

## CHAPTER 6: TRANSPORTATION RESOURCES— HAMPSHIRE COUNTY

### Introduction

The goal of the Transportation Resources chapter is to assess the existing transportation facilities, identify concerns and recommend improvements. The chapter begins with a comprehensive inventory of transportation related infrastructure and facilities along Route 112, including: road, bridge, public transportation, bicycle, pedestrian, and railway facilities. Information for the inventory comes from a variety of sources, including the MassHighway road inventory files, the Registry of Motor Vehicles, and data routinely gathered and maintained by the transportation staff of the PVPC and FRCOG. In addition, PVPC and FRCOG conducted site assessments to record data on the aesthetics and characteristics of the Route 112 corridor. The information gathered during the site assessments includes the length of the Byway, travel lane width, shoulder width, surface material, the existence or lack of sidewalks, type of guardrails, signs, retaining walls, the layout of major intersections, and the location of existing turnoffs. Issues regarding the maintenance, safety, historic significance and aesthetic character of the transportation facilities along the corridor are also described. The chapter concludes with a discussion about the issues of concern and recommendations for future action.

All of the material in this chapter has been further informed by the Route 112 Scenic Byway Advisory Committee. In developing this chapter, there have been impassioned discussions with the members of the Hampshire County advisory committee in particular. Members care deeply about preserving the rural quality of the roadway and feel that upgrades in recent decades have not been in keeping with the character of their communities. They would like to work with MassHighway to reevaluate the need for these recent changes. For future projects, committee members would like to be engaged as early as possible at the pre-design phase of the process. The need to employ context sensitive design for all roadway modifications and the need to develop a comprehensive signage program for the Byway have emerged as two major recommendations coming out of these discussions.

Throughout this chapter PVPC has worked to present information about the Byway with a concentration on existing MassHighway standards, guidelines, and overall corridor safety while also striving to accurately represent the concerns of advisory committee members.

### History of the Road Development

The Route 112 corridor originally developed into a major route connecting the villages along the Westfield River in southern Hampshire County with villages in the more mountainous regions of northern Hampshire County and Franklin County. This corridor allowed for the movement of people and goods between villages while maintaining the rural character of

the area. Over time, Route 112 became a vital north/south corridor for the region providing inter-county and interstate connectivity. Recognizing this, Massachusetts designated the corridor a state highway in the 1930s. Before this, Route 112 was comprised solely of local roads.

In modern times the communities along the corridor have become bedroom communities with the majority of the residents commuting to the larger urban areas to their places of employment. This has caused the role of Route 112 to change from a link between villages into a vital commuting link between the rural communities along the corridor and the larger urban areas to the east and west. Although the function of the Route 112 corridor has changed over time the rural character of the communities has not.

## **Inventory of the Road: Characteristics and Conditions**

The Corridor Management Plan study area extends 53.4 miles along Route 112, from the Vermont border in the Town of Colrain to the intersection with Route 20 (Jacob 's Ladder Scenic Byway) in the Town of Huntington. Route 112 is an important travel route, serving as the major north-south connection between the hill towns in the western parts of Franklin and Hampshire counties. The road serves as a commercial truck route, an arterial road, and a scenic recreational route.

The Hampshire County section of the Route 112 Scenic Byway is 29.9 miles long, with one travel lane in each direction. Road width varies along the Byway. The minimum travel lane width observed was 9.5 feet per lane and the maximum was 12 feet. The character of Route 112 in Hampshire County reflects its function as an important and primary regional travel route within a scenic rural area.

Jurisdiction over the Route 112 corridor varies by community. MassHighway has jurisdiction over Route 112 in Goshen from the Ashfield town line south into Cummington to the location where Route 112 and Route 9 split at Bryant Road. Cummington maintains Route 112 from the split with Route 9 south to the Worthington town line. Worthington maintains Route 112 from the Cummington town line south to Worthington Corners where Route 112 and Route 143 split. MassHighway has jurisdiction over Route 112 in Worthington from Worthington Corners south to the Huntington town line. MassHighway has jurisdiction over Route 112 throughout the Town of Huntington.

The following section of this chapter summarizes the information gathered on the aesthetic characteristics, overall condition of the road, and other related infrastructure. The MassHighway Road Inventory File data base provides details of the travel lane widths, shoulder width, paving materials, and existence or absence of sidewalks. PVPC verified this information and then supplemented it with information collected during site assessments. The following description is intended to provide a sense of the character and layout of the Byway, traveling from north to south. Segment one, the portion of Route 112 from the Ashfield town line to Route 9 in Goshen, is classified by MassHighway as a "rural major collector." Segments 2 and 3, the portion of Route 112 that runs concurrently with Route 9

in Goshen and Cummington, is classified by MassHighway as a “rural principal arterial.” Segments 4 through 9, the portion of Route 112 that extends south from Route 9 in Cummington to Route 20 in Huntington, is classified by MassHighway as a “rural minor arterial” roadway. All of the information described below is summarized in Table 6-1.

### ***Route 112 Segment Descriptions***

Segment 1: Cape Street (Goshen) The first segment of Route 112 extends south from the Ashfield Town Line to United States Marine Corps Highway for a distance of 1.7 miles. Cape Street provides access to the D.A.R. state forest, where camping and other outdoor recreational activities are available for visitors. Travel lanes are consistently 12 feet wide with 8-foot shoulders throughout this section of roadway. Guardrails are present in a few locations for short distances but are not prevalent. Pavement markings consist of yellow center lines and white edge lines and were observed as being in fair condition with only one slope exceeding 15 percent in grade. The Hampshire County advisory committee believes that this section of the Byway is too wide and too straight, and is not in keeping with the area’s rural character. They believe that every effort should be made to avoid roadway changes of this nature, and that MassHighway consider narrowing the roadway in this segment as part of any road resurfacing projects.

Segment 2: United States Marine Corps Highway(Cummington/Goshen) Segment two of Route 112 extends from Cape Street (Route 112) to the Westfield River Bridge. This 5.5 mile segment is shared with Route 9 and has 12-foot travel lanes with 8-foot shoulders. Steel guardrails are present for the majority of the segment except where curb cuts for roads and driveways are present. Pavement markings consist of yellow center lines and white edge lines and were observed as being in fair condition. Considered as rolling terrain, this segment has several grades greater than 15 percent.

Segment 3: Berkshire Trail (Cummington) The third segment extends from the Westfield River Bridge to Bryant Road, and has similar characteristics to those of segment 2. This 1.5 mile long segment is shared with Route 9, has 12-foot travel lanes and 10-foot shoulders. Hampshire County advisory committee members have characterized this section of Route 112 as a physically unattractive roadway in contrast to the highly scenic area it traverses. Portions of this segment run parallel with the Westfield River, providing nice views of the river before Route 112 crosses above the river at the end of the segment. Steel guardrails are present for the majority of the segment except where curb cuts for roads and driveways are present. Pavement markings consist of yellow center lines and white edge lines and were observed as being in fair condition. This segment also has several grades greater than 15 percent.

Segment 4: Grout Road, and Bryant Road (Cummington) The fourth segment starts at Berkshire Trail (Route 9) and extends for 1.4 miles where it ends at the Five Corners intersection. This section of roadway provides one 12-foot lane of travel in each direction. While shoulders exist along some portions of this segment they could not be measured due to poor pavement conditions and lack of pavement markings. Steel guardrails extended

along both sides of the segment with breaks for driveways. Pavement rutting was observed to be very severe along this segment. The northern section of this segment has a steep downhill grade with slight views to its termination point at Route 9.

Segment 5: West Cummington Road, Dingle Road and Clark Road (Cummington and Worthington) The fifth segment extends from Five Corners intersection in Cummington to Williamsburg Road (Route 143) about 1 mile north of Worthington Corners. This segment is approximately 4.2 miles in length. As with previous segments, Route 112 provides one lane of travel in each direction. This section of Route 112 was observed to be one of the most scenic sections of the corridor. Large sugar maples, pastures, and old farms exist on both sides of the road. The condition of the pavement along this section is poor with a number of locations where there is root damage to the pavement. No pavement markings are present. Shoulder widths range from 0 feet to 1 foot and the roadway lane width averages between 9.5 to 10 feet. A short section of wooden guardrails was observed on the northbound side of the road just after Bronson Brook at mile 13.9 on Dingle Road. A small section of concrete sidewalk is provided over Powell Brook. Steel guardrails are present on both sides of the roadway in two locations at mile 11.4 and mile 13.9 for approximately a hundred feet. This segment consists of rolling terrain with curved roadway alignments. PVPC identified some safety concerns in the area due to the narrow roadway lane width and the lack of shoulders; however this section of roadway had the lowest traffic volumes of the entire corridor. Based on conversations with representatives from the Town of Cummington, this section has existing drainage issues and can require extraordinary means to clear the road of snow during the winter. These safety concerns are not shared by the Hampshire County advisory committee. Committee members agree unanimously that the portion of this segment located in Cummington is iconic, representing the truest form of a scenic rural road. They believe that future Route 112 Scenic Byway projects should strive to emulate the nature of this portion of roadway.

Segment 6: Huntington Road (Worthington): The sixth segment of Route 112 is approximately 2.6 miles long running from the intersection with Clark Road south to the intersection of Kinne Brook Road. This segment travels through Worthington Corners, site of the only traffic signal on the Hampshire County section of the Byway. Worthington Corners—where Route 112 and Route 143 intersect—consists of a general store, post office, the Worthington Historical Society Meeting House, and several residential dwellings. The roadway is a consistent 24 feet with 2-foot shoulders on either side. Pavement markings consist of double yellow centerlines and single white edge lines in good condition. Steel guardrails are present at mile 16 for about a tenth of a mile span in this segment. The Hampshire County advisory committee feels the section of this segment, which was recently resurfaced from Route 143 south to the Huntington town line, is aesthetically unpleasant and should be avoided in future projects. Worthington Corners was the topic of several conversations regarding past and future highways improvements. It was agreed that this location needs to be further studied to determine the scale of possible improvements at this location. The Hampshire County advisory committee feels that this intersection is over-designed and takes away from the historic character of Worthington Corners. The

Committee would like improvements implemented that would be of more historic nature in order to make the intersection blend in with the community. See Appendix I for schematics of options proposed by Route 112 Scenic Byway Advisory Committee Member Scott Heyl.

Segment 7: Huntington Road/ Worthington Road (Worthington and Huntington) The seventh segment of Route 112 is approximately 9.2 miles in length, and starts at the intersection of Kinne Brook Road in Worthington and winds south along the Westfield and Little Rivers to its terminus at Pond Brook Road (Route 66) in Huntington. The roadway width varies between 26 and 30 feet in this area. The shoulder width is 1 foot for most of the segment except for a few sections where the shoulders increase for a short distance. At Ireland Street (South Worthington Village), 8-foot shoulders are present. Pavement markings consist of double yellow center lines and single white edge lines in good condition. There are no sidewalks on this segment except on the Knightville Bridge where Route 112 crosses the Westfield River. There are also granite curbs here. There are steel guardrails throughout this segment on both sides of the roadway with sporadic breaks for roads, driveways and ledge outcroppings. At mile 23.4, a concrete wall was present for about 150 feet. The existing safety devices do at times interfere with scenic views of the river. This section of roadway is the first section with a significant amount of rolling terrain, the majority of this segment exceeds 15 percent in grade and a few locations exceed 25 percent in grade. The advisory committee feels that this segment, which was recently resurfaced from Route 143 south to the Huntington town line, is aesthetically unpleasant. In particular, members mentioned the reflectors, the width, and the straightening of the roadway.

Segment 8: Worthington Road (Huntington) The eighth segment in Huntington is approximately 2.4 miles in length starting at Pond Brook Road (Route 66) and ending at the intersection of Montgomery Road. This segment of the Route 112 corridor provides one lane for each direction of travel. The road width is a consistent 26 feet allowing for 12-foot travel lanes and 1-foot shoulders. No sidewalks or curbing are provided. Steel guardrails are provided on the southbound side of the roadway for most of this segment, except where curb cuts are present. Steel guardrails are present only where there are steep slopes and curves. Guardrails were observed to be in good condition. The roadway in this segment is mainly flat with some rolling curves through wooded rolling hills. The pavement markings include double yellow centerlines and single white edge lines and are in fair condition.

Segment 9: Worthington Road (Huntington) The ninth and final segment of the Route 112 corridor in Huntington is approximately 1.4 miles in length starting at Montgomery Road and ending at the intersection of Route 20. This segment of Route 112 provides one lane for each direction of travel. The roadway width varies in length from 24 to 32 feet throughout this segment. The 32-foot section of roadway was found on the Cross Bridge where Route 112 and Route 20 intersect. On-street parking was observed on both sides of the road from the northern end of the Cross bridge to Pleasant Street. Sidewalks are present on the southbound side of Route 112 from Littleville Road and going south for the remainder of the segment. Sidewalks were observed for the last 0.2 miles on both sides of the road. Steel

guardrails are located at curved sections of roadway and range from fair to good condition. Pavement markings were observed to be in fair condition consisting of double yellow centerlines on the entire segment except where passing is permitted and single white edge lines.

## **Roadside Features: Curbing, Guardrails, Retaining Walls and Signs**

For the purpose of maintaining the scenic qualities of the Byway, PVPC has examined and assessed roadside features such as curbing, guardrails, retaining walls and signage. These features are important to consider in ensuring that the scenic and rural qualities of the corridor are maintained. The discussion here is further informed by the concerns of members of the Route 112 Scenic Byway Advisory Committee in Hampshire County, particularly on lighting and on snow and stormwater management.

### ***Curbing***

Curbing is not a major feature along the Byway except in a few limited areas. In the locations where it is used it is generally either granite or asphalt curbing installed primarily in village centers or to channel water into drainage structures.

### ***Guardrails***

Overall, there is a considerable amount of guardrail along the entire Hampshire County section of the Byway. Almost all of it is constructed from standard galvanized steel, which Route 112 Scenic Byway Advisory Committee members feel detracts from the scenic quality of the Byway. Future construction work along the Byway that involves guardrail replacement ought to consider the installation of an alternative guard rail as approved by MassHighway. One possibility is COR-TEN steel guardrails, which are thought to blend in more with rural landscapes, and are commonly used as an alternative to galvanized steel. There may also be opportunities to use steel back timber guardrails, which have a natural look and have been used along other scenic byways across the country to increase aesthetics. Route 112 Scenic Byway Advisory Committee members from Hampshire County would also like to work with MassHighway to reevaluate the need for guardrails in certain locations.

### ***Retaining Walls/Stone Walls***

There are a few locations along the Hampshire County section of Route 112 where retaining walls are present. In Huntington, at mile 26.8, going southbound for approximately 500 feet and then again at mile 27.1 southbound for about 100 feet, low retaining walls made of fencing and stone were observed. The only other retaining wall located in the Hampshire County portion is at mile 23.4; this concrete wall is significantly higher and runs along the

Table 6-1 below summarizes the travel lane and shoulder width of the length of the Hampshire County section of the Byway.

**Table 6-1: Summary of Road Layout Details in Hampshire County**

Street Name	Starting Point	Ending Point	Length	Posted Speed		ADT	Lane Width		Shoulder Width		On Street Parking
				Min	Max		Min	Max	Min	Max	
Cape street	Ashfield Town Line	Route 9 (USMC HWY)	1.7	35	50	1606	12	12	7	8	No
USMC League HWY	Cape Street Goshen	Westfield River Bridge	5.5	35	50	3914	12	12.5	6	9	No
Berkshire Trail	Westfield River Bridge	Bryant road	1.5	50	35	351	12	12	10	10	Yes
Bryant Road/Grout Road	Route 9 (Berkshire Trail)	Five Corners (Bryant Road)	1.4	25	35	373	12	12	0	0	No
Clark Road / W. Cummington Road	Five Corners (Cummington)	Williamsburg Road	4.2	25	35	1288	9.5	10	0	3	No
Huntington Road	Clark Road (Route 143/112 Split)	Kinne Brook Road	2.6	25	45	1288	12	12	2	3	No
Worthington Road/Huntington Road	Kinne Brook Road (Worthington)	Route 66 (Pond Brook Road)	9.2	35	50	1680	12	12	1	8	No
Worthington Road	Route 66 (Pond Brook Road)	Montgomery Road	2.4	35	35	3613	12	12	1	1	No
Worthington Road	Montgomery Road	Route 20 (Huntington)	1.4	25	35	4671	12	12	0	7	Yes

Sources: Data collected by field survey completed by PVPC staff and MassHighway Road Inventory File Year 2006, MassHighway Department Planning.

southbound edge of the road for approximately 150 feet. There are numerous stone walls near the Byway that should be preserved during any future improvement projects. Byway communities may want to examine whether their bylaws adequately protect these stone walls.

### *Signs*

Signs located in the MassHighway roadway right of way (ROW) on Route 112 involve standard road signs installed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD is the national standard for all traffic control devices installed on any public way. Requests to deviate from the MUTCD must be approved by the Federal Highway Administration (FHWA). Signs are located along the Route 112 corridor as required by the MUTCD. There may be the possibility, however, for the number of signs in a specific area to be reduced if the signage exceeds the requirements of the MUTCD. For this to be determined the board of selectmen from the specific community may request MassHighway District 1 to perform a sign audit at specific locations to determine the necessity of the signs.

There are several locations where signs are obstructed by vegetation making it difficult if not impossible to read the signs. Signs have been a major point of discussion with Route 112 Scenic Byway Advisory Committee members from Hampshire County. Members would like to explore with MassHighway the possibility of developing a comprehensive signage program for the Byway that is both in keeping with the area's rural character, and can help unify the Byway through the use of an easily recognizable symbol.

Signs to be added at specific locations along the corridor for aesthetic or informational purposes that do not conform to the MUTCD must be approved by MassHighway or placed outside the MassHighway roadway ROW.

Appendix I has schematics drawn by a Hampshire County advisory committee member showing a sign alternative desired for Worthington Corners. The signs in the schematics do not conform to the MUTCD and would need to be approved for installation. If approved these sign alternatives could also be utilized at other strategic locations along the corridor.

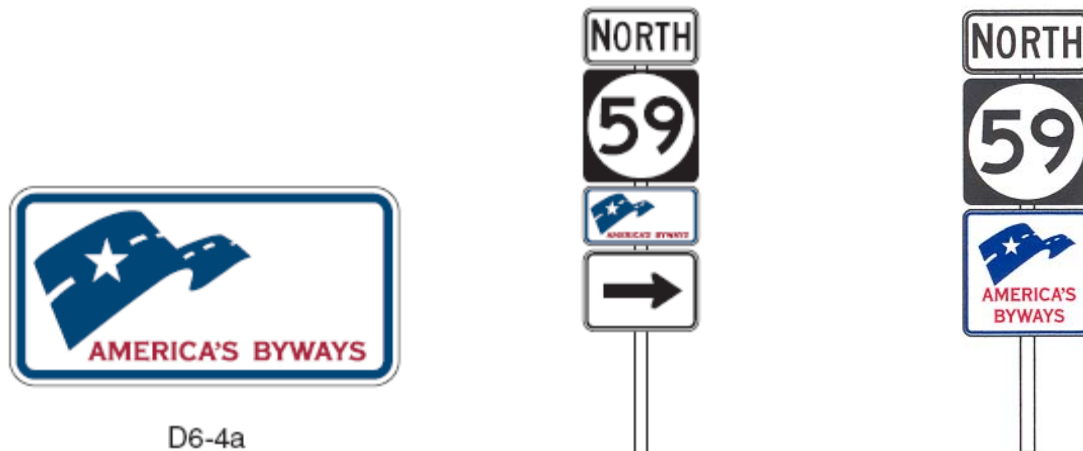
The Jacob's Ladder Scenic Byway received approval to locate way-finding signs along the Jacob's Ladder Scenic Byway. The committee submitted a letter requesting way-finding signage along that byway along with an example of the type of signage desired (see picture at right). MassHighway District 1 approved the way-finding signs to



*Way-finding sign approved for nearby Jacob's Ladder Trail.*

be placed at specified locations along that byway. Any signage acquired using federal funds would also be required to be located on publicly owned land. A community may use federal funds for signage on private land if an easement has been granted to the community for the land where the sign is to be located.

Routes designated by the U.S. Secretary of Transportation as an All-American or National Scenic Byway may install the Americas Byway way-finding signs shown below. These signs may be installed on route sign assemblies or as part of larger roadside structures. National Scenic Byways signs may also be installed at periodic intervals along the designated route and at intersections where the designated route turns or follows a different numbered highway. At locations where roadside features have been developed to enhance the traveler's experience such as rest areas, historic sites, or scenic overlooks, the National Scenic Byways sign may be placed on the associated sign assembly to inform travelers that the site contributes to the byway travel experience.



*Examples of way-finding signs for routes designated as All-American Byways.*

Signs associated with commercial uses were found to be limited along Route 112 and generally do not detract from the scenic nature of the corridor. There are also a number of historic markers located along the Byway to identify locations of historical significance.

### ***Lighting***

Street lights along the Route 112 Scenic Byway are owned and operated by the municipalities. A member of the advisory committee has noted that lights in some locations detract from the rural night experience. PVPC recommends that communities develop a local process to evaluate the location of street lights along the corridor. PVPC also recommends that safety during the hours of darkness be incorporated into this process. Any light proposed for removal along MassHighway owned sections of Route

112 should be discussed with MassHighway prior to removal to ensure safety is not affected negatively.

### ***Snow and Stormwater Management***

Much of Route 112 in Hampshire County parallels the Westfield River, a nationally designated Wild and Scenic River. Advisory committee members from Hampshire County have requested that MassHighway pursue stormwater management practices that better protect this important resource. Specifically, the advisory committee has requested that where possible, MassHighway install planted swales that will prevent the movement of roadway runoff into the river.

Huntington advisory committee members have noted that residents are often in violation of a local bylaw that stipulates that they must keep the sidewalks in front of their homes clear of snow. This violation occurs because Route 112 snow removal operations put large amounts of snow on the sidewalks (there are no snow buffers between the roadway and the sidewalks).

## **Alternative Design**

As described throughout this report, Route 112 is a scenic roadway that winds and curves through hilly terrain. Roadway reconstruction projects over recent decades have generally detracted from Route 112's rural and historic scenic character. While the road has become an important transportation route, a concerted effort should be made going forward to maintain the character of the roadway during any improvement projects. In instances where roadway improvements are considered, the scenic beauty, rural and historic character, and intrinsic qualities of the Byway should be considered.

*Context Sensitive Solutions (CSS)*, or *Context Sensitive Design (CSD)* as it is also known, provide one means of safeguarding these qualities. CSS refers to roadway design standards and development practices that are flexible and sensitive to balancing a community's economic, social and environmental objectives.

*The Massachusetts Highway Department Project Development and Design Guidebook* includes a new procedure that allows for more CSS design. Section 2.11 (design exception) of the Guidebook, explains the new procedures involved in the design exception process. The design exception section of the Guidebook replaces the "Footprint Roads Pilot Program." The design exception process involves the completion of a design exception report that details which of the 13 AASHTO control criteria is not met. Safety and traffic operational goals must still be met by the facility with the lower standards. The report must be completed and given to MassHighway along with the 25 percent design submittal for review by the design exceptions committee. Once approved by the committee the design exception is forwarded to FHWA for their approval. Scenic Byway designation does not automatically qualify for a design exception. Design

exceptions are granted only when there are geometric features that cannot be reasonably corrected or addressed due to engineering, topographic, or construction constraints.

There are many details that define the scenic beauty, historic character and intrinsic qualities of Route 112. Improvements should attend to all level of roadway detail, including guardrails, barriers and retaining walls. Designs for the most context sensitive features should be considered on a case-by-case basis given the specific location. Table 6-2 includes some alternative materials that have been used on other scenic byway projects or in other locations in Western Massachusetts as more appropriate aesthetically pleasing alternatives to traditional highway features. It is important to note that technology is constantly evolving and it is important to consider all possible engineering features available.

While the initial cost of installing alternative design features may be more costly, consideration should be taken of the long-term durability. A comprehensive and long-term cost-benefit analysis of the desired technique should be conducted to evaluate the true cost of the alternative. For example, the concrete-core masonry guardrail may have a higher construction costs; however, the durability of concrete and stone can be expected to outlast that of steel. In addition, the aesthetic quality maintained or improved through the construction of roadway features that are more appropriate for the Byway will ensure local support and also be a positive influence on tourism. These positive impacts should be included in the cost-benefit analysis.

**Table 6-2: Alternative Design Techniques and Features (Guardrails, Guard Walls, Retaining Walls)**

<b>Alternative Design Technique</b>	<b>Description</b>	<b>Locations Where Feature has Been Used</b>
Steel-backed Timber Guardrail	Wooden rail surface backed with reinforced steel.	George Washington Memorial Parkway, VA Blue Ridge Parkway, VA
COR-TEN Steel Guardrails	Steel guardrail with a weathered or rustic look that blends in with the surrounding landscape.	Cor ten steel guardrails are used in many locations. See: Lower Hope Street, Greenfield.
Box Beam Rails	Box beams located lower than usual guardrail allows for view	Dumbarton Bridge, Potomac Parkway, Washington, DC
Columbia River Highway Guardrail	Whitewashed wooden rail backed with reinforced steel	Columbia River Highway, OR
Hidden Guardrails	Guardrails hidden by roadside vegetation	In New Jersey
Ironwood Guardrail System	The post system uses composite rails attached to steel posts set in soil. The above ground section of each post is covered by timber, which functions as a block-out while also providing an all-wood appearance.	Watkins Glen, NY
“Rockefeller’s Teeth” stone walls	Segmented native stone guards	Acadia National Park Motor Road, ME
Concrete-core Stone Masonry Guard wall	The retaining wall has a concrete core and native stones are applied to the façade for a more natural look.	Skyline Drive, VA and on Route 66 in Hampshire County, Massachusetts
Pre-cast Simulated Stone Wall	Pre-cast concrete panels designed, textured, and colored to resemble native stonework	Baltimore Washington Parkway, MD

Sources: FHWA, *Flexibility in Highway Design*, 1997.

Marriott, *Saving Historic Roads, Policy & Design*, 1998.

FRCOG, *Design Alternatives for Rural Roads*, 2001.

## Pavement Conditions and Pavement Management Analysis

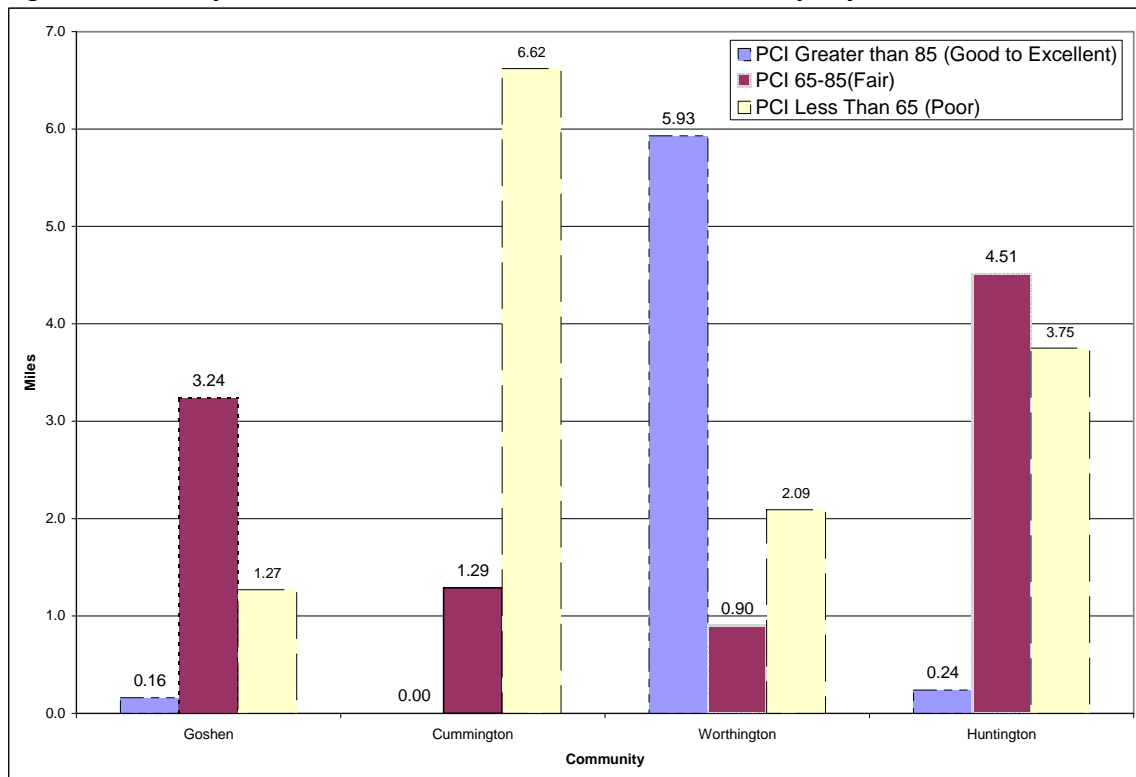
PVPC has a system in place for managing pavement for all Federal-Aid eligible roadways in the Pioneer Valley region. Route 112 is a functionally classified roadway which relies on federal funding for much of its pavement maintenance activities.

PVPC staff surveyed all 29.9 miles that comprises the Route 112 corridor from the Ashfield town line to the intersection of Route 20 and 112 in Huntington. The entire study area was divided into 33 roadway segments. Pavement Condition Index (PCI) is a measurement of roadway serviceability and is a method to establish performance criteria. The average PCI for Route 112 in December 2006 was rated at 70, which indicates that the majority of segments are in fair condition. The PCI condition survey analysis of roadway segments is broken down as follows: 12 percent of the segments have a PCI greater than 85 (good to excellent), 48 percent have a PCI between 65 and 85 (fair), and 36 percent of the roadway segments have a PCI less than 65 (poor).

A list of the Route 112 corridor segments, their respective PCI rating, the required repair type, and estimated improvement cost, is presented in Appendix F.

Figure 1 summarizes the existing roadway conditions for each community. This figure illustrates miles of roadway within each PCI category.

**Figure 1: Roadway Conditions December 2006 Route 112 Scenic Byway**



Source: PVPC

## **Vehicular Use and Roadway Performance Related Statistics along the Byway**

Traffic counts are conducted by FRCOG in Franklin County and by PVPC in Hampshire County. In addition, MassHighway routinely collects traffic counts on roads within the state's jurisdiction, including Route 112. Maintaining a data base of traffic volume counts provides a way to monitor growth in the Byway area and determine future needs.

### **Traffic Volumes**

PVPC has collected traffic volume data at a number of locations along and adjacent to Route 112 in the past years. The data consists of traffic volumes collected during a period of 48 weekday hours. The count data collected was averaged to calculate an Average Daily Traffic (ADT) volume, which was multiplied by a seasonal adjustment factor to produce an Average Annual Daily Traffic (AADT) volume for each location.

The seasonal adjustment factors are intended to correct irregularities in traffic volumes in order to calculate an Average Annual Daily Traffic (AADT) volume count that reflects a typical day. MassHighway calculates the seasonal adjustment factors based on data collected at more than 200 statewide permanent traffic count locations where data is collected 365 days of the year. The AADT is used to calculate an Annual Growth Rate (AGR), which quantifies the percent of traffic volume growth over time. It is important to note that while the methodology for calculating AADT volumes follows a standard procedure, the seasonal adjustment factors used to calculate the average Annual Growth Rates (AGR) rely on figures compiled from locations across the State.

Table 6-3 lists the AADT for traffic counts at locations on Route 112 in Hampshire County as well as for the AGR for locations where multiple counts were conducted during different years. Table 6-4 contains the AADT for traffic count locations adjacent to Route 112. Each table includes traffic count data collected during the past ten years for the specific locations.

These figures are intended to provide a general idea of the volume and growth trends along the Byway. Unfortunately, it was not feasible to collect traffic volume data on all of the collector roads that feed into the Route 112 corridor. Monitoring traffic volumes in the future is an important component of ensuring that Byway character is protected and maintained in the future.

Scenic byways typically see an increase in weekend trips especially during fall foliage season. Table 6-5 shows weekend vehicular volume for Saturday and Sunday data (Collected in October of 2006). Raw data is the actual weekend volumes collected. As

can be seen from the table, traffic volumes on a Saturday are higher than Sunday traffic volumes for most locations.

**Table 6-3: Traffic Count Data from locations along Route 112 in Hampshire County**

<u>Town – Street/Route</u>	<u>Location</u>	<u>Past Year Counts</u>		<u>Most Current Counts</u>	
		<u>Year</u>	<u>AADT</u>	<u>Year</u>	<u>AADT</u>
Goshen – Cape Street	N/O Route 9	2005	1529	2006	1494
Goshen – Route 9/112	W/O Cape Street	NA	NA	2006	3640
Cummington – Route 9/112	@ Goshen Town Line	2002	2994	2006	3151
Cummington – Route 9	E/O Bryant Road	2002	3125	2006	3239
Cummington – Grout Road	E/O Five Corners Intersection	NA	NA	2006	326
Cummington – West Cummington Road	S/O Five Corners Intersection	NA	NA	2006	347
Worthington – Clark Road	N/O Williamsburg Road	2002	247	2006	197
Worthington – Williamsburg Road	N/O Old Post Road	2002	1365	2006	1198
Huntington – Worthington Road	@Worthington Town Line	2002	1216	2006	1222
Worthington – Huntington Road	S/O of Old Post Road	2003	1362	2006	1198
Huntington – Worthington Road	S/O County Road	2003	3159	2006	3360
Huntington – Worthington Road	N/O Pond Brook road	2003	1593	2006	1562
Huntington – Worthington Road	N/O Basket Street	NA	NA	2006	4344

*AADT – Average Annual Daily Traffic*

*Sources: Traffic counts completed by MassHighway and PVPC*

**Table 6-4: Traffic Count Data from select side roads adjacent to Route 112 in Hampshire County**

<u>Town – Street/Route</u>	<u>Location</u>	Most Current Count	
		<u>Year</u>	<u>AADT</u>
Goshen – Main Street	S/O Cape Street	2003	4711
Cummington – Bryant Road	W/O Five Corners	2006	39
Cummington – Main Street	N/O Berkshire Trail	2006	767
Worthington – Williamsburg Road	W/O Clarks Hill Road	2002	1534
Worthington – Old North Road	W/O Worthington Road	2002	550
Worthington – Old Post Road	E/O Worthington Road	2002	343
Huntington – Pond Brook Road	E/O Worthington Road	2004	946
Huntington – Bromley Road	W/O Worthington Road	2003	591
Huntington - Russell Road (Route20)	W/O Worthington Road	2003	4037
Huntington - Russell Road (Route20)	E/O Worthington Road	2003	4786

*AADT – Average Annual Daily Traffic*

*Sources: Traffic counts completed by MassHighway and PVPC*

**Table 6-5: Weekend Traffic Count Comparison**

<b>Location</b>	<b>Saturday</b>	<b>Sunday</b>
Cape Street North of Berkshire Trail West	1697	1578
Berkshire Trail West West of Cape Street	4078	3374
United States Marine Corp League Highway @ Goshen Town Line	3461	3174
United States Marine Corp League Highway East of Bryant Road	3702	3347
Grout Road East of Five Corners	273	267
West Cummington Road South of Five Corners	457	465
Clark Road North of Williamsburg Road	293	189
Williamsburg Road North of Old Post Road	1522	942
Huntington Road South of Old Post Road	1627	1028
Worthington Road @ Worthington Town Line	1400	1250
Worthington Road North of Brook Pond Road	1936	1560
Worthington Road South of County Road	3746	2965
Worthington Road North of Basket Street	4388	3330

*Sources: Traffic counts completed by MassHighway and PVPC*

## Level of Service Analysis

A Level of Service (LOS) analysis was completed using Class 2 analysis (described in Appendix G) for the Hampshire County section of the Byway. The analysis resulted in high LOS rankings for the entire roadway ranging from LOS A to LOS B. The majority the roadway was ranked as LOS A, with only two locations scoring as LOS B (See Table 6-6). The two locations are located on the section of Route 112 that is shared with Route 9. These slightly lower rankings are due to the higher rate of speed and the relatively high volume traveling this portion of the corridor, as opposed to the remainder of the study area.

**Table 6-6: Level of Service for Locations Along Route 112 in Hampshire County**

Street Name	ADT	Lane Width (Average)	Speed (85%)	Level of Service
1) Cape Street	1606	12	58	A
2) USMC League HWY	3914	12	52	B
3) Berkshire Trail	3388	12	49	B
4) Grout Road/Bryant Road	373	12	45	A
5) Clark Road / W. Cummington Road	1288	9.5	32	A
6) Huntington Road (N/O Kinne Brook Rd)	1288	12	37	A
7) Worthington Road/Huntington Road	1680	12	50	A
8)Worthington Road (S/O Rt 66)	3613	12	49	A
9) Worthington Road (S/O Montgomery Rd)	4671	12	32	A

Sources: PVPC

All segments of the Byway in Hampshire County are well below capacity indicating that vehicles traveling the Byway will experience little congestion. This shows that Route 112 could accommodate much higher volumes and still be an enjoyable roadway to travel.

## Safety Analysis and Crash Data

The crash data was reviewed for Route 112 to determine if there are locations along the Byway that have existing safety problems. Crash data is available from the Massachusetts Registry of Motor Vehicles (RMV) and also local police departments. Massachusetts' law requires that within 5 days of a crash, all vehicular crashes that result in \$1,000 or more of property damage, or an injury or a fatality, must be reported to the Massachusetts Registry of Motor Vehicles (RMV) and the local Police Department using a standardized Motor Vehicle Crash Operator Report form. MassHighway maintains a database from these crash reports.

Below is a summary of the crash data and findings for locations along Route 112, based on MassHighway data. The most up to date MassHighway crash data available was for the period 2003 through 2005. Table 6-7 provides general statistics over the three-year period from the reported crashes that occurred within the study area.

**Table 6-7: Crash Statistics along Route 112, 2003 through 2005**

Community	Year	Number of Accidents	2003 -2005 Total	Type	2003-2005 Total	Severity
<b>Goshen</b>	2003	4	Angle	1	Property Damage	13
	2004	7	Rear End	1	Personal Injury	8
	2005	10	Head On	1	Fatality	0
			Pedestrian	0	Unknown	0
			Fixed Object	17		
			Side Swipe	1		
			Unknown	0		
<b>Cummington</b>	2003	1	Angle	0	Property Damage	3
	2004	3	Rear End	1	Personal Injury	2
	2005	4	Head On	2	Fatality	1
			Pedestrian	0		
			Fixed Object	3		
			Side Swipe	1		
			Unknown	1		
<b>Worthington</b>	2003	2	Angle	2	Property Damage	4
	2004	5	Rear End	0	Personal Injury	3
	2005	1	Head On	1	Fatality	0
			Pedestrian	0	Unknown	0
			Fixed Object	4		
			Side Swipe	0		
			Unknown	1		
<b>Huntington</b>	2003	14	Angle	3	Property Damage	15
	2004	5	Rear End	4	Personal Injury	5
	2005	5	Head On	1	Fatality	1
			Pedestrian	0	Unknown	3
			Fixed Object	12		
			Side Swipe	2		
			Unknown	2		

Source: MassHighway Department

Route 112 in Goshen had a total of 21 crashes over the three years studied. The number of crashes was observed to increase each of the three years. Over 80 percent of all crashes involved a single vehicle. The roadway on this segment of Route 112 has wide travel lanes with a wide shoulder and is generally straight. The high prevalence of single vehicle crashes suggests that vehicles went off the roadway as a result of driver error.

From 2003 to 2005, Route 112 in Cummington experienced a total of 8 crashes. Three of the crashes (38 percent) were single vehicle collisions and two (25 percent) were head on collisions. The majority of crashes (63 percent) happened during daylight hours. There was one fatality in Cummington over the three-year period. This crash occurred during the daytime on dry pavement. Four of the eight crashes occurred in 2005 in Cummington.

A review of crashes along Route 112 in Worthington shows that 50 percent or 4 of the 8 total crashes in the three year period were single vehicle crashes. The majority of crashes (63 percent) occurred during day light hours, however half occurred during dry conditions and half during wet roadways conditions.

Route 112 in Huntington experienced the highest number of crashes, including one fatality, with twenty four total over the three-year period researched. Crashes in Huntington consisted of: 13 percent angle collisions, 17 percent rear-end collisions, 4 percent head-on collisions, and 40 percent unknown collision types. Single vehicle crashes accounted for 50 percent of all crashes. Most crashes occurred on dry roads during daylight hours. The one fatality on Route 112 occurred on a clear night on a dry, lighted section of roadway and involved a collision with the bridge near Montgomery Road.

**Table 6-8: Summary of Intersection Crash Rates in Hampshire County**

Roadway Location	Community	Number of Crashes	Average Crash Rate
Route 9/112 @ Cape Street	Goshen	3	0.48
Route 9/112 @ Spruce Corner	Goshen	2	0.47
Route 9/112 @ Loomis Rd	Goshen	4	1.23
Route 9/112 @ Fairgrounds Rd	Cummington	4	1.12
Huntington Rd @ Old North Rd	Worthington	2	0.97
Worthington Rd @ Route 66	Huntington	1	0.5
Worthington Rd @ Montgomery Rd	Huntington	2	0.37
Worthington Rd @ Littleville Rd	Huntington	2	0.48
Worthington Rd @ Route 20	Huntington	3	0.42

Sources: MassHighway and PVPC

MassHighway reviews historical data in order to develop standard crash rates for both signalized and unsignalized intersection for each MassHighway district. Crash rates are

measured by combining crash frequency with vehicle volume, making them an effective tool to measure safety hazards at intersections.

The crash rate for signalized intersections in District 1 was calculated to be 0.87 per million entering vehicles (MEV) and 0.66 (MEV) for unsignalized intersections. Table 6-8 summarizes the average crash rate (MEV) for nine intersections along the Route 112 Scenic Byway in Hampshire County. Huntington Road at Old North Road in Worthington is a signalized intersection. It was observed to have an average crash rate of 0.97 (MEV), 0.10 higher than the District 1 average. Two of the unsignalized intersections in the study area were observed to have average crash rates higher than the state average. The two locations are Route 112/9 at Fairgrounds Road (1.12 MEV) in Cummington and Route 112/9 at Loomis Road (1.23 MEV) in Goshen.

## Bridge Inventory

Bridges are a critical component of any transportation system. Maintaining the safety and functionality of bridges is a high priority. Bridges fall primarily under the jurisdiction of the state. Bridge structures longer than 20 feet are inspected by MassHighway, and are ranked according to standards established by the American Association of State Highway and Transportation Officials (AASHTO). The purpose of the AASHTO rating is to provide a standard to compare the status of bridges in a region and across the country. The ratings are based on factors such as its structural integrity, the road's functional classification, and the designed purpose of the bridge. The ratings are used to determine eligibility for bridge reconstruction or replacement.

Bridges are also further classified as “structurally deficient” or “functionally obsolete.” Bridges are determined to be “structurally deficient” if they fall below specific thresholds. Bridges that receive a rating of 4 or lower on a scale of 0-10 are considered Structurally Deficient. A “structurally deficient” bridge has a measurable level of deterioration to its deck, super structure or substructure. A structurally deficient bridge is inspected on a much more frequent basis depending on its level of deterioration.

The classification of a bridge as “functionally obsolete” means that it is inadequate to fulfill its current function. An example would be a four-lane road leading to a two-lane bridge. The bridge itself may be structurally sound; however, its use is limited in some capacity.

Information regarding whether a bridge has a posted weight or height limit is important in assessing a region's transportation network. Weight restrictions are important determinants that can affect freight routes and should be addressed to improve a region's accessibility to goods, people and economic opportunities. It is also important for local fire departments with heavy fire equipment.

The historic character and design of the bridges within the Route 112 Scenic Byway study area must be taken into consideration during rehabilitation/reconstruction work. Table 6-9: Inventory of Bridges in the Route 112 Scenic Byway study area provides data

for each of the bridges located within the towns included in the Byway study area, as listed in the 2006 MassHighway Bridge Listing. This information includes the condition rating, structural evaluation, AASHTO ratings and bridge status.

A total of 13 bridges are located along the Route 112 corridor. The table shows that eight of the bridges are structurally non-deficient, one is structurally deficient, and four are functionally obsolete. Functionally obsolete bridges are considered to be acceptable as long as their condition rating is greater than 50. If and when the condition rating deteriorates to unacceptable conditions, the bridge geometry and capacity may be upgraded as part of a future improvement project. All four functionally obsolete bridges are located in the Town of Huntington. Three of the bridges have a rating of less than 50.

MassHighway District 1 indicates that two of the bridges on the Route 112 corridor are slated for reconstruction within the next five years. Bridge H-27-006 in Huntington spans the Westfield River and the CSX rail line near the intersection of Route 20; it scored a 46 on the AASHTO scale and is considered Functionally Obsolete. The exact details for the reconstruction of the bridge are not known at this time. The project is in the planning stage. Bridge W-45-006 in Worthington spans the Kearney Brook. It scored a 64.4 on the AASHTO scale and is the only structurally deficient bridge along the corridor. This project is being designed under the Pre-Engineered Bridge Program with CME Associates as the designer. The existing structurally deficient bridge will be replaced with a new single span pre-stressed concrete box beam bridge supported on reinforced concrete cantilever abutments behind the existing abutments. The structure will be closed during construction. For bridge W-45-006, MassHighway conducted a public hearing in 2003, but work has not advanced much since.

**Table 6-9: Inventory of Bridges in the Route 112 Scenic Byway Study Area**

Town	Bridge Number	Year Built/Rebuilt	Location	Crossing	AASHTO Rating	Deficiency
Goshen	G-06-001	1950	USMC League Hwy.	Stone Brook	94.2	Non-Deficient
	G-06-003	1950	USMC League Hwy.	Stone Brook	91	Non-Deficient
Cummington	C-21-001	1950	USMC League Hwy.	Swift River	79.9	Non-Deficient
	C-21-002	1939	Berkshire Trail	East Branch Westfield	72.3	Non-Deficient
	C-21-010	1950	USMC League Hwy.	North Branch Swift River	73.9	Non-Deficient
Worthington	W-45-004	1938	Clark Rd.	Bronson Brook	88.5	Non-Deficient
	W-45-006	1939	Dingle Rd	Kearney Brook	64.4	Structurally Deficient
	W-45-014	1971	Huntington Rd.	Little River	96.9	Non-Deficient
	W-45-015	1931	Huntington Rd.	Wards Stream	71.9	Non-Deficient
Huntington	H-27-006	1938	Worthington Rd.	CSX RR & Westfield	46	Functionally Obsolete
	H-27-006	1938	Worthington Rd. (Ramp)	MHD Depot & Other Relief	45.8	Functionally Obsolete
	H-27-007	1921	Worthington Rd.	Westfield River	57.7	Functionally Obsolete
	H-27-008	1940	Worthington Rd.	Pond Brook	48.8	Functionally Obsolete
	H-27-019	1940	Worthington Rd.	Sykes Brook	93.4	Non-Deficient
	H-27-020	2001	Worthington Rd.	Westfield River	91.6	Non-Deficient

Source: Massachusetts Highway Department Bridge Listing, 2006

Information in table 6-9 is subject to change.

## Public Transportation Services

Door-to-door accessible van service (paratransit) for elderly and disabled residents is provided for the Towns of Goshen, Cummington, Worthington, and Huntington by the Franklin Regional Transit Authority (FRTA). There is not currently any fixed route transit service provided in these four towns.

Requests for new transit service are handled by the regional transit authority (RTA) of which the community is a member (FRTA in this case). The RTA will assess the potential for ridership along the proposed new route and may conduct a feasibility study to determine the cost to provide service and estimate potential route alternatives and their effect on ridership. The community is typically expected to bear 25 percent of the costs to provide the transit service on an annual basis. Due to current funding constraints, most RTAs are not expanding their existing transit services unless the cost to provide service can be funded 100 percent by the member community or an alternative source of funds.

## **Bicycle and Pedestrian Access**

The Route 112 Scenic Byway corridor is a quiet roadway, with rolling terrain creating an exceptional opportunity for both pedestrian and cyclist to enjoy nature. Bicycling is one of the best ways to experience the quiet solitude of the winding river basins, migrating birds, and small town neighborhoods of the Byway. Pedestrian use is generally more suitable near town centers where speeds tend to be lower. Route 112 from Route 66 in Huntington to Kinne Brook Road in Worthington has no sidewalks and a shoulder that is between 1 and 2 feet in width, creating a potentially unsafe environment for pedestrians. High vehicular speeds (upwards of 50 miles per hour) also contribute to safety concerns in this area. The southern portion of the study area near Huntington Center is pedestrian friendly. It has sidewalks and shoulders and a relatively low speed of travel. One of the most visually pleasing sections of Route 112, starts at Williamsburg Road in Worthington and ends at Berkshire Trail in Cummington, is a low speed and low volume road and would be better suited for pedestrians with a few minor safety improvements.

### ***Bicycle Level of Service***

The Pioneer Valley Planning Commission evaluated Route 112 for its suitability for bicycle travel through a process that involved measuring travel lane width, shoulder width, vehicle speed, traffic volume and available parking along each roadway segment. Using this information each roadway segment was evaluated using the FHWA (Federal Highway Administration) Bicycle Compatibility Index. BCI is an emerging national standard for quantifying the bike-friendliness of a roadway. While other "level-of-service" indices relate to traffic capacity, BCI measures bicyclist comfort level for specific roadway geometries and traffic conditions. Roadways receive an A to F score with A rated as the most attractive for all levels of cyclists. Many professionals feel that a BCI grade of C is the minimum acceptable grade in order to recommend a roadway for use by a casual cyclist.

**Table 6-10: Bicycle Level of Service Analysis Route 112 Scenic Byway Corridor Study**

Location  Segment	Results		
	BCI	Level of Service	Bicycle Compatibility
1) Cape Street (Ashfield T.L. to USMC League Hwy)	1.95	B	Very High
2) USMC League HWY (Cape St. to Bridge at Westfield River)	2.12	B	Very High
3) Berkshire Trail (Bridge at Westfield River to Bryant Rd)	2.03	B	Very High
4) Grout Road/Bryant Road (Berkshire Trail Route 9 to Five Corners)	3.46	D	Moderately Low
5) Clark Road / W. Cummington Road (Five Corners to Williamsburg Rd)	3.22	C	Moderately High
6) Huntington Road/Williamsburg Rd (Clark Rd to Kinne Brook Rd)	1.80	B	Very High
7) Worthington Road/Huntington Road (Kinne Brook Rd to Pond Brook Rd)	2.69	C	Moderately High
8) Worthington Road (Pond Brook Rd to Montgomery Rd)	2.60	C	Moderately High
9) Worthington Road (Montgomery Rd to Route 20)	4.12	D	Moderately Low

Source: PVPC

As can be seen from table 6-10, seven of the nine segments function at a LOS of C or better. Segments 9 and 4 received BCI scores of “D.” This can be attributed to un-designated on-street parking along segment 9 which utilizes the shoulder of the road requiring cyclist to ride in the travel lane. This can create conflicts between vehicles entering and exiting the on-street parking area and cyclists attempting to navigate the roadway. Segment 4 was rated low compared to similar segments due to the relatively higher speeds, poor pavement conditions, and lack of a marked shoulder on the roadway. Although segment five received a BCI score of “C” this section is recommended for riders of a higher skill level, due to the high rate of speed vehicles travel and the narrow shoulder on the roadway.

## Findings and Recommendations

Findings	Recommendations
<p>Roadway reconstruction projects have detracted from the historic and rural scenic character of Route 112.</p>	<p>Work with Mass Highway District 1 to ensure that the <i>Massachusetts Project Development and Design Guidebook</i> (2006) includes provisions that will safeguard the historic and rural scenic character of the Route 112 Scenic Byway and other scenic byways during any improvement projects. Work with MassHighway to develop a practice whereby the Route 112 Scenic Byway Committee receives sufficient pre-design notice anytime a project, including signage, is being considered that may affect the Byway. Talk with Executive Office of Transportation about establishing automatic process whereby preliminary project work includes a checkbox indicating whether the project is planned for a scenic byway. This would trigger notification of scenic byway advisory groups.</p> <p><i>Context Sensitive Solutions (CSS)</i>, or <i>Context Sensitive Design (CSD)</i> as it is also known, which refers to roadway design standards and development practices that are flexible and sensitive to balancing a community’s economic, social and environmental objectives, ought to be employed at every opportunity along Route 112.</p> <p>The Design Exceptions section of Chapter 2 of the <i>MassHighway Department Project Development and Design Guide</i> should be consulted when considering roadway improvement projects along the Route 112 corridor. The design exception allows projects in context sensitive areas to reduce specific requirements when designing projects in those areas (see Appendix E). Design exceptions are granted only when there are geometric features that cannot be reasonably corrected or addressed due to engineering, topographic, or construction constraints. Scenic byway designation does not automatically qualify for a design exception.</p> <p>MassHighway District 1 should consider evaluating the reduction of lane and shoulder width as appropriate and in accordance with their 2006 <i>Project Development and Design Guidebook</i> as part of future roadway improvement projects along the Route 112 corridor.</p>

<b>Findings</b>	<b>Recommendations</b>
Many of the existing traffic signs along the Route 112 corridor were observed to be obscured by vegetation at the time of the field inventory.	Vegetation along the entire Route 112 corridor should be maintained on a periodic basis to ensure that good visibility is maintained for all traffic signs. Maintenance of existing vegetation at local intersections and access driveways is critical to ensure that adequate sight distance is maintained from the minor street approaches. Any vegetation removal should be done in a sensitive manner in order to avoid over clearing which will result in a reduction in the scenic qualities of the roadway. In some instances it may be necessary to approach property owners to request that existing vegetation be trimmed or removed to provide adequate sight distance
Traffic signs are not always consistent with the rural and scenic quality of the Byway	Develop a comprehensive signage program along the Route 112 Scenic Byway to provide a consistent aesthetic quality along the corridor by first approaching MassHighway District 1 Office to discuss options for consolidating existing traffic signs and using signs that better reflect the historic, rural, and scenic qualities of the Byway. PVPC has already conducted a sign inventory for Route 112 in Goshen, Cummington, Worthington and Huntington.
Historic trees along the Byway are in need of protection.	Byway communities should adopt a tree bylaw that will provide some protection for historic trees along Route 112. In addition, an arborist should be consulted prior to redesign of the Route 112 corridor to ensure appropriate measures are undertaken to protect and properly maintain the mature trees that line the corridor. Where possible the maple rows should be restored outside of the roadway right of way.
The segment of Route 112 in Cummington that is lined by old sugar maples carries outstanding scenic values, yet local safety officials are concerned about the condition of the roadway and issues related to drainage and snow removal.	Bring public safety officials and local Route 112 neighbors to the table in order to develop a mutually agreeable plan for preserving the scenic values of the roadway over the long term.
Several sections of Route 112 require improvements to address poor pavement conditions.	It is recommended that each town contact MassHighway District 1 to discuss how the existing pavement conditions could be improved within the existing roadway layout.

<b>Findings</b>	<b>Recommendations</b>
Pavement markings were noted to be faded in several locations along the corridor. Pavement markings serve as a way to provide regulatory and warning information to the driver without diverting his/her attention from the roadway.	PVPC feels it is important to maintain pavement markings on a regular basis to ensure that maximum visibility is maintained. In areas with no pavement markings, new reflective markings should be installed to define travel lanes and passing and no-passing zones. Advisory committee members from Hampshire County are opposed to the use of in-pavement reflectors along the roadway.
Salt and other roadway contaminants pose a threat to the health of nearby surface waters. MassHighway has guidelines in place that allows communities or residents to request the reduction of salt on state-maintained roadways.	Local communities should identify environmentally sensitive locations, especially near water supplies, where reducing the amount of salt used during the winter months will reduce contamination.  Any future roadway project should consider installation of stormwater best management practices to ensure the health of nearby surface waters. These best management practices could include vegetated swales, infiltration basins, and possibly areas of porous pavement.
Some roadways along the Route 112 corridor currently intersect at severe angles or have sight distance restrictions due to existing land uses and structures. These include: Five Corners (Cummington) Old North Road (Worthington) County Road (Huntington) Montgomery Road (Huntington) Basket Street (Huntington)	It is the opinion of the PVPC that non-standard intersection alignments and unidentified sight distance restriction could contribute to future safety problems as traffic continues to grow along the Route 112 corridor. Advisory committee members from Hampshire County do not agree with this recommendation, the committee feels nonstandard intersections give a sense of place and add character to the experience of the Byway. Any recommended intersection improvements must have the support from the Town in which the intersection exists.
<i>Five Corners, Cummington</i> intersection is an irregularly shaped intersection	New markings should be painted at this intersection to better delineate travel lanes and stop lines. Guide signs should be replaced/installed in a historical context to clearly identify the Route 112 corridor to drivers. An advanced warning sign (a modified W2-1) showing a five leg intersection should be installed on any approach without a stop sign. Advisory committee members from Hampshire County feel that these intersections are integral to the historic and scenic character of the Byway. They object to any markings or realignments at these intersections.

<b>Findings</b>	<b>Recommendations</b>
<i>Worthington Corners</i> is a location that might benefit from enhancements such as pedestrian amenities and streetscapes, as well as contextually sensitive designs to restore the historic character of this village.	The Town of Worthington could explore pedestrian amenities such as the utilization of existing and possible acquired right of way to develop a pedestrian/bicycle path connecting the Corners (Worthington Post Office) with the Maples Senior Housing Complex to the north and the town center to the south. Any pedestrian/safety enhancements using state or federal funds must be ADA compliant. The right turn off of Route 112 to Route 143 North is historic and should remain unchanged. The Town has also indicated they prefer not to designate on-street parking spaces.
Based on the peak hour turning movement counts performed by the PVPC, it does not appear that minimum traffic volume requirements are currently satisfied to support traffic signal control at <i>Worthington Corners</i>	This intersection should be studied in greater detail to determine if the minimum requirements are still met for the full time operation of a traffic signal.  PVPC can perform a traffic signal warrant analysis and associated study at this intersection as part of the Local Technical Assistance Program upon written request from the Worthington Board of Selectmen. MassHighway should be consulted anytime an activity is proposed for a roadway under their jurisdiction.
Intersection safety at <i>Route 66, Huntington</i>	PVPC recommends that the existing painted island at the intersection of Route 112 with Route 66 should be converted to a raised median. This would ensure that left turning vehicles from Route 112 remain on the proper side of the roadway and assist in reducing the speed at which this maneuver is currently performed. Sight distance is also limited for Route 66 looking to the south. This could be improved by reducing the existing embankment along Route 112. The existing "STOP Ahead" sign on the Route 66 approach to the intersection should be moved approximately 100 to 200 feet back to give more advance warning of the approaching intersection.
Intersection Safety at <i>Basket Street, Huntington</i>	The intersection of Route 112, Basket Street, and Maple Street currently operates under stop control on the two minor approaches. It was noted that the majority of vehicles failed to stop. This intersection originally operated under "Yield" sign control. The Town of Huntington may consider converting the intersection back to "Yield" sign control.

<b>Findings</b>	<b>Recommendations</b>
Traffic flow improvements at the intersection of <i>Route 20, Huntington</i>	An analysis should be performed to determine if the southbound approach of Route 112 at Route 20 warrants an exclusive left and right turn lane. Traffic from this approach was observed to drive the roadway in this manner; however the designation of actual turning lanes would assist in improving traffic flow along this approach and to guide left turning traffic from Route 20 around the existing median. Pedestrian crosswalks should also be considered at this intersection to connect the existing sidewalks in the vicinity of the intersection. Sight distance from Route 112 to the east could also be improved by removing the existing vegetation along the guardrail
Restoration of <i>Worthington Town Common</i> in the vicinity of Worthington Town Hall could add to the scenic value of Route 112.	Advisory committee members from Hampshire County discussed the possibility of relocating the roadway in order to restore the Worthington Town Common. It is recommended this concept be discussed with local officials and then possibly with MassHighway District 1 to determine the feasibility of restoration and its potential impact on the existing transportation and land use in the vicinity of the Town Hall. Any request of MassHighway would need to come from the Worthington Board of Selectmen.
Project 602994 in Huntington calls for the replacement of Bridge H-27-006 (Cross Bridge) Route 112 over the Westfield River and Conrail is currently in planning phase. This bridge was given a score of 46 and is currently rated as functionally obsolete. Project 603646 is the replacement of Bridge W-45-006 Route 112 over Kearney Brook. This project replaces the only structurally deficient bridge in the study area.	MassHighway's Bridge section is currently focusing on both structurally deficient bridges and preservation of non-structurally deficient bridges (which involves keeping these bridges from falling into the structurally deficient category). Consideration of bridges for rehabilitation or replacement is based on MassHighway's ongoing inspection program and the availability of funds. It will be important to continue to monitor all bridges along the Byways. Care should be taken to use bridge preservation techniques where practical to keep bridges out of the structurally deficient category.
Bridge railings could be more consistent with the historic and scenic character of the Byway.	Any new construction or bridge improvement along the Byway should utilize bridge railings that are consistent with the character of the Byway such as glue-laminated wood bridge railing, Federal lands Modified Kansas corral bridge railing, or stone masonry railings. Bridge railings must be crash tested and approved by MassHighway's bridge section before installation.

<b>Findings</b>	<b>Recommendations</b>
Norwich Bridge (H-27-007, AASHTO rating of 57.7) and Pond Brook Bridge (H-27-008, AASHTO rating of 48.8) are both considered functionally obsolete.	It is recommended that MassHighway create projects for both bridges so that they be upgraded to MassHighway standards for arterial highways. It will be important to preserve the historic character of these bridges. Advisory committee members from Hampshire County are of the opinion that Norwich bridge should be restored not replaced
In several segments, stone walls are integral to the character of the Byway. Many of these walls are in need of preservation and protection.	Protection of stone walls should be a part of future roadway improvement programs. Explore what options there may be to establish local review for alteration of stone walls along Route 112. (Note that MGL, Chapter 40, Section 15c, which enables cities and towns to establish a scenic roads bylaw that could safeguard stone walls, excludes numbered routes or state highways.)
Retaining walls are not always in character with the rural scenic nature of Route 112.	It is recommended that all roadway improvement projects requiring reconstruction or rehabilitation include the evaluation and appropriate replacement of retaining walls. Where replacement is warranted, stone retaining walls are the most consistent with the scenic character along the Byway. Dry or mortared stone walls, as appropriate, should be used if new retaining walls are constructed, and to replace existing retaining walls if needed
In several locations of the Byway, guardrails have not been installed in a manner that is compatible with the scenic nature of the road.	As roadway improvement projects are completed, encourage the use of new guard rails of more aesthetically appropriate design and materials, such as wooden rails or cable, rather than galvanized steel. Advisory committee members from Hampshire County expressed interest in the removal of guardrails, where possible, to maximize visibility of scenic areas. A request must come from the board of selectmen for a given town to MassHighway District 1 to conduct a safety analysis of existing areas protected by guardrails to determine if they could be removed.

<b>Findings</b>	<b>Recommendations</b>
<p>There are too many street lights; too much night-time light pollution and glare.</p>	<p>Based on concerns from the Hampshire County advisory committee members about nighttime light pollution and glare on the Byway, PVPC’s recommendations include using standards for hooded street lights; exploring historic style path lighting; and enforcing “no light pollution crossing property lines” principle that are appropriate to the Byway. Any candidate locations for street light removal should be first discussed at a local board of selectmen meeting. Upon favorable review, a request for removal should be submitted to the appropriate agency. Some of the street lights along the corridor illuminate sections of state-owned highway, in these locations it is recommended that the municipality discuss potential light removal with MassHighway to ensure that safety does not decrease during hours of darkness.</p>
<p>In Huntington, grass buffers between the roadway and existing sidewalks have been eliminated in many places.</p>	<p>It would be advantageous to reinstall grass buffers between the roadway and existing sidewalks along Route 112 where practical. This buffer would allow for the storage of snow.</p>