

ELEMENT FOUR: TRANSPORTATION

The Transportation Element examines Holland's transportation infrastructure in terms of current condition, level of utilization, deficiencies that need to be addressed, and safety concerns. This element of the plan consists of five components:

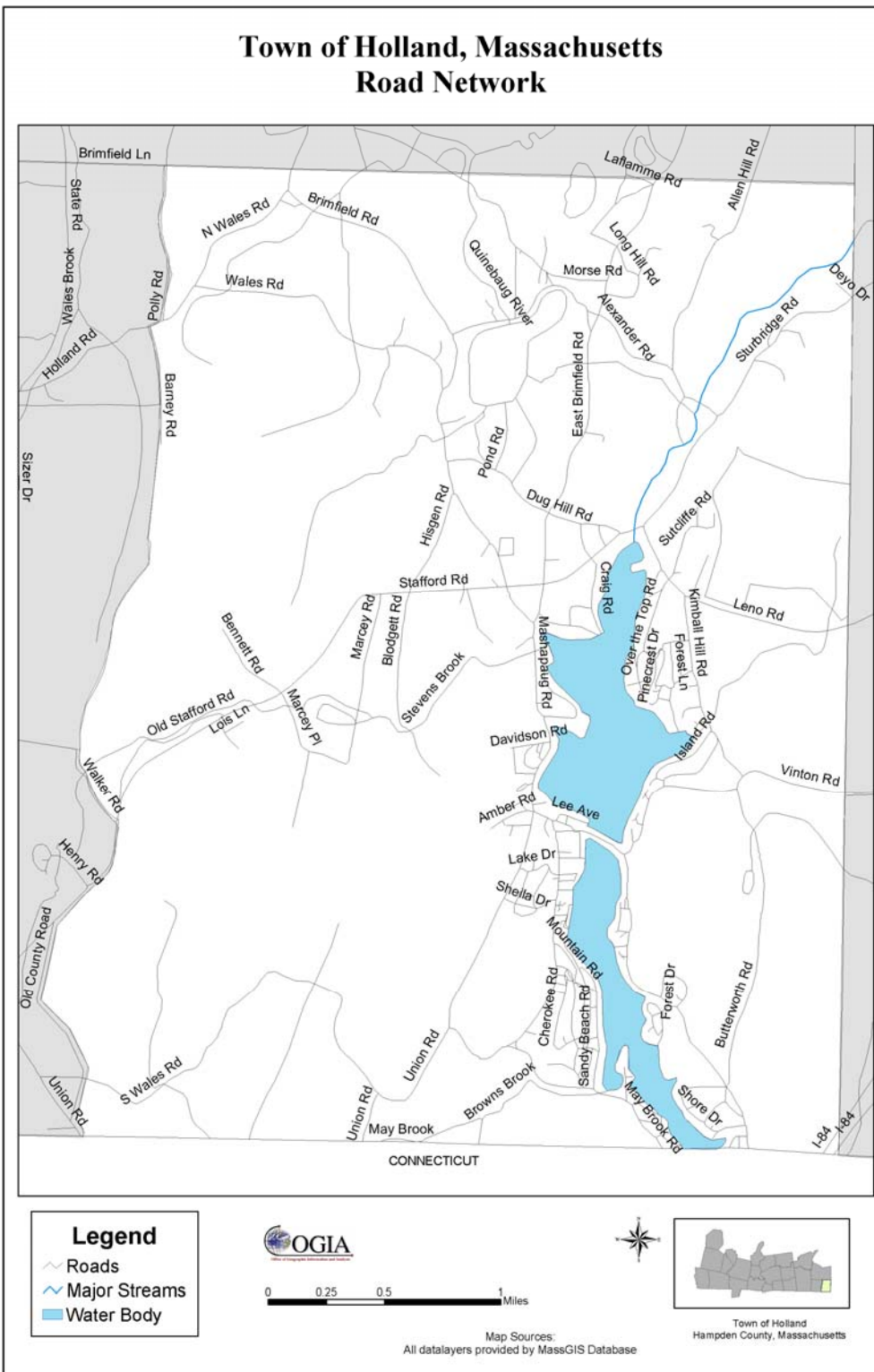
- An existing infrastructure report that summarizes the current transportation infrastructure of Holland based on a pavement management system
- A traffic count report that identifies roads that are the primary routes of entrance and egress to Holland
- A problem identification report that identifies transportation problems and potential responses
- An examination of the sidewalk network in the Town Center and recommendations for improvements

Existing Infrastructure

Holland's transportation infrastructure consists of its municipal road network. The town's road network is composed of both public and private roadways and the network includes both paved and unimproved roads. The Holland Highway Department is responsible for maintaining and improving the town's transportation infrastructure. Funding for maintenance and improvement projects comes primarily from State grants. A map of the town's transportation infrastructure is presented in Figure T-1.

The Town of Holland does not possess a public transportation system. Personal automobile is the primary form of transport in the town. The lack of a sidewalk network within the town and the narrowness of town roads make pedestrian and bicycle travel difficult. The Town Center would benefit greatly from the establishment of a sidewalk network, especially from a safety standpoint. A proposed sidewalk network for the Town Center is proposed later in this section.

Figure T-1: Road Network, Holland Massachusetts, 2004



Source: MassGIS, MassGIS datalayers, 2004

Pavement Management System

A survey of the pavement conditions of the town's main roads was conducted and the results were incorporated into a pavement management system. The pavement management system provides an inventory of pavement conditions for the surveyed roads and can be utilized to make budgeting and pavement repair decisions. Funding for road repair and improvement projects from the State often stipulate specific types of repairs and improvements that funds can be utilized for. Since grants from the State provide the funding necessary for major repair and improvement projects in Holland, a pavement management system that can identify roads based on specific repair requirements was considered to be the most appropriate for the town.

The following roads in Holland were examined for existing pavement conditions and the data was incorporated into the pavement management system:

- Mashapaug Road (from intersection with Stafford Road to the south)
- Stafford Road (from intersection with Mashapaug Road to the west)
- Brimfield Road (from the intersection with Stafford Road to the north)
- Old Country Road
- East Brimfield Road
- Sturbridge Road (from intersection with Brimfield Road to the east)
- Leno Road
- Union Road (from the intersection with Maybrook Road to the north)

The roads examined were evaluated based on a set of standard pavement deficiency criteria. These pavement deficiencies included the following types:

Surface Deficiencies

- Delamination
- Flushing
- Potholes
- Raveling and Weathering

Surface Deformations

- Rippling
- Rutting
- Shoving
- Tenting

Cracking

- Alligator Cracking
- Block Cracking
- Edge Cracking
- Longitudinal Cracking

Reflective Cracking
 Transverse Cracking

Lane/Shoulder Deterioration

Lane/Shoulder Drop Off
 Lane/Shoulder Separation

In addition to the presence of pavement deficiencies, the extent of specific deficiencies was recorded. Extent of deficiency was recorded for the following types of pavement deficiencies: delamination, flushing, potholes, raveling and weathering, alligator cracking, block cracking, edge cracking, and transverse cracking. A detailed description of the types of pavement deficiencies surveyed and repair methods used to correct these deficiencies are presented in the Appendix.

Pavement deficiency data for all roads surveyed were entered into a spreadsheet program that allows for the categorization of roads based on pavement deficiency. The spreadsheet format allows the town to conduct operations on the pavement condition data in order to make informed pavement management decisions. For example, if the town received funds from the State in order to make preventative repairs, such as crack sealing, the pavement management system could be used to perform a search that identified all of the roads surveyed based on the severity of specific pavement deficiencies such as alligator cracking, block cracking, and reflective cracking. For a list of roads surveyed and specific pavement deficiencies associated with each of these roads, see Appendix. A summary of the general condition of roads in Holland is provided in Table T-1.

Table T-1: Summary of Pavement Management Assessment

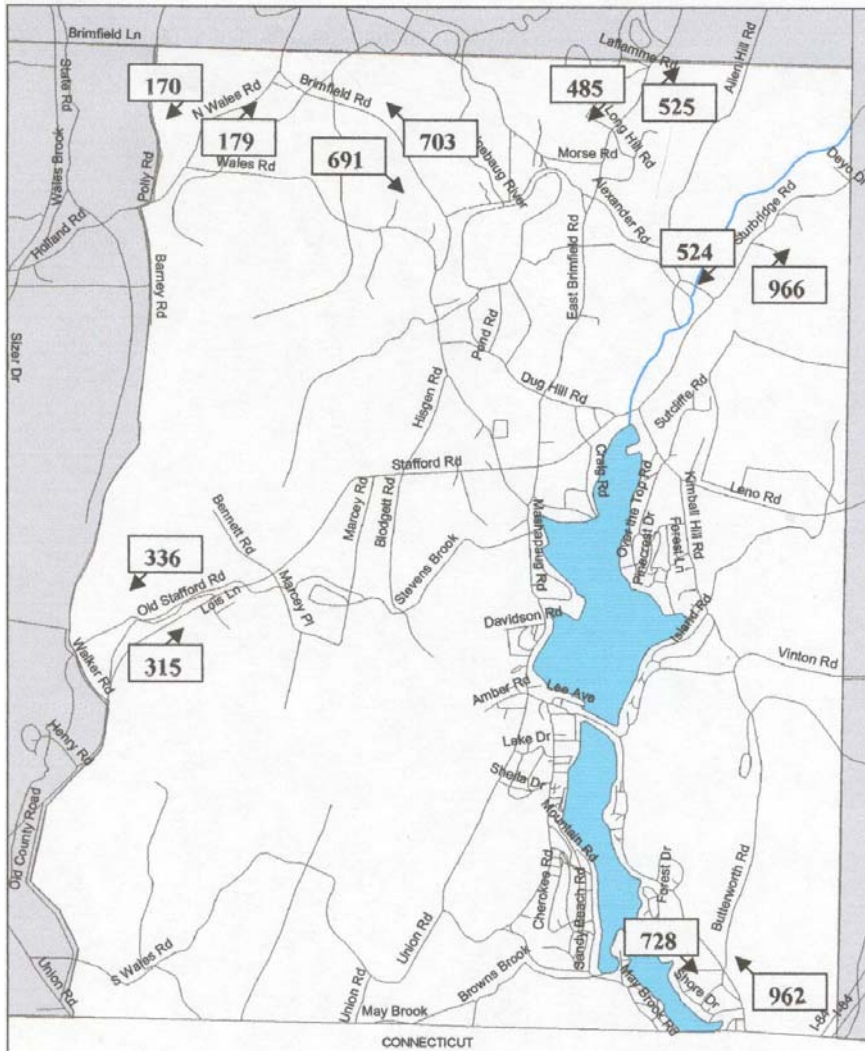
General Type of Deficiency	Specific Type of Deficiency	Number of Surveyed Roads With Deficiency
Surface Deficiencies	Delamination	4
	Flushing	0
	Potholes	2
	Raveling and Weathering	7
Surface Deformations	Rippling	4
	Rutting	3
	Shoving	0
	Tenting	4
Cracking	Alligator Cracking	6
	Block Cracking	0
	Edge Cracking	6
	Longitudinal Cracking	5
	Reflective Cracking	0
	Transverse Cracking	5
Lane/Shoulder Deterioration	Lane/Shoulder Drop Off	0
	Lane/Shoulder Separation	2

Source: Pavement Management Survey Data, Town of Holland, 2004

Traffic Count Data

Collecting traffic count data is useful to the town for two main reasons. Traffic count data is utilized when applying for road construction and repair funds from the State. Traffic counts also provide important data for making informed decisions concerning future infrastructure development within the town. During the public meeting held on July 5, 2004, residents of Holland noted that traffic count data for the months of June, July, and August would be valuable since these counts would reflect the large influx of visitors during the summer vacation months. The Pioneer Valley Planning Commission conducts a limited number of traffic counts each year for towns and cities within its region at no cost. The town is encouraged to utilize this service in order to obtain traffic counts during the summer months. The following roads were examined for the traffic count study: North Wales Road, Brimfield Road, East Brimfield Road, Sturbridge Road, Mashapaug Road, Stafford Road. Traffic counts occurred on Tuesday, April 27, 2004 from 12:00 AM to 11:59 PM. Figure T-2 presents the results of the traffic counts.

Figure T-2: Traffic Counts, Town of Holland, 2004



Source: Traffic Count Survey, Town of Holland, 2004

Table T-2 summarizes the results of the traffic count study.

Table T-2: Summary of Traffic Count Study Results, Town of Holland, 2004

Roadway	Outbound/Inbound	Volume	Totals
North Wales Road	Outbound	170	349
	Inbound	179	
Brimfield Road	Outbound	703	1,394
	Inbound	691	
East Brimfield Road	Outbound	525	1,010
	Inbound	485	
Sturbridge Road	Outbound	966	1,490
	Inbound	524	
Mashapaug Road	Outbound	728	1,690
	Inbound	962	
Stafford Road	Outbound	336	651
	Inbound	315	

Problem Identification Report

The following transportation problems were identified by the Community Development Committee and town residents at the public forums held on November 24, 2003 and July 5, 2004.

Lack of Sidewalks in the Town Center

The lack of a sidewalk network in the Town Center was cited as a transportation issue that needed to be addressed. The absence of sidewalks discourages pedestrian travel and presents a safety hazard since pedestrians are required to walk on the shoulder of the road to reach common destinations such as the Town Hall, Hitchcock Field, the Town Library, and the Elementary School. A proposed sidewalk network is presented in the final section of this plan.

The Maintenance of Private and Public Dirt Roads

The maintenance of Holland's numerous public and private dirt roads has been cited by town residents as a major transportation issue. The maintenance of dirt roads will continue to be an issue in the near future since it is unlikely that the town will be able to secure the substantial funds required to pave these roads. Although maintenance procedures have been implemented to address the problems associated with dirt roads, such as a catch basin cleaning program, these procedures have not been as effective as anticipated.

Of particular concern to town residents are the negative impacts resulting from dirt roads adjacent to Hamilton Reservoir. During heavy rains, storm water run-off carries soil from the numerous dirt roads and private driveways and deposits this soil into reservoir. This process leads to the sedimentation of the reservoir and a reduction of water quality and recreational value. The process of run-off and sedimentation of the reservoir is exacerbated by the fact that

the soils surrounding Hamilton Reservoir are very susceptible to erosion due to soil type and high slope levels. In addition, the Hamilton Reservoir is relatively shallow and therefore the negative effects of sedimentation are more destructive to the reservoir ecosystem.

Actions to Address the Maintenance of Private and Public Dirt Roads

The following actions are designed to address the issue of maintenance of private and public dirt roads.

Conduct a Comprehensive Analysis of the Town's Dirt Roads

A comprehensive analysis of the town's municipal dirt roads should be conducted by a transportation-consulting firm that possesses expertise in the maintenance and improvement of dirt roads. Once municipal dirt roads have been surveyed and analyzed, a report that outlines the maintenance and improvement procedures required for specific roads should be developed (i.e. re-grading, catch basin installation, increased vegetative cover along roadsides, etc.).

Develop an Annual Maintenance Schedule for the Town's Dirt Roads

With the assistance of the transportation consultant, the Holland Highway Department would develop an annual maintenance schedule for public dirt roads. The maintenance schedule would outline the actions required to maintain specific roads based on the recommendations of the transportation consultant's report.

Establish a Lake/Pond Overlay District

The negative impacts of private dirt roads and driveways in the Hamilton Reservoir area can be addressed through the adoption of a Lake/Pond Overlay District. A Lake/Pond Overlay District sets design standards for private roads and driveways in order to prevent storm water run-off and sedimentation of the reservoir. A detailed description of how a Lake/Pond Overlay District addresses the negative impacts associated with private dirt roads is presented in the Open Space and Resource Protection Element of this plan. An example of a Lake/Pond Overlay District is included in the Appendix.

Examination of the Sidewalk Network in the Town Center

There is currently no sidewalk network in the Town Center. The absence of sidewalks in the Town Center not only discourages pedestrian travel, it also poses a safety hazard for pedestrians. Under the current situation, pedestrians are required to walk on the shoulder of roads in order to reach destinations within the Town Center, such as the Town Hall, the Town Library, Hitchcock Field, and the Elementary School. Due to the presence of the Elementary School and Hitchcock Field (the main playing field for youth sports within the town), the safety of children is a major reason for the establishment of a sidewalk network in the Town Center.

A proposed sidewalk network for the Town Center is presented in Figure T-3. Phase 1 of the proposed network focuses on the Town Hall/Elementary School area due to the priority of addressing safety concerns for pedestrians, particularly children. Phase 2 focuses on connecting the Town Center business district to the Town Hall/Elementary School area. Establishing a sidewalk network will assist to promote the town's goal of creating a more cohesive and accessible Town Center.

Figure T-3: Proposed Sidewalk Network for the Town Center

