

## **CONCLUSIONS AND RECOMMENDATIONS**

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### **CONCLUSIONS**

VAI has completed a comprehensive study of the Beal Street/West Street/Fort Hill Street corridor within the Town of Hingham in an effort to identify existing and potential future traffic demands, operational deficiencies (i.e. motorist delays and vehicle queuing), and safety concerns along the corridor, with the goal of identifying both short and long-term improvement strategies that address roadway and intersection capacity, safety, neighborhood impacts and pedestrian and bicycle accommodations. This effort was completed as a cooperative venture with the Town of Hingham Board of Selectmen, Planning Department, Department of Public Works, Police Department, and School Department, as well as in consultation with the Land Use Committee and Planning Board, the Massachusetts Highway Department, and with public participation.

As a result of the analyses and information collected in conjunction with this study, the following issue areas were identified along the Beal Street/West Street/Fort Hill Street corridor:

- Existing travel speeds along Beal Street and Fort Hill Street exceed the posted speed limit of 30 mph by 10 to 20 mph over the course of the day. The excessive speed of vehicles is not conducive to pedestrian and bicycle travel and is not consistent with the limiting design features of the roadways (i.e. sight lines, pavement width, and horizontal and vertical curves) or the residential areas that front along the corridor.
- The intersections evaluated along the Beal Street/West Street/Fort Hill Street corridor were found to have a motor vehicle crash rate below the MassHighway average for signalized or unsignalized intersections, as appropriate.
- Pedestrian facilities of varying condition are generally provided along one or both sides of the corridor roadways. A notable exception to this observation is the portion of Fort Hill Street between New Bridge Street and the location of the planned MBTA West Hingham Station on the Greenbush Commuter Rail line, where a sidewalk is not currently provided that would permit neighborhood access to the Station for pedestrians.
- An extensive network of bicycle paths is provided within Bare Cove and Great Esker Parks that are accessible from parking lots located off Fort Hill Street and Beal Street; however, the roadways providing access to these facilities (Beal Street, West Street and Fort Hill Street) do not presently accommodate bicycle travel.

- Motorist delays and vehicle queuing for minor street movements (generally left-turns from side streets that are under STOP-sign control) at the intersections evaluated along the Beal Street/West Street/Fort Hill Street corridor were shown to be currently operating at or over their design capacity, particularly during the weekday evening peak period, as a result of the relatively large volume of commuter traffic during the peak periods. These operating conditions will further deteriorate in the future, absent improvement, with the continued build-out of planned development in the area.
- The planned installation of traffic control signals at the intersections of Beal Street at Sergeant William B. Terry Drive (in conjunction with the redevelopment of the Hingham Shipyard) and Fort Hill Street at South Street and West Street (in conjunction with the MBTA Greenbush Commuter Rail Line) will improve traffic operations at these locations and accommodate anticipated future development in the area.
- North Street and New Bridge Street were found to accommodate a significant volume of commuter traffic during the peak periods, disproportionate to the function and land use character of these roadways, which primarily serve a local access function to residential homes and neighborhood areas that directly front along these roadways.

Upon review of these issue areas, a series of recommendations were developed and refined in consultation with the Town and residents that have been designed to address the anticipated demands on the transportation infrastructure resulting from future development in the area, reduce potential impacts on adjacent residential neighborhoods, and accommodate pedestrian and bicycle travel in a safe manner.

## **RECOMMENDATIONS**

The following recommendations have been developed for the Beal Street/West Street/Fort Hill Street corridor and are designed to be implemented alone or in combination in order to produce the desired effect of reducing vehicle travel speeds, facilitating pedestrian and bicycle travel, and accommodating potential future development in the area while minimizing impacts on residential neighborhoods. The recommended improvements have been grouped by corridor and include both short and long term improvement measures. Table 11 at the end of this section summarizes each of the improvements discussed below and provides an estimated cost to design and construct the suggested improvement measure.

### **Fort Hill Street Corridor**

The recommended improvements along the Fort Hill Street corridor are summarized on Figure 9 and center primarily on pedestrian and bicycle accommodations and access to the MBTA's West Hingham Station on the Greenbush Commuter Rail Line and Bare Cove Park. The following summarizes the recommendations for the Fort Hill Street corridor.

#### **Short-Term Improvements**

Several short-term improvements have been developed for the Fort Hill Street corridor that are designed to improve safety along the corridor and provide safe and efficient access for pedestrians and bicyclists. All of the suggested improvements can be completed within the public right-of-way or on Town owned land and do not impact private properties.

- Improve pedestrian access along the Fort Hill Street corridor by providing wheelchair ramps and marked crosswalks for crossing intersecting roadways. STOP-signs and STOP-lines should be installed in advance of the crosswalks on the intersecting streets.
- Pedestrian crossing warning signs should be installed on Fort Hill Street at and in advance of the existing crosswalk situated on the south leg of the intersection of Fort Hill Street at New Bridge Street. The advance warning signs should be installed on Fort Hill Street approximately 175 feet north and south of the crossing in order to provide motorists with advance notice of the potential for pedestrians to be crossing at this location. Consideration should also be given to the use of colored, textured pavement (stamped asphalt or inlayed pavement markings) for the crossing in order to provide a visual and tactile emphasis of the crossing for both pedestrians and motorists.
- *Fort Hill Street/New Bridge Street* - Edgeline pavement markings should be provided around the perimeter of the grassed island area along both Fort Hill Street and New Bridge Street. In addition, a STOP-sign and STOP-line should be provided on the approaches of the connector roadway linking Fort Hill Street and New Bridge Street and situated on the south side of the grassed island.
- *Fort Hill Street/MBTA West Hingham Station/Bare Cove Park Drive* – Three alternative improvement plans were developed for this intersection that were designed to accommodate access to the West Hingham Station, the planned Town DPW facility and athletic complex to be located within Bare Cove Park, and maintain safe and efficient access to the School Depot. Upon review of the alternatives by the Town and the MBTA, improvement Alternative 3, which is depicted on Figure 10, was selected as the preferred alternative. It is recommended that the roadway alignment, parking lot and access modifications to Bare Cove Park and the School Depot be completed as depicted on the Figure 10. Further, traffic signal conduit and pullboxes should be installed at the intersection of Fort Hill Street at Bare Cove Park Drive and the West Hingham Station driveway, and between this intersection and the intersection of Fort Hill Street at South Street and West Street, in order to facilitate the future installation of a traffic control signal, if and when warranted.

### **Long-Term Improvements**

The following is a list of suggested long-term improvements for the Fort Hill Street corridor which have been designed to improve traffic operations, safety and accessibility along the corridor, both at present and with anticipated future development in the area.

- In order to link the New Bridge Street residential neighborhood and those residences located along the south side of Fort Hill Street to the MBTA's West Hingham Station, it is recommended that a sidewalk be constructed along the east side of Fort Hill Street between New Bridge Street and the planned sidewalk to be constructed along the West Hingham Station frontage on Fort Hill Street.
- Consideration should be given as a part of a long range bicycle master plan to widen the portion of Fort Hill Street from a point just north of Dwiggin's Path to the Weymouth Town Line in order to provide a minimum roadway cross-section of 28-feet. This cross-section would allow shared use of the traveled-way (two 14-foot wide travel lanes) by both motor vehicles and bicycles. The current cross-section in this area is approximately 24-feet, which is sufficient for motor vehicle travel but does not meet minimum standards for bicycle accommodations.

- *Fort Hill Street/New Bridge Street* – Consideration should be given to reconstructing the intersection of Fort Hill Street at New Bridge Street to form a standard right-angle intersection, eliminating the channelizing island on the New Bridge Street approach. The suggested improvements would include the addition of a left-turn lane on the Fort Hill Street southbound approach. These improvements would serve to better accommodate existing and project future traffic demands at the intersection and improve both pedestrian and vehicle safety.
- *Fort Hill Street/MBTA West Hingham Station/Bare Cove Park Drive* – Traffic demands at the intersection of Fort Hill Street at Bare Cove Park Drive and the West Hingham Station driveway are expected to increase in the near-term as a result of both the opening of the Commuter Rail station and the planned development of the Town athletic complex within Bare Cove Park. These future traffic generators combined with the need to provide safe and efficient access to the School Depot for school buses and School Department vehicles, which will likely enter and exit the Depot during the same peak operational periods as the West Hingham Station, may necessitate the need to install a traffic control signal at the intersection. Accordingly, it is recommended that the intersection of Fort Hill Street at Bare Cove Park Drive and the West Hingham Station driveway be monitored periodically for the installation of a traffic control signal. The monitoring program should consist of the collection of 12-hour (7 AM to 7 PM) manual turning movement and vehicle classification counts at the intersection and completing a Traffic Signal Warrants Analysis (TSWA) in accordance with the methodology and procedures outlined in the *Manual on Uniform Traffic Control Devices* (MUTCD).<sup>11</sup> A copy of the TSWA methodology from the MUTCD is provided in the Appendix.

### **Beal Street/West Street Corridor**

The recommended improvements along the Beal Street/West Street corridor are summarized on Figure 11 and address pedestrian and bicycle accommodations, vehicle travel speeds, and impacts to residential properties as they relate to access, traffic volumes and neighborhood cut-through traffic. The following summarizes the recommendations for the Beal Street/West Street corridor.

#### **Short-Term Improvements**

Several short-term improvements have been developed for the Beal Street/West Street corridor that are designed to be implemented within the existing confines of the pavement section and are designed to improve safety along the corridor, reduce vehicle travel speeds, provide safe and efficient access for pedestrians and bicyclists, and improve the roadway environment for the residential neighborhoods along the corridor.

- *Beal Street/West Street/North Street* – A series of alternative improvement plans were developed for the intersection of Beal Street at West Street and North Street that were designed to accomplish three major goals: 1) reduce the use of North Street as a cut-through roadway; 2) slow vehicle travel speeds approaching the intersection; and 3) provide for safe pedestrian and bicycle travel. Upon review of the alternatives by the Town, the improvements depicted on Figure 12 were selected as the preferred intersection improvement program. As depicted, it is recommended that the North Street approach be realigned to form a right-angle approach to Beal Street/West Street; the

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<sup>11</sup> *Manual on Uniform Traffic Control Devices*; Federal Highway Administration; Washington, DC; 2003.

corner radii be decreased and a raised median added to the North Street approach in order to reduce the width of the intersection; the North Street approach be placed under STOP-sign control (remove the STOP-sign from the West Street approach); and that a crosswalk be constructed across the Beal Street west leg of the intersection. It is suggested that the crosswalk either be raised (see Figure 13) or that a colored, textured pavement (stamped asphalt or inlaid pavement markings) be used at the crossing in order to provide a visual and tactile emphasis of the crossing for both pedestrians and motorists and in an effort to reduce travel speeds approaching and departing the intersection.

- In an effort to reduce vehicle travel speeds along the Beal Street corridor, the following improvements are recommended which can be implemented alone or in combination in order to produce the desired effect.
  - Installed raised crosswalks (see Figure 13) at the existing pedestrian crossings of Beal Street situated adjacent to North Street (see above), Squirrel Hill Road, Fottler Road, Beals Cove Road and the entrance to Bare Cove Park.
  - Install a raised intersection (see Figure 13) treatment at the intersection of Beal Street at Sergeant William B. Terry Drive. It is envisioned that this improvement would be completed, if desired, in conjunction with the planned installation of a traffic control signal at this intersection as a part of the Hingham Shipyard redevelopment project.
  - Restripe Beal Street between approximately Route 3A and Fottler Road to provide two 12-foot wide travel lanes and 8 to 9-foot wide shoulders with appropriate signs and pavement markings indicating the function of the shoulder area as a bicycle lane.
  - In conjunction with the restriping of the segment of Beal Street described above, it is suggested that neckdowns be provided at appropriate locations along the segment that would reduce the traveled way to 24-feet for motor vehicles by extending the curbline into the existing roadway. Cut-outs would be provided at the neckdown areas for the bicycle lane to pass-through. Suggested locations of neckdowns would be at the crosswalks situated at the entrance to Bare Cove Park and at Beals Cove Road, and at a point north of Sergeant William B. Terry Drive.
- Improve pedestrian access along the Beal Street corridor by providing wheelchair ramps and marked crosswalks for crossing intersecting roadways. STOP-signs and STOP-lines should be installed in advance of the crosswalks on the intersecting streets. Pedestrian crossing warning signs should be installed at and in advance of all crossings of Beal Street. The advance warning signs should be located approximately 175 feet north and south of the crossings in order to provide motorists with advance notice of the potential for pedestrians to be crossing at these locations. Consideration should also be given to the use of colored, textured pavement (stamped asphalt or inlaid pavement markings) for the crossings if the raised crosswalk treatment is not selected as described above in order to provide a visual and tactile emphasis of the crossing for both pedestrians and motorists.

- It is suggested that the existing midblock crosswalk situated between Hockley Drive and Squirrel Hill Lane be removed as there is no destination, sidewalk or protected landing area for pedestrians on the east side of Beal Street at this location.
- In conjunction with potential future modifications to the Stop & Shop plaza, it is suggested that the property owner consider the installation of traffic calming measures such as speed humps (see Figure 13), raised or textured crosswalks, neckdowns, etc, in order to reduce cut-through traffic between Route 3A and Beal Street through the primary drive aisle of the plaza.
- Consider petitioning MassHighway to restrict access to Beal Street from Route 3A by reconfiguring the intersection of Beal Street at Route 3A to eliminate the right-turn movement from Route 3A onto Beal Street. Egress from Beal Street to Route 3A would be maintained. Motorists seeking to access Beal Street from Route 3A would continue a short distance east and use Sergeant William B. Terry Drive. This modification has the potential to reduce vehicle travel speeds and cut-through traffic by imposing a series of controlled turning maneuvers to gain access to Beal Street and increasing travel times between Route 3A and Beal Street. This suggestion should be coupled with the implementation of a traffic monitoring program at the intersection which is discussed in the *Long Term Improvements* section for the Beal Street corridor which follows.

### **Long-Term Improvements**

The following is a list of suggested long-term improvements for the Beal Street/West Street corridor which are designed with a focus on reducing the scale of the roadway to be consistent with residential nature of the corridor that exists along the majority of the roadway. This goal is accomplished by narrowing the roadway cross-section, introducing roadside planting strips for street trees, and proving connectivity for pedestrians and bicyclists to the many existing and proposed recreational, public transportation and retail amenities in the area.

- Consideration should be given to the reuse of the former railroad right-of-way located along the west side of Beal Street between North Street and Squirrel Hill Lane as an off-road bicycle path. At Squirrel Hill Lane, the bicycle path could transition to an on-road facility with the section of Beal Street between Squirrel Hill Lane and Fottler Road widened from 24-feet to 28 feet (minimum) in order to provide two 11 to 12-foot wide travel lanes with a 4 to 5 foot wide shoulder/bicycle lane along both sides of the roadway.
- Connections between the bicycle path discussed above and the path network within Bare Cove Park should be developed at the south end of the facility. This connection could consist of an extension of the on-road bicycle facility along West Street and Fort Hill Street to Bare Cove Park Drive. Access to Bare Cove Park is presently afforded at the north end of the corridor by way of the parking area situated just north of Beals Cove Road.
- A pedestrian and bicycle link between the Hingham Shipyard redevelopment project, the MBTA water shuttle and the public park/waterfront amenities located within the former shipyard site should be developed. This connection should consist of the installation of bicycle lanes along both sides of Sergeant William B. Terry Drive and provisions for pedestrians and bicycles to cross Beal Street at its intersection with Sergeant William B. Terry Drive. In conjunction with the redevelopment of the Hingham Shipyard, it is suggested that the master plan for the redevelopment incorporate

bicycle lanes/paths within the development that provide for these pedestrian and bicycle connections.

- Consideration should be given to reducing the width of Beal Street between Route 3A and Fottler Road from 42 feet to 34 feet, consisting of two 12-foot wide travel lanes with 5-foot wide bicycle lanes along both side of the roadway. This reduced cross-section would also allow for the construction of 5-foot wide sidewalks along both sides of the roadway that are off-set from the edge of the traveled-way, incorporating the introduction of a landscaped planting strip between the curblineline and the sidewalk. The planting strip would provide for the introduction of street trees along this segment of the corridor, mirroring the rural residential scale of the environment along the corridor to the south of this segment.
- The intersection of Beal Street at Sergeant William B. Terry Drive should be monitored on a periodic basis in conjunction with the redevelopment of the Hingham Shipyard. It is suggested that the monitoring program commence upon issuance of a Certificate of Occupancy for the first commercial building to be located within the development or the 50<sup>th</sup> residential unit, whichever ever comes first, and continue for a period 5-years after complete occupancy. The monitoring program should consist of the collection of 12-hour (7 AM to 7 PM) manual turning movement and vehicle classification counts at the intersection and completing a TSWA in accordance with the methodology and procedures outlined in the MUTCD. If and when the intersection is found to meet warrants for the installation of a traffic control signal, the proponent of the Hingham Shipyard redevelopment has committed to the design and installation of a traffic control signal. The results of the monitoring program should be provided to the Town.

## **SUMMARY**

VAI has completed a comprehensive study of the Beal Street/West Street/Fort Hill Street corridor in a cooperative effort with the Town and residents which has resulted in the development of a series of the suggested improvements, both short and long-term, designed with the goal of improving pedestrian and bicycle access, addressing identified safety deficiencies and capacity constraints, and creating a transportation system that meets the existing and future needs of the residences and business that are served by the corridor. With few exceptions, the suggested improvements can be completed within the public right-of-way or on Town owned land and do not impact private properties.

**Table 11**  
**RECOMMENDED IMPROVEMENT SUMMARY**

Location	Suggested Improvement Measure	Estimated Cost <sup>a</sup>
<b>Fort Hill Street Corridor</b> <i>Short-Term:</i>	<ul style="list-style-type: none"> <li>- Improve pedestrian access by providing wheelchair ramps and marked crosswalks; install STOP-signs and STOP-lines on intersecting roadways.</li> </ul>	\$40,000
	<ul style="list-style-type: none"> <li>- Install pedestrian crossing warning signs in advance of the crossing at New Bridge Street; incorporate colored or textured pavement for crossing.</li> </ul>	\$5,000
	<ul style="list-style-type: none"> <li>- <i>Fort Hill Street/New Bridge Street</i> – install signs and pavement markings.</li> </ul>	\$2,000
	<ul style="list-style-type: none"> <li>- <i>Fort Hill Street/MBTA West Hingham Station/Bare Cove Park Drive</i> – construct intersection improvements depicted on Figure 10.</li> </ul>	\$250,000 <sup>b</sup>
<i>Long Term:</i>	<ul style="list-style-type: none"> <li>- Construct a sidewalk along the east side of Fort Hill Street between New Bridge Street and the West Hingham Station.</li> </ul>	\$125,000
	<ul style="list-style-type: none"> <li>- Widen Fort Hill Street between Dwiggin's Path and the Weymouth Town Line to accommodate bicycle travel.</li> </ul>	\$170,000
	<ul style="list-style-type: none"> <li>- <i>Fort Hill Street/New Bridge Street</i> – reconstruct intersection to improve approach geometry and improve traffic operations.</li> </ul>	\$170,000
	<ul style="list-style-type: none"> <li>- <i>Fort Hill Street/MBTA West Hingham Station/Bare Cove Park Drive</i> – monitor for future traffic signal control; install traffic signal if and when warranted.</li> </ul>	\$225,000 <sup>c</sup>

See notes at end of table.

**Table 11  
RECOMMENDED IMPROVEMENT SUMMARY (Continued)**

Location	Suggested Improvement Measure	Estimated Cost <sup>a</sup>
<b>Beal Street/ West Street Corridor Short-Term:</b>	<ul style="list-style-type: none"> <li>- <i>Beal Street/West Street/North Street</i> – construct intersection improvements depicted on Figure 12.</li> </ul>	\$140,000
	<ul style="list-style-type: none"> <li>- Install raised crosswalks at the Beal Street crossings adjacent to North Street, Squirrel Hill Road, Fottler Road, Beals Cove Road and at the entrance to Bare Cove Park.</li> </ul>	\$40,000
	<ul style="list-style-type: none"> <li>- <i>Beal Street/Sgt. William B. Terry Drive</i> - install a raised intersection.</li> </ul>	\$75,000 <sup>d</sup>
	<ul style="list-style-type: none"> <li>- Restripe Beal Street between Route 3A and Fottler Road to provide (2) 12 ft. travel lanes and 8 to 9 ft. bicycle lanes along both sides of the roadway.</li> </ul>	\$50,000 - \$200,000 <sup>e</sup>
	<ul style="list-style-type: none"> <li>- Install neckdowns to reduce the pavement width to 24 ft. at the Beal Street crossings adjacent to Beals Cove Road and the entrance to Bare Cove Park, and at a point north of Sgt. William B. Terry Drive.</li> </ul>	\$40,000
	<ul style="list-style-type: none"> <li>- Improve pedestrian access by providing wheelchair ramps and marked crosswalks; install STOP-signs and STOP-lines on intersecting roadways; install pedestrian crossing warning signs in advance of all crossings of Beal Street; incorporate colored or textured pavement for crossings.</li> </ul>	\$100,000
	<ul style="list-style-type: none"> <li>- Remove the midblock crossing of Beal Street situated between Hockley Drive and Squirrel Hill Lane.</li> </ul>	\$2,000
	<ul style="list-style-type: none"> <li>- Install traffic calming features within the Stop &amp; Shop plaza to discourage cut-through traffic between Route 3A and Beal Street.</li> </ul>	\$5,000 - \$35,000 <sup>e</sup>
	<ul style="list-style-type: none"> <li>- Consider restricting access to Beal Street from Route 3A.</li> </ul>	\$25,000

See notes at end of table.

**Table 11**  
**RECOMMENDED IMPROVEMENT SUMMARY (Continued)**

Location	Suggested Improvement Measure	Estimated Cost <sup>a</sup>
<b>Beal Street/  West Street Corridor  Long-Term:</b>	<ul style="list-style-type: none"> <li>- Construct an off-road bicycle path along the former railroad right-of-way on the west side of Beal Street, between North Street and Squirrel Hill Lane; widen Beal Street between Squirrel Hill Lane and Fottler Road to accommodate bicycle travel.</li> </ul>	\$150,000
	<ul style="list-style-type: none"> <li>- Develop a bicycle connection to Bare Cove Park along West Street and Fort Hill Street to Bare Cove Park Drive.</li> </ul>	\$30,000 - \$100,000 <sup>e</sup>
	<ul style="list-style-type: none"> <li>- Develop pedestrian and bicycle connections to the Hingham Shipyard redevelopment project, the MBTA water shuttle and the public park/waterfront amenities located within the former shipyard site.</li> </ul>	\$30,000 - \$75,000 <sup>d, e</sup>
	<ul style="list-style-type: none"> <li>- Reduce the width of Beal Street between Route 3A and Fottler Road from 42 ft. to 34 ft., accommodating (2) 12 ft. travel lanes, 5 ft. bicycle lanes along both sides of the roadway, and 5 ft. sidewalks along both sides of the roadway separated from the traveled-way by a landscaped planting strip.</li> </ul>	\$500,000
	<ul style="list-style-type: none"> <li>- <i>Beal Street/Sgt. William B. Terry Drive</i> – monitor for future traffic signal control; install traffic signal if and when warranted.</li> </ul>	\$250,000 <sup>d</sup>

<sup>a</sup>Estimated design and construction cost.

<sup>b</sup>Assumes the MBTA constructs the improvements along Fort Hill Street and within the West Hingham Station, including the installation of traffic signal conduit and pull boxes. Cost shown is for the reconstruction of Bare Cove Park Drive, the closure and removal of the gatehouse entrance to the School Depot and the reconstruction of the parking area within the School Depot as depicted on Figure 10.

<sup>c</sup>Traffic signal installation only. Assumes short-term improvements at the intersection have been constructed.

<sup>d</sup>Improvement to be completed in conjunction with the Hingham Shipyard redevelopment.

<sup>e</sup>Price range reflects the cost with and without a pavement overlay.