



# Montgomery Avenue Business District Study for the Borough of Narberth

This project was funded by a Transportation and Community Development Initiative (TCDI) grant provided by the Delaware Valley Regional Planning Commission

Prepared by:

THE WAETZMAN PLANNING GROUP

In Association with:

Pennoni Associates, Inc.

URS Corporation

June 29, 2007

## **Narberth Borough Officials**

### Mayor

Thomas Grady (Formerly on Borough Council)

Dennis J. Sharkey (Retired Mayor)

### Narberth Borough Council

Mary Jo Pauxtis, President

Nancy Lotz, Vice-President

Heidi Boise

Andy Haakenson

Matt Pettigrew

Michael Quinn

Bob Wegbreit

Fran Gaudini (Retired Councilwoman)

Hunter Martin (Retired Councilman)

Larry Ruben (Retired Councilman)

### Borough Manager

William J. Martin

## **Study Steering Committee**

Eli Holtman (Borough Planning Commission)

William Martin (Borough Manager)

Angela Murray, AICP (Lower Merion Twp. Assistant Director, Building & Planning)

Eric Persson (Lower Merion Twp. Economic Development Specialist)

Barry Seymour, AICP (DVRPC Executive Director; Formerly on Borough Planning Commission)

Charles Guttenplan, AICP (Study Project Manager, Vice President, The Waetzman Planning Group)

Diana Mancini, RLA (Senior Landscape Architect, Pennoni Associates, Inc.)

Marc Morfei, RLA (Senior Landscape Architect, Pennoni Associates, Inc.)

Matthew Ehlinger, PE (Senior Traffic Engineer, URS Corporation)

John Nawn, PE (Project Manager, URS Corporation; resigned Fall 2005)

Mark Rhoads, PE (Project Manager, URS Corporation)

## Table of Contents

Executive Summary .....	v
Chapter 1: Introduction.....	1
Chapter 2: Project Scope.....	4
Chapter 3: Study Process .....	5
Chapter 4: Issues, Goals and Objectives .....	7
Chapter 5: Existing Conditions .....	11
Chapter 6: Business Surveys.....	19
Chapter 7: Traffic Issues and Analysis.....	23
Chapter 8: Streetscape Improvement Plans .....	55
Chapter 9: Conclusion .....	76
Appendix A: Narberth Business Survey .....	78
Appendix B: Existing Automobile and Pedestrian Traffic .....	81
Appendix C: Sidewalk Capacity.....	84
Appendix D: Intersection and Arterial Levels of Service.....	86
Appendix E: Pedestrian Clearance Time Calculations.....	88

**List of Figures**

Figure 1: Context Map ..... 3  
 Figure 2: Existing Land Use Map ..... 16  
 Figure 3: Montgomery Avenue Photographic Survey ..... 18  
 Figure 4: Parking Utilization Plan ..... 27  
 Figure 5: Traffic Flow/Pedestrian Alternate 1 ..... 31  
 Figure 6: Traffic Flow/Pedestrian Alternate 2 ..... 35  
 Figure 7: Traffic Flow/Pedestrian Alternate 3 ..... 39  
 Figure 8: Traffic Flow/Pedestrian Alternate 4 ..... 43  
 Figure 9: Traffic Flow/Pedestrian Alternate 5 ..... 47  
 Figure 10: Existing Landscape Plan ..... 57  
 Figure 11: Existing Conditions – Cross Sections 1 and 2 ..... 58  
 Figure 12: Existing Conditions – Cross Sections 3 and 4 ..... 59  
 Figure 13: Existing Conditions – Cross Sections 5 and 6 ..... 60  
 Figure 14: Proposed Streetscape Plan Sheet 1 ..... 62  
 Figure 15: Proposed Streetscape Plan Sheet 2 ..... 63  
 Figure 16: Proposed Streetscape Plan Sheet 3 ..... 64  
 Figure 17: Proposed Streetscape Plan Sheet 4 ..... 65  
 Figure 18: Proposed Streetscape Plan Details Sheet 1 ..... 66  
 Figure 19: Proposed Streetscape Plan Details Sheet 2 ..... 67  
 Figure 20: Proposed Streetscape Plan Details Sheet 3 ..... 68  
 Figure 21: Proposed Conditions – Cross Sections 1 and 2 ..... 69  
 Figure 22: Proposed Conditions – Cross Sections 3 and 4 ..... 70  
 Figure 23: Proposed Conditions – Cross Sections 5 and 6 ..... 71

**List of Tables**

Table 1: Narberth TCDI Meeting Schedule ..... 6  
 Table 2: Narberth Demographics ..... 11  
 Table 3: Existing Land Use ..... 13  
 Table 4: Survey Results ..... 20  
 Table 5: Narberth/Lower Merion Analysis ..... 21  
 Table 6: Renter/Owner/Landlord Analysis ..... 22  
 Table 7: Grant/Funding Opportunities for Underground Utilities in Narberth ..... 72

## Executive Summary

A Business District Study was undertaken by the Borough of Narberth, beginning in the fall of 2004, with funding assistance through the Transportation and Community Development Initiative (TCDI) program, funded through the Delaware Valley Regional Planning Commission. The project area consists of a half-mile portion of Montgomery Avenue from its intersection with Haverford Avenue (on the east) to its intersection with Old Gulph Road/Narberth Avenue/Sabine Avenue (on the west), and also includes the small, triangular area bordered by Iona Avenue, Woodbine Avenue and Montgomery Avenue. The Waetzman Planning Group (WPG) was hired as consultant to the Borough to undertake the study, together with two sub-consultants, Pennoni Associates, Inc. and the URS Corporation. Pennoni was involved initially with topographic and field survey work to provide base information for the study and later in the study, was to provide preliminary engineering for recommended streetscape improvements and cost estimates (these tasks were later eliminated due to a change in project scope). URS was responsible for developing and evaluating vehicular and pedestrian safety improvements within the study area.

The scope of the study was designed to be comprehensive and address issues of traffic flow and control, pedestrian safety, economic development/business prosperity, and streetscape aesthetics. Though preliminary engineering and cost estimates for streetscape improvements were to be included, a modification to the scope of work was approved in mid-2006, to remove these work items. All of the other issues were retained as part of the study scope.

A Steering Committee (listed on page i) was established to work with the consultant team. Representatives of both the Borough and Lower Merion Township served on the Committee, recognizing that the business district actually straddles the municipal boundary (the south side of Montgomery Avenue is in the Borough while the north side is in Lower Merion Township), while the roadway itself is under the Township's jurisdiction. The resultant study was therefore a cooperative effort by both municipalities.

Issues, goals, and objectives were developed for six areas of concern: Pedestrian Considerations; Economic Development Considerations; Streetscape Considerations; Other Design Considerations; Traffic Considerations; and Implementation Considerations. These culminated in a vision for the Study: *The vision of the Montgomery Avenue Area Business District Study is to revitalize the commercial core along Montgomery Avenue by improving pedestrian circulation and safety, providing additional parking and adequate vehicular circulation, and fostering economic vitality along the commercial spine of Montgomery Avenue. This can be accomplished in several ways, by implementing the goals and*

*objectives described previously. Many of the objectives can be included within structured design guidelines that unify the Study corridor as well as provide safety principles and regulations.*

A business survey was conducted early in the Study process and a follow-up meeting held with representatives of the business community on both sides of Montgomery Avenue. The need for additional parking was a key issue raised by the survey. Various streetscape improvements were suggested, as were pedestrian safety improvements; traffic speed was also raised as a concern.

Extensive surveys and analyses of existing conditions in the Study area, were undertaken. These included a demographic analysis, existing land use, parking quantity and location, traffic patterns and characteristics, pedestrian accommodations and impediments, and other streetscape characteristics. The results of these were all graphically portrayed and presented to the Steering Committee established to work with the consultant team for the Study. The results of these surveys were key inputs into the recommendations developed as the part of the Study.

The following is a list of recommended short and long term traffic-related improvements that would not significantly impact the capacity along Montgomery Avenue; these were developed by URS once a determination was made in 2006 to maintain the existing traffic patterns and lane configuration on Montgomery Avenue.

#### Short Term

- Adjust signal timings to provide minimum pedestrian clearance intervals according to PennDOT criteria along with optimizing signal timings and offsets.
- Install pedestrian countdown timers of Hand/Man signal heads for pedestrians.
- Install texturized or imprinted crosswalks.
- Create and install special "traffic calming zone" or "pedestrian friendly zone" signs.
- Examine the placement and size of speed limit signage.
- Install ornamental signal poles.
- Create a "gateway" to the area by using a combination of physical and textural changes.

#### Long Term Measures

- Restrict right turns on red at signalized intersections.
- Implement exclusive pedestrian phases at intersections with high pedestrian volumes.

- Move the utilities along Montgomery Avenue underground.

After the decision was made to maintain the existing cartway width of Montgomery Avenue, streetscape improvement concept plans were developed by WPG for the entire Study area. These plans were based upon six sections taken at different locations in the Study area, representing the variety of situations and typical constraints found in different locations. The streetscape concept plans include improvements which would assist in implementing some of the traffic calming recommendations, and would improve pedestrian circulation and safety. This has consistently been an overriding goal for the Study. ADA compliance would also be achieved. Finally, the streetscape concept plans are also aimed at creating a more uniform appearance for the Business District, helping provide an identity and in general, improving the aesthetic appearance of the area.

It is recognized that successful implementation of the recommendations of this Study will require a continued cooperative effort by Narberth Borough and Lower Merion Township. Borough Council is committed to continuing to work with the Township toward that end.

## Chapter 1: Introduction

Narberth Borough, located in southeastern Montgomery County, is a highly developed residential community that lies along the SEPTA regional rail line, the R5, also known as the “main line.” Due to its location and regional access, Narberth has always appealed to the residential community with its diverse collection of general retail and specialty shops, restaurants, and service businesses. However, recent suburban development including regional malls and big-box retail establishments, has resulted in a decline of the commercial vibrancy that Narberth once enjoyed. The Borough has undertaken measures, including this Study, with the intent of reversing the trend of economic decline and to revitalize the Business District along Montgomery Avenue. This is the fourth phase of business district revitalization undertaken by the Borough for the past several years. The first three phases focused on the Haverford Avenue Business District.

The Waetzman Planning Group was contracted by Narberth Borough to produce an Improvement Plan that addresses business district improvements within the Montgomery Avenue Area Business District. For purposes of this Study, the Business District has been defined as that area which encompasses a segment of Montgomery Avenue that extends for slightly more than one half mile, from its intersection with Haverford Avenue in the east to its intersection with Old Gulph Road/Narberth Avenue/Sabine Avenue in the west. This area additionally includes the small, triangular area bordered by Iona Avenue, Woodbine Avenue and Montgomery Avenue. The area can be seen on Figure 1, an aerial photograph of the District and the surrounding area.



The western end of the Study area at Narberth Avenue

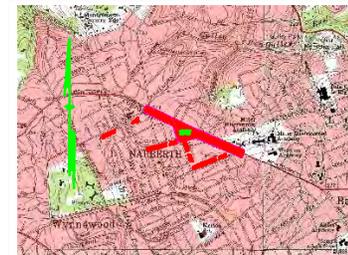
The Plan was intended to address a number of issues including: traffic volume and speed through the District; unfriendly pedestrian environment (the District is located on both sides of the street though one side, the south side, is within the Borough and the other side, the north side, is in Lower Merion Township); lack of adequate parking or at least a perception thereof; a poor aesthetic appeal and lack of a specific visual identity; and as a result of these issues, a possible loss of business vitality within the District and the potential for vacancies.

The Waetzman Planning Group collaborated with Pennoni Associates, Inc. and URS Corporation to prepare certain portions of the Study. Topographic, field, and photographic surveys as well as business surveys were used to assist in the research, analysis, and design process. Pennoni Associates produced all of the topographic and field surveys, upon which all of the physical analyses and streetscape components were based. They also prepared six sections of the Study area, utilized in the streetscape designs. In addition, Pennoni developed a website devoted to the study: [www.MontgomeryAvenue-Narberth.com](http://www.MontgomeryAvenue-Narberth.com). URS Corporation provided all of the traffic and parking analyses for the Study.

The consultant team worked with Narberth Borough, as well as Lower Merion Township, throughout the Study. A Steering Committee was created with representation from the Borough, the Township, and DVRPC. This Committee provided input and review for all aspects of the Study.

Eighty percent of the cost for this Study was funded by a grant from the Transportation and Community Development Initiative program (TCDI). This program is funded through the Delaware Valley Regional Planning Commission (DVRPC). As described by DVRPC, the TCDI program is intended to assist in reversing the trends of disinvestment and decline in many of the region's core cities and first generation suburbs by:

1. Supporting local planning projects that will lead to more residential, employment or retail opportunities;
2. Improving the overall character and quality of life within these communities to retain and attract business and residents, which will help to reduce the pressure for further sprawl and expansion into the growing suburbs;
3. Enhancing and utilizing the existing transportation infrastructure capacity in these areas to reduce the demands on the region's transportation network; and
4. Reducing congestion and improving the transportation system's efficiency



Montgomery Avenue Business District Study Borough of Narberth, Montgomery County, PA	
<b>Context Map - Aerial</b>	
SCALE: 1" = 100' DATE: 10 February 2005 PROJECT: ENG-5-110	
PREPARED FOR: THE BOROUGH OF NARBERTH	PROVIDED BY: <b>THE WAETZMAN PLANNING GROUP</b> 1230 County Line Rd., Bryn Mawr, PA 19010 Telephone: (610) 527-0600; Fax: (610) 527-0445

**FIGURE 1**

## Chapter 2: Project Scope

The initial scope of the project included the drafting of a slightly broader Revitalization and Redevelopment Plan for the Montgomery Avenue Business District. The plan would include a background study summarizing demographics and identifying and mapping important issues. Goal and objectives for the Study would be arrived at by collaborating with stakeholders (Narberth Borough, business owners and operators, other property owners, the Narberth Business Association, Lower Merion Township, and others). The plan would also examine the redevelopment potential of specific parcels, zoning issues, shared parking, potential vehicular and pedestrian conflicts, and how pedestrian use can be encouraged via traffic and streetscape improvements. The Study was to be followed by an action plan for implementation. Next preliminary design and engineering studies to implement recommendations from the plan for streetscape, pedestrian and traffic improvements were to be developed by URS Corporation and Pennoni Associates. Final engineering of the streetscape improvements was to be performed by Pennoni Associates, as well as cost estimates and a website.

As the project evolved, the scope of the project changed. After several meetings with Lower Merion Township (in early and mid-2006), which has jurisdiction over the entire right-of-way of Montgomery Avenue, it was determined that all improvements would occur within existing curblines and that no changes to the existing traffic patterns, would be made. All traffic pattern changes studied were determined to have an adverse impact on the traffic carrying capacity of Montgomery Avenue; this was not acceptable to Lower Merion Township due to the already high traffic volume (average daily traffic volume of over 25,000 vehicles). Due to the resultant project delay and the extent of funding already expended by this time in the Study, some of the original end products were eliminated, with DVRPC's concurrence; it is the Borough's expectation that these will be undertaken at a later date. Final engineering plans and cost estimates were dropped, but preliminary design recommendations for streetscape design changes to improve pedestrian access and safety, as well as enhance the aesthetics of the area, were still to be developed. The Waetzman Planning Group was still to produce a final Revitalization and Redevelopment Plan which would address existing conditions, business survey results, land use and parking issues, pedestrian/vehicular conflicts; and which would also include the above design recommendations. The website was also to be retained.

### Chapter 3: Study Process

The initial phase of the Study involved gathering background data. For URS, this consisted of reviewing existing traffic data and gathering right-of-way and property owner information. The Waetzman Planning Group researched census data to gather demographic information, compiled a photographic inventory of the area, developed a businessperson's survey with the assistance of the Steering Committee, and outlined goals and objectives for the Study. Pennoni provided a topographic and field survey of the area. The purpose of the survey was to document all existing site features between the street right-of-way lines. The survey depicted ground elevations with contours at one-foot intervals and spot elevations where appropriate. The plan also illustrated physical features including curbs, sidewalks, crosswalks, surface utility structures, building façades, building entrances, and trees, located between the curblines and the building façade. Underground utilities were added to the plan using available records obtained from the respective utility providers through the PA One Call system. Pennoni prepared these plans in AutoCAD format at a scale of 1"=40'. In addition, cross sections were developed at certain points along the streetscape to depict typical existing conditions. A total of six cross sections were developed, five on Montgomery Avenue and one on Woodbine Avenue, at a scale of 1"=4'. The cross sections showed existing buildings, parking, sidewalk, curbs, roadway, walls, landscaping, and right-of-way lines.

The second phase of the Study involved The Waetzman Planning Group collecting additional data on existing conditions including parking statistics, street furniture, and street trees and conducting a visual inventory of signage. WPG also completed a context map, as well as an existing conditions plan and an existing land use survey for the Study area. The businessperson's survey was distributed and responses gathered. URS conducted the following counts: intersection vehicular turning movement counts, intersection bicycle/pedestrian counts, and parking utilization counts.

Early in 2005, Waetzman Planning Group tabulated and analyzed the results of the business survey which was used as a major input to other aspects of the Study. URS developed five different traffic alternatives to address existing traffic issues along Montgomery Avenue. They also completed a capacity analysis for sidewalks, intersections and arterials. Once the project scope was modified, URS recommended several short and long term improvements to address pedestrian and parking issues without impacting the traffic capacity of Montgomery Avenue. Once these efforts were completed, WPG developed alternative streetscape design concept plans addressing typical constraints based on information taken from the surveys and cross-sections done by Pennoni Associates; these addressed the six "typical"

situations depicted by the sections. The streetscape design plans address issues such as expanding usable sidewalk surface, reducing sidewalk obstructions, creating a Borough gateway, creating safer crossings, and addressing the lack of adequate parking.

As mentioned above, a Steering Committee was formed at the outset of the Study to provide input and oversee the progress of the Study. Throughout the course of the Study, meetings were held with the Steering Committee as well as with the Narberth Borough Council and the Lower Merion Township Board of Commissioners. In addition, a breakfast meeting was held with a number of the business owners to gather their input and discuss the issues which had been identified through the responses to the business survey. Table 1 lists the 14 formal meetings held during the course of the Study; other informal coordination meetings and discussions were held on an as-needed basis with the consultant team members, Borough officials and Lower Merion Township officials.

<b>Date</b>	<b>Participants</b>
9/9/2004	Kick Off Meeting
2/10/2005	Steering Committee
3/31/2005	Breakfast Meeting with business representatives
5/17/2005	Steering Committee
10/14/2005	Steering Committee, Lower Merion Township traffic consultant
3/2/2006	Borough Council briefing
3/10/2006	Lower Merion Township Staff
3/15/2006	Lower Merion Township Board of Commissioners
5/22/2006	Lower Merion Township Board of Commissioners
8/31/2006	Steering Committee
9/25/2006	Steering Committee
10/4/2006	Borough Council
12/13/2006	Steering Committee
6/14/2007	Borough Council

## Chapter 4: Issues, Goals and Objectives

This section describes the issues (considerations), goals and objectives that were developed in conjunction with the Steering Committee, for the various aspects of the Study. They culminated in an overall vision that acted as a guide for this Study.

### A. PEDESTRIAN CONSIDERATIONS

#### Issues:

- Variable Width/Narrow Sidewalks
- Sidewalk Obstructions (utility poles, sign posts, newspaper boxes, etc.)
- Proximity of vehicular movement on Montgomery Avenue
- Unsafe street crossings (Montgomery Avenue)

#### Goal:

**Create uniform sidewalks which function safely and efficiently, as well as being inviting to pedestrians.**

#### Objectives:

1. Create sidewalk of sufficient width to handle pedestrian flow.
2. Remove obstructions or reroute sidewalk around obstructions.
3. Provide separation between sidewalk and vehicles with the use of streetscape elements where space permits.
4. Provide benches as pedestrian resting places, and to encourage lingering within the business district.
5. Make all pedestrian accommodations ADA-compliant.

#### Goal:

**Provide safe and efficient pedestrian crossing of Montgomery Avenue.**

#### Objectives:

1. Analyze/increase pedestrian crossings times at each signal timing plan to permit safe passage consistent with existing or proposed cartway width(s).
2. Provide/upgrade pedestrian devices at each signal.
3. Define clear pedestrian crosswalks.

### B. ECONOMIC DEVELOPMENT CONSIDERATIONS

#### Issues:

- Possible under-utilization of 2<sup>nd</sup> stories in some buildings (couldn't determine from field survey)
- Loss of business due to parking inadequacy (or perceived inadequacy)

- Loss of business due to difficulty in accessing business site
- Lack of unique identity for this area as a 'destination' business district (needed for business promotion)
- Lack of on-street parking on Montgomery Avenue
- Long-term vacancy of historic landmark on Lower Merion side (General Wayne Inn) [*Resolution appears forthcoming with recent purchase.*]

**Goal:**

**Promote the business district as a single entity.**

**Objectives:**

1. Publicize Business Association meetings and events.
2. Advertise events in the district in local newspapers.
3. Create an identity (name) and logo for the district.
4. Periodically publicize a list of available space within the district.

**Goal:**

**Increase parking availability in the district.**

**Objectives:**

1. Work with property owners to create shared parking facilities and cross-access arrangements.
2. Work with property owners to redesign parking areas where space allows.
3. Provide directory signs to off-street parking areas.
4. Add on-street parking if space permits.

## **C. STREETScape CONSIDERATIONS**

**Issues:**

- Lack of overall aesthetic/design
- Lighting at a highway scale
- Breaks in the "urban fabric"
- Sporadic and uncoordinated landscaping

**Goal:**

**Develop a unique streetscape design for the entire district.**

**Objectives:**

1. Establish a design theme for the area.
2. Establish gateway elements to define the boundaries of the district.
3. Choose a characteristic light standard for the district which is at a pedestrian scale but also provides adequate light on the roadway.

4. Incorporate coordinated street furniture, including signal poles and mast arms.
5. Work with the municipalities, business owners, and Business Association to establish responsibilities for maintenance of landscape elements.

#### **D. OTHER DESIGN CONSIDERATIONS**

**Issues:**

- Uncoordinated signage
- Breaks in the 'urban fabric' created by off-street parking lots and pavement up to the sidewalk.

**Goal:**

**Provide inclusive design recommendations which go beyond the traditional elements of streetscape design.**

**Objectives:**

1. Provide recommended parameters for updating the municipalities' sign regulations.
2. Include district-wide sign recommendations to help create design unity.
3. Incorporate design elements to visually close the breaks in the urban fabric where space permits.

#### **E. TRAFFIC CONSIDERATIONS**

**Issues:**

- Traffic speed/absence of traffic calming
- Traffic volume
- Lack of turning lanes
- Access Management/Numerous driveways
- Limited space between curb and right-of-way

**Goal:**

**Create a traffic environment that supports through movement of vehicles while recognizing the need to accommodate pedestrians and encourage commerce.**

**Objectives:**

1. Provide for a traffic calmed environment without sacrificing efficiency of through movements.
2. Provide on-street parking to address pedestrian-traffic separation and as a traffic calming tool, in addition to the commercial benefits.

3. Provide for better and safer ingress and egress to existing parking lots and side streets.
4. Provide left turn lanes at key intersections or throughout the corridor.

## F. IMPLEMENTATION CONSIDERATIONS

### Issues:

- Study area split by two municipalities (Narberth Borough on one side of Montgomery Avenue, Lower Merion Township on the other)
- Entire Montgomery Avenue right-of-way under Lower Merion Township jurisdiction
- Numerous individual property owners
- Absentee landlords
- Probable need to time phase installation of expensive public improvements

### Goal:

**Develop a prioritized action plan to include responsible parties.**

### Objectives:

1. Explore the establishment of a working committee representing both municipalities which could oversee implementation of the Study's recommendations.
2. Identify possible incentives for Business Association membership.
3. Recommend implementation and funding options which may be used by both municipalities as well as those which may be used by property owners.
4. Provide a phasing schedule for the recommended public improvements.

## **Vision**

The following vision was borne from the goals, issues and objectives:

*The vision of the Montgomery Avenue Area Business District Study is to revitalize the commercial core along Montgomery Avenue by improving pedestrian circulation and safety, providing additional parking and adequate vehicular circulation, and fostering economic vitality along the commercial spine of Montgomery Avenue. This can be accomplished in several ways, by implementing the goals and objectives described previously. Many of the objectives can be included within structured design guidelines that unify the Study corridor as well as provide safety principles and regulations.*

## Chapter 5: Existing Conditions

### Demographics

The following demographics for Narberth Borough were compiled from 2000 Census data provided by the United States Census Bureau. The Borough of Narberth is the most appropriate geographic unit for obtaining demographic information for this Study. The Census refines information into smaller geographic

**Table 2: Narberth Demographics**

<b>General Characteristics</b>	<b>Number</b>	<b>Percent</b>	<b>U.S.</b>
Total population	4,233	100.0	100%
Male	1,946	46.0	49.1%
Female	2,287	54.0	50.9%
Median age (years)	37.7	(X)	35.3
Under 5 years	231	5.5	6.8%
18 years and over	3,289	77.7	74.3%
65 years and over	537	12.7	12.4%
One race	4,188	98.9	97.6%
White	4,031	95.2	75.1%
Black or African American	50	1.2	12.3%
American Indian and Alaska Native	5	0.1	0.9%
Asian	96	2.3	3.6%
Native Hawaiian and Other Pacific Islander	0	0.0	0.1%
Some other race	6	0.1	5.5%
Two or more races	45	1.1	2.4%
Hispanic or Latino (of any race)	59	1.4	12.5%
Average household size	2.22	(X)	2.59
Average family size	3.02	(X)	3.14
Total housing units	1,981	100.0	100.0%
Occupied housing units	1,904	96.1	91.0%
Owner-occupied housing units	1,149	60.3	66.2%
Renter-occupied housing units	755	39.7	33.8%
Vacant housing units	77	3.9	9.0%
<b>Social Characteristics -</b>	<b>Number</b>	<b>Percent</b>	<b>U.S.</b>
Population 25 years and over	3,052	100.0	
High school graduate or higher	2,874	94.2	80.4%
Bachelor's degree or higher	1,944	63.7	24.4%
Civilian veterans (civilian population 18 years and over)	279	8.5	12.7%
Disability status (population 21 to 64 years)	365	13.8	19.2%
Foreign born	229	5.4	11.1%
Now married (population 15 years and over)	1,804	52.8	54.4%
Speak a language other than English at home (5 years and over)	315	7.9	17.9%
<b>Economic Characteristics -</b>	<b>Number</b>	<b>Percent</b>	<b>U.S.</b>
In labor force (population 16 years and over)	2,417	72.0	63.9%
Mean travel time to work in minutes (population 16 years and over)	25.5	(X)	25.5
Median household income (dollars)	60,408	(X)	41,994
Median family income (dollars)	79,545	(X)	50,046
Per capita income (dollars)	35,165	(X)	21,587
Families below poverty level	27	2.6	9.2%
Individuals below poverty level	143	3.4	12.4%
<b>Housing Characteristics -</b>	<b>Number</b>	<b>Percent</b>	<b>U.S.</b>
Single-family owner-occupied homes	1,062	100.0	
Median value (dollars)	222,400	(X)	119,600
Median of selected monthly owner costs	(X)	(X)	
With a mortgage	1,616	(X)	1,088
Not mortgaged	489	(X)	295

(X) Not applicable.

Source: U.S. Census Bureau, Summary File 1 (SF 1) and Summary File 3 (SF 3)

units including census tracts, block groups, and blocks. Even at the smallest level (block), the boundaries were not contiguous with the Study area boundaries and could not be remedied without making gross assumptions. The limitations for collecting more detailed demographic data for an area smaller than the already tiny Narberth Borough outweigh the value of the exercise.

### **Pedestrian Issues**

One of the obstructed sidewalk sections on Montgomery Avenue.



The existing conditions along Montgomery Avenue in Narberth Borough are varied, and pedestrian safety is a critical concern. Sidewalk widths are not uniform along the length of the corridor and areas of improvement are needed. The surveys prepared by Pennoni Associates show existing conditions and were used to help determine areas that should be addressed. Sidewalks vary in width from 2'-7" to 12'-9" within the right-of-way. (This widest area, at the

gas station at the intersection of Woodbine and Montgomery Avenues, actually extends about three and a half feet further back, behind the right-of-way.) Pedestrian access along narrowed-down sidewalks are obstructed in some areas by other streetscape elements such as sign posts, utility poles, newspaper boxes, and the like. Either sidewalk widening, relocation of the site elements, or both should occur with the understanding that pedestrian safety and ADA compliance are critical concerns. (Refer to "Traffic Issues and Analysis" and "Streetscape Improvement Plans" chapters for further discussion of pedestrian accommodations.)

### **Parking Issues**

There is no on-street parking available along Montgomery Avenue within the Study area on the Narberth side; limited on-street parking is available on the Lower Merion side. There is on-street parking along Iona and Woodbine Avenues. (Refer to "Traffic Issues and Analysis" chapter for additional discussion of parking issues.)

Prior to the modification to the Study's scope, on-street parking along Montgomery Avenue was seen as a possible appropriate measure to implement within the Study area for several reasons: 1) additional parking is being sought for users of the business district; 2) on-street parking would provide a type of traffic calming on Montgomery Avenue, slowing down traffic in both directions thereby providing additional safety measures for pedestrians; and 3) it is often appropriate for on-street parking in business districts to be metered, providing revenue to the business district.

One of the "ad-hoc" pull-in parking areas in the Study area.



**Land Use**



Some of the residential units located on Woodbine and Iona Avenues.

The following Table 3 shows existing land use within the study area. In addition, available off-street parking quantities are tabulated. Please refer to Figure 2 which graphically indicates existing land uses within the Montgomery Avenue Area Business District. The existing land use map indicates a strong commercial spine along Montgomery Avenue with service related

uses anchoring many of the corners. Residential units (single-family and other) are clustered in the center of the Study area along and Woodbine Avenue, with Iona Avenue having a mix of residential and business uses (the latter are located on the north/east side of the street). Other residential units can be found above commercial uses along Montgomery Avenue.

**Table 3: Existing Land Use**

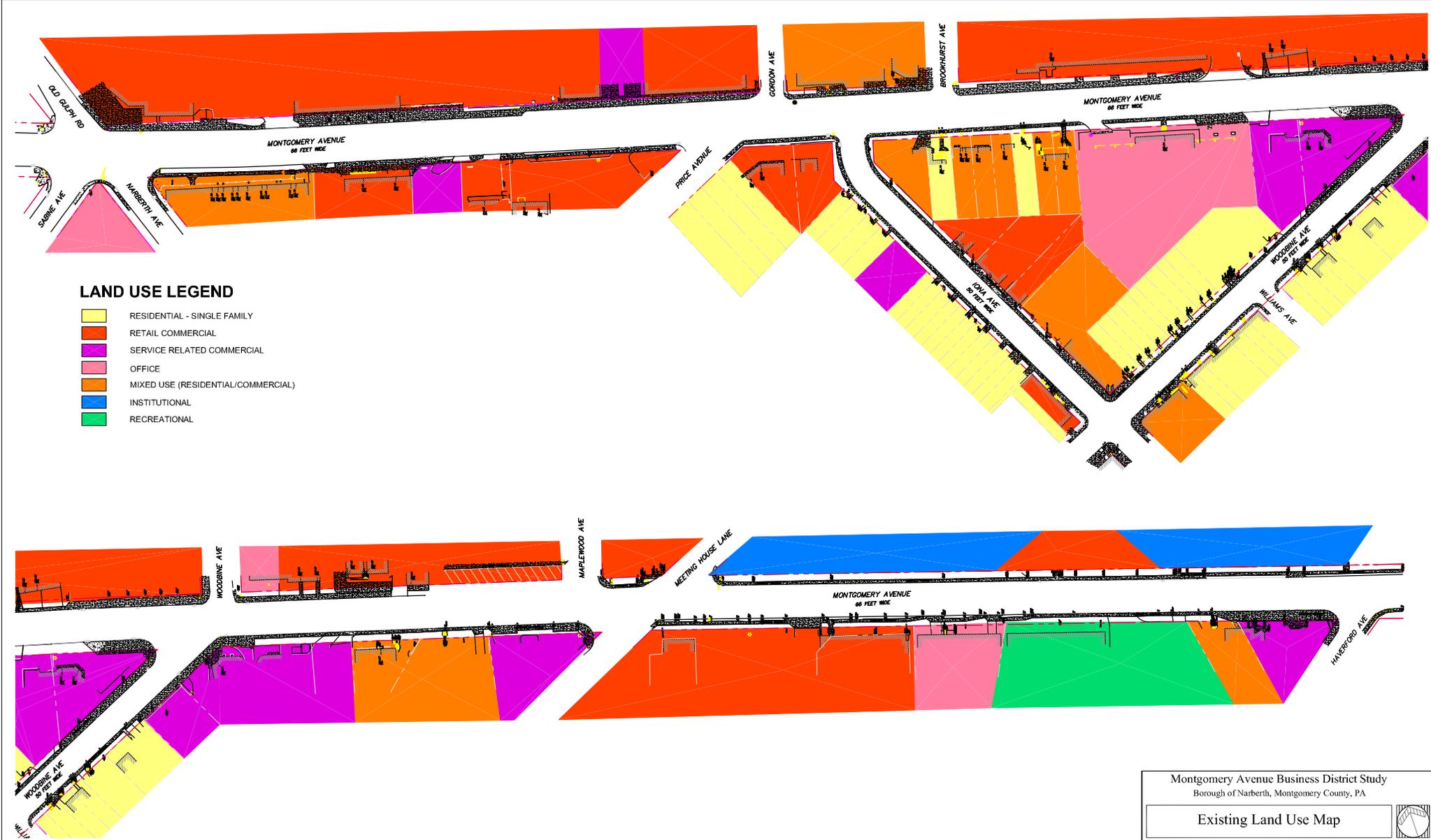
ADDRESS	LAND USE / Business (each floor)	Building	PARKING (off street)	ADDITIONAL NOTES	
606 MONTGOMERY AVE	Exxon gas station	1-story		triangular lot at corner of Montgomery & Haverford Ave.	
610 MONTGOMERY AVE	Hair Studio One	2-story house	Shared front parking lot with 30 spaces for all four uses; Shared rear lot with 12-15 spaces behind Hair Studio and Cleaners only	3 mailboxes on side: potentially apartments above?	
MONTGOMERY AVE	Wimbledon Cleaners	1-story			
MONTGOMERY AVE	Holistic Health, J. Lee Ruttenberg, DC	1-story			
614 MONTGOMERY AVE	Narberth Tennis Club and Julian Krinsky School of Tennis	large building with height equal to 3 stories + outdoor courts			
632 MONTGOMERY AVE	dental, medical, law offices	3-story concrete building	30 spaces in rear lot		
614 MONTGOMERY AVE	Rite Aid	1-story	98 shared spaces in lot		
650 MONTGOMERY AVE	Albrechts Garden Center	1-story		greenhouse	

MONTGOMERY AVENUE BUSINESS DISTRICT STUDY FOR THE BOROUGH OF NARBERTH

ADDRESS	LAND USE / Business (each floor)	Building	PARKING (off street)	ADDITIONAL NOTES
700 MONTGOMERY AVE	Mobil	1-story		corner of Montgomery & Meeting House Lane
714 MONTGOMERY AVE	Hamper Shop of the Lankenau Hospital	2-story stone	28 spaces in rear lot	Pike House: Lower Merion historical society plaque
720 MONTGOMERY AVE	CarCrazy.net	2-story building	5 spaces in rear lot; 4 spaces in front	
732 MONTGOMERY AVE	Royal Bank America	Two 3-story buildings separated by drive-thru	54 spaces in side/rear lot	at corner of Woodbine & Montgomery
MONTGOMERY AVE	Coastal Gas Station	1-story		
814 MONTGOMERY AVE	Dr. Robert Summers, periodontics	2-story	10 spaces in rear	3/10 spaces restricted for Royal Real Estate employees only
822 MONTGOMERY AVE	medical offices, law offices, dermatology, cosmetic surgery, cpa	3-story concrete building; part of ground floor is covered parking	~70 spaces (some lines not visible)	
830 MONTGOMERY AVE	Cobrin Realtors (mixed use)	830-832 - twin, 2-story		probable apartments on top - MIXED USE
832 MONTGOMERY AVE	Psychic readings (mixed use)		1 space in front	
834 MONTGOMERY AVE	Residential	834-836 - twin, 2-story		
836 MONTGOMERY AVE	Insurance, Optical, tailor in rear			
838 MONTGOMERY AVE	Sun Valley Pizza, (upstairs: insurance adjusters)	2-story	10 spaces in rear; 4 spaces in front	
840 and 840A MONTGOMERY AVE	apartments? Doors on Sun Valley building	2-story		
842 MONTGOMERY AVE	Residential	2-story		
844 MONTGOMERY AVE	Narberth Beverage	2-story	4-6 spaces (unlined)	
854 1/2 MONTGOMERY AVE	Spots: pet accessories and pet store	2-story house	7 shared spaces	
854 MONTGOMERY AVE	Gifted: invitations, stationery, gifts			

MONTGOMERY AVENUE BUSINESS DISTRICT STUDY FOR THE BOROUGH OF NARBERTH

ADDRESS	LAND USE / Business (each floor)	Building	PARKING (off street)	ADDITIONAL NOTES
856 MONTGOMERY AVE	Manhattan Bagel	2-story building	6 spaces	
916 MONTGOMERY AVE	Hopes cookies, (behind: CPA)	1-story building	25 shared spaces	
916 MONTGOMERY AVE	West Coast Video			
920 MONTGOMERY AVE	Classic Cake Company	1-story	4 spaces in front	
926 MONTGOMERY AVE	PNC Bank	1-story	8 spaces; 16 spaces shared with PT center	drive-thru
MONTGOMERY AVE	Physical Therapy Center	1-story	16 spaces shared with PNC bank	
MONTGOMERY AVE	Shoppes at Penn Valley: cleaners, Italian Delite (940), DQ (942), Main Line Pet Spa (944), Galactica II (946), Richard Elliot, Jasmine	2-story	27 shared spaces	
301 N. WOODBINE AVE	UnReal Marketing Solutions	3-story		
303-319 WOODBINE AVE	Rowhomes (9)	2-story	none	
321 WOODBINE AVE	SF Residential	2-story	none	
WOODBINE AVE	Family Hair Cutting (residences in rear)	1-story		
306-318 WOODBINE AVE	Rowhomes	2-story	1 driveway entire length of rowhomes	
326 WOODBINE AVE	Twin	2-story		
328 WOODBINE AVE	Single Family	2-story	garage in rear	
330 WOODBINE AVE	Single Family	2-story	2 car garage in rear	
245 WOODBINE AVE	Cavistons restaurant	3-story		
306 - 328 IONA AVE	Rowhomes (12)	2-story		
IONA AVE	Collision Care Auto Body	2-story building	4 spaces in front	
336 - 338 IONA AVE	Twin	2-story	driveway	
340-342 IONA AVE	Twin	2-story		
307 IONA AVE	??	pastel building	22 spaces in lot	
IONA AVE	Dance Express	1-story	8 spaces in lot	
317 IONA AVE	Mary's Tailor Shop	1-story	same lot as Sun Valley Pizza	



- LAND USE LEGEND**
- RESIDENTIAL - SINGLE FAMILY
  - RETAIL COMMERCIAL
  - SERVICE RELATED COMMERCIAL
  - OFFICE
  - MIXED USE (RESIDENTIAL/COMMERCIAL)
  - INSTITUTIONAL
  - RECREATIONAL

<p>Montgomery Avenue Business District Study Borough of Narberth, Montgomery County, PA</p>	
<p><b>Existing Land Use Map</b></p>	
<p>SCALE: 1" = 100' DATE: 10 February 2005 PROJECT NO: 3-110</p>	
<p>PREPARED FOR: THE BOROUGH OF NARBERTH</p>	<p>PREPARED BY: <b>THE WAETZMAN PLANNING GROUP</b> 1230 County Line Rd., Bryn Mawr, PA 19010 Telephone: (610) 527-0600; Fax: (610) 527-0445</p>

**FIGURE 2**

### **Photographic Inventory**

Figure 3, which follows, shows a photographic representation of the existing conditions found within the Montgomery Avenue Business District on the Narberth (south) side of Montgomery Avenue. Beginning on the right top of the figure, is the western edge of the Study area, at the Narberth Avenue/Sabine Avenue/Old Gulph Road intersection. Going from right to left on the top row, then on the middle four rows, and lastly, the bottom row, the figure ends at the left bottom at the eastern end of the Study area (at Haverford Avenue). The photographic collage illustrates the mixed building types and ages, the variety of land uses (with commercial and office uses predominating on Montgomery Avenue, with some residential use usually on upper stories), the variety of sidewalk widths and obstructions, and the formal and ad-hoc parking arrangements. (Note: these photos do not show the uses along the block faces of Iona and Woodbine Avenues.)



NARBERTH AVENUE

IONA AVENUE

PRICE AVENUE

WOODBINE AVENUE

MEETINGHOUSE LANE

HAVERFORD AVE

FIGURE 3

## Chapter 6: Business Surveys

Surveys were distributed to approximately 150 businesses and commercial property owners on Montgomery Avenue to provide input for this Study. Original analysis of the business survey responses was provided on March 31, 2005. Subsequent to that, an additional 29 surveys were collected, bringing the total to 55. Borough officials visited many of the additional businesses to seek this input personally because of its importance to the Study. Below is an analysis of all survey results with a description of where significant changes occurred. (The full text of the questionnaire can be found in Appendix A.)

Fifty-five (55) surveys (~37%) were ultimately returned and are analyzed here based on which municipality the respondent is located in and whether the respondent rents, owns, or is a landlord. The survey asked for the number of full-time and part-time employees and parking need and deficiency of each respondent. Suggestions for streetscape improvements were also requested.

### All Responses

Respondent businesses average 7.1 full-time and 3.7 part-time employees; total employment ranges from 0 to 182 full-time and 0 to 68 part-time. These numbers are considerably different from the original survey results as two major employers (Royal Bank and Acme) were included in the results. For parking, 18 respondents reported a deficiency, and just over one third (172 spaces) of the overall parking need (481 spaces) is not met. The most significant streetscape concern of respondents is for more landscaping, which includes bushes, shrubs, and flowers. Respondents are also interested in better street lighting, benches, and street trees.

**Table 4: Survey Results**

	ORIGINAL (26)	ALL DATA (55)
<b>Parking</b>		
Need	233	481
Deficiency	111	172
<b>Employees</b>		
Full-time	101	393
Part-time	64	205
<b>Streetscape Improvements<sup>1</sup></b>		
Wider Sidewalks	9	27
Street Trees	17	36
More Landscaping	27	52
Better Lighting	24	50
Benches	20	29
Other	10	33
No Improvements	6	9

Other improvements that were suggested in the response to the questionnaire include the need for more parking for employees and concerns about vehicle speed and pedestrian safety on the Avenue. Store front façade improvements and cleaner streets were also suggested, as were moving utility poles off of the sidewalk. New responses were particularly interested in cleaner streets and sidewalks.

### **Narberth and Lower Merion Split**

The new survey results came largely from Lower Merion. The original analysis showed a similar response from each municipality. Narberth respondents still cited a greater percentage of deficient parking than Lower Merion, but the percentage dropped from 72% to 53%. Narberth businesses are still most concerned with more landscaping and better lighting. Lower Merion businesses did not vary greatly in their responses and are concerned with street trees, better lighting, and benches.

---

<sup>1</sup> Values of streetscape improvement are weighted.

**Table 5: Narberth/Lower Merion Analysis**

	ORIGINAL DATA		ALL DATA	
	NARBERTH (12)	LOWER MERION (14)	NARBERTH (22)	LOWER MERION (33)
<b>Parking</b>				
Need	65	168	184	297
Deficiency	47	51	98	74
<b>Employees</b>				
Full-time	47	54	265	128
Part-time	33	31	55	150
<b>Streetscape Improvements</b>				
Wider Sidewalks	6	3	13	14
Street Trees	4	13	13	23
More Landscaping	16	11	23	29
Better Lighting	11	13	21	29
Benches	7	13	10	19
Other	9	7	17	16
No Improvements	3	3	6	3

**Renter/Owner/Landlord Split**

The new survey responses did not greatly affect the outcomes of the Renter/Owner/Landlord analysis. Owner occupants responded that they had a greater percentage of deficient parking than renter occupants. More renter occupants recommended improvements to streetscape amenities (trees, other landscaping, better lighting, and benches) than did owner occupants or landlords.

**Table 6: Renter/Owner/Landlord Analysis**

	ORIGINAL DATA			ALL DATA		
	RENTER OCCUPANT (13)	OWNER OCCUPANT (9)	LANDLORD (4)	RENTER OCCUPANT (31)	OWNER OCCUPANT (20)	LANDLORD (4)
<b>Parking</b>						
Parking Need	127	106	NA	249	232	NA
Parking Deficient	51	60	NA	88	84	NA
<b>Employees</b>						
Full-time	42	59	NA	85	308	NA
Part-time	24	40	NA	78	127	NA
<b>Streetscape Improvements</b>						
Wider Sidewalks	9	6	0	19	8	0
Street Trees	12	3	5	23	8	5
More Landscaping	13	7	7	29	16	7
Better Lighting	17	4	3	34	13	3
Benches	10	5	3	16	10	3
Other	2	8	0	14	19	0
No Improvements	0	6	0	0	9	0

## Chapter 7: Traffic Issues and Analysis

URS Corporation (URS) was retained to develop and evaluate pedestrian safety and vehicular improvements within the Montgomery Avenue Business District project area, as it has been previously defined in this report. The following represents the work that was done to accomplish these tasks.

### Existing Conditions

The project area contains of the following seven intersections, four of which are signalized:

- Old Gulph Road/Narberth Avenue/Sabine Avenue and Montgomery Avenue
- Price Avenue/Gordon Avenue and Montgomery Avenue
- Iona Avenue/Brookhurst Avenue and Montgomery Avenue
- Woodbine Avenue and Montgomery Avenue
- Meetinghouse Lane/ Maplewood Avenue and Montgomery Avenue
- Haverford Avenue and Montgomery Avenue
- Iona Avenue and Woodbine Avenue

Through the project area, Montgomery Avenue is a two-way, four lane urban arterial roadway. It generally travels in the east/west direction and has a posted speed limit of 25 miles per hour.

The travel lanes on Montgomery Avenue are fairly narrow with a typical width of 10 feet, widening slightly to 11 feet at its intersection with Old Gulph Road/Narberth Avenue/Sabine Avenue. Its right-of-way width is typically 66 feet along the project area. Along the Narberth (southern) side of Montgomery Avenue, there is typically a four-foot wide sidewalk, while a sidewalk varying in width from four feet to 12 feet runs along the Lower Merion (northern side). On-street parking is not permitted at any locations along the Narberth side of Montgomery Avenue. On the Lower Merion side of Montgomery Avenue, there are 14 pull-in, angle parking spaces just west of Maplewood Avenue and 10 parallel parking spaces west of Gordon Avenue.

Montgomery Avenue intersects with Conshohocken State Road (PA 23) at its eastern end and meets PA 320 at its western end, where it becomes South Gulph Road. It provides a heavily traveled link between the City of Philadelphia and the suburban areas of Lower and Upper Merion Townships, along with the Borough of Narberth. Lancaster Avenue (US 30), Conshohocken State Road (PA 23) and the Schuylkill Expressway (I-76) are other major east/west arteries that parallel Montgomery Avenue, west of the Schuylkill River.

Ownership of Montgomery Avenue belongs to Lower Merion Township. It serves as the northern border between the Borough of Narberth and Lower Merion Township. All traffic signals along Montgomery Avenue are owned and maintained by the Township.



Windsor Avenue and Iona Avenue Looking North

Iona Avenue and Woodbine Avenue are both two-way, two lane local roadways with on street, parallel parking. The two roadways meet at a four-leg, all-way stop controlled intersection. Both roadways at this intersection have one shared left/through/right lane.

Old Gulph Road/Narberth Avenue and Sabine Avenue meet Montgomery Avenue to form a signalized, five-leg intersection. At this intersection, Montgomery Avenue has one shared left/through and one shared through/right lane in each direction. Old Gulph Road makes up the northern leg of the intersection, changing its name to Narberth Avenue south of the intersection. Both approaches consist of one shared left/through/right lane. The southwest leg of the intersection is Sabine Avenue, which is a one lane, one-way roadway in the southbound direction, away from Montgomery Avenue.



Montgomery Avenue and Old Gulph Road/  
Narberth Avenue/Sabine Avenue Looking North



Montgomery Avenue and Price Avenue Looking East

Approximately 700 feet east of Old Gulph Road/Narberth Avenue/Sabine Avenue, Montgomery Avenue is intersected by Gordon Avenue from the north and Price Avenue from the south. This creates a four-leg intersection with Gordon Avenue and Price Avenue offset by 70 feet. Both Gordon Avenue and Price Avenue have one shared left/through/right lane controlled by a stop sign.

190 feet east of Gordon Avenue/Price Avenue, Montgomery Avenue is intersected by Brookhurst Avenue from the north and Iona Avenue from the south to form a signalized, four-leg intersection. The north and south legs of this intersection are offset by 110 feet and each consists of one shared left/through/right lane.



Montgomery Avenue and Iona Avenue/Brookhurst Avenue Looking East



Montgomery Avenue and Windsor Avenue Looking South

Woodbine Avenue meets Montgomery Avenue 620 feet east of Iona Avenue/Brookhurst Avenue to form the north and south legs of a signalized, four-leg intersection. Both approaches of Woodbine Avenue consist of one shared left/through/right lane.

Meetinghouse Lane and Maplewood Avenue meet Montgomery Avenue 520 feet east of Woodbine Avenue to form a signalized, five-leg intersection.



Montgomery Avenue and Meetinghouse Lane/Maplewood Avenue Looking West

Meetinghouse Lane forms the south and northeast legs. Maplewood Avenue is offset from Meetinghouse Lane by 120 feet and forms the northwest leg. Both approaches of Meetinghouse Lane and Maplewood Avenue consist of one shared left/through/right lane.

Haverford Avenue meets Montgomery Avenue from the south, approximately 900 feet east of Meetinghouse Lane to form a stop controlled, T-shaped intersection. Stop control is on the Haverford Avenue approach, which consists of one shared left/right lane.



Montgomery Avenue and Haverford Avenue Looking North

### **Data Collection**

The following traffic data was obtained for this Study:

- Intersection vehicular turning movement counts
- Intersection bicycle/pedestrian counts
- Parking utilization counts

### **Vehicular and Bicycle/Pedestrian Counts**

The majority of intersection turning movement traffic counts and bicycle/pedestrian counts were taken from the Multi-modal Transportation Study, Lancaster/Montgomery Avenue performed by McMahon Associates (MCM) for Lower Merion Township and dated August 2, 2001. URS performed its own counts for Study intersections not available from the MCM report. URS performed the following counts on February 17, 2005 during the morning peak period from 7:00 AM to 9:00 AM and during the evening peak period from 4:00 PM to 6:00 PM:

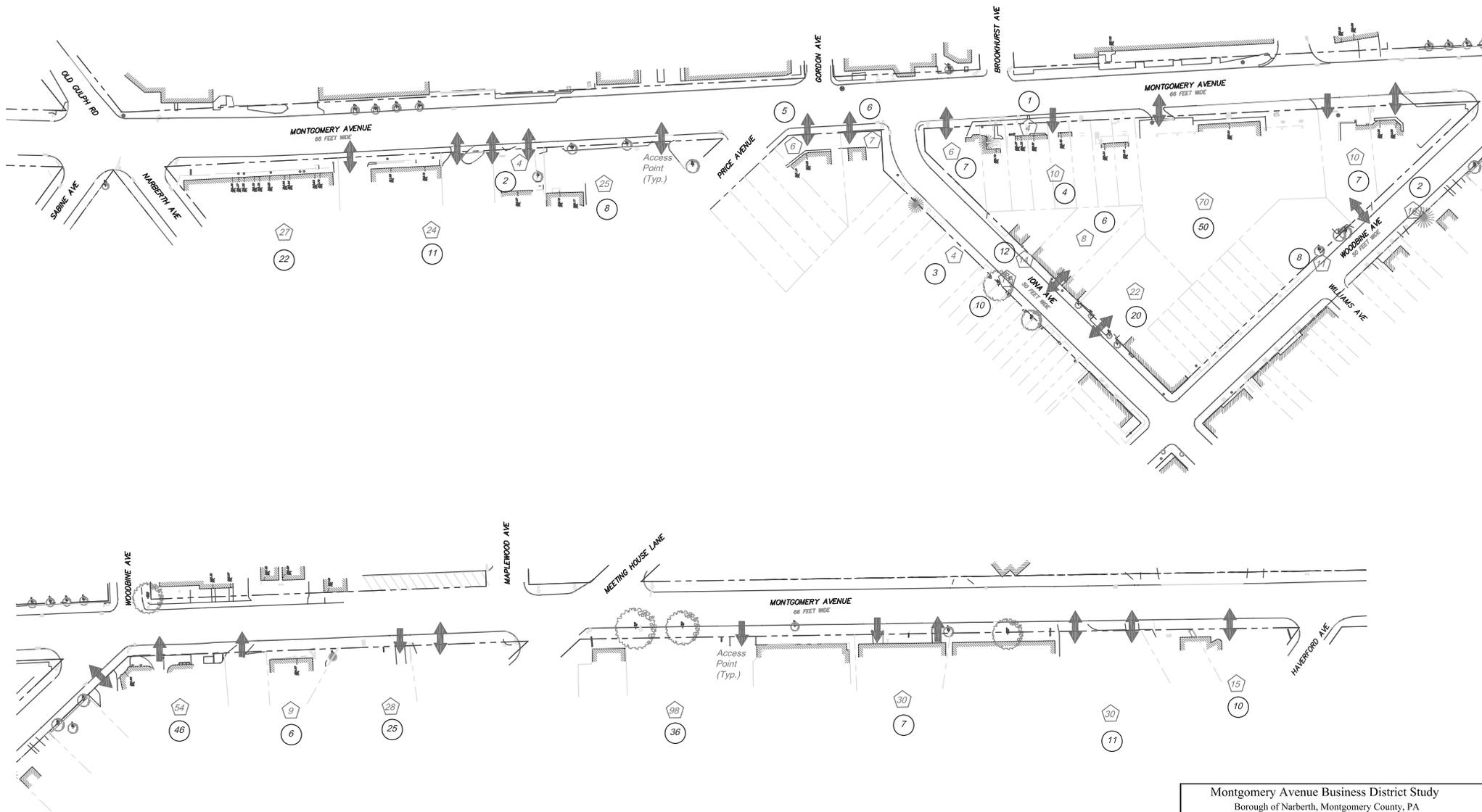
- Price Avenue/Gordon Avenue and Montgomery Avenue (vehicular turning movement counts)
- Haverford Avenue and Montgomery Avenue (vehicular turning movement counts)
- Iona Avenue/Brookhurst Avenue and Montgomery Avenue (bicycle/pedestrian counts)

The peak hour volumes were taken from the above counts as the highest volume one-hour periods in the morning and evening. Because the turning movement and bicycle/pedestrian counts taken from the MCM Study were performed in the year 2000, a 2% yearly growth rate was applied to this data to normalize it to the year 2005. Year 2005 intersection vehicular turning movement and bicycle/pedestrian counts for the Montgomery Avenue Business District Study area may be found in Appendix B.

### **Parking Utilization Counts**

URS performed parking utilization counts on February 17, 2005 at 4:00 PM. Conversations with Study area business owners indicated that the weekday evening peak hour was typically their busiest time period and hence, the time of greatest parking demand.

The parking utilization counts were performed by observing the number of occupied parking spaces on the Narberth side of Montgomery Avenue within the Study area. These parking areas are primarily private lots with some on-street parking located on Iona Avenue and Woodbine Avenue. The Parking Utilization Plan in Figure 4 compares the occupied versus available number of spaces for each parking area. It shows the areas of highest parking demand during a typical weekday evening peak period.



**Legend:**

- ⬡ - Number of available parking spaces = 543 total
- ⊙ - Number of occupied parking spaces = 327 total

Count date: 02/17/2005  
 Count time: 4 pm

Montgomery Avenue Business District Study Borough of Narberth, Montgomery County, PA	
<b>Parking Utilization Plan</b>	
PREPARED FOR: The Borough of Narberth	SCALE: 1" = 100' DATE: 24 February 2005 PROJECT NO. 3-110
PREPARED BY: <b>THE WAETZMAN PLANNING GROUP</b> 1230 County Line Rd., Bryn Mawr, PA 19010 Telephone: (610) 527-0600; Fax: (610) 527-0445	

**FIGURE 4**

## **Roadway Alternatives**

In its existing configuration, Montgomery Avenue has two travel lanes in each direction with a total of 24 on street parking spaces. Part of the original objectives of this Study was to address the existing traffic issues with Montgomery Avenue, which are listed below.

- Lack of on-street parking
- Left turning vehicles block through traffic
- Lack of pedestrian safety
- High vehicular speeds

Five different alternative roadway configurations were developed to attempt to address the above traffic issues. Due to the proximity of utilities on each side of Montgomery Avenue along with already limited sidewalk and right-of-way width on the Narberth side, the proposed roadway changes for all alternatives take place within the existing curb lines. Roadway plans for each alternative are displayed in Figures 5 through 9. The following descriptions summarize each alternative along with their main advantages and disadvantages.

### **Alternative 1 - Parking on Eastbound Montgomery Avenue**

#### Summary:

- Westbound - 2 travel lanes
- Eastbound - 1 travel lane, 1 parking lane
- 23 proposed on-street parking spaces
- Advantages/Disadvantages:
- Provides relatively few parking spaces and only on one side of street
- Does not accommodate left turning vehicles
- More travel lanes for pedestrians to cross than Alternates 3 thru 5
- Reduces number of through travel lanes in approaching Eastbound direction creating longer queues

### **Alternative 2 - Parking on Westbound Montgomery Avenue**

#### Summary:

- Westbound - 1 travel lane, 1 parking lane
- Eastbound - 2 travel lanes
- 80 proposed on-street parking spaces
- Advantages/Disadvantages:
- Provides more parking than Alternate 1 but only on one side of street
- Does not accommodate left turning vehicles
- More travel lanes for pedestrians to cross than Alternates 3-5
- Reduces number of through travel lanes in approaching Westbound direction creating longer queues

### **Alternative 3 - Center Two Way, Left Turn Lane (TWLTL) with shoulders**

#### Summary:

- Westbound - 1 travel lane
- Eastbound - 1 travel lane
- Center TWLTL
- 14 proposed on-street parking spaces
- 2 shoulders
- Advantages/Disadvantages:
- Provides fewest parking spaces of any alternate
- Provides for left turns without obstructing through traffic
- Center TWLTL allows for easier access both to and from businesses and residences
- Center TWLTL provides a potential relief area for vehicles to get around obstructions in through lane
- Less travel lanes for pedestrians to cross than Existing Condition and Alternates 1 and 2
- Should reduce crash rate compared to Existing Condition
- Reduces number of through travel lanes in both approaching directions creating longer queues

### **Alternative 4 - Left Turn Lanes on Westbound Montgomery Avenue**

#### Summary:

- Westbound - 1 travel lane with left turn stalls
- Eastbound - 1 travel lane
- 150 proposed on-street parking spaces (mostly on Eastbound side)
- Advantages/Disadvantages:
- Provides the most parking of any alternate
- Accommodates left turning vehicles only in the westbound direction without obstruction to westbound through traffic
- Less travel lanes for pedestrians to cross than Existing Condition and Alternates 1 and 2
- Reduces number of through travel lanes in both approaching directions creating longer queues

### **Alternative 5 - Center Two Way, Left Turn Lane**

#### Summary:

- Westbound - 1 travel lane
- Eastbound - 1 travel lane
- Center TWLTL
- Maplewood Ave. revised to one way northbound to eliminate signal phase at the intersection of Maplewood/Meetinghouse/ Montgomery Avenue

- 72 proposed on-street parking spaces (mostly on the eastbound side)
- Advantages/Disadvantages:
- Provides parking on both sides of street
- Parking and reduced number of travel lanes provide traffic calming
- Provides for left turns without obstructing through traffic
- Center TWLTL allows for easier access both to and from businesses and residences
- Center TWLTL provides a potential relief area for vehicles to get around obstructions in through lane
- Less travel lanes for pedestrians to cross than Existing Condition and Alternates 1 and 2
- Should reduce crash rate compared to Existing Condition by eliminating the de-facto left turn lanes
- Reduces number of through travel lanes in both approaching directions creating longer queues

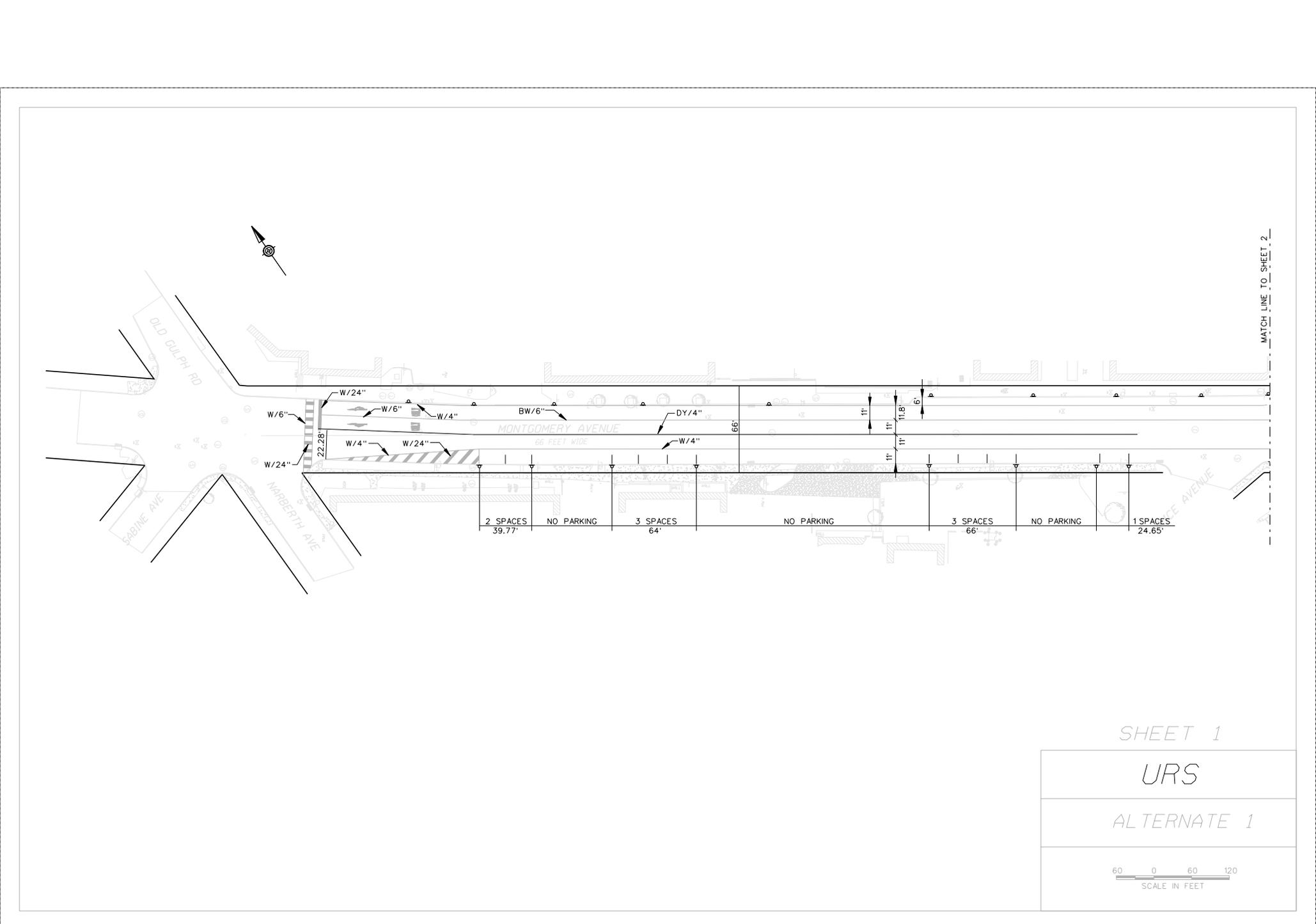
## **Capacity Analyses**

### Sidewalk Capacity Analyses

At four feet wide, the sidewalks along the Narberth side of Montgomery Avenue are relatively narrow, while the sidewalks on the Lower Merion side vary in width from four to 12 feet. URS performed capacity analyses of the sidewalks along Montgomery Avenue to determine if their width provides sufficient capacity for the number of pedestrians.

To analyze the capacity of the sidewalk, it is assigned a Level of Service (LOS) ranging from A through F with A being the best operation and F the worst. The analyses were performed in accordance with methodology from the Highway Capacity Manual (HCM), 2000. Walkway and sidewalk capacity is based upon pedestrian flow rate, which is determined from the pedestrian volume and effective walkway width. Calculations for the sidewalk capacity analyses may be found in Appendix C.

The calculations show that, assuming a minimum effective sidewalk width of four feet and a maximum hourly pedestrian volume of 23 from the count data, the sidewalk LOS will be A. Therefore, because these are the minimum and maximum values, all sidewalk segments along the Study area of Montgomery Avenue will operate at LOS A. In fact, assuming a minimum effective sidewalk width of four feet, the hourly pedestrian volume would have to be greater than 1,200 to for the LOS to drop below A.



SHEET 1

URS

ALTERNATE 1



FIGURE 5

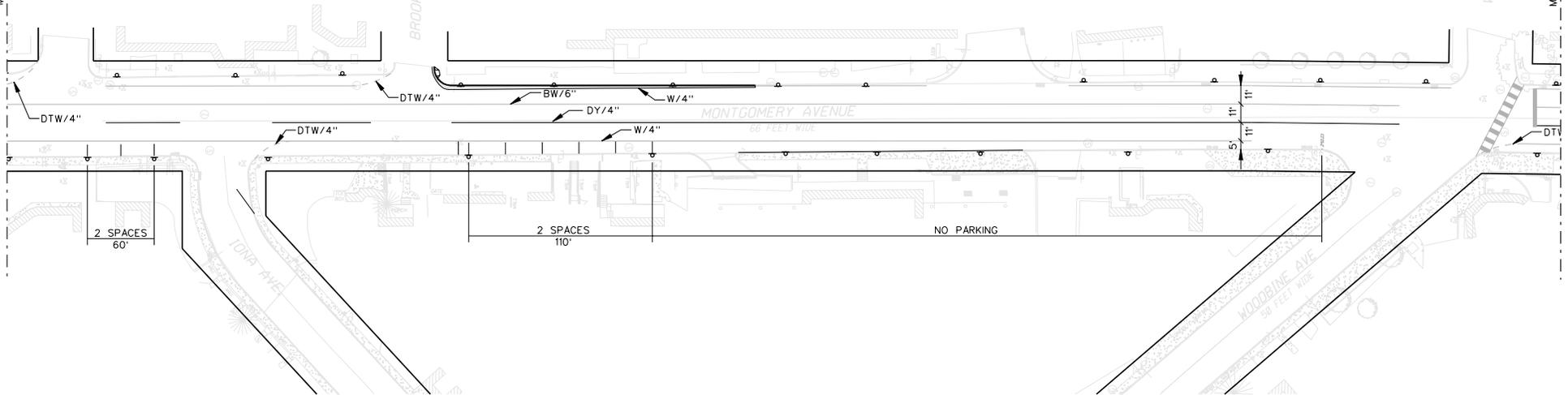
MATCH LINE TO SHEET 1

GORDON AVE

BROOKHURST AVE

WOODBINE AVE

MATCH LINE TO SHEET 3



SHEET 2

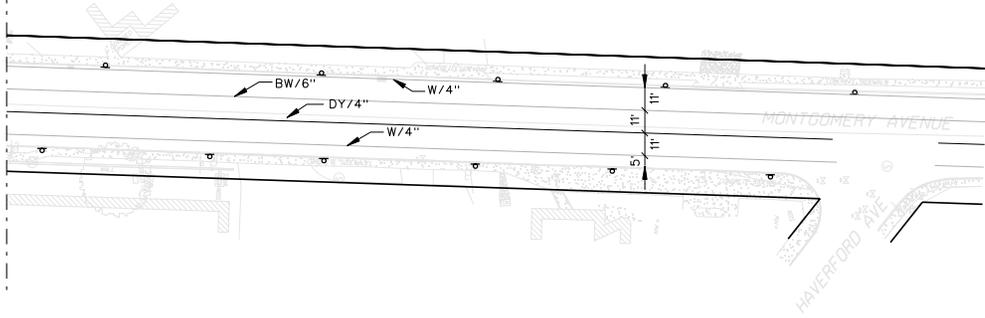
URS

ALTERNATE 1





MATCH LINE TO SHEET 3

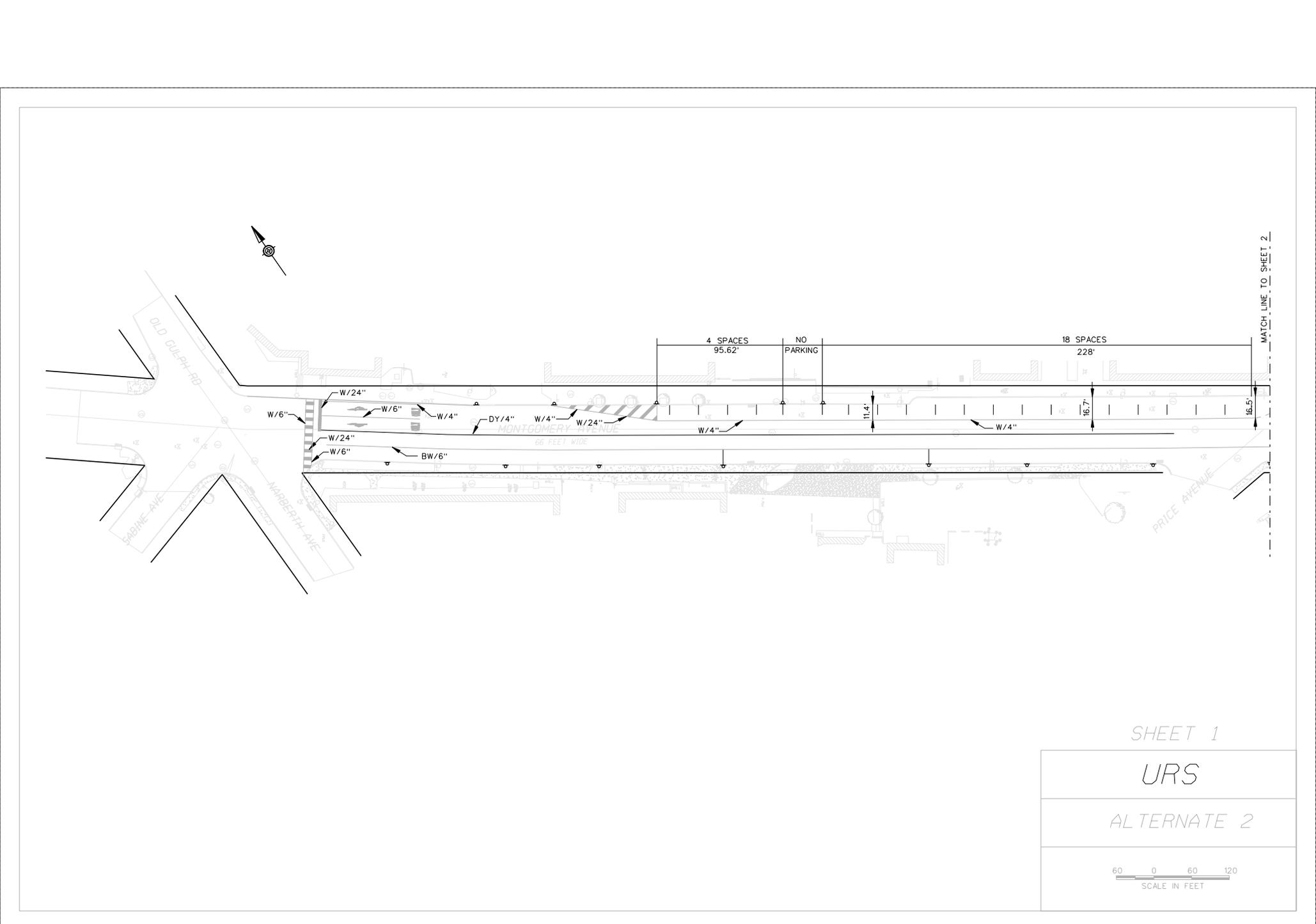


SHEET 4

URS

ALTERNATE 1





SHEET 1

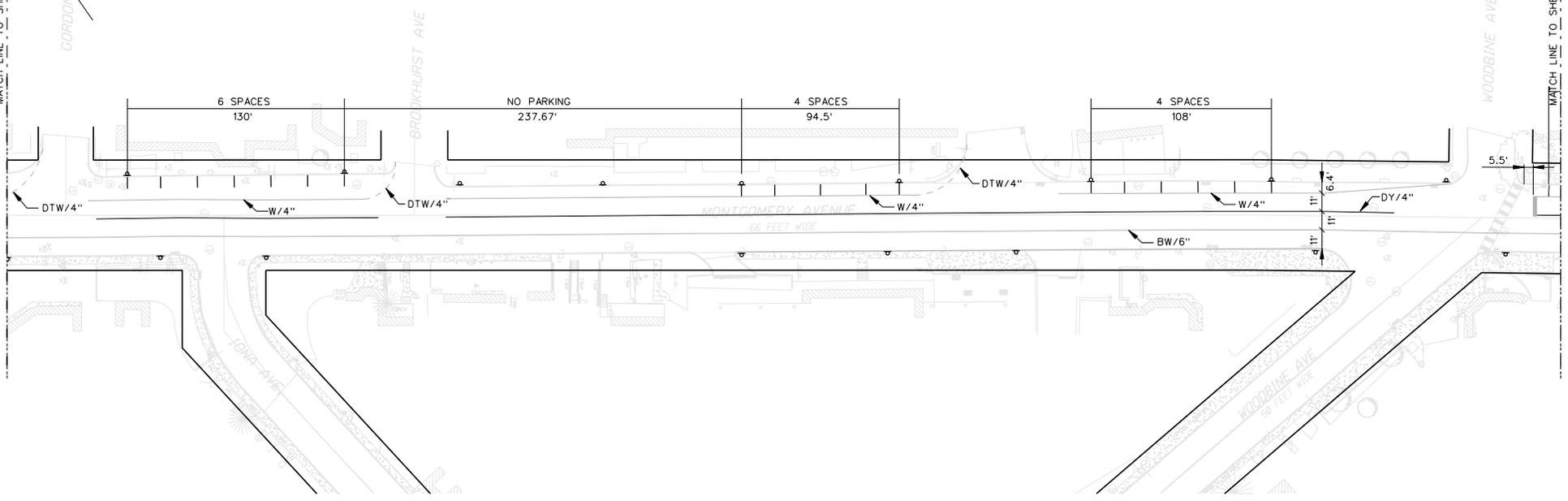
URS

ALTERNATE 2



FIGURE 6

MATCH LINE TO SHEET 1



MATCH LINE TO SHEET 3

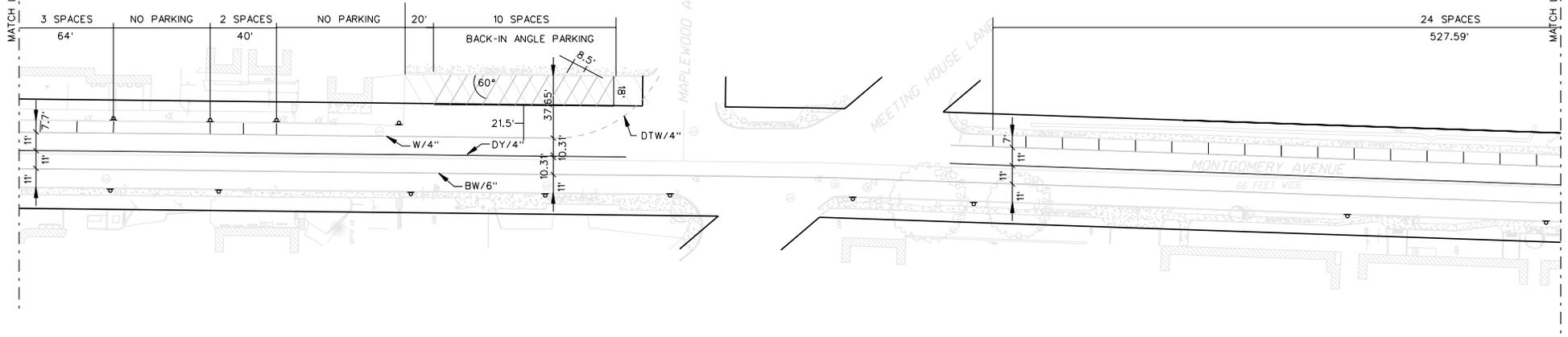
SHEET 2

URS

ALTERNATE 2



MATCH LINE TO SHEET 2



MATCH LINE TO SHEET 4

SHEET 3

URS

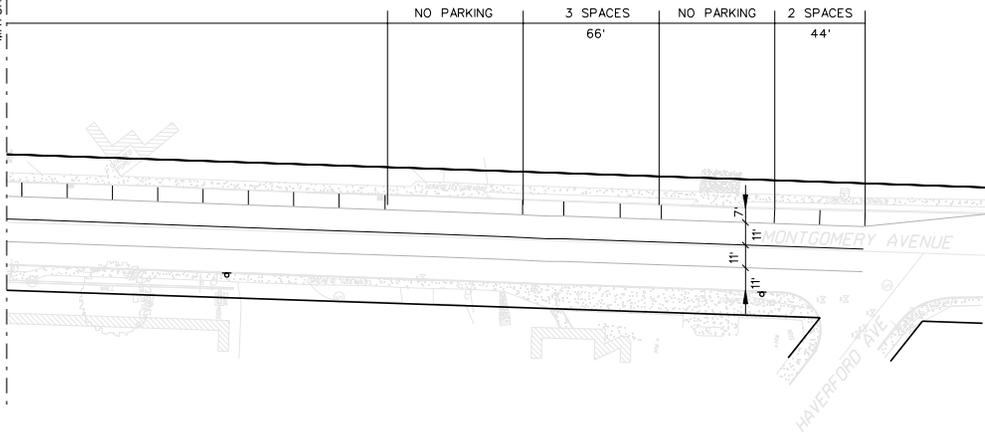
ALTERNATE 2



MATCH LINE TO SHEET 3



NO PARKING	3 SPACES 66'	NO PARKING	2 SPACES 44'
------------	-----------------	------------	-----------------

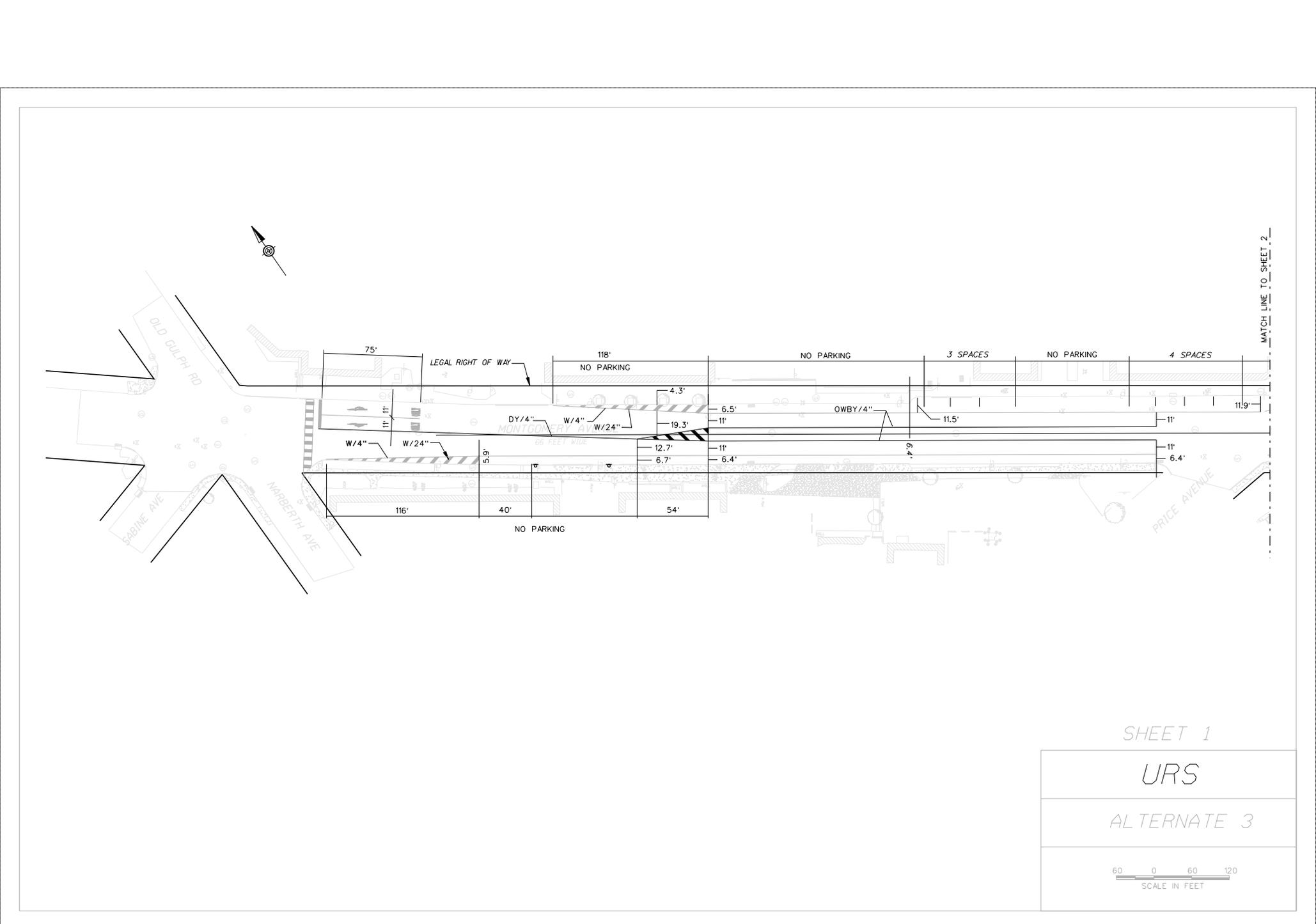


SHEET 4

URS

ALTERNATE 2





SHEET 1

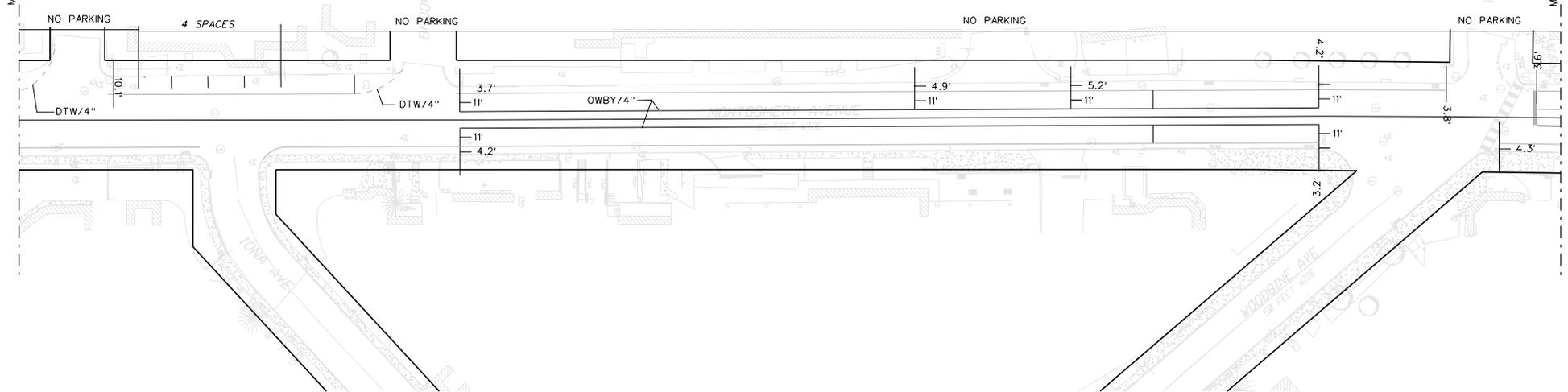
URS

ALTERNATE 3

60 0 60 120  
SCALE IN FEET

FIGURE 7

MATCH LINE TO SHEET 1



MATCH LINE TO SHEET 3

SHEET 2

URS

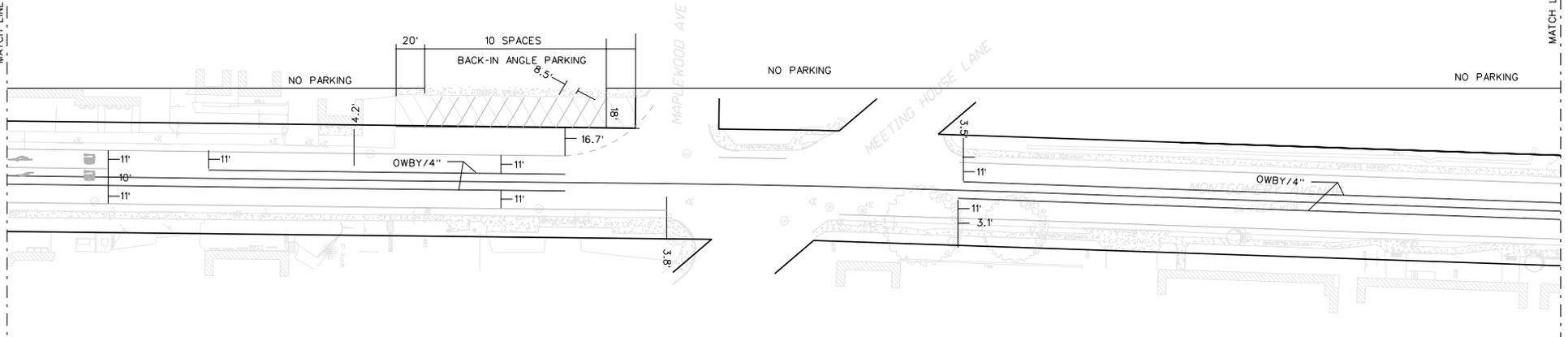
ALTERNATE 3



MATCH LINE TO SHEET 2



MATCH LINE TO SHEET 4



SHEET 3

URS

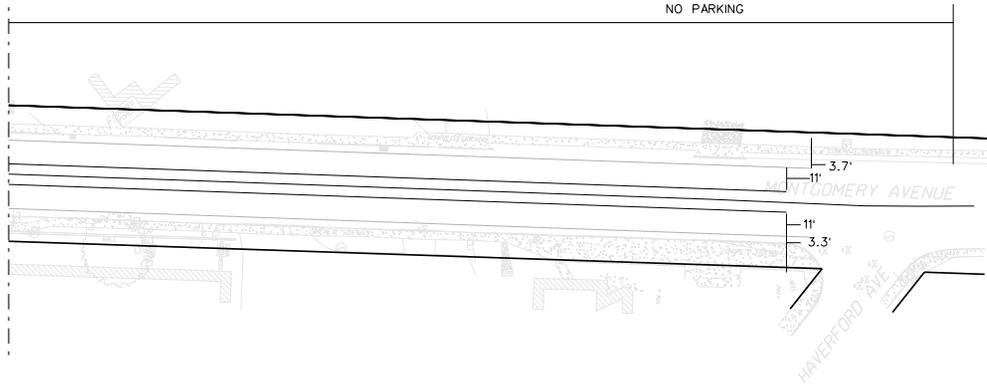
ALTERNATE 3



MATCH LINE TO SHEET 3



NO PARKING



SHEET 4

URS

ALTERNATE 3



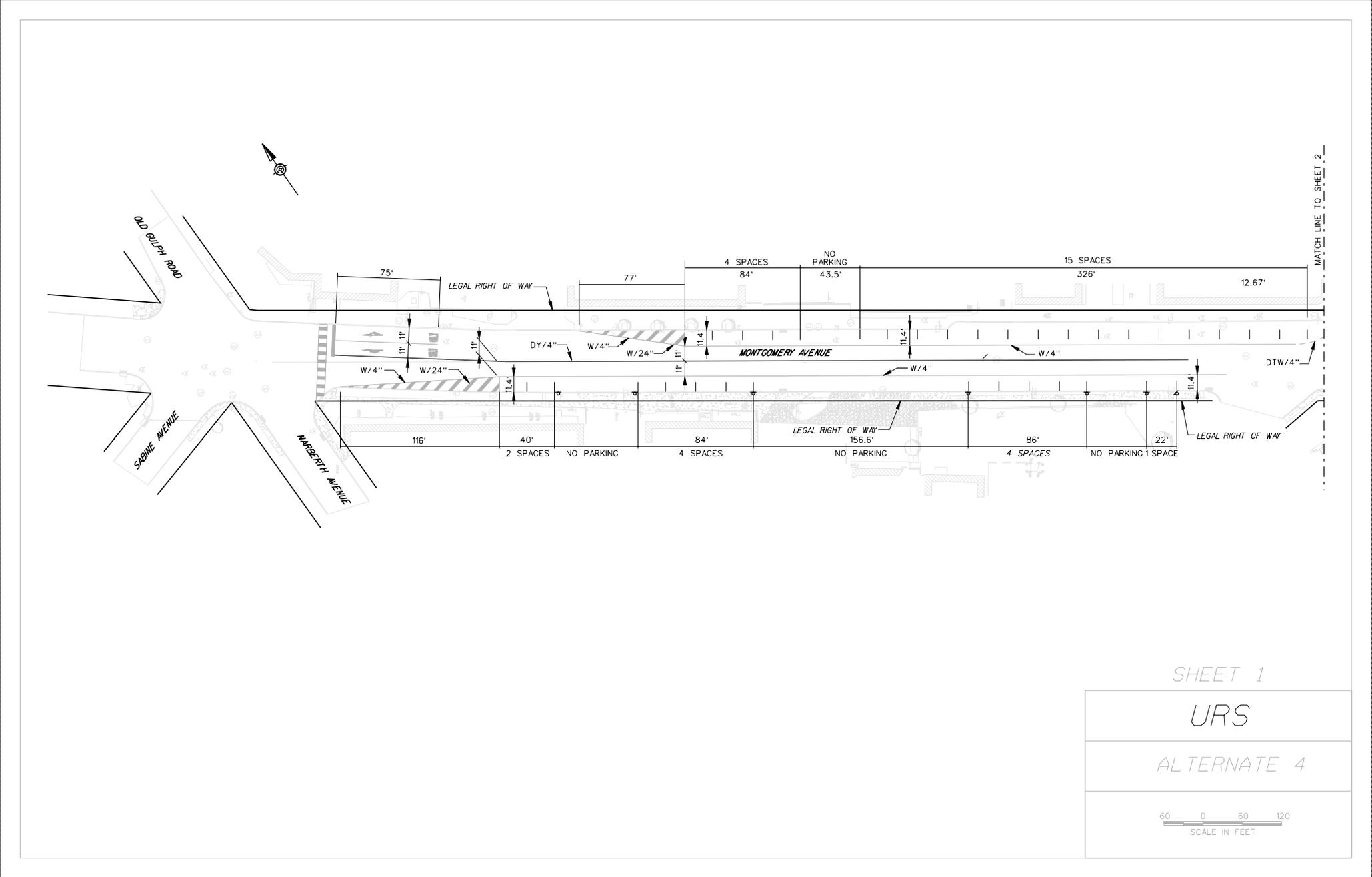
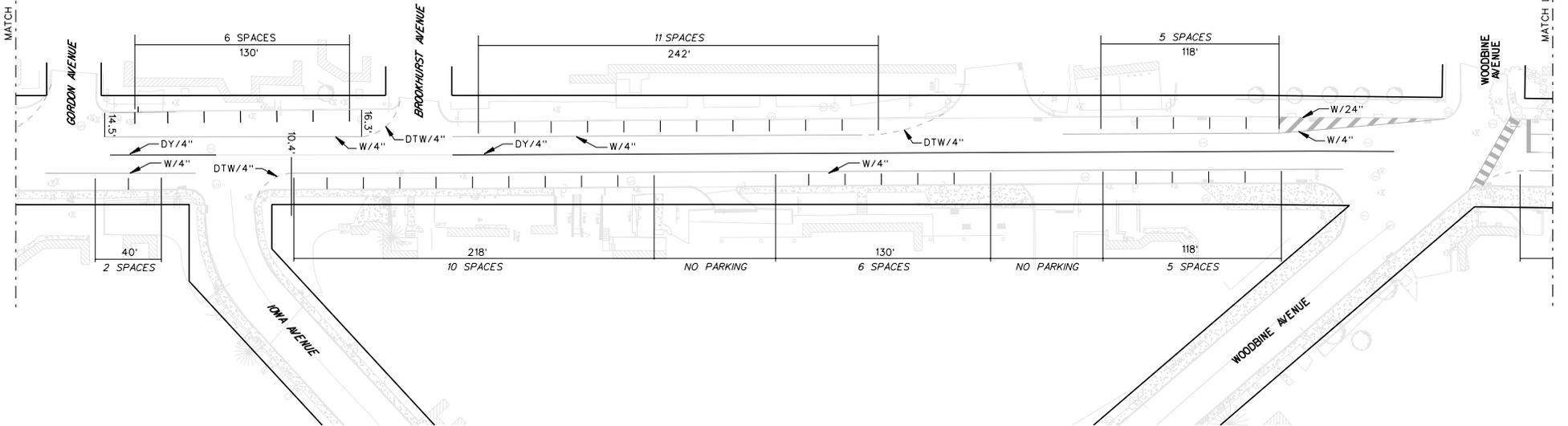


FIGURE 8

MATCH LINE TO SHEET 1



MATCH LINE TO SHEET 3

SHEET 2

URS

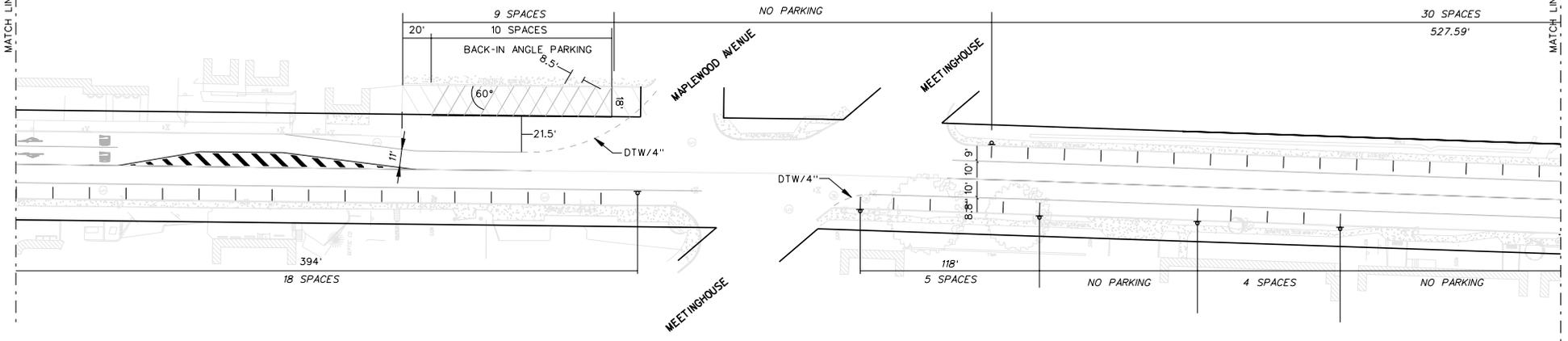
ALTERNATE 4



MATCH LINE TO SHEET 2



MATCH LINE TO SHEET 4



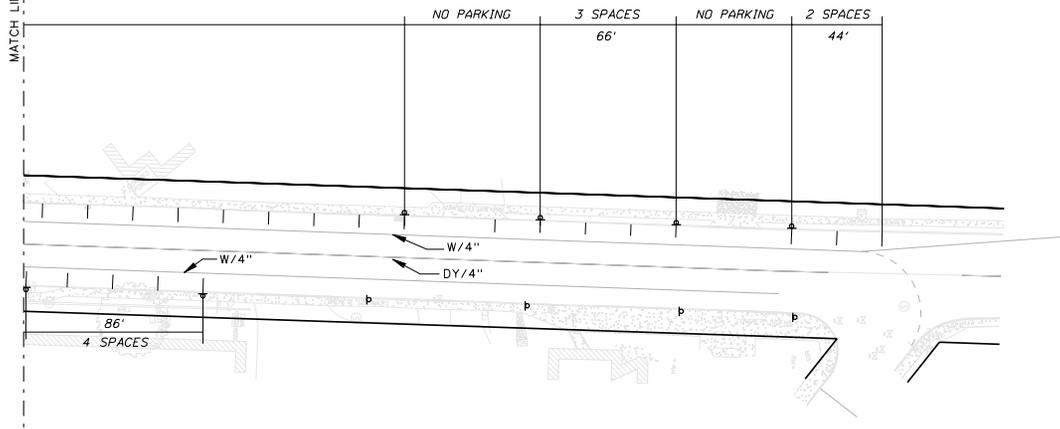
SHEET 3

URS

ALTERNATE 4



MATCH LINE TO SHEET 3



SHEET 4

URS

ALTERNATE 4

60 0 60 120  
SCALE IN FEET



MATCH LINE TO SHEET 1

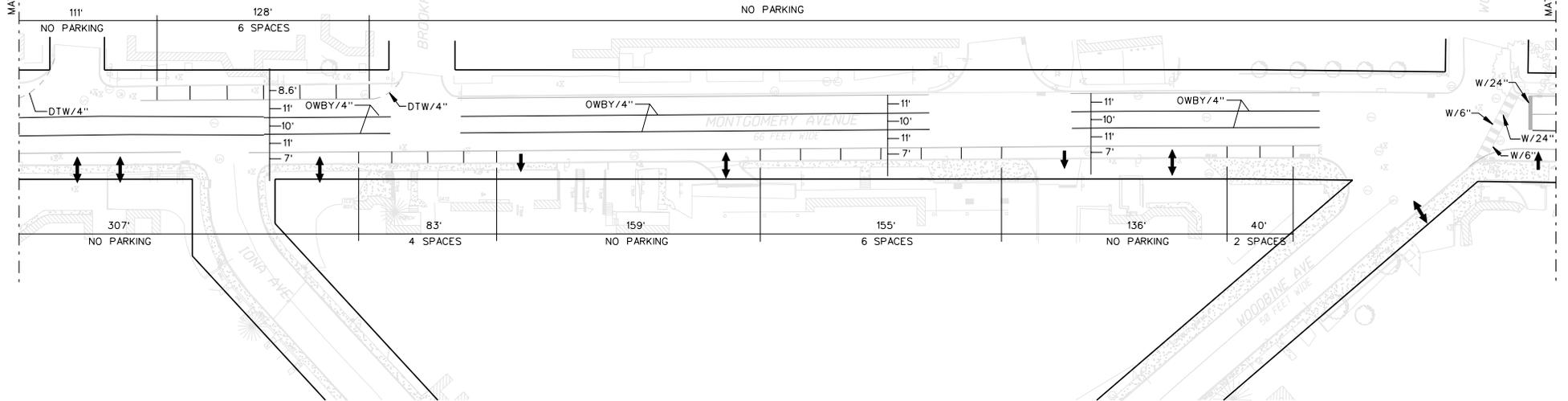
GORDON AVE



BROOKHURST AVE

WOODBINE AVE

MATCH LINE TO SHEET 3



SHEET 2

URS

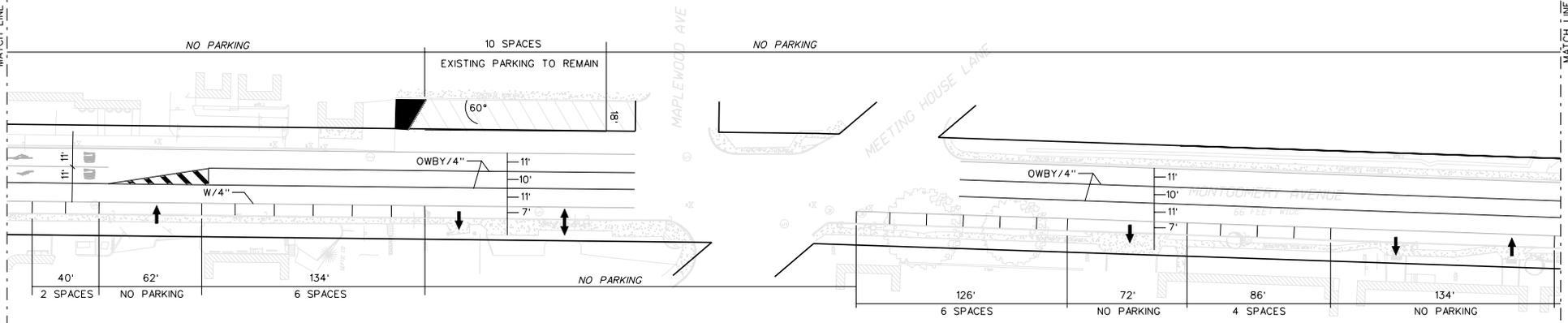
ALTERNATE 5



MATCH LINE TO SHEET 2



MATCH LINE TO SHEET 4



SHEET 3

URS

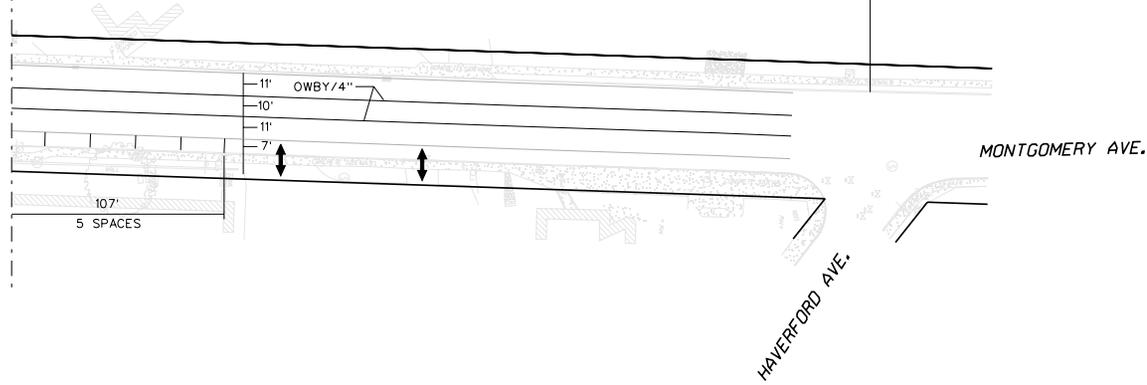
ALTERNATE 5



MATCH LINE TO SHEET 3



NO PARKING



SHEET 4

URS

ALTERNATE 5

60 0 60 120  
SCALE IN FEET

### Intersection and Arterial Capacity Analyses

Intersection and arterial capacity analyses were performed using Synchro, Version 6 software and methodology from the Highway Capacity Manual (HCM), 2000. Intersection levels of service are based upon the average delay, in seconds, calculated for each vehicle at each intersection movement, while arterial levels of service are based upon the flow speed of traffic.

A chart comparing intersection and arterial levels of service for existing conditions, existing lane configurations with optimized signal timing and Alternatives 1 through 5 may be found in Appendix D.

Analyses were performed for the existing lane configurations and traffic volumes with both the existing signal timings and with the signal timings optimized and adjusted to meet the PennDOT minimum pedestrian signal timing requirements. Alternatives 1 through 4 utilized existing traffic volumes with the respective proposed lane configurations, noted earlier, while Alternative 5 utilized the proposed lane configurations and re-routed traffic to accommodate conversion of Maplewood Avenue to one way in the northbound direction. Alternatives 1 through 5 also utilized optimized signal timing and phasing.

From the analyses of Alternatives 1 through 5, it can be seen that the individual intersections along with the arterial segment generally operate at, or slightly worse than, both existing conditions and existing lane configurations with optimized signal timing for each of the Alternatives 1 through 5. This is because each alternative reduced the capacity of Montgomery Avenue by reducing the number of through lanes to accommodate on street parking.

With an average daily traffic (ADT) volume of over 25,000 vehicles per day, Montgomery Avenue has relatively high traffic volumes, operating at or near capacity in the existing peak hours. Because of this, concerns were raised by Lower Merion Township with the effects to traffic over the reduction in capacity along Montgomery Avenue in Alternatives 1 through 5. Additionally, concerns were raised with potential queues at either end of the project area, where Montgomery Avenue would transition from two lanes to one.

As a result of these concerns, Alternatives 1 through 5 were ultimately discarded. The project team then refocused their efforts on traffic calming measures maintaining the existing lane configurations. These measures are discussed in the next section.

### **Traffic Calming Measures**

Because of the disadvantages of reduced capacity and potential queues at the lane reduction transitions inherent in alternatives 1 through 5, reducing the number of through lanes on Montgomery Avenue was eliminated as a possibility, at this time. Since increasing on street parking without widening the street would not be possible without decreasing the number of through lanes, the project objectives were modified somewhat to focus more on pedestrian safety and streetscape improvements which would not significantly impact the capacity of the roadway.

The current problem with Montgomery Avenue for pedestrians is that high traffic volumes and roadway width make crossing Montgomery Ave. intimidating. Therefore, to improve safety for pedestrians in the Study area and thus make it a more attractive retail destination, a list of recommended traffic calming measures was developed. These measures have been divided into short term measures, which can be implemented immediately, and long term measures, which may be implemented in the future with further study and or funding. It is important to note that none of these measures would rule out implementing any of the previously discussed roadway alternatives, should it be desired in the future.

#### Short Term Measures

- Adjust signal timings - the only intersection in the Study area that has sufficient timing for pedestrians according to PennDOT criteria is Meetinghouse and Montgomery. All signals should be adjusted to provide the minimum pedestrian crossing times. Pedestrian clearance interval calculations for signalized intersections are provided in Appendix E.
- Optimize the signal timings and offsets (though it appears that the signals are currently coordinated, optimization would aid the flow of traffic).
- Replace the current 8-inch red/yellow/green signal heads for pedestrians with Hand/Man signal heads or countdown timers at all signals. These improve safety for pedestrians by showing when it is no longer safe to begin crossing.
- Install texturized or imprinted crosswalks. These will alert motorists to the potential of pedestrians and indicate they are entering a pedestrian friendly area along with improving the street appearance. These do not reduce vehicle speeds or volumes by themselves, however they may enhance other traffic calming measures.
- Create special signs to indicate to motorists that they are entering a "traffic calming zone" or "pedestrian friendly zone".

- Enhance the speed limit signage by examining placement of existing signs and adding additional and/or larger signs if necessary. The existing speed limit along Montgomery Avenue is 25 mph. Though a formal speed survey was not performed as part of this Study, speeding traffic has been cited as a common concern in the survey of businesses performed as part of this project.
- Utilize ornamental signal poles to improve aesthetics and provide identity to area. Ornamental signal poles can be expensive and the existing signal poles at some intersections appear relatively new. However, the existing poles can be stockpiled for future use.
- Create a "gateway" to the area by using a combination of physical and textural changes. This can help create an identity and alert motorists that they are entering a special zone.

#### Long Term Measures

- Consider restricting right turns on red at signalized intersections to reduce the number of pedestrian/vehicle conflicts. This may create minor increases in delay but could be justified if the pedestrian volume increases in the future.
- Implement exclusive pedestrian phases at signalized intersections if necessitated by future pedestrian volumes. Currently the intersection of Montgomery and Narberth/Old Gulph/Sabine has an exclusive pedestrian phase. This could increase delays further at the signalized intersections, but it would eliminate pedestrian/vehicle conflicts where implemented.
- Consider moving the utilities underground. This would likely be expensive to implement but it will enhance aesthetics of area by reducing clutter and create new streetscaping opportunities.

#### **Conclusions and Recommendations**

Without widening the roadway, any improvements to Montgomery Avenue that would increase the number of on-street parking spaces or add turning lanes, would require reducing the number of through lanes. However, it was determined through discussions with Lower Merion Township that the potential adverse impacts upon the roadway and intersection capacity along with the vehicular queues at the areas where the roadway transitions from two lanes to one, would be too great. Therefore, any roadway improvements should maintain a minimum of two through lanes currently provided in each direction along Montgomery Avenue.

The above list of recommended short and long term improvements that would not significantly impact the capacity along Montgomery Avenue, should therefore be considered for implementation.

## Chapter 8: Streetscape Improvement Plans

The following were the major goals for updating the streetscape: to create a more pedestrian friendly environment; to begin to create connections between the Montgomery Avenue Business District and the Borough's main (Haverford Avenue) business district (along the Woodbine Avenue and Haverford Avenue axes); to improve pedestrian and vehicular circulation; and in general, to create a more business-friendly environment. These concept plans represent the "ideal" solutions to the issues identified in the Study area as discussed in this report, and, if implemented, would maximize the stated goals. However, to completely implement these plans, improvements would be required outside of the right-of-way in certain locations. This would require property owners' cooperation and possible significant financial investment. In locations where such cooperation would not be forthcoming or where physical impediments would prevent the full realization of the goals, certain adjustments to the plans would be necessary.

### Existing Streetscape Conditions

An Existing Landscape Plan (Figure 10) was used as one of the inputs for the streetscape plans. Also, six sections, taken at different locations in the project area to illustrate the varying "typical" situations and constraints which need to be addressed by the proposed improvements, were relied upon heavily for these plans. (See Figures 11 through 13.) These sections indicate the available width for pedestrian use, the presence of various obstructions, and the location of existing parking (where present). The constraints shown in these sections, were addressed to the maximum extent feasible, by the accompanying streetscape plans.

The following is a brief description of the sections:

**Section 1** – Illustrates a planting strip between Montgomery Avenue and the sidewalk with a level grade and few pedestrian obstructions in the existing walk. This section was taken east of the Narberth Avenue/Sabine Avenue/Old Gulph Road intersection. Expanding the streetscape to the edge of curb in this situation, would require little grading.

**Section 2** – Illustrates the interface of the sidewalk with an adjacent parking lot. This section was taken between the Narberth Avenue/Sabine Avenue/Old Gulph Road intersection and the Price Avenue intersection, nearer to Price Avenue. There is a planting strip between Montgomery Avenue and the sidewalk in this situation; however, the difference in grade between the top of the sidewalk and the top of curb is 6%. Therefore, to

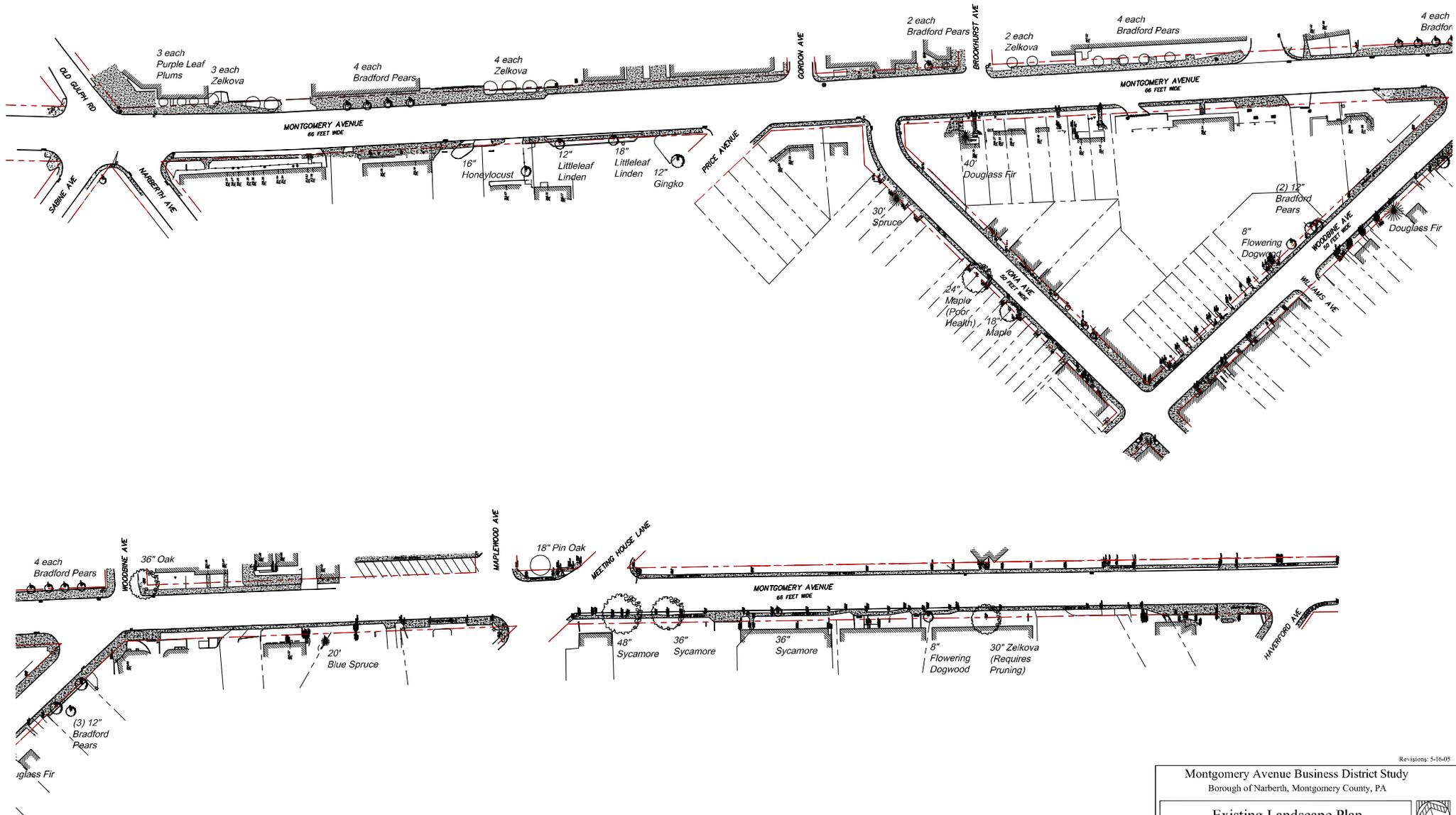
create a wider sidewalk, the height of the curb would need to be raised to the height of the existing sidewalk.

**Section 3** – Illustrates the interface of the sidewalk with Montgomery Avenue. This section was taken between the Iona and Woodbine Avenues intersections, closer to Iona Avenue. This section of the streetscape has many obstructions in the walk including signage, telephone poles, and the steps leading to the adjacent building. As discussed above, we suggest exploring the possibility of constructing a retaining wall at the right-of-way line to hold the grade and reconstructing the steps to the building outside of the right-of-way line. In some cases, space permitting, this may require a 90-degree turn in the stairway in order to keep it within the right-of-way.

**Section 4** – Illustrates an ‘informal’ parking area perpendicular to the business along Montgomery Avenue. This section was taken between the intersections of Woodbine Avenue and Meetinghouse Lane. Because of the many obstructions in the sidewalk in this situation, pedestrians walk between the sidewalk and parked cars, creating a potentially dangerous situation. It is strongly recommended that the ‘informal’ parking spaces along Montgomery Avenue be relocated to off-street parking or to shared parking lots. However, with no assurance that this can be accomplished, the informal parking has been left on the streetscape concept plans at this point; adjustments to tree and light standard placement will be necessary to remain clear of the parking and provide adequate sight distance.

**Section 5** – Illustrates a fully paved corner, typical of intersections with gas stations (Coastal Gas at Woodbine Avenue, Luke Oil at Meeting House Lane, and Exxon at Haverford Avenue). This section was taken at the Luke Oil station at Meetinghouse Lane. At all of these intersections, there is plenty of room for pedestrians to walk, but the aesthetic of the corner could be improved by using street trees, enhanced paving, and evergreen shrubs instead of paving asphalt to the edge of the sidewalk, as more fully illustrated on the accompanying plans.

**Section 6** – Illustrates the residential quality and scale of Woodbine Avenue. Along this street, the sidewalk width is determined by the residential walls infringing into the right-of-way.



Revisions 5-16-05

Montgomery Avenue Business District Study  
Borough of Narberth, Montgomery County, PA

Existing Landscape Plan

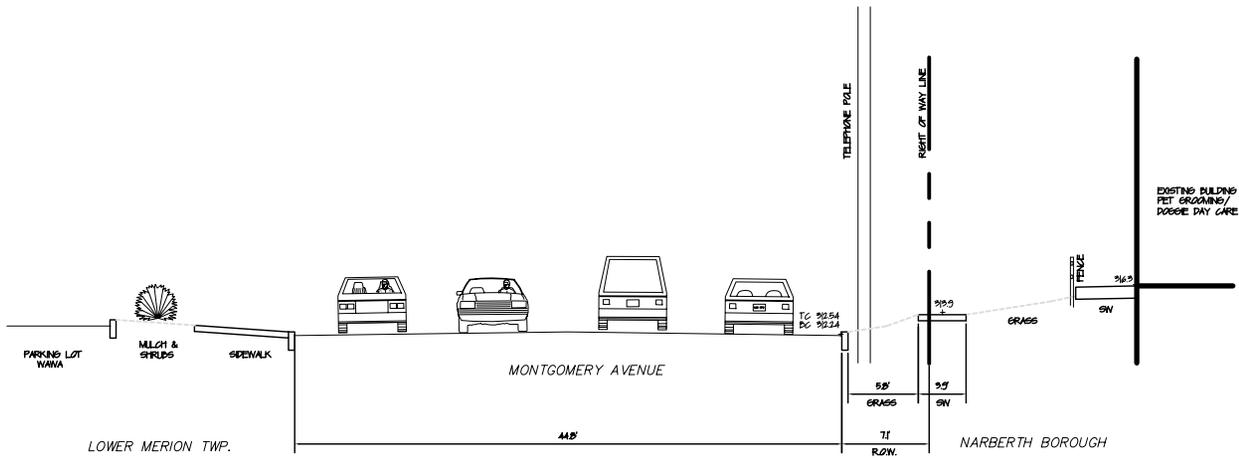


SCALE: 1" = 50'  
DATE: 10 February 2005  
PROJECT NO. 3-110

PREPARED FOR:  
THE BOROUGH OF NARBERTH

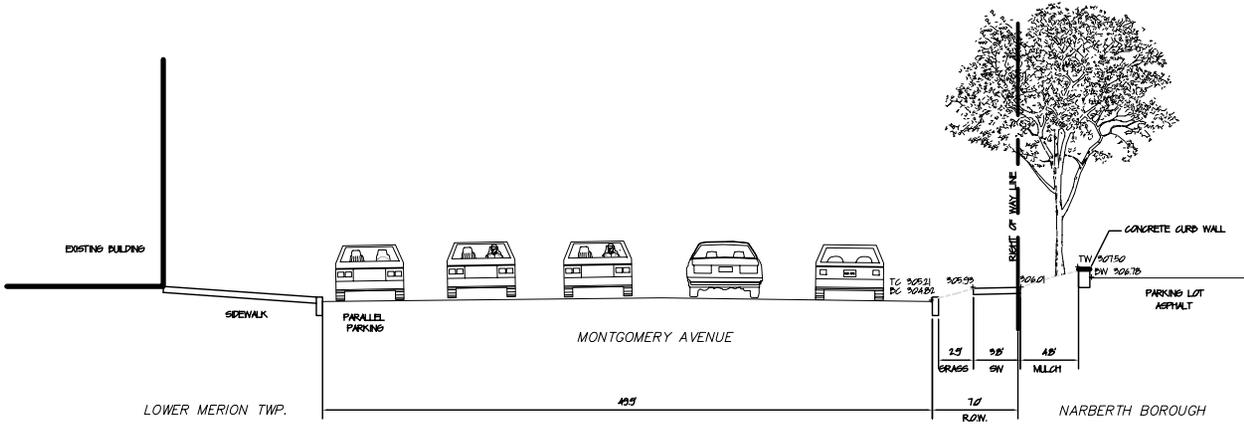
PREPARED BY:  
THE WAETZMAN PLANNING GROUP  
1230 County Line Rd., Bryn Mawr, PA 19010  
Telephone: (610) 537-0600; Fax: (610) 537-0445

FIGURE 10



**SECTION 1 - 3/4 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"



**SECTION 2 - 3/4 / 3/4 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"

**Pennoni Associates Inc.**  
 One Drexel Plaza, 3001 Market Street, Philadelphia, PA 19104  
 Engineers · Surveyors · Planners · Landscape Architects



DATE	NO.	REVISIONS	BY

ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE IN FEET AND INCHES. DIMENSIONS SHALL BE TO FACE UNLESS OTHERWISE SPECIFIED. THE USER OF THIS DOCUMENT SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

**MONTGOMERY AVENUE STREETSCAPE**  
 BOROUGH OF NARBERTH, MONTGOMERY COUNTY, PENNSYLVANIA  
**EXISTING CONDITIONS - CROSS SECTIONS**  
**THE WAITZMAN PLANNING GROUP**  
 1230 COUNTY LINE ROAD  
 BETH LEVINE, PA 19010

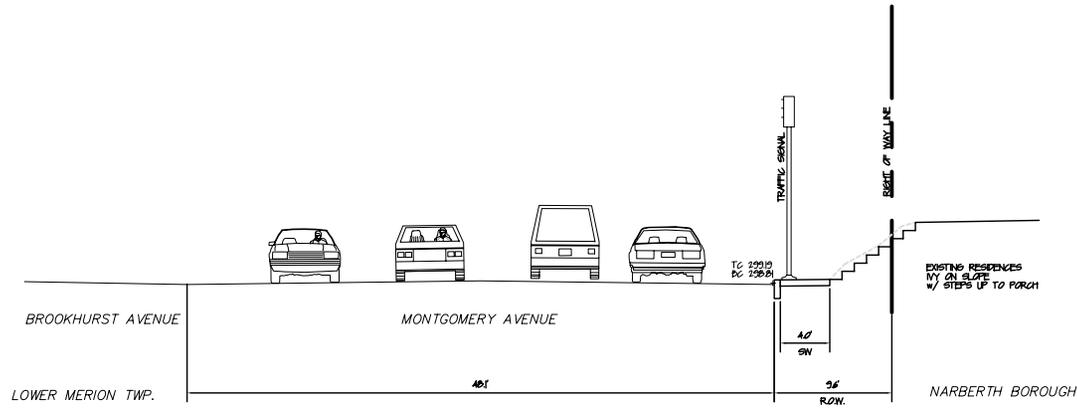
ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES INC. ARE THE PROPERTY OF PENNONI ASSOCIATES INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF PENNONI ASSOCIATES INC. PENNONI ASSOCIATES INC. SHALL NOT BE LIABLE FOR ANY DAMAGES, INCLUDING CONSEQUENTIAL DAMAGES, ARISING FROM THE USE OF THIS DOCUMENT.



DATE	ISSUED BY
AS SHOWN	
DATE	
11/13/06	

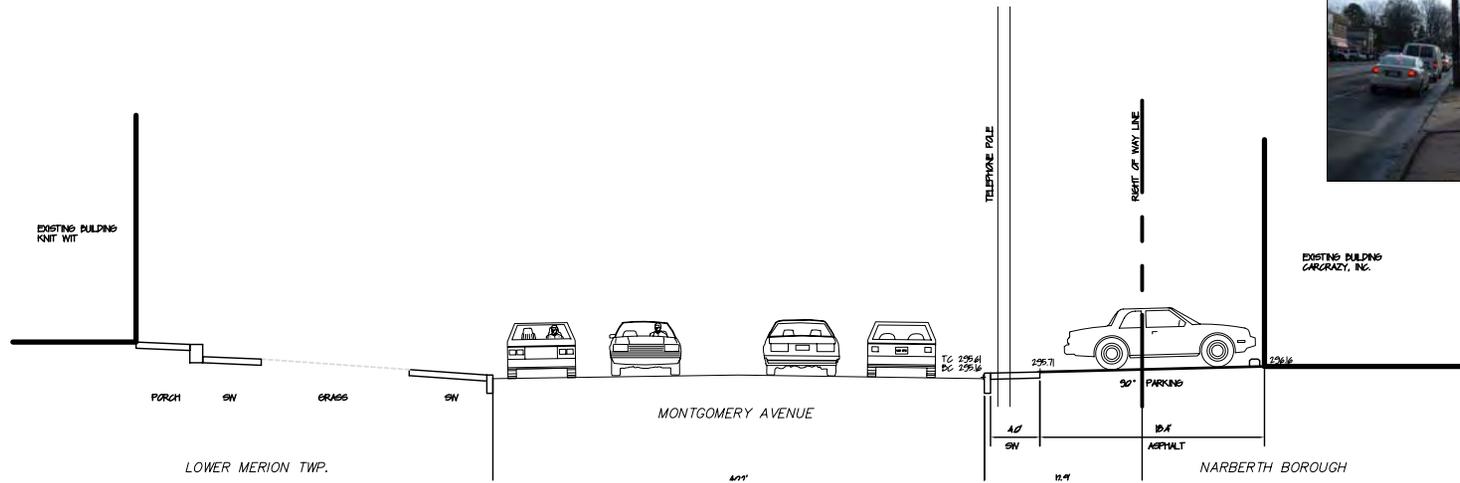
**C0301**

FIGURE 11



**SECTION 3 - 842 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"



**SECTION 4 - 710 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"

**Pennoni Associates Inc.** One Drexel Plaza, 3001 Market Street, Philadelphia, PA 19104  
**Engineers - Surveyors - Planners - Landscape Architects**



DATE	NO.	REVISIONS	BY

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES INC. ARE THE PROPERTY OF PENNONI ASSOCIATES INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF PENNONI ASSOCIATES INC.

**MONTGOMERY AVENUE STREETScape**  
 BOROUGH OF NARBERTH, MONTGOMERY COUNTY, PENNSYLVANIA  
**EXISTING CONDITIONS - CROSS SECTIONS**  
**THE WAITZMAN PLANNING GROUP**  
 1230 COUNTY LINE ROAD  
 BETH LEVINE, PA 19010

ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES INC. ARE THE PROPERTY OF PENNONI ASSOCIATES INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF PENNONI ASSOCIATES INC.

NO.	DATE	BY

SHEET 0401
SHEET 1 OF 3

DATE	PROJECT NO.
11/13/06	C0302

FIGURE 12



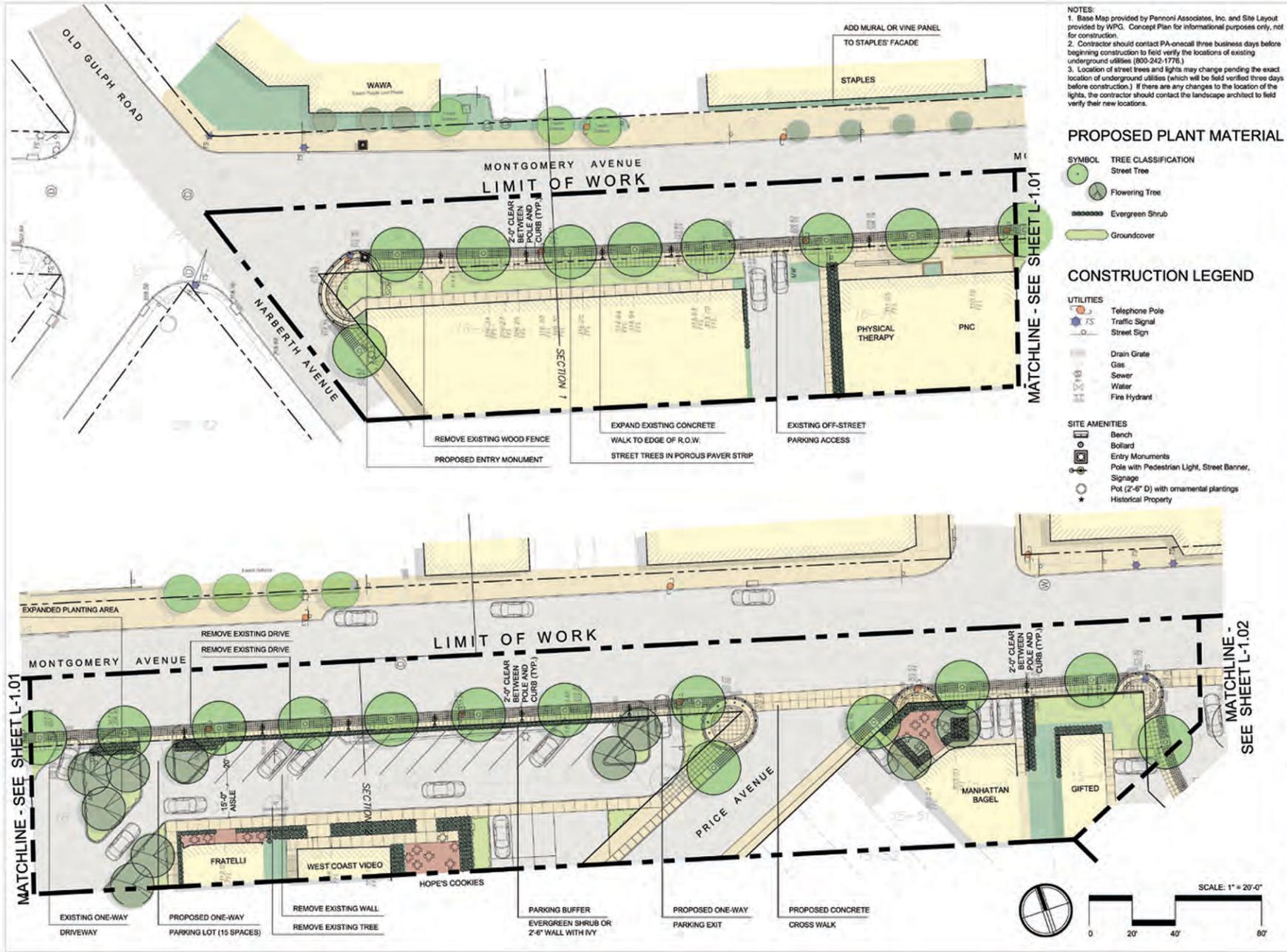
### **Streetscape Concept Plans**

To achieve the stated goals for this project and to address the conditions illustrated in the six sections described above, the following are descriptions of the recommended improvements; these are illustrated in Figures 14 through 17. (The first of these has been color-rendered to assist in visually understanding the various features which appear on all of these figures.) Details of some of the improvements are shown in Figures 18 through 20. Following these figures, the six sections previously described, are repeated to illustrate how they would be altered with the recommended streetscape improvements superimposed. (See Figures 21 through 23.)

### **Montgomery Avenue Streetscape Improvements**

**ENHANCE SIDEWALKS ALONG MONTGOMERY AVENUE** - Enlarge the sidewalks to 8' wide (where possible) by relocating existing sidewalk obstructions such as staircases, walls and parking areas outside the right-of-way. Separate the pedestrian space from traffic along Montgomery Avenue by providing a 4' wide porous paver stone strip with tree pockets and pots with street lights and banners. The stone strip would provide visual interest and be ADA accessible. That would allow for its use to "expand" the usable sidewalk surface where the 8' sidewalks can't be achieved (this is true for significant sections within the western portion of the project area). It is proposed that the width of the paver stone strip be consistent to provide visual continuity throughout the Study area; the width of the concrete sidewalk will vary where necessary. (For example, this occurs where Section 2 is taken.) It will also be necessary to eliminate street trees in some locations where the pedestrian area is very narrow if obstructions can't be eliminated such as in the area where Section 4 was taken; also see #2 below. There, the street lights with banners and hanging baskets would provide visual continuity (see paragraph below).

Create a uniform sidewalk palette with paving, site furnishings, and signage consistent in color and style with the existing downtown business district. Uniformly space street trees (typically 40 feet on center) and street lights to create a rhythm through the streetscape. Add Borough entry monuments along Montgomery Avenue and create stylized street corners at the intersections into the Borough along Montgomery Avenue. Provide banner arms on street lights for banners and/or hanging flower baskets; directional/traffic signage could also be located on the pole.



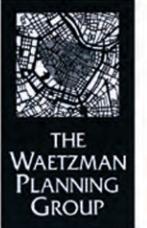
NOTES:  
 1. Base Map provided by Pennoni Associates, Inc. and Site Layout provided by WPG. Concept Plan for informational purposes only, not for construction.  
 2. Contractor should contact PA-oncall three business days before beginning construction to field verify the locations of existing underground utilities (800-242-1776).  
 3. Location of street trees and lights may change pending the exact location of underground utilities (which will be field verified three days before construction.) If there are any changes to the location of the lights, the contractor should contact the landscape architect to field verify their new locations.

**PROPOSED PLANT MATERIAL**

- | SYMBOL | TREE CLASSIFICATION |
|--------|---------------------|
|        | Street Tree         |
|        | Flowering Tree      |
|        | Evergreen Shrub     |
|        | Groundcover         |

**CONSTRUCTION LEGEND**

- UTILITIES**
- Telephone Pole
  - Traffic Signal
  - Street Sign
  - Drain Grate
  - Gas
  - Sewer
  - Water
  - Fire Hydrant
- SITE AMENITIES**
- Bench
  - Bollard
  - Entry Monuments
  - Pole with Pedestrian Light, Street Banner, Signage
  - Pot (2'-6" D) with ornamental plantings
  - Historical Property



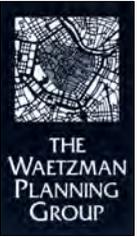
1230 COUNTY LINE ROAD  
 BRYN MAWR, PA 19010

**Montgomery Avenue Business District Study**  
 Proposed Streetscape Plan for  
 The Borough of Narberth  
 Montgomery County, PA

DATE: 12.13.2006  
 SCALE: 1" = 20'-0"  
 PROJECT NO: 3-110  
 REVISIONS:

SHEET NO:  
**L-1.01**

FIGURE 14



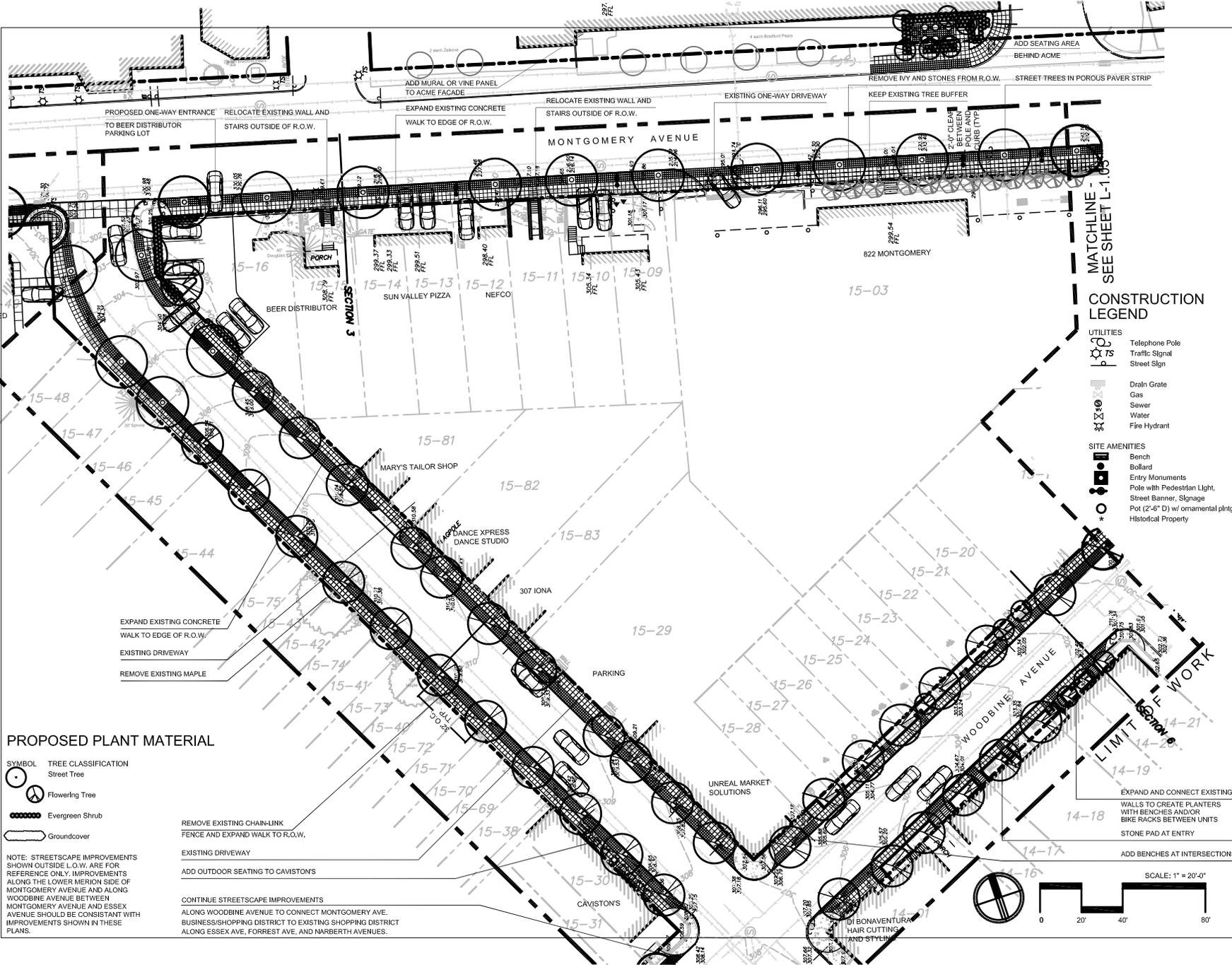
1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

**Montgomery Avenue Business District Study**  
Proposed Streetscape Plan for  
The Borough of Narberth  
Montgomery County, PA

DATE: 12.13.2006  
SCALE: 1" = 20'-0"  
PROJECT NO: 3-110  
REVISIONS:

SHEET NO:

**L-1.02**



**CONSTRUCTION LEGEND**

- UTILITIES**
- Telephone Pole
  - Traffic Signal
  - Street Sign
  - Drain Grate
  - Gas
  - Sewer
  - Water
  - Fire Hydrant
- SITE AMENITIES**
- Bench
  - Bollard
  - Entry Monuments
  - Pole with Pedestrian Light, Street Banner, Signage
  - Pot (2'-6" D) w/ ornamental plantings
  - Historical Property

**PROPOSED PLANT MATERIAL**

- SYMBOL TREE CLASSIFICATION**
- Street Tree
  - Flowering Tree
  - Evergreen Shrub
  - Groundcover

REMOVE EXISTING CHAIN-LINK FENCE AND EXPAND WALK TO R.O.W.

EXISTING DRIVEWAY  
ADD OUTDOOR SEATING TO CAVISTON'S

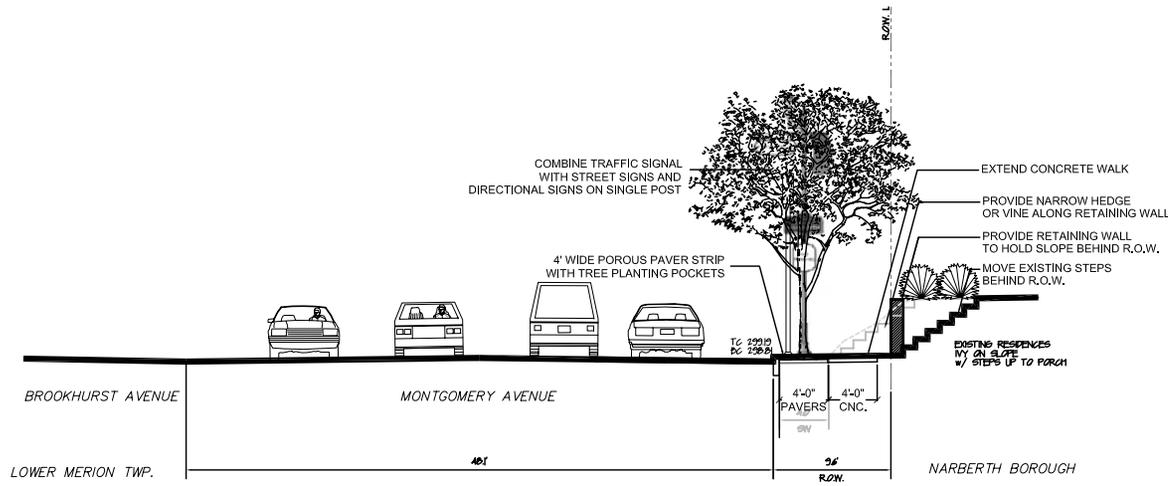
CONTINUE STREETScape IMPROVEMENTS ALONG WOODBINE AVENUE TO CONNECT MONTGOMERY AVE. BUSINESS/SHOPPING DISTRICT TO EXISTING SHOPPING DISTRICT ALONG ESSEX AVE, FORREST AVE, AND NARBERTH AVENUES.

EXPAND AND CONNECT EXISTING WALLS TO CREATE PLANTERS WITH BENCHES AND/OR BIKE RACKS BETWEEN UNITS  
STONE PAD AT ENTRY

ADD BENCHES AT INTERSECTIONS

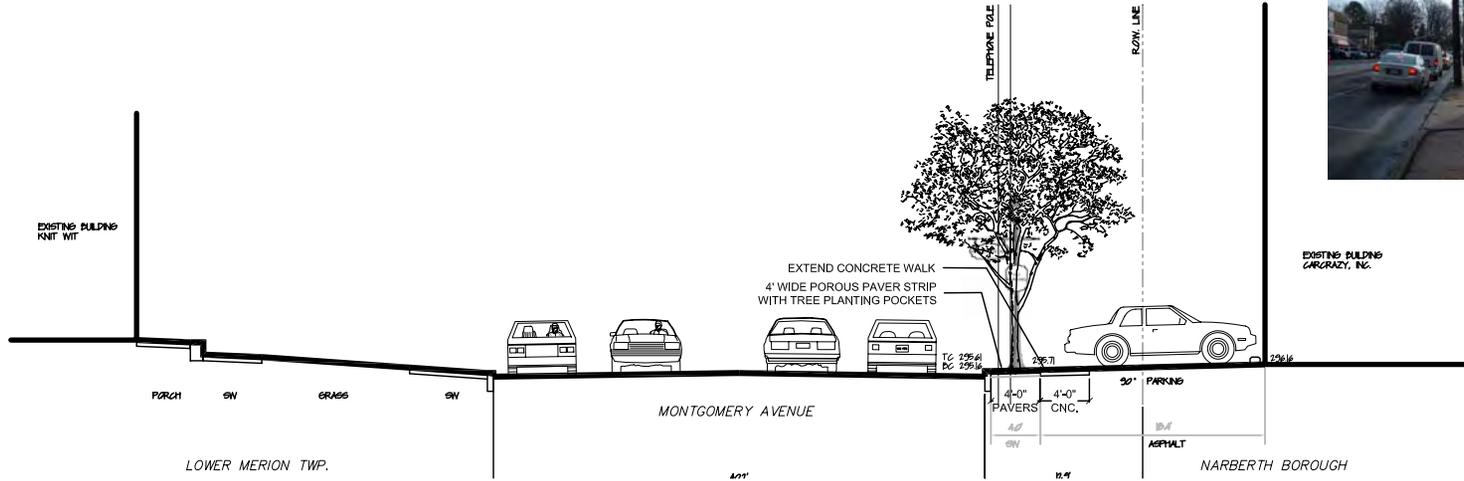


MATCHLINE - SEE SHEET L-1.03



**SECTION 3 - 842 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"



**SECTION 4 - 710 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"



1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010



One Drexel Plaza, 3001 Market Street, Philadelphia, PA 19104

**MONTGOMERY AVENUE STREETScape**  
BOROUGH OF NARBERTH, MONTGOMERY COUNTY, PENNSYLVANIA  
**PROPOSED CONDITIONS - CROSS SECTIONS**  
THE WAETZMAN PLANNING GROUP  
1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

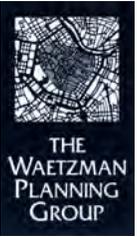
ALL DOCUMENTS PREPARED BY PENNONI ASSOCIATES, INC. ARE THE PROPERTY OF PENNONI ASSOCIATES, INC. AND ARE NOT TO BE REPRODUCED, COPIED, OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF PENNONI ASSOCIATES, INC. PENNONI ASSOCIATES, INC. IS NOT RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN THIS DOCUMENT. PENNONI ASSOCIATES, INC. IS NOT A PROFESSIONAL ENGINEER OR ARCHITECT. PENNONI ASSOCIATES, INC. IS NOT A LICENSED PROFESSIONAL ENGINEER OR ARCHITECT IN THE STATE OF PENNSYLVANIA.

DATE	ISSUED BY
AS SHOWN	DATE
11/13/06	11/13/06

PROJECT NO. **C0302**

FIGURE 22





1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

**Montgomery Avenue Business District Study**  
Proposed Streetscape Plan for  
The Borough of Narberth  
Montgomery County, PA

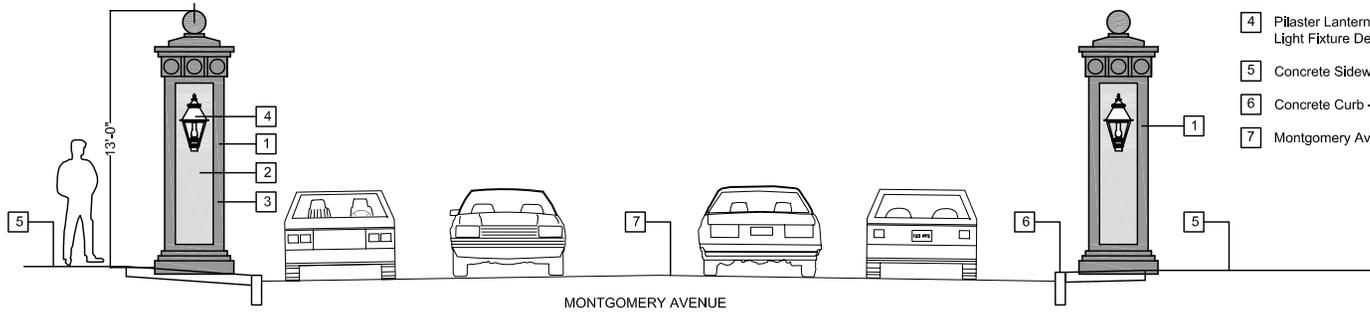
DATE: 09.22.2006  
SCALE: No Scale  
PROJECT NO: 06.021  
REVISIONS: 12.8.2006

SHEET NO:

**LC-5.03**

NOTES:

- 1 Stone Entry Pilasters - Refer to Plan. Adopt architectural detailing for pilaster from historical buildings on Montgomery Avenue (Including the Rees-Price House, the Merlon Friends Meeting House, the Early Tavern, and the John Dickson House.)
- 2 Pilaster Material 'A' - Stone column, base, and cap. Stone to match existing on-site walls.
- 3 Pilaster Material 'B' - Lighter stone accent or recessed stone panel
- 4 Pilaster Lantern - Mounted to Stone Pilaster. Refer to Light Fixture Detail for lantern specifications.
- 5 Concrete Sidewalk - Refer to Detail and Plan
- 6 Concrete Curb - Refer to Detail and Plan
- 7 Montgomery Avenue - Refer to Plan

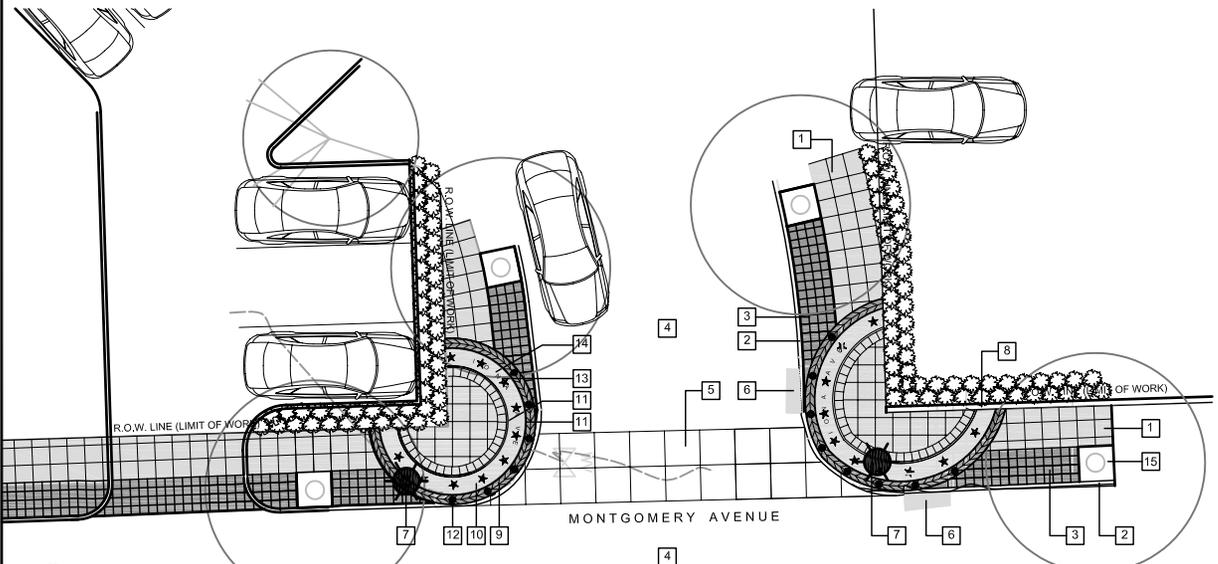


MONTGOMERY AVENUE

**A** Section: Entry Monuments

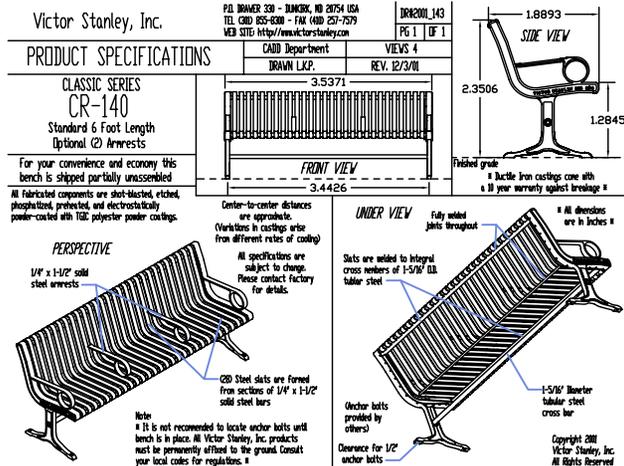
NOTES:

- 1 Concrete Walk - Refer to Detail and Plan
- 2 Concrete Curb - Refer to Detail and Plan
- 3 Stone Paving - Refer to Detail and Plan
- 4 Asphalt Paving - Refer to Detail and Plan
- 5 Concrete Cross Walk - Refer to Detail and Plan
- 6 Existing Drain Grates - Refer to Plan
- 7 Existing Traffic Signal - Refer to Plan
- 8 Existing Wall - Refer to Plan
- 9 Corner Paving Material 'A' - Stone Band. Pavers cut to grain pattern as shown on plan Refer to Plan and Specifications.
- 10 Corner Paving Material 'B' - Concrete Paving. Finish, color, and aggregate to match adjacent concrete walk. Score per detail. Refer to Plan and Specifications.
- 11 SS Metal Band Inlay - Flush with concrete walk. Band located along the perimeter of Interior concrete paving. Provided by The Slab Lab Concrete Studio, Braintree MA, 61 contact.
- 12 Optional Bollard - Refer to Detail and Plan.
- 13 Optional SS Star Inlay - Flush with concrete walk. Refer to Detail and Plan.
- 14 Optional SS Street Name Inlay - Flush with Concrete walk. Refer to Detail and Plan.
- 15 Optional Tree Gate - Refer to Plan.



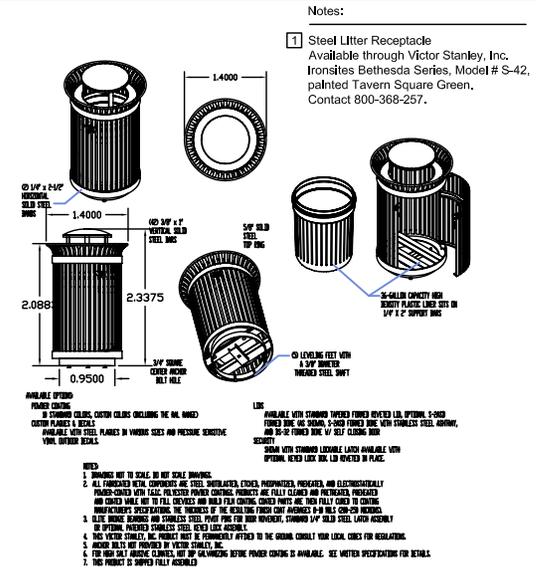
MONTGOMERY AVENUE

**D** Intersection Enlargement

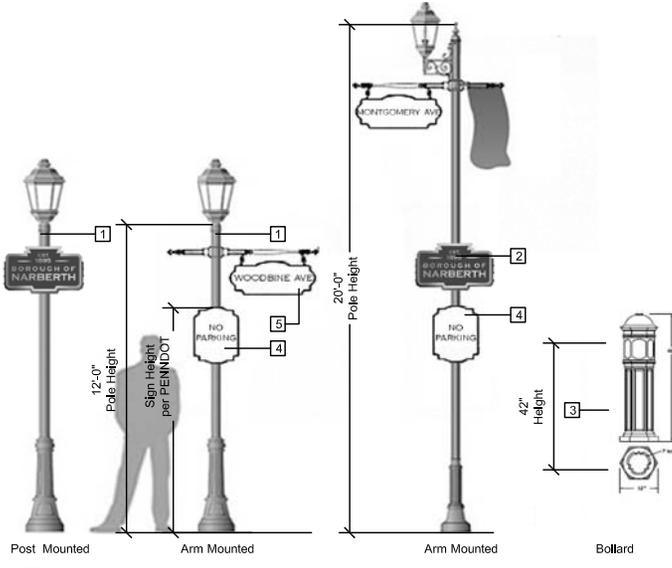


- Notes:
- Steel Bench with formed Steel Scrolls Available through Victor Stanley, Inc. Classic Series, Model # CR-40 (or approved equal) painted Tavern Square Green. Contact 800-368-257.

**A** Steel Bench



**C** Steel Litter Receptacle



- Notes:
- Post Mounted Light to Match Existing Narberth Business District Light Posts Available through Architectural Area Lighting. Contact 714-994-2700.  
 DESCRIPTION: Pedestrian light with cutoff optics and 12 foot round tapered aluminum pole with two piece clamshell base (with photo control.)  
 LIGHT: Towne Commons Series, Model # ALN 440-H3, painted dark green (to match existing light posts.)  
 LAMPS: Venture MH 100W/U/PS (or equal); 125W and 120V.
  - Arm Mounted Light to Match Existing Narberth Business District Light Posts Available through Architectural Area Lighting. Contact 714-994-2700.  
 DESCRIPTION: Pedestrian light with cutoff optics and 20 foot round tapered aluminum pole with two piece clamshell base (with photo control) with dual mounting arm for light with banner hardware.  
 LIGHT: Towne Commons Series, Model # ALN 440-H3, painted dark green (to match existing light posts).  
 ARM FOR LIGHT: Model # 2-TRA55.  
 ARM FOR BANNER: Model # BBS4-18  
 LAMPS: Venture MH 100W/U/PS (or equal); 125W and 120V.
- Cast Aluminum Bollard to Match Existing Narberth Business District Bollards Available through Architectural Area Lighting. Contact 714-994-2700.
- BOLLARD: Model # 480W, with fuse holder #FS1 (with photo control) painted dark green (to match existing light posts), 42" mounting height.  
 LAMPS: Venture MH 70W (or equal); 90W and 120V.
- Road Signs (Prohibitive, parking restricted, speed limit, directional, cultural, regulatory, stop and warning signs.) Mount signs on proposed pedestrian light poles. Sign dimensions and height to comply Pennsylvania Department of Transportation requirements
  - Street Signs - Sign dimensions and height to comply with Pennsylvania Department of Transportation requirements

**D** Light Fixtures and Bollards

**F** Not Assigned

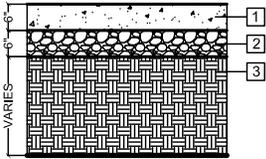


**Montgomery Avenue Business District Study**  
 Proposed Streetscape Plan for  
 The Borough of Narberth  
 Montgomery County, PA

DATE: 09.22.2006  
 SCALE: No Scale  
 PROJECT NO: 06.021  
 REVISIONS: 12.8.2006

SHEET NO:

**LC-5.02**



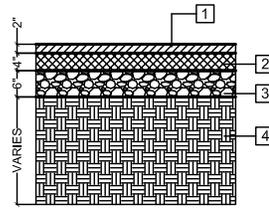
NOTES:

- 1 Concrete Paving - Finish to match existing concrete paving
- 2 Compacted Stone Base Course
- 3 Compacted Sub-base - Refer to Geotechnical Engineer's Report

ADDITIONAL NOTES:

- 1. Concrete sidewalk to be scored per plan.
- 2. Refer to detail for Sidewalk Header

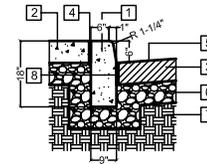
**A** Concrete Walk



NOTES:

- 1 Asphalt Surface Course - Refer to Geotechnical Engineer's Report
- 2 Asphalt Binder Course - Refer to Geotechnical Engineer's Report
- 3 Aggregate Stone Base Course
- 4 Compacted Subgrade - Refer to Geotechnical Engineer's Report

**B** Asphalt Pavement



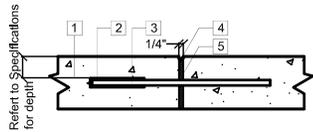
NOTES:

- 1 PIP Concrete Header
- 2 Concrete Paving - Refer to detail
- 3 Asphalt Pavement - Refer to detail
- 4 Expansion Joint - Width of joint filler strip equal to the thickness of pavement, less 0.5"
- 5 Finish Grade
- 6 Compacted Stone Base Course
- 7 Compacted Sub-base - Refer to Geotechnical Engineer's Report
- 8 Bituminous Type Expansion Joint Filler - Conforming to A.A.S.H.O. Specs M-33. To be installed between curb and concrete paving or concrete base course.

ADDITIONAL NOTES:

- 1. Concrete header to be scored per plan.

**C** Concrete Curb



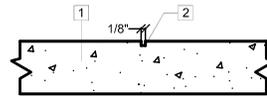
NOTES:

- 1 Concrete Paving - Refer to Detail.
- 2 Expansion Joint Sleeve - Install per Manufacturer's Specifications.
- 3 Expansion Joint Dowel - Install per Manufacturer's Specifications.
- 4 Expansion Joint Filler Material - Install per Manufacturer's Specifications.
- 5 Expansion Joint Sealant Material - Install per Manufacturer's Specifications. Tool flush.

ADDITIONAL NOTES:

- 1. Refer to plan for expansion joint locations.
- 2. Refer to Manufacturer's specifications for depth of expansion joint.

**D** Expansion Joint



NOTES:

- 1 Concrete Paving - Refer to Detail.
- 2 Sawcut Score Joint

ADDITIONAL NOTES:

- 1. Refer to plan for score joint locations.
- 2. Refer to Manufacturer's specifications for depth of expansion joint.

**E** Sawcut Score Joint

**F** Not Assigned



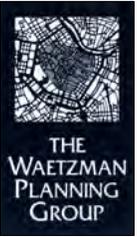
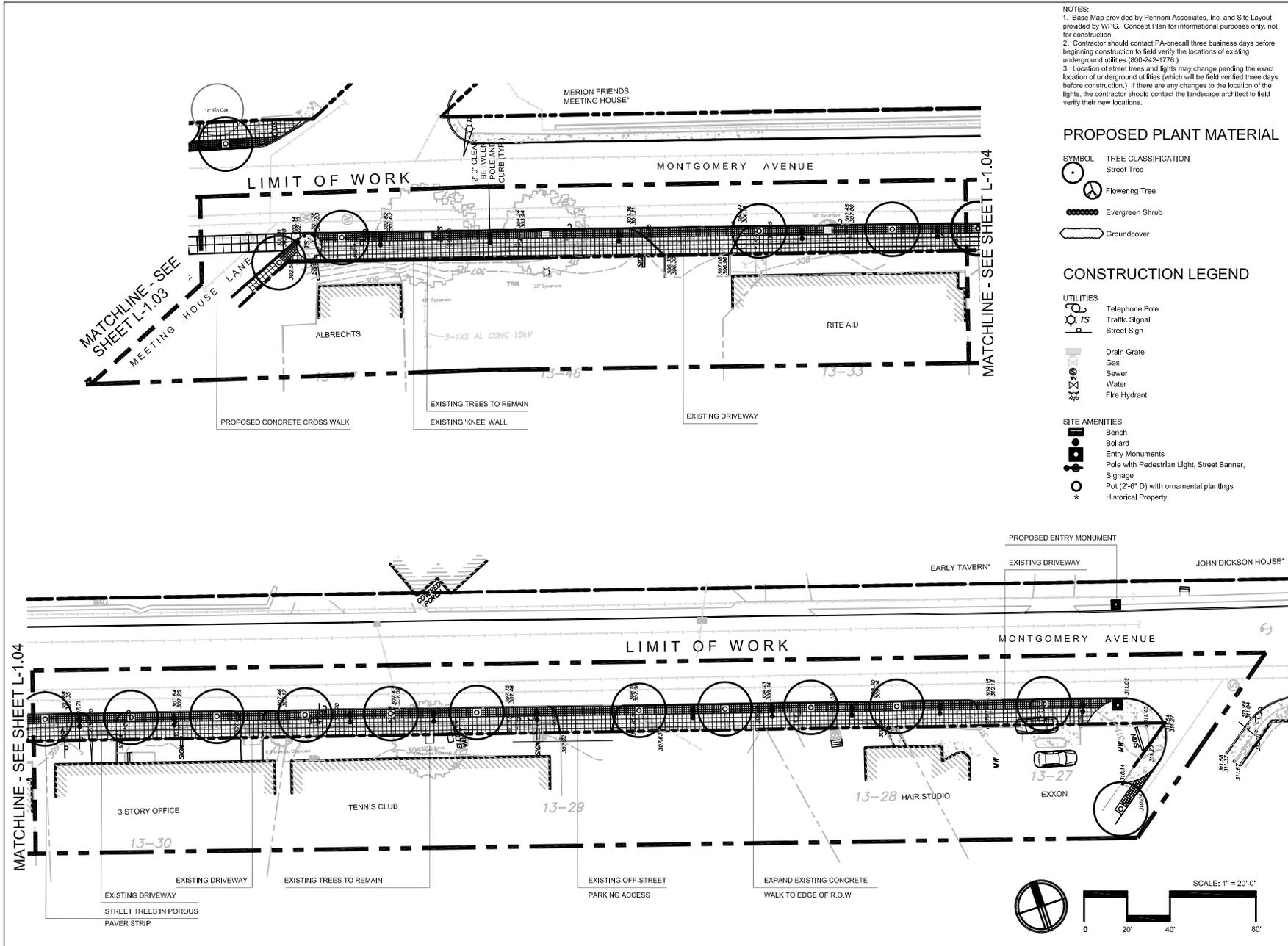
1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

**Montgomery Avenue Business District Study**  
 Proposed Streetscape Plan for  
 The Borough of Narberth  
 Montgomery County, PA

DATE: 09.22.2006  
 SCALE: No Scale  
 PROJECT NO: 06.021  
 REVISIONS: 12.8.2006

SHEET NO:

**LC-5.01**



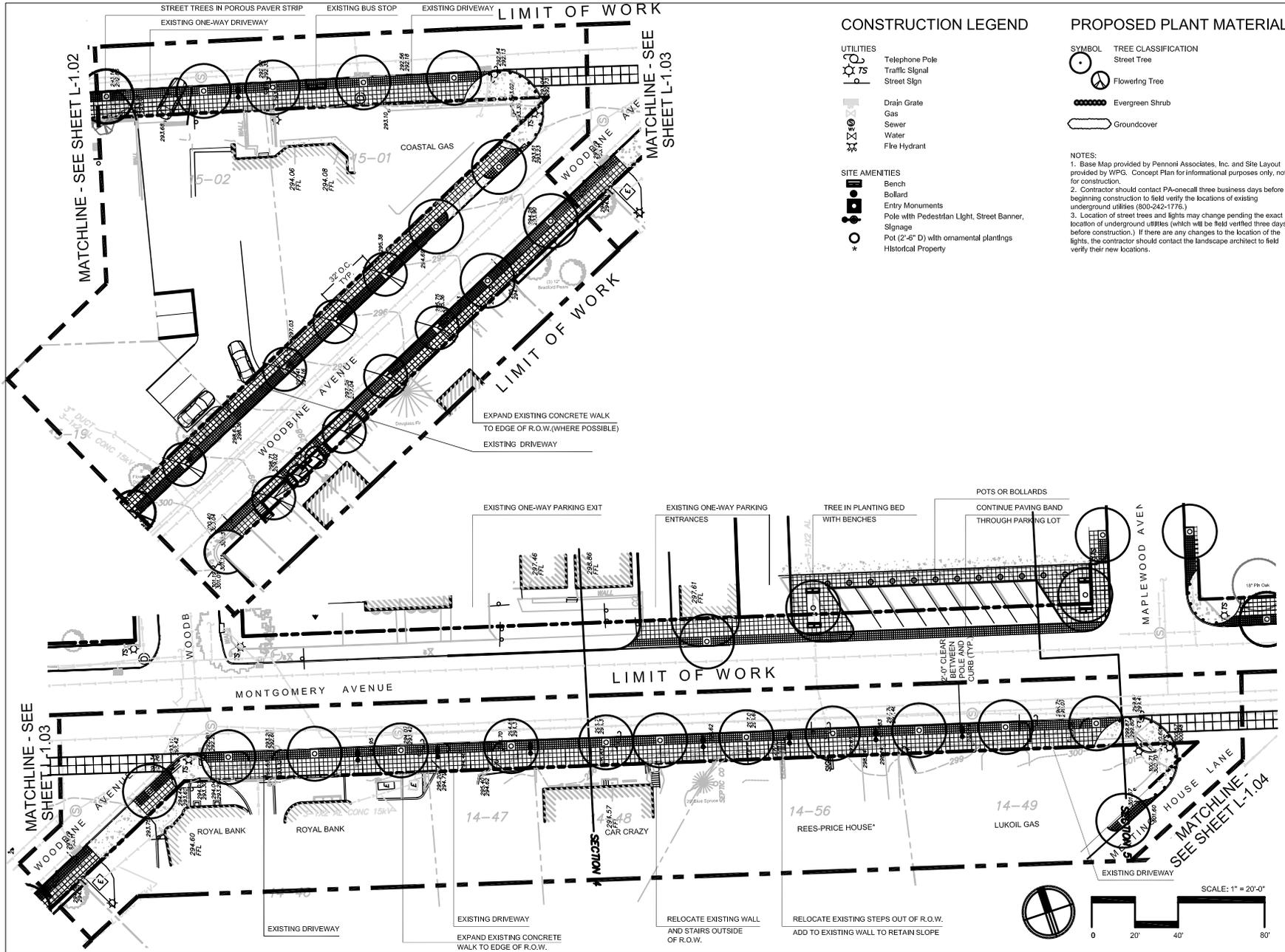
1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

**Montgomery Avenue Business District Study**  
Proposed Streetscape Plan for  
The Borough of Narberth  
Montgomery County, PA

DATE: 12.13.2006  
SCALE: 1" = 20'-0"  
PROJECT NO: 3-110  
REVISIONS:

SHEET NO:  
**L-1.04**

FIGURE 17



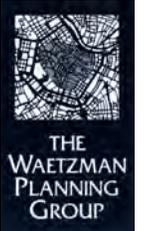
**CONSTRUCTION LEGEND**

- UTILITIES**
- Telephone Pole
  - Traffic Signal
  - Street Sign
- SITE AMENITIES**
- Bench
  - Bollard
  - Entry Monuments
  - Pole with Pedestrian Light, Street Banner, Signage
  - Pot (2'-6" D) with ornamental plantings
  - Historical Property

**PROPOSED PLANT MATERIAL**

- SYMBOL TREE CLASSIFICATION**
- Street Tree
  - Flowering Tree
  - Evergreen Shrub
  - Groundcover

- NOTES:**
1. Base Map provided by Pennoni Associates, Inc. and Site Layout provided by WPG. Concept Plan for informational purposes only, not for construction.
  2. Contractor should contact PA-onecall three business days before beginning construction to field verify the locations of existing underground utilities (800-242-1774).
  3. Location of street trees and lights may change pending the exact location of underground utilities (which will be field verified three days before construction.) If there are any changes to the location of the lights, the contractor should contact the landscape architect to field verify their new locations.



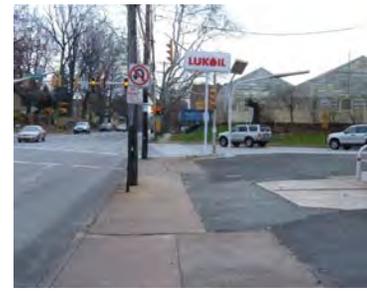
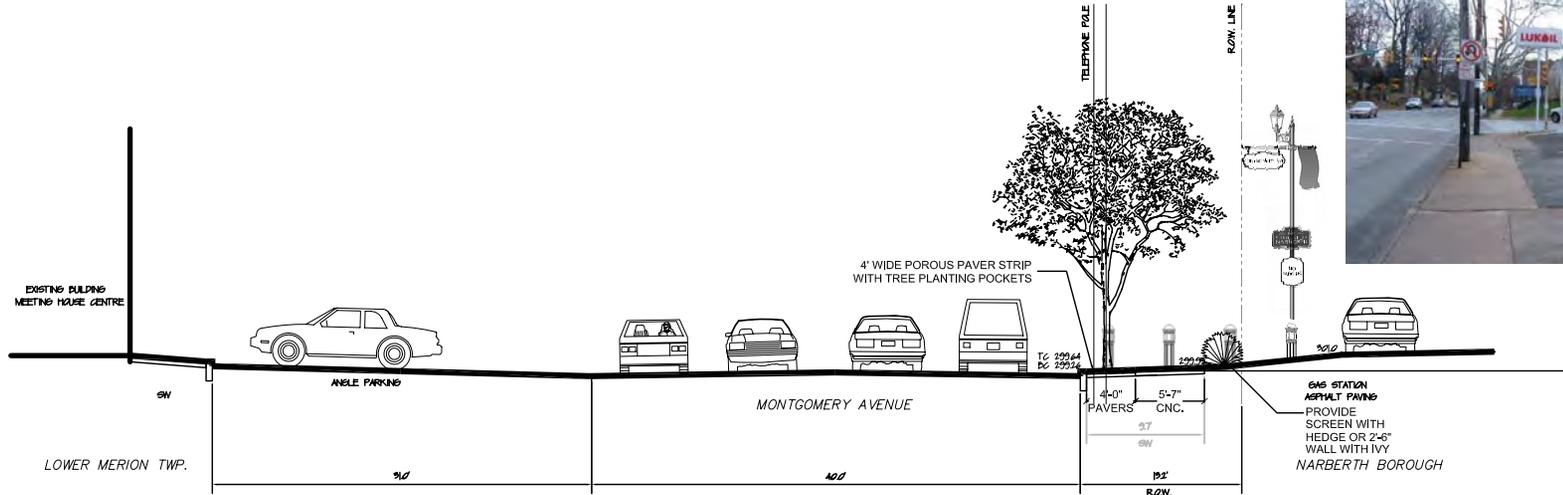
1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

**Montgomery Avenue Business District Study**  
Proposed Streetscape Plan for  
The Borough of Narberth  
Montgomery County, PA

DATE: 12.13.2006  
SCALE: 1" = 20'-0"  
PROJECT NO: 3-110  
REVISIONS:

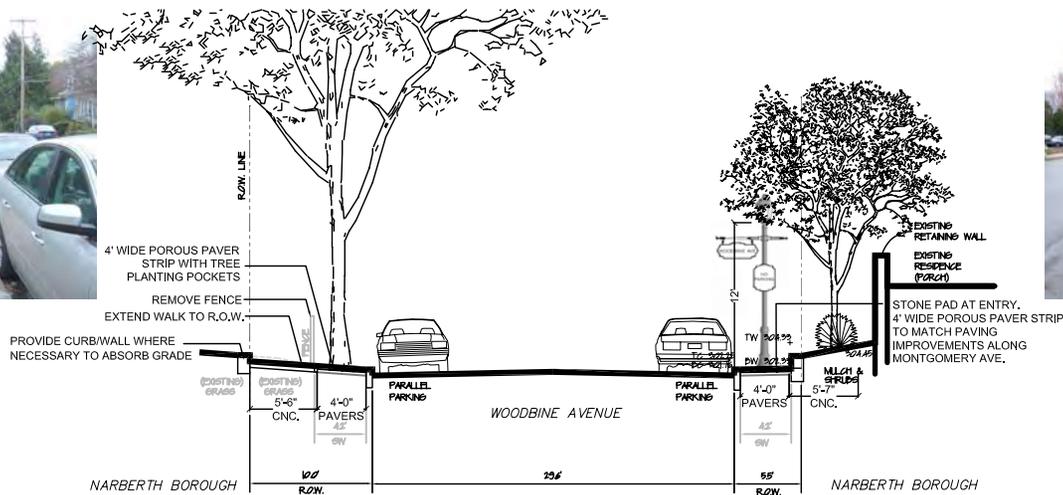
SHEET NO:  
**L-1.03**

FIGURE 16



**SECTION 5 - 700 MONTGOMERY AVENUE**

SCALE 1/4" = 1'-0"



**SECTION 6 - 321 AND 316 WOODBINE AVENUE**

SCALE 1/4" = 1'-0"



1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010



One Drexel Plaza, 3001 Market Street, Philadelphia, PA 19104

**MONTGOMERY AVENUE STREETSCAPE**  
BOROUGH OF NARBERTH, MONTGOMERY COUNTY, PENNSYLVANIA  
**PROPOSED CONDITIONS - CROSS SECTIONS**  
THE WAETZMAN PLANNING GROUP  
1230 COUNTY LINE ROAD  
BRYN MAWR, PA 19010

ALL DOCUMENTS PROVIDED BY PENNONI ASSOCIATES INC. ARE THE PROPERTY OF PENNONI ASSOCIATES INC. AND ARE TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED IN THE TITLE OF THIS DOCUMENT. ANY REUSE OR REPRODUCTION OF THIS DOCUMENT FOR ANY OTHER PROJECT OR SITE WITHOUT THE WRITTEN PERMISSION OF PENNONI ASSOCIATES INC. IS STRICTLY PROHIBITED. PENNONI ASSOCIATES INC. SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS IN THIS DOCUMENT. THE USER OF THIS DOCUMENT SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL INFORMATION CONTAINED HEREIN.

DATE	BY	REVISED
11/13/06	AS SHOWN	1 OF 3

PROJECT NO. **C0303**

FIGURE 23

**REDUCE SIDEWALK OBSTRUCTIONS** - Combine street signs, traffic signs, directional signs to reduce the number of poles in the existing streetscape. Bury utility/telephone lines beneath the street, or if not feasible, explore the possibility of moving the utility/telephone lines behind the buildings along Montgomery Avenue (generally along rear property lines). PECO believes that no gas utility relocation is needed to accommodate the improvements and is preparing an estimate regarding the cost of burying or relocating the utility/telephone lines. (There are a number of potential funding sources available for burying utility lines; please refer to Table 7 below; a search for funding sources to relocate utility poles has been unsuccessful thus far but should be pursued by the Borough.)

**Table 7: Grant/Funding Opportunities for Underground Utilities in Narberth**

<b>Program</b>	<b>Abbreviation</b>	<b>Grantor/ Lender</b>	<b>Comments</b>
Community Development Block Grant	CDBG	DCED <sup>2</sup>	Income eligibility not an issue for ADA compliance
Transportation Enhancements	TE - Hometown Streets	PennDOT <sup>3</sup>	Landscaping and other scenic beautification; federal cost reimbursement program
Community Revitalization Program	CRP	DCED	Provides grant funds to support local initiatives that promote community stability and quality of life
Pennsylvania Infrastructure Bank	PIB	PennDOT	No limit on amount, but max term loan of 10 years; rate at 1/2 prime lending rate
Liquid Fuels		PennDOT	Applicability currently being researched
New Communities	Elm St, Main Street Program	DCED	Elm Street Program provides eligibility for grant funds for planning, technical assistance, and physical improvements to residential and mixed use areas in proximity to central business districts
Urban Development Program	UDP	DCED	Grants for urban development and improvement projects, range of \$5,000-\$25,000
Section 108		DCED	Enables local governments already participating in CDBG program to obtain federally guaranteed loans
MontCo Community Revitalization Program		MCPC <sup>4</sup>	Hatfield used this one, not an option for Narberth

<sup>2</sup> Department of Community and Economic Development

<sup>3</sup> Pennsylvania Department of Transportation

<sup>4</sup> Montgomery County Planning Commission

**CREATE BOROUGH 'GATEWAY'** – Provide entry monuments along Montgomery Avenue at intersection of Narberth Avenue and Montgomery Avenue and Haverford Avenue and Montgomery Avenue. The entry monuments could be stone pilasters and the architectural detailing adapted from the historical buildings along Montgomery Avenue. Additionally, enhanced paving at the intersections of Narberth Avenue, Price Avenue, Iona Avenue, Woodbine Avenue, and Meeting House Lane would highlight the Narberth Borough side of Montgomery Avenue as the entry points to the Borough. The corners of each block would be ornately paved/scored, inlaid with street names, and articulated by bollards. The intersections could reflect the history of the historical buildings along Montgomery Avenue (including the Rees-Price House, the Merion Friends Meeting House, Early Tavern, and the John Dickson House.)

**CREATE SAFER STREET CROSSINGS** - Emphasize the cross walk locations by using concrete as the crosswalk paving material. The color, finish, and scoring of the cross walks should match the cross walks in the existing downtown business district. Also, the corners of each block would be articulated by bollards to vertically emphasize the crossing points.

(Note: No mid-block crossings have been shown since they were discounted as being unsafe during various meetings/discussions for this project.)

**ADDRESS LACK OF PARKING** – Currently there is not enough on-street parking to accommodate patrons of the businesses along Montgomery Avenue. For this reason, many businesses have provided one to three 'informal' spaces between the front of their buildings and Montgomery Avenue. As parking was never intended in this space, there is limited room for vehicles, which often overhang into the sidewalk and the right-of-way. Because the option of adding on-street parking was eliminated during the course of this project, and there is no appropriate site to build a new off-street parking facility, this 'informal' on-street parking is still shown on the plans. However, the goal would be to eliminate these parking areas whenever arrangements can be made for shared parking.

Between PNC and Price Avenue, there is an informal parking lot at Fratelli, West Coast Video, and Hope's Cookies. Each business, however, has its own driveway, and the frequent interruptions in the sidewalk create an unsafe walking environment for pedestrians and a safety concern for drivers on Montgomery Avenue. We are proposing to consolidate the parking lots into a one-way lot with an entrance at Fratelli and an exit at Hope's Cookies. We are also proposing a one-way parking lot at the Beer Distributor, with an entrance along Montgomery

Avenue and the exit along Iona Avenue. Each parking area would be separated from the streetscape by a low evergreen hedge.

Although the Lower Merion Township side of the streetscape is not technically included in the scope of services, it was determined early on in the project, that planning would be done for both sides of the street. If improvements are implemented on both sides of the street, the entire area will appear as, and function as, a single business district. The enhanced crossings and the continuity of the streetscape will encourage pedestrians to cross over from one side to the other. For this reason, key locations for improvements are shown on the plan on the Lower Merion side as well; in addition to these improvements, we recommend that the pavement scheme and lighting planned on the Narberth side, be echoed on the Township side. One of the significant benefits of encouraging people to cross Montgomery Avenue by making the recommended improvements, is the availability of parking on the Township side. There are a number of larger chain store users with large lots, often not fully utilized. One of the recommendations of this Study is for the municipalities to work with these owners and develop agreements to allow people frequenting any near-by business, to park in these lots.

### **Woodbine Avenue Streetscape Improvements**

Also included in the scope of services were streetscape issues along Iona and Woodbine Avenues. Because Woodbine Avenue would be the axis which would connect the Montgomery Avenue Streetscape to the existing business and shopping district centered around the Narberth and Haverford Avenues, we have incorporated the same design vocabulary along Woodbine, and reduced the scale to reflect the residential character of the street. The spacing of street trees would become tighter and the tree species would change (we are showing flowering trees). As on Montgomery Avenue, there are a number of retaining walls and steps leading to each residence which currently are located within the right-of-way. Although this limits the width of the sidewalk to 4', pedestrian traffic along Woodbine Avenue is considerably less than it is along Montgomery Avenue, and we believe the disturbance to the existing residences would outweigh the benefit of a wider sidewalk. To enhance the uniformity of the streetscape along Woodbine, we are proposing to: expand and connect the existing retaining walls to create planters (possibly with benches or bike racks) between the units; plant flowering trees in these enlarged planters; add stone pads to the concrete paving at the entry to each unit (in lieu of the porous paver strip); and add benches to the businesses at the intersection of Woodbine and Iona Avenues.

### **Iona Avenue Streetscape Improvements**

Iona Avenue is residential in character on the west side of the street and dominated by businesses on the east side of the street. The residential side of the street is

defined by level grades and chain link fences; therefore we are proposing to expand the sidewalk to the right-of-way on Iona Avenue. Other streetscape improvements along Iona would combine those proposed for Montgomery Avenue and Woodbine Avenue: plant flowering trees as the street tree (as on Woodbine) but between the sidewalk and the road (as on Montgomery Avenue); and mimic the paving scheme along Montgomery Avenue – plant street trees in a 4' wide stone paver band and pave the remaining sidewalk in concrete scored in 2' bands.

## Chapter 9: Conclusion

At the outset of this Study, it was anticipated that the end products would be more comprehensive in nature, including possible modifications to traffic patterns and lane configurations on Montgomery Avenue. With some of the traffic alternatives studied, the addition of on-street parking was a possibility, as was increased sidewalk area for pedestrians. It was expected that once the most advantageous traffic alternative was chosen, complementary streetscape concept plans would be prepared, followed by preliminary engineering for the installation of the improvements which would have been included on those plans. This would have brought the Borough and Lower Merion Township closer to implementation of improvements.

Nevertheless, with the modified scope of work, some definitive conclusions and very useful end products, have resulted. First, the Borough and Lower Merion Township have an increased appreciation for the specific concerns of the business owners and operators in this area. Some of these concerns can be addressed through future physical changes, while others might require different actions. Secondly, some significant short and long term traffic calming measures have been identified and brought to the table. These are all measures that can be implemented without any changes to the traffic patterns and lane configuration of Montgomery Avenue. Thirdly, detailed streetscape concept plans have been developed. Finally, a website entitled [www.MontgomeryAvenue-Narberth.com](http://www.MontgomeryAvenue-Narberth.com) has been formed to provide the public with information regarding the Study and to create excitement and awareness over the proposed improvements. As these plans are taken from the concept level to installation of improvements in the future, the improvements will assist in implementing some of the traffic calming measures, enhance the pedestrian experience and safety in the Study area, and create an identity and aesthetic that it currently lacks. Certainly, increasing pedestrian safety and encouraging non-vehicular use of the Business District, has continually been a major goal for the Study.

Narberth Borough Council has reviewed the short and long term traffic calming recommendations and has endorsed the streetscape concepts which are included in this report. Borough Council is committed to continuing to work with Lower Merion Township toward the implementation of the recommendations. This continued cooperation can lead to many future worthwhile improvements in the Montgomery Avenue Business District, which is shared by the two municipalities. It is anticipated that through this cooperation, efforts to secure future funding to implement recommendations made in this Study, might be successful.

## **Appendices**

## **Appendix A: Narberth Business Survey**

<b>Business Name</b>	
<b>Business Address</b>	
<b>Business Contact (Name &amp; Phone #)</b>	
<b>Business Owner &amp; Phone # (if different from above)</b>	
<b>Date of Completion</b>	

**1. What type of business is this?**

\_\_\_\_\_

\_\_\_\_\_

**2. How many years have you been at this location?** \_\_\_\_\_

**3. Please circle one:**            **Owner-occupied Business**            **Renter-occupied Business**

**4. How many employees work here?**

Full Time \_\_\_\_\_ Part Time \_\_\_\_\_

**5. What are the days and hours of operation? If this is a seasonal business, please indicate dates open.**

\_\_\_\_\_

\_\_\_\_\_

**6. What is your business' peak period for customer or clients?**

Day of Week \_\_\_\_\_ Time of Day \_\_\_\_\_

**7. What are the parking needs for employees and patrons of your business?**

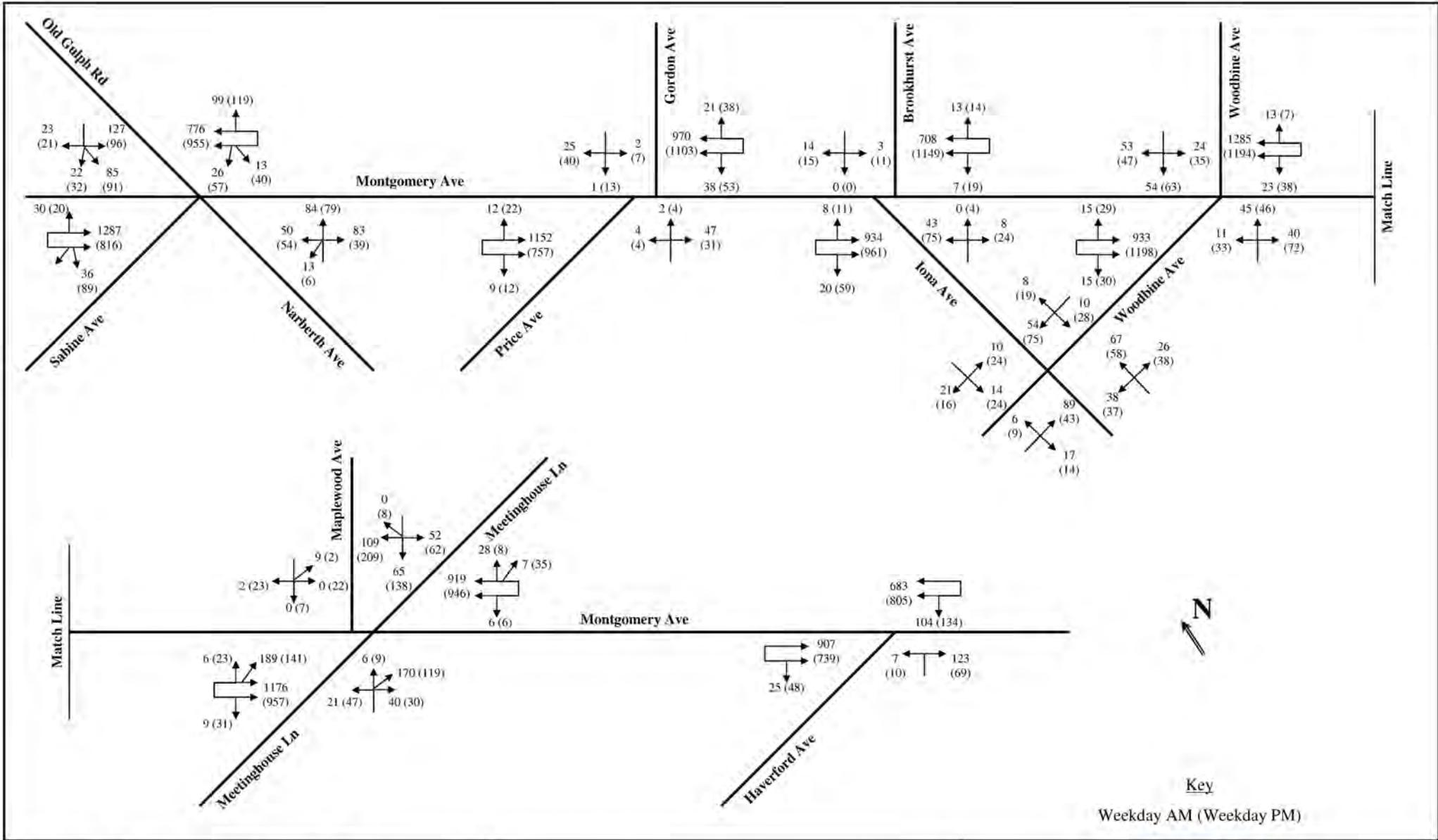
Employees \_\_\_\_\_ Patrons/Clients \_\_\_\_\_ Total \_\_\_\_\_

**8. How many parking spaces are you deficient (if any)?**

Employees \_\_\_\_\_ Patrons/Clients \_\_\_\_\_ Total \_\_\_\_\_



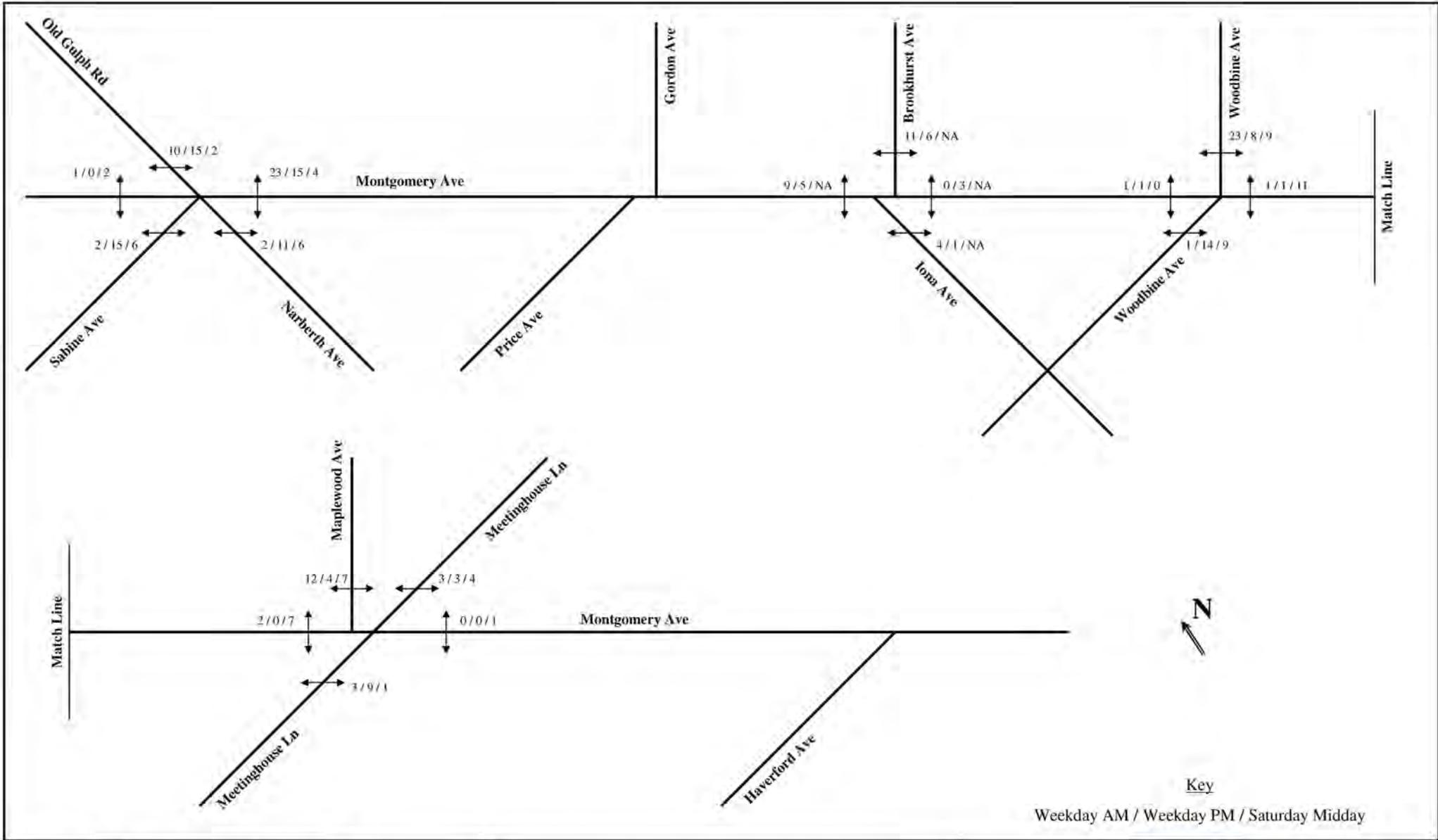
## **Appendix B: Existing Automobile and Pedestrian Traffic**



Montgomery Avenue Area  
Business District Study

2005 Existing Traffic Volumes





Montgomery Avenue Area  
Business District Study

2005 Existing Pedestrian Traffic



**Appendix C: Sidewalk Capacity**

## Montgomery Avenue Sidewalk Pedestrian Capacity Analysis

From Highway Capacity Manual (HCM) 2000, Chapter 18:

- $V_P = V_{15}/(15 \times W_E) = V_{60}/(60 \times W_E)$

Where:

$V_P$  = Pedestrian unit flow rate (p/min/ft)

$W_E$  = Effective walkway width (ft)

$V_{60}$  = Peak hourly flow rate

The maximum pedestrian volume (23 pedestrians) was recorded on the north side of Montgomery Avenue @ Woodbine Avenue during the AM peak hour.

$V_{60} = 23$  pedestrians

Assume  $W_E = 4$  ft

- $V_P = 23/(60 \times 4) = 0.1$  p/min/ft

From Exhibit 18-3 of HCM 2000 (see below):

- If  $V_P$  is less than or equal to 5, then the Level of Service (LOS) = A

EXHIBIT 18-3. AVERAGE FLOW LOS CRITERIA FOR WALKWAYS AND SIDEWALKS

LOS	Space (ft <sup>2</sup> /p)	Flow Rate (p/min/ft)	Speed (ft/s)	w/c Ratio
A	> 60	≤ 5	> 4.25	≤ 0.21
B	> 40-60	> 5-7	> 4.17-4.25	> 0.21-0.31
C	> 24-40	> 7-10	> 4.00-4.17	> 0.31-0.44
D	> 15-24	> 10-15	> 3.75-4.00	> 0.44-0.65
E	> 8-15	> 15-23	> 2.50-3.75	> 0.65-1.0
F	≤ 8	variable	≤ 2.50	variable

- $V_P = 0.1$ , which is less than 5. **Therefore the LOS of the sidewalk = A**

### Conclusion:

**Because the  $W_E$  along Montgomery Avenue is at least 4 ft and the maximum hourly pedestrian volume = 23, we can determine the LOS of all sidewalk segments along Montgomery Avenue in the study area = A.**

Assuming  $W_E = 4$  ft, the pedestrian volume would have to be greater than 1,200 pedestrians per hour for the LOS to be below A.

## **Appendix D: Intersection and Arterial Levels of Service**

**NARBERTH BOROUGH - MONTGOMERY AVE STUDY  
INTERSECTION LEVELS OF SERVICE AND DELAY**

Intersection	Existing Conditions		Existing lane configurations with optimized signal timing		Alternative I - Parking on eastbound Montgomery Ave		Alternative II - Parking on westbound Montgomery Ave		Alternative III - Center two way, left turn lane		Alternative IV - Left turn lanes on westbound Montgomery Ave		Alternative V - Center two way, left turn lane & parking on eb Montgomery	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Montgomery Ave and Old Gulph Rd/Narberth Ave/Sabine Ave														
Overall	C (21.5)	C (21.1)	C (28.3)	C (32.4)	C (30.0)	C (30.7)	C (30.4)	C (29.6)	C (30.4)	C (30.5)	C (31.0)	C (29.6)	C (30.6)	C (33.3)
Montgomery Ave and Gordon Ave/Price Ave														
Montgomery Ave eastbound left/through/right					A (1.0)	A (1.4)					A (1.3)	F (366.5)		
Montgomery Ave eastbound left/through	A (0.6)	A (1.3)	A (0.6)	A (1.3)			A (0.7)	F (563.5)						
Montgomery Ave eastbound left									B (11.6)	F (239.1)			B (12.2)	F (1032.3)
Montgomery Ave westbound left/through/right							A (2.9)	A (3.0)			A (2.8)	A (3.0)		
Montgomery Ave westbound left/through	A (2.1)	A (1.9)	A (2.1)	A (1.9)	A (2.1)	A (1.9)								
Montgomery Ave westbound left									B (12.1)	A (9.9)			B (12.4)	B (10.3)
Gordon Ave southbound	D (27.2)	<b>F (124.8)</b>	D (27.2)	F (126.3)	F (67.7)	F (249.4)	F (67.8)	F (>999.9)	D (30.8)	F (>999.9)	F (140.2)	F (>999.9)	E (39.3)	<b>F (1032.3)</b>
Price Ave northbound	E (35.9)	<b>E (45.4)</b>	E (35.8)	E (45.8)	F (69.6)	F (53.7)	F (301.8)	F (>999.9)	E (37.3)	F (>999.9)	F (222.1)	F (>999.9)	E (41.6)	<b>F (&gt;999.9)</b>
Montgomery Ave and Brookhurst Ave/Iona Ave														
Overall	A (5.3)	A (8.4)	A (3.6)	A (5.2)	A (5.3)	B (12.1)	A (5.3)	D (37.6)	A (5.7)	B (13.9)	A (9.3)	E (60.6)	A (6.8)	B (17.2)
Montgomery Ave and Woodbine Ave														
Overall	<b>B (18.1)</b>	<b>B (12.4)</b>	B (11.0)	B (12.3)	A (9.7)	D (53.8)	F (103.2)	F (96.2)	D (44.0)	D (51.3)	F (193.7)	F (248.7)	<b>F (94.6)</b>	<b>F (109.6)</b>
Montgomery Ave and Maplewood Ave/Meetinghouse Ln														
Overall	F (92.7)	F (161.8)	F (113.7)	F (99.4)	F (414.8)	F (353.2)	F (166.6)	F (186.4)	F (135.0)	F (145.0)	F (496.5)	F (450.3)	F (134.1)	F (116.0)
Montgomery Ave and Haverford Ave														
Montgomery Ave westbound left/through	A (5.1)	A (5.2)	A (5.1)	A (5.2)	A (5.1)	A (5.2)	A (4.4)	A (5.0)			A (4.4)	A (5.0)		
Montgomery Ave westbound left									B (11.3)	B (10.6)			B (11.8)	B (10.7)
Haverford Ave northbound	C (19.0)	C (19.7)	C (19.0)	C (19.7)	E (47.4)	D (29.2)	C (23.8)	D (30.9)	D (30.8)	C (22.2)	E (39.0)	D (33.0)	E (47.8)	C (24.7)
Woodbine Ave and Iona Ave														
Woodbine Ave eastbound	A (8.1)	A (7.9)	A (8.1)	A (7.9)	A (8.1)	A (7.9)	A (8.1)	A (7.9)	A (8.1)	A (7.9)	A (8.1)	A (7.9)	A (8.1)	A (7.9)
Woodbine Ave westbound	A (8.0)	A (8.3)	A (8.0)	A (8.3)	A (8.0)	A (8.3)	A (8.0)	A (8.3)	A (8.0)	A (8.3)	A (8.0)	A (8.3)	A (8.0)	A (8.3)
Iona Ave northbound	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)	A (8.3)
Iona Ave southbound	A (7.6)	A (7.9)	A (7.6)	A (7.9)	A (7.6)	A (7.9)	A (7.6)	A (7.9)	A (7.6)	A (7.9)	A (7.6)	A (7.9)	A (7.6)	A (7.9)
Arterial Level of Service														
Eastbound Montgomery	D	F	E	E	F	F	E	D	E	E	F	F	F	F
Westbound Montgomery	C	D	B	B	B	B	F	F	E	E	E	F	E	E

Notes:

- 1) Level of Service (Delay in seconds)
- 2) Pedestrian signal timings corrected for Existing lane configurations with optimized signal timing and Alternatives I through IV
- 3) Alternative V - Eliminated exclusive pedestrian phase from Old Gulph/Narberth/Sabine intersection, changed Maplewood Ave to one way northbound and re-routed traffic to Woodbine Ave.

## **Appendix E: Pedestrian Clearance Time Calculations**

Narberth Borough - Montgomery Avenue Business District Study  
Pedestrian Clearance Time Calculations

**Montgomery and Narberth/Old Gulph/Sabine**

<b>Street to Cross</b>	<b>Sw = Ped. Walking Speed (ft./sec.)</b>	<b>W = width of crosswalk from edge to edge (ft.)</b>	<b>L = distance from curb to center of far lane (ft.)</b>	<b>Required Tw = "Walk" Interval (sec.) = <math>(0.5*W)/Sw+3</math></b>	<b>Required Tpc = "Don't Walk" Interval (sec.) = <math>L/Sw</math></b>	<b>Required Tw+Tpc (sec.)</b>	<b>Existing Tw<sup>1</sup> (sec.)</b>	<b>Existing Tpc<sup>1</sup> (sec.)</b>	<b>Existing Tw+Tpc (sec.)</b>
Montgomery (North/South)	4	50	40	9	10	19	7	13	20
Old Gulph (East/West)	4	60	50	11	13	24			
Narberth (East/West)	4	45	35	9	9	18			
Sabine (East/West)	4	45	28	9	7	16			

**Notes:**

1) Existing pedestrian phasing is exclusive pedestrian interval upon actuation only.

**Conclusions:**

**Increase Walk interval to 11 sec.**