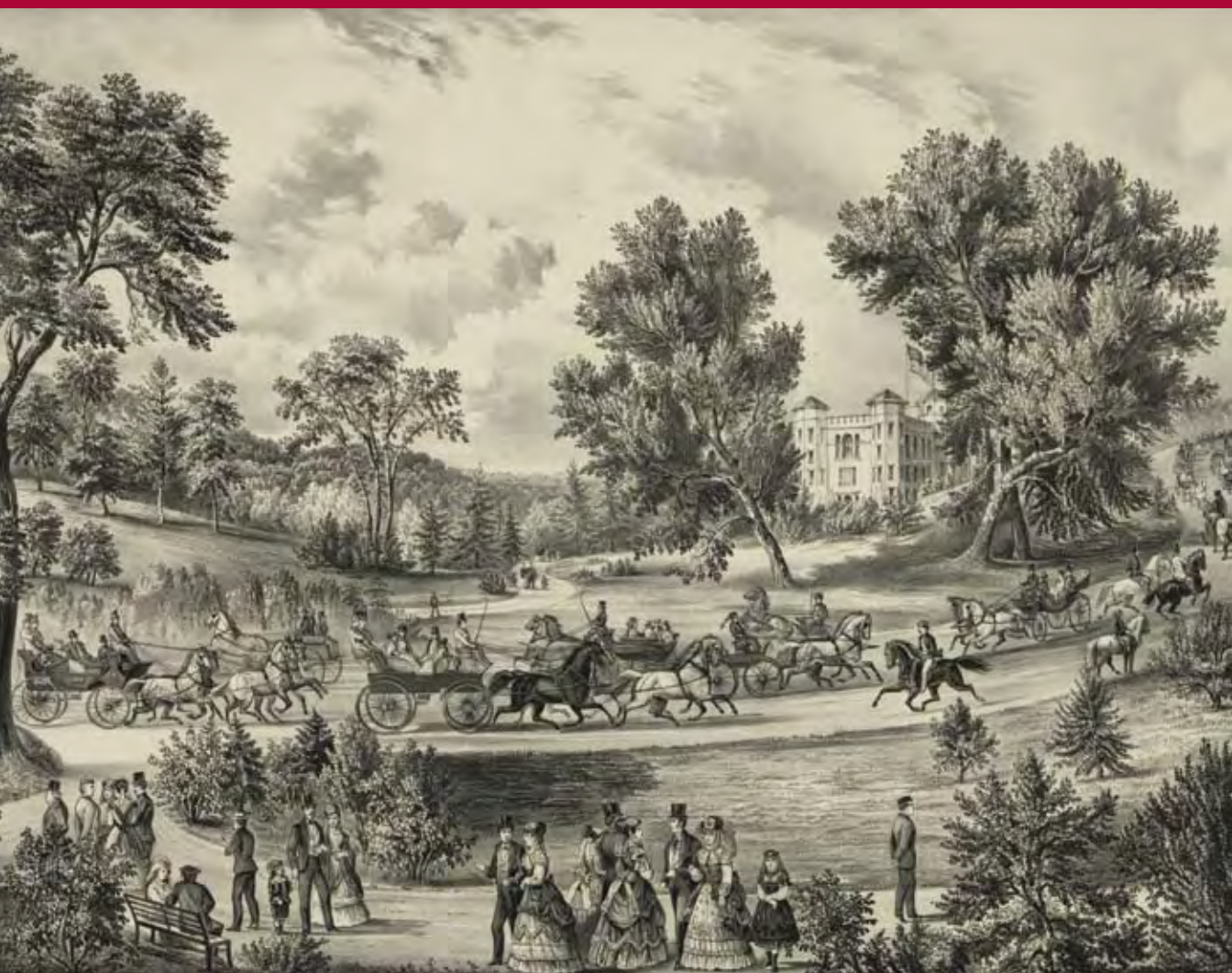


VOLUME 1 / ISSUE 1 / JUNE 2011

Roads Designed for Pleasure / Chik-Wauk Museum and Nature Center
Mapping Visitor Experiences / Byways Safety 101

Journal

FOR AMERICA'S BYWAYS 



A Publication from America's Byways Resource Center



FROM THE DIRECTOR



Michelle Johnson
Director
America's Byways
Resource Center

...we expect that information provided in the *Journal for America's Byways* will primarily address historical perspectives, research, trends, tools and other applied best practices, success stories, or emerging issues...

We're pleased to introduce the all-new *Journal for America's Byways*, a direct result of your input and survey responses. Each issue provides in-depth professional and scholarly information, insights, and news about topics that are important to the byway community, such as this issue's thematic concentration on the visitor experience.

We're honored that our inaugural issue features the work of Paul Daniel (Dan) Marriott. His well-researched article, "Roads Designed for Pleasure: A Brief History of the Origins of Scenic Driving and Automobile Touring in the United States," provides historical scope and context for understanding how today's byway managers can contribute to the touring legacy and promote economic development.

Other articles in this issue by David Guiney, Rob Balmes with Cindi Ptak, and Wayne Gannaway offer case studies and useful tools for enhancing the visitor experience on America's Byways®.

Here, and in the future, we expect that information provided in the *Journal for America's Byways* will primarily address historical perspectives, research, trends, tools and other applied best practices, success stories, or emerging issues within at least one of four core topic areas:

1. Finances
2. Visitor Experience
3. Byway Organization
4. Corridor Management

In addition to building your expertise for better byway management, these articles serve as excellent resources for your grant research and project development.

Your knowledge and experience is highly valued, too. We invite your article submissions for the *Journal for America's Byways*. Submission guidelines are posted online at BywaysResourceCenter.org.

Again, thank you for sharing your comments and suggestions with us. Together, we'll continue on the road to success.

A handwritten signature in dark ink, reading "Michelle Johnson". The signature is fluid and cursive, with a long, sweeping underline.



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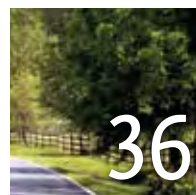
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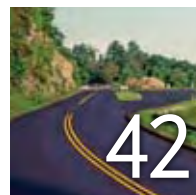
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Cover Image

"The Grand Drive, Central Park N.Y.," Currier and Ives, 1869.
Courtesy of Library of Congress [Digital ID: pga 00737].

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ROADS DESIGNED FOR PLEASURE

A BRIEF HISTORY OF THE ORIGINS OF SCENIC DRIVING AND AUTOMOBILE TOURING IN THE UNITED STATES

BY PAUL DANIEL MARRIOTT

Author's Note: It seems appropriate, with the launch of the new *Journal for America's Byways*, that we consider the history behind our modern byways. Here is an introduction to the people, movements, technologies, and inspirations that form the basis of the American passion of driving for pleasure. As you will see, a number of nationally designated America's Byways® are a part of this rich history.

Introduction: The National Scenic Byways Program is the most recent accomplishment in a long history of ideas and movements designed to satisfy the innate need Americans have to explore their nation beyond the next horizon. America's Byways identify the best routes to the most interesting scenic, natural, recreational, historical, cultural, and archaeological wonders, and curiosities, that we, as an adventurous people, have always sought to discover and examine for ourselves. This article will introduce the origins of the modern byways movement by examining the history and evolution of pleasure driving in the United States. The article will argue that our broad definition of byways today, based on six intrinsic qualities, is rooted in eighteenth-century origins of scenic analysis and pleasure driving that arose from a new appreciation for the natural landscape during the Age of Enlightenment. The article will also show that many of our modern highway concepts, from innovations in pavement technology to advancements in engineering, are directly tied to the design and construction of nineteenth-century pleasure drives and early twentieth-century automobile parkways—both ultimately laying the foundation for our modern interstate system and solidifying our appreciation of driving for pleasure.



ONE OF THE FIRST SCENIC ROADS EVER CONSTRUCTED IN THE UNITED STATES (C. 1824) TOOK TRAVELERS IN CARRIAGES FOR A PRECIPITOUS DRIVE 3,000 FEET ABOVE THE HUDSON RIVER TO CATSKILL MOUNTAIN HOUSE—SIMPLY TO ENJOY THE VIEW. ETCHING BY JOHN RUBENS SMITH, 1830. COURTESY OF NEW YORK PUBLIC LIBRARY. [WWW.NYPL.ORG](http://www.nypl.org).



DRIVING FOR PLEASURE

THE CARRIAGE DRIVES OF CENTRAL PARK BECAME AN IMPORTANT PART OF NEW YORK'S SOCIAL SCENE. "THE DRIVE," THOMAS HOGAN, 1869. COURTESY OF NEW YORK PUBLIC LIBRARY [DIGITAL ID: 800749].

Vehicle design, engineering, technology, and attitudes toward the landscape would have made the concept of driving for pleasure incomprehensible during the early days of the United States. Overland transportation was difficult in the colonial period and first years of the new republic. Few roads were constructed, or “artificial” as built roads were referred to during the period, and maintenance was sparse. Water travel, when available, was generally considered most reliable and comfortable. With the growth of the young nation, the authorization of turnpikes by state legislatures in the late eighteenth century, and the congressional authorization of the National Road in 1806—the first federally funded highway—the construction of roadways and the development of reliable all-weather paving techniques took on new importance.

AMERICAN ROOTS

After the American Revolution overland transportation was principally addressed by the development of toll roads or turnpikes. The first, chartered by the Commonwealth of Virginia in 1785, ran

west from Alexandria along the Potomac River to the Blue Ridge Mountains. The Philadelphia-to-Lancaster Turnpike in Pennsylvania began construction in 1793. The well-designed route covered sixty-two miles and showed a modest profit to its investors in the first five years—with profits climbing in subsequent years due to increased traffic from westward expansion. The turnpike was fifty feet wide between fences (what today we would define as the right-of-way), of which twenty-one feet was designated to be:

*made an artificial road, which shall be bedded with wood, stone, gravel, or any other hard substance, well compacted together, a sufficient depth to secure a solid foundation to the same; and the said road shall be faced with gravel, or stone pounded, or other small hard substance, in such manner as to secure a firm, and, as near as the materials will admit, an even surface...*¹

Due to the success of the Lancaster Turnpike and the urgent need for internal improvements, most states adopted toll financing for roads and canals by 1800.²

The National Road (All-American Road, 2002³) was envisioned by George Washington to open the interior of the young nation to commerce and secure the western frontier from competing, and potentially troublesome, European powers. Authorized by Thomas Jefferson on March 29, 1806, the National Road began in Cumberland, Maryland and extended to Wheeling, Virginia (now West Virginia) where it linked with the commercially vibrant Ohio River. To ensure a high-quality road, the commissioners recommended the state-of-the-art French Trésaguet method for highway construction. The first segment of the crushed-stone National Road opened to the public in 1818.

Despite the picturesque, even sublime, landscapes through which many of these roads were constructed, the urgent need for basic transportation, limited funds and the ambitious undertaking to build a federal highway to the West, it is not surprising that aesthetic sensibilities of the English picturesque landscape movement, then in vogue in Europe, were not considered in the design of these early roads. For the early American traveler, interactions with nature were more likely the result of bothersome stumps in the middle of the road than carefully planned and constructed panoramic views. One very notable exception was George Washington's Mount Vernon estate on the Potomac River.

In 1758 Washington sent to England to request a copy of Batty Langley's *New Principles of Gardening*. Langley (1696-1751) was an early proponent of the new

“natural” style of gardening that rejected the rigid formality of continental Europe. With Langley's text, Washington would create at Mount Vernon a picturesque landscape showcasing the natural beauties of his property and the bounty of his farm. A pleasure drive, designed in this “new” style, would welcome guests arriving by carriage at the West Gate. Here, Washington introduced a three-quarter-mile long vista across a rolling, green meadow to the mansion. Immediately after the impressive view, the drive diverged along a winding course through the woodlands and along the productive farm fields of the estate before returning to the formal axis (introduced with the vista) at the mansion grounds. Like the great English estate drives, the visitor was provided a glimpse of the destination (the mansion) and then treated to a pleasant (but relatively direct) scenic drive to admire the beauty of the landscape. This was a dramatic departure from the accepted and formal design traditions brought by the colonists to the New World—many of whom were out of touch with the latest landscape developments taking place in England.

BRITISH PRECEDENTS

Many of our theories on the laying out of pleasure drives come directly from the English Landscape School of the eighteenth century. During the Age of Enlightenment (a period of rational scientific thought and inquiry), the English Landscape School revolutionized gardening and dramatically altered how people viewed and appreciated their environment. During this formative era, the accepted and formal axial designs

of European estates, which demonstrated domination over the landscape, were rejected in favor of natural scenery. British landscape designers such as Batty Langley, William Kent (1685-1748), Lancelot “Capability” Brown (1715-1783) and Humphry Repton (1752-

and deliberately applied to landscape features in the eighteenth and nineteenth centuries. Their references to carriage roads and scenic drives provide clues to the design intent and physical execution of the route—and their use in written descriptions provides important insights

It may seem unremarkable to us, but the idea of providing a drive to showcase “romantic wonders” was nothing short of revolutionary.

1818), over a period of one hundred years of radical design and experimentation in the English countryside, established the design elements and the philosophical approach that would influence American scenic roads and parkways well into the twentieth century.

The English Landscape School addressed not only issues of circulation, design, and horticulture but also established scientific reasoning and terminology for appraising and understanding scenery.⁴ The terms *beautiful*, *picturesque*, and *sublime* often referred to as the aesthetic triangle, were debated among artists, landscape designers, and theorists on both sides of the Atlantic. While there continued to be intellectual debate among the nuanced meanings of each of the terms, it is important to note that the terms *beautiful*, *picturesque*, and *sublime* were carefully

into the intended driver experience. They were not generic landscape terms—as often used today—for pleasant scenery. In general, *beautiful* referenced pleasing features and attractive everyday scenes (a shady grove or farm pasture, for example); *picturesque* referred to more dramatic or rustic views (a rocky mountain face or windswept tree, for example); and *sublime* indicated awe-inspiring natural features (Niagara Falls or the Yosemite Valley, for example).

Humphry Repton, the last of the great influential English Landscape gardeners of this period, was perhaps the most detailed in his observations and recommendations for the design and laying out of pleasure drives. His detailed reports for each property he designed, exquisitely summarized in his “Red Books” (red-leather-bound notes and illustrations

for each site), show a mastery of the kinesthetic relationship between viewer and landscape. When developing plans for Blaise Castle in Bristol he wrote:

It is remarkable that no attempt should have been made to render objects of so much beauty and variety accessible in a carriage, for however interesting the walks in hilly countries may be, they can only be enjoyed by great labour and exertion; they require health of body and vigour of limbs to enjoy their romantic wonders, while the aged and infirm have been excluded from the beauties of the place by the danger and difficulty of exploring them.⁵

It may seem unremarkable to us, but the idea of providing a drive to showcase “romantic wonders” was nothing short of revolutionary. Repton was one of the most outspoken proponents of well-designed and well-located drives. In his 1792 plan for Antony House in Cornwall, he noted:

Few parts of modern gardening have been so mistaken as the management of approaches, there is no branch of the art on which I have so often had occasion to deliver my opinions; and without repeating all the arguments on which it is founded, I shall only assert, that an approach ought to be apparently, if not really a road to the house and to that only. if [sic] that road naturally leads thro’ a considerable extent of what I have called park, it is the duty of the Landscape Gardener to shew [sic] the grounds to the greatest advantage, but it is absurd to mislead the visitor far out of his way, merely to shew such beauties as more properly belong to the Drive than

the approach, and still more absurd to make unnecessary circuit (which I have indeed seen practised) merely to have it said, that the approach is so many miles long; on the contrary, it frequently happens that a house is so situated as to make the public road the nearest line of approach, and a deviation from it must then be considered as an absurdity, but as such a circumstance often tends to lessen the importance of a place, if the public road cannot be removed to a distance, it is an allowable deception to disguise that public road, and make it appear private, and as part of the approach.⁶

Carriage drives became popular features in the English landscape and were likely traveled by visiting Americans Thomas Jefferson and John Adams when they followed Thomas Whately’s guide to English gardens, *Observations on Modern Gardening*, during a tour in 1786. Whately included detailed descriptions of roads and avenues in his chapter titled “Of Art,” noting the desirable qualities of a route with “natural easy sweeps... presenting at every bend some new scene to the view.”⁷

Not only did carriage roads provide exceptional aesthetic pleasures and pleasing views, they also supported the increasingly popular sport of carriage driving in England. Managing a heavy carriage and team of horses required considerable skill, stamina, and strength. In America, the pleasures of scenic driving would be first introduced in the unlikelyst of locations—the cemetery.

AMERICAN ROADWAY DESIGN IN THE ROMANTIC ERA



Some of the earliest examples of roads designed specifically for leisure and enjoyment in the United States were developed in the early nineteenth century for the new landscape cemeteries. These cemeteries, a dramatic departure from the austere and utilitarian graveyards of the colonial era, created bucolic retreats just outside crowded city centers—designed as much for pleasurable outings as for burying grounds. The first, Mount Auburn Cemetery in Cambridge, Massachusetts (consecrated in 1831), had a well-developed network of carriage drives. The sinewy routes provided ever-changing views of lush plantings, ponds and lagoons, and ornamental trees—and the well-groomed surfaces of the roads offered a pleasant ride. Designed by Massachusetts Horticultural Society President Henry A. S. Dearborn and

civil engineer Alexander Wadsworth, the carriage drives were thoughtfully aligned to the natural topography of the site and named for plants.

Romantic cemeteries in Brooklyn, Baltimore, and Cincinnati would quickly copy Mount Auburn's innovative design, introducing the romantic landscape and pleasure driving to an even larger public audience. The cemeteries became favored destinations for Sunday drives and picnics and provided the first visible, and popular, expression of Romantic Era landscape design in the United States.

As the cemetery movement spurred an interest in new concepts for landscape design, Repton's ideas, and those of the English Landscape School, were introduced to the American public largely through the writings and influence of

Andrew Jackson Downing (1815-1852). A fierce proponent of the natural beauties and wild qualities of North America, Downing built on the English style, with its naturalistic plantings and curvilinear forms, and introduced an appreciation for a distinctly American landscape.

This style, valuing highly unique landscape features, and views and vistas, sculpted the landscape with a keen eye to the visitor's experience. Showcasing a view required

carefully staging the approach to a particular vantage point—thus circulation within the landscape (footpaths, carriage drives, and avenues) was key. Scenic carriage drives constructed in the nineteenth century marked the start of the American embrace of pleasure driving. For the first time, roads were constructed for no other purpose than the provision of scenic views and attractive prospects.



IN AMERICA, SCENIC DRIVING WAS FIRST INTRODUCED IN THE BEAUTIFULLY LANDSCAPED CEMETERY. PLAN FOR MOUNT AUBURN CEMETERY, CAMBRIDGE, MASSACHUSETTS, C. 1848. COURTESY OF LIBRARY OF CONGRESS.



THIS 1859 LITHOGRAPH SHOWCASES PICTURESQUE BOULDERS AND WINDSWEEP VEGETATION—FASHIONABLE LANDSCAPE ACCENTS DURING THE ROMANTIC ERA. THE OBVIOUS SLOW PACE OF THE CARRIAGE SUGGESTS A FAMILY OUTING FOCUSED ON SCENIC ENJOYMENT AND LANDSCAPE APPRECIATION. NOTE THE COUNTRY ESTATE HOUSE NESTLED IN A COPSE IN THE DISTANCE. "LIFE IN THE COUNTRY," CURRIER AND IVES, 1859. COURTESY OF LIBRARY OF CONGRESS [DIGITAL ID: PGA 00810].



In his widely read and influential book, *A Treatise on the Theory and Practice of Landscape Gardening Adapted to North America With a View to the Improvement of Country Residences*, Downing quotes the eight principal requisites for roads in the “modern style” as developed by Repton, a man he calls “one of the most celebrated English practical landscape gardeners.”⁸ While these eight principles focus primarily on the approach to the house, they clearly establish the theory behind the development of a curvilinear circulation system and its logical placement within the larger landscape. In particular, Downing notes Repton’s theories for routes that are logical and based on physical landscape forms—natural or artificial: “As soon as the house is visible from the approach, there should be no temptation to quit it (which will ever be the case if the road be at all circuitous), unless sufficient obstacles, such as water or inaccessible ground, appear to justify its course.”⁹ It is important to note the negative connotation he ascribes to “circuitous,” suggesting curvilinear forms simply for the sake of form, without logical physical rationale, detract from the visitor’s experience of the landscape.

Andrew Jackson Downing himself wrote extensively on the design and laying out of pleasure drives as an integral part of landscape design and appreciation and noted their use for exercise as well:

The Drive is a variety of road rarely seen among us, yet which may be made a very agreeable feature in some of our country residences, at a small expense. It is intended for exercise more secluded than that upon the public road, and to show the interesting portions of the place from the carriage, or on horseback. Of course it can only be formed upon places of considerable extent; but it enhances the enjoyment of such places very highly, in the estimation of those who are fond of equestrian exercises. It generally commences where the approach terminates, viz. near the house: and from thence, proceeds in the same easy curvilinear manner through various parts of the grounds, farm or estate. Sometimes it sweeps through the pleasure grounds, and returns along the very beach of the river, beneath the fine overhanging foliage of its projecting bank; sometimes it proceeds towards some favorite point of view, or interesting spot on the landscape; or at others it leaves the lawn and traverses the farm, giving the proprietor an opportunity to examine his crops, or exhibit his agricultural resources to his friends.¹⁰

It would be Downing who would bring English architect Calvert Vaux (1824-1895) to the United States. Vaux and Frederick Law Olmsted would advance the design and technology of carriage drives and lay the foundations for modern highway design at New York's Central Park.

THE CENTRAL PARK

Not surprisingly, carriage roads were a significant feature of the design for

Central Park in New York City. Here Frederick Law Olmsted and Calvert Vaux continued the tradition of curvilinear alignments and romantic views but also introduced sophisticated engineering principles in vertical alignment that allowed the carriage roads to pass over and under the park's pedestrian paths and bridle trails to minimize intersections of conflicting interests and activities—allowing the maximum enjoyment of the park landscape by each user group.

Pleasure driving was becoming extremely popular in America, and Central Park with its well-designed roads was an ideal destination for carriage drives. The following extended quote, appearing in the *New York Times* shortly after the Central Park carriage drives first opened to the public, is included to show the popularity and almost giddy excitement by which pleasure driving was embraced (and reported) in the park.

On the broad carriage-road, whose surface was like polished steel, was a long line of carriages filled with gay, laughing people. Fast young men in sulkies [a light two-wheeled, one horse carriage for one] whose huge wheels almost topped the head of the driver, with clean-cut, well-shaped, bob-tailed nags scud along the road as if the old Harry was after them: huge, heavy, substantially-built family carriages with gilded lamps, gilded hubbed-wheels, and high, well covered seats, drawn slowly, sedately and dignifiedly by heavy, long-bodied, long-tailed, thick maned horses, contained elderly ladies dressed in black silk, lace caps and false curls, accompanied

by one or two younger ladies, who sat generally on the front seat, wearing English baréges, coal-scuttled bonnets, or cloudy Nubias [a light head scarf], and who looked after the afore-mentioned fast young men as if they would like to change places for just a little while, it would be “so nice” and such fun; then would pass a mad-dashy barouche [a stylish touring carriage] with top thrown back, filled with chattering girls whose mammas had remained at home, and who were bent on having a good time, and who seemed mightily tickled whenever they met one of those comet-like sulkies or when, as was frequently the case, they were joined by some young blood on horseback, who exhilarated by riding, could bend gracefully and whisper gallantly, or by his lively conversation keep the ball of fun rolling with increased velocity... In fact, there is no place in the country, or as far as we have seen in any other, where driving can be so perfectly enjoyed as on the avenues and broad roads of the Central Park...¹¹

In addition to the sophisticated and elegant alignment of the carriage drives, Olmsted and Vaux imported the latest technology in road building—constructing the roads in the Telford method from England. Work on paving the roads commenced in 1869. Paying particular attention to the construction of the park drives, Olmsted noted:

Roads of binding gravel are always excellent—better for pleasure-driving than

*any other—so long as their foundation is firm and unyielding. Ordinarily, however, the earth below works up every Spring [sic], and the whole road becomes soft and rutty. It is very commonly attempted on private grounds to provide against this by laying a stratum of stone under the gravel, which, if the road is much used, serves only to increase the evil, for the gravel stone sinking through the clay more readily than the larger stone, the latter, in obedience to a well-known law, work to the surface. There is one method of using large stones, however, which was first practised by Telford on the Holyhead road, and which supplies a perfectly unyielding road foundation.*¹²

Olmsted and Vaux’s attention to the construction technology was important to their desired success for the carriage drives in the park. Most roads in the United States during this period were in poor condition. The few paved roads were generally in urban settings and in varying degrees of repair—most, including the cobbled streets of many cities, were wholly inappropriate for relaxing or pleasure driving due to their rough surfaces. Olmsted knew the concept of pleasure driving was wholly dependent on the provision of a smooth surface over which to travel. Pleasure drives at Central Park and other parks represent some of our earliest efforts at sophisticated engineering design and materials technology through advancements in surface treatments.

NEXT PAGE: PEDESTRIAN PROMENADES AND CARRIAGE DRIVES IN CENTRAL PARK, NEW YORK. “THE GRAND DRIVE, CENTRAL PARK N.Y.,” CURRIER AND IVES, 1869. COURTESY OF LIBRARY OF CONGRESS [DIGITAL ID: PGA 00737].





BUILDING RELIABLE ROADS

The science of road building was significantly advanced at the end of the eighteenth century in Europe, laying the foundation for modern paving technology. Three principal engineers, Pierre-Marie Jérôme Trésaguet (1716-1796), Thomas Telford (1757-1834), and John Loudon McAdam (1756-1836), developed road construction techniques and theories that were imported to the United States in the early nineteenth century.

Trésaguet, who came from an engineering family, was appointed Director General of bridges, roads, and municipal works in France in 1775. France was generally considered to have the finest, best constructed, and best maintained road network in Europe. One of Trésaguet's major contributions to modern paving technology was the introduction of angular stone, rather than rounded gravel. The sharp faces of broken angular stone bound together form an interlocking structure.

The Trésaguet method was used for the first segments of the National Road in Maryland and Pennsylvania. While the system worked well for France's well-financed and impeccably maintained road network, it did not perform well on the heavily traveled and under-financed National Road. Trésaguet's top surface of protective gravel, intended to be regularly raked, quickly wore away and exposed the foundation structure, leading to road failure.

Telford, a stonemason from Scotland who ultimately founded the British Institution of Civil Engineers, first became involved with the science of road building when

commissioned by the British government in 1801 to report on transportation measures to halt the population exodus from the Scottish Highlands. Nicknamed the "Colossus of Roads," Telford supervised the construction of 90 miles (145 kilometers) of road in the Highlands and would direct the Holyhead Road Commission between 1815 and 1830.¹³ Telford built on the work of Trésaguet, reconsidering the foundation and improving drainage.

Telford's system relied on an impervious surface structure to prevent water from weakening the construction. He also raised the pavement structure above the surrounding ground or drained the nearby area if elevating the road wasn't practicable. A heavy "cambered" (sloped) foundation of stone blocks, installed on flat ground, created the crown to ensure good drainage and provided long-term stability for the road. New York City employed the Telford method in the construction of city streets in the early nineteenth century,¹⁴ and it would be recommended as the pavement of choice by Olmsted in the "Greensward" plan he and Vaux submitted for the Central Park competition in 1858.

The Telford method was durable and reliable, but it was expensive to construct.

McAdam developed the first practical and affordable modern road construction process, and his name is still remembered today when we reference "macadam" pavements. McAdam, unlike Trésaguet and Telford, was familiar with the United States, having lived in New York for thirteen years as a young man. He first became

involved with roadmaking as a trustee of the Ayrshire Turnpike in Scotland in 1787. He was appointed surveyor of roads for the Bristol Turnpike in 1816. He wrote a booklet, “Remarks (or Observations) on the Present System of Roadmaking,” in 1816 and “A Practical Essay on the Scientific Repair and Preservation of Public Roads” in 1819. His great

A key to the success of the surface was that the 20mm stone size was much smaller than the 100mm [approximately 4 inches] width of the common iron coach tire.¹⁵

Unlike Telford’s flat excavated base, with the stones forming the camber, McAdam insisted that the base soil excavation for the road could form the camber. Like Telford, he elevated the road above the water

As the parks movement spread across the nation and cities continued to grow, the new advances in pavement technology would be implemented....

contribution was in the development of a road-building system that did not require the heavy stone structure base of the earlier systems—arguing that a layer of broken angular stones would behave as a coherent mass. Historian Maxwell Lay explained:

Stone size was an important element in the McAdam recipe. For the lower 200mm [approximately 8 inches] thickness of the pavement, the maximum size was commonly 75mm [approximately 3 inches]. However, for the upper 50mm [approximately 2 inches] thick surface course the stone size was limited to 20mm [approximately ¾ inch]. Indeed, the stone had to be small enough to fit into the stonebreaker’s mouth and was checked by supervisors, who carried in their pockets a set of scales and a stone of the correct mass.

table—good drainage was essential to the correct functioning of the construction.

McAdam’s process was first used in the United States on the Boonsboro Turnpike in Maryland in 1822 and would soon become the standard pavement for the National Road and the nation. His pavement solved the vexing problem of narrow iron wheels on vehicles traveling at relatively high speeds gouging and causing rutting of the roads. McAdam’s angular interlocking stone surface, or road metal, was made of stones averaging less than one inch. (It was difficult for the carriage wheels, averaging four inches in width, to have as severe a negative impact on the surface.) While effective, the paving process was labor intensive, requiring larger rock to be broken by hand to create the angular gravel. It would not be until

1858, when the first practical mechanical stone crusher was patented by Eli Blake, that road gravel (for all construction methods) became commercially viable. Blake's steam-powered crusher, built in Connecticut, produced stone for Central Park's carriage roads.¹⁶ About the same time, the first mechanical steam-powered rollers were being developed in Britain.

The first steam-powered roller in the United States was imported from England in 1869 to help construct the carriage drives at Central Park. The *New York Times* reported:

*A party of engineers assembled at the Central Park yesterday morning to witness the operation of a steam road and park roller, imported from England, and manufactured by Aveling & Porter, of Rochester, Kent. The machine comprehended an ordinary steam engine of ninety-horse power, with a wide roller in front, divided in two parts and two rollers behind, widely divided by the engine. The whole weighed fifteen tons, and performed the service required effectually and economically... Mr. Green, Superintendent of the Central Park, was present, together with Mr. Stranahan, of Prospect Park, Brooklyn, and several gentlemen interested in laying out the parks of other cities.*¹⁷

As the parks movement spread across the nation and cities continued to grow, the new advances in pavement technology would be implemented along with the new boulevards and avenues accompanying the growing urban populations.

GRAND WAYS

Inspired largely by the urban parks movement, many cities undertook the development of parkways or boulevards during the second half of the nineteenth century. In general, these grand ways were broad formal avenues or boulevards, with extensive rows of trees and commodious pedestrian promenades and walks. Grand ways, while often connecting or serving park areas, were nevertheless primarily urban features. While occasionally termed "parkways," they served more as attractive landscaped connections to public parks than the curvilinear routes within extensive protected parklands and natural settings, as parkways would come to be defined in the twentieth century.¹⁸

Robert Morris Copeland (1830-1874) was a noted landscape gardener and author of *Country Life: A Handbook of Agriculture, Horticulture, and Landscape Gardening* published in 1859. Like Downing, he wrote extensively on the design and location of carriage drives and was one of the most accomplished individuals in the design of grand urban thoroughfares. Copeland's work included the design and laying out of grounds for country estates, public parks, and cemeteries, as well as town planning and road design throughout New England. He is credited with assisting architect Arthur Gilman in the layout of Boston's Back Bay in 1856 and with developing the boulevard concept for Boston's Commonwealth Avenue. Copeland, with H.W.S. Cleveland, designed Sleepy Hollow Cemetery in Concord, Massachusetts, and in 1858 Copeland and Cleveland



COMMONWEALTH AVENUE, BOSTON C. 1903. PHOTO COURTESY OF LIBRARY OF CONGRESS.

submitted an entry for the Central Park design competition in New York.

Copeland was intensely engaged in the parks debate for the City of Boston. He made numerous recommendations for a comprehensive municipal and metropolitan park system and suggested linking the park units by a broad avenue or parkway “100 to 200 feet wide, which,” he said:

*should, like the circumference of the circle, give boundary and form to the whole city, and be so connected by radial lines that from all parts to all parts there would be direct and easy avenues of communication, and the main avenue or boulevard would thread as it were all the parks and public grounds and bring them into a common system, and give a beautiful and convenient drive for the citizens in the different parts of the environs.*¹⁹

Copeland’s concepts for an integrated system of attractive avenues would be echoed by landscape architect Charles Eliot in the 1890s when the Metropolitan Park Commission was considering the creation of “parkways or boulevards” between the different units of the planned regional park system around Boston. Eliot had apprenticed in Olmsted’s office

in Brookline, Massachusetts and was involved with Olmsted’s design work for the park avenues of the Fenway, Riverway, Jamaica Way, and Arborway connecting Boston’s “Emerald Necklace” parks in the 1880s—Olmsted’s last great park planning project.

Olmsted’s influence on roads designed for pleasure cannot be underestimated both in executed projects and his extensive writings on the design and character of public roads. After the successes of Central Park and Prospect Park in Brooklyn, Olmsted developed parkway systems for Louisville, Kentucky, and Buffalo, New York, and worked on conceptual plans for the park boulevards in Chicago. In Buffalo, Olmsted developed an elegant system of parkways and circles from a plan begun in 1868. The road network was largely constructed by 1876.

In his 1866 report, “Preliminary Report in Regard to a Plan of Public Pleasure Grounds for the City of San Francisco,” Olmsted, under a section of the report titled “The General Promenade,” provided detailed recommendations to create a grand avenue from the existing Van Ness Avenue as part of the park concept:

There would remain a space to be given up to the promenade and ornamental ground 280 feet wide. Within this an excavation would be made, varying in depth a little, according to the shape of the surface, but everywhere at least twenty feet deep. The sides of the excavation should slope so as to have a nearly level space at the bottom 152 feet wide. In the centre of this might be formed a mall 24 feet wide, flanked on each side by a border, to be used as will hereafter be described. Between the borders and the foot of the slopes might be two roadways, each 54 feet wide, 15 feet being made of loose sifted gravel, as a pad for saddle horses, and the remaining 39 feet finished with hard rolled gravel for carriages.²⁰

Similar to Central Park's innovative accommodation of cross-town traffic by sunken traverse roads, San Francisco's cross-city traffic would be carried over the Van Ness Promenade by a series of bridges. The plan was never implemented.

In his 1866 "Report Upon a Projected Improvement of the Estate of the College of California (the University of California), at Berkeley, Near Oakland," Olmsted wrote extensively on the need for an attractive road network to organize the town and provide pleasant approaches to the new college. He strove to take advantage of the natural features of the site, while developing a plan of scenic and pleasure drives for the neighborhoods surrounding and larger public approaches to the new college.

The third is by a new road which I recommend should be laid out as a pleasure drive from Oakland. This road

would be to the southward of, and run parallel with the present Telegraph road, until after it has passed the vicinity of the new cemetery, where it would curve upon a long radius to the left, and passing to the eastward of some of the lowest foot hills, cross the Telegraph road near the foot of the mountains, and approach Berkeley on a line parallel with the range, passing along the east side of the public garden, and reaching the vicinity of the College without entering the village, as shown upon the plan. Such a road would form a drive much more attractive than any now in use out of Oakland, and would lay open a most desirable region for residences along the foot of the mountains....²¹

After providing details, analysis, and recommendations for a pleasure drive between Oakland and Berkeley, Olmsted devoted considerable attention to the design and nature of the roads within the new community. It is important to note that he focused both on function ("sufficiently direct") and picturesque qualities ("sylvan and rural character"):

The extent of the sylvan lanes would be about five miles. At several points upon them there would be very fine distant views, each having some distinct advantage. The local scenery would also at many points be not only quite interesting, even without any effort to produce special effects by planting, but it would have considerable variety, much more so than might be supposed from the drawing. The road is designed to be laid out in such a way as to make the most of the natural features, while preserving their completely sylvan and rural character, being carried with



LAKE SHORE DRIVE, CHICAGO, ILLINOIS, 1905. CHICAGO'S GRAND WAYS ADHERED CLOSELY TO THE POWERFUL GRID THAT ORGANIZED THE CITY. PHOTO COURTESY OF LIBRARY OF CONGRESS.

*frequent curves in such a way as to make the best use of the picturesque banks of the arroyos and the existing trees upon them. These are sometimes allowed to divide it into two parts. Notwithstanding the varied curves which the arrangement involves, the general course of the lanes will be found simple and the connection between the more important points sufficiently direct. This is especially the case with the approaches to the College site from the points nearest it at which the neighborhood is entered.*²²

Another notable landscape architect, George E. Kessler (1862-1923), designed park and parkway systems in Kansas City, Missouri; Denver, Colorado; Indianapolis, Indiana; and Memphis, Tennessee. A transitional figure, designing for both horse and carriage, and automobile, Kessler's designs are more associated with grand ways than the automobile parkways of the early twentieth century.

THE MINNEAPOLIS PLAN

Of all the grand ways constructed during this period, the "Grand Rounds" (National Scenic Byway, 1998) in Minneapolis was one of the most noteworthy.

A parkway and boulevard system was constructed in Minneapolis based on the 1883 report, "Suggestions for a System of Parks and Parkways for the City of Minneapolis," prepared by landscape architect H.W.S. Cleveland. Cleveland, a close friend of Olmsted and associate of Copeland, had distinguished himself in Chicago with his 1869 publication "Public Grounds in Chicago: How to

Give Them Character and Expression." In Chicago, he took the unusual landscape approach of arguing for straight avenues and boulevards to complement the prairie topography and ubiquitous grid pattern of the city. Minneapolis, by contrast, presented him a landscape palette of varied topography overlain with a city grid and punctuated with numerous lakes. Here, Cleveland adeptly mixed serpentine drives with broad razor-straight avenues—the complete system, ideally suited to the natural and built landscape was quickly dubbed the "Grand Rounds" by William Watts Folwell, the first president of the University of Minnesota. The Minneapolis boulevards and avenues represented one of the first comprehensive systems of grand ways integrating multiple park units and residential districts within a larger metropolitan setting.

The landscape and engineering innovations at Central Park and the Grand Ways of cities like Buffalo, Chicago, Denver, and Minneapolis would lay the foundation for twentieth-century highway design, as expressed in the first great scenic automobile roads: the Bronx River Parkway and Columbia River Highway. Before this could happen, however, the democratization of individual travel, first through the bicycle and soon after through the mass-produced automobile, would need to occur—raising a national rallying call from the general populace for good roads. ★

To be continued...

Part II of this article will appear in the next issue.

Please note that historical quotes contain historic spellings (shew instead of show, for example) and British-English spellings (practised vs. practiced, for example). Historic spelling and incorrect grammar are noted with a [sic] comment.

The Author

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Notes:

¹ Albert Gallatin, "Report of the Secretary of the Treasury on Roads and Canals," S. Doc. No. 250, 10th Congress, 1st Session, 1808, p. 895.

² America's Highways, 1776-1976, (U.S. Department of Transportation, Federal Highway Administration, 1976), p. 10.

³ Indiana's segment was designated a National Scenic Byway in 1998; Illinois' in 2000; the entire six-state route including Maryland, Pennsylvania, West Virginia, and Ohio was designated an All-American Road in 2002.

⁴ The nineteenth-century views of the aesthetic triangle are rooted in William Hogarth's *The Analysis of Beauty*, published in 1753 and Edmund Burke's *Inquiry into the Origin of Our Ideas of the Sublime and Beautiful*, published in 1756.

⁵ John Dixon Hunt, *Gardens and the Picturesque*, (Cambridge, Massachusetts: MIT Press, 1992), p. 161.

⁶ Edward Malins, *The Red Books of Humphry Repton*, (London: Basilisk Press, 1976), (this is a reproduction set of manuscripts and has no page numbers).

⁷ Thomas Whately, *Observations on Modern Gardening*, (London, Printed for T. Payne at the Mews-gate, 1770), p. 140.

⁸ Downing, *A Treatise on the Theory and Practice of Landscape Gardening* (Dumbarton Oaks Trustees for Harvard University, 1991 reprint: 4th ed. New York: Putnam, 1850), p. 339.

⁹ Ibid., p. 339.

¹⁰ Ibid., pp. 341-342.

¹¹ "A Day in the Central Park," *New York Times*, April 15, 1860. Emphasis added.

¹² Charles Beveridge, ed., *The Papers of Frederick Law Olmsted, Volume III: Creating Central Park*, (Baltimore: The Johns Hopkins University Press, 1983), p. 155. Emphasis added.

¹³ Frederick Law Olmsted would cite the Holyhead Road in the submission plan for Central Park.

¹⁴ Lay, M. G., *Ways of the World: A History of the World's Roads and the Vehicles That Used Them* (New Brunswick: Rutgers University Press, 1992), p. 80.

¹⁵ Ibid., p. 77. Emphasis added.

¹⁶ Ibid., p. 86.

¹⁷ "A Steam Road Roller," *New York Times*, June 5, 1869.

¹⁸ The definition of a parkway is widely attributed to Norman T. Newton as described in *Design on the Land* (Cambridge, Massachusetts: Harvard University Press, 1971), p. 597.

¹⁹ *Boston Daily Advertiser*, Oct. 24, 1873. Emphasis added.

²⁰ S. B. Sutton, ed., *Civilizing American Cities: Writings on City Landscapes: Frederick Law Olmsted*, (New York: Da Capo Press, 1997), p. 126.

²¹ Ibid., p. 286.

²² Ibid., p. 286-287.

CHIK-WAUK MUSEUM AND NATURE CENTER:

A VISITOR EXPERIENCE
BUILT ON BOLD DREAMS
AND SOLID PLANS

BY WAYNE GANNAWAY



When visiting the Gunflint Trail National Scenic Byway in northern Minnesota in the autumn, it is easy to see how a place with such stunning natural beauty and cool, crisp air could inspire bold dreams. The towering pines that ring the clear glacial lakes and the protruding stones arrayed along the shore provide a place to relax and reflect on those relationships, places, and stories, which taken together, point to what is most important. In the summer of 2005, the magic of the Gunflint Trail inspired long-time and more recent residents to sketch out a vision to rehabilitate an old lodge into a Gunflint Trail museum.

Too often, a big vision involving a building project can sap an organization's money and energy, leaving it weakened and committed to a project it may no longer want or need. There is no shortage of empty or underperforming museums or visitor centers that were developed in the absence of community support and strategic thinking. The experience of the members of the Gunflint Trail Historical Society (GTHS) was different. Their careful and inspired work represents a positive example of using a powerful vision as a catalyst for successfully planning and implementing a capital improvement project whose value is greater than the sum of its square footage.

Beginning at the city of Grand Marais on Lake Superior, the Gunflint Trail National Scenic Byway travels fifty-seven miles into the heart of the Boundary Waters Canoe Area Wilderness. It is appropriate, perhaps, that the Chik-Wauk Museum and Nature Center is a

historic building located nearly at the end of the byway. The stories told there and the people who operate the museum are not peripheral to the Gunflint Trail—they are central to it and lie at its heart.



A “WALL OF MEMORIES” MUSEUM EXHIBIT AND COMFORTABLE SEATING CREATE A READING CORNER. PHOTO COURTESY OF GUNFLINT TRAIL HISTORICAL SOCIETY.

Ed Nunsted constructed the Chik-Wauk Lodge in 1934 as a lodge to rent to hunters, anglers, and outdoor enthusiasts. Built to be fireproof, the granite rubble stone construction, low-slung roof, and ample porch projecting off the front, give the lodge a sturdy and rustic bungalow appearance. While it provided cherished memories for countless vacationers, the U.S. Forest

Service acquired the Chik-Wauk in 1978 under the Boundary Waters Canoe Area Wilderness Act. Vacationers continued to summer at the lodge through the 1990s, and the Forest Service put it to use for a few years, as well. Despite being watched over by neighbors and the Forest Service, the lodge was not being put to its highest and best use, and deferred maintenance began piling up. But the neighbors and former patrons of the lodge did not forget about this special place—far from it; they held on to personal photographs and well-preserved Chik-Wauk artifacts, as if anticipating the creation of a place to tell their story.

FROM INSPIRATION TO PLANNING

At the beginning of 2005, no one was satisfied with the disposition of the Chik-Wauk Lodge. That summer, a group of Gunflint Trail lodge owners, outfitters, and residents met with the Forest Service District Ranger to come up with a solution. The relationship was a productive one, and it was a catalyst for action.

Before the year was out, the citizens formally established the GTHS by incorporating as a nonprofit organization in Minnesota, and they had recruited 135 members and dozens of volunteers. Shortly thereafter, they received a 501(c)(3) tax-exempt status as a nonprofit, thus allowing their donors to claim a tax-deductible, charitable donation and allowing them to raise funds from an area foundation. Perhaps most important, the citizens, now galvanized as the GTHS, showed their planning

and business acumen by researching and writing a business plan for preserving the lodge and repurposing it as a museum and nature center. The members presented the plan to the district ranger as part of their partnership proposal in November, and by late December, they were discussing an agreement with the Forest Service Partnership Coordinator.

But what value is a plan if one does not have the right people to implement it? Fortunately for the GTHS, it had the essential ingredients within their group: fundraiser, historian, organizer, and taskmaster. Everyone was assigned a task and did it. Trustees provided the leadership but also volunteered their skills in marketing, fundraising, and

...the citizens formally established the Gunflint Trail Historical Society (GTHS)... and they recruited 135 members and dozens of volunteers.

While articulating the mission statement with long- and short-term goals, the business plan sketched out a compelling vision of an organization and museum grounded in reality, with a candid acknowledgement of areas requiring more research. In addition to outlining the challenges of a construction project, the business plan also included sections on marketing, exhibits, and grounds. The plan clearly indicated the GTHS needed to raise a lot of money, coordinate a multifaceted project and keep in touch with its key partner, the Forest Service, along with the wider community. One way they engaged the community was by establishing a GTHS board of twelve trustees representing the entire sixty-mile geographic area. They planted the seeds of a community project.

planning. As they gained momentum, GTHS members built their network of supporters, recruiting volunteers to perform such duties as record keeping and membership administration. Others were ready to help out when it came time for the hard work of rehabilitating the lodge and building a trail system. Even before the grand opening of the museum, the group boasted over 400 volunteers.

While the enthusiastic energy of the GTHS volunteers is the “backbone of our organization,” according to trustee Sue Kerfoot, the group knew that credibility and transparency were critical to maintaining support. Prospective donors and volunteers have lots of choices in terms of where to donate their resources. Why should they donate



FOREST SCENE DIORAMAS GREET VISITORS AS THEY ENTER THE CHIK-WAUK MUSEUM AND NATURE CENTER.
PHOTO COURTESY OF GUNFLINT TRAIL HISTORICAL SOCIETY.



to poorly operated organizations or to those who only contact them when they want free labor or money? The GTHS took steps to give its constituents a reason to believe in it. It demonstrated fiscal responsibility when it hired a certified public accountant to monitor the financial accounting and file tax returns. The trustees of the GTHS keep their members informed with annual reports, professionally prepared audits, meeting minutes, and the “Gunflint Times” newsletter distributed twice a year. They reinforce their credibility by using a well-designed logo, letterhead, brochure, and website.¹ And they always thank their members and donors.

The trustees’ clear vision, good planning, and robust community outreach did not simply make them good neighbors; it also enabled them to successfully raise money and in-kind labor and materials.

BUILDING ON THE MOMENTUM

The GTHS created a development plan that sought diverse funding sources through fundraising events, small and large donations from residents, corporation gift programs, and memorials. The target was to raise \$1.1 million, and the group has met that goal, including the creation of a sizable endowment. The group knew that potential funders of any capital improvement project would want to see more than an inspiring vision statement and cadre of enthusiastic volunteers—they want to see that the organization has done its homework and can actually implement the project.

After researching similar museums and nature centers across the country, the GTHS hired an interpretive and exhibit design firm to create the design development plans to transform the lodge into a place that provides a special experience for travelers and residents alike. In addition to skilled and enthusiastic trustees, the group credits the exhibit plan with helping to sell the concept to prospective donors. A number of smaller grants from local utility companies and business associations were followed by large donations from a family foundation and residents. Of the \$1.1 million raised by the group, almost two-thirds came from private sources, including special events.

Throughout the entire effort, the Forest Service and the district ranger proved to be steady partners. After signing a memorandum of agreement with the Gunflint Trail Historical Society in 2006, the Forest Service leveraged its Passports in Time Program (PIT) to do some basic preservation and rehabilitation of the lodge. Through the program, the Forest Service provided volunteers working under the guidance of historic preservation professionals from the Superior National Forest Heritage Resources staff. Working alongside GTHS volunteers, the team repaired or replaced 470 panes of glass from the lodge's 35 window sashes, performed minor structural repairs, and repainted all of the exposed wood. The Chik-Wauk Museum and Nature Center was taking shape.

Rehabilitating even a smaller building such as the Chik-Wauk lodge can easily leave an emerging byway organization with sticker shock. A byway group may curtail its vision, not wanting to undertake a large project. Or the group may ignore real risks and bite off more than it can chew. Careful planning, long-term vision and patience allowed the GTHS to make incremental but steady progress on what might have been an overwhelming rehabilitation project.

A year after the PIT volunteers repaired the windows, the GTHS rehabilitated the collapsing front porch, interior flooring, hardware, and other building features. The following year, with the designs for exhibits sixty percent complete, the GTHS upgraded the interior electrical systems and began the landscaping and trail construction. The exhibit designer installed the exhibition space in 2010, and the Chik-Wauk Museum and Nature Center was poised for its grand opening.

A GATHERING PLACE FOR TRAVELERS AND COMMUNITY

As satisfying as the rehabilitation of the lodge was to the trustees, they knew that the significance of the area rested in part with the memories of long-time residents as well as families who had made a tradition of vacationing along the Gunflint Trail. The trustees kept this constituency involved in the project by letting them help write the story. The exhibit designer would, no doubt, provide a quality museum design, but the trustees could not invent a sense of

THE MUSEUM TELLS THE STORIES OF THOSE WHO SOUGHT TO LIVE ON AND MAKE A LIVING OFF OF THE LAND.
PHOTO BY WAYNE GANNAWAY.



community. Tapping into the growing interest in the Gunflint Trail story and the Chik-Wauk project, trustees invited community members to submit stories, photographs, and artifacts that related to the Gunflint experience.

The results were impressive. One complete wall of the museum features photographs submitted by people for whom the Gunflint Trail is a special place. Black-and-white, Polaroid, and modern images of people hiking, fishing, and snowshoeing are accompanied by letters sharing the memories. While this exhibit takes time and effort to promote, collect, and catalog, trustee Sue Weber

pointed out that it is a popular feature of the museum for both residents and visitors—it is the first display at which many museum visitors stop. It also illustrates the level of community support the GTHS has achieved.

While the story of the Gunflint as a long-time resort and wilderness vacation area resonates with the community, travelers get a comfortable and relaxing place to learn about the byway's intrinsic qualities. Visitors learn not only about the resort owners and vacationers, but also about the miners, loggers, trappers, and Ojibwe who came before them. The trustees did not cram the modestly

sized lodge with any and all artifacts. The overall exhibit design is economical in its use of space and varied enough in its media to provide something for any learning style. First and foremost, a wildlife exhibit about the trees, fish, and mammals of the Gunflint Trail welcomes visitors as they step into the museum space. The museum has a library and comfortable reading area for travelers to sit down with a book about local and regional topics.

EXCITEMENT...WITH ORGANIZATIONAL SUSTAINABILITY

Inviting the community to donate artifacts and archival material is a great way to build support and provide eye-catching material for an interpretive exhibit; however, it can also create thorny problems for unprepared museums. For example, what type of artifacts will the museum accept? Under what circumstances will the museum accept a loan of an artifact? If donated outright, must the museum keep the artifact forever? Will the museum determine the value of the artifact? A feel-good story about a donation can quickly sour, if a donor feels that a gift was not handled properly. To its credit, the GTHS has developed a detailed collections policy and posted it on its website. Such behind-the-scenes attention to detail will help any museum sustain goodwill.

The level of planning by the GTHS board of trustees indicates they realize that a viable museum cannot survive off the goodwill of the community alone.

Nor does a successful capital campaign and construction project guarantee long-term viability for the historical society and museum; that is a distinction lost on many nonprofits, including some byway organizations.

According to the Nonprofit Finance Fund (NFF), a national community development financial institution, there are two main “flavors of money”: revenue and capital.² The former is for routine or operational needs and the latter for implementing change, such as a construction project. Moreover, according to the NFF, capital projects increase fixed costs, such as insurance, maintenance and utilities and must be matched with reliable revenue sources. Even in smaller organizations, directors and boards must plan budgets carefully and diligently monitor spending.

To keep its balance sheet sustainable, the GTHS board of trustees has created three budget sub-committees. One sets budgets for the operations of the governing organizational structure, the Gunflint Trail Historical Society. The second scrutinizes the income and expenses of the Chik-Wauk Museum and Nature Center, so “it lives within its means,” according to the board president, Frederick Smith. The third sub-committee guides long-range planning for capital improvements, which Smith said, will enhance the museum and attract “both new and return visitors to hear more about the life and times of the Gunflint and its people.” Because the U.S. Forest Service does not fund any ongoing maintenance

of the museum or grounds, the trustees must budget for and monitor those needs. Although a sizable endowment (which the board intends to grow) will help stabilize the future of the organization, Smith said that the GTHS “must operate independently, as if the endowment were not in the picture. It is my belief that this will keep the great Gunflint community organization charged with a commitment of a continuing ethic for hard work.”

Perhaps as important as the financial controls they have established, the GTHS trustees have a realistic view of the financial commitment and stewardship responsibilities of operating a vibrant museum for the community and byway travelers.

By 2010, five years after setting off on this substantial enterprise, the GTHS had much to boast: a solid, realistic business plan; money in the bank; dozens of volunteers; a memorandum of agreement with the Forest Service; and a rehabilitated lodge. In those first years, it also had completed the planning and work required to have the lodge listed on the National Register of Historic Places by the National Park Service in 2007 and the Gunflint Trail designated as a National Scenic Byway by the U.S. Secretary of Transportation in 2009.

And the trustees are not simply settling back. Through a long-range planning committee, they continue to carefully plan for the future to maintain the organization’s vision and to keep the community involved. By the end of the

2010 season, its first season, the Chik-Wauk Museum and Nature Center received almost 11,000 visitors. And the future looks equally bright: the GTHS will enter the 2011 season with over 600 members, new exhibits, and a full-time site manager. While their strong financial position is something to be excited about, the GTHS trustees and members, as well as the community as a whole, have been energized by sharing their story and history with each other and travelers along the Gunflint Trail National Scenic Byway. ★

The Author

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Notes:

¹ The Gunflint Trail Historical Society maintains a website with information such as the organization’s mission and goals, events, and a downloadable brochure and forms: www.gunflinttrailhistoricalsociety.org. The Chik-Wauk Museum and Nature Center website is www.chikwauk.com.

² “Building is not Buying,” Nonprofit Finance Fund, March 2011. <http://nonprofitfinancefund.org/capital-services/builders-vs-buyers>.



PLAN YOUR KICKS!

MAPPING VISITOR EXPERIENCES ON AMERICA'S BYWAYS

BY DAVID GUINEY

CRUISING ALONG THE ATLANTIC SHORE ON THE NEW OUTER BANKS NATIONAL SCENIC BYWAY. ENJOYING THE MARSHES AND DUNES ALONG SELECTED ROAD SEGMENTS ARE SIGNIFICANT EXPERIENCES TO MAP. PHOTO COURTESY OF DAVID GUINEY.

The legendary song first recorded in 1946 by Nat King Cole lured Americans onto the road with this advice: “Get your kicks on Route 66.” Today travelers are getting their kicks nationwide on numerous byways under the National Scenic Byways Program and many state and local systems. But what specifically are those “kicks”? Perhaps they’re the most exciting, rewarding, and memorable experiences of their trip.

Parks manage natural and historic resources. Museums manage collections. Highway departments manage roads and

bridges. What do byway organizations manage? Normally the physical resources along the byway are the responsibility of others. Byway organizations manage opportunities for visitor experiences. But because there are so many kinds of potential experiences along a byway, how can organizations organize and manage this work?

This article describes a way that potential byway experiences can be identified, mapped, and organized so that byway coordinators can know exactly what they have to offer to travelers and can identify



exactly what byway organizations need to do optimize those experiences. You'll get your kicks by helping travelers get theirs.

YOUR CORRIDOR MANAGEMENT PLAN: A GOOD STARTING POINT

For byways, the foundation management document is the corridor management plan (CMP). The Federal Highway Administration calls for CMPs to provide “an assessment of the byway’s intrinsic qualities and their context (the area surrounding them). The end product is typically a catalog of the byway’s scenic, historic, natural, archeological, cultural,

and recreational qualities. A community visual assessment is an ideal way to involve a large number of local residents in evaluating the byway’s resources.”¹

The CMP intrinsic quality assessment or resource catalog is a good starting point for beginning to map desired visitor experiences. Once you have identified the primary byway resources that will be accessible to travelers, you can begin envisioning the experiences travelers can have in connection with those resources.

A visitor experience database can be a great tool for organizing desired visitor experiences because it focuses on personal outcomes—the experiences you want visitors to enjoy and remember at your sites. Here’s how it works.

LOW-TECH OR HIGH-TECH: DYNAMIC DATABASES

A visitor experience database can be as simple as a set of index cards, a notebook of forms filled out by hand, an Excel workbook file, or a digital database using software such as Microsoft Access or FileMaker Pro by FileMaker, Inc. The examples of data entry screens and reports in this article were created using FileMaker Pro.

Your database can document a comprehensive assembly of discrete personal experiences linked to specific places and ordered in a logical sequence—for example, following a scenic byway corridor from east to west. A logical numbering system can help you control the ordering of experiences in the database,

and enable you to locate records more easily later.

Other forms of interpretive planning culminate in a printed text document such as a Long-Range Interpretive Plan.

A digital visitor experience database is a dynamic tool that can be easily updated. Polished reports can be printed whenever needed. Site or byway managers can capture their entire interpretive and informational services in one place. You can make your database as small and simple—or large and comprehensive—as might be useful.

Each record in the database is a potential visitor experience that is facilitated or enhanced by the byway or destination site. So, for example, entering a byway destination site and feeling a sense of arrival is a database record. The experience is facilitated by an appropriate entrance

sign. If the sign is existing and functional, the database can show a picture of it, and describe the visitor experience. If there is no sign, the database record might suggest that an appropriate sign be designed and produced.

Another record—or experience—might be viewing the ocean along a stretch of road that borders the beach, with interpretation of the scene in a byway guidebook. The next record might describe the experience of stopping at a visitor center and speaking with a receptionist about where to find the best local food or artwork.

The database approach allows you to “lump” or “split” experiences as desired. For example, if a byway has a small one-room museum, it might be recorded as one experience. Alternatively, if there were four exhibits in the room, you could make a database record for each. Pre-visit experiences are often important to consider and may be included in the database—things like websites and key directional signs.

ARE YOU PROGRAMMING BYWAY TRAVELERS?

This way of working is not about “programming” visitors’ behavior. The database is a tool for helping byway coordinators and partners enhance and expand the experiences of visitors. Perhaps at some sites—ones that are high in scenic or recreational values—visitors might not need much help in identifying and understanding the opportunities they are encountering. But at many sites, resources and values are somewhat hidden and need to be identified and interpreted before



COVER FOR A VISITOR EXPERIENCE DATABASE REPORT.
COURTESY OF DAVID GUINEY.

The image shows a web-based data entry form for the 'Star-Spangled Banner Flag House'. At the top, it displays '01 - 120' and the title. Below this is a 'General Location' section with a dropdown menu for 'Experience Status' currently set to '01 - Approach to Flag House'. The form includes fields for 'Specific Location', 'Experience No. & Name', 'Experience', 'Media or Services', 'Team/Phone', 'Recommendation', 'Experience Duration', 'Status of Medium', and 'Responsibility'. A 'More Fields' button is visible at the bottom.

A DATA ENTRY SCREEN SHOWING A DROP-DOWN MENU FOR EXPERIENCE STATUS. COURTESY OF DAVID GUINEY.

they can be appreciated. For example, a battlefield along a rural byway might look like an ordinary farm. How would visitors know what happened there without the aid of a map, historical plaque, wayside exhibit, or a personal guide?

EXPERIENCE ANATOMY: THE DATABASE FIELDS

Traditional text documents are not very effective in correlating all the parameters of data associated with experiences. Your visitor experience database can capture for each experience many fields of information, including, but not limited to, the following:

- Experience name
- Description of the desired visitor experience
- General location, such as a district of a park
- Specific location

- Photo of the site
- Photo of media product at the site, such as a sign or exhibit
- Interpretive topic, theme, and subtheme
- Type of interpretive medium or program to be presented
- Typical duration of the experience—perhaps 5 sec. for a sign, 20 min. for a video
- The organization or individual responsible for facilitating the experience
- Accessibility features of the experience
- Status of media or services offered
- Recommendations for media or program development—action items!

If you want to use the low-tech approach, try creating your database in a three-ring binder. Each page would be a blank form you can take into the field to fill in. If you use clear plastic sleeves, you can add photos, maps, or drawings to the package. Make blanks on your form for all the data that will be useful to you. Don't include fields you won't use. If desired, you could go back later and type the information into a word processing file.

THE POWER OF DIGITAL DATABASES

Digital databases can offer more power and options for users than traditional paper-based systems. Drop-down lists and radio buttons can speed data entry. Once data is entered into a digital database, the application can automatically create reports that capture the byway's media and personal services programs. You can see experiences one-per-page.

Visitor Experience -Media and Programs		
VE ID No.	Experience and Park Resource	Location
02 - 300	Learn flag design and scale Visitors approach the site's visitor center building and its glass flag that is the same proportion (30 feet high by 45 feet long) as the original Star-Spangled Banner flag. Many visitors notice the transparent, mechanical nature of the glass-walk flag and go up for a closer look.	Flag House Grounds The glass flag wall on the south side of the new museum, facing south across the courtyard. The flag wall extends approximately from December's flag wall to the museum entrance.
Media or Program Type Flags or banners		
 		
Notes 3 - Star-Spangled Banner This topic includes the flag, its use in the war, flag's poem, the National Anthem, flag design and use, and related topics.		
Experience Duration 5 minutes	Status 2 - Existing, needs improvement	
Responsibility Star-Spangled Banner Flag House	Recommendations Recommend maintaining this major architectural and interpretive feature which serves as a focal point for the museum. Currently the courtyard landscape design does not indicate to visitors that viewing the flag is valued as an important experience. Consider creating a visitor welcome point with accurate interpretation and perhaps seating. Visitors who see other visitors here will be more likely to enter. If those who don't have time for a House tour or museum visit, they could get the most story through accessible exhibits and self-messaging in the courtyard.	

A REPORT PAGE DESCRIBING A DISCRETE VISITOR EXPERIENCE—SEEING A GRAPHIC OF A FULL-SIZE STAR-SPANGLED BANNER. COURTESY OF DAVID GUINEY.

You can also call for a report that displays multiple records on a page. If you need a specialized report, database functions are available for creating a new report from scratch or copying an existing report and modifying it for your own purposes.

Digital databases allow you to perform searches. For example, if you want to know how many experiences deal with the American Indian theme, all those records can be returned and printed. Or you might want to know how many wayside exhibits are located in a particular segment of a byway. Even complex searches are quickly done.

Although the database serves primarily as a system for managing interpretive media and personal services to visitors, it can also serve as an inventory of park or byway resources.

Because it's a database of experiences, it can be used to develop itineraries for visits. For example, if you were having a guest coming to your byway, you could open the digital database to see a list of possible experiences, click the ones you want your traveler to have, and then quickly print a report of the highlighted stops.

ACTION ITEMS AT YOUR FINGERTIPS

Visitor experience analysis and database development form a solid foundation for the orderly development of media and programs. Setting priorities and sticking to them becomes easier, because you have at your fingertips your existing interpretive program, plus everything you want to create or remove.

Your database can include a recommendations field, which can be used as an "action item" list. You can associate a cost with each item. If you need three new wayside exhibits, a new entrance sign, and rehabilitation of an artifact case, the database will quickly provide you with a report summarizing that work. Clearly presented reports help to clarify your needs to managers, reviewers, and funding organizations.

Interpretive program management includes removing or discontinuing products or services that are ineffective, counterproductive, or harmful to the resources and their visitor experiences. Use your database tool to identify negative experiences or elements and target them for removal or replacement—for example, faded or obsolete signs.



HAVING YOUR PICTURE TAKEN IN FRONT OF THIS FAMOUS WELCOME SIGN IS AN EXPERIENCE NOT TO BE MISSED. PHOTO COURTESY OF DAVID GUINEY.

ACCESSIBLE EXPERIENCES FOR EVERYONE

Consider having a section on your data entry form for documenting accessibility and universal design features of experiences. Being mindful and respectful of all your potential audiences will win more support for your byway.

You can use your database to record positive accessibility features such as level walking surfaces, large type, audio programs, and tactile elements. Because the database is recording not just the features of media and programs, but the entire experience at the site, the program provides a much more accurate picture of accessibility values. Even just the exercise of reviewing accessibility features for all experiences is bound to increase awareness and focus attention on desired or required improvements.

KEEPING THE END IN MIND

The National Park Service Media Development Process lists foundation planning as the first step in interpretive media development. Planning by desired visitor experience helps planners keep the goal in mind from the start. Having a viable database in place helps you stay on track in providing quality visitor

experiences through focused projects and programs. You have envisioned your ideal visitor experiences based on your knowledge of byway resources and your experience with visitors over many years. Furthermore, good foundation planning speeds the writing of grant requests and scopes of work for contracts.

Regardless of the technology used, a visitor experience database can be a solid foundation for wayside exhibit planning, museum exhibit planning, publications development, historic furnishings planning, or the planning and design of portable electronic media programs. Map your visitor experiences, track action items for enhancing those experiences, and help byway travelers get their kicks. ★

The Author

David Guiney is the principal and senior planner for Interpretive Direction, LLC., providing professional visitor experience planning and interpretive media guidance for heritage sites. His office is located in Harpers Ferry, West Virginia.

Notes:

¹ "National Scenic Byways Program," *Federal Register*, vol. 60, no. 96, May 18, 1995.



BYWAYS SAFETY 101:

YOUR GUIDE TO IMPROVING TRANSPORTATION SAFETY ON SCENIC BYWAYS

BY ROB BALMES WITH CINDI PTAK

PHOTO COURTESY OF ROB BALMES.

Transportation safety is a vital component to the overall well-being and enjoyment of visitors to America's national, state, and tribal scenic byways.

A safe traveling experience is defined by the United States Department of Transportation (USDOT) in the Code of Federal Regulations “as freedom from harm resulting from unintentional acts or circumstances.” The primary goal of implementing transportation safety projects and strategies on scenic byways is to improve safety for all users—motorists, motorcyclists, pedestrians, bicyclists, and transit riders. The benefits realized from effective safety measures on byways include safer roadways and intersections, reduced fatalities and injuries, improved mobility, and a far less stressful, more enjoyable visitor experience.

THE NATIONAL PERSPECTIVE

Each year in the United States, millions of citizens are involved in traffic-related accidents, or more precisely defined by transportation professionals as crashes. The consequences can often involve significant vehicular damages, destruction to private property, injuries, trauma, and deaths. The economic impact to our nation from injury and fatal crashes alone is estimated to exceed over \$700 billion annually.¹ Based on the most recent traffic safety statistics provided by the National Highway Traffic Safety Administration (NHTSA), over five million crashes were reported by law enforcement officers

Figure 1
Fatalities and Fatality Rate per 100M VMT by Year



CHART: CRASH FATALITIES AND FATALITY RATE PER 100 MILLION VEHICLE MILES TRAVELED, BY YEAR.

SOURCE: U.S. DEPARTMENT OF TRANSPORTATION, NATIONAL HIGHWAY TRAFFIC SAFETY DIVISION, TRAFFIC SAFETY FACTS SUMMARY OF STATISTICAL FINDINGS, 2009.

across the nation in 2009; 33,808 of which resulted in fatalities.² Despite the fact that fatalities and fatal crashes are at their lowest levels in almost sixty years, crashes still represent one of the most prevalent causes of death to the citizens of our nation.

RURAL AREAS AND TRIBAL LANDS

Even though the majority of Americans reside in urban and suburban areas, over half of all fatal traffic crashes occur in rural areas. According to NHTSA, traffic crashes in rural areas accounted for fifty-six percent of all traffic fatalities in 2008. Moreover, the fatality rate was 2.6 times higher (per 100 million vehicle miles traveled) in rural areas than in urban areas. The reasons? Crashes in rural areas typically involve more victims per vehicle and more severe damages, such as roll-overs, ejected persons, and head-on collisions. Additionally, the response time of emergency medical services (EMS) is often considerably longer in rural areas.³

Tribal Lands have been documented as having one of the highest rates of motor-vehicle related crashes in the nation. In fact, crashes are the leading cause of death involving the age group of Native Americans between four and forty-four, and the third leading cause of death to the entire population. The percentage of fatal crashes to Native Americans that involved a single vehicle was almost twenty-six percent higher than the overall percentage in the nation (73% to 58%).⁴

WHAT DEFINES A CRASH?

A crash is generally defined as an unintended incident that causes damage(s) to a motor vehicle(s) and can also result in injury or death to one or more persons involved. Crashes involve collisions between motorized vehicles, such as automobiles, trucks, motorcycles, and buses, and also include nonmotorized collisions (pedestrians, bicyclists, animals). The severity of a crash can vary significantly between incidents, but generally falls into the following three categories:

Fatal Crash: A law-enforcement-reported crash in which at least one person dies.

Injury Crash: A law-enforcement-reported crash in which at least one person was reported to have either an incapacitating injury, a visible but not incapacitating injury, or a possible injury with no visible evidence.

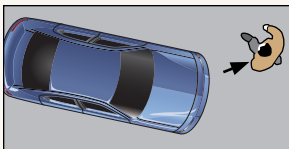
Property Damage Only (PDO) Crash: A law-enforcement-reported crash in which no one involved in the crash was killed or injured, but enough damage occurred to one or more vehicles, requiring documentation.

The primary causes of crashes can vary substantially from one incident to another. However, some of the most frequent causes of crashes on America's transportation system include:

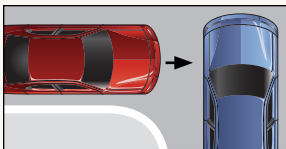
- Distracted Driving
- Speeding
- Driving Under the Influence (DUI)/ Driving While Intoxicated (DWI)

MAJOR TYPES AND CAUSES OF CRASHES

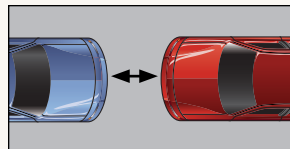
Traffic crashes fall into several categories or types. The precise description of a crash and/or its cause varies between states and local jurisdictions, but generally includes the following seven major groups:



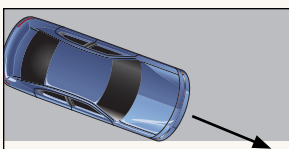
PEDESTRIAN/BICYCLE COLLISIONS



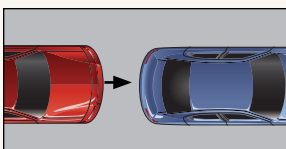
BROADSIDE COLLISIONS



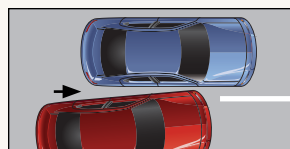
HEAD-ON COLLISIONS



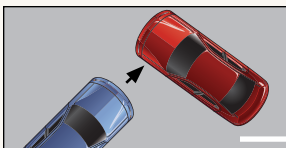
LOST CONTROL/RUN-OFF ROAD



REAR-END COLLISIONS



SIDE-SWIPE COLLISIONS



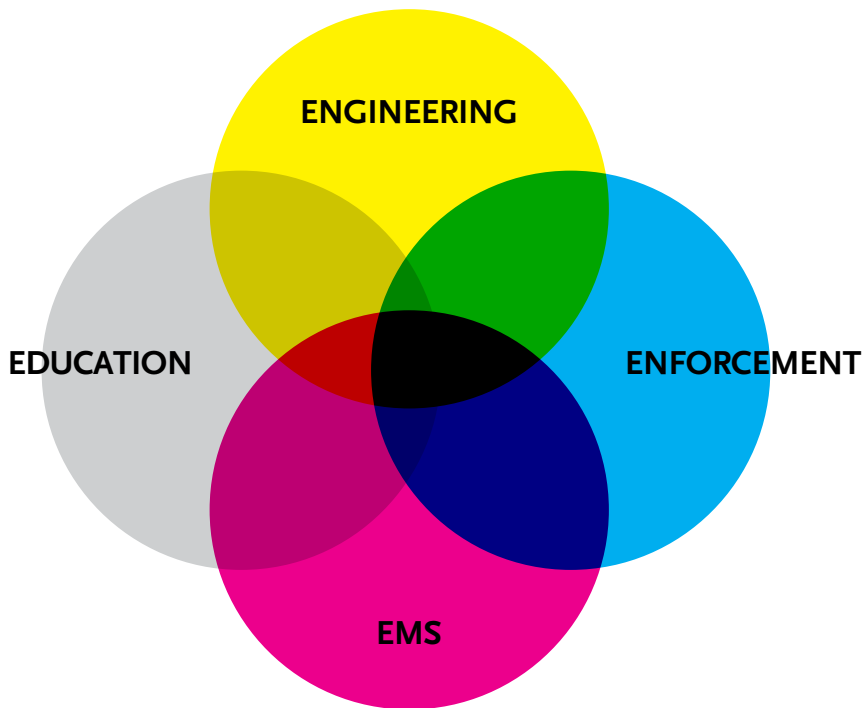
TURNING/ANGLE COLLISIONS

- Aggressive/Reckless Driving
- Weather/Storms
- Red-Light and Stop-Sign Running
- Reckless Teen Drivers
- Nighttime Driving
- Active Animal Crossings
- Mechanical Failure (i.e., flat tire)
- Driver Confusion/Navigation/Wayfinding Issues
- Sleeping/Drowsiness
- Geometry/Sight Distance

The Baby Boom Generation will also have a growing impact on roadway safety in the United States. Older drivers over 70 are projected to triple in the next 20 years.⁵ In general, older persons are also at a greater risk when driving, and more likely to be injured or killed in a crash.

FHWA AND THE FOUR E'S

The Federal Highway Administration (FHWA) Office of Safety has taken a leadership role nationally by working closely with states, local governments, tribal governments, and community stakeholders to further develop and promote safety programs and technologies in order to reduce fatalities and injuries on our nation's transportation system. The Office's specific mission is "to reduce highway fatalities by making our roads safer through a data-driven, systematic approach and addressing what are called the Four E's of Safety: Engineering, Education, Enforcement, and Emergency Medical Services (EMS)."



ENGINEERING

In July 2008, FHWA's Safety Office published the "Guidance Memorandum on Consideration and Implementation of Proven Safety Countermeasures." The Memorandum highlights nine proven countermeasures to improve safety on America's roadways and significantly accelerate the achievement of local, state, and national safety goals. They include:

1. Road Safety Audits (RSA)
2. Rumble Strips and Rumble Stripes
3. Median Barriers
4. Safety Edges
5. Roundabouts
6. Left and Right Turn Lanes
7. Yellow Change Intervals
8. Medians and Pedestrian Refuge Areas
9. Walkways

Visit the FHWA's Safety Office website for detailed descriptions and updated information related to each of the nine countermeasures at: safety.fhwa.dot.gov/policy/memo071008.

Additionally, wildlife crossings, commonly referred to as critter crossings, are recognized as effective safety countermeasures on roadways. Critter



BICYCLE/PEDESTRIAN CROSSING.
PHOTO COURTESY OF ROB BALMES.



BICYCLE/PEDESTRIAN UNDERPASS. PHOTO COURTESY OF ROB BALMES.

crossings involve the design and construction of underpasses, tunnels, culverts, overpasses, and other related structures to enable animals to safely cross roadways. Critter crossings have been proven to reduce wildlife-vehicle collisions, thereby saving the lives of both animals and humans and reducing injuries and property damages to vehicles. FHWA maintains a critter crossing website: www.fhwa.dot.gov/environment/wildlifecrossings.

EDUCATION

Enhanced education and awareness can have a substantial impact on the overall safety of the traveling public on scenic byways. States, tribal governments, and byway organizations have the ability through wayshowing to better inform travelers on how to more safely and effectively navigate the byway. Maps,

media, digital applications, and websites are examples of tools that can be used to better inform the traveler; yet, if not used appropriately, these tools must also be recognized as contributing to safety hazards along the byway, such as distracted driving. The Winter 2010 *Vistas* article, “Help Curb Distracted Driving,” offers more information on this important topic. You can read it all at www.bywaysresourcecenter.org/resources/publications/vistas/2010.

ENFORCEMENT

Transportation experts widely acknowledged that to achieve a high rate of success, engineering and education initiatives must be complemented by enforcement. The presence of enforcement officers alone can significantly change driver behavior along a byway. A prime example is the NHTSA “Click It or

Ticket” national campaign (www.nhtsa.gov/CIOT). The campaign combines both education and media awareness with statewide enforcement across the nation. Partnerships with the enforcement community at the state and local levels are major components to effective transportation safety initiatives.⁶

EMERGENCY MEDICAL SERVICES (EMS)

Emergency medical services are important to ensure that additional lives are not lost, and further debilitating injuries do not occur to the victims of an incident. The difference between life and death often correlates to the ability of EMS to respond to a crash. States, tribal governments, local governments, and byways are strongly encouraged to involve the medical community in their work on any transportation safety project or program to help ensure a more effective process for administering medical treatment to victims of crashes.

STATE AND TRIBAL GOVERNMENTS

The passage of SAFETEA-LU in 2005 established a greater emphasis on safety for state departments of transportation to incorporate in their respective transportation planning and engineering missions. In compliance with SAFETEA-LU, all states, in cooperation with local and tribal governments, must develop a Strategic Highway Safety Plan (SHSP) to provide a comprehensive framework for reducing highway fatalities and serious injuries on state roadways. The SHSP is

ROAD SAFETY AUDIT – A SAFETY ASSESSMENT TOOL

A Road Safety Audit (RSA) is a technique that is commonly used to assess safety on a roadway. RSA's typically involve an evaluation of road safety issues by trained engineering professionals along a defined roadway and/or intersection. The result of an RSA is a set of recommendations for low-cost safety improvements to reduce crashes and improve the safety of a particular portion of the roadway. RSA's can serve as an important part of developing strategies and countermeasures for portions of a scenic byway being considered as a potential safety project.

a four- to five-year plan that establishes statewide goals, objectives, and key areas of emphasis, and integrates the Four E's into their respective program areas.

In coordination with tribal safety partners, FHWA's Office of Federal Lands Highway Indian Reservation Roads program develops safety plans to help mitigate the serious safety problems facing tribal lands. The safety plans help tribal governments to identify and prioritize needs and to ultimately implement projects that focus on reducing injury and fatality crashes, which have been documented as having a major impact on Native Americans living within tribal lands.

NATIONAL SCENIC BYWAYS PROGRAM – DISCRETIONARY GRANTS PROGRAM (SAFETY IMPROVEMENTS CATEGORY)

The National Scenic Byways Program (NSBP), through discretionary grants, provides competitive-based funding for safety improvements each year to State Scenic Byways, Indian Tribal Byways, National Scenic Byways, and All-American Roads. Byway projects competing for NSBP funds in the safety improvements category should identify safety improvements that will reduce or eliminate the likelihood of crashes, or motor vehicle, bicycle and/or pedestrian conflicts that are attributable to an increase in travel as a result of designation.

Specifically, there are five key principles for byways, tribes and states to follow when pursuing a safety project grant:

1. Document that the proposed safety improvement(s) are necessary in order to accommodate increased traffic and changes in the types of vehicles using the byway as a result of designation (State, Tribal, National, All-American) or new byway facility (i.e., interpretive center, visitor center, wayside exhibit).
2. Funds may be used only for safety improvements on the byway or a road which provides direct access to a resource related to the byway (i.e., interpretive center, visitor center).
3. Funds cannot be used for road maintenance, such as potholes or re-paving.
4. Private property purchases for a byway project must adhere to the Uniform Relocation Assistance and Real Property

Acquisition Policies Act of 1970.

5. Proposed funds for the project must be proportionate to the proposed safety benefits specifically to byway travelers. A safety project which also benefits general public access to the highway must involve a non-byway funding share.

Other considerations for an applicant to carefully review, which largely determine the success of a byway safety project, include:

- Does the project correct the safety deficiency(ies) resulting specifically from designation or a new development project on the byway?
- Are your proposed improvements referenced in your corridor management plan?
- How was the project prioritized or selected by the byway leader(s)?
- What will be the outcome or result from the safety improvement(s)?
- What data do you have to demonstrate both existing safety deficiencies and the impact on safety resulting from byway designation? Can you provide “before and after” scenarios of pre- and post-project implementation?
- Can you demonstrate the benefits of the project?
- Have you factored in the service life of the project and operations and maintenance costs?

Data collection and analysis are an important part of documenting the impacts a proposed safety project may have on the byway. When considering the data to

collect in preparation for a NSBP grant application in the Safety Improvement category, the following list serves as guidance for the type of information that may be necessary to properly document your project's impacts.

- Historical crash data (before designation/project)
- Historical traffic volume data (before designation/project)
- Existing crash data (since designation/project)
- Existing traffic volume data (since designation/project)
- Change in crashes and/or crash rate(s) as result of designation or new project(s) (i.e., visitor center, wayside exhibit)*
- Change/increase in traffic volumes as a result of designation or new project(s)*
- Service life of the proposed project
- Operation and maintenance costs
- Expected project costs and benefits
- Benefit-cost analysis

Byway organizations also have the opportunity to conduct their own educational and awareness campaigns on transportation safety. Educational campaigns are eligible for NSBP funding as part of the Marketing category (as public relations). As stated by the FHWA's NSBP, "A byway marketing program includes initiatives and activities that support the overall marketing strategy such as developing and implementing a

BENEFIT-COST ANALYSIS (BCA)

As part of analyzing a potential safety-related improvement project, a detailed assessment is completed to determine the benefits realized from the project compared to the overall costs, reflecting a true benefit to cost ratio (B/C). The B/C ratio can serve as a specific measurement, demonstrating the "before and after" scenario and overall benefits of completing the project.

Overall, benefits can be both qualitative (visitor experience) and quantitative (i.e., reduction in crashes and/or severity), which are actualized on completion of the project. The costs associated with the project include all of the capital expenditures to improve the roadway/facility and recurring maintenance and operational costs once the project is complete.

byway marketing plan, marketing and public relations activities, development of collateral materials, and identification and development of cooperative advertising, partnerships and/or sponsorships."

Overall, byway organizations, tribal governments, and state byway coordinators considering how to improve safety on their respective byways should not only work directly with their appropriate department of transportation to obtain the aforementioned data and

**Attributable to an increase as a result of designation. This may mean a combination of data sources, such as the marketing of specific designations near crash data sites; an increase in traffic alone does not suggest this.*

information, but also become more familiar with their state's SHSP, tribal safety management system plans, public safety campaigns (i.e., Distracted Driving), and other applicable safety plans at the metropolitan and/or local levels. Byways should also verify whether their corridor management plans reflect safety projects and programs and marketing or public relations strategies to promote safety along the byway. It is imperative to work closely with your local, tribal, and state partners to identify how safety needs or potential projects could fit into their existing short-term and long-term plans. It is also important to monitor and research the types of safety-related improvements that may already be planned along the byway.

WHAT TYPE OF SAFETY PROJECT DO YOU NEED?

There are a number of candidate safety strategies and countermeasures for byway organizations, tribes, and states to consider as a potential byway safety project. The following list includes projects and strategies, which serve as means to improve safety on scenic byways. Some of the listed projects/strategies, such as reducing speed limits, are not project-specific and/or eligible for grants per se, but serve as viable strategies that could be implemented by a state DOT, tribal government, or local jurisdiction with governance over the roadway.

- Construct median barriers (median guardrail, cable guardrails)
- Conduct and raise visitor awareness and publicity of safety (distracted

driving, drowsy driving, impaired driving)

- Provide education and outreach materials to byway travelers (state or national safety program videos, brochures, publications)
- Promote safety in all wayshowing information (maps, digital apps, orientation stops, signage, websites)
- Reduce operating speed limits on the byway (near activity centers, interpretation sites)
- Construct grade separations (rail-roadway crossings, overpasses)
- Reconstruct culverts, drainage improvements
- Eliminate or reduce roadside hazards (utility poles, light poles, trees, slopes, sign posts)
- Implement traffic calming techniques (traffic barriers, speed bumps/humps, raised crosswalks, street alignment, traffic circles, on-street parking)
- Improve sight distance and visibility near and at intersections (clear trees, brush, move unnecessary signs, utility poles)
- Reconfigure/reconstruct intersection, roundabouts



SCENIC TURNOUT ALONG A BYWAY.
PHOTO COURTESY OF CONTEXT SENSITIVE SOLUTIONS.



CENTERLINE RUMBLE STRIP.

PHOTO COURTESY OF AMERICA'S BYWAYS RESOURCE CENTER.



WILDLIFE BRIDGE OVER A HIGHWAY.

PHOTO COURTESY OF FEDERAL HIGHWAY ADMINISTRATION.

- Install rumble strips or stripes (centerline, shoulder)
- Provide safety edges in pavement
- Widen shoulders, provide bicycle lanes
- Construct scenic turnout areas
- Install or improve right- and left-turn lanes to visitor/activity centers, wayside areas
- Install guardrails along shoulders
- Provide passing relief lane(s)
- Improve turning radii of intersection(s)
- Improve advanced notification of stop sign or signal (stop, yield, signal ahead, variable message sign)
- Improve size and visibility of roadway and byway signage (retro-reflective, fluorescent signs, pavement markings/reflectors)
- Optimize signal timing of intersection(s)
- Restrict or eliminate turn maneuvers (left turns, u-turns, right-turn on red)
- Complete sidewalk or walkway gaps
- Construct pedestrian refuge islands and mid-block crossings

- Provide safe animal crossings, underpasses, overpasses (wildlife bridges, critter crossings)



PEDESTRIAN/BICYCLE UNDERPASS ALONG A RIVER TRAIL

PHOTO COURTESY OF AMERICA'S BYWAYS RESOURCE CENTER

- Ensure ADA-compliant access to transit stops and stations
- Construct pedestrian/bicycle underpass or bridge(s)
- Improve crosswalks and curb ramps to be ADA-compliant
- Increase lighting conditions at intersection(s) and/or to activity center(s)
- Install countdown pedestrian signals at intersection(s) and/or to activity center(s) ★

SAFETY LINKS AND RESOURCES

National Scenic Byway 2011 Grant Information and Application Tips

www.bywaysonline.org/grants/application

www.bywaysonline.org/grants/examples/safety

www.bywaysonline.org/grants/examples/marketing

FHWA Safety Program

safety.fhwa.dot.gov

FHWA Transportation Safety Planning

www.fhwa.dot.gov/planning/scp/index.htm

FHWA Guidance Memorandum on Proven Safety Countermeasures

safety.fhwa.dot.gov/policy/memo071008

FHWA Road Safety Audits (RSA)

safety.fhwa.dot.gov/rsa

National Highway Traffic Safety Administration (NHTSA)

www.nhtsa.dot.gov

Tribal Transportation Safety

flh.fhwa.dot.gov/programs/irr/safety/

USDOT/FHWA Critter Crossings

www.fhwa.dot.gov/environment/wildlifecrossings

Official U.S. Government Website for Distracted Driving

distraction.gov

“Help Curb Distracted Driving,” Vistas, Winter 2010. America’s Byways Resource Center.

bywaysresourcecenter.org/resources/publications/vistas/2010/winter10

The Authors

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Cindi Ptak, former National Scenic Byways Program Manager, serves as the Federal Lands Highway Program Coordinator for the Public Lands Discretionary and Forest Highway Programs at FHWA in Washington, DC.

Notes:

¹ Estimating the Costs of Unintentional Injuries, National Safety Council, 2010.

² Traffic Safety Facts, U.S. Department of Transportation, National Highway Traffic Safety Division, Traffic Safety Facts Summary Statistical Findings, August 2009.

³ Traffic Safety Facts, U.S. Department of Transportation, National Highway Traffic Safety Division, Rural/Urban Comparison, 2008.

⁴ Fatal Motor Vehicle Crashes on Indian Reservations, 1975 – 2002, National Center for Statistics and Analysis, National Highway Traffic Safety Division and U.S. Department of Transportation, April 2004.

⁵ Susan Farley, “2025: A Lot of Old People on the Roads,” *New York Times*, October 19, 2010.

⁶ *Transportation Planner’s Safety Desk Reference: Guidance for Implementation of the American Association of State Highway and Transportation Officials (AASHTO) Strategic Highway Safety Plan*, USDOT/FHWA, January 2007.



LITTLE DIXIE GREAT RIVER ROAD IN MISSOURI.
PHOTO COURTESY OF AMERICA'S BYWAYS RESOURCE CENTER.

Journal

FOR AMERICA'S BYWAYS 

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DULUTH, MN 55802

OR E-MAIL: [CENTER@BYWAYS.ORG](mailto:center@byways.org);

INCLUDE "JOURNAL EDITOR" IN SUBJECT LINE.

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