

## Appendix 2

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**TRAFFIC AND SAFETY REPORT****Westfall Road at Sawgrass Drive****(June 2002 traffic counts)**

This section of Westfall Road has peak hourly vehicle volumes of 485 AM approaching the intersection in the westbound direction, and 578 AM vehicles in the eastbound direction. Sawgrass Drive has 113 AM vehicles approaching in the northbound direction, and 68 AM approaching vehicles in the southbound direction. Details on the turning movements are included in the attached figures.

It is recommended to cross Westfall Road on the east side of Sawgrass Drive to reduce the crossing length. The east side crossing will cross a WB lane, an WB left turn lane and an EB lane. It would be necessary to cross an extra EB right turn lane if the crossing was on the west side of Sawgrass Drive.

Additional signage, pavement markings and crosswalk marker posts to create a pedestrian gateway are recommended. An engineering study of traffic conditions, pedestrian movements and physical characteristics of this location, should be performed to determine whether installation of a traffic control signal is justified. Future development and increased traffic volumes on Westfall Road and Sawgrass Drive may warrant the installation of a traffic signal. A traffic signal with pedestrian signals will assist and provide additional safety for pedestrians and non-motorized traffic crossing Westfall Road. The installation of a traffic/pedestrian signal will eliminate the need for a median refuge or curb bump-outs.

If the County makes improvements on Westfall Road, a count down pedestrian head or roving/animated eyes are recommended. If no county improvements are anticipated, the minimum of pedestrian crossing signs (MUTCD W5-1 and/or W5-2) and pavement markings for a crosswalk are recommended. High pedestrian volumes may warrant flashing overhead caution lights or in-pavement crosswalk signals. The guidelines in the MUTCD Part 235, Chapter V would be consulted for proper sign design.

**Elmwood Avenue at Goodman Street****(January 1999 traffic counts)**

The traffic volumes on Elmwood Avenue at Goodman Street show 1140 AM (484 PM) peak hourly vehicles in the westbound direction, and 492 AM (1283 PM) vehicles in the eastbound direction. Goodman Street has 270 AM (206 PM) southbound vehicles. Details on the turning movements are included in the attached figures.

It is proposed to cross Elmwood Avenue on the east side of Goodman Street and continue the trail northbound on the east side of Goodman Street. This location would cross 2 eastbound travel lanes, a center median (1 lane wide) and 2 westbound lanes. The southbound trail on the west side of Goodman Street will cross Goodman Street at the sidewalk and then cross Elmwood Avenue east of the intersection.

Additional signage, pavement markings and crosswalk marker posts to create a pedestrian/trail gateway are recommended. An engineering study of traffic conditions, pedestrian movements and physical characteristics of this location should be performed to determine whether installation of a traffic control signal is justified. Future development and increased traffic and pedestrian volumes on Elmwood Avenue and Goodman Street may warrant the installation of a traffic signal. A traffic signal with pedestrian signals and the existing raised median east of the intersection will assist and provide additional safety for pedestrians and non-motorized traffic crossing Westfall Road.

Specific recommendations for this intersection are the same as those for Westfall & Sawgrass). Note the W5-1 sign should not be used in advance of crossings where traffic is controlled by traffic control signals.

### **Goodman Street at Highland Avenue (June 1994 traffic counts)**

There are single approaching northbound and southbound lanes on Goodman Street that have peak hourly volumes of 96 AM (334 PM) approaching the intersection in the northbound direction, and 396 AM (352 PM) approaching in the southbound direction. Highland Avenue has 172 AM (522 PM) vehicles approaching in the eastbound, and 487 AM (208 PM) approaching in the westbound direction. Details on the turning movements are included in the attached figures.

Highland Avenue is widened in the eastbound and westbound direction to provide 2 vehicle lanes at the intersection. The desired crossing would be to cross Goodman Street south of the intersection and then cross Highland Avenue west of the intersection. These crossings would have the least amount of vehicle conflicts compared with crossing Highland east of the intersection and Goodman Street north of the intersection.

The existing traffic signal could be used with timing modifications and possible additional pedestrian signals to cross the intersections safely. Specifically, the pedestrian signal heads could be modified with count down or roving/animated eyes

and install accessible push buttons at a minimum. Additional signage, pavement markings and crosswalk marker posts to create a pedestrian/trail gateway are recommended.

See Figure 1 for the typical Bicycle and Automobile movements at intersections.

### **Goodman Street at Pinetum Road**

This intersection was reviewed as an alternative route to travel between Goodman Street and South Avenue. Traffic counts at this intersection were not available. Rockingham Street was the closest intersection north of Pinetum Road and Highland Avenue was the closest intersection south of Pinetum Road where traffic counts were available. For the AM peak there were 486 (450 PM) peak hourly vehicles that departed in the southbound direction south of Rockingham Street. The northbound traffic approaching Rockingham Street was 245 AM (452 PM) both counts were taken in September 1997. Turning movements were not available at the Pinetum Road intersection. Pinetum Road is located on the west side on Goodman Street between Highland Avenue and Rockingham Street. The approximate vertical grade on Goodman Street is +3.6% approaching Pinetum from the south (traveling northbound). The grade on Pinetum from the intersection at Goodman Street is estimated at +4.5%. Record road plans for Pinetum Road could not be located. There is also a horizontal road curve on Goodman Street at Pinetum Road. Record road information on Goodman Street did not indicate the actual degree of curvature for this section. The horizontal and vertical constraints at this intersection present a safety concern (limited sight distance) for a trail in both the northbound and southbound direction. The steep grade on Pinetum Road would present difficulty for wheelchairs and bicyclists traveling in both eastbound and westbound directions.

From the information that was available and reviewed in the field, in our opinion, the Goodman/Highland intersection would be safer than the Goodman/Pinetum due to the steep grades at Pinetum, poor sight distance, unsignalized intersection and the amount of disturbance necessary to construct a proper lane width to accommodate bicycles from Highland to Pinetum Road.

### **Highland Avenue at South Avenue** (July 2002 counts)

There are currently two (2) lanes approaching the intersection in the northbound and southbound direction along South Avenue. There are 453 AM (647 PM) approaching peak hourly vehicles in the northbound direction, and 549 AM (626 PM) approaching peak hourly vehicles in the southbound direction along South Avenue. Highland Avenue has 96 AM (176 PM) approaching peak hourly vehicles in the eastbound

direction, and 432 AM (239 PM) approaching peak hourly vehicles in the westbound direction. Details on the turning movements are included in the attached figures.

The existing traffic signal could be used with timing modifications and possible additional pedestrian signals to cross the intersections safely. Specifically, the pedestrian signal heads could be modified with count down or roving/animated eyes and install accessible push buttons at a minimum. Additional signage, pavement markings and crosswalk marker posts to create a pedestrian/trail gateway are recommended. Creating isolated curb bump-outs are not recommended at the South Avenue and Highland Avenue intersection. Crosswalks are evident on all four road crossings and could be augmented with additional pedestrian signal notification to safely cross South Avenue and Highland Avenue. Modifications to the pavement markings, pedestrian signals, and traffic signal timing (extending the pedestrian green time, if necessary) could make the intersection safer for pedestrians and bicycles.

One option that should be reviewed would be to transition the 2 travel lanes in the northbound direction to a single lane north of Highland (currently transitions north of Reservoir Road) and continue this to Robinson where the travel lane is reduced to one lane now. This would create a 14-foot travel lane and a 6-foot wide trail on South Avenue north of Highland. The same pavement configuration would be used in the southbound direction on South Avenue where the existing one travel lane would be extended from Robinson to Highland Avenue. Further investigation to design a "Right Lane Becomes Right-Turn-Only Lane" as indicated on the attached Figure A should be considered.

The route along Highland Avenue is recommended over Pinetum Road due to safety and accessibility concerns. Providing a proposed trail in both the eastbound and westbound direction is recommended. The existing 36 feet of pavement will accommodate 2-12 foot travel lanes and 2-6 foot trails.

### **South Avenue at Robinson Drive (September 1990 counts)**

Vehicle traffic data was not available at the South Avenue/Robinson Drive intersection. Reservoir Road is the closest intersection where counts were available from 09/13/1990. The northbound peak hourly traffic volume on South Avenue at Robinson Drive is estimated at 768 AM (737 PM). The southbound peak hourly traffic volume on South Avenue at Robinson Drive is estimated at 595 AM and (832 PM). Robinson Drive is a two-way street that runs between Mt. Hope Avenue and South Avenue. There are no residential homes on this road. Parking is probably used during events at the park, but would probably not be utilized year round to any great extent. Although a wider road section to accommodate two lanes of bicycle

traffic may be desirable at some time in the future, it is not recommended due to the parkland and historic characteristics along this road.

Trail users traveling northbound on South Avenue turning left onto Robinson Drive should be assisted with a separate left turn lane, or a crosswalk. A left turn lane could be established within the existing curbs by restricting parking on the east side of South Avenue south of Robinson Drive. Traffic continuing north on South Avenue past Robinson Drive are directed to a single through lane and a curb side parking lane. The attached Figure B illustrates a proposed re-striping of the South Avenue/Robinson Drive intersection.

An engineering study of traffic conditions, pedestrian movements and physical characteristics at this location, should be performed to determine whether installation of a traffic control signal is justified. Currently there are no crosswalks on South Avenue at this location, crosswalks exist on Robinson Drive and Alpine Street.

One alternative that should be considered would be to design a left turn lane and crosswalk on South Avenue. High pedestrian volumes may warrant flashing overhead caution lights or in-pavement crosswalk signals. Further field investigation noted that parking is now restricted on both sides of South Avenue between Robinson and Highland.

#### **Mt. Hope at McLean Street (January 1989 counts)**

The latest traffic counts available for the Mt. Hope Ave/McLean Street was recorded in 1989. These counts do not reflect the volumes after McLean Street was designated as one way westbound. The volumes on Mt. Hope northbound, approaching the intersection were 954 AM (919 PM) vehicles. The southbound approaching vehicles were 919 AM and (1275 PM). McLean Street volumes showed 51 AM (18 PM) turning left from Mt. Hope and 121 AM (103 PM) turning right from Mt. Hope. Details on the turning movements are included in the attached figures.

Additional signage, pavement markings and crosswalk marker posts to create a pedestrian gateway are recommended. An engineering study of traffic conditions, pedestrian movements and physical characteristics of this location should be performed to determine whether installation of a traffic control signal is justified. Future development and increased traffic volumes on Mt. Hope Avenue and McLean Street may warrant the installation of a traffic signal. We suggest adding a crosswalk on Mt. Hope as there is already a left turn lane on Mt. Hope. High pedestrian volumes may warrant flashing overhead caution lights or in-pavement crosswalk signals.

A contra-flow trail lane could be established on McLean Street within the 19 feet of existing pavement. A 14-foot travel lane and 5-foot contra-flow to a 12-foot travel with a 7-foot contra flow lane would be the options available. Additional delineation between the travel lane and contra flow lane would be needed.

### **New Products**

New products as indicated in the attached product catalog that includes: crosswalk marker posts, “Briteside” reflective panels, in-pavement flashing markers, snowplowable markers, etc. would need the road owner/agency approval before use.

### **Figures**

The following figures (figures 1 through 5) indicate typical bicycle and automobile movements at intersections along with different scenarios of typical sections for pedestrians and bicyclists facilities. Conversions between metric and English units are as follows:

1.2 meter	=	4 feet
1.5 meter	=	5 feet
2.1 meter	=	7 feet
3.6 meter	=	12 feet
4.2 meter	=	13.5 feet
4.3 meter	=	14 feet
6.6 meter	=	21.6 feet

### FACILITIES FOR PEDESTRIANS AND BICYCLISTS

#### Typical Bicycle and Automobile Movements at Intersections

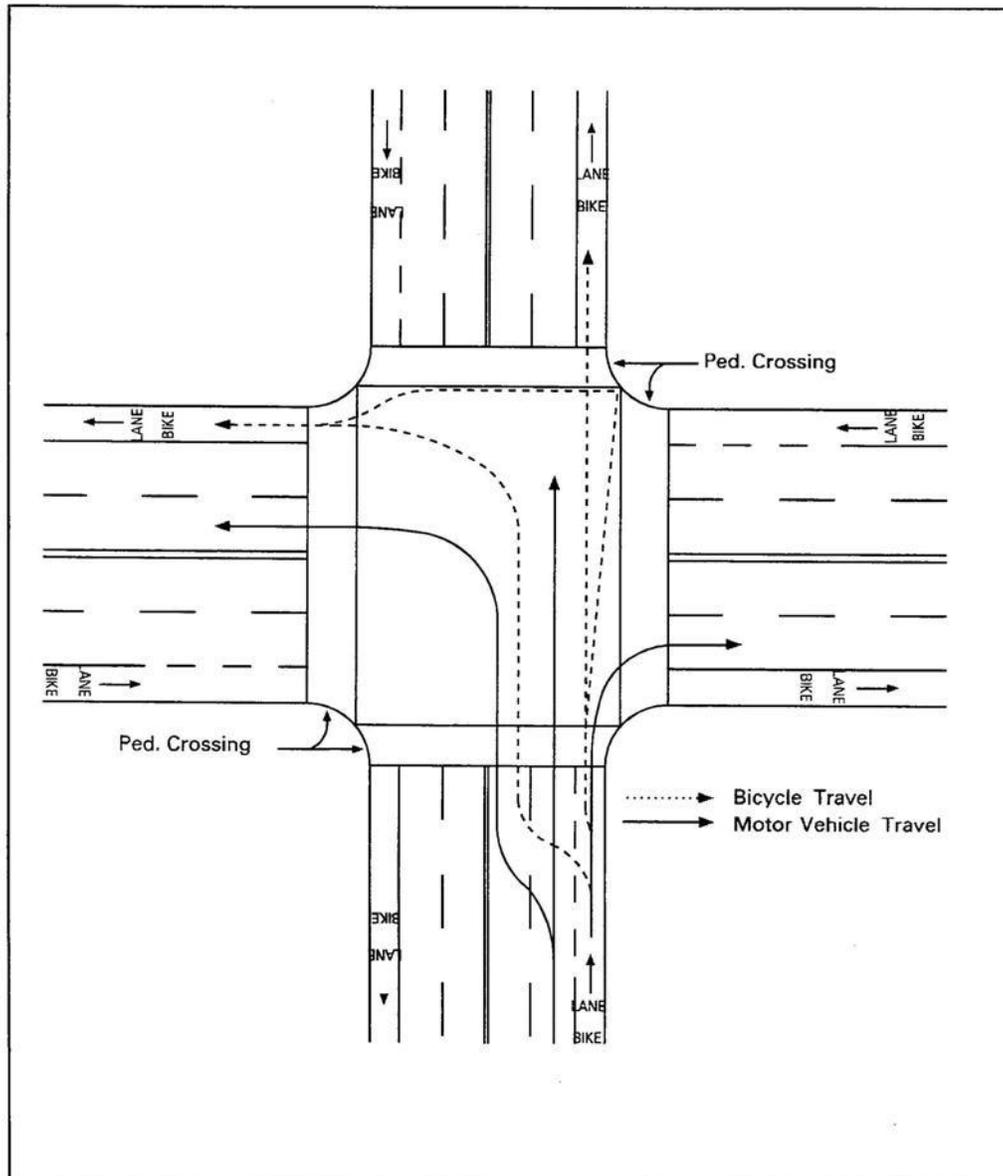


Figure 1

FACILITIES FOR PEDESTRIANS AND BICYCLISTS

Wide Curb Lane

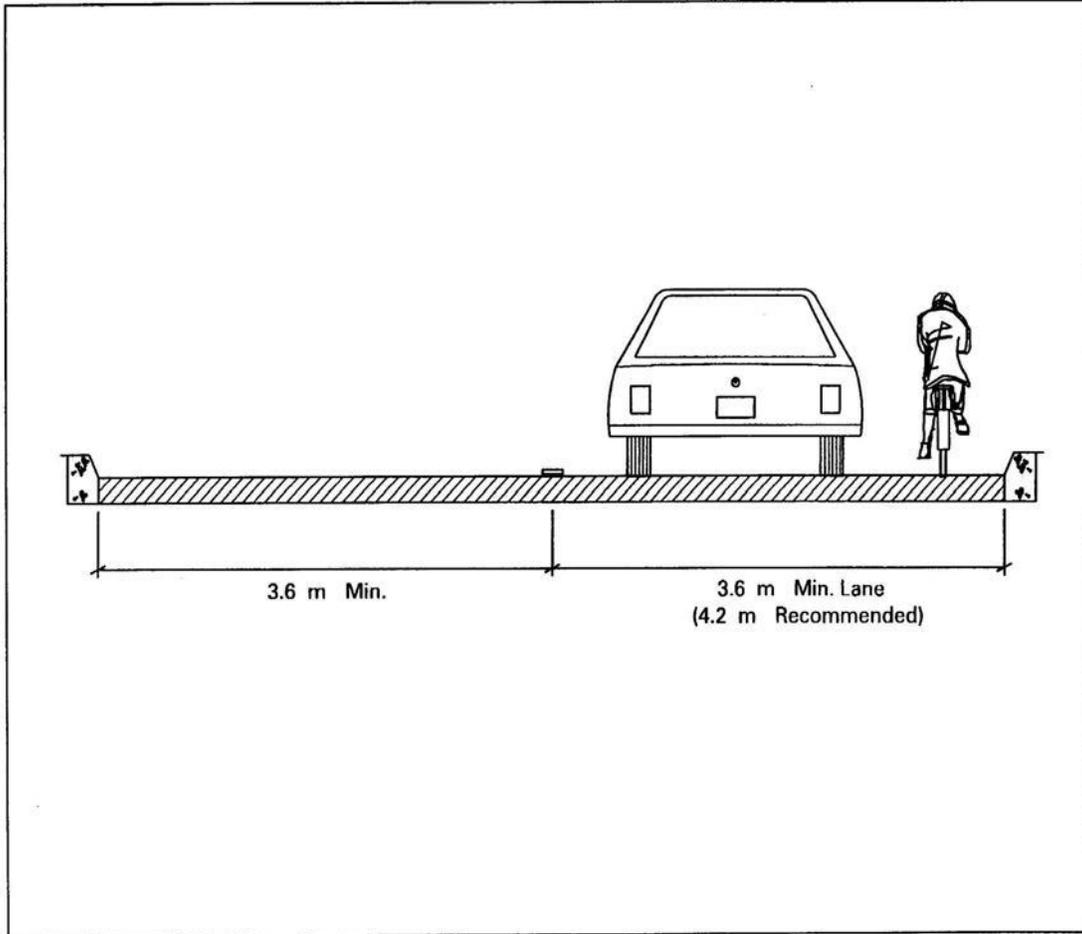


Figure 2

FACILITIES FOR PEDESTRIANS AND BICYCLISTS

Wide Curb Lane with On-Street Parking

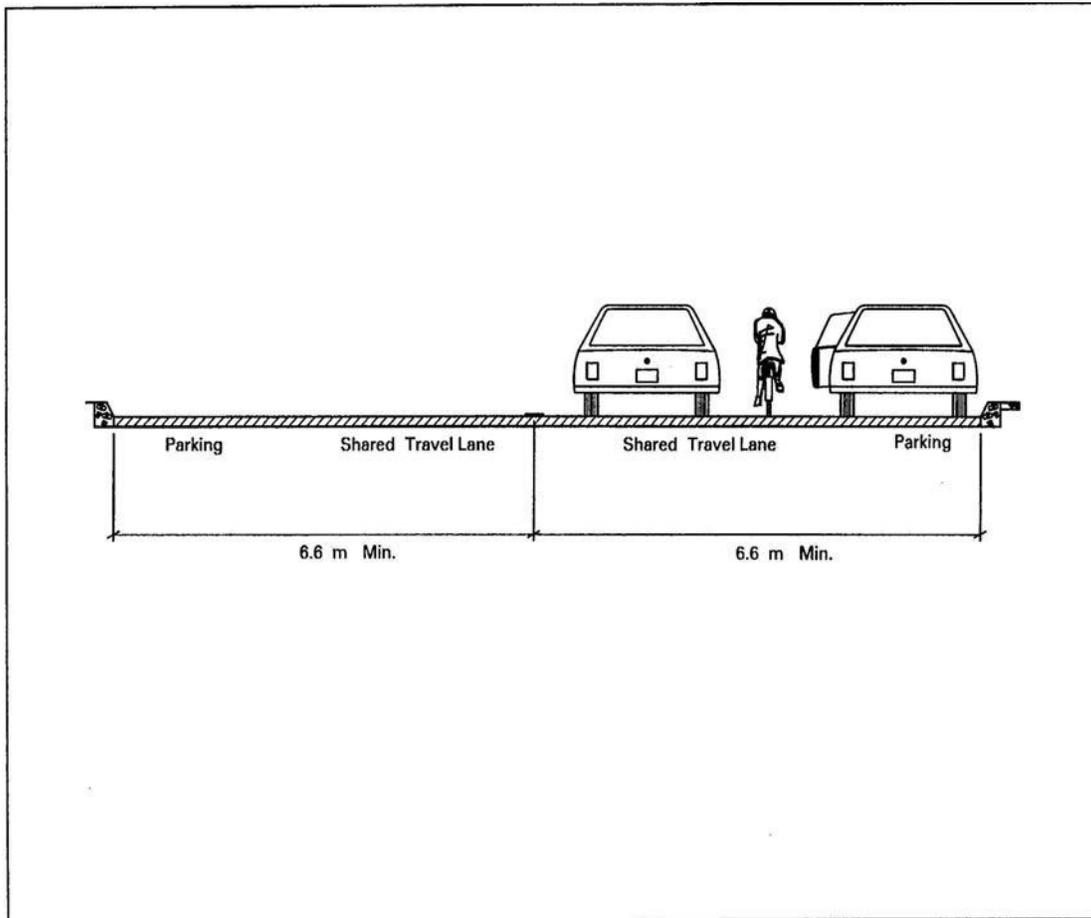


Figure 3

FACILITIES FOR PEDESTRIANS AND BICYCLISTS

Bicycle Lane (Two-way street, without parking)

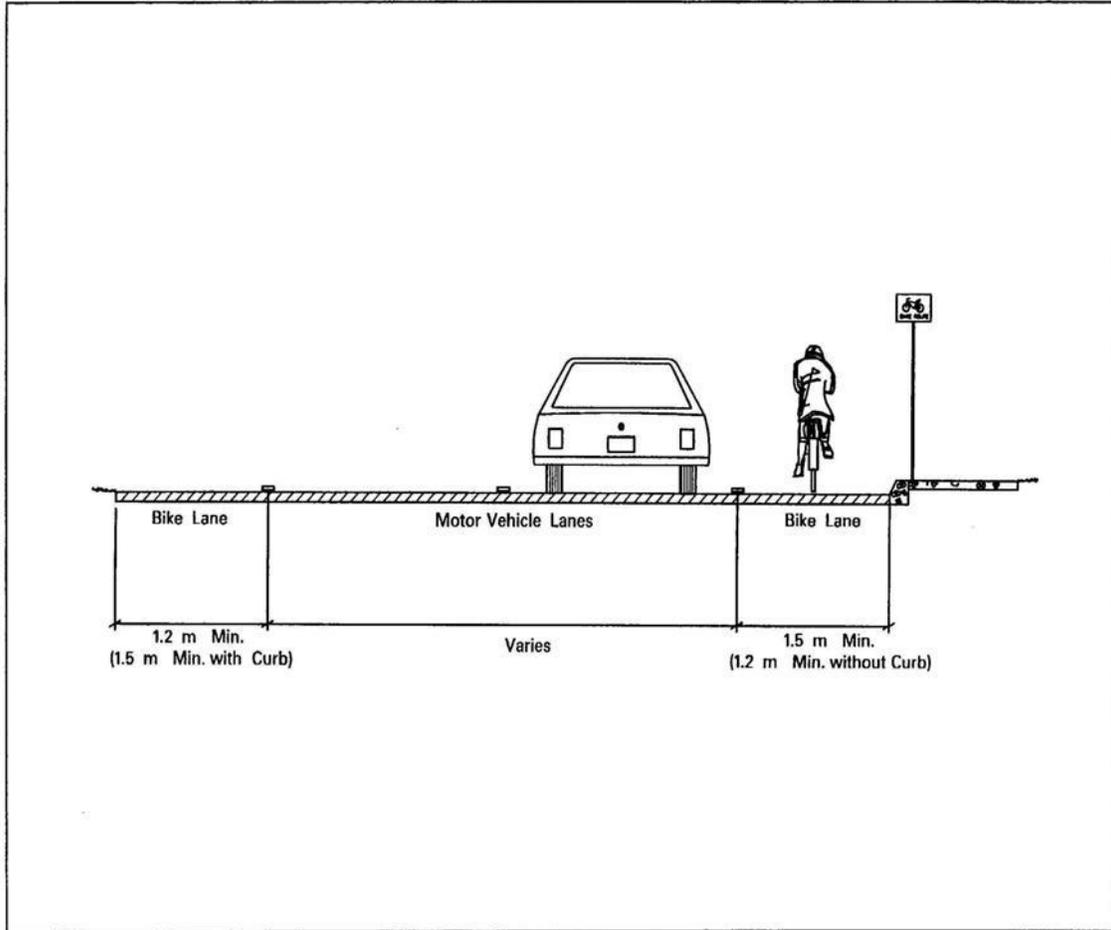


Figure 4

FACILITIES FOR PEDESTRIANS AND BICYCLISTS

Bicycle Lane (Two-way street with on-street parking)

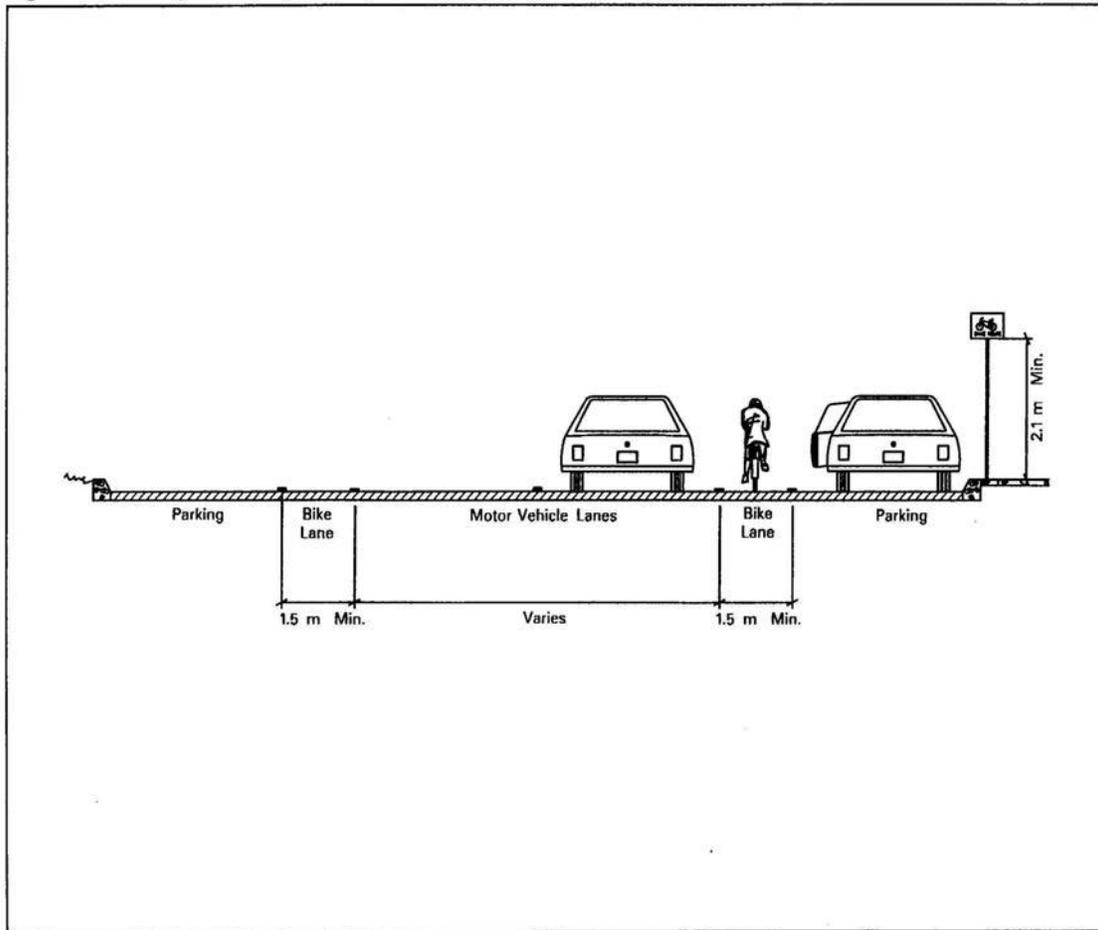


Figure 5



2230 PENFIELD ROAD  
 PENFIELD, NEW YORK 14526  
 TEL: 585.377.1450  
 FAX: 585.377.1266

**SOUTH AVE. /  
 HIGHLAND AVENUE  
 INTERSECTION**

**CANALWAY / HIGHLAND  
 PARK CONNECTOR TRAIL  
 TRAFFIC STUDY**

DATE: JUNE 2004

SCALE: 1" = 40'

DRAWN : DS CHECKED: DT

FIGURE 'B'



2230 PENFIELD ROAD  
 PENFIELD, NEW YORK 14526  
 TEL: 585.377.1450  
 FAX: 585.377.1266

**SOUTH AVE. /  
 ROBINSON DRIVE  
 INTERSECTION**

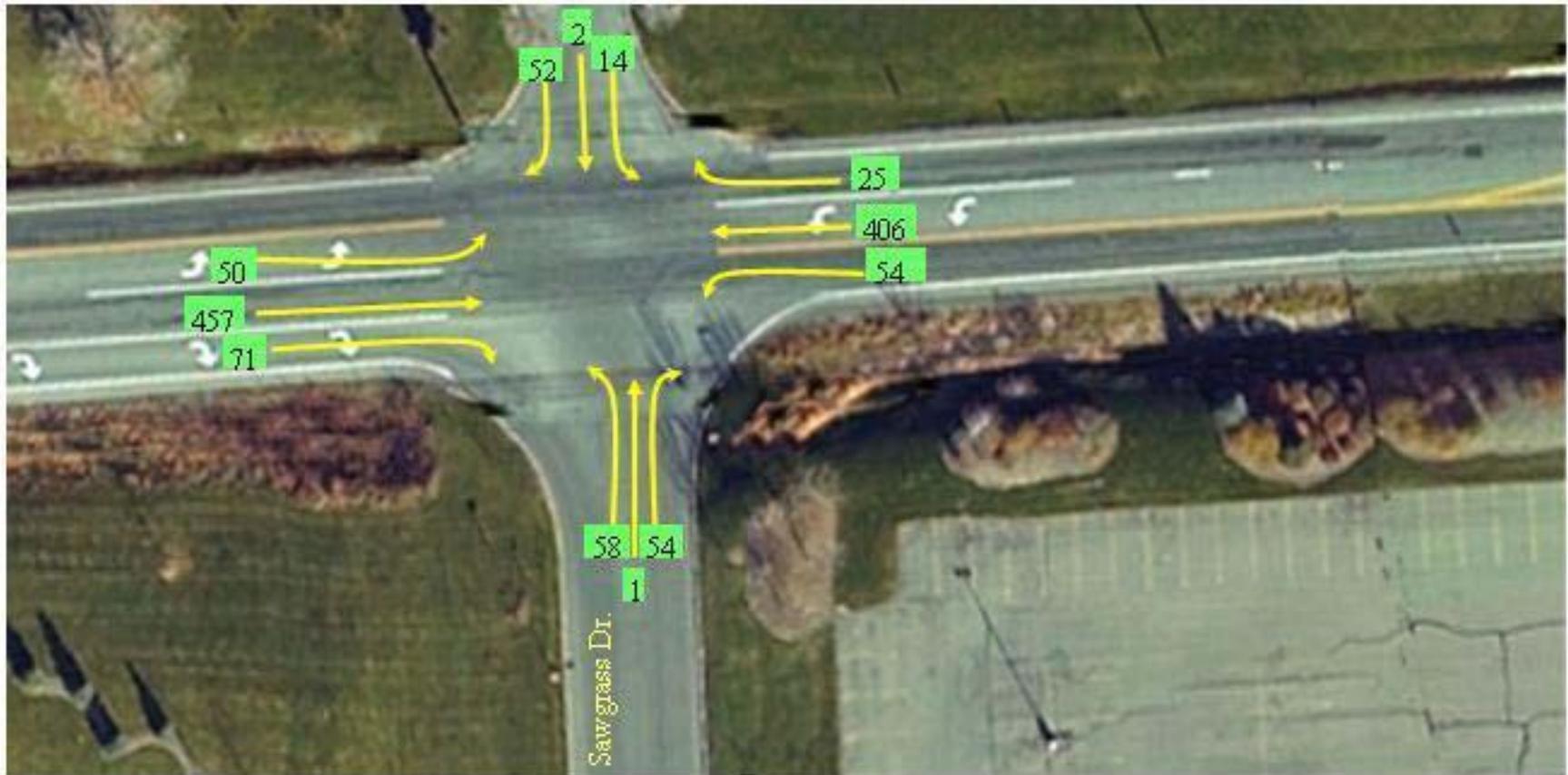
**CANALWAY / HIGHLAND  
 PARK CONNECTOR TRAIL  
 TRAFFIC STUDY**

DATE: JUNE 2004 (REV: 10/04)

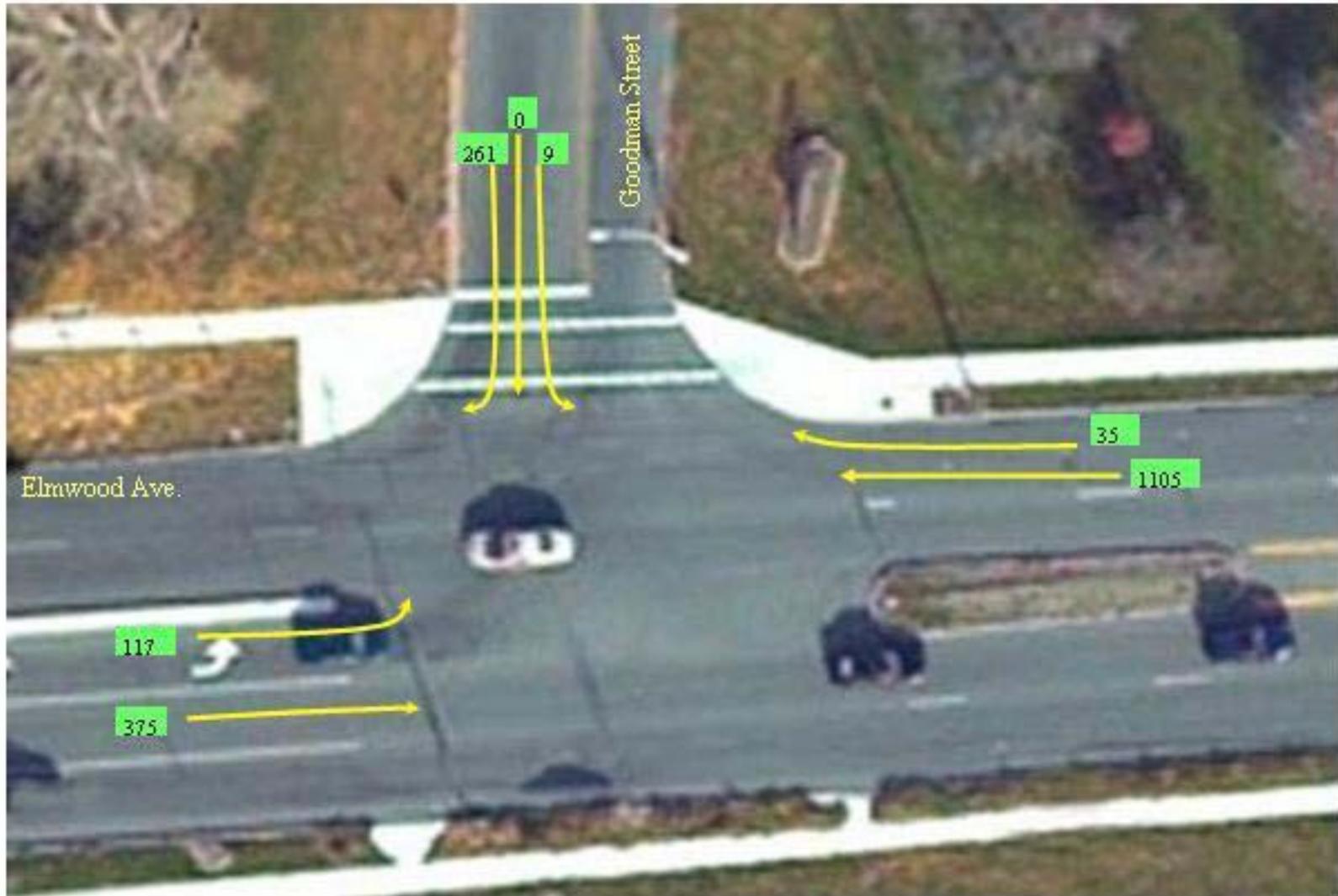
SCALE: 1" = 40'

DRAWN : DS CHECKED: DT

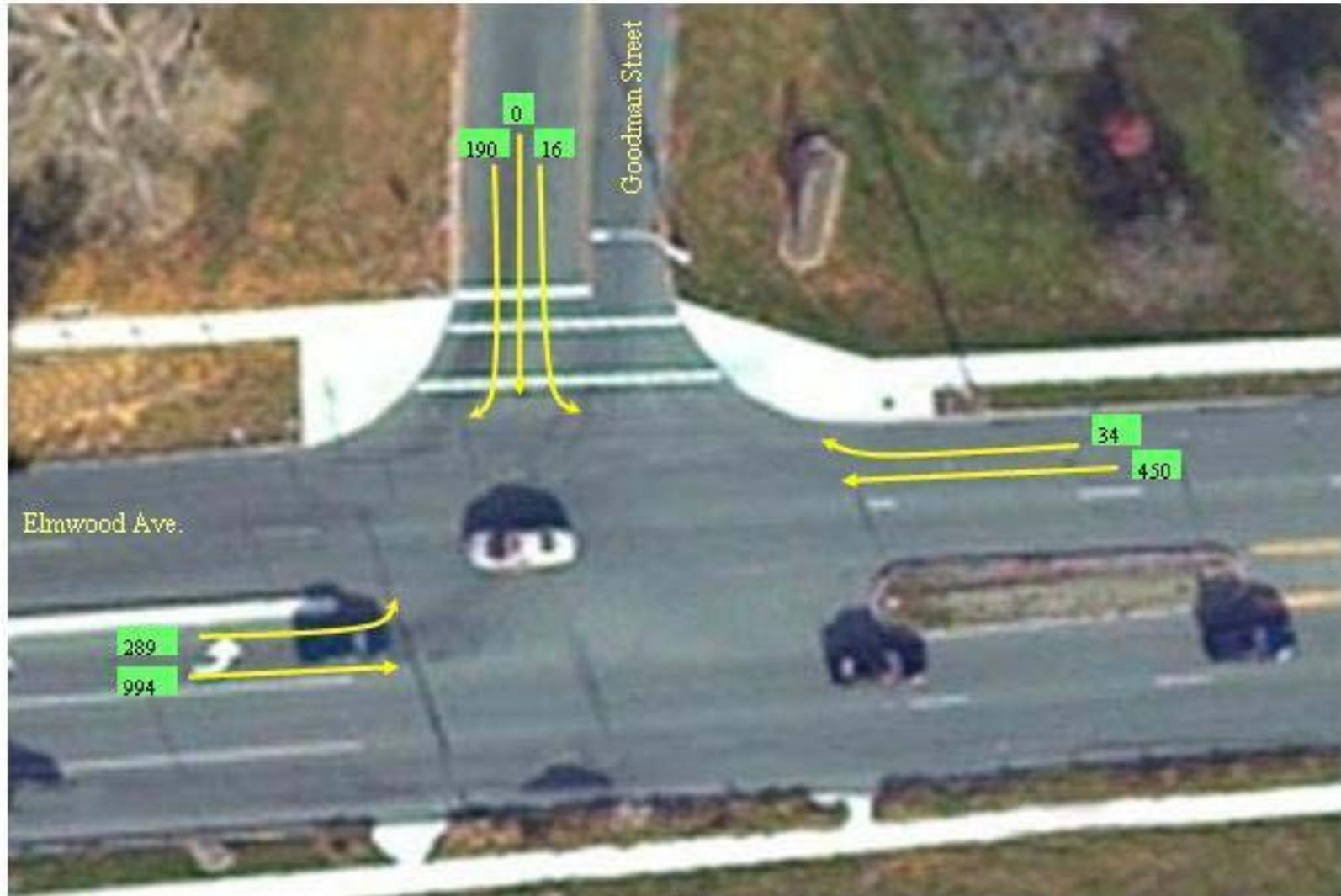
FIGURE 'B'



Westfall Road and Sawgrass Drive  
 AM Peak Traffic Volumes  
 June 13, 2002



Goodman Street and Elmwood Avenue  
 AM Peak Traffic Volumes  
 January 5, 1999



Goodman Street and Elmwood Avenue  
 PM Peak Traffic Volumes  
 January 5, 1999



Highland Avenue and Goodman Street  
 AM Peak Traffic Volumes  
 June 21, 1994



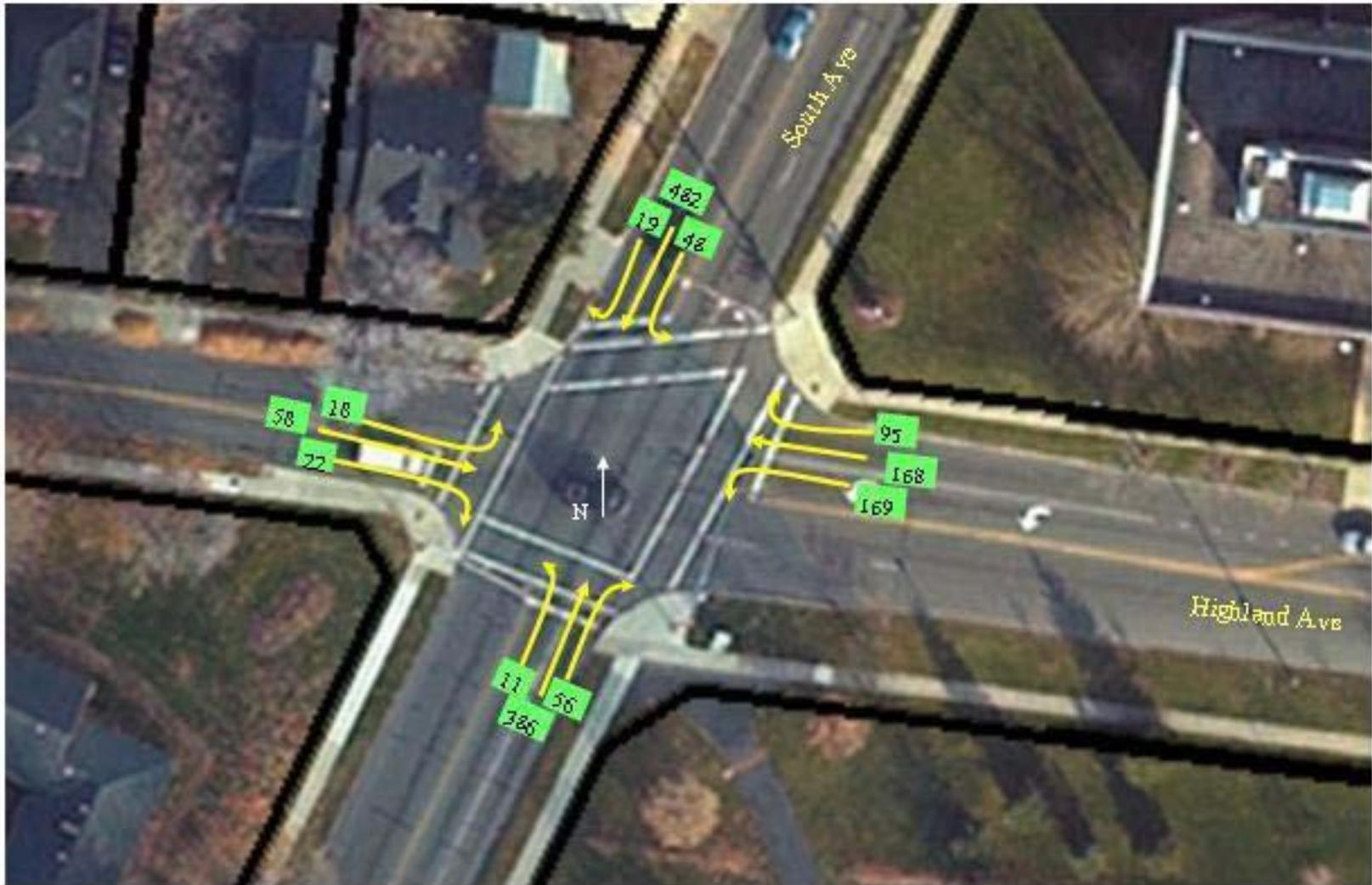
Highland Avenue and Goodman Street  
 PM Peak Traffic Volumes  
 June 21, 1994



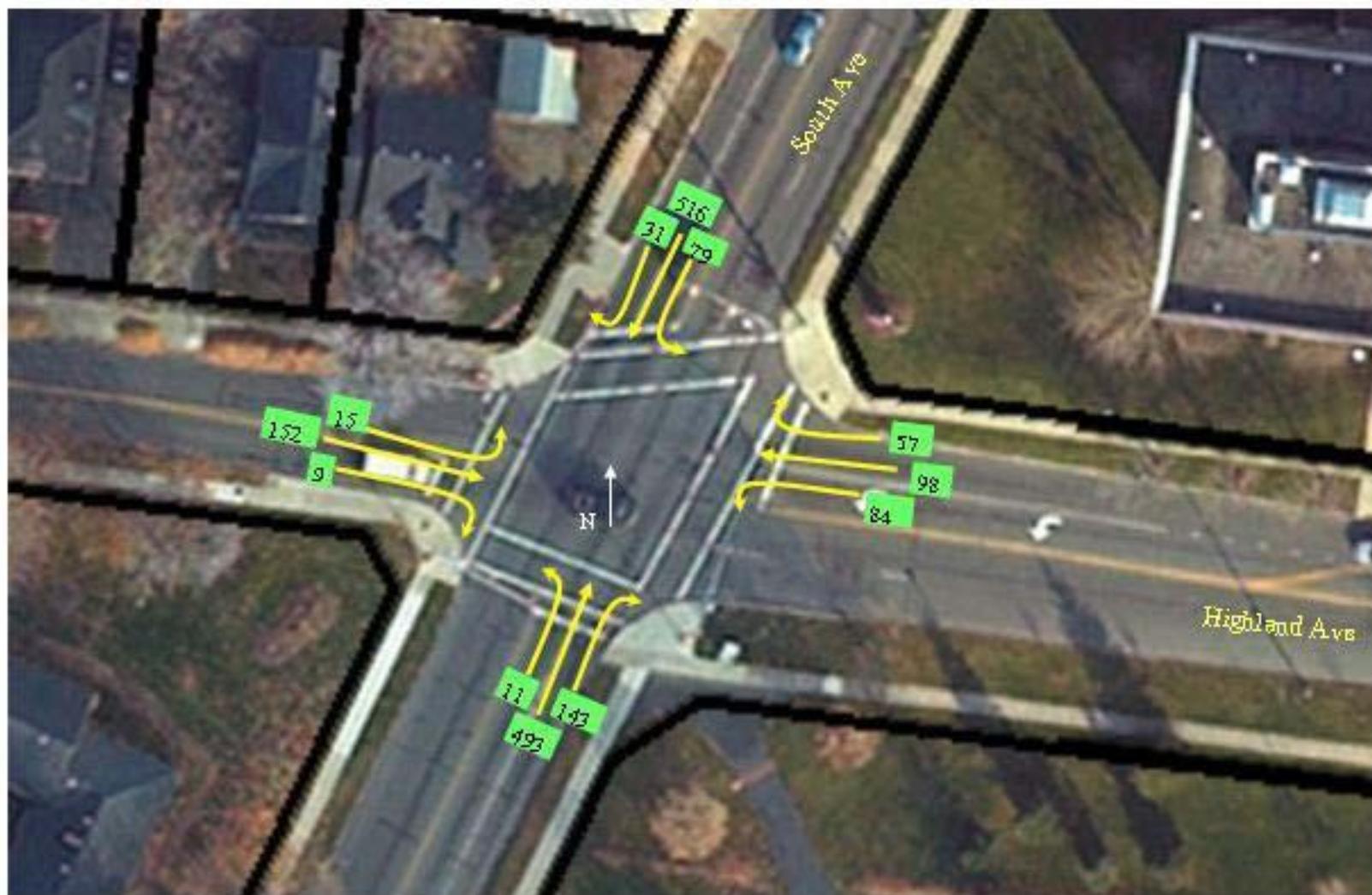
**Goodman Street and Pinetum Street  
AM Peak Traffic Volumes  
September 25, 1997**



Goodman Street and Pinetum Street  
PM Peak Traffic Volumes  
September 25, 1997



Highland Avenue & South Avenue  
 AM Peak Traffic Volumes  
 July 16, 2002



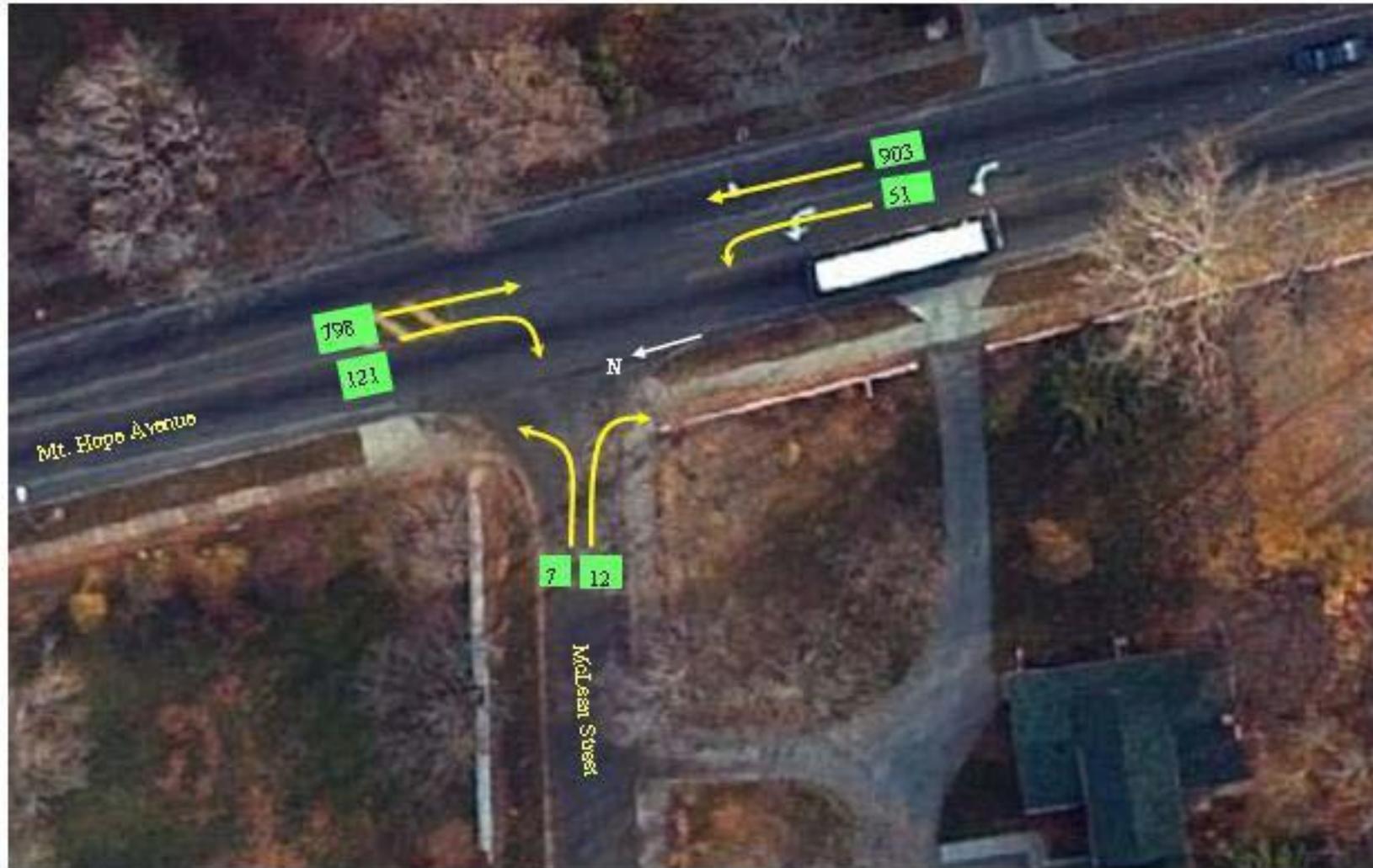
Highland Avenue & South Avenue  
 PM Peak Traffic Volumes  
 July 16, 2002



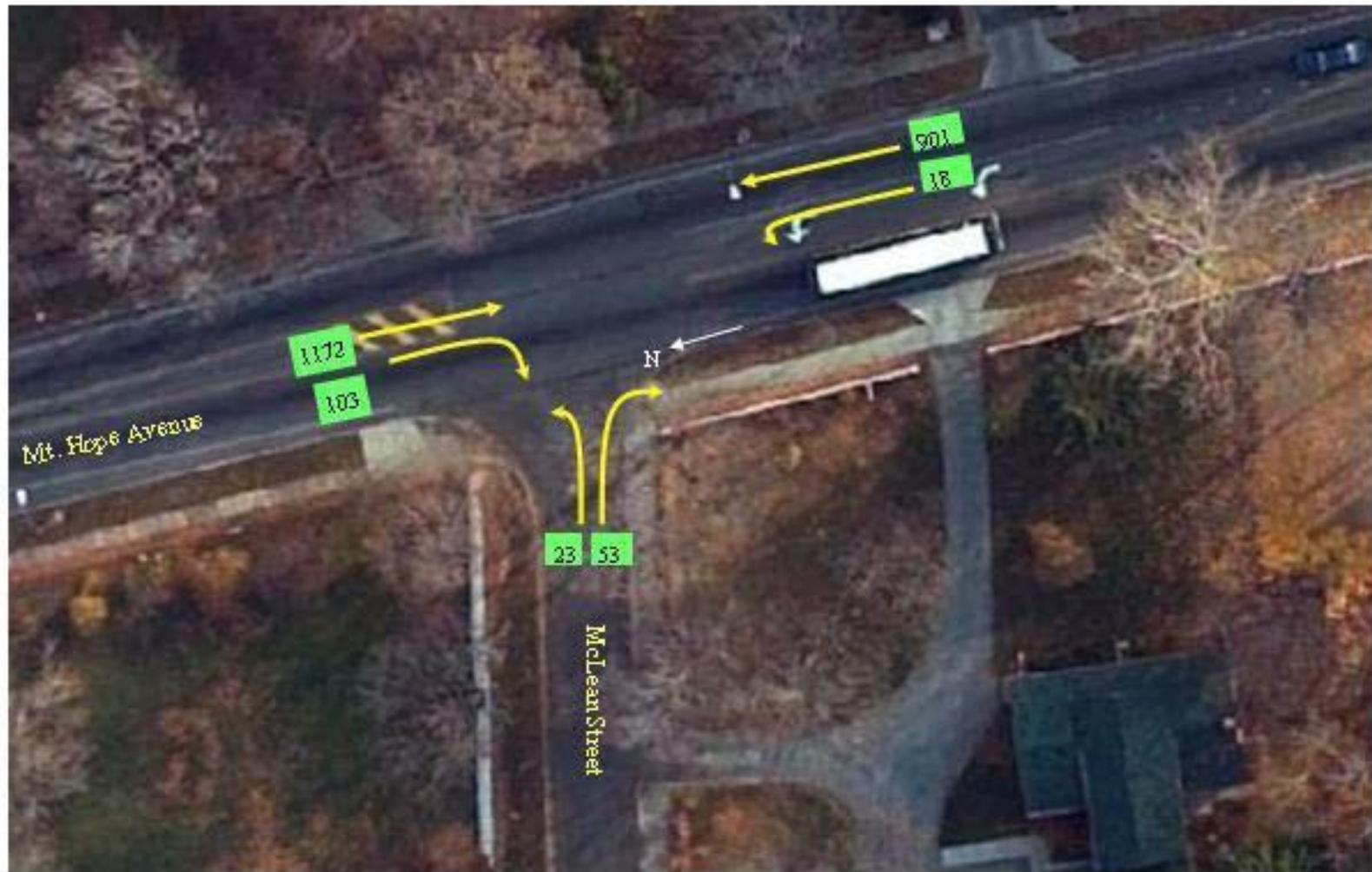
South Avenue at Robinson Drive and Alpine Street  
AM Peak Traffic Volumes  
September 13, 1990



South Avenue at Robinson Drive and Alpine Street  
PM Peak Traffic Volumes  
September 13, 1990



Mt. Hope and McLean Street  
AM Peak Hour Traffic Volumes  
January 31, 1989



Mt. Hope and McLean Street  
PM Peak Hour Traffic Volumes  
January 31, 1989