

## **I. INTRODUCTION**

### **A. Goal**

The goal of the Lincoln Garden Club's Roadsides Project is to raise awareness of the need to protect and maintain the rural, historic character of Lincoln roadsides. This report is intended to be helpful to both private property owners and to Town officials and staff, in the hope that all can work together on maintaining the rural character of Lincoln.

### **B. Process**

In the fall of 2006, the Roadsides Committee of the Garden Club began researching the issues, reviewing past Town studies on roads and open space, and identifying target roads and intersections. In addition, committee members talked to many groups, committees, Town staff and Town officials to determine their interest in and views about Lincoln's roadsides. This report reflects comments and insights from all those groups.

### **C. Our Report**

Lincoln's roadsides are an important contributor to the Town's highly valued rural character. With the alignment of many of the roadways dating back to colonial times, the experience of moving through the Town for both residents and visitors continues to be one of fields, forests, stone walls and historic buildings that are an important part of our rural heritage. But the impacts of increased traffic volume, new development, and limited maintenance budgets have challenged Lincoln's ability to retain and improve the quality of its roadsides.

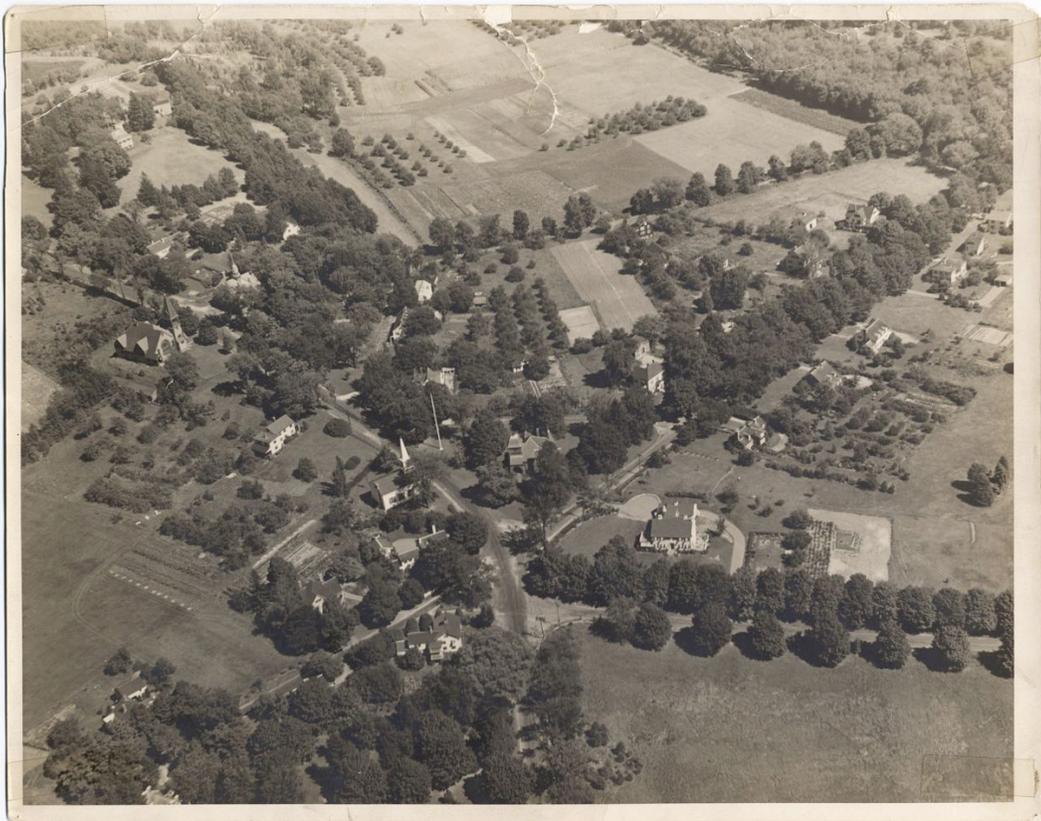
Currently many groups are working to address those challenges. Town boards and residents have been studying and planning for Lincoln's future: The Long Range Planning Committee with its Transportation, Land Use, and Built Environment Committees; the Ad Hoc Roadways and Traffic Committee; and the Conservation Commission with its Open Space and Recreation Plan Committee and its focus on invasive plant management. All these groups have acknowledged the importance of Lincoln's roadsides as part of the Town's open space and rural character. This broader awareness creates an opportunity for the Town, its nonprofit partners, and property owners to work together to restore, improve and maintain our rural roadsides. For example, together we can:

- Enhance the public face of the Town, for ourselves and our visitors
- Clean up, reveal, repair and maintain historic stone walls
- Reduce invasives on public rights-of-way and private edges of the road, and restore native plant species
- Open up and maintain historic views of fields and historic properties

## *Lincoln's Roadsides*

- Improve gateway intersections and road edges of key civic properties
- Guide tree pruning by utilities to preserve shape and longevity of roadside trees
- Improve appearance and placement of guard rails, lighting, signs
- Improve public safety with better visibility for motorists, pedestrians, bicyclists

This report suggests guidelines as well as specific actions for both Town government and private residents to improve our roadsides in a manner consistent with our rural heritage. General guidelines are offered for residents and Town staff that apply to all road types. Specific guidelines for 5 road types offer more detail. Actions designed to protect our heritage of stone walls are outlined, as well as appropriate choices for new or replacement plantings along roadways that emphasize native species. In addition, the report sets forth suggested guidelines for the “hardware” of our roadways such as guardrails and other safety and traffic control elements that are not historic but nevertheless necessary to today’s Lincoln roads. The potential for enhanced gateways to Lincoln are outlined as well as a suggested action plan for the Town and private residents.



*This 1938 aerial photo shows regularly spaced tree allees along Lincoln’s main roads at the historic center.*

## II. BACKGROUND

### A. Lincoln's Rural Roadside Heritage

Lincoln's earliest road was the Battle Road, built in 1636, to connect with Concord. During the rest of the 17<sup>th</sup> century, additional small stretches of road were built west to Concord and east to Watertown. No roads, however, were built in what is now the historic center since there were few residents there until the 18<sup>th</sup> century. In the first half of the 18<sup>th</sup> century, roads were gradually built to the meeting house in the center and to link up with the 17<sup>th</sup> century roads. After the incorporation of Lincoln in 1754, road connections north, south and west were extended. In the 19<sup>th</sup> century, some Lincoln roads were re-routed and others discontinued. Map 1 shows Old Roads of Lincoln 1636-1900, prepared by members of the Lincoln Historical Commission.<sup>2</sup>

Lincoln is fortunate to have much of that early road system intact and protected by the Minute Man National Historical Park (MNHP) and by Lincoln's Scenic Roads Bylaw. MNHP has restored this historic rural character along the 2A roadsides by extensive removal of invasives and overgrowth, the repair of stonewalls, and the clearing of fields. MNHP also is working on a management plan for the Battle Road Scenic Byway, designated by the Commonwealth in 2006. Lincoln's Scenic Roads Bylaw protects over 20 of Lincoln's roads, as show on Map 2.



*Roadside fields restored at Minuteman National Historic Park along Rt. 2A*

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<sup>2</sup> Interview with Kerry Glass, Lincoln Historical Society, February 10, 2009.

## *Lincoln's Roadsides*

The special character of Lincoln's rural roadsides is described in two important Town reports. In 1980 the Lincoln Roadside Committee, chaired by Lincoln resident and landscape architect Ronald Wood, worked with The Regional Land Program, Inc. directed by Michael Everett, on a report titled *Lincoln Roadside Study*. This report was the result of research and mapping of Lincoln's roads, and provides both an overview of the Town's visual character and a way to categorize Lincoln's roads.

*The rural aspects of the Town are best seen in the alternation of forested and agrarian land. Most of the forested land is of two origins- wetlands and long abandoned farm fields. The agricultural land remaining is for the most part visually associated with fine buildings and land uses of obvious cultural richness.*<sup>3</sup>

*The roads of Lincoln are typical of country towns of mid-New England... Lincoln has retained significant portions of its agrarian, nineteenth century land uses and fine architecture built over the last centuries. This has resulted in a pattern of visually dominant zones where open fields defined by rock walls and tree allees combined with the clustered notable architecture of the Town Center have established a memorable image... although much development has occurred in Lincoln, the suburbanization is not significantly evident.*<sup>4</sup>

Thus, the report suggests that the two main images of the Town are its woods and its agricultural land with related buildings, which together create the rural character that we experience as we pass along Lincoln's roads.



*Historic house and fields- Codman House*



*Woods and stone walls lining road*

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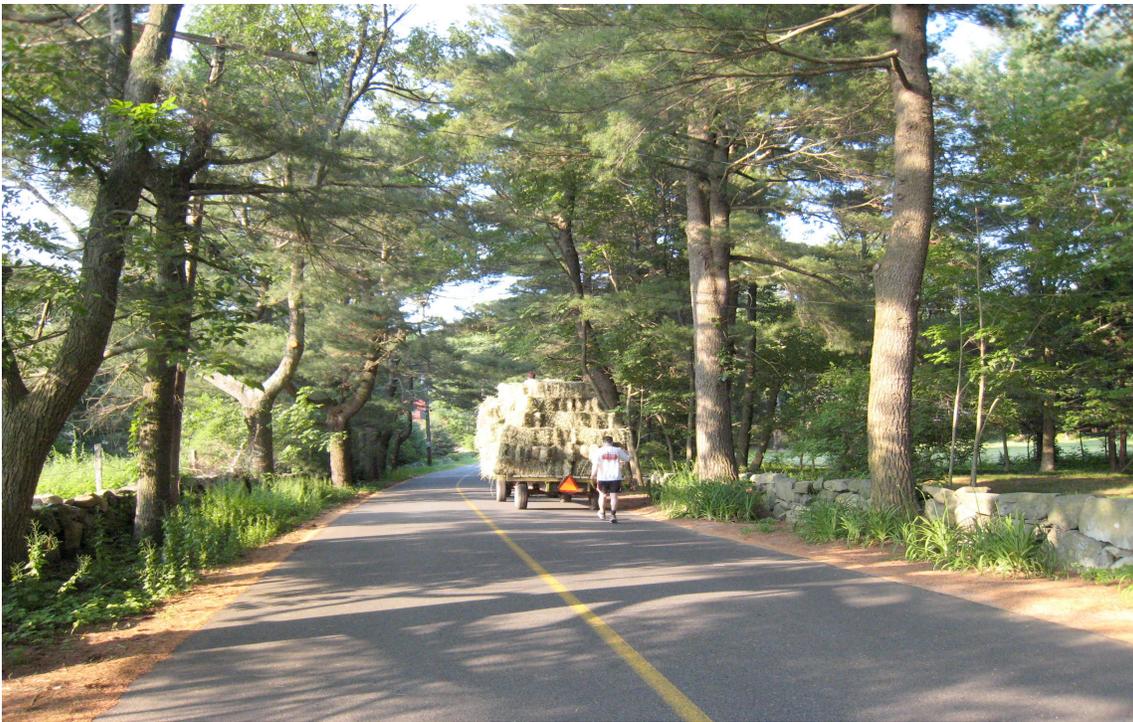
<sup>3</sup> Lincoln Roadside Study, Prepared for the Lincoln Roadside Committee, 1980. Page 3

<sup>4</sup> Lincoln Roadside Study, Prepared for the Lincoln Roadside Committee, 1980. Page 1

*Lincoln's Roadsides*



*View of the historic Flint fields from intersection of Old Lexington Road and Lexington Road.*



*Haying operations on Page Road*

## *Lincoln's Roadsides*

Our scenic roads and our historic stone walls also are well described in the June 2006 *Lincoln Reconnaissance Report*, which includes a heritage landscape inventory for Lincoln.

### *Scenic Roads*

*Roads are the public face of Lincoln, the threads that tie the community together and the corridors from which the landscape is viewed. Much of Lincoln's road system dates back to the Colonial period when roads were laid out for travel by foot or on horseback. Most of Lincoln's roads still reflect their original alignment, width and corridor characteristics despite the fact that they are now used by fast moving automobiles in increasing volume.... Although roughly half of the roads in Town have been designated as scenic roads under the Scenic Roads Bylaw, preserving their rural character while accommodating necessary modern use remains a constant challenge. While each road is slightly different, the primary elements of the road corridor are the alignment, roadbed, trees and stone walls. In addition, the view of adjacent fields, ponds, hills and historic buildings from the roadway plays a critical role in defining rural character.*

### *Stone Walls*

*Related to the issue of roads is that of stone walls which line many of Lincoln's historic roads and define the edges of old farm fields. In many cases property lines fall in the middle of stone walls so ownership and responsibility for maintenance are sometimes unclear. Another issue is that in some cases stone walls are being removed, sometimes without consent of the owner and in other cases because additional access is desired or because they are considered unsightly or inconvenient.<sup>5</sup>*

Historic photos of Lincoln show how open the roadsides and viewsapes were 100 years ago.



*Weston Road 1877*



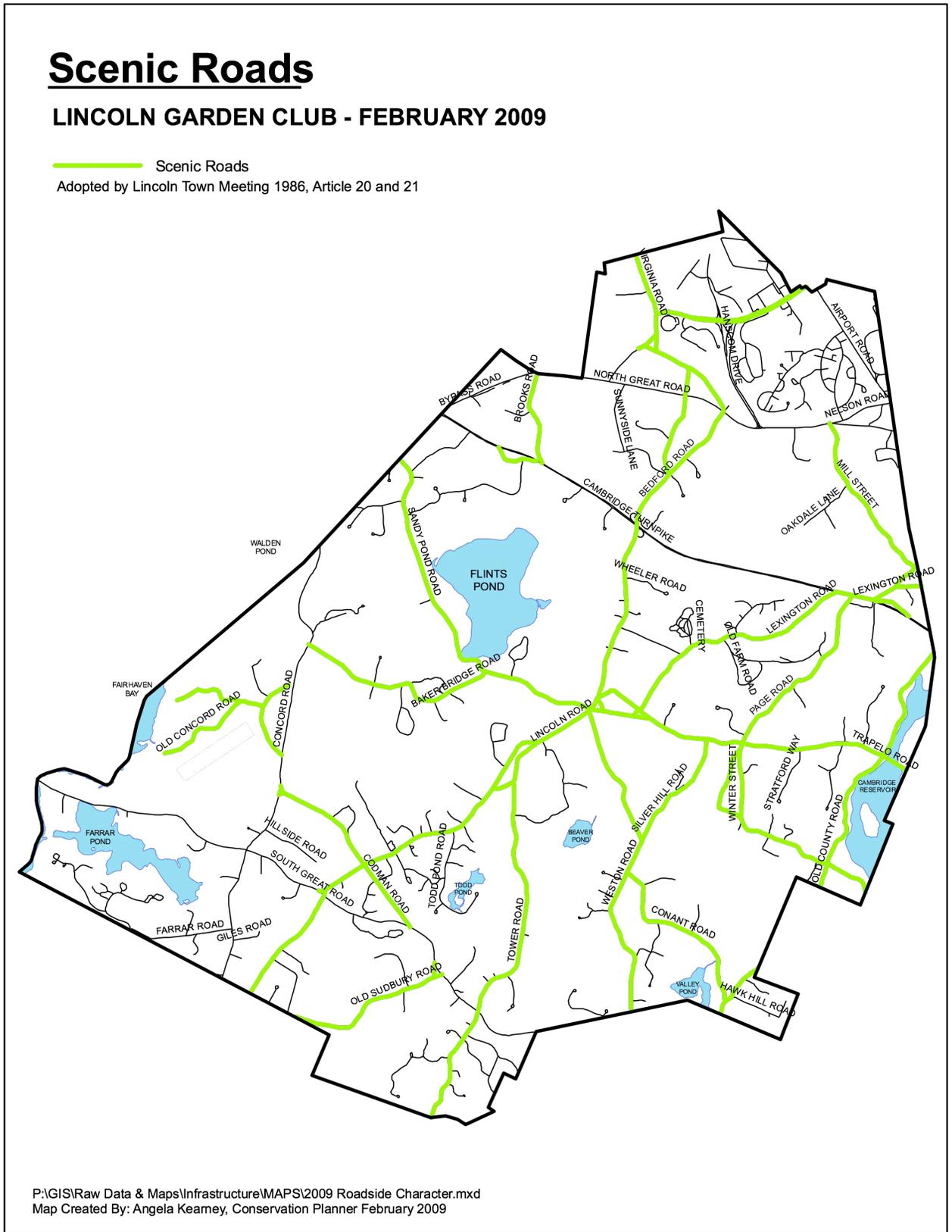
*Weston Road 2008*

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<sup>5</sup> Lincoln Reconnaissance Report 2006. Page 14



## Map 2 Scenic Roads of Lincoln



## **B. Current Challenges**

As noted in the Lincoln Reconnaissance Report <sup>6</sup>, the Town's basic roadway system dates back to the Colonial era and retains much of the original alignment characteristics. What has changed is the intensity of use of the roadway corridors, both for traffic and for the utility infrastructure systems that serve Town residents. The impact of these two forces, coupled with a much more wooded landscape, means that the roadway scene of today is challenged to retain its historic character and beauty. An overview of current challenges can be summarized as follow:

### **1. Impacts of increased traffic volumes**

Greater traffic volumes create demands for "improvements" to facilitate traffic flows and to provide for public safety. Lincoln has resisted roadway widening where it is not justified by safety concerns, but over time the amount of paving within the public right-of-way has often increased, usually to the detriment of the bordering stone walls and landscape. As a consequence, the effects of winter-time sand/salt runoff as well as vehicle-caused damage compromise the health of trees adjacent to the roadside, and stone walls are sometimes disfigured by neglect or the results of roadway widening.

A second impact of increased traffic is the "hardware" that accompanies modern roadway design standards. The "hardware" refers to traffic control signs, street lighting, guardrails, speed bumps, curbing and traffic signals, much of which is mandated by concerns for public safety. Their visual impacts, however, do not generally enhance the roadways, especially when they are in poor repair. Lane striping, while necessary on major roads, has become the norm on many secondary roads to the detriment of their rural and historic character.

Finally, these increased volumes also contribute to the rapid deterioration of the road and roadside path surfaces in many locations.



*Pavement deterioration on Trapelo Road*

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6. Lincoln Reconnaissance Report 2006. Page 2

## **2. Impacts of utility infrastructure**

Modern requirements for public utilities such as water supply, communications, electricity, gas, and fire protection are accommodated within the public right-of-way. These utilities did not exist in the historic road layout. Fortunately newer subdivision roads place all such utilities underground with only limited hardware visible to the public. By contrast, the primary historic roadway network carries all of these services, with the most damaging to visual quality being the overhead wire system. The overhead wires and supporting posts create a visual nuisance, and the associated pruning of trees to protect the wires leaves misshapen crowns and contorted branching structures. In some cases utility companies have removed the tops of trees, but left the trunk standing to slowly deteriorate.



*Misshapen crowns and contorted branching structures from utility company pruning*

## **3. Impacts of increased or unmanaged vegetation**

Historic photos of Lincoln's landscape show contrasts with today's environment. What was an open, less forested, and agricultural landscape has given way to a predominantly wooded environment, with the notable exception of the extraordinary open fields which have been preserved such as Flint's Fields, the Baker Bridge Fields, Codman Road Fields, and others. Where woods have replaced fields, the resultant second growth forest has transformed the look of the public roads.

Several challenges accompany the increased forest growth within and adjacent to the public right-of-ways. First, some trees have grown immediately adjacent to the edge of pavement, creating a safety issue for motorists and a poor environment for growth of the trees. Second, volunteer tree growth has occurred in or adjacent to stone walls, eventually disfiguring or destroying the walls. A third issue is the presence of invasive

## *Lincoln's Roadsides*

plant species. As more and more invasive plants have found their way into the Lincoln landscape, the roadway landscape has suffered visually and ecologically from the growth of plants that literally choke out the native trees, shrubs, and ground cover. As stated by the Lincoln Conservation Commission,

*Roadsides are often corridors for the spread of invasive plant species as windblown seeds establish new populations by moving into other areas of Town. Plowing disengages dirt thus transporting seed contaminated soil along road corridors as well.*<sup>7</sup>



*Volunteer tree growth in wall*



*Overgrown and invasive vegetation*

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<sup>7</sup> Anna Wilkins, Lincoln Conservation Department, May, 2008

### III. Guidelines for Maintaining the Rural Character of Lincoln's Roadsides

*“As a community, we have surely arrived at that stage of development when it is generally understood, as well as desired, that shade and ornamental trees, standing by our roadsides, are to be strictly preserved, and holders of abutting land understand the limitation of their right.”* Town Report 1896<sup>8</sup>

The Town's commitment to its trees and roadsides clearly has a long history. Likewise, the understanding of the public purpose and the private cooperation needed to preserve our roadsides and public shade trees is still understood today. In this chapter, suggestions for how to maintain and improve the varied types of roadsides in Lincoln are offered to both private property owners and the Town.

#### A. Roadside Definitions

To help understand roadside protection and maintenance, one can think of the roadside in two zones:

##### 1. The Public Right-of-Way (ROW)

The **public right-of-way** is owned by the Town, except for Route 2 and 2A which are owned by the Commonwealth. The right-of-way (ROW) includes the pavement and a strip of land adjacent to the pavement edge. In general, the stone walls often define the ROW edge beyond the pavement: from the edge of the pavement to the stone wall, and sometimes including the stone wall. Where there are no stone walls, the ROW strip from the pavement edge is approximately 10 to 15 ft. wide, although some rights of way have different and wider dimensions.

In the public right-of-way, the Town is responsible for general maintenance and tree removal. Property owner actions within the public right-of-way adjacent to their properties are generally restricted to cleaning up trash, removing invasive plant species, and planting groundcovers. Other property owner actions in the ROW should be cleared with the Town. Special reviews by the Planning Board and Tree Warden are required for certain actions proposed within the ROW of the Town's 27 designated Scenic Roads, shown on Map 2. We recommend that all these actions be undertaken in line with the guidelines that follow.

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<sup>8</sup> 1896 Town Report, Page 71

## **2. The bordering landscape**

Beyond the public right-of-way is a larger area that has significant impact on the roadside image. An area that can generally be referenced as **the bordering landscape**, this zone of at least 20-30 feet in width often contains plantings, stone walls, fences and other structures that are an important part of one's view of the roadside. These bordering landscapes are the responsibility of property owners.

The bordering landscape is not subject to any regulations in Lincoln, except in a limited way along the Scenic Roads. In some towns, such as Wellesley and Brewster, the Scenic Road bylaw has been enhanced by defining a scenic road layout or a corridor protection district that includes and protects key private property edges adjacent to the scenic public right-of-way.



*Typical of many roads in Lincoln, this part of Weston Road is defined by stone walls with few trees within the public right-of-way. The image of the road corridor is established in large part by the trees outside the right-of-way, in the bordering landscape of Pierce Park and private residences.*

*Lincoln's Roadsides*



*This bordering landscape of Lincoln Road in South Lincoln consists of a row of magnolia trees outside the public right-of-way. The area between the road and the stone wall is too narrow for planting, and the presence of overhead wires is an added incentive for locating trees beyond the wall.*



*Often the bordering landscape consists of specimen quality trees which, in this case on Page Road, frame views to open meadows beyond.*

*Lincoln's Roadsides*



*Often the bordering landscape beyond the stone wall consists of relatively poor quality trees and invasive plants that should be thinned to improve views and to allow better quality trees to mature.*



*The character of many Lincoln roads is established by mature trees located in the bordering landscape, with relatively few trees between the pavement and stone walls.*

## **B. General Guidelines for All Roadsides**

The following general guidelines address the features associated with all roadsides, such as plantings, stone walls, fences, lighting, signs, and guardrails. These guidelines are offered to assist both public agencies and private property owners in managing the roadsides.

### **1. Clean up**

Roadside clean up can start with trash removal and focus on removing invasive plants that block views or interfere with stone walls.

- a. The following invasive species should be targeted in roadside management due to their relatively small numbers around Town, known extremely aggressive behavior, and considerable negative ecological impacts:

Tree-of-Heaven (*Alianthus altissima*)  
Japanese Knotweed (*Polygonum cuspidatum*)  
Garlic Mustard (*Alliaria petiolata*)  
Black Swallow-wort (*Cynanchum louiseae*)

Many more invasive species have become established in Lincoln, particularly in roadside stone walls, thus contributing to the slow disintegration of the walls. Examples are:

Glossy Buckthorn (*Frangula alnus*)  
Asiatic Bittersweet (*Celastrus orbiculata*)  
Exotic bush honeysuckles (*Lonicera spp.*)

More detail on how to remove and dispose of invasives can be found in Appendix B, prepared by the Conservation Commission, and on their website.

- b. Clean up scrub and volunteer trees along stone walls. Removal of trees over 1 inch caliper within the public right-of-way is subject to town approval. Do not pull out trees by the roots which can damage the wall; rather, cut at the roots and leave a stump. Apply herbicide to cut stump to control resprouts.
- c. The most important guideline is to replant and stabilize areas where soil has been disturbed to prevent invasives from spreading by seeds or root growth and returning more vigorously. See planting recommendations that follow.

### **2. Plantings**

Property owners and the Town share a responsibility for the roadway plantings: the Town plants and maintains trees, shrubs, and ground covers within the public right-of-way while private property owners can plant in the bordering landscape, outside the public right-of-way. In addition, property owners can plant ground covers, grasses and perennials in the right-of-way with the understanding that such plantings are subject to the effects of plowing and mowing by the Town. In some cases where perennial



*Lincoln's Roadsides*

Here are some examples of recommended roadside plants.

Deciduous Trees (App. A1.): Tulip Tree/Yellow Poplar (*Liriodendron tulipifera*)  
Red Maple (*Acer rubrum*)  
Swamp White Oak (*Quercus bicolor*)

Evergreens (App. A2): Balsam Fir (*Abies balsamea*)  
White Spruce (*Picea glauca*)

Deciduous Evergreen (App. A2): American Larch (*Larix laricina*)

Understory Trees (App. A3): Common Witchhazel (*Hamamelis virginiana*)  
River Birch (*Betula nigra*)  
Downy Serviceberry (*Amelanchier arborea*)

Understory Shrubs (App. A 4): Dwarf Fothergilla (*Fothergilla gardenia*)  
Fragrant Sumac (*Rhus aromataica*)  
Winterberry (*Ilex verticillata*)

Groundcover, native grasses, wildflowers: NoMow Seed (without Rye)  
(App. A 5-A9) Hayscented Fern (*Dennstaedtia punctilobula*)  
Showy Goldenrod (*Solidago speciosa*)



*No mow grass after one year*

*Hayscented fern*

*American  
Larch*

*Tulip Tree*

*Downy  
Serviceberry*

### **3. Stone walls**

Stone walls are significant elements of Lincoln's roadsides. Our roadside stone walls are typically drystone farmer's walls, laid without mortar, and usually between two and three feet high. In addition, many stone walls along our roads are also retaining walls, and can reach heights of four or more feet.

*It is best to monitor stone walls and detect problems as they develop, before major repairs are required. This includes keeping the wall free and clear of growth, other than lichen, because the root systems of vines and saplings can prove devastating to a wall's support and structure....Left untended every wall will come apart, tumble to the ground, disperse over acres of soil, and be buried by encroaching vegetation.<sup>9</sup>*

More information on the history and maintenance of stone walls is in Appendix C and is available as a brochure from the Lincoln Garden Club. Stone walls along the Town's Scenic Roads are protected and monitored by the Planning Board.

#### Maintenance Guidelines:

- a. Keep walls free of growth, removing invasives, vines, brush, leaves, and volunteer saplings.
- b. When removing saplings and trees leave the stump. Do not pull out by roots as this can damage the stone wall.
- c. Use traditional techniques to maintain, repair and construct stone walls, according to the type of wall. Many Lincoln walls are drystone farmers' walls, not mortared walls.
  - Consider selecting the size and type of stone and laying techniques similar to nearby roadside stone walls.
  - Consider keeping the height similar to nearby roadside stone walls, which are typically two to three feet high in Lincoln.
- d. Use recommended ground covers in front of stone walls, to avoid entanglement and to preserve views of the wall.



*Lincoln Public Safety Building stone wall before Stone Wall Workshop clean up*



*After Stone Wall Workshop rebuilding*

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<sup>9</sup> Lincoln's Stone Walls, 2009, Lincoln Garden Club; also Appendix C.

*Lincoln's Roadsides*



*Stone Wall Workshop Nov. 2, 2007*



*Pierce Park wall needing restoration*



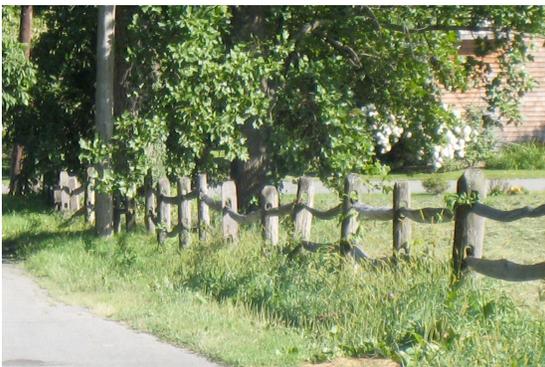
*Stone wall in very good condition along Mackintosh Lane*



*Historically, the consistent line of stonewalls strongly defined road corridors in Lincoln, as shown in this 1887 print looking north toward the Hagan House on Bedford Road.*

**4. Fences** (See Fence Bylaw citation in Appendix G)

- a. Use traditional rural fencing styles in keeping with the roadway type, such as split rail, farm fences, and woven wire/barbed wire fencing for animals. (see following discussion of roadway types in Lincoln, III C).
- b. Fencing near stone walls should be set back to provide sufficient space for maintenance of the walls.
- c. Minimize privacy fencing near the road, set privacy fencing back from the property line/ROW, and add native plantings to reduce visual impact.



*Split rail fencing on ROW line*



*Straight rail farm fencing set back from ROW line*

**5. Lighting** (See Dark Sky Guidelines; citation in Appendix G,

- a. On private property minimize outdoor lighting near roadside edge and at driveways. Utilize fixtures with shielded light sources and limited wattage to eliminate glare when viewed from the roadway.
- b. Utilize glare reducing fixtures, technically referred to as “cut-off” light fixtures, for safety illumination on streets and at intersections. Pedestrian friendly lighting similar to fixtures installed on Library Lane and at Lincoln Station is suggested for areas of higher intensity foot traffic.

**6. Guardrails**

Along some primary and secondary roadways in Lincoln, guardrails are used for safety where the roadside edge drops off or other hazards occur within a zone just off the pavement edge. Many are in disrepair and unsightly. Older guardrails are made of deteriorating concrete bollards and triple wire. Other types include telephone pole posts with triple wire, metal posts with metal guardrails, wooden posts with metal guardrails, and telephone poles without rails or wire. The 1997 Roadway Guidelines include an analysis of guardrail types.<sup>10</sup>

As part of efforts to upgrade the roadside character, the Town could consider using a consistent and standardized approach to the replacement and repair of guardrails, both to reduce costs as well as lessen the visual impact of the hardware. A review of guardrail alternatives conducted as part of the Town's 2009-2010 roadway improvement project has resulted in the recommendation to use wooden posts with interconnecting cables. Such a standard would reinforce the rural character of Lincoln's roads by utilizing a natural, dark-colored material for the posts with relatively low-visibility cables for the interconnecting structure.

**7. Storm water management**

Storm water runoff from Lincoln's roadways is either collected by catch basins and then discharged into the environment via drain lines, or distributed from the pavement directly to the shoulder of the roadway and directly infiltrated into the ground. Environmentally the best practice being favored by cities and towns is to encourage infiltration, both to replenish ground water supplies as well as to take advantage of the natural pollution abatement offered by plants and soils. The Town's program of roadway improvements should favor the maintenance of storm water runoff into the shoulder area, including removal of sand build-up resulting from winter road sanding/salting which eventually inhibits water flows from the pavement. Such a maintenance program not only helps to preserve the integrity of the roadway pavement, but also aids in the control of invasive plants which thrive on disturbed soils.

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<sup>10</sup> *Roadway Design Guidelines, 1997.*

## **8. Signs/traffic control hardware**

Lincoln's roadways include signage and traffic control hardware required for public safety and information. For the most part these elements are seen as a normal part of typical roadways and discounted as an issue to be dealt with in a roadside improvement program. While the shape and content of such signs are controlled by state and national standards, their detailed placement and mounting hardware are subject to better practices. Public bodies such as the National Park Service as well as institutions and non-profit organizations provide examples of such practices. Recent changes in sign support hardware at Five Corners in Lincoln demonstrate a more refined design solution utilizing a round pole painted black. The new Historic District signs, also utilizing the round black pole, are appropriately scaled and designed, informing all of entering our Historic Districts.



*New Historic District signs with round poles*

## **9. Utility poles and lines**

The utility companies such as NSTAR, Verizon and Comcast have an obligation to keep their lines and poles functioning and safe. In Lincoln, virtually all these services are above ground and along the roadside edge, except in certain subdivisions. Thus how these utilities carry out the maintenance of lines and poles has a major impact on the visual character and safety of Lincoln's roadsides.

NSTAR has guidelines for pruning that follow the rule that its primary conductor line must have clearance from limbs as follows: 8 ft. side clearance, 8 ft. clearance below, and 12 ft. clearance above the line. While these dimensions are often not rigidly adhered to, the practical impact of line maintenance is to often create deformed tree crowns that neither enhance the roadway scene nor the tree's structural integrity. The Town's planting practices should recognize this reality and carefully select the location and type of new plantings to avoid the utility line conflicts.