FIGURE 16: PEDESTRIAN ROAD CROSSING IMPROVEMENTS

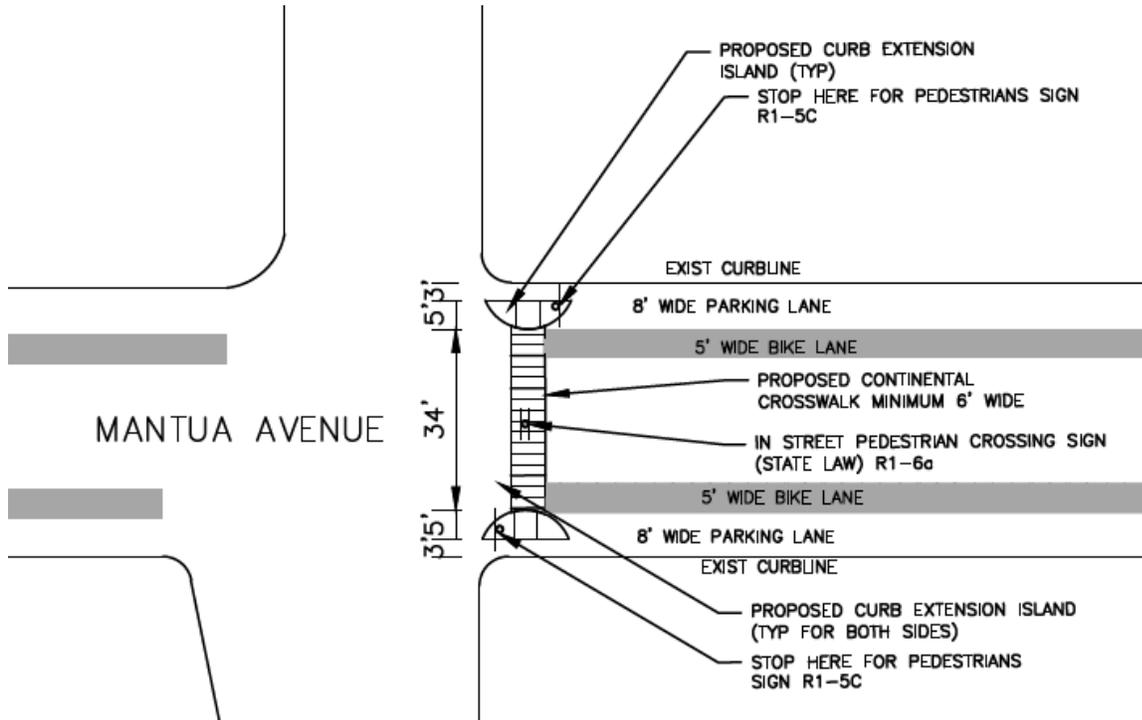


FIGURE 17: PEDESTRIAN ROAD CROSSING SIGNAGE



Lighting in Mantua Avenue

The installation of low level pedestrian lighting in Mantua Avenue is a feasible solution for addressing pedestrian safety at night and is consistent with a “Main Street” Concept. (See Figures 18, 19, & 20)

IV. PUBLIC OUTREACH

Public involvement throughout all phases of the Traffic Circulation Study was integral in the identification of deficiencies and subsequent development of solutions to pedestrian travel. A total of three (3) meetings were publicly advertised and scheduled to coincide with the completion of the major phases of the project, i.e. Needs Assessment, Preliminary Plan Development, and Final Plan Development.

During the meetings, the public provided valuable input with respect to their past and present experiences with respect to pedestrian circulation within the Borough’s Downtown area. As previously noted, one resounding theme was a concern regarding the safety of pedestrians attempting to cross the 50 foot wide Mantua Avenue roadway and the conflicts between those pedestrians and vehicles travelling in Mantua Avenue. This information was critical to the development of, and recommendations for, the appropriate pedestrian safety improvements.

V. RECOMMENDATIONS FOR IMPLEMENTATION

A number of factors were considered during the evaluation of the various Design Options described above. These factors primarily included the ability to address the identified needs and the mitigating impacts with respect to land disturbance, drainage, environmental impacts, potential construction costs, and the general safety and welfare of the public. Based upon the evaluation of the various factors, we offer the following recommendations for the implementation of improvements to address pedestrian traffic circulation within the Borough of Wenonah's Downtown area:

Sidewalks and Handicapped Ramps in TCDI Study Area

Ability to meet needs

It has been determined that the installation of sidewalks in following streets will address the need for facilitating safe and adequate pedestrian travel within the TCDI Study Area:

1. South side of Elm Street, from Princeton Avenue to Marion Avenue.
2. East side of Marion Avenue, from Poplar Street to Elm Street.
3. North side of Park Avenue, from Corsons Alley to Southwest Avenue.

Furthermore, the construction of handicapped ramps where none exist and the reconstruction of all non-compliant handicap ramps will increase handicapped accessibility within the TCDI Study Area.

Mitigating Impacts

The installation of sidewalks in the abovementioned streets, as well as the construction of new handicapped ramps and reconstruction of non-compliant handicapped ramps, will result in an insignificant amount of disturbance to public property, especially when weighed against the corresponding safety and accessibility benefits.

Accordingly, it is our opinion that there are limited impacts associated with the aforementioned improvements.

Recommendation

For reasons stated herein, it is recommended that the installation of sidewalks in the following streets should be incorporated into any future plans for improvements to the Borough's Downtown area.

1. South side of Elm Street, from Princeton Avenue to Marion Avenue.
2. East side of Marion Avenue, from Poplar Street to Elm Street.
3. North side of Park Avenue, from Corsons Alley to Southwest Avenue.

In addition, it is recommended that the construction of handicapped ramps be performed where none exist in order to address federal regulations and increase handicapped accessibility.

Furthermore, a detailed engineering assessment should be performed on all handicapped ramps within the project area to determine compliance with current ADA Regulations. Consequently, it is recommended that all non-compliant ramps identified should be reconstructed to meet ADA Regulations and increase handicapped accessibility.

Sidewalks in Mantua Avenue, from Monroe Avenue to Marion Avenue

Ability to meet needs

As indicated in the “*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*”, the widening of sidewalks in Mantua Avenue to a width of between 6 feet and 14 feet is a recognized method for promoting pedestrian circulation that is consistent with the Main Street Concept.

Mitigating Impacts

The widening of sidewalks in Mantua Avenue, will not result in a significant amount of disturbance to public property, especially when weighed against the corresponding safety and pedestrian mobility benefits.

Accordingly, it is our opinion that there are limited impacts associated with the widening of sidewalks in Mantua Avenue.

Recommendation

For reasons stated herein, it is recommended that the widening of the sidewalks in both sides of Mantua Avenue, from Monroe Avenue to Marion Avenue, should be incorporated into any future plans for improvements to the Borough’s Downtown area.

Pedestrian Crosswalks in Mantua Avenue

Proposed un-signalized crosswalks at Monroe Avenue and Marion Avenue

Ability to meet needs

The addition of un-signalized crosswalks at the intersections of Mantua Avenue with Monroe Avenue and Mantua Avenue with Marion Avenue will address the need for safe pedestrian crossings located in close proximity to Public Transit facilities and the local destination points known as Wenonah Medical Associates and Wycoff-Nester Dental Office.

Mitigating Impacts

The addition of the proposed crosswalks in Mantua Avenue, will not result in a significant amount of disturbance to public property, especially when weighed against the corresponding safety and pedestrian mobility benefits.

Accordingly, it is our opinion that there are limited impacts associated with the addition of un-signalized crosswalks in Mantua Avenue, at both Monroe Avenue and Marion Avenue.

Recommendation

Due to the distance to the nearest existing crosswalks, i.e. 340 feet, and in consideration of the types of uses that they will serve, i.e. NJ Transit Facilities and Medical Office Buildings, the installation of proposed un-signalized crosswalks at Monroe Avenue and Mantua Avenue, and at Marion Avenue and Mantua Avenue, should be incorporated into any future plans for improvements to the Borough’s Downtown area.

Advance markings and signage & In-street “Yield to Pedestrian” signage

Ability to meet needs

As indicated in the “*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*”, the addition of the proposed signage in conjunction with the proposed pedestrian road crossing improvements is a recognized method for promoting pedestrian safety that is consistent with the Main Street Concept.

Mitigating Impacts

The installation of the signage improvements as described herein and as indicated in Figure 16 & 17 will have no adverse impacts.

Recommendation

Due to the inherent safety benefits and minimal impact, it is recommended that the installation of the signage improvements as described herein and as indicated in Figure 16 & 17, should be incorporated into any future plans for improvements to the Borough’s Downtown area.

Curb Extensions

Ability to meet needs

As indicated in the “*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*”, the addition of curb extensions are a recommended pedestrian road crossing improvement for a Community Collector/Main Street type of roadway, especially for streets with on-street parallel parking.

Recognized benefits provided by the proposed curb extensions include the following:

1. Reducing vehicular speeds by promoting the perception of a narrowing roadway.
2. Increasing sight distance for vehicles attempting to gain access to Mantua Avenue, from the local Borough side streets, by allowing vehicles to safely encroach further into the Mantua Avenue Roadway for adequate visibility.
3. Decreasing the distance that a pedestrian has to travel in order to safely cross the fifty (50) foot wide Mantua Avenue roadway.
4. Increasing the ability for drivers to visually recognize pedestrians attempting to cross the roadway
5. Increasing the ability for pedestrians to visually recognize vehicles travelling in the roadway

Mitigating Impacts

The installation of curb extensions, or bump-outs, at the Mantua Avenue pedestrian road crossings will not result in a significant amount of disturbance to the County Right of Way, especially when weighed against the corresponding safety and pedestrian mobility benefits. The primary impacts

are related to drainage along the Mantua Avenue gutterline and therefore, design features have been incorporated to address this concern.

Therefore, it is our opinion that there are limited impacts associated with the implementation of curb extensions in Mantua Avenue.

Recommendation

The installation of proposed curb extensions, as indicated in detail in Figure 12 and as indicated in layout in Figures 13 & 16, have been widely recommended for addressing a number of safety concerns with respect to both vehicles and pedestrians and therefore, should be incorporated into any future plans for improvements to the Borough's Downtown area.

The Plans were also reviewed with the Office of the Gloucester County Engineer. The County Engineer's comments have been documented in the Recommendation for Implementation of Parking Improvements.

Lighting in Mantua Avenue

Ability to meet needs

As indicated in the "*Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*", the installation of pedestrian level lighting improvements in Mantua Avenue is a recognized method for promoting the safety of pedestrian circulation and is consistent with the Main Street Concept.

Mitigating Impacts

The installation of pedestrian level lighting improvements in Mantua Avenue will not result in a significant amount of disturbance to the County Right of Way, especially when weighed against the corresponding safety benefits. The primary impacts are related to excessive light spillover onto adjacent properties which will be addressed during the design and layout phase of any future improvement project.

Recommendation

The existing inadequate lighting levels in Mantua Avenue warrant the installation of pedestrian level lighting improvements to address the safety of the walking public at night and therefore, should be incorporated into any future plans for improvements to the Borough's Downtown area.

Furthermore, due to the prominence of the Mantua Avenue corridor and the Victorian theme of the existing buildings which maintain frontage thereon, the style and type of light fixtures should be carefully selected in conjunction with the input of Borough Council and the Wenonah Historical Society.

2.3 BICYCLE CIRCULATION

During the preparation of this report, the Office of the Gloucester County Engineer requested that the proposed improvements to Mantua Avenue be designed to incorporate the County's Master Bicycle Plan, which is proposed to extend through the Borough of Wenonah.

In accordance with this request, the plans have been designed to include a 5 foot wide bicycle lane on both the north and south sides of Mantua Avenue (See Figure 19). It is our understanding that the County will be seeking funding to construct the bicycle lanes and the improvements associated therewith, i.e. bike racks, signage, etc.

2.4 PUBLIC TRANSPORTATION

Light Rail Line

Plans for a Light Rail Line have been contemplated for the existing railroad Right of Way that runs through the Borough of Wenonah. However, specific details regarding these plans, including its financial feasibility, have been in question for many years. Although this report recognizes the possibility of the Light Rail Line, we are unable to address any aspect related thereto based upon its unknown status.

New Jersey Transit

New Jersey Transit Bus Route #412 maintains stops at the following intersections within the Study Area.

1. Northeast corner of Monroe Avenue and Mantua Avenue
2. Southwest corner of Monroe Avenue and Mantua Avenue
3. Southeast corner of Southeast Avenue and Mantua Avenue
4. Northwest corner of Clinton Avenue and Mantua Avenue
5. Southwest corner of Princeton Avenue and Mantua Avenue

The facilities for these bus stops solely consist of an uncovered bench. Therefore, as part of any future plans for improvements to the Borough's Downtown area, it is recommended that the Borough petition New Jersey Transit to provide more user friendly bus stop facilities to provide riders with protection from inclement weather.

Furthermore, it should be noted that the proposed improvements in Mantua Avenue (See Figure 18), will require the relocation of the following bus stops in order to maximize the potential capacity for on-street parallel parking in Mantua Avenue:

1. The existing Bus Stop at the northeast corner of Monroe Avenue and Mantua Avenue should be relocated to the northwest corner of Monroe Avenue and Mantua Avenue
2. The existing Bus Stop at the southeast corner of Southeast Avenue and Mantua Avenue should be relocated to the southwest corner of Clinton Avenue and Mantua Avenue

It is recommended that the Borough coordinate the relocation of these existing Bus Stops as part of any future plans for improvements to the Borough's Downtown area.

CONCLUSIONS

The Borough of Wenonah maintains a strong Downtown Center that supports the majority of existing civic and commercial uses. Being planned over 140 years ago, the founding fathers did not anticipate the need for the off-street parking and traffic circulation facilities which are required to support the present day civic uses, commercial businesses, and multi-family dwellings which are primarily located along Mantua Avenue. To further exacerbate the existing parking and traffic circulation deficiencies, a number of land use modifications have increased both the density and intensity of uses within the Borough's Downtown Area since its inception in 1871.

Accordingly, the Borough of Wenonah has identified an inherent need to create a more user friendly and inviting downtown area for the purposes of supporting local businesses, while balancing the ability to maintain Wenonah's small town charm. In addition, the Borough has also identified the need to provide safer access to, from, and within, the existing downtown area. With this in mind, the Borough has commissioned this Study in an attempt to address these initiatives.

During the completion of the study, it became apparent that the Borough's Downtown area, more particularly Mantua Avenue, mimics a Main Street Concept, as evidenced by the following existing features and/or proposed recommendations which were offered within the content of this Report (see Figures 19 & 20):

- 1) Regular pedestrian activity with recommendations for widening of existing sidewalks to 6 feet in width;
- 2) The presence of commercial and civic uses, with a mix of residential uses. Some of which are found on the 2nd floor of existing buildings;
- 3) High building density, oriented to the street, with limited property frontage;
- 4) The presence of on-street parallel parking, with a minimum parking lane width of 8 feet;
- 5) Recommendations to reduce the vehicular speeds from 35 mph to 30 mph;
- 6) The presence of only two (2) travel lanes in Mantua Avenue, each maintaining a width of twelve (12) feet
- 7) The presence of Public Transportation facilities as well as opportunities for alternate transportation, i.e. bicycle travel.

FIGURE 19: TYPICAL BLOCK LAYOUT FOR MANTUA AVENUE

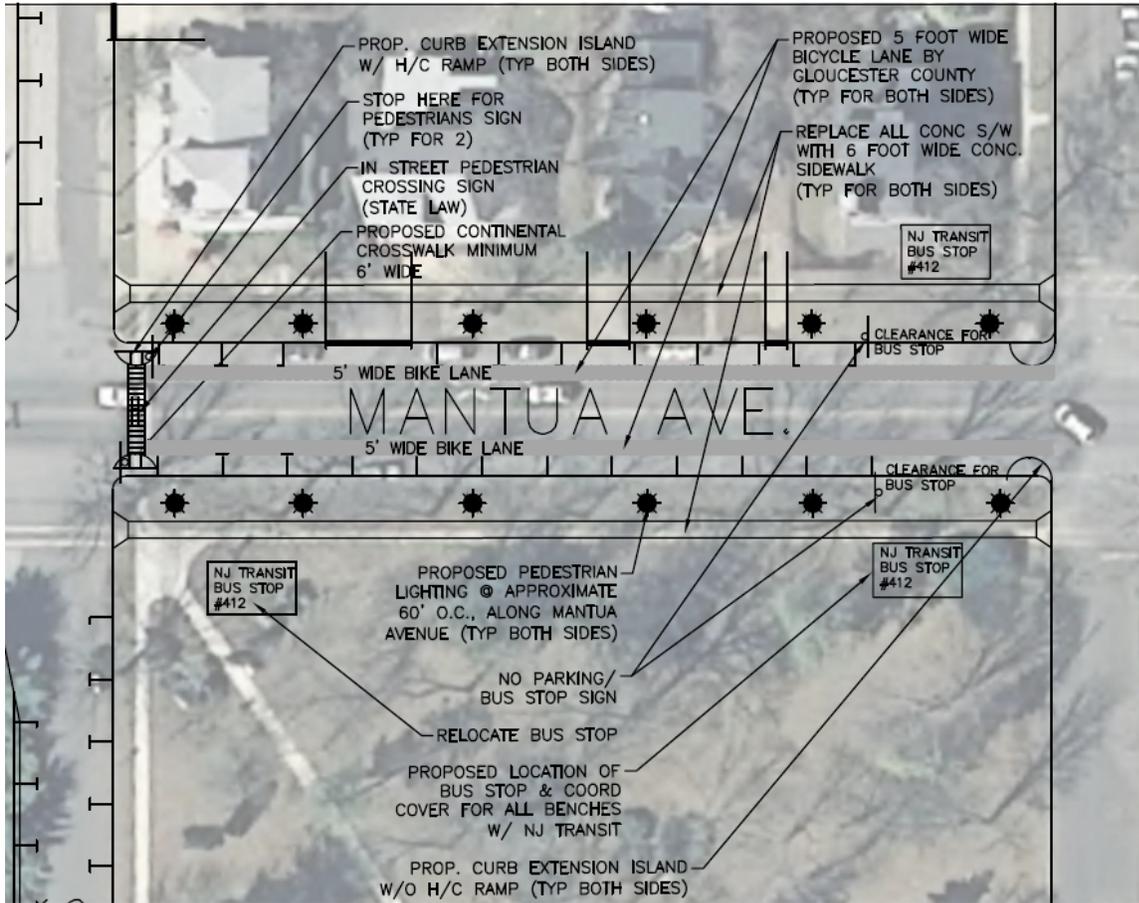
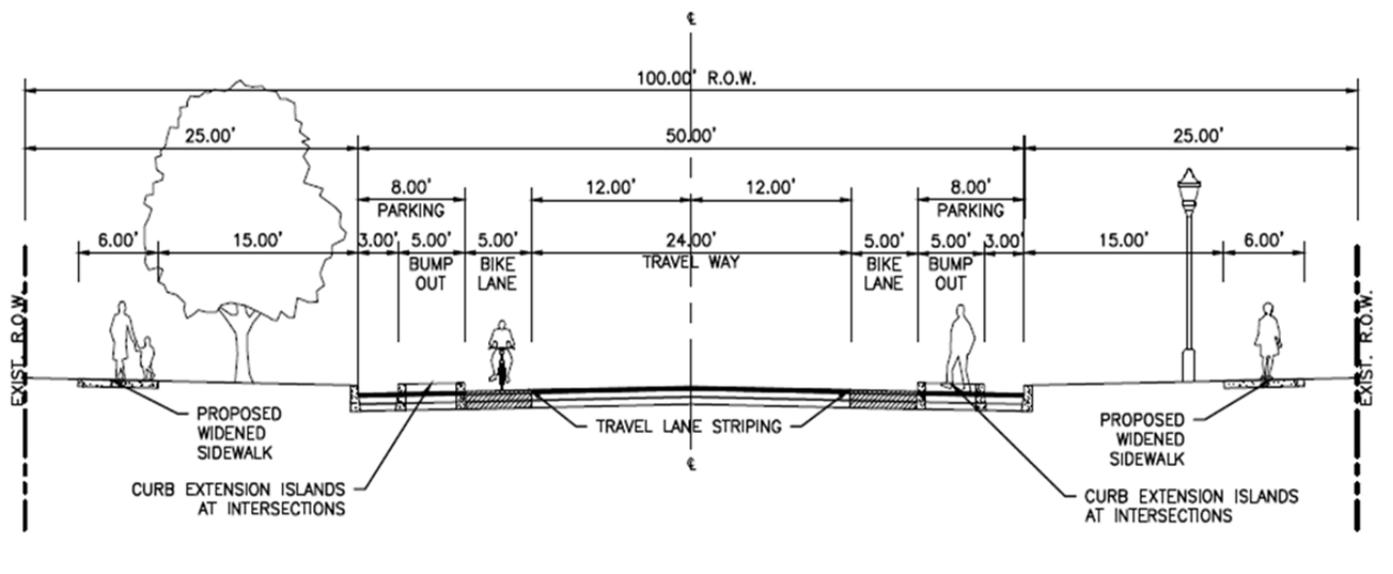


FIGURE 20: TYPICAL CROSS SECTION FOR MANTUA AVENUE



Although Mantua Avenue demonstrates the majority of features inherent to a “Main Street” Concept, the 100 foot wide Right of Way offers a deviation from the following features of the typical Main Street Design, which is detailed within *The Smart Transportation Guidebook for Planning and Designing Highways and Streets that Support Sustainable Living Communities*:

- 1) The Mantua Avenue Buffer Width is approximately 15 feet wide, whereas the recommended “Main Street” Buffers range from 4 to 6 feet in width;
- 2) The Mantua Avenue Building Shy Distances are far greater than that which is provided in the “Main Street” Design Concept, i.e. 2 feet;

To support the “Main Street” Concept in Mantua Avenue, recommendations for improvements to a number of the local intersecting streets were made that will provide for additional parking capacity and increased pedestrian mobility, while also addressing the interaction between residents and business patrons.

Accordingly, it has been concluded that the implementation of the recommendations provided within this report will serve to:

- A. Encourage new and existing business to thrive off of the recent Borough investments into the future of the downtown area. These investments include the recent rehabilitation of the Wenonah Train Station/Community Center and construction of the new Borough Municipal Building.
- B. Attract new business to the downtown area and increase employment opportunities for Borough residents.
- C. Improve access to the commercial and civic uses throughout the downtown area.
- D. Promote pedestrian traffic and increase pedestrian safety throughout the downtown area.
- E. Enhance and increase utilization of the existing transportation infrastructure, including public transportation facilities
- F. Improve the overall character and quality of life within the Wenonah community.

In conclusion, the recommendations provided within this Study are consistent with the Delaware Valley Regional Planning Commission’s initiatives and guidelines as well as the Gloucester County’s Roadway and Bicycle Master Planning documents. The findings of this Study shall serve as a guidance document for the Borough of Wenonah in the implementation of policies to address both parking management and traffic circulation needs within the Borough’s Downtown Area. Furthermore, this study shall be used as a tool by the Borough of Wenonah in seeking funding from the various DVRPC Transportation Improvement Programs for the construction of the improvements recommended within this Report.

BIBLIOGRAPHY

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- The New Jersey Residential Site Improvement Standards
- American Planning Association Publications
- Mantua Township Land Use and Development Ordinance
- Woolwich Township Land Use and Development Ordinance
- NJ State No Parking Statute, i.e. Title 39.