

TRAFFIC STUDY & STRATEGY for the Mid-Island Area

Town of Nantucket, Massachusetts



Submitted to:

Nantucket Planning & Economic Development Commission
One East Chestnut Street
Nantucket, MA 02554

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TRAFFIC STUDY

Mid-Island Area Nantucket, Massachusetts

Prepared for:

Nantucket Planning and Economic Development Commission
4 North Water Street
Nantucket, Massachusetts 02554

July 2005

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EXECUTIVE SUMMARY

This traffic study has been prepared to quantify and evaluate the recommendations of the 2003 Mid-Island Area Plan, based on actual field evaluation, traffic counts and engineering standards. This study includes data collection efforts, field studies, accident analysis and capacity analysis, as well as the conceptual design of potential improvement alternatives. The study area intersections and the type of assessment to be performed were developed in consultation with Town of Nantucket officials, with the primary focus to improve safety and congestion in the study area.

Traffic Volumes

The traffic study area consists of eighteen locations along the following roadways: Milestone Road, Orange Street, Pleasant Street, Surfside Road, Sparks Avenue, and Old South Road (see Figure 1). Existing conditions within the study area were developed by conducting traffic counts between June and August 2004; researching accident history, evaluating the Nantucket Regional Transit Authority (NRTA) services and existing bikeways; and inventorying existing parking areas, roadways, intersections and traffic controls. Traffic counts were collected during the peak season weekday AM peak period (7:00 to 10:00 AM), weekday PM peak period (3:00 to 6:00 PM) and the Saturday midday peak period (11:00 AM to 2:00 PM) at the study area locations where quantitative analyses were performed.

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Accidents

The accident history at the study area locations was researched from the files of the Nantucket Police Department for the period between 2000 and 2003. This information revealed that the following six study area locations experienced higher than the district-wide and/or statewide average for unsignalized intersection (from highest to lowest accident rate).

- Pleasant Street at York Street and Atlantic Avenue (Five Corners)
- Pleasant Street at Williams Lane
- Milestone Road at Polpis Road
- Surfside Road at Fairgrounds Road
- Surfside Road at Miacomet Avenue
- Old South Road at Fairgrounds Road

In addition, the Milestone Rotary experienced the highest number of accidents over the evaluated four-year period, on average approximately 6 accidents per year.

Parking Analysis

Parking counts were collected during the peak season weekday PM peak period (3:00 to 6:00 PM) and the Saturday midday peak period (10:00 AM to 2:00 PM) at businesses and restaurants located in the central area of the Mid-Island area (see Figure 5).

Based on the parking data, there were several parking areas that experienced at or near capacity situations during one or both of the time periods studied. These parking areas included businesses on West Creek Road, such as On-Glaze Salon, Kitty Murtaghs, Nantucket Bagel and Lucky Express and businesses along Pleasant Street, such as Trattoria, the Stop & Shop, Hen House, Bamboo and the Post Office. Conversely, the Sanford parking lot, with the exception of the Sea Grill Restaurant/Photo Express parking area, experienced very low utilization rates.

Transit Services

The Nantucket Regional Transit Authority (NRTA) provides seasonal, island wide transportation, operating nine routes with 13 buses. Available NRTA historical data for the above nine bus routes were researched to determine frequency, usage and ridership. This information revealed as service increased, ridership, in general, is increased, indicating a demand for transit service.

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Bikeways

The island of Nantucket has over 24 miles of bicycle paths comprised of six designated bicycle routes. These include the Surfside Road Bicycle Path, the Madaket Road Bicycle Path, the Milestone/Sconset Road Bicycle Path, the Cliff Road Bicycle Path, the Polpis Road Bicycle Path and the Eel Point Bicycle Path. These bicycle paths provide convenient access to many destinations/areas of the island, are generally separated from the adjacent roadways, 8 feet wide and in good condition. There are also informally designated bicycle paths along roadways such as Bartlett Road, Nobadeer Farm Road and Old South Road. (See Figure 12).

While there is a bicycle path located on the west side of Surfside Road, it ends abruptly at Vesper Lane and does not provide any further guidance to bicyclists. There is currently no connecting bike path from the Surfside Bicycle Path to the Milestone/Sconset Road Bicycle Path or a bicycle path into the Downtown area.

Future Conditions

Future conditions were derived by projecting existing volumes by ten years to 2014 for design purposes. The future peak-hour traffic volumes were developed by applying a 3.0 percent compounded annual growth rate to the existing volumes. In addition, based on discussions with Town of Nantucket officials, intersection improvements to provide a single lane roundabout at the intersection of Sparks Avenue at Pleasant Street and Hooper Farm Road are proposed under a separate study. This traffic study evaluated the impacts on the proposed roundabout design at this intersection under improvement scenarios, i.e. the Pleasant Street one-way alternative.

Findings/Recommendations

Improvement measures for existing geometric and/or safety deficiencies and future deficiencies resulting from traffic growth related to background traffic were identified, as follows:

Pleasant Street Corridor

- The Mid-Island Area Plan recommended studying the potential for providing one-way westbound travel and developing a “Main Street” feel to Pleasant Street.
- The expected traffic pattern changes were taken into account in developing existing and future traffic volumes networks with Pleasant Street one-way.

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- With Pleasant Street one-way circulation, on street parking is recommended as follows: on both sides of the roadway from West Creek Road to Cherry Street, with angle parking maintained in the vicinity of the Island Pharmacy, one side between Williams Street and Gardner Perry Lane and no parking between Gardner Perry Lane and the Five Corners intersection. (See Figure 22 A&B).
- Also, with Pleasant Street one-way, the one-way direction of Williams Street should be reversed (from northbound to southbound) and Cherry Street should be made a one-way roadway in the southbound direction, towards Pleasant Street.
- Pedestrian and bicycle amenities should be emphasized.
- If two-way flow is maintained along Pleasant Street, parking should be provided as follows: on both sides of the roadway from West Creek Road to Daves Street and no parking on the remaining sections of the corridor. (See Figure 23 A&B).
- The provision for on street parking may require the cooperation of abutters and right of way impacts.
- An order of magnitude cost for the geometric improvements required along this corridor would be approximately \$880,000 to \$1,100,000 with the Pleasant Street one-way alternative and approximately \$980,000 to \$1,200,000 if two-way flow is maintained along Pleasant Street. The associated engineering fee associated with these options is approximately \$120,000 to \$130,000.

West Creek Road

- Two-way circulation should be maintained on West Creek Road.
- Existing parking lots should be modified to eliminate the existing on-street, 90-degree parking and to improve circulation and efficiency. (See Figure 24A).
- Two alternatives have been recommended to address the pedestrian and on-street parking concerns along West Creek Road. (See Figure 24B). The first option provides a 6 foot sidewalk with an 8 foot parking lane on the westerly side of West Creek Road. Option 2 eliminates the on-street parking and provides two, 7-foot sidewalks.
- Provision for the parking configuration would require cooperation of various land owners to provide shared use parking.
- An order of magnitude cost for the geometric improvements associated with the reconfiguration of the off-street parking areas is approximately \$85,000 to \$110,000.
- An order of magnitude cost to implement the parking modifications with the Option 1 roadway improvements is approximately \$170,000 to \$200,000 with an associated engineering fee of approximately \$20,000. To construct the parking modifications with the Option 2 roadway improvements the approximate construction cost is \$220,000 to \$270,000 with an associated engineering fee of approximately \$30,000.

Milestone Road at Polpis Road and Monomoy Road

- Reconfigure the intersections to form more traditional, 90-degree “T” intersections. (See Figures 25 and 26).
- Separate left- and right-turn lanes should be maintained on the minor street approaches.
- Pedestrian and bicycle amenities should be emphasized.
- Provide fencing (Post and Rail Type) between the Milestone Road Bike Path and the roadway in the vicinity of the Monomoy Road and Polpis Road intersections to discourage unnecessary and unexpected pedestrian and bike crossings.
- An order of magnitude cost for the geometric improvements required at these intersections would be approximately \$170,000 to \$200,000, for the Polpis Road intersection and \$250,000 to \$300,000 for the Monomoy Road intersection. The associated engineering fees are approximately \$20,000 and \$30,000 respectively.

Milestone Rotary

- This location should be evaluated under a separate, detailed study to understand the effects on the intersection capacity based on growth and geometric changes to the intersection. It is estimated that the cost of such a study would be approximately \$50,000.
- Orange Street and Old South Road could potentially be realigned to provide improved pedestrian and bicycle accommodations, in particular across the Sparks Avenue approach. (See Figure 27).
- Traditional roundabout (rotary) striping should be provided to enhance consistence with the Sparks Avenue Roundabout (Yield Lines, etc.).
- An order of magnitude cost for the geometric improvements required at this intersection would be approximately \$250,000 to \$300,000 and the associated engineering fee is estimated to be approximately \$30,000.

Fairgrounds Road at Old South Road

- Modify the intersection to provide lane separation (left- and right-turn lanes) on the Fairgrounds Road approach. (See Figure 28). A right turn lane of approximately 250 feet will be provided.
- The Nantucket Electric driveway should be relocated further to the west on Fairgrounds Road as part of the New Public Safety Facility.
- Pedestrian and bicycle amenities should be emphasized.
- An order of magnitude cost for the geometric improvements required at this intersection would be approximately \$90,000 to \$120,000 and the associated engineering fee is estimated at approximately \$13,000.

Surfside Road Intersections

- Pedestrian and bicycle amenities should be emphasized. (See Figure 29).
- Where possible, the bike path should be shifted or relocated to encourage bike crossings in front of stopped site street traffic.
- Use of textured crosswalk treatments, such as brick stone, should be considered.
- An order of magnitude cost for the aforementioned geometric improvements at these intersections would be approximately \$45,000 to \$60,000 and the associated engineering fee is estimated to be approximately \$6,500.

Surfside Road at Miacomet Avenue

- The driveway access along Miacomet Avenue should be reconfigured to reduce the amount of “open” pavement. (See Figure 30).
- Cooperation of adjacent land owners will be required.
- Pedestrian and bicycle amenities should be emphasized.
- An order of magnitude cost for the geometric improvements required at this intersection would be approximately \$75,000 to \$85,000 and the associated engineering fee is estimated to be approximately \$9,500.

Pleasant Street at Cherry Street, Williams Lane and Williams Street

- The Williams Street at Pleasant Street intersection should be reconfigured to form a more traditional, 90-degree “T” intersection. (See Figure 31).
- Pedestrian and bicycle amenities should be emphasized.
- Also, with Pleasant Street one-way, the one-way direction of Williams Street should be reversed and Cherry Street should be made a one-way roadway in the southbound direction. A separate left-turn lane could also be provided on the Pleasant Street westbound approach for vehicles turning onto Williams Lane.
- An order of magnitude cost for the geometric improvements required along this corridor would be approximately \$90,000 to \$110,000, with Pleasant Street two-way and approximately \$95,000 to \$120,000, with Pleasant Street one-way. The estimated engineering fee associated with the design is approximately \$12,500.
- The reconfiguration of the Williams Street Cherry Street one-way pairing would require additional modifications at the intersections with Orange Street. (See Figure 32). An order of magnitude cost for the construction of these improvements is approximately \$30,000 to \$40,000 with an associated engineering fee of approximately \$4,500.

Orange Street at Union Street

- A second STOP sign should be placed on the Orange Street eastbound one-way approach.
- An order of magnitude cost for the geometric improvements required at this intersection would be approximately \$500 to \$1,000.
- Due to discrepancies between the data collected as part of this study and past historical data, it is recommended that this location be further studied based on 2005 summer traffic levels. It is estimated that approximately \$1,500 would be required to reexamine the operations at this intersection.

Sparks Avenue at Prospect Street, Surfside Road and Atlantic Avenue (Four Corners)

- Realign Sparks Avenue and Prospect Street to form a standard four-way, STOP controlled intersection with a channelized right-turning lane. (See Figure 33).
- Pedestrian and bicycle amenities should be emphasized.
- An order of magnitude cost for the geometric improvements required at this intersection would be approximately \$240,000 to \$290,000 and the associated engineering fee is estimated to be approximately \$30,000.

Pleasant Street at York Street and Atlantic Avenue (Five Corners)

- Minor radii improvements and pedestrian and bicycle access should be provided at this intersection. (See Figure 34).
- With Pleasant Street one-way, a separate left-turn lane should be provided on the Pleasant Street westbound approach for vehicles turning onto York Street and Atlantic Avenue.
- An order of magnitude cost for the geometric improvements required at this intersection would be approximately \$100,000 to \$150,000 and the associated engineering fee is estimated to be approximately \$16,500.

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Parking

- On-street parking should be established along Pleasant Street, generally from West Creek Road to Bear Street, where the parking demand is greatest, as described in the Pleasant Street corridor evaluation.
- The existing head-in parking on West Creek Road should be improved and/or eliminated to alleviate conflicts with through traffic on West Creek Road, as described in the West Creek Road corridor evaluation.
- The Sanford Parking lot should be modified to improve circulation and efficiency. This improvement will require cooperation between the Town & landowners.

Transit

- A Mid-Island central stop is recommended to facilitate employees and visitors to this area, along with other major destinations of the Island.
- The Stop & Shop property appears to be a feasible and realistic location for the central Mid-Island stop.
- Preliminary modifications to the existing transit routes within the Mid-Island area to provide a future central Mid-Island stop at the Stop & Shop site are recommended. (see Figure 35 and Table 38)
- Any modifications to the existing transit routes, including providing a central Mid-Island stop, should be studied from an economic and transit headway perspective and would ultimately need to be reviewed and approved by the NRTA.

Bikeways

- A formal in-Town Bike Path/Route should be provided along Orange Street, connecting the Mid-Island area and Rotary with the Downtown. Based on the available GIS mapping, it appears that the Orange Street right-of-way varies between 30-35 feet. Due to the limited right-of-way, a “typical” ten-foot bicycle/multi-use path along one side of the road with a minimal sidewalk along the other will have significant impacts on right-of-way along the corridor. The minimum cross section for such an alignment (Option 1) would require approximately 40 feet of right-of-way. As an alternative, (Option 2) the sidewalk could be eliminated and simply provide a 10 foot multi-use path along one side of the road. This would require a minimum cross section of 34 feet. In addition, a four-foot bike/shared lane on Orange Street in each direction (Option 3) may be feasible with appropriate “SHARE THE ROAD” signing. This would require reconstructing and restriping Orange Street along with minor right-of-way impacts. Figure 36 illustrates the proposed alternative cross sections and signage. Order of magnitude costs associated with the three alternatives are approximately \$760,000 to \$1,000,000 for Option 1, \$670,000 to \$800,000 for Option 2 and \$810,000 to \$1,000,000 for Option 3. The

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estimated engineering fee associated with the design of the corridor is approximately \$100,000.

- A bicycle path should be provided along Sparks Avenue, connecting the Surfside Road Bike Path with the Milestone and Old South Road Bike Paths. A multi-use path, adjacent to the street is anticipated. It is also anticipated that some roadway realignment, to the north, may be required as part of this alternative. These improvements are included in the current regional *Transportation Improvement Program* (TIP). An order of magnitude cost associated with such improvements would be approximately \$900,000 to \$1,100,000. It is estimated that the associated engineering fee would be approximately \$120,000.
- A bicycle path should be provided at the termini of the existing Surfside Road bike path at Vesper Lane, connecting Surfside Road to Sparks Avenue. An alternative would be to provide the connection via the high school parking lot/property at the southeast corner of Sparks Avenue and Surfside Road. An order of magnitude cost associated with such improvements would be approximately \$35,000 to \$60,000. It is estimated that the associated engineering fee would be approximately \$6,500.
- A bicycle path should be provided along the northerly side of Milestone Road from Orange Street to Polpis Road. This path will reduce the number of bicyclists that are forced to cross the Milestone Rotary. An order of magnitude cost associated with such improvements would be approximately \$500,000 to \$600,000. It is estimated that the associated engineering fee would be approximately \$65,000.