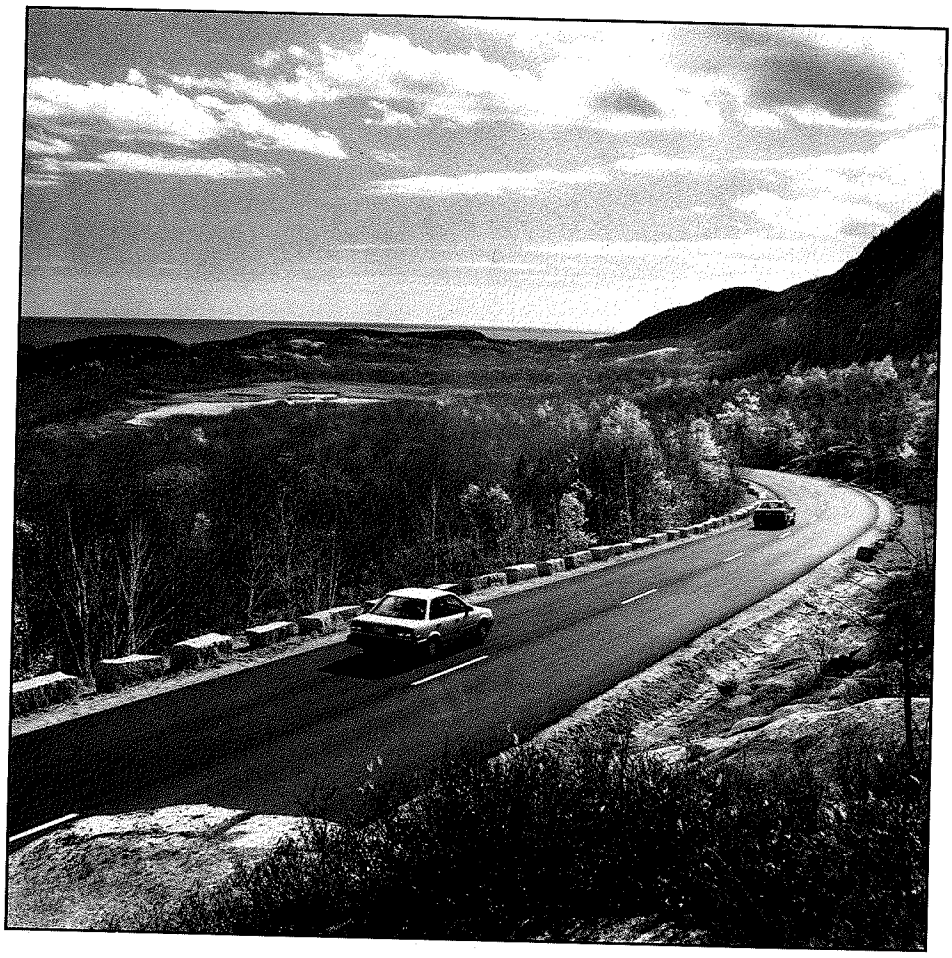
# Historic Motor Road System

## Acadia National Park

Compliance Documentation and Rehabilitation Guidelines for FHWA Project #PRA-ACAD-4A10



Olmsted Center for Landscape Preservation

National Park Service

# HISTORIC MOTOR ROAD SYSTEM

## ACADIA NATIONAL PARK

Compliance Documentation and Rehabilitation
Guidelines for FHWA Project #PRA-ACAD-4A10

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CULTURAL LANDSCAPE PUBLICATION NO. 9

Olmsted Center for Landscape Preservation

National Park Service
Boston, Massachusetts

1993

*Reprinted in 1996*
*with Epilogue*

This report is part of the Cultural Landscape Publication Series produced by the Olmsted Center for Landscape Preservation. This series includes a variety of publications designed to provide information and guidance on landscape preservation to managers and other preservation professionals.

The Olmsted Center for Landscape Preservation is a center for landscape preservation, training and technology development based at the Frederick Law Olmsted National Historic Site. From this location, Olmsted and his successors designed thousands of public and private landscapes across America.

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**Cover photo:** Champlain Mountain segment of Acadia National Park's Historic Motor Road System, above "Bliss Field," October 1995. This photo taken after completion of PRA-ACAD 4A10 is placed on the cover of the attached report, which has been reprinted two years after completion. Photo by the author.

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## FOREWORD

Visitors to Acadia have long known that driving the Motor Roads is one of the most popular and enjoyable aspects of a Mount Desert Island vacation. The constantly varying views of ocean, forest, and mountain are unique to the area. Many visitors find the convenient access to hiking, picnicking, and swimming key to their visit. While the smooth alignment, interesting vistas, and rustic coping stones have long been appreciated, the rich story of the development of the road system had been largely forgotten. Even park staff were not aware of the roles John D. Rockefeller, Jr., Frederick Law Olmsted, Jr., George B. Dorr, and the Bureau of Public Roads played. In particular, the sustained effort of John D. Rockefeller, Jr. over more than thirty years was not fully appreciated.

In recent years, the demands of more and larger vehicles created pressure to widen and otherwise change the roads. This was the case in 1991 when then superintendent Bob Reynolds proposed stopping construction in mid-stride and examining the roads from an historic perspective before proceeding with additional work. Working with the fine staff of the Olmsted Center for Landscape Preservation, the lost story was recovered and we all came to a much heightened appreciation of the high standards of construction. Going through a step by step process of looking at each aspect of the roads has led us to logical and common sense rehabilitation solutions preserving what is best about the system with a nod to the realities of modern traffic.

I am very proud to have been a late arriving part of this effort and applaud the park and Olmsted Center staff for a job well done. I believe that it will not only serve us well for the road system, but will also serve as a model for preservation of other historic resources in Acadia and elsewhere.

Paul F. Haertel
Superintendent
Acadia National Park

## PREFACE

This project successfully demonstrates that cultural resource planning can provide an effective tool for making informed decisions regarding the treatment of historic properties. It is also an example of a proactive approach towards the stewardship of cultural landscapes, and in particular, the Section 106 process. The Acadia motor roads project follows the spirit of 36 CFR, Part 800, which encourages the early involvement of the State Historic Preservation Officer (SHPO) and other interested parties during the initial stages of planning. As a result, the Section 106 process, often unfairly criticized for slowing down important maintenance projects, proceeded smoothly and approval was given in a very timely manner.

The motor roads project has been truly a collaboration, drawing together professionals with a wide range of expertise, including the staff of Acadia National Park, the Denver Service Center, and the Federal Highway Administration, who all enjoyed an excellent working relationship throughout the planning, design, and construction phase.

With the construction project, PRA-ACAD 4A10 now complete, the accomplishments of this planning effort can be evaluated to gauge its applicability and usefulness in future work. The original report was completed inexpensively and efficiently in three months during the summer of 1993 by two individuals, a writer/researcher and an editor/project manager. The cost of the work was less than two percent of the total construction budget. However, this report (supplemented with annotated drawings), provided compliance documentation for a construction project three times the final scope, approximately one half of the 26-mile historic motor road system. It is hoped that this report will be of continued benefit when the segment of roadway that were deleted from the final construction due to budget limitations, are finally scheduled for rehabilitation.

This motor roads report was originally prepared solely for the park's use related to the aforementioned construction project. It has been reprinted to make this example available to preservation professionals, designers, maintenance staff, and other individuals interested in the rehabilitation of historic roads, or in the history of Acadia National Park in particular. Although the project is site-specific, this approach - involving a collaboration of landscape preservation professionals, maintenance staff, and highway engineers - is transferrable. We hope that the motor roads report will assist others with the planning, research, and stewardship of their cultural landscapes.

Lauren G. Meier
Project Manager
Olmsted Center for Landscape Preservation

## ACKNOWLEDGEMENTS

We would like to thank the many individuals who contributed to this project. At Acadia National Park, former Superintendent, Bob Reynolds and Deputy Superintendent, Len Bobinchock initiated this project. Paul Haertel, Superintendent remains committed to the preservation of the historic motor road system. Chief of Maintenance, Jim Vekasi served as the principal project manager at the park. With his staff, Jim played a critical role in formulating the rehabilitation guidelines to ensure that the proposed work both preserved the cultural values of the road system and could be maintained with contemporary practices. Deborah Wade, Chief of Interpretation, made the park's historic documents and photographs available for our use, which was integral to the preparation of the narrative history. Many others at the park offered their advice and encouragement.

Staff of the NPS Denver Service Center (DSC) and the Federal Highway Administration (FHWA) worked to translate the recommendations of this report into the final construction drawings and specifications. Lou Delorme, Alice McLarty, and Harry Sloat of the DSC; and Dave Weber, Leo Dario, Bill Whittenberger, Greg Holnbeck and Bill Paille of the FHWA all contributed greatly to this work.

Landscape architect, Will Rieley, provided research advice and reviewed preliminary drafts of the rehabilitation guidelines. Robert Joubert of the Asphalt Institute provided technical information. Tom Rosenbaum and Michelle Hiltzik assisted with research at the Rockefeller Archive Center. Elizabeth Igleheart, Maine Historic Preservation Commission provided useful comments and review.

This project has also built upon the work of several other individuals. Most importantly, Eleanor Ames conducted the initial research on the work of the Olmsted Brothers at Acadia National Park which provided an important foundation of information. This was followed by an "Historic Landscape Assessment" and an "Evaluation of Eligibility" prepared by Lauren Meier and Catherine Evans.

Cultural resource, design, and maintenance professional in the NPS New England Systems Support Office (formerly the North Atlantic Region) provided fundamental support. Nora Mitchell, Director of the Olmsted Center contributed overall guidance and advice. Lead Historian, Paul Weinbaum, assisted with technical preservation issues related to Section 106 compliance. Robert McIntosh, Bob Holzheimer, Bill Barlow, and Dave Price participated in reviews and discussions. The staff of the Frederick Law Olmsted National Historic Site, especially Superintendent, Rolf Diamant and Deputy Superintendent, Lee Farrow Cook provided project support. Archivist, Linda Genovese and Archives Specialist, Joyce Connolly facilitate research in the Olmsted NHS Archives.

In closing, we thank Leo and Mary Grossman, Gladys O'Neil, and Irene Marinkee for the memories and souvenirs they shared with us. These individuals and their families were personally involved with the creation of the motor road system.

# INTRODUCTION

## PURPOSE OF THIS REPORT

A portion of Acadia National Park's Historic Motor Road System is scheduled for a program of rehabilitation in 1994. Over fifty percent of the Motor Road's 26.2 mile surface will receive much needed attention within the scope of the Federal Highway Administration's project PRA-ACAD 4A10. Since 1926, Federal Highways (FHWA), then the Bureau of Public Roads (BPR), and the National Park Service have been cooperating on the design, construction, and rehabilitation of roads within the National Park System. This partnership has provided public access to the scenic wonders of the parks while simultaneously safeguarding the park's ecological and scenic values. Together, the NPS and BPR (FHWA) have been responsible for creating some of the nation's most beautiful parkways. In growing numbers, the fruits of this partnership are being recognized for their historical significance. To date, this recognition has included park roads found in many National Parks such as Glacier, Zion, Yellowstone, Mount Rainier, and Shenandoah National Parks. In 1993, the Motor Road System of Acadia National Park was determined to be eligible for nomination to the National Register of Historic Places.[1] Having long considered the scenic and ecological implications of their collaborative parkway projects, this documentary report is a result of the growing mutual concern on the part of the National Park Service and the Federal Highway Administration for the preservation of our nation's historic park roads.

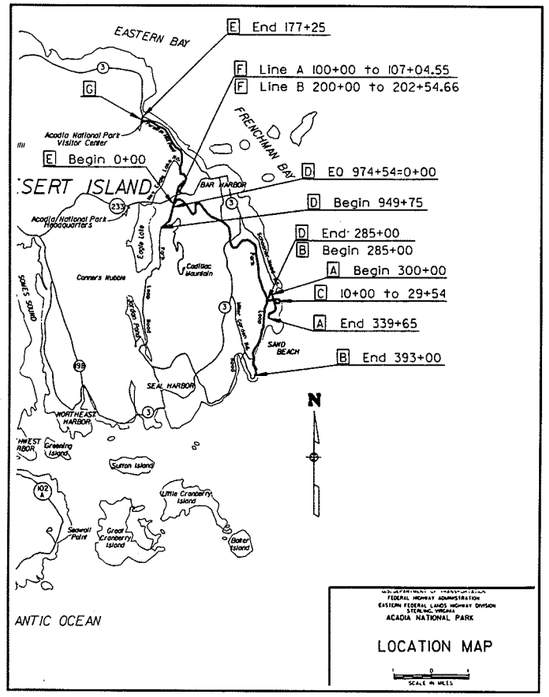


**Figure 1** Scope of FHWA Project PRA-ACAD 4A10, 1994.

Acadia National Park was the first National Park east of the Mississippi River and today is one of the most visited national parks in the nation. The Historic Motor Roads are the primary means by which the majority of visitors experience the park. A visitor's experience of these roads is inextricably linked to the perceived quality of their visit. Unfortunately, increasing visitation causes accelerated deterioration of the roadway and the adjacent landscape. Periodic rehabilitation, such as the work outlined in Federal Highway Project #PRA-ACAD 4A10, ensures that these roads continue to function as an important part of the park visitor's experience. However, without careful consideration of the historic character, these projects can result in an accumulation of alterations which taken together may significantly alter the historic resource.

Therefore, it is necessary to step back and look into the layers of history to uncover the clarity of design which makes these roads exceptional, and to assure that future work does not further jeopardize the integrity of the Historic Motor Road System.

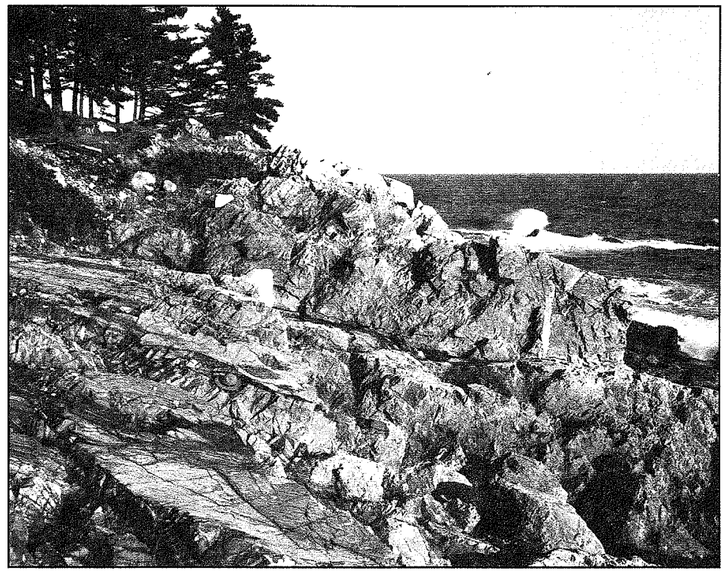

**Figure 2** The Acadian coastline near Ocean Drive, no date. Photograph courtesy Acadia National Park Archives.

In order to ensure that the historic character of the Motor Road System is retained, the following report has been prepared to identify character-defining features and recommend specific rehabilitation guidelines related to FHWA Project PRA-ACAD 4A10. To set the stage for this work, a brief chronological history has been prepared which documents the evolution of the Motor Road System, focusing on the sections of the historic road included in the FHWA project.

This report, prepared by North Atlantic Region's Cultural Landscape Program through the Olmsted Center for Landscape Preservation, builds upon earlier studies by the Olmsted Center, which led to the determination that the Motor Roads are historic and eligible for the National Register of Historic Places. This document is intended to provide the basis for the Case Report required for compliance with Historic Preservation Act (36 CFR, Part 800) and guide Federal Highways as they prepare the final construction documents.

Since the report focuses on only a portion of the roadway and construction issues related to the FHWA Project #PRA-ACAD 4A10, it does not provide any comprehensive information related to character and integrity of the remaining portions of the road system. Thus, this report is not intended to be a Cultural Landscape Report, nor satisfy compliance documentation for the rehabilitation of the entire system.





To date, several archives and collections have been examined in an attempt to locate information on the design and construction of the Motor Roads. This includes:

1. **Acadia National Park**
   Bar Harbor, ME
   BPR Final Construction Reports
   Park Historic Map Files
   Denver Service Center fiche cards

2. **Rockefeller Archive Center**
   North Tarrytown, NY
   Rockefeller Family Archives
   Simpson Family Collection

3. **National Archives, Federal Records Center**
   Waltham, MA
   CCC monthly reports

4. **National Archives Main Facility**
   Washington, D.C.
   Central Classified Files of the National Park Service

5. **Federal Records Center**
   Suitland, MD
   Bureau of Public Roads Files

6. **Federal Records Center, Cartographic Branch**
   Alexandria, VA

7. **Federal Highway Administration, Eastern Lands**
   Sterling, VA

Several individuals were also contacted in connection with the research. They include Leo Grossman (BPR Engineer 1920-1941), Gladys O'Neil and Irene Marinkee of the Bar Harbor Historical Society, Linda McClelland, National Register Program, NPS; Robert Page and Randall Biallis, Park Historic Architecture Division, NPS; Eric Deloney, Chief, HAER Branch, Historic American Building Study and Historic American Engineering Record, NPS; and Leo Dario, FHWA project engineer. This search has revealed considerable written information in the form of correspondence and reports, some preliminary design and construction drawings, but little information in the form of final construction drawings. The exception is Paradise Hill Road. These drawings were located at the FHWA Eastern Lands office in Sterling, Virginia. It is possible that more specific construction documentation may be found in the future.

This information has been reviewed and analyzed to generate an historical overview of the design and construction of the Historic Motor Road System at Acadia National Park. This section is followed by a description of the existing conditions of what is commonly know as the "Loop Road" from near the intersection of Cadillac Mountain Road, to Otter Cliffs, and also a northern spur, known as "Paradise Hill Road." This section includes an analysis of the existing features which are integral to the historic character of the road. Finally, the most important section of the report provides specific recommendations, in the form of drawings and specifications, to ensure that the integrity of the Historic Motor Road is retained throughout FHWA Project #PRA-ACAD-4A10.

## Role of John D. Rockefeller, Jr. and Others

Acadia's Motor Roads are the product of the talents of many engineers and designers. The most notable among them is Frederick Law Olmsted, Jr. However, the concept and implementation of a Motor Road System is primarily the result of the vision of John D. Rockefeller, Jr. Just as George Buckman Dorr, Acadia's first Superintendent had ideas reaching beyond the Hancock County Trustees for Public Reservations, John D. Rockefeller, Jr. was thinking about more than merely efficient and well engineered park motor routes.

The deeply ingrained work ethic that demanded painstaking attention to detail, and excellence as a product, had brought great fortune to the Rockefeller family. Having learned this ethic from his father, and the ideals and practice of philanthropy from family advisor Dr. Gates, John D. Rockefeller, Jr. would never associate himself with any project or gift where quality had been compromised, always seeking to provide the greatest good from his considerable wealth. Reaching well beyond the shores of Mount Desert Island, Rockefeller helped to set the standard of quality for National Park roadways and landscapes by his direct sponsorship of projects in Yellowstone and elsewhere. He was also influential through the close personal relationships he developed with the early Directors of the National Park Service.

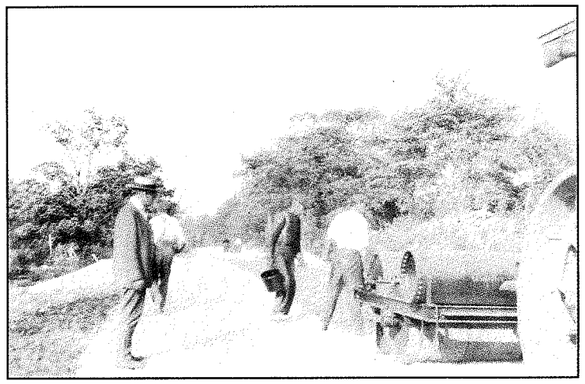

**Figure 3** John D. Rockefeller, Jr. supervising road construction, no date. Photograph courtesy Rockefeller Archive Center, Simpson Family Collection.

A sensitive and introspective man, Rockefeller was attracted to the idealism of those who served in the early years of the Park Service. He once wrote to Director Mather upon learning of his retirement:

> "...Thus some years ago I had come to realize what extraordinarily fine, able, unselfish men had been brought into the park service. Knowing how meager the salaries which these positions carry, I wondered that men of such high calibre had been attracted to them. This was made clear to me when I came to know you and to learn something of what you have been doing in the department of parks these many years. These young men have been drawn into the service because of their admiration and affection for you and because of the fine example of unselfish public service which you have set for them. They have come to realize that the National Park Service offers an opportunity for a man of ability and idealism to make a very real contribution to the development of his country.[2]

Through his association with the Park Service, Mr. Rockefeller found himself in the company of others like himself, who sought only the best from themselves and for their country. Through his friendship of over thirty five years with NPS Director Horace M. Albright, he found an avenue for expression of





his vision and values for the entire National Park System.

**John D. Rockefeller's Conservation Philanthropy**
**Includes generous gifts to:**

Acadia National Park
Great Smokey Mountain National Park
Shenandoah National Park
Yellowstone National Park
Mesa Verde National Park
Grand Teton National Park
Virgin Islands National Park
South Calaveras Giant Sequoia Grove
Humbolt Redwoods State Park
Colonial Williamsburg Foundation
Colonial National Historic Park
George Washington Birthplace National Monument
Palisades Interstate Park
American Planning and Civic Association

When Rockefeller died in 1960, the keen interest and watchful supervision which he gave to the development of Acadia National Park was impossible to replace. Rockefeller's carriage road network was the first to fall into disrepair. Shrinking maintenance dollars and overworked staff, common today, were problems which were especially severe at the time of Rockefeller's death. Culverts quickly became clogged with leaves and other debris, causing washouts across the carriage road surface. As the carriage roads became impassible, they received less attention from the public and were allocated fewer maintenance resources. Happily, the carriage road system is today experiencing a renaissance. A program of rehabilitation is underway which recognizes both the historic significance and recreational potential of Rockefeller's carriage roads and aims to transform them to their former condition. This carriage road rehabilitation program is guided by exhaustive studies of their original planning and construction.[3]

Similarly, the Motor Road System has been recognized as a significant cultural resource. Preservation of the integrity of the Motor Road System is essential to the unique character of the park and the enjoyment of visitors that experience Acadia National Park each year.

# HISTORICAL OVERVIEW

## HISTORIC MOTOR ROAD SYSTEM
## ACADIA NATIONAL PARK

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### INTRODUCTION

The origins of Acadia National Park are well documented elsewhere and remains a fascinating story of public and private cooperation and controversy. The central figure in the founding of Acadia National Park is George Buckman Dorr. Dorr, the scion of a wealthy Boston family, devoted most of his life and fortune to the creation of Acadia National Park. He served as the Park's first Superintendent from the founding of "Sieur de Monts National Monument" in 1916, until his death in 1944. Dorr was also the park's first naturalist, writing of the many natural wonders to be encountered along the trails that he built, maintained and personally enjoyed. An incredible number of photographs, taken during Dorr's tenure, of the scenery around Mount Desert Island, reflect the beauty of the island at that time and the power it had over his life.

Dorr was gregarious, outgoing, and had an impulsive streak which made him rush headlong into projects, oftentimes without a great deal of planning and forethought. This made him the perfect alter-ego for John D. Rockefeller, Jr.
To be certain, Acadia National Park owes its existence to the enthusiasm and tenacity of George Dorr. The human aspects of the story of the cooperation between these two bi-polar personalities makes the story of the park and the roads only more interesting. Even though their relationship was publicly cordial, it was often privately tense. However, they managed to lay aside their differences, and work toward a common goal, each recognizing and respecting the others commitment and affection for the landscape of Acadia National Park.


**Figure 4** Superintendent Dorr with park staff, 1941. Photograph courtesy Acadia National Park Archives.

## Construction of Jordan Pond/Eagle Lake Motor Road

(See Figure 7, Diagram 1)

Rockefeller had been building a system of carriage roads on and near his Seal Harbor estate for nine years when it became apparent that Acadia National Park would not escape the automobile. The carriage roads were very similar in design to what Rockefeller enjoyed at his home in Pocantico Hills, New York. He derived great pleasure in their construction as well as their use. In addition to the carriage roads on his Seal Harbor estate, many of the carriage roads on Mount Desert Island traced routes over land owned by either the park or property held in trust for the park by the Hancock County Trustees for Public Reservations. When building carriage roads on park property, Rockefeller established a method of working designed to avoid controversy. It was typical for Rockefeller to choose the route, and to provide the funds for the engineering and construction of the roads, while Superintendent Dorr served as the National Park official technically in charge of the work. Rockefeller would go as far as to prepare contract documents for carriage road construction for Dorr's signature.[4] These Dorr executed, exercising a great deal of independence as a Superintendent, reflecting the unique circumstances of his position and the times in which he served. This methodology was later used in the construction of the park's first Motor Road.

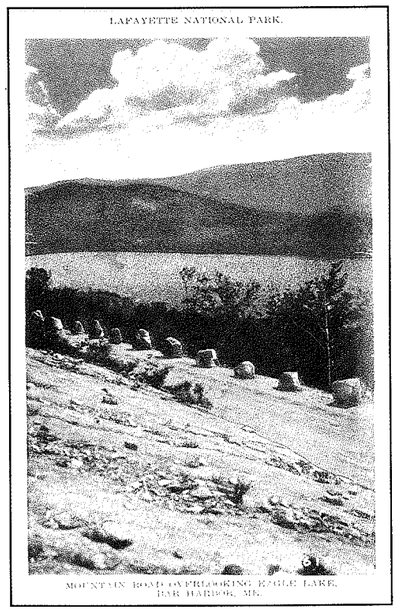



**Figure 5** Historic postcard of Jordan Pond/Eagle Lake Motor Road. Courtesy of Irene Marinkee.

In June of 1922, the National Park Service Director, Stephen Mather and Arno Cammerer traveled to Acadia for the purpose of inspecting a proposed road and trail program submitted to the Park Service for approval by Superintendent Dorr. Dorr's plan was the result of Mather's instructions to all National Park superintendents to prepare maps, estimates, and other data covering road projects to be submitted to Congress as the basis for the general roads program for all of the National Parks.[5] Dorr's plan which met with Mather's and Cammerer's hearty approval, included routes from Eagle Lake Road (Rt. 233) to Jordan Pond House by way of Bubble Pond, and a route to the summit of Cadillac Mountain. Dorr may have had an advantage over other Park Superintendents in drafting his plan to Mather. He had at his service the talents of Paul Simpson and Walters Hill, who served as Rockefeller's engineering and surveying team. Rockefeller, well acquainted with Dorr through the planning and construction of the carriage roads, predictably took interest in the Park Service's plans for Motor Roads, wishing to see that if any road was to be built, that it be done well.

Cammerer commented on the proposed route:

> ...On Tuesday I circled Jordan Pond, partly by the new survey and partly where such existed - by foot trails, and then followed the Motor Road survey through the woods along the western slope of Pemetic Mountain from the foot of Jordan Pond to the northern end of Bubble Pond, a





> distance of about three miles. Surveyor Simpson, who made the survey, and Mr. Lynam accompanied Supt. Dorr and me. The road is excellently located throughout with a maximum five percent grade. With the exception of one or two places where it will cross rock slides, it cannot be seen from either above or below; and along these rock-slide sections boulders and other weathered rocks which are abundant along the route can be so arranged that the road will scarcely appear, at all, in evidence...[6]

In addition to the scenic qualities of the proposed Motor Roads, Cammerer's report also focused on the desirability of having the proposed roads in place as a barrier to wildfire, and for making accessible to the typical citizen the wonders of the National Park. Dorr's plan was approved with Cammerer emphasizing:

> ...this report must be kept confidential as far as the general public is concerned. Should it become public in any way land values might rise to such figures that the proposed donations will not be sufficient to cover the amount needed for acquisition and the opportunity be lost. Therefore should discussion of individual projects or development work arise it should be carried on generally and without reference to this map or this report...

Rockefeller had received a copy of this map from Superintendent Dorr while in Seal Harbor. Upon his return to New York, he composed a letter of commitment to Dorr which was to begin his involvement with the creation of Acadia's Motor Road System.

> ...I understand that you have had surveys made of a motor road from the Eagle Lake Road to the top of Green Mountain (Cadillac). I also understand that you have had surveys made of a road from the Eagle Lake Road along the west side of Green Mountain to Bubble Pond, around the north end of Pemetic Mountain, along the east side of Jordan Pond and to the Jordan Pond House. I further understand that these two roads start from the same point on the Eagle Lake Road and proceed for a distance of several thousand feet as a single road. You have told me that both of these roads have been approved by the Government and that you are hoping to get an appropriation from the Government for the construction of the road up Green Mountain, but that you fear the appropriation, if made, will be hardly sufficient to construct the entire length of the road and build it as it should be built. As you know, my special interest in the plan of development of the National Park which is being carried on is in connection with its availability for horses and pedestrians. Nevertheless, I have felt strongly that a motor road to the top of the highest mountain on the Island was desirable, and that a motor road to Jordan Pond, as planned was equally important from the point of view of the best ultimate development of the Park. Further, since these roads together would make available for motorists as fine scenery as any in the Park, It seems to me that their construction would still further justify the Government's policy of developing the balance of the park for use by pedestrians and horse-drawn vehicles.
>
> I am therefore prepared to contribute whatever reasonable amount may be necessary for the construction of the road from the Eagle Lake Road to the Jordan Pond House, as above described...
>
> ...In our various conferences on the subject, you have said that you were disposed to build the road on a day labor basis, and that you were in a position to give it your personal attention. You have also said that you would have specifications prepared and estimates made of the probable cost of the first section, which is common to both the mountain road and the lake road, and that you would advise me of the estimated cost of this section. Upon receiving this estimate, I shall be prepared to make a definite pledge toward the cost of that section, followed by definite pledges for the road, section by section...[7]

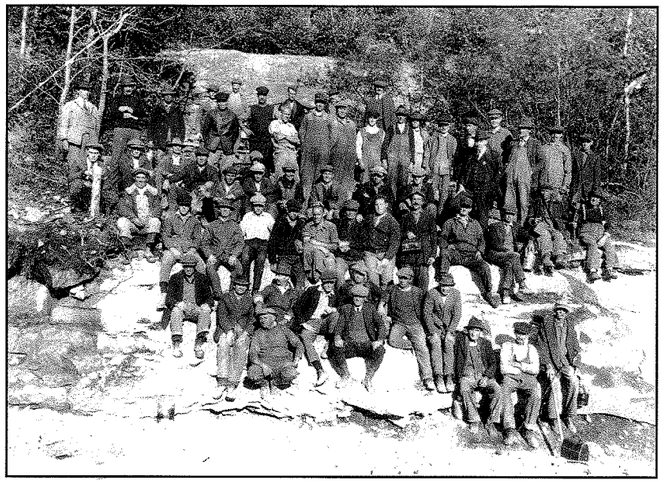
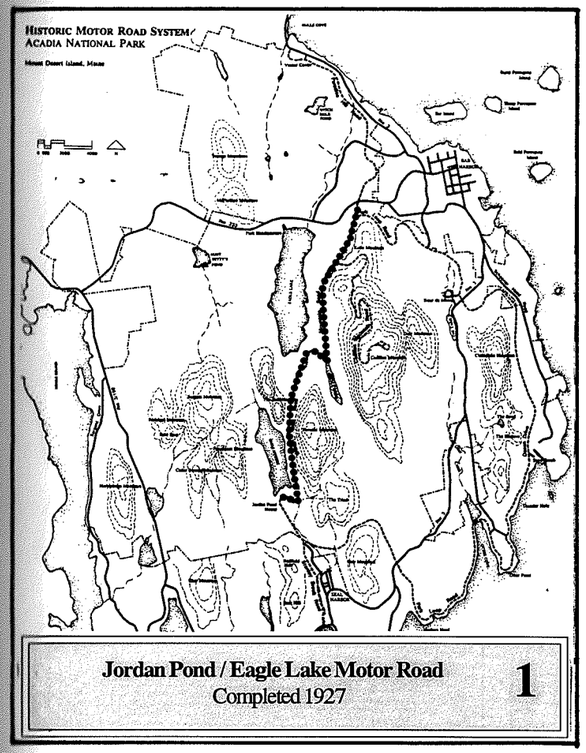


**Figure 6** Work crew, Jordan Pond/Eagle Lake Motor Road, 1926. Photograph courtesy Acadia National Park Archives.

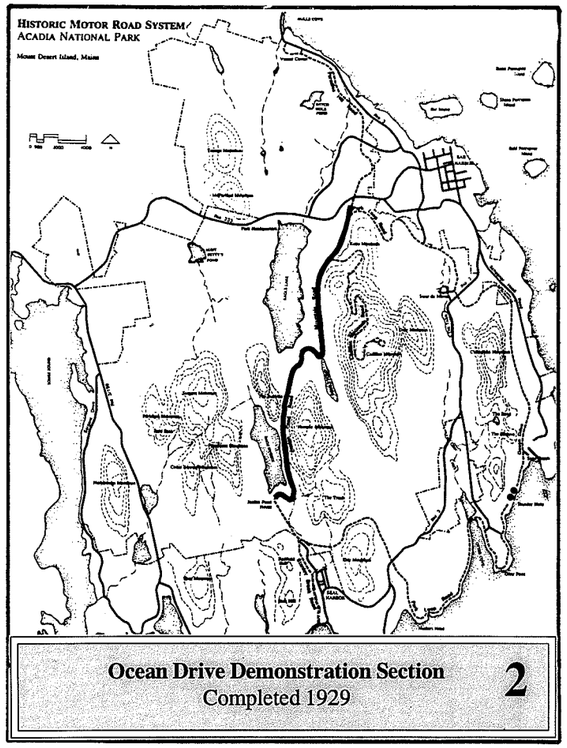
Rockefeller was familiar with the separation of circulation systems of New York City's Central Park, where vehicles and pedestrians were conveyed over the same terrain, yet on different routes. He was proposing much the same arrangement for Acadia. He felt that providing for a separate Motor Road would help his argument for saving the rest of the park for pedestrian and carriage systems. He wrote in 1923, shortly after construction began:

> ...I think you can feel quite comfortable about the automobile problem, so far as my property and the Lafayette National Park are concerned. I cannot imagine a day ever coming when I should be willing to admit motors over our own roads, and the Park authorities, both local and in Washington, are thoroughly committed and on record as permanently opposed to the admission of automobiles into the Park, except on the one or two roads to be built especially for automobiles, namely the one to the top of Green Mountain and the other running from the Green Mountain Road to Bubble Pond and finally out to the south side of the island...[8]

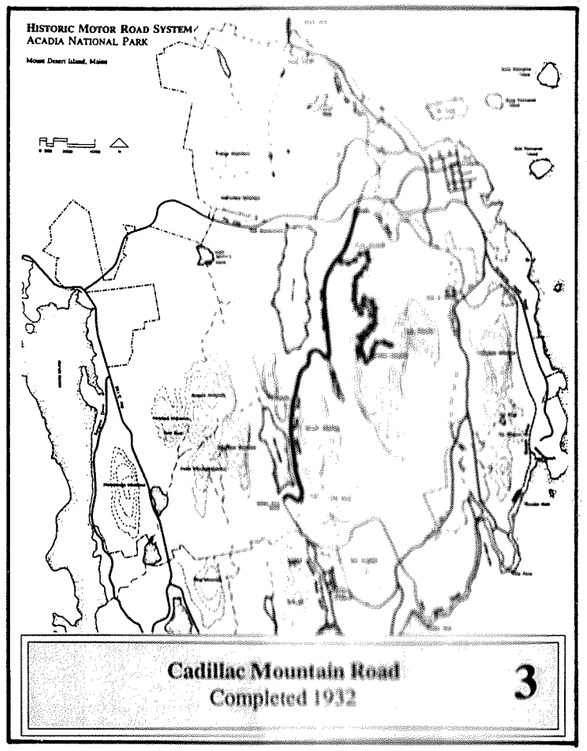
The first section of this road, which is specifically mentioned in his letter to Dorr is a 4300' section from Eagle Lake Road (Rt. 233) to the proposed intersection with the future Cadillac Mountain Road. This section, the first to be built, was completed in July of 1924 and is the oldest section of Acadia's Historic Motor Road System. Yet even before this first section of the Jordan Pond/Eagle Lake Road could be completed, opposition surfaced once again from the Island's summer residents, who had shut down an earlier carriage road. This opposition was led by Pennsylvania Senator, and summer resident, George Wharton Pepper. Dozens of other summer residents engaged in a letter writing campaign to Secretary of the Interior Hubert Work urging the abandonment of the project.



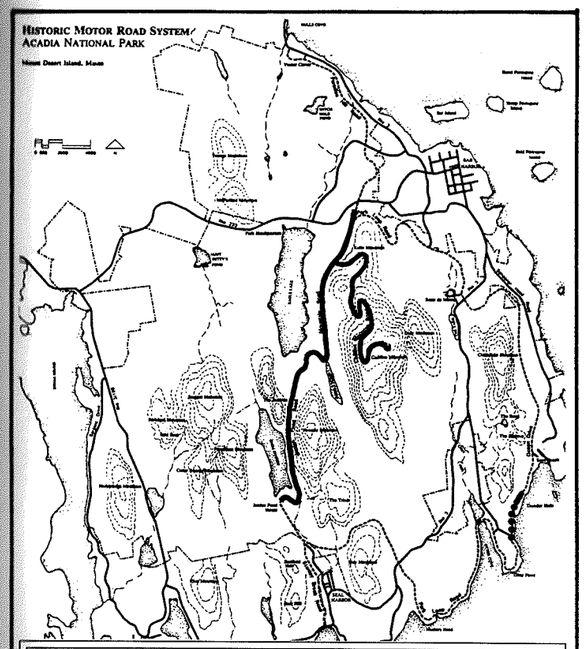

**Jordan Pond / Eagle Lake Motor Road** **1**
Completed 1927



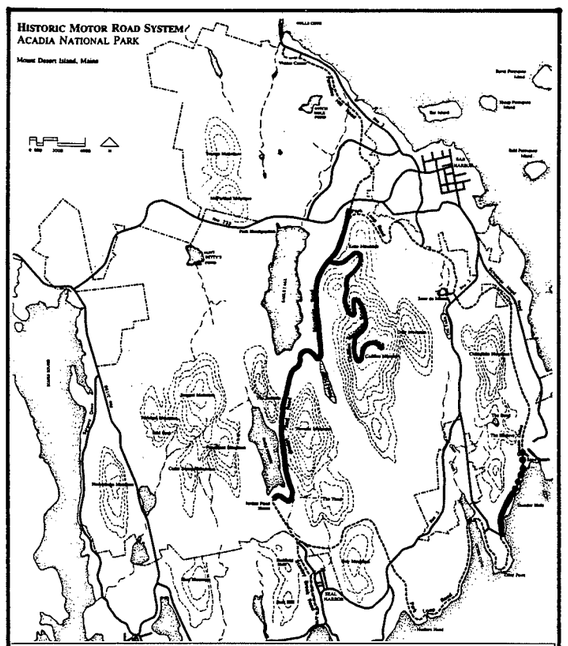

**Ocean Drive Demonstration Section** **2**
Completed 1929



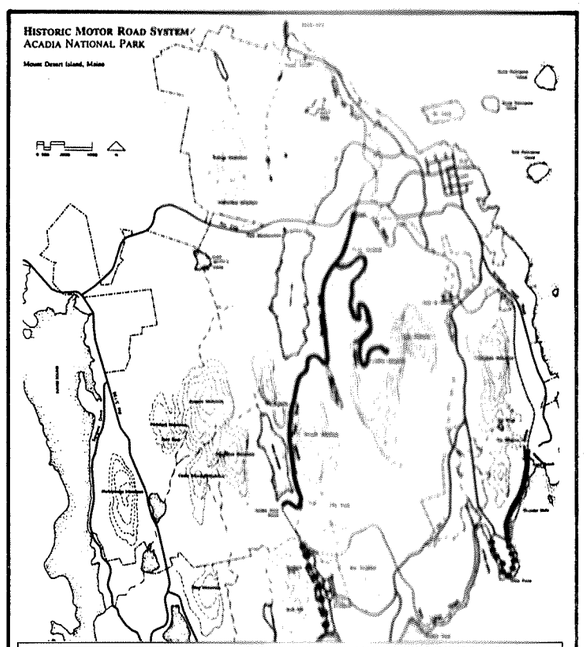

**Cadillac Mountain Road** **3**
Completed 1932




**Ocean Drive: Thunder Hole to Otter Cliffs** **4**
Completed 1933




**Ocean Drive: Thunder Hole to Sand Beach** **5**
Completed 1934




**Stanley Brook Road / Otter Cliffs Road** **6**
Completed 1936

## Period Road Completion Diagrams

### Figure 7

The captioned diagrams appearing on this and the following page follow the step by step progression of the development of Acadia National Park's Historic Motor Road System. Construction of the first of these roads, which began as early as 1921, was not complete until 1958, some thirty five years later.

All of the roads described were conceived and planned before World War II. However, the war and the priorities of the intervening years deferred the construction of segments captioned 12 / 13 / 14 until the 1950's.

All segments of the Motor Road System appear in this figure. However, only the following segments fall within the scope of the proposed 1994 rehabilitation project **PRA ACAD 4A10**.

**Segment 1**
Jordan Pond / Eagle Lake Motor Road

**Segment 2**
Ocean Drive: Thunder Hole Demonstration Section

**Segment 4**
Ocean Drive: Thunderhole South to Otter Cliffs

**Segment 5**
Ocean Drive: Thunderhole North to Sand Beach

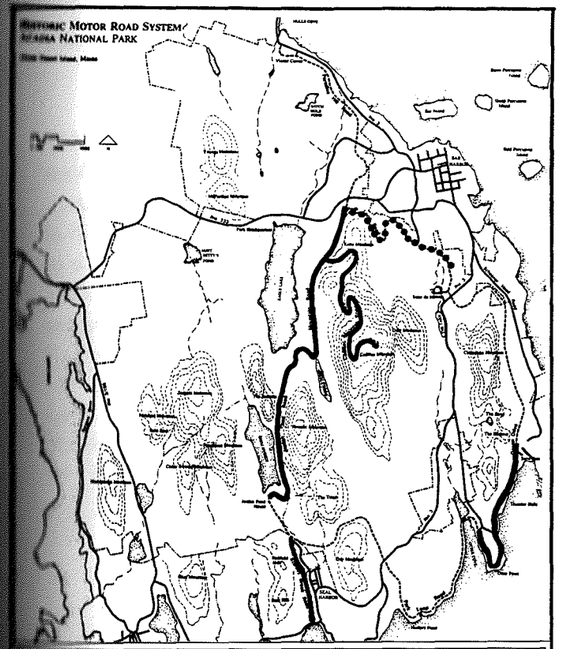
**Segment 6**
Otter Cliff Road

**Segment 7**
Kebo Mountain Road and Bridge

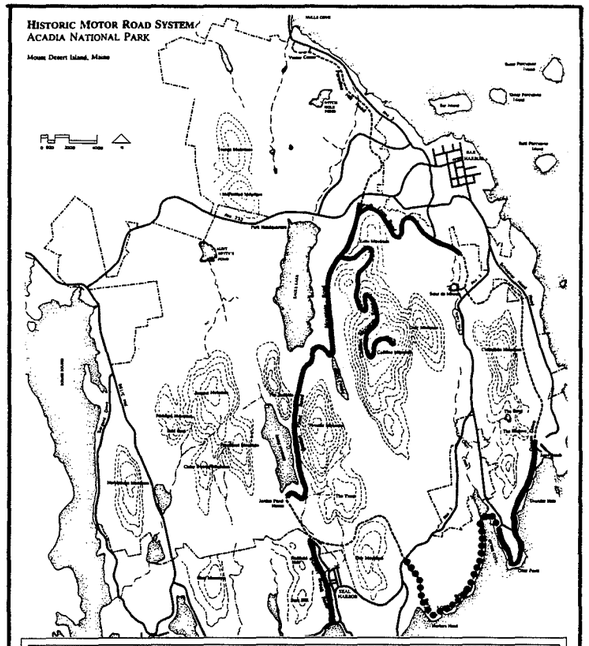
**Segment 9**
Kebo Extension and Champlain Mountain Road

**Segment 11**
Paradise Hill Road

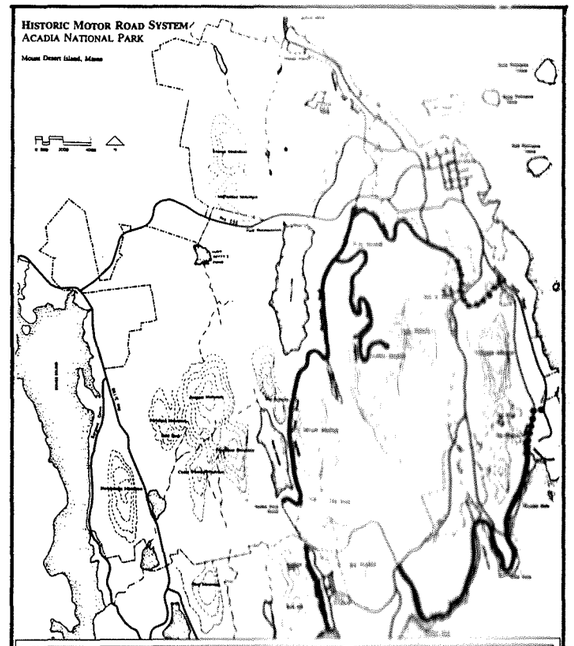
**Segment 14**
HPR Project 4A2



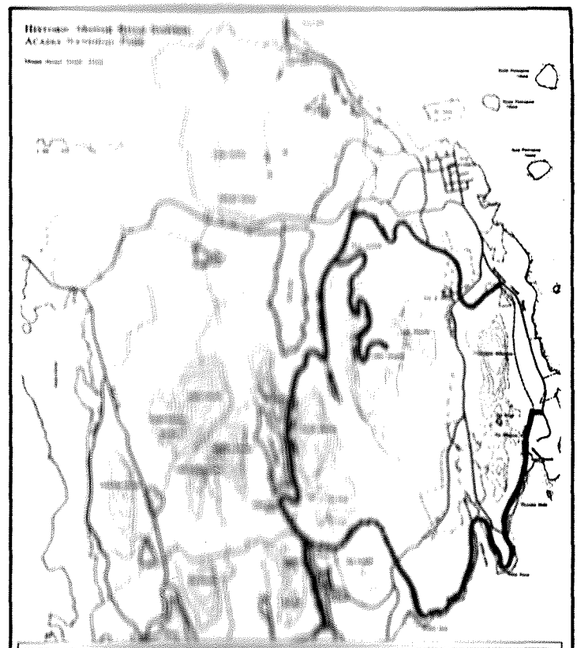

**Kebo Mountain Road and Bridge** **7**
Completed 1938



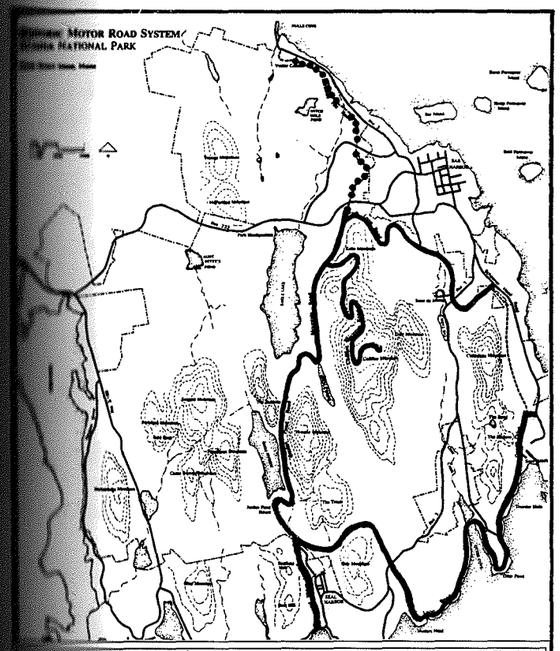

**Otter Cove Causeway / Blackwoods Road** **8**
Completed 1939



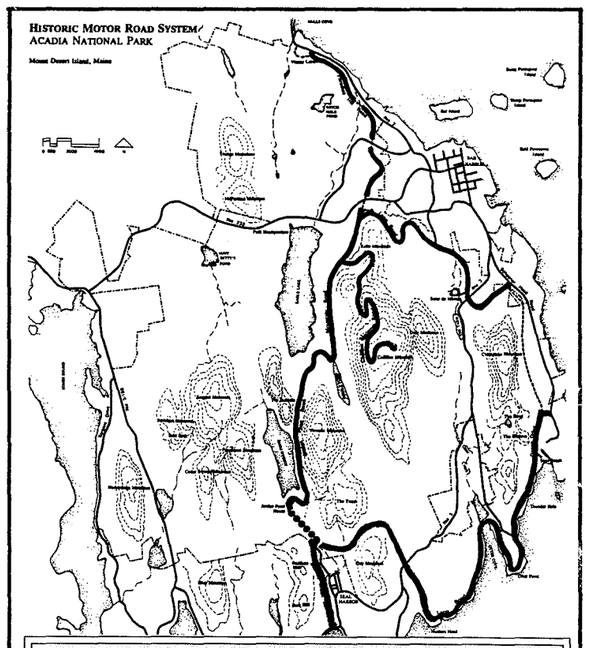

**Kebo Extension / Champlain Mountain Road** **9**
Completed 1940



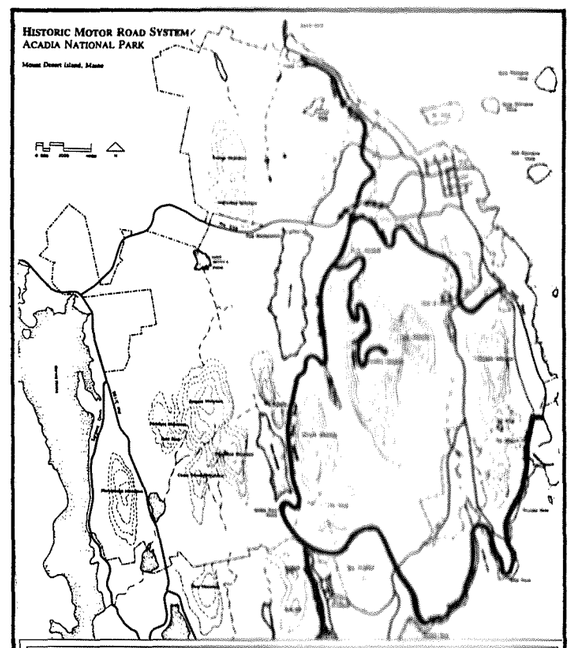
**Day Mountain Road** **10**
Completed 1941



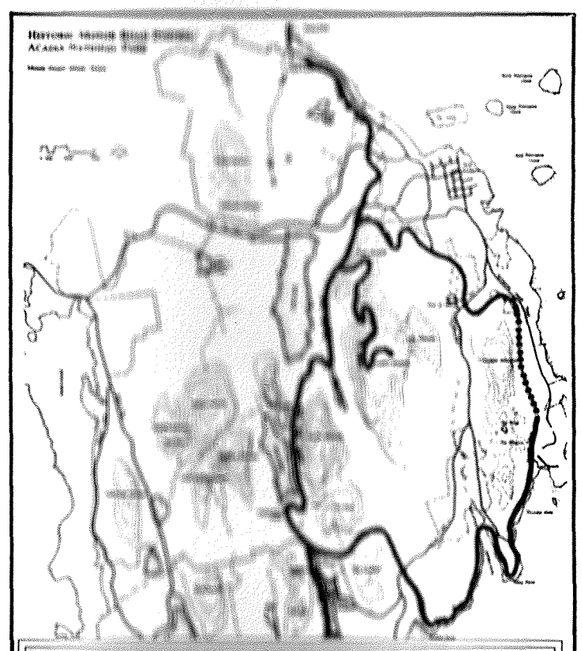

**Paradise Hill Road: Bridges not Included** **11**
Completed 1941




**Day Mountain Road Realignment** **12**
Completed 1951




**Paradise Hill Bridges** **13**
Completed 1952



**BPR Project 4A2** **14**
Completed 1958

This opposition was based on fears that "the proposed development would bring in a "peanut crowd" of the Coney Island type, and that the park would speedily be littered with egg shells, banana peels, old tin cans, etc." Rumors had spread that the park was to be gridironed with roads and its natural beauty was to be lost forever.[9] These protests and rumors led Secretary Work to convene hearings in Washington to sort out the issues and come to a decision as to the desirability of the completion of the road project. These hearings were held and Secretary Work approved the road program, due greatly to the broad support the program had among the year-round residents, the Maine congressional delegation as well as Harvard University's President Emeritus Charles Eliot.

Later that summer, Work visited the site of the controversy himself, accompanied by NPS Director Mather. The Bar Harbor Times carried accounts of the Secretary's visit and reported the comments of both men.

> ...Perhaps the very height of his address was reached, so far as local interest is concerned, when he said that though he had believed the foreman of Glacier Park, also a Maine man, had the last word in road construction without landscape marring, he had come to the conclusion that he would have all the park engineers, including Chief Daniel R. Hull of the National Park come to Mount Desert Island in September for a gathering here. "I want them all to come and sit at the feet of your chief engineer, Hill", said Mr. Mather, "and study this magnificent development of yours on this Cadillac Mountain road approach, where the very minimum of marring has been so well demonstrated... [10]

From the comments of Director Mather, it is apparent that Section 1 of the Jordan Pond/Eagle Lake Motor Road, which also served as the approach for the future Cadillac Mountain Road, set a bench mark for quality within the National Park Service (Figure 8). These comments preceded the NPS's Inter-bureau agreement of 1926 with the Bureau of Public Roads. Mather did direct Daniel Hull, NPS Chief Landscape Engineer, to visit the completed section of the road as an example of excellent construction. Hull went on to draft the NPS/BPR Inter-bureau agreement the following year.

That same year, Rockefeller's interest in a Motor Road appeared to have expanded to include something more comprehensive than his earlier involvement. During 1925 and 1926, Rockefeller engaged the C. G. White Engineering Company to study and provide estimates for a bridge and causeway over Otter Cove to replace a structure that had been destroyed by the sea some years ago.[11] This sign of interest on further road developments reflect the emerging idea that a system of Motor Roads could take in the landscape of the island from the mountain tops to the sea. Though these studies and estimates were shelved for a time as other priorities worked themselves out, they eventually led to the BPR's completion of Otter Cove causeway and bridge in 1939.

Construction continued on the Jordan Pond/Eagle Lake Road into 1927 when the road was surface treated with a "bituminous macadam." Bituminous macadam was an early term for bituminous surface treatment, which utilized asphalt rather than clay to hold together the final aggregate layer of the road. This early surface treatment utilized the native granite from a quarry near Bubble Pond. This gave the road the same color as the surrounding outcroppings, helping the road to further blend into the landscape. This first Motor Road had a traveled way of eighteen feet, two feet wider than Rockefeller's standard width for his carriage road projects. The speed limit was posted at 18mph, with the road being closed from 9pm to 7am.

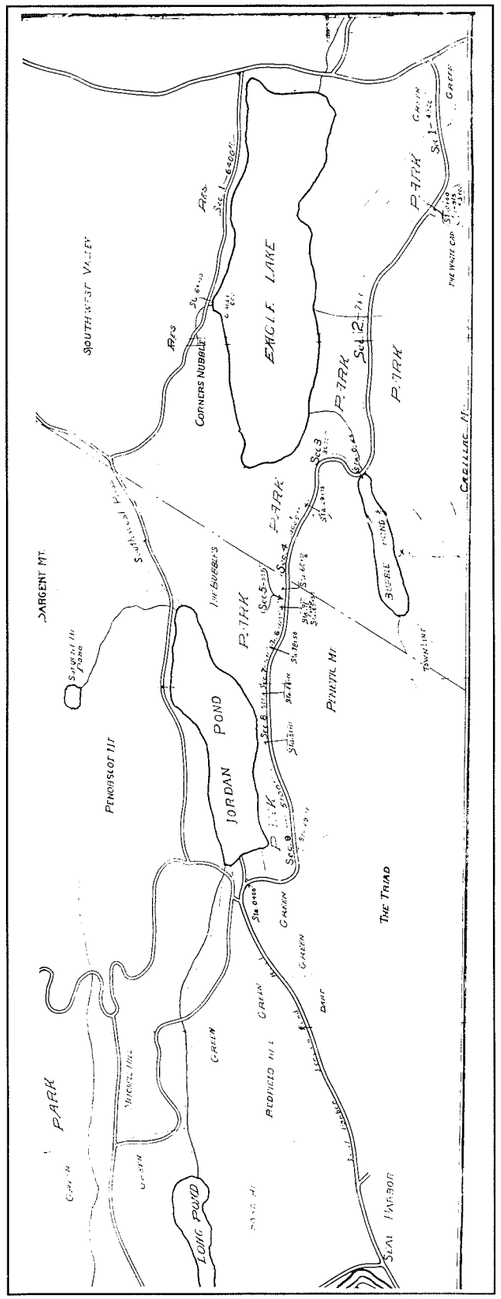



**Figure 8** Jordan Pond/Eagle Lake Motor Road, circa 1927. Drawing courtesy Acadia National Park Archives.





## Ocean Drive Thunder Hole Demonstration Section

(See Figure 7, Diagram 2)

Further indication of Rockefeller's growing interest in a Motor Road System, is the use of his engineers and crews to reconstruct a 500 foot sample section of Ocean Drive in 1929. Ocean Drive was originally built in the 1890's as a scenic drive, by the Town of Bar Harbor.[12] Rockefeller, making use of his experience with and pleasure in road construction, completed this sample section at Thunder Hole as an example of what the whole of Ocean Drive could become. This 500 foot section was funded by the Town of Bar Harbor, through a $2,000 grant from the State of Maine. The road was 24 feet wide to accommodate the parking of cars along the upper side.[13] Concurrently, contracts had been awarded and work had begun on the Cadillac Mountain Road.

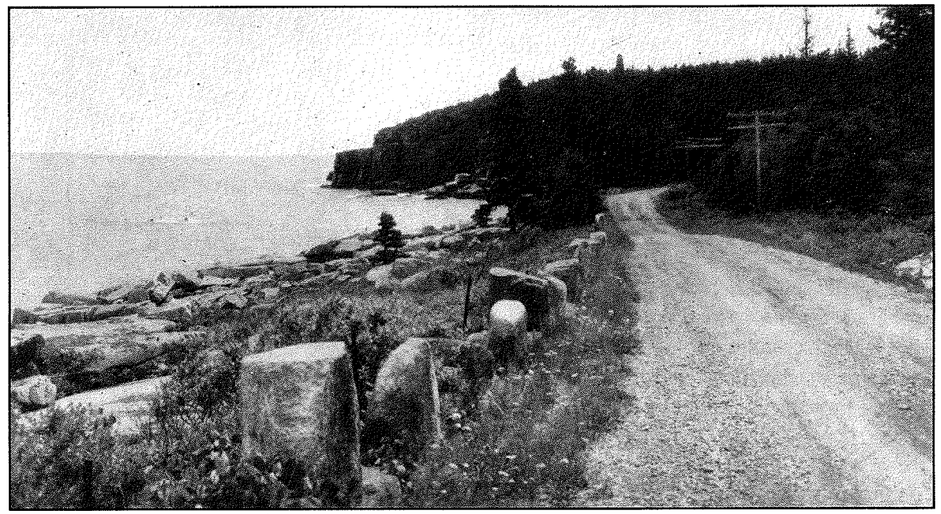


**Figure 9** Ocean Drive as shown in Charles Eliot 2nd's 1928 Report, "The Future of Mount Desert Island."

## Construction of Cadillac Mountain Road
(See Figure 7, Diagram 3)

The Cadillac Mountain Road is one of the earliest roads constructed under the new Inter-Bureau agreement which the NPS had entered into with the Bureau of Public Roads. In July of 1929 the young resident engineer for the BPR, Leo Grossman arrived in Bar Harbor to begin his administration of this project, which had been designed the previous year. Cadillac Mountain Road was Grossman's first assignment with the BPR as a resident engineer.

**Figure 10** Leo Grossman, Bureau of Public Roads Resident Engineer, 1929-1942.

Grossman immigrated to the United States as a young boy with his family. He was born in Odessa Russia and later educated at M.I.T., receiving a degree in engineering. He remembers the work of his early career with the Bureau of Public Roads as a wonderful experience in helping to create an American treasure. He was later to work closely with Rockefeller in the planning of later BPR segments of the Motor Road System.

Cadillac Mountain Road is an amazing example of construction on mountainous terrain. The maximum gradient is seven percent, which required that the profile ascend to the summit for its entire length. There is a positive grade for the entire distance. The road was laid out with spiral transition curves, an adaptation from the techniques of the railroad industry which resulted in a smoother, flowing transition between tangents and curves.[14]

The Cadillac Mountain Road was constructed with Federal funds; the total of grading and surfacing contracts exceeding $214,000. The Bureau's Final Construction Reports for this road are very informative as to the details. From these reports it is clear that the typical section for this project called for an eighteen foot pavement width with two foot shoulders in cut and three foot shoulders in fill. This width was later widened as part of the contract for the construction of the parking area at the mountain's summit. A boulder guard rail was fashioned out of large pieces of ledge rock, similar to that of the Jordan Pond/Eagle Lake Motor Road. These stones were about three and one half feet in height, set in a six inch trench in the fill section on the shoulder of the road. The stones were spaced so that there was not greater than a four-foot opening between the stones.[15]

The Portland Sunday Telegram reported on the dedication ceremony for the Cadillac Mountain Road offering a fine description of the road and its surface:

> ...the road is linked with the gift road of John D. Rockefeller, Jr., making the tour from the start at Bar Harbor to the very summit a comfortable few minutes spin. At all points it is 22 feet wide, built by the penetration macadam method, penolithic type. For this





> construction a native granite rock was quarried on the site from a fifty-foot cut located two-thirds of the way up the mountain and through which the new road passes.
>
> **A Non-Skid Road**
>
> The pink granite finish of the surface presents a truly pleasing effect that harmonizes with the guard stones and the picturesque panorama beyond. This type of road is non-skid even in wet weather, if the driver exercises reasonable care... [16]

**Figure 11** Cadillac Mountain Road, 25 November 1931. Photograph from Bureau of Public Roads, *Final Construction Report* (Hereafter, BPR).

## Rockefeller Proposes a Comprehensive Motor Road Plan

By the summer of 1929, having completed the construction of the sample section of Ocean Drive at Thunder Hole, and seeing the Bureau of Public Road's work on Cadillac Mountain Road underway, Rockefeller's attitude towards the containment of the Motor Roads had changed. His vision for the development of Acadia National Park now included a comprehensive Motor Road System. This change of heart may have come in light of the good effect of his sponsorship of roadside improvements and landscaping in Yellowstone National Park. It was through this project in Yellowstone that Rockefeller began a lifelong correspondence and friendship with Horace M. Albright, future Director of the National Park Service.[17]

In August of that year, he wrote to the Kidde Construction Company of New York City, a company that had worked for Rockefeller at his Pocantico Hills estate:

> As you know, I have for some years been building roads here on Mount Desert Island, partly on my own land, partly in Acadia National Park - roads, some of them for horses, some for automobiles. I have for some time been working on a large scheme for an automobile road, which means some twelve to fifteen miles of road going from mountain tops to the seacoast. At length I have about secured the necessary land to make this development possible. I have here two engineers constantly in my employ, one Mr. Simpson, whose father preceded him in this work, the other Mr. Hill, a Bar Harbor man...Mr. Simpson is thoroughly competent for this kind of work. He was once State Highway Supervisor in Maine. Mr. Hill is also a good engineer...Mr. Simpson has done work for me at Tarrytown; Mr. Miller and Mr. Tess know him, and they have both been up here to go over his roads with him. Mr. Simpson and Mr. Hill, with the one or two helpers which they have, could not possibly do the amount of reconnaissance work required to make ready for this larger scheme, without prolonging the preliminary studies for too long. I am wondering whether Mr. Miller could assume responsibility for the making of these surveys and studies for me, using Mr. Simpson and Mr. Hill with their helpers and supplementing them with some of your engineers from Tarrytown or others whom you might get.[18]

One month after Rockefeller had engaged the services of the Kidde Construction Company to study the possible routes for the Motor Road System that he had in mind, he also brought in the expertise of the Olmsted Brothers: Landscape Architects of Brookline Massachusetts. The Olmsted firm's services were solicited to settle a dispute between Superintendent Dorr and Rockefeller about the location of a park entrance road in the vicinity of the Sieur de Monts Spring area. This area had originally been developed by Dorr. It was home to the Abbe Museum, Sieur de Monts Spring and the Wild Gardens of Acadia. Rockefeller wanted the road to come in at the foot of Dry Mountain (now Dorr Mountain) following the line of the Hemlock Road, pass to the west of the Wild Gardens, the Sieur de Monts Spring, and the Abbe Museum, and from there to travel south along the western bank of the Tarn. Dorr insisted that the Hemlock Road not be invaded, and that the Motor Road come down through the Great Meadow passing to the north of the Sieur de Monts Spring and the Museum to join the proposed route down the west side of the Tarn.

Rockefeller wrote to Henry Hubbard, a principal of the Olmsted firm, hoping to resolve the issue. Frederick Law Olmsted, Jr. was occupied at the time on a project in the west.

> As I discussed on the ground the first two of these problems yesterday with Mr. Dorr, it became clear to me that neither he nor I could, with the aid simply of our engineers, arrive at their best solution. I suggested to him that entirely at my own expense and as a personal matter, I invite Mr. Olmsted and his associates to study these problems from a purely detached and unbiased standpoint, and give us their opinion. With this suggestion Mr. Dorr was in completest accord and delighted at the idea"..."If you will undertake the study of this problem, which I assume I can count on your being willing to do, for it does not involve the execution of the program but simply the maturing of a comprehensive, well ordered plan, which Mr. Dorr, the Government or I will carry out from time to time as we may see fit...[19]





The correspondence of Dorr and Rockefeller reveals that to a great extent, both gentleman's opinion of the preferred routes was significantly altered by consulting with the Olmsted firm. Consultation with Hubbard and later Frederick Law Olmsted, Jr. helped to answer initial questions regarding the lay out of an entrance road and the line of a Motor Road in the Tarn Valley. Most interesting was the adoption of plans for the Motor Road to turn to the east at the north end of the Tarn then turn south again and travel down the east side of the Tarn valley, parallelling Route 3.

Charles Eliot 2nd of Boston, a summer resident of Bar Harbor and author of "The Future of Mount Desert Island" a privately sponsored planning document, learned of Olmsted's ongoing consultation with Rockefeller and wrote to Olmsted of his concerns:

> ...but I am one of those that feel that his hobby of building roads is inclined to take him further than the conditions justify.
>
> I am delighted that you have been called in on this problem, and am hopeful that you can divert Mr. Rockefeller's activities into useful lines...[20]

After almost a year of study, collaborating with engineers Hill and Simpson through the Kidde Company and correspondence on the matter of the expanded system of Motor Roads, Frederick Law Olmsted, Jr. prepared a lengthy report to sum up the conclusions of the planning effort.[21]

In his report, Olmsted described the proposed route for the circuit as:

**Section A:** Beginning at the Jordan Pond/Eagle Lake Motor Road and passing around the north end of Great Pond Hill to the Great meadow region.

**Section B:** From the Red Rock Spring, past the Kebo golf course, and on to the east side of the Great Meadow.

**Section C:** From the east side of Great Meadow, to Sieur de Monts Spring, to the north end of the Tarn, then continuing south on the east side of the Tarn on a route parallel, but elevated above the county road, over the saddle at Gorham Mountain's "Bowl and Beehive." The road would then descend Gorham Mountain's east side and connect with the existing Ocean Drive.

**Section D:** Ocean Drive. The route would follow essentially the same line as this existing scenic drive, which was built in the 1890's. Some minor changes in alignment would be necessary, but it was not recommended that the road be widened to the same width as the demonstration at Thunder Hole.

**Section E:** Otter Cliffs section, a continuation of Ocean Drive. "This section would first swing inland, then rise rapidly to occupy the crest of a line of cliffs with views over and between the trees to the ocean, but coming out on a curve close to the brink of the cliffs on a flattish rocky knoll which surmounts them at their highest point---a superb outlook. The Otter Cliffs foot trail as far as it now extends, being closer to the shore, will remain practically unaffected by this road."

Olmsted's report alludes to the future extension of the Otter Cliffs section through the Blackwoods section, continuing on through to Hunter's Beach, which would in the future be designed to meet the guidelines within the report. Those guidelines called out design standards and the rational behind them, such as:

**Speed limit**: Eighteen miles per hour

**Width**: Standard pavement width of 18 feet with widening at the curves.
Two foot shoulders. Shoulders to be vegetated.

**Maximum curvature**: 200' radius

**Maximum gradient**: Seven percent

Anticipating controversy, Olmsted added:

> The underlying basis for almost any such questions lies in the fact that no motor roads can be constructed, maintained and used in a region of natural scenery such as characterizes Mount Desert without some sacrifice, either through interference with the perfection of enjoyment of the region by other means, or through objectionable alteration of the scenery itself, or both; thus offsetting in greater or less degree the increase of enjoyment of the region by motorists which is made possible by the roads. The fact is in general no less indisputable...that the use of motor cars is, with all of its limitations and drawbacks, one of the important means of enabling people to enjoy such a region and tends to be used for more "man-hours" of enjoyment than any other one means, regardless of any one's opinion of relative human values...





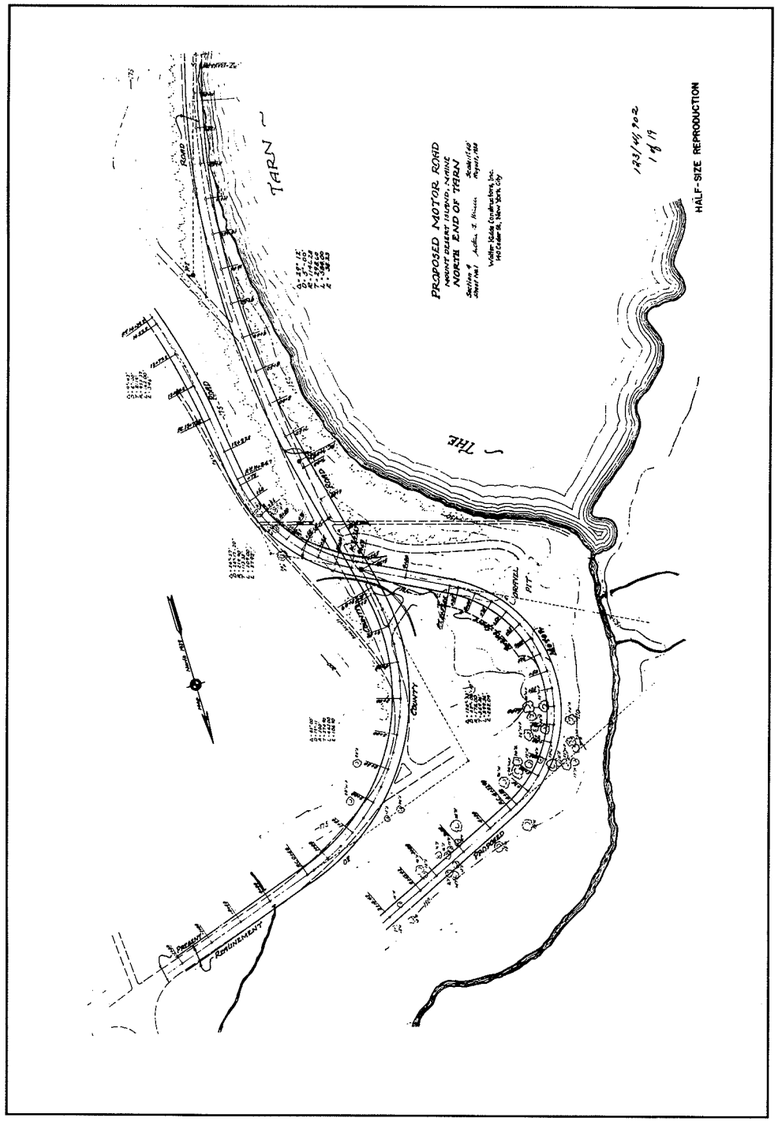



**Figure 12** Controversial proposed route down the east side of the Tarn, 1930. Courtesy National Park Service, Denver Service Center Microfilm Collection.

Olmsted went on to make an oblique reference to his fellow landscape architect Charles Eliot 2nd who had voiced opposition to an expanded system of motor roads in his study, "The Future of Mt Desert Island".

**Figure 13** Frederick Law Olmsted, Jr., circa 1917. Photograph courtesy National Park Service, Frederick Law Olmsted National Historic Site.

Olmsted answered Eliot:

> ...The view has been expressed by some who have thought seriously about this problem at Mount Desert that the existing public roads, together with the existing park motor road and that under construction on Cadillac Mountain, provide adequately enough for enjoyment of the scenery by motorists, and that, in view of the effect of additional motor roads on the scenery and their interference with the perfection of its enjoyment by other available means, practically no more motor roads should be built in the Acadia National Park.
>
> I am sure, on at least two grounds, that this extreme view is mistaken. First, portions of the existing public roads which must now be used in making any considerable circuit by motor for enjoyment of the scenery of the National Park and associated landscapes run through localities which are now, and others which are bound to become incongruous and disturbing elements in the landscape seriously interrupting the continuity of the typical natural scenery. Cases in point are along the County Highway from where it leaves the National Park lands south of the Tarn to a point beyond Otter Creek Village, and along the various east and west roads north of the mountains which run through the village of Bar Harbor or its outskirts.

Olmsted's report accompanied a plan, and was sent to the park office in Bar Harbor to be posted for public comment. The offer had already been made to the Federal Government for their construction.[22]

After receiving a favorable response to his offer from the National Park Service, Rockefeller released the story to the Bar Harbor press. On September 10, 1930 the biggest local news story of the year appeared in the Bar Harbor Times.[23] The headline read **"Rockefeller Offers to Build a $4,000,000 Motor Road for Park"**.

The next day the Associated Press wire service carried the story. Since the nation had entered the Great Depression, this was a story of national interest.

> **Bar Harbor, Me., Sept. 10 (A.P.)**
> Fourteen miles of public highway on Mount Desert Island will be built by John D. Rockefeller, Jr., at a cost of $4,000,000 it was announced today by George G.[sic] Dorr, superintendent of Acadia National Park.
>
> The project would employ 500 men three years. Dorr said Mr. Rockefeller has his engineers reports at hand, but had not announced when work on the road would be started.





> Mr. Rockefeller has built approximately 40 miles of public motor and carriage roads on the island, in the Seal Harbor section of which is situated his luxurious summer home.

These news stories caught the residents of Mount Desert Island truly off guard, as it seems that Superintendent Dorr was fairly reticent about the plans that were underway.[24] Once again, a cloud of controversy settled over the community regarding Rockefeller and his roads. Many residents were angry, and within the week of the news release, the Secretary of the Interior's office was deluged with letters insisting that he refuse Rockefeller's offer. Frederick Law Olmsted, Jr. did not escape the controversy either. He was quickly contacted by his former classmate and Schooner Head Road resident Richard W. Hale.

> Dear Rick: October 9, 1930
>
> Yours of October 8 and its enclosures are most interesting. Whether this is the right or the wrong thing to do, local public opinion was given no real opportunity. Then at Washington, they told some of us that we had applied for hearing too late and others that they never gave hearings anyway.
>
> The fact is obvious. The generosity of giving Four Million Dollars and the gratitude which ought to be felt when you and Mr. Rockefeller are 80 to 90% right in a great public improvement,-- those are all very well. But we smart under the domination of benefactors of great wealth who, like an Oriental Caliph, give us something delightful and ram it down our throats. My gullet takes it kindly for I like the benefactor.
>
> But going into the Pot and Kettle Club and telling that gang with a map what you are going to do is not taking the public into your confidence while your plans are still fluid.
>
> I hate to be in opposition and I hate to be associated with some of the people and some of the views in opposition to Mr. Rockefeller, but I smart under these conditions.
>
> If I were advising Rockefeller, I think I should advise him to have you make one of those "Before and After" pictures. It would be a water-color sketch of that slope looking at it from across the Tarn and it would have a sort of drop curtain which, when dropped, would show the road and when up, would show the trees and slope as they now are. Is that or anything like it feasible? Is there anything in the nature of a line of stakes where you two propose to put the road?

Hale's anger grew as time went on, as neither Olmsted, Rockefeller nor the park adequately addressed his concerns to his satisfaction. He took his complaints directly to the Secretary of the Interior making a personal attack on Rockefeller. In an effort to portray him as an eccentric, he related the following story to the Secretary:

> ...The motive force behind what is going on was well described to me by the late Charles William Eliot, Ex-President of Harvard University, who made substantially the following statement:
>
> I know Mr. John D. Rockefeller, Jr., well. I have seen him socially at his home and in business relations of intimacy about his charities. He has no pleasure in life except the pleasure which he takes in these roads upon Mount Desert Island."
>
> The force with which this statement was made stimulated my interest and surprised me. So I cross-examined President Eliot. I inquired about religion, family, children, sports, and Eliot stood

his ground. He said in substance:

> There is great virtue and sterling worth there, but all those other things are taken seriously with high moral purpose and I see no pleasure except in expenditure upon the roads...[25]

Hale went on in his letter to the Secretary to describe the summer residents of Mount Desert Island as living under a kind of "benevolent despotism" where the Federal Government took the role of enforcing the decisions and wishes of Rockefeller.

This and similar personal attacks did not escape Rockefeller. He was a sensitive man, and took these attacks seriously. By January of 1931, he had decided to withdraw his generous offer. In a letter of January 19 to the Director of the National Park Service, he wrote:

> ...Within the last three months, as you are aware, quite a few summer residents of Mount Desert Island, all of them my friends, have in one way or another voiced their opposition - in some instances quite bitterly - to further road construction in Acadia National Park and on Mount Desert Island in general, and to Road No. 1 in my offer in particular. Moreover, a small piece of land over which that road was laid out to pass, has been withheld from sale or gift, for the frankly stated purpose of preventing the construction of the road. This in itself is evidence of the overwrought feeling that has developed.
>
> I spend my summers on Mount Desert Island, because of the beauty and restfulness of the place and the pleasure of being among congenial friends. But any such enjoyment would be largely negatived by the feeling which has been aroused and which is naturally most distressed to one who in offering to build these roads, sought to render a public service. In view of what has developed and in order to eliminate myself as a factor in the situation, I am writing to ask you to release me from further obligation under my offer of June 27th, beyond the completion of Road 3.[26]

The news of Rockefeller's withdrawal of his road program offer was as big a news story as his initial offer of it. On January 30, the story appeared in the Boston Herald:

> No wonder Europeans often have trouble in understanding us Americans! Down on Mt Desert Island in Maine, it is the wealthy summer residents who have been campaigning to maintain the primitive, simple foot trails in Arcdia [sic] National Park. The "ordinary folk" have been eager for John D. Rockefeller, Jr., to build modern highways through the park so that they could travel over them in their automobiles. Mr. Rockefeller is so disturbed by the animosity resulting from his generous offer of $4,000,000 for improvements that he has withdrawn his tender. In substance the controversy at Bar Harbor is no different from that which has led Cohassett and other South shore communities to restrict the use of their beaches to residents. Property owners at these resorts resent the intrusion of thousands of outsiders who go there to picnic and bathe. For much the same reason older settlers on Mt. Desert Island, solicitous of the present natural beauties of their retreat, dislike attempts to "civilize" it...[27]

The effect of the withdrawal of Rockefeller's offer was to pit the year-round residents against the wealthy summer residents. Once the request was made to withdraw the offer, the year-round residents took action, writing their own letters to politicians and the press. The existence of the Motor Road System today, reflects the power of local politics.

The Town of Bar Harbor, in spite of the withdrawal of the road program offer, voted to abandon the town's ownership stake in Ocean Drive, as was required as a precondition to the commencement of the





road program. Going one step further, they passed a resolution appealing to Mr. Rockefeller to reconsider his withdrawal. Such appeals were also coming in from the National Park Service, and in May of 1931, Rockefeller agreed with the Park Service to let his request for release from commitments for road construction "lie on the table" for the period of one year.

This decision was made concurrently with the completion of the Kidde Construction Company's construction drawings earlier commissioned by Rockefeller for the road proposal (Figure 14).

A committee of summer residents was put together by Dr. Train to look into sorting out the apprehension and controversy over the initial offer and withdrawal of the generous road building program. One of the members of the committee was a Dave Morris, a personal friend of Rockefeller's. Morris wrote to Rockefeller asking for some answers to several questions that had come up in the committee's discussions.

Rockefeller responded to his friend Morris's letter with uncharacteristic frankness about his disposition towards his charitable gifts to the park. In this letter, Rockefeller explained why more community involvement was not sought in planning the roads.

> ...When the so-called Bishop Lawrence committee was created several years ago, its chairman sought to gain my cooperation with the committee. I said I was always glad to work on a problem of common interest with a group of men when all had the same relation to the enterprise. But that was not the case in that instance. The members of the committee were putting in time and thought but no money while I was putting in time and thought and all the money. That being the situation I frankly stated I could not work with the committee and that I was not prepared, nor did I think I should be asked, to submit the question of how my money should be spent to any group of people however intelligent, public spirited and competent...as to my relation to the further development of Acadia National Park. What I have done thus far has been to acquire strategic lands in order to preserve and protect them. Some of these lands have already been deeded to the park. I have also built roads, both motor and horse, and done forestry work and planting. All these things I have done not under compulsion but as a pleasure...This I will say, however, that the Government is entirely familiar with and fully in accord with such further possible developments as have thus far suggested themselves to me. To speak of future possibilities to any anyone else is in a sense to commit myself to the carrying out of those possibilities. Moreover, because of certain land purchases involved, to do so might mean to make such possibilities impossible before they had been entered upon. That, therefore, I have not done heretofore, nor am I prepared to do so now. If cooperation on my part in the development of Acadia National Park becomes an obligation and a duty rather than an opportunity and a privilege, I should probably drop the whole matter...[28]

The members of the Train committee could not agree. The committee split into to factions and wrote separately to Rockefeller. Both groups felt strongly against the section of Motor Road planned to parallel Rt. 3 down the Tarn Valley and up over Gorham Mountain. However, the dissenting faction led by Rockefeller's friend expressed the opinion that if this route is found to be the only way to make a "circuit road" possible, that this less desirable route should be undertaken. Dr. Train's faction communicated to Rockefeller its total opposition to any further road construction.[29]

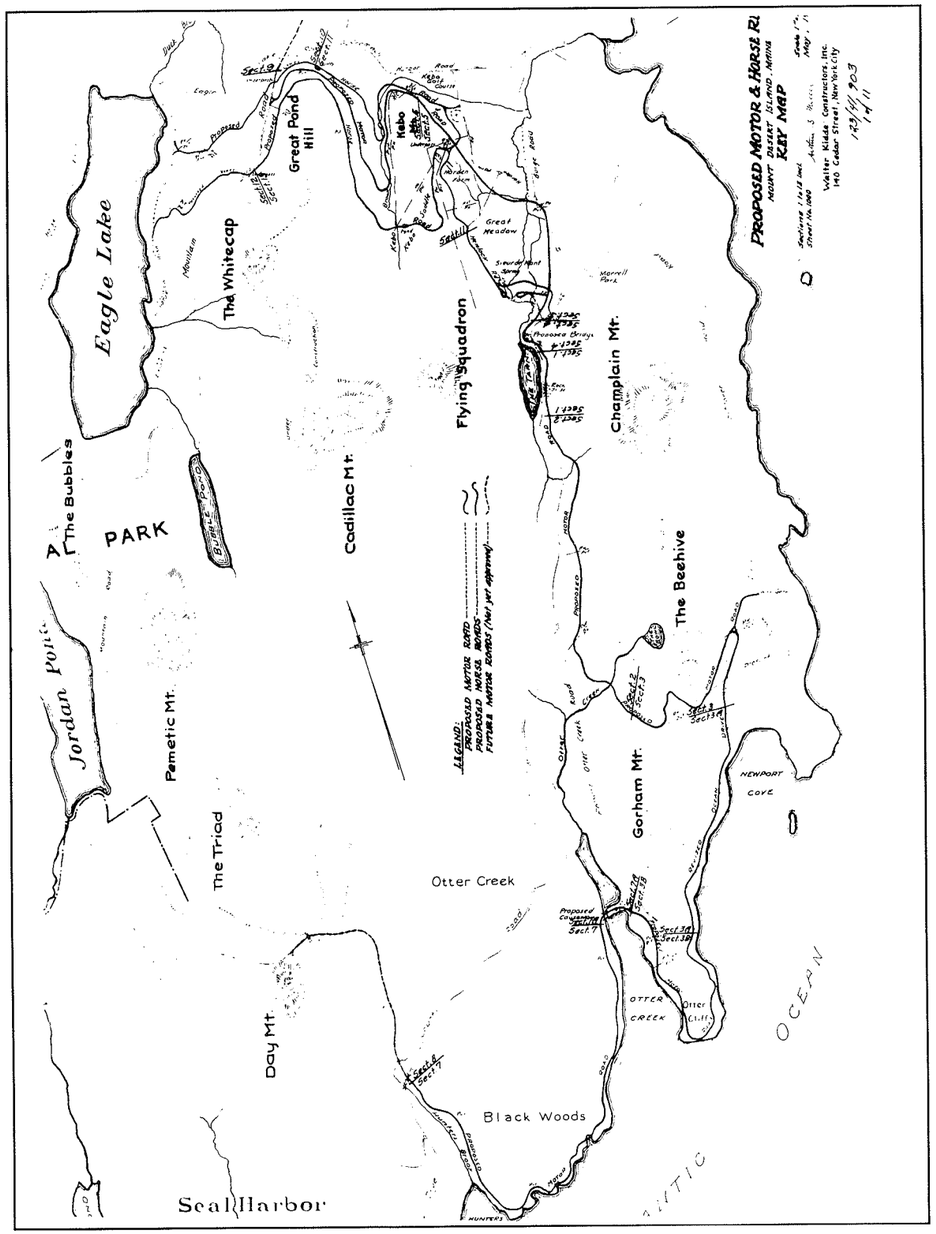



**Figure 14** Key map, Kidde Construction Company drawings, 1931. Courtesy National Park Service, Denver Service Center Microfilm Collection.





While Rockefeller's offer lay "on the table" the leadership of the Department of the Interior continued to press on, smoothing the way for the road program to be taken back up. In April of 1932, Congress passed the Interior Department Appropriations Act, which contained funding for the relocation of the Otter Cliff Naval Radio Station to the Schoodic Peninsula. The removal of this obstruction to the Otter Cliffs section of the proposed Motor Road was another one of Rockefeller's pre-conditions for deeds of lands to make it possible. The relocation of the military facility required a great amount of political dealmaking in addition to obtaining the funding required. It was a significant milestone in making the roads program proposed by Rockefeller possible. After this was accomplished, the Department of the Interior requested that Rockefeller continue to postpone the withdrawal of his offer to build a system of Motor Roads.

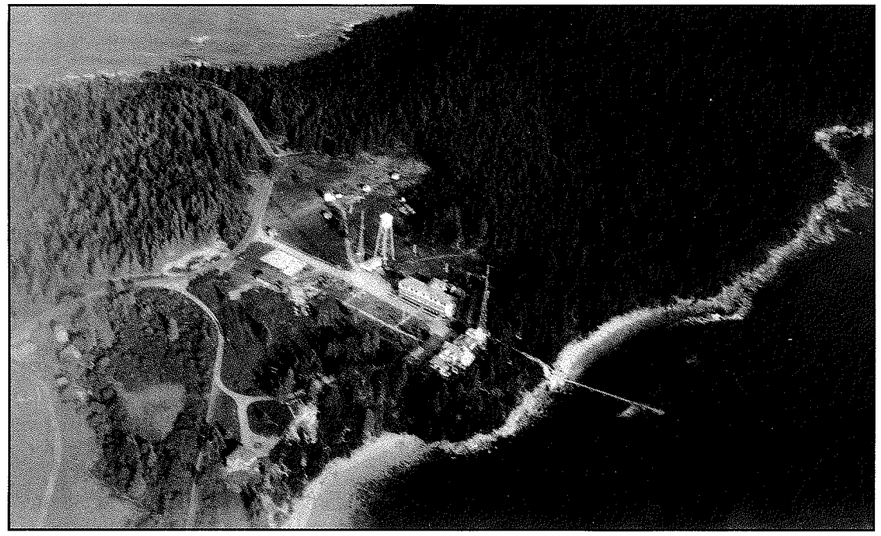


**Figure 15** US Naval radio station, Otter Cliff Point, no date. Photograph courtesy of Irene Marinkee.

While the greater issue of the Park Motor Road System lay dormant, Rockefeller used this time to continue to work on Motor Road projects outside of the Park, closer to his Seal Harbor estate, "The Eyrie", on property which he owned. In June of 1932, Rockefeller once again contacted Frederick Law Olmsted, Jr., seeking his advice on a Motor Road he was planning for the Stanley Brook valley. He also sought out the Olmsted firm's services for the reconstruction of Ocean Drive.

During this same period, the Cadillac Mountain Road was formally dedicated. The previous fall the surfacing of Cadillac Mountain Road had been completed. The months between the completion of that contract and the July 23, 1932 dedication ceremony were taken up in roadside cleanup and landscaping work.

It is apparent that Rockefeller and the National Park Service were indeed very busy making plans for the eventual construction of the Motor Road System as Rockefeller's offer "lay on the table" during 1931 and 1932. The legal technicalities of the Town of Bar Harbor's intended abandonment of its ownership of Ocean Drive were being worked out in close consultation with Rockefeller and the National Park Service. Olmsted had been counseling Rockefeller on refining an alignment of Stanley Brook Motor Road in conjunction with Simpson, the engineer. Olmsted was working closely with engineer Hill, also in Rockefeller's employment for the plans for the eventual reconstruction of Ocean Drive.

In 1933 Secretary of the Interior Wilbur, of the outgoing Hoover Administration, was making plans to "retire." Rockefeller feared that much of the verbal understandings he had with the Department of the Interior and the National Park Service would be lost with the installation of a new Secretary. Rockefeller was anxious to have some agreement on paper as to the planning and execution of the Motor Road System before Secretary Wilbur's replacement. At the same time, he did not want to appear eager, as his enthusiasm for road building had been the source of so much controversy. Rockefeller's solution was to draft a letter for Secretary Wilbur's signature where the Secretary would appear to approach Rockefeller with a proposed understanding of the responsibilities of the parties involved. Secretary Wilbur's acceptance and return of this draft effectively took the road program "off the table" and allowed construction to proceed.

> Dear Mr. Rockefeller:
>
> As you know, I have been greatly interested in the development of Acadia National Park in Maine and in the building of roads there. In this connection you have been kind enough to aid the Government by making possible extensive studies of certain additional horse and motor roads, partly in Park lands, partly in adjacent lands that were purchased having the interests of the Park in mind. The Motor Road as projected will in my judgement be one of the finest scenic roads in this country, while the horse roads will be beautiful in themselves and in addition will round out the existing horse road system. Because of the opposition of a few summer residents as well as because certain conditions made by you in your road building offer have not been wholly met, work on the motor road has not been begun as yet.
>
> The Government has consented to your building these roads and you have already built one of them, but I am anxious to make some arrangement with you before I leave office which will go as far as now is possible toward insuring their completion. My proposal, therefore, is that the conditional offer made you some time ago and accepted by the Government be left as follows:
>
> 1. Consent heretofore given to you to build the horse and motor roads in question is now confirmed on the following terms: You to build them if and as you may elect and within the period (if and as extended) mentioned below; you to be under no obligation to build any of the said roads. This consent is conditioned upon your beginning work upon some section of one of the roads within five years from the date of your acceptance of this proposal, with the understanding that if during that period work has been begun, the period shall thereupon be extended for five years from the date at which you stop the work so begun.
>
> 2. If work is begun upon any of the said roads or upon a section of one of them, which section is connected at each end with a public highway or an existing Park road, the completion of that particular road or section shall be regarded as incumbent upon you, if living, or otherwise upon your heirs unless an easy and safe provision for a circular turning comfortable for public use is made at the point where the road is discontinued, or unless some other adjustment of the matter satisfactory to the National Park Service is made.





> Because of the great importance to Acadia National Park of the completion of this road system and because of my desire before retiring from office to leave matters in a situation as favorable to the ultimate consummation of the project as possible, I earnestly hope my proposal will meet with your acceptance.

Secretary Wilbur added on his own:

> I am pleased to learn from the Director of the National Park Service that it now seems more hopeful that the motor road may be routed around the northern and eastern slopes of Newport" [Champlain]" Mountain instead of through the Gorge and over the mountain to the Ocean Drive. Although questions of land ownership appeared to prevent the location of the road on this more advantageous line, you have always been favorable to it, and so have my immediate predecessors and I. The officers of the National Park Service, too, have always advocated this route. I hope that new location may eventuate.[30]

During the winter months of 1933, Hill and Simpson had been conducting a preliminary survey of a possible route around the north end of Champlain Mountain. This was a more desirable route than the route down the Tarn, and over Gorham, and less expensive due to its shorter length. Rockefeller had avoided it until this time because he thought it impossible to obtain land for the alignment from the wealthy summer residents along the Schooner Head Road.

After receiving essentially his own letter in return, Rockefeller responded to Secretary Wilbur:

> I beg to acknowledge the receipt of your letter of February 2nd. The proposal therein contained is entirely satisfactory to me, and at your instance I am happy to accept it.
>
> Your letter dated February 2nd and my reply of this date cover the entire understanding between the Department of the Interior and myself in regard to the Acadia National Park road building project.[31]

Thus, 1933 became a watershed year for the motor road program at Acadia National Park. All approvals necessary to begin upon the roads program, which met with controversy in 1930, had been secured. As much as anything else, the onset of the Great Depression had eliminated all of the vocal opposition to the multi-million dollar building project. In its worst period, the Great Depression had left fifteen million people out of work. Rockefeller's own great fortune, which before the stock market crash of 1929 was estimated at nearly one billion dollars, was reduced to less than 500 million by 1934, and to 291 million by 1939.[32] In spite of this drastic reduction of his wealth, Rockefeller continued to sponsor many charitable causes, which due to the Depression, needed his good works more than ever. Conservation philanthropy continued to be one of Rockefeller's special passions.

During 1933, the Roosevelt administration's "New Deal" programs were passed into law as an effort to stop the downward spiral of the nation's economy. These included the National Industrial Recovery Act, Agricultural Adjustment Act, Civilian Conservation Corps, and the Tennessee Valley Authority. Of these, the most relevant to the history of Acadia was the Civilian Conservation Corps (CCC).

The CCC Camp at McFarland Mountain was involved in many work projects which aided the development of the Motor Road System. In addition to trail and landscaping work, the CCC also fabricated many of the site details for the Motor Road, such as gates, fences and signs.

## THE RECONSTRUCTION OF OCEAN DRIVE

(See Figure 7, Diagrams 4 and 5)

Aware of the opportunity that the CCC labor presented to the development of the Motor Roads, Rockefeller and Dorr took steps to obtain the greatest benefit from the availability of that labor. Rockefeller personally recognized the talent and amiable nature of a young landscape architect named Benjamin Breeze who was employed at the park. Rockefeller wrote to Arno Cammerer, who had recently replaced his old friend Horace Albright as Director of the National Park Service, to point out the qualities of the young man and to suggest that he be appointed to plan and design the work which the CCC related to the construction of the Ocean Drive footpath system.

At first the CCC was not very helpful. The lack of a strong work ethic was described by Ralston, who served as Rockefeller's superintendent in Seal Harbor:

> Your letter of Nov. 3, relative to the path on the Ocean Drive frontage, received.
>
> Mr. Dorr spent some time in going over the line of the path with his foreman and landscape engineer, and started the construction work Oct. 31.
>
> There are six CCC men, a foreman and the landscape engineer when necessary, and the labor performed daily by the entire crew does not surpass the labor performed each day by one of our workmen. Mr. Hill is looking after the work as per your request, and he is thoroughly disgusted on account of the small amount of work accomplished and the hours put in. They come to work between 8:30 and 9 o'clock in the morning and quit before our men lay off for the day...[33]

However, in time and with better leadership, the CCC's work at Acadia was seen to have great benefit and have a lasting impact on the park.

As plans for the eventual shape of the Motor Road began to materialize in 1933, the refinements of Stanley Brook Motor Road were just being worked out with Olmsted through Simpson. The Ocean Drive project, coordinated through Hill, was ready for construction in April. Olmsted was also in consultation with Rockefeller as to the refinement of the new route being investigated around the north end of Champlain Mountain.[34] This new route was to replace the controversial east Tarn route which was to carry the Motor Road over Gorham Mountain and back down to join Ocean Drive.

The planning for the reconstruction of Ocean Drive was well advanced of other road projects. Thus, Ocean Drive was the first to be constructed. The first section of Ocean Drive to be reconstructed was the 2300 foot section running from Thunder Hole south to the surveyed line for the Otter Cliff Road. This section was completed by August of the same year. Work then began on the section of Ocean Drive from Thunder Hole to the north to Sand Beach and the Satterlee property. The entire reconstruction was completed in August of 1934.





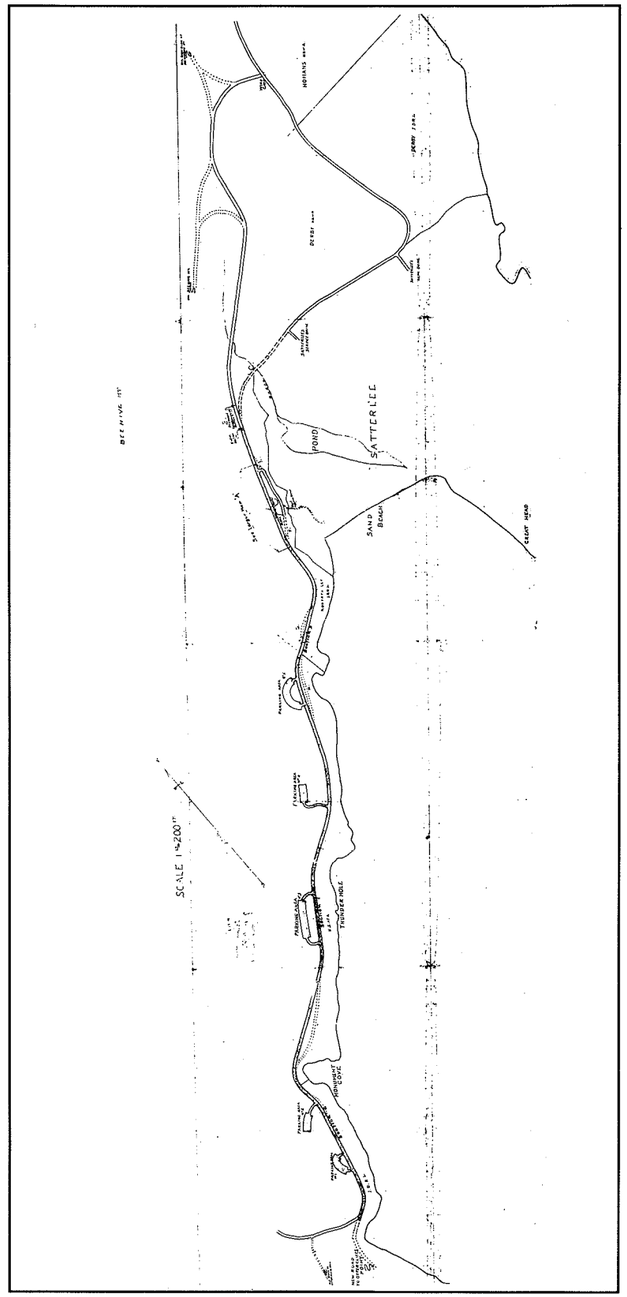



**Figure 16** The reconstruction of Ocean Drive, 1934. Drawing courtesy Rockefeller Archive Center.

Olmsted took care in his correspondence with Rockefeller and Hill to avoid what he perceived as errors in the 1929 reconstruction of the Thunder Hole demonstration section. Olmsted described this segment as too wide in his report of July 1930. Although no cross section documents survive for the Ocean Drive Demonstration Section, Hill described the cross-section of the Thunder Hole portion and the new proposed cross-section to Rockefeller in a letter:

> In answer to your letter of the 25th: You asked if it is the plan to make the road on the Ocean Drive the same width and general character throughout as the stretch previously built at Thunder Hole.
>
> My understanding of Mr. Olmsted's cross sections call for an 18' traveled way with a 2' shoulder of fairly good earth material, making a grass border on each side. But on the curve at Monument Cove he has widened to a 24' travel way and on the small curve south of that he has widened to a 20' way, still keeping the two foot soft earth shoulder.
>
> On the section previously built at Thunder Hole we started with a 24' travel way, a one foot hard shoulder on the west and a 2' hard shoulder on the east side. When we put the hard top surface on we topped both shoulders as well as the travel way, and we also found that we had a lot of water in the ditch at times so we oiled that as well, and I have noticed that about all the parking has been done using the ditch as well as the road. This really gives a 32' roadway on that section.[35]

Olmsted later confirmed Hill's account of the two cross-sections, however emphasizing that there was to be no "topped ditch" in the new cross-section.[36] Rockefeller was interested in these as well as every detail of the Ocean Drive construction. Olmsted advised Rockefeller on the layout of Thunder Hole's "concourse" and on minor changes to the sidewalk curbing next to the old parapet at Thunder Hole.

As to the informal "widenings" that Olmsted and Hill were busy laying out on the southern section of Ocean Drive, Rockefeller added his own emphatic instructions:

> Dear Mr. Hill:
>
> Mr. Olmsted tells me that any questions in connection with the southern section of the Ocean Drive which you brought up were settled satisfactorily during his recent visit. I find on talking with him that he had forgotten our agreement not to have any more parking places provided along the edge of the road south of the Thunder Hole, but rather to provide such spaces off the road under the trees at various convenient and available intervals. Even if parking along the road does not block the road, it so seriously detracts from the beauty of the ocean view that it seems to me greatly to be deplored. I thought it was clear in your mind that no more roadside parking provision was contemplated.
>
> Upon learning of this misunderstanding, I at once communicated with Mr. Ralston and asked him to stop construction on any roadside parking places. Mr. Olmsted will try to go to Maine for a day or two in the not distant future and locate with you appropriate interior parking places. When this is done, work thereon can be undertaken without delay, unless it interferes with traffic..."[37]

Hill got busy ordering that these roadside parking spaces be obliterated. When Olmsted arrived three weeks later, he found the "enlarged round place, for turning and stopping to see the view, just south of cove, where the old cemented granite parapet borders the road, had been graded when Rockefeller's communication had been received, but Hill had loamed the area over and sprinkled it with hunks of





weathered granite to keep automobiles out and partly planted."[38]

Rockefeller was also involved in giving instructions for the CCC forestry crew under Dorr's supervision as they worked adjacent to the new Ocean Drive.

Writing to Superintendent Dorr:

> "...The reports are generally favorable. Apparently the work is much better than any forestry work that has been done by town men in recent years. In some instances burning has been done in places where good trees were burned, necessitating their being cut down. In one instance a fire had been made under a moss covered bluff that could be seen from the roadside. These are slips which always have to be guarded against and are to be regretted.
>
> If you feel it is wise, I should be disposed to suggest that the men continue their work down to the Ocean Drive but that they be instructed to cut only actual dead stuff down or standing, leaving the cutting of less good material to be done in the spring by some of our specially selected men when the snow is off the ground and careful selection can more easily be made...[39]

In March of 1934, bituminous surface treatment was being laid on the five parking lots designed to offer an alternative to parking alongside Ocean Drive. A sixth parking lot at Sand Beach was created out of the old roadbed of the 1890's Ocean Drive. This section of roadbed already offered informal widenings that had been used as parking for the Sand Beach ever since the first Ocean Drive was constructed. The southern lobe of the Old Sand Beach Parking lot has the remnants of some stairs and a path that used to cross the Satterlee's property to the beach. Apparently the presence of stray dogs was a source of vexation for Mr. Satterlee, who periodically threatened to close the beach off to the public. Recommendations were made by Olmsted to construct a dog-tight fence with a self closing gate for this path.[40]

By late July of 1934, the reconstruction work at Ocean Drive was largely complete. This represented the first section to be completed of Rockefeller's comprehensive Motor Road program which had caused so much turmoil in merely getting started. Rockefeller was obviously pleased as he wrote to Superintendent Dorr.

> ...I greatly miss not being in Maine this summer but was glad to have been able to spend two days last week up there. It is needless to say that I went not once, but three or four times to the Ocean Drive and was thrilled with its beauty and completely satisfied with the result of the rebuilding of the road. I think Mr. Olmsted was most successful in his designing of the road and that Mr. Ralston has been equally successful in the construction of it. I was delighted to see your No Parking signs and during my several visits to the Drive saw only one car parked on it. The parking areas seem to me most convenient and adequate and to leave no just reason for any parking on the road itself.
>
> I noticed with much satisfaction the path between the Drive and the sea. The work that has been done under your supervision on the southern end is as charming as the path work done a year ago on Cadillac Mountain. I feel sure this path will be much used and greatly enjoyed and am eager to see the subsidiary paths running from it to various points along the shore also developed and constructed as I presume you are proposing to do.

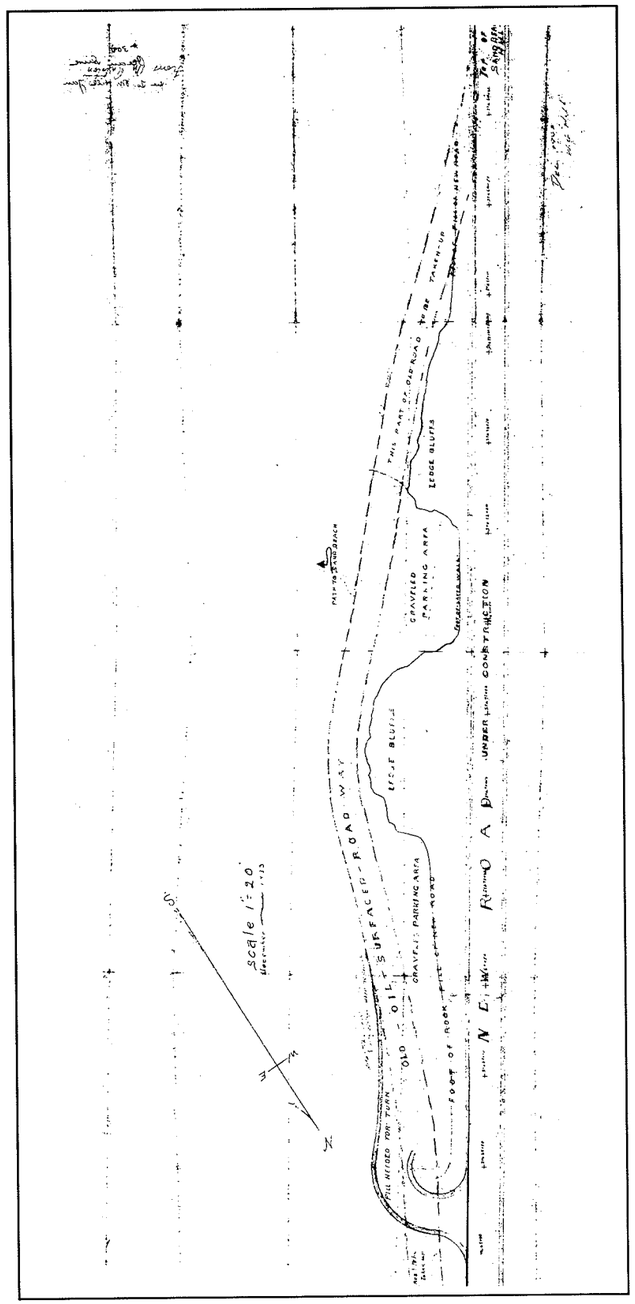



**Figure 17** Section of the 1890's Ocean Drive re-configured as a parking lot. Drawing courtesy Rockefeller Archive Center.





> Now that the work of road construction has been completed, I feel that I should withdraw entirely from any further responsibility for the development and care and upkeep of the area surrounding the Drive, which is owned by the Park. Since you have competent landscape men at work under you and since they have the C.C.C. labor which is, I take it, becoming more efficient right along, I would hope that you would proceed to refine and develop the area adjoining the Ocean Drive on both sides as rapidly as that is possible. By this I mean the completion of the paths, the improvement and planting of the roadsides, some of which we have left graded but raw, also the sides of the path which we constructed to the north, the planting which is desirable to screen the parking places at different points and to soften certain places along the ocean side...[41]

Rockefeller also wrote of his pleasure with the completed work to Director of the Park Service, Arno Cammerer, enclosing a copy of his instructional letter to Dorr. To this, Cammerer responded:

> ...I am delighted over your enthusiasm on the road accomplishment. Such praise means a lot, especially coming from you, for I am keen to have all the work we do there measure up to what you have accomplished in the past. The plan you outline [to Dorr] appears to be entirely satisfactory from every standpoint. I am hoping that my time will permit me to visit Acadia before the year is over and see this work...
>
> ...I am particularly delighted on the road side clean-up done in some of the parks with available CCC labor and the results achieved in better road side conditions incident to new road construction for which your efforts in Yellowstone several years past have been the guide...[42]

## CONSTRUCTION OF STANLEY BROOK ROAD

(See Figure 7, Diagram 6)

Before the work was complete on the reconstruction of Ocean Drive, work had begun on clearing and grubbing out a line for the Stanley Brook Road that had been earlier decided upon in consultation with Olmsted. Construction began after a two year process of design and refinement starting in June of 1932, while Rockefeller's road program offer "lay on the table". That design process began when Rockefeller had written Frederick Law Olmsted, Jr. the following letter:

> ...The Stanley Brook valley at Seal Harbor is parallel with the Jordan Pond Road and between that road and the Seaside Inn. The brook is a beautiful rushing brook with large mossy boulders and flowing through a fine stand of timber. It empties into the sea at the bridge on the Seal Harbor - Northwest Harbor highway between the Seaside Inn and the drinking fountain at the corner of the village green.
>
> For some time I have been seeking to acquire land in this valley so as to make possible a pleasure motor road through it that would connect with the present Jordan Pond Road about a mile from the sea just north of the Seal Harbor Cemetery where the Wildwood Farm Road from Mr. Dane's place comes into the highway at right angles. In the back of my mind I have thought that this road, if built and thus connected with the Jordan Pond Road as above outlined, would make a magnificent park motor entrance to the present Acadia Park motor road from Jordan Pond to the Eagle Lake Road and up to the top of Green Mountain (Cadillac)...It would make unnecessary the use of the Jordan Pond Road in its lowest section for pleasure traffic.
>
> I now own the land necessary for this road. Mr. Simpson and I have laid out the road. The valley is narrow, the brook is tortuous. To make the most of both, we had thought to cross the

> brook from six to ten times. Because this would be a motor road, the crossings would need to be flat; because they are numerous they should not be too expensive. In studying these crossings with Mr. Simpson on various occasions, I have found that the problem in some instances at least quite a delicate and complicated one...
>
> I covet the value of your opinion on the location of this road. Moreover, since the question of the building of a road through this valley has aroused considerable local discussion and at one time criticism, it would help matters greatly were it known that the road as ultimately built had been studied and approved by you. I will appreciate it if you can arrange to spend a couple of days at Seal Harbor during the text two or three months for a full study of this problem with Mr. Simpson. The whole distance involved is only a mile...
>
> ...Let me make it clear that I have in mind to turn this road and the area through which it passes over the Acadia National Park ultimately. The road will be built through its entire length on property which I own, therefore no consents will be needed for the construction of any road which I finally adopt.[43]

Olmsted made several visits to Mount Desert Island, consulting with Simpson on the alignment of the proposed Motor Road through the narrow Stanley Brook valley. Each visit resulted in the re-adjustment of the center line staking at certain stations to achieve the desired effect. In addition to advice on alignment, Olmsted offered counsel on ways to reduce the size of the road prism, or graded area, within this narrow valley, and on an appropriate form of bridge for the many crossings of the Stanley Brook. At the road's termination at its intersection with the county road in Seal Harbor, Olmsted offered advice on the design of the vegetative treatment at the road's edges, so as to best take advantage of the dramatic prospect of the harbor.

On the alignment of the road, Olmsted's comments related to the increasing of particularly tight radii, and avoiding specimen trees. At given points this also meant a realignment of Stanley Brook's channel. Regarding any alignment under discussion, Olmsted wrote:

> ...Alternatives should be staked and adjusted on the ground before a final decision is reached.[44]

The alignment of the last section of the road, as it entered Seal Harbor, was of the greatest interest to Olmsted. Here he wrote:

> ...Before finally deciding the alignment and profile of this part of the road I believe it is important to alter the landscape of the lower end of the valley, south of Station 69 by some quite radical and extensive, but very carefully and skillfully directed removal and pruning of trees and bushes. I think it may be found, when this is done, that the most agreeable and at the same time most economical location for the road will be more nearly as indicated in ink on Sheet No. 7, somewhat to the west of the line as shown by the blueprint and as now staked with laths. It is hardly worth while to re-stake this portion of the line before this cutting is done. But if I am to review the proposed restakings north of Station 67 (and especially alternatives A, B and C), some time this autumn as has been suggested, I should greatly welcome the opportunity of personally directing, at the time of that visit, the removal of trees and bushes at all the more critical places near the mouth of the valley so as to develop the landscape effects I have in mind. If Mr. Ralston could put a gang of axmen at my disposal at that time, it would not take long to fix the limits of the desirable clearings, and I could then make definite recommendations for the completion of the clearings. For certain additional planting which will be desirable...[45]





As the imminent work on the Ocean Drive reconstruction diverted attention away from the Stanley Brook Road project, the topic was not revisited until May of 1933. With construction of the Ocean Drive well underway, Rockefeller began to consider his next project. At this time only minor adjustments were made to the alignment of the road. As the Stanley Brook Road project became a priority, Olmsted's comments became concerned with minimizing the landscape damage to the narrow, beautiful Stanley Brook valley. His view was that to avoid damage due to grading of the road prism, the road surface should be kept as narrow as possible. This would include the elimination of shoulders for the road. He also proposed an experimentation with wheel guides along the edge of the road to contain the road in a type of channel. Olmsted had learned of this type of road edge treatment from the Chief Engineer at Zion National Park. He enclosed with his report to Rockefeller a set of diagrams, (A thru E) with which he hoped to experiment. He wrote to his client:

> ...Any of these smooth types of wheel-guides, set close to the travelled-way, should of course flare gradually away from the edge of the road at the end where it joins on to an unguarded shoulder of the ordinary sort, so that if a car approaching it has over-run moderately onto the shoulder it will be guided back onto the traveled-way without damage.[46]

These experiments were conducted, and were all seen as failures. Apparently the sloped faced wheel guides had the disconcerting ability to allow an auto to ride up onto and over them, leaving the vehicle stuck straddling the wheelguide.

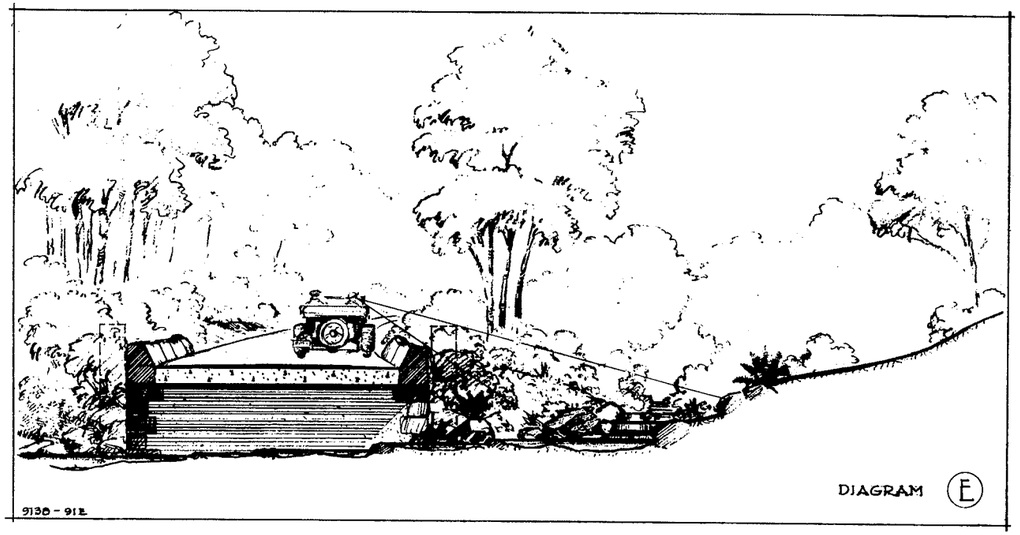



**Figure 18** Olmsted Brother's design striving to minimize impacts to the Stanley Brook valley, 1933. Drawing courtesy National Park Service, Frederick Law Olmsted National Historic Site.

Among other innovations recommended by Olmsted was the addition of a layer of sand and gravel over the roots of trees in cases where the fill of the road was to pass over the roots.

As to the bridges for the proposed Stanley Brook Road, Olmsted recommend: "very simple and unpretentious granite-lintel bridge or culvert, not very different in appearance from "indigenous" structures of this sort to be found on many of the old roads of Mount Desert."[47] With regard to the width of the Stanley Brook Road, Olmsted advised:

> ...I recommended and he assented to a standard minimum clear width of road bed on tangents and long radius curves of 22 feet. I did not intend to recommend paving the whole 22 feet although the subgrade is to be solidly built to that width sufficient to support a 22 foot pavement if ever desired. Whether the paving shall be 18, 20 or 22 feet on tangents remains to be determined; but I think the maximum width of paving that could possibly be justified on tangents is 20 feet, in which opinion, I understood you to say, the Park Service now concurs according to your latest information through Mr. Dorr.
>
> Where retaining walls are required to support the road-bed I recommended allowing 20 inches for parapet width outside the clear road-bed width of 22 feet on tangents plus the additional widenings on curves.[48]

In April of 1936, the Stanley Brook Motor Road was complete except for some final planting details. Rockefeller deeded the property over which the road traveled to the Federal Government. In May, Olmsted sent his final correspondence regarding planting and concluded his involvement with this portion of the Motor Road System.

## Construction of the Otter Cliffs Road

(See Figure 7, Diagram 6)

The survey for Otter Cliff Road was completed in 1930, around the time of Olmsted's original comprehensive report on the Motor Road System. However, as was the case with the Stanley Brook section, this work yielded to the priority of the reconstruction of Ocean Drive. Ocean Drive, with a road already in place was an easier project due to cost and minimal public opposition. Once the reconstructed Ocean Drive was complete and had received high praise from many corners, the Stanley Brook and the Otter Cliffs sections both went into construction at the same time period. Both were completed in the same year, with the Otter Cliff section completed in August of 1936.[49]





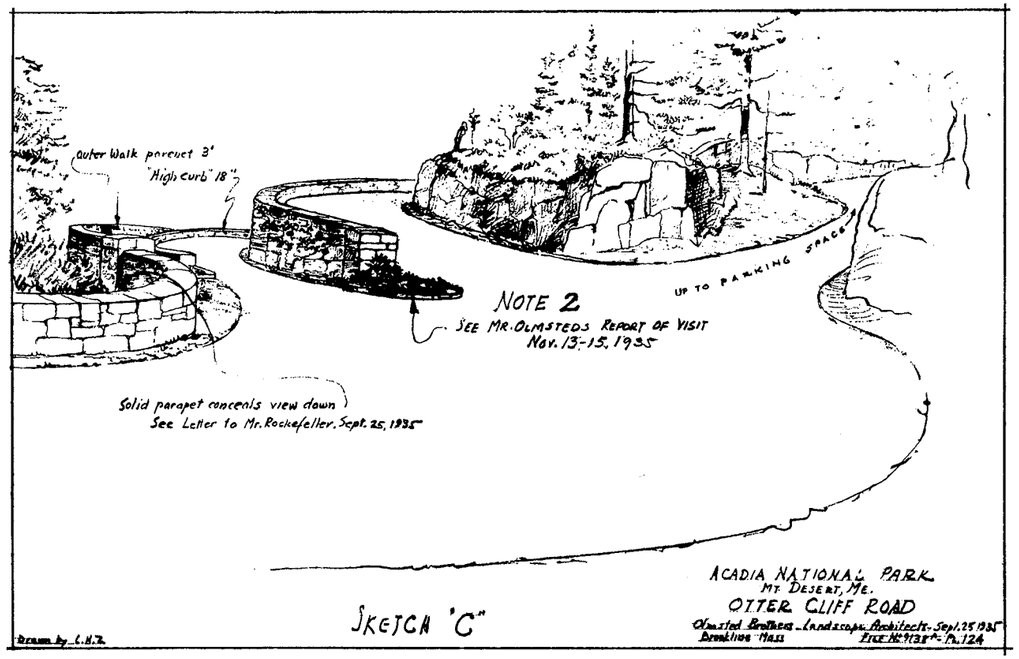



**Figure 19** Olmsted Brother's design for Otter Cliff Road, 1935. Drawing courtesy National Park Service, Frederick Law Olmsted National Historic Site.

## Rockefeller Passes the Funding Torch

The completion of the Stanley Brook and Otter Cliffs section of the Motor Road System marks the end of Rockefeller's direct funding of the construction for his Motor Road master plan. Rockefeller remained involved financially, through his acquisition and subsequent gifts of land which made the route of the road possible. He used his position as the donor of the land to retain direct control over the design and the quality of the road. No one took a greater interest in the Motor Road System's completion than he. Rockefeller, through his correspondence, assumed a role akin to that of a project manager. All the relevant parties kept Rockefeller apprised of the progress of any given project. Rockefeller never hesitated to contact anyone, from the Secretary of the Interior, to Leo Grossman the Bureau of Public Roads' resident Engineer, regarding his concerns or ideas about the Motor Road.

The Roosevelt administration's "New Deal" spending was making Federal funds available for road construction in Acadia National Park. This, combined with the fact that Rockefeller's fortune had been greatly diminished by the Depression, was perhaps an opportunity to share the responsibility of funding his original proposal. In June of 1935, while the Stanley Brook Road and the Otter Cliffs section were under construction, the Acting Director of the National Park Service notified Rockefeller that $350,000 had been allocated for construction of a portion of the Motor Road System to extend from the northern end of Jordan Pond/Eagle Lake Motor Road to the vicinity of Sieur de Monts Springs.[50]

## CONSTRUCTION OF KEBO MOUNTAIN ROAD AND KEBO BROOK BRIDGE

(See Figure 7, Diagram 7)

**Figure 20** Kebo Mountain Road, 1938. From BPR, *Progress Views.*

The advent of Federal funding for the construction of the Acadia National Park Motor Road System brought into partnership John D. Rockefeller, Jr. and his consultants, the National Park Service, and the Department of Agriculture's Bureau of Public Roads. The BPR, which had remained in the background after the 1932 completion of Cadillac Mountain Road, was now back as a partner in the design collaboration which was to fashion the remainder of the Motor Road System. To this partnership the BPR brought an increased level of engineering skill, and by this time, considerable experience in building park roads for the National Park Service all across the country.

The first section to be undertaken by this new partnership was what would come to be known as the Kebo Mountain Road. This new section was to begin at the 1924 portion of Jordan Pond/Eagle Lake Road and continue around the north end of Great Pond Hill up into the Kebo Brook Valley, around the north end of Kebo Mountain and join up with the existing portion of Harden Farm Road which flanked the eastern side of the Great Meadow and traveled through the Kebo Golf Club. The original route that this road was to take, was worked out in consultation with the Olmsted firm and included plans for carriage roads to parallel it and join the carriage road system to the town of Bar Harbor. This section of road was to serve as an approach road to the Jordan Pond/Eagle Lake Motor Road and from there to Cadillac Mountain Road from the town of Bar Harbor, effectively bypassing County Rt. 233. This section appeared on a version of the plan that Superintendent Dorr submitted to Director Mather in 1922. Any mention of it however escaped written comment.





Grossman's Final Construction Report provides a brief history:

> Prior to August 1936, all of the property traversed by this project was owned by Superintendent G. B. Dorr personally, John D. Rockefeller, Jr., and the town of Bar Harbor. The possibilities for a motor road and carriage road system were studied by Rockefeller who employed the Kidde Constructors of New York City to make detailed surveys. In 1935, the Bureau of Public Roads was asked to make such additional surveys as might be required and to prepare Plans, Specifications and Estimates preliminary to the advertising of the project for contract. In reviewing the surveys of the Kidde Company, it was found that none of their center line was located on standards of curvature and economy required by the Bureau. It was necessary to make an independent survey which involved extensive changes in location. These changes were shown to Rockefeller and Superintendent Dorr and were approved by them. All of this location was also gone over in the field with Chief architect T. C. Vint of the National Park Service and Consultant Landscape Architect F. L. Olmsted and approved by them.[51]

### Design Standards For Kebo Mountain Road

**Typical Section**: out to out section in fills / ditch to ditch section in cuts of 28 feet.

**Maximum Curvature**: All curves over 500' in radius, except for a 400' radius at the crossing of the narrow valley of Kebo Brook and a 215' radius in an approach road from the road leading from Bar Harbor.

**Maximum Gradient**: 7.00%

Grossman's "Progress Views" reveal the introduction of a rectilinear coping stone guard rail on the Kebo Mountain Section. It appears from the photos that the spacing is also much closer than the four foot maximum gap between stones as was the convention on the Cadillac Mountain Road.

Olmsted's involvement with this section of the Motor Road System began when Rockefeller asked that he collaborate with Mr. Miller of the Kidde Construction Company in the preparation of surveys and plans for his proposal of 1930. With the construction of the Kebo Mountain Road to begin in March of 1936, Arno Cammerer and Thomas Vint requested that Rockefeller make Olmsted's services available to the Park Service for a "plan in hand" inspection prior to letting the contract.

Cammerer wrote to Rockefeller:

> ...If Mr. Olmsted could be employed for the final inspection of the survey and plans before the project goes into contract, it would bring out the full usefulness of his services in connection with this project, whereas, if he does not review the final survey plans his connection with the design of the project would possibly be incomplete...[52]

Olmsted's report to Rockefeller on his attendance of this "plan in hand" review of the road layout reveals that he had no serious reservations about the proposed work. He wrote to Rockefeller:

> ...Both Mr. Vint and I found the center line location and profile, as worked out by the Bureau Engineers, to be in general excellent, embodying distinct improvements over all earlier studies by the Bureau and others...[53]

**Figure 21** Kebo Mountain Road, construction station 83+25, before construction, 1938. Photograph from BPR, *Progress Views*.

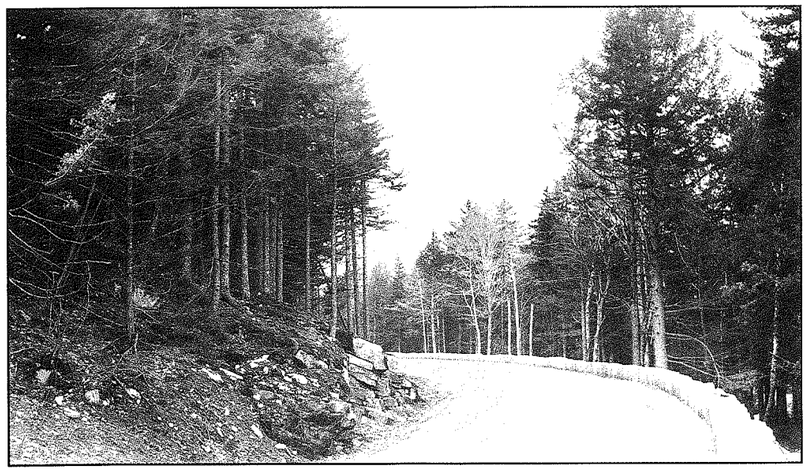


**Figure 22** Kebo Mountain Road, construction station 83+25, after construction, 1938. Photograph from BPR, *Progress Views*.





Work began on the Kebo Mountain Section shortly after the "plan in hand" inspection in May of 1936 and was completed on September 2nd of 1938.

**Figure 23** Kebo Brook Bridge, 1938. Photograph from BPR, *Progress Views*.

## Construction of Otter Cove Causeway and Blackwoods Road

(See Figure 7, Diagram 8)

The origins of this project extend back to 1925 when Rockefeller engaged the White Engineering company to study the feasibility and make estimates for the replacement of a bridge and causeway that had been destroyed by the sea. These plans were further developed through the collaboration of the Kidde Construction Company and Olmsted, resulting in the plans printed in conjunction with Rockefeller's troubled Motor Road proposal of 1930.

In 1936, the National Park Service successfully obtained $500,000 in funding for the Otter Cove Causeway and Blackwoods Road in their appropriations for 1937.[54] After this funding was obtained, in September of 1936, Rockefeller deeded the Federal Government the lands necessary to complete the work.[55]

As with the Kebo Mountain section the Park Service requested the assistance of Frederick Law Olmsted, Jr. Olmsted's fee was paid from Rockefeller's funds.[56] The BPR prepared contract plans and specifications for this section which were essentially refinements of the Kidde Construction Company drawings. Construction began in the spring of 1938.

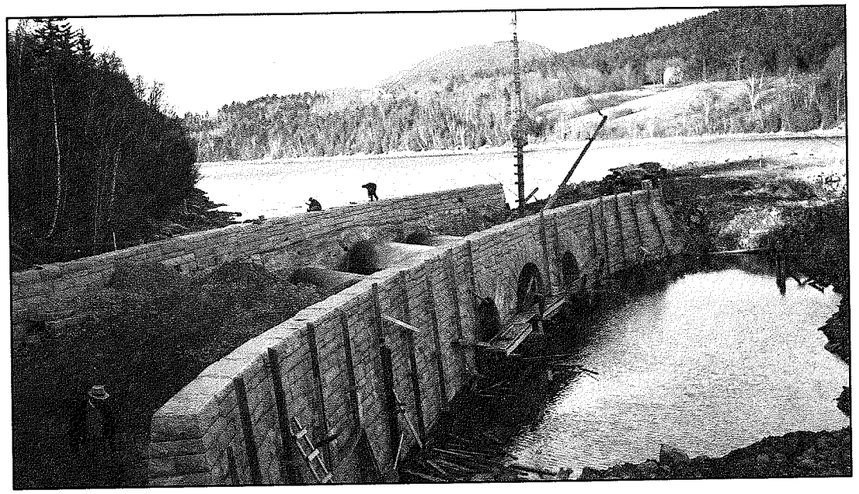


**Figure 24** Construction of Otter Cove causeway, 1939. Photograph from BPR, *Progress Views*.

When construction was completed in September of 1939, Rockefeller wrote to Olmsted:

> The Otter Creek Inlet Causeway and Motor Road around the Black Woods has just been opened and is more beautiful and successful than I had even dared to hope it would be. The causeway looks as if it had always been there, so naturally is it related to the surrounding country, while the curve only adds to its beauty. People are delighted with the road and regard it as a great addition to the motor road system.
>
> My heartiest congratulations to you on the important part you have had in bringing this undertaking to so eminently satisfactory a conclusion.[57]





## The Construction of Kebo Extension and Champlain Mountain Road
(See Figure 7, Diagram 9)

The construction of the Kebo Mountain Road and the Champlain Mountain Road signified a commitment to the route around the north end of Champlain Mountain. This route was fraught with difficulties in obtaining land holdings and rights of way from the residents of the area of Schooner Head Road. The construction of this project forever abandoned the controversial route of the 1930 proposal, which traveled down the Tarn Valley and up and over Gorham Mountain. In reference to this decision, Rockefeller wrote to Secretary of the Interior Ickes:

> ...I am optimistic enough to believe, as a result of many years of effort to bring about certain results here on Mount Desert Island, that the policy of following the line of least resistance, so long as it is the right line, even when it entails sometimes a weary period of patient waiting, is in the long run the most successful. With most of this road actually built on the around the mountain route in line with your recent decision, I have a feeling it will only be a question of time when the land necessary for the remaining link will become available and the complete circuit of park road possible. If I thought that the omission of this remaining link was regarded as anything other that temporary, I should feel very differently about having recommended this plan but, knowing that the whole theory of the Acadia Park Motor Road is that there shall be a continuous, unbroken-by-highways, park road circuit to the top of Cadillac Mountain, down to the sea, for miles along the seacoast and back to Cadillac Mountain, I view with equanimity the necessary temporary use of existing highways...[58]

The landholdings referred to belonged to Mr. Atwater Kent, and Mr. Potter Palmer of the Schooner Head Road. Kent within time donated his property to the park, as did the Palmer family. However Palmer's widow held back her land until shortly before her own death in 1955.

These two sections worked towards a union at these two difficult properties. The Kebo Mountain Extension continuing south and eastward past the Great Meadow along an existing section of Harden Farm Road. South of the area of Sieur de Monts Spring this segment turns east and underpasses the county Rt. 3, traveling over lands formerly owned by Superintendent Dorr, passing by the old horse race course and the Beaver Pool.

The Champlain Mountain Section is a northerly extension of Ocean Drive, continuing that road to the "Wire Gate Road." This route made use of the Schooner Head Road as a temporary passage until the disputed Kent and Palmer properties could be acquired.

Grossman's "Final Construction Report" for this project offers more background:

> ...The survey of the project No. 6A3 (Kebo Ext.) was made in 1938-1939...The survey of project No. 8A1 was made in 1936-1939.
>
> ...Both surveys included several alternate locations, the final locations being decided by Mr. T. C. Vint, Chief, Branch of Planning of the National Park Service and by Mr. Frederick Law Olmsted, Consultant Landscape Architect for Mr. John D. Rockefeller, Jr.
>
> The design throughout provided for twenty-foot pavement of bituminous surface treated gravel with two-foot shoulders in cut and six-foot shoulders in fill. Except on curves, the ditch to ditch

> width was 28 feet in cuts; the shoulder width if fills was 32 feet. All curves were designed with spiral transitions and were widened and superelevated on the basis of fifty miles per hour. The minimum radius of the curvature was 409 feet on the Park Road...Grades were rolled to conform with the natural ground contour, the maximum grade used being seven percent...[59]

The contract funding for this project was $142,050.95. Work began on November 22 of 1939 and continued to completion on November 26, 1940.

**Figure 25** Stone masons at work on the Route 3 bridge, 1940. Photograph from BPR, *Progress Views.*

## Construction of Day Mountain Road

(See Figure 7, Diagram 10)

The idea for a road to connect the Blackwoods Road with the original Jordan Pond/Eagle Lake Motor Road first appeared as a product of the collaboration of the Kidde Construction Company and Olmsted. On the key map which accompanied the construction plans printed for Rockefeller's controversial 1930 proposal, the Day Mountain Road appeared as a dashed line, indicating "planned/not approved".

This project was administered by the BPR as Project #3A3-6A4 . The two mile project was routed between Day Mountain and the Triads. Like the other BPR work of this vintage, this section featured spiral transition curves, and superelevation and widening on the curves for a design speed of 50 mph.





**Figure 26** Day Mountain Road, construction station 77+00, before construction, 1941. Photograph from BPR, *Progress Views.*

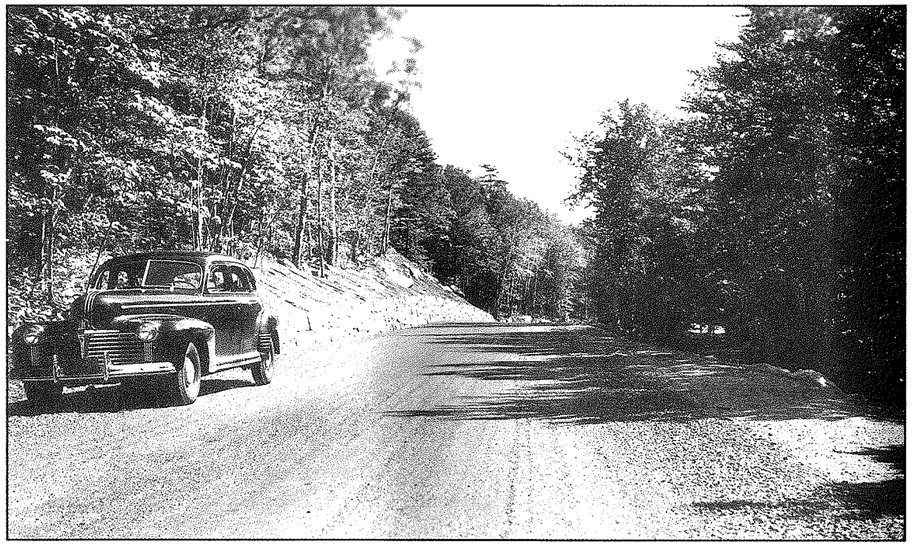


**Figure 27** Day Mountain Road, construction station 77+00, after construction, 1941. Photograph from BPR, *Progress Views.*

## CONSTRUCTION OF PARADISE HILL ROAD
(See Figure 7, Diagram 11)

The first mention of a road extending from the northern terminus of Jordan Pond/Eagle Lake Road to Hull's Cove appears in correspondence between Rockefeller and his surveyor Paul Simpson in 1934.[60] During the time of this initial planning, the reconstruction of Ocean Drive had just been completed and the work on Stanley Brook and Otter Cliff Road had just begun. In March of 1936, before the Stanley Brook or Otter Cliffs sections were complete, Rockefeller was in communication with the Secretary of the Interior, informing the Secretary of his intentions to deed the Federal Government lands which would make the Paradise Hill Road possible.[61]

As World War II had begun in Europe in 1939, the Paradise Hill Road Project as well as the Day Mountain Road, were pressed by Rockefeller as priorities. It was his understanding that as the war progressed, with the potential of the United States being drawn into the conflict, that funding for these road projects would be diverted to the war effort.[62]

This 3.5 mile section was given the Project number 10 by the BPR. Contract funding amounted to $209,945 with construction commencing on December 19, 1940, with completion occurring on October 11, 1941. The funding appropriation for the work of this date did not however include sufficient monies to construct the three bridges which the route required. These bridges were the grade separations over county Rt. 233, and another over what was then known as the "New Eagle Lake Road." A 402 foot, triple arch span was planned to cross over the Duck Brook. World War II intervened before funding could be obtained for these three bridges and they were completed eleven years later.

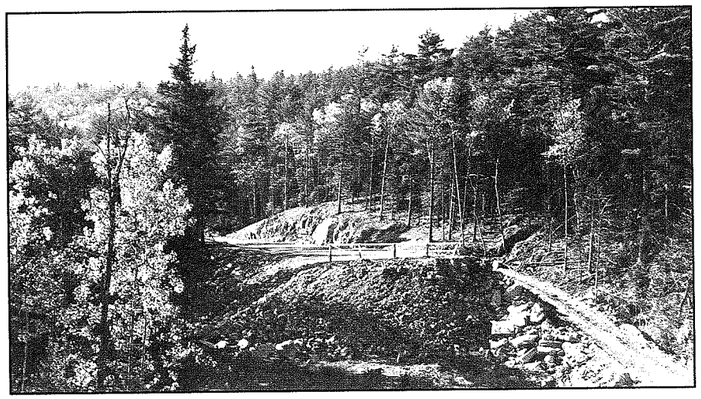


**Figure 28** Paradise Hill Road, bridges not in contract, 1941. From BPR, *Progress Views.*

The BPR's Grossman provides the following background in his "Final Construction Report":

> ...Just prior to the award of the contract for this project, the major portion of the lands traversed belonged to Mr. John D. Rockefeller, Jr. The deed of gift of the required lands to the Federal Government was offered contingent upon the abandonment of the New Eagle (Lake) Road and





> permission to relocate the County Road.(Rt. 233) By authority of the County Commissioners and by a special town meeting, both of these contingencies were provided for.
>
> ...The purpose of the road covered by this report is to form a direct connection to this loop system from the State Highway system bypassing the congested streets of Bar Harbor. In developing the location of this road, every effort was made to develop the many scenic viewpoints along the alignment...
>
> Survey, Plans and Estimate:
>
> The survey of this project was first begun in September 1938 and was continued intermittently until just before it was advertised for bids in November 1940. Several alternate designs were studied before the final location was decided upon and properties finally acquired by the Government. The location and design as finally settled upon were decided by Mr. H. J. Spelman District Engineer, Public Roads Administration, Mr. T. C. Vint, Chief, Branch of Planning of the National Park Service, and by Mr. John D. Rockefeller, Jr."[63]

**Design Standards:**

**Typical Section:** 20' traveled way of bituminous surface treated gravel. Two foot shoulders in cut and six foot shoulders in fill. Except on curves, the ditch to ditch width was 28 feet in cuts; shoulder to shoulder width in fills is 32 feet.

**Curvature:** All curves were designed with spiral transitions and were widened and superelevated based on the design speed of 50 mph. Minimum radius of curvature was 440.74 feet on the main road and 54.13 feet on approaches.

**Gradient:** Maximum gradient of seven percent except on a small section of approach road connecting the project to the county road.

Later in 1963, the Paradise Hill Road received a section of "double road" borrowing from the design concept of the earlier double road on Otter Cliffs. This reworking of Paradise Hill Road was designed for the first major overlook across to Frenchman's Bay.

## CONSTRUCTION OF DAY MOUNTAIN ROAD EXTENSION
(See Figure 7, Diagram 12)

This short extension of the Day Mountain Section was necessary to move the connection of the Day Mountain Road with the Jordan Pond/Eagle Lake Road off of private property owned by a Mr. Dane.

This project, BPR #9A1 was completed in 1951. Contract funding amounted to $31,000.[64]

## Construction of Paradise Hill Road Bridges

(See Figure 7, Diagram 13)

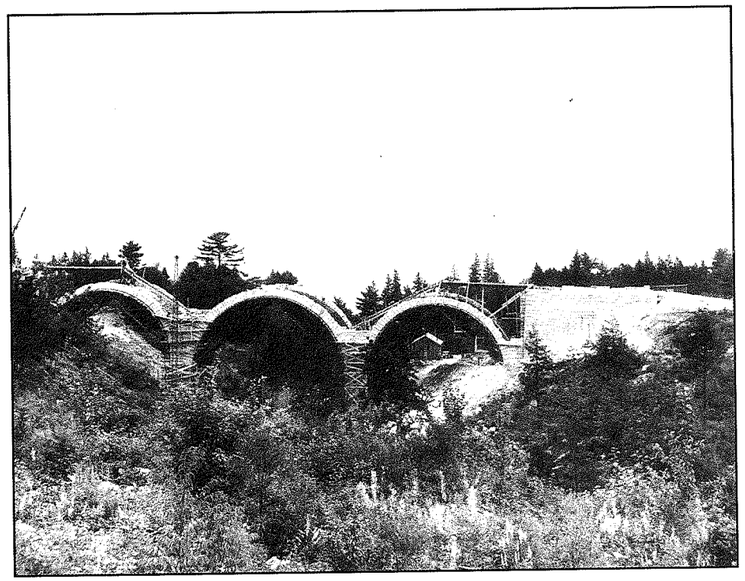


**Figure 29** Construction of the Duck Brook Bridge, on Paradise Hill Road, 1952. Photograph courtesy Bar Harbor Historical Society.

As the end of World War II drew near, Rockefeller again took up the cause to have Acadia's Motor Road System completed. This included the unbuilt bridges for Paradise Hill Road, the Dane property realignment on the Day Mountain section and the portion yet unbuilt to parallel Schooner Head Road. The following letter puts Rockefeller's role in the completion of the Motor Road System in context. This project was something that his wealth alone could not accomplish. It called upon him to be the project's primary cheerleader, spurring the Federal Government on towards its completion.

> Dear Mr. Drury:
>
> Some day the war will be over; I hope it will not be in the far distant future. When it is and public work projects are again possible and desirable both intrinsically and for the sake of giving employment, I am greatly hoping that the completion of the roads and bridges in connection with the unfinished road system in Acadia Park will be one of the projects that can be shortly undertaken.
>
> You will recall the difficult experience in the past in getting the plans and specifications for these roads and bridges prepared and approved by the various departments. Is this work going forward? Has the preparation been completed? Is the necessary data already so that bids on this work can be gotten without delay when the time comes?





> We have not been on Mount Desert Island for the past two summers. Mrs. Rockefeller and I are going to the Seaside Inn at Seal Harbor for the first two weeks of this August. It is this proposed visit which brings these matters again to my mind and leads me to write this letter.[65]

Drury wrote back to Rockefeller that he had not forgotten about the road program. He informed him that the two road grade separation structure plans were complete for the Paradise Hill Road and that the Duck Brook Bridge plans were in preparation. He further explained that much of the effort of the Bureau of Public Roads during the war effort had revolved around the construction of roads to serve the Pentagon Building in Washington and the construction of the Alcan Highway.[66]

The Paradise Hill bridges were included in the Department of Interior's 1950 roads and trails appropriation, and work began on them that year. They were completed during the 1952 season. The approximate contract funds for this project was $152,000.[67]

## Completing the Loop

The completion of Acadia National Park's Motor Road System was an undertaking which occupied well over three decades. During the 1950's, the missing portions of the road were completed in time for Rockefeller, nearing the end of his life, to realize the fruition of his goal. In February of 1955, Mr. Rockefeller responded to the birthday wishes of his old friend Horace M. Albright, and reflected on a life filled with good works and friendship:

> Your letter on congratulations and good wishes from Mrs. Albright and yourself on my birthday, was one of the most beautiful I received and I thank you for it from my heart. What a wonderful friend you have been to me over these many years, what interesting things we have done together and what happiness we have had in doing them.
>
> I have been richly blessed throughout my life. To few men have come such opportunities as have come to me. With them have come responsibilities, great and varied. These I could not have carried with any degree of success had it not been for a small group of able, high-minded, public-spirited men like yourself with whom I have been fortunate in being able to surround myself.
>
> When someone once asked my father to what he attributed his success, he said: "To my associates". In even larger measure has that been true in my life. No man ever had a finer, wiser, or more loyal associates than I have had. Without them I could have accomplished little. To have worked with them has been on of the high privileges of my life.
>
> Mrs. Rockefeller and I are greatly enjoying our stay here and are profiting by it in every way. With renewed thanks for your beautiful letter and above all for your friendship...[68]

Mr. Rockefeller had just entered his eighty second year.

**CONSTRUCTION OF BPR PROJECT 4A2**
(See Figure 7, Diagram 14)

In 1955, Mrs. Potter Palmer, the "Grand Dame" of Schooner Head Road deeded the portion of her property to the Federal Government which made the completion of Acadia's Motor Road System possible. Her gift to the park came after the devastation of the 1947 fire which destroyed her home "Hare Forest" and shortly before her death.[69]

Before World War II, the route for this section had been decided upon. As early as 1938, Rockefeller had walked the center-line of this route with the BPR's resident engineer Leo Grossman.[70]

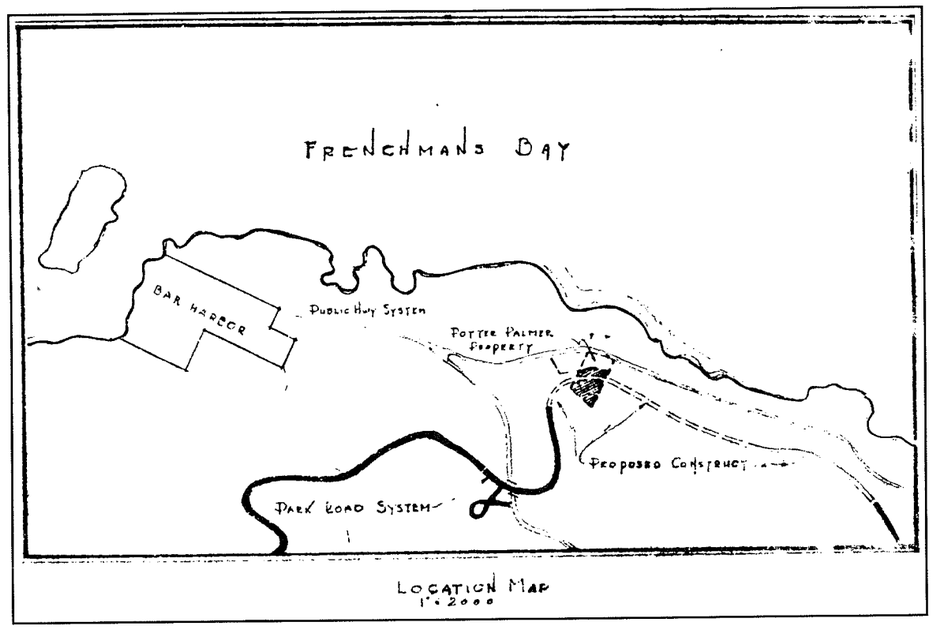



**Figure 30** The route of BPR Project 4A2, 1958. Drawing courtesy National Park Service, Denver Service Center, Microfilm Collection.

During the intervening years between choosing the route and the preparation of construction documents many refinements were made. However the basic design decisions as to the route remained in force through to the projects 1958 completion date.

The Bureau of Public Roads "Final Construction Report" of 1958 for this project recognizes the pre-WWII planning for this road:

> ...Necessary surveys were performed by Bureau of Public Roads personnel assigned to the Bar Harbor, Maine office. This work was performed intermittently during the years preceding World War II and discontinued in 1942 when the Bar Harbor office was temporarily closed.[71]





On this later project we do not have the benefit of Grossman's penchant for detail in the Final Construction Reports or the high quality black and white photography which accompanied them. This report of a later era offers:

> ...All phases of the work were performed using standard construction practices and procedures. There were no innovations in construction methods and no unusual conditions or circumstances were encountered on the project. It is noted that the greater part of excavation was in solid ledge, principally granite...

This Completion Report relates the following standards:

**Pavement Width:** 20 feet plus widening at the curves

**Width of Roadbed:** Cuts - 30 feet plus widening
Fill - 32 feet plus widening

The BPR's resident engineer for this last segment which completed the loop was George O'Neil. O'Neil had worked with Grossman before the war, and was well familiar with the high standard with which the previous sections were designed and constructed. During Rockefeller's later years, he spent less time on Mount Desert Island, his advanced age limiting his service as the informal director of "quality control" as had been his practice on earlier sections. O'Neil's involvement with this last segment is important because O'Neil was familiar with the high standards established by Rockefeller on earlier projects before WWII.

BPR Project 4A2 was a "Mission 66" project. Mission 66 was a ten year program of park development designed to help the National Park System accommodate the enormous increase in visitation after the war. The shear volume of projects, oftentimes led to a lack of oversight on the part of the Park Service, and many of the Mission 66 projects have been criticized for not keeping to the high standards and rustic traditions of the National Park Service. However, this cannot be said of this last project which completed Rockefeller's vision for Acadia's Motor Road System. A remarkable consistency carried through this last project, despite some interesting variations in materials. A large amount of rustic rubble masonry waterway was installed in connection with this last project, a significant and telling indication of Rockefeller's continued influence. Only after his death in 1960, did the park allow the introduction of bituminous, asphaltic pavement of the ditches or waterways.

# CHARACTER DEFINING FEATURES

## HISTORIC MOTOR ROAD SYSTEM
## ACADIA NATIONAL PARK

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### INTRODUCTION

Acadia National Park's Historic Motor Road System evolved from the labor of many individuals, all working towards a single vision. John D. Rockefeller, Jr. came to Mount Desert Island seeking relief from the complexities of his life. With him, he brought a passion for building, which was an outlet for his creative energy and self expression. Enchanted by the Acadian landscape, he first sought to make its beauty accessible to himself and others through the creation of an incredible system of carriage roads.

As the automobile grew more popular, Rockefeller doubled his efforts on the carriage roads to provide a means to escape the automobile's speed and noise. He placed deed restrictions on the land he donated for the carriage roads to insure that automobiles would be excluded. Still, as the numbers of automobiles began to explode in the early part of this century, it became clear that the day of the horse and carriage was drawing to a close. Rockefeller realized that there would be great pressure on the routes he had chosen for the carriage roads, if an attractive alternative was not provided for automobile traffic.

By 1929, Rockefeller fully embraced the concept of a Motor Road System for Acadia which took in the landscape from the mountain tops to the sea. When realized, this system would provide a third circulation system for the park, the three systems accommodating, foot, carriage, and motor traffic. Working with the leadership of the park and the National Park Service, Rockefeller used his own funds to finance a comprehensive study of the future Motor Road System calling upon the experience and traditions of the Olmsted Brothers, landscape architectural firm in Brookline, Massachusetts. It was well understood that this new Motor Road System would have to stand along side and be compatible with the finely crafted network of carriage roads which had already been constructed. It was also the desire of the National Park Service that the Motor Road System compare favorably with Rockefeller's carriage road system. This desire for consistency in design and craftsmanship in both systems created a palette of many of the same basic character-defining features. Both systems are excellent works of landscape architecture and engineering. Although the Carriage and Motor Road Systems share much in common, they each retain their own unique historic character, especially with regard to issues of scale and surface.

# Inventory and Assessment of Character-Defining Features

## Landscape Scale Features

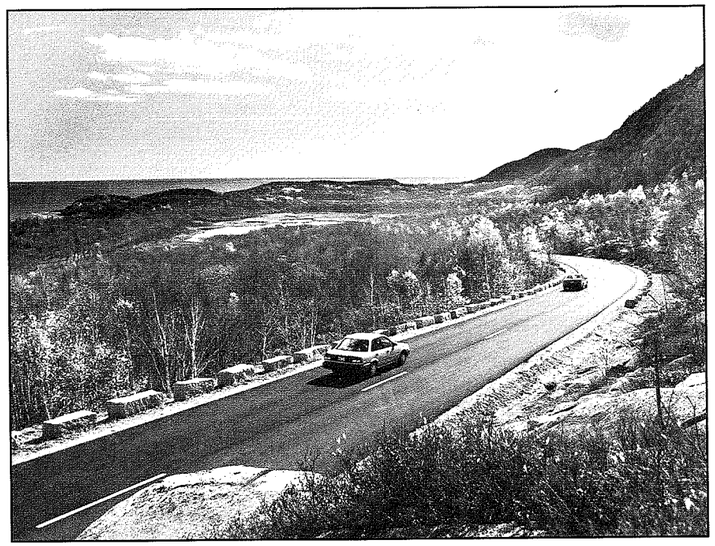

**Figure 31** BPR Project 4A2, above Bliss Field. Photograph by Olmsted Center for Landscape Preservation (Hereafter, OCLP).

> ...In a naturalistic landscape, as far as it is possible, the road should seem to lie upon the surface of the ground without interruption of the natural modeling. The surface of necessary cuts and fills should simulate the natural surface where possible; where this is impossible their modeling should still be as sequential and unbroken a continuation of the natural surface as the designer can arrange...[72]

This quote from Hubbard and Kimball's " An Introduction to the Study of Landscape Design" represents the prevailing attitude of the time towards the design of roads in a naturalistic, park setting. This was the attitude of Rockefeller in his layout of his carriage road system, and that of his advisor Frederick Law Olmsted, Jr. towards the design of the Motor Road System.

The design of Acadia's Motor Road System accommodated the constraints of challenging topography and private property ownership. Often, the best possible route required the traverse of the ledge rock of Mount Desert's granitic mountains. A mosaic of property holdings had to be assembled to make these routes possible, and as a result, the circumstances of the site affected the ideal layout of the road. The Historic Motor Road System, nevertheless, lies lightly on the land. This is a result of painstaking attention to detail with regard to the three basic elements of road design. These elements are:

Horizontal Alignment
Vertical Alignment or "Profile"
Cross-Section





### Horizontal Alignment

The horizontal alignment of Acadia's Historic Motor Road System is generally intended to expose the park visitor to the landscape variety of Mount Desert Island, from the mountains to the coast. This inevitably involves a curvilinear route, following as closely as possible the natural contours of the land. The horizontal alignment of roads deals with the design of curves and tangents in a planar relationship. Two distinctly different approaches to horizontal alignment of curvilinear roads exist within the Historic Motor Road System.

The early work of Hill and Simpson on the Jordan Pond/Eagle Lake Motor Road, the Stanley Brook Road, Otter Cliffs Road, and the reconstruction of Ocean Drive all made use of a series of arcs and tangents, well balanced for aesthetic as well as safety concerns. One refinement to this basic approach utilized by Hill and Simpson was the introduction of widening on the curves. A wider pavement width is more desirable for comfortably negotiating a vehicle through a curve than is necessary on a tangent section.

The road projects in Acadia which involved the Bureau of Public Roads added an additional refinement to the design of the road system's horizontal curvature. This refinement was the introduction of lengths of spiral curves which served as a transition between the straight section, or tangents, and the circular curves. This refinement of the horizontal alignment of roads was an adaptation from the railroad industry. In the mid-19th Century, a gentleman by the name of Shortt, sought to find a solution to the uncomfortable lurching of trains which occurred when the tracks arrived at a Point of Curvature or Point of Tangentcy. Shortt's solution was to introduce a segment of "transition curve" which would ease the train into a true circular curve, eliminating the lurch occurring at these points.

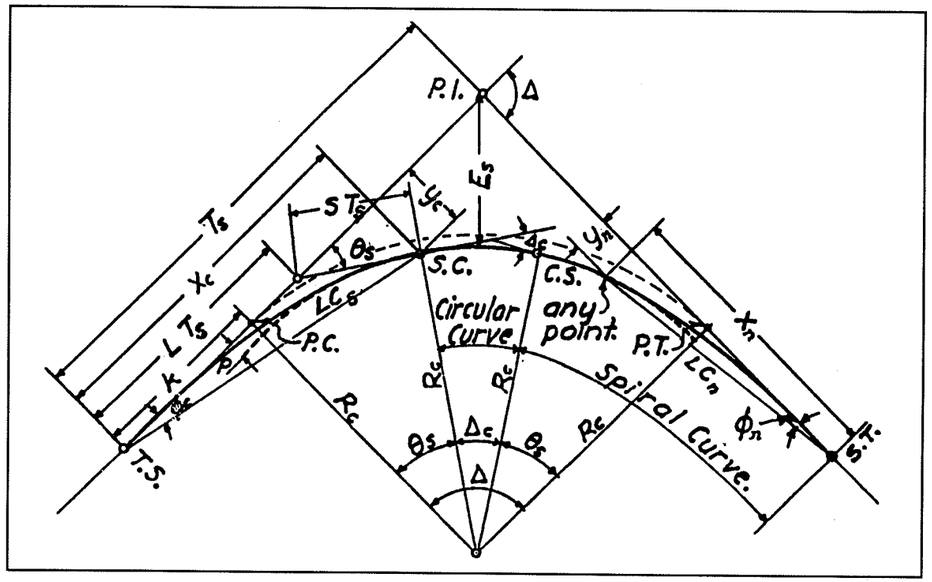


**Figure 32** Spiral transition curves were inserted for comfort and safety. From Seelye, *Design*, pg. 12-29.

The Bureau of Public Roads earliest work at Acadia was on the Cadillac Mountain Road, and utilized spiral transition curves throughout its length. The alignment of Cadillac Mountain Road was laid out by Leo Grossman using a book of tables from his studies at M.I.T.; *Field and Office Tables: Specially Applicable to Railroads.*[73] As Cadillac Mountain Road curves for most of its length, with very few tangent sections, a very large portion of this roadway is laid out in spiral curvature.

When the BPR again became involved with the construction of Acadia's Motor Roads during the "New Deal," spiral curvature again became a part of the road design. The engineering of the curves for these later segments of road involved sizing the curves based upon a 50 mph design speed. This implied larger radius curves than were typical in the earlier arc and tangent work of Hill and Simpson.

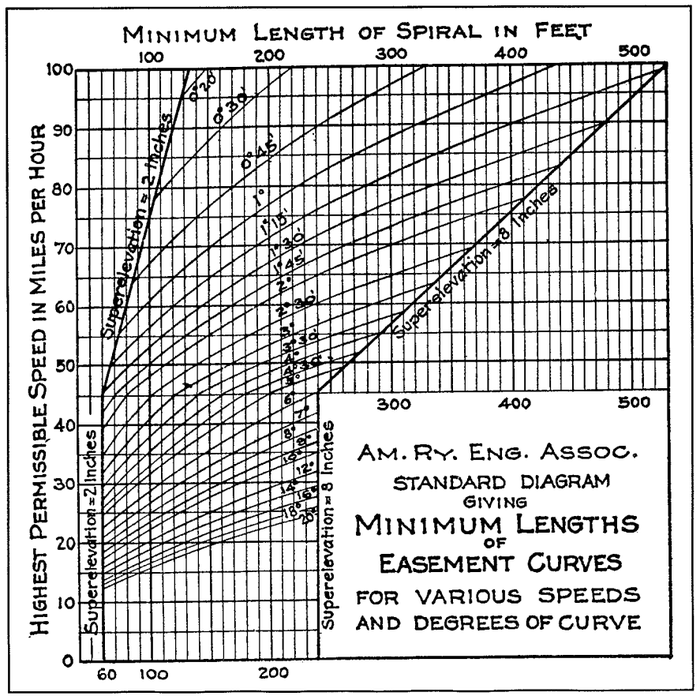


**Figure 33** A page from Leo Grossman's field book. From Allen, *Field and Office Tables*, pg. 33H.

The road design which resulted from the collaboration of engineers Hill and Simpson with Frederick Law Olmsted, Jr. was of a much lower design speed. While the historic design speed is undetermined, these sections of the road were posted at 18 miles per hour. These sections originally included: Jordan Pond/Eagle Lake Motor Road, the reconstructed Ocean Drive, Stanley Brook Road, and Otter Cliffs Road. The Jordan Pond/Eagle Lake Motor Road, which did not involve Olmsted, was the park's first segment of Motor Road. This early road was re-designed in 1962. The redesign followed the same general route, but introduced spirals and wider curves to bring the road up to modern highway standards.





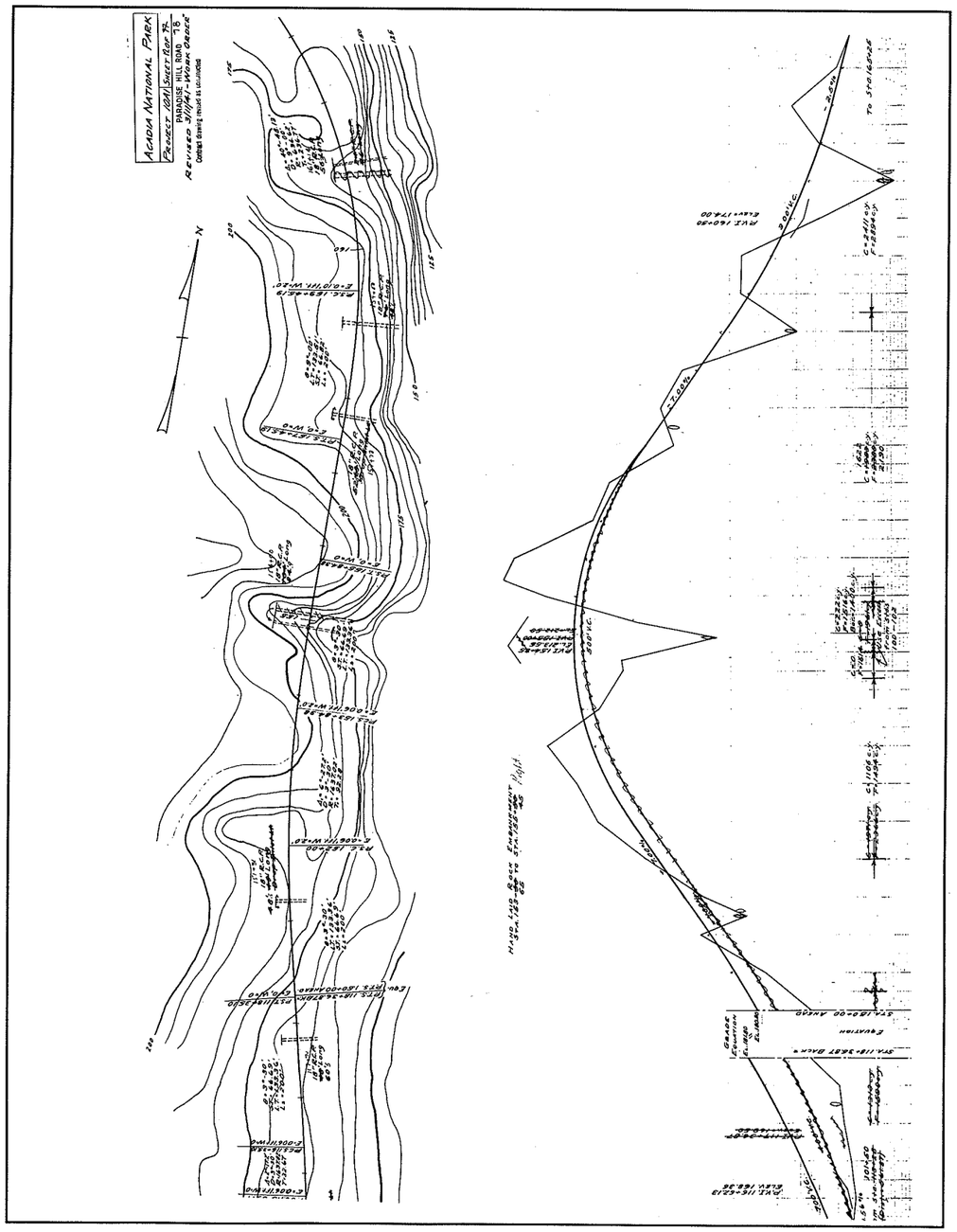


**Figure 34** A sheet from the Paradise Hill Road "As Built" drawings, 1941. Drawing courtesy Federal Highway Administration.

## Vertical Alignment

Vertical alignment or "profile," deals with how the curvilinear line in plan fits the three dimensional aspect of topography. In an ideal form, the union of horizontal and vertical alignments will resemble the sweeping path of a bird in flight.[74] A road's profile is also designed geometrically, using a series of vertical curves and tangents. The curves are parabolic, and referred to alternately as "sag" or "summit" curves depending upon their orientation. Vertical alignment of all sections of the Motor Road System feature a maximum gradient of seven percent.

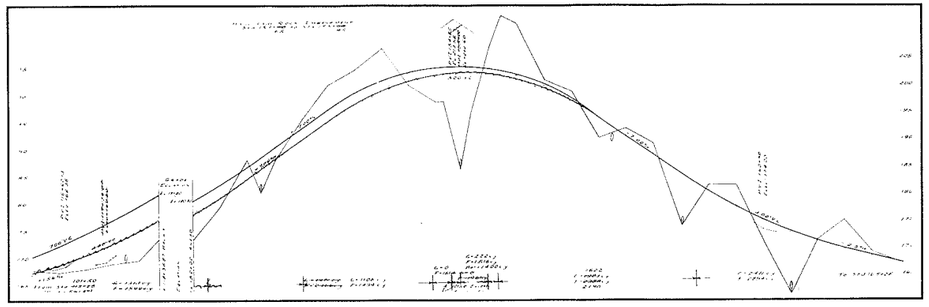

**Figure 35** A summit curve, Paradise Hill Road. Drawing courtesy Federal Highway Administration.

The vertical alignment of the Motor Road also utilized bridges to cross streams throughout the system. These bridges are beautiful examples of rustic construction. Their construction is of modern ferro-concrete, faced with stone. Bridges were also employed to eliminate "at grade" intersections of the Motor Road System with State and County Roads, as well as the Carriage Roads. The five bridges within the scope of the proposed Federal Highways project were designed by the National Park Service, and received the approval of John D. Rockefeller, Jr.

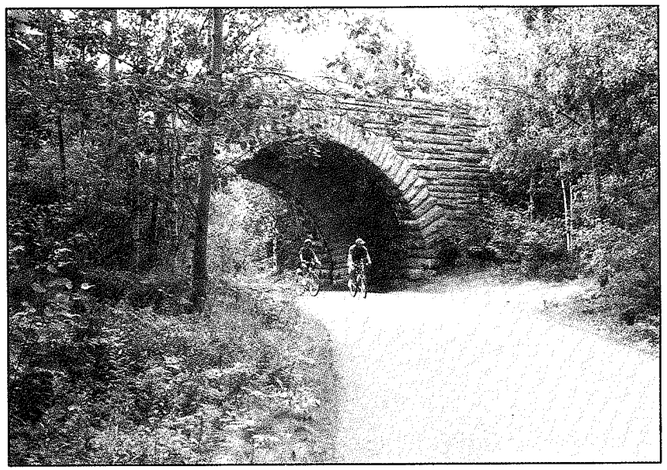

**Figure 36** Stone bridge at "Pump House Road," 1993. Photograph by Olmsted Center for Landscape Preservation.





## Cross-Section

Many of the character-defining features of Acadia's Motor Road System are best understood in terms of their cross-sectional relationship to one another. The road cross-section represents an assembly of features which have changed during various periods in the development of the Motor Road System. Different "typical" cross-sections were employed on different historical segments during the system's development. These different cross-sections reflect changes and refinements to the width and crown of the roadway. There are also differences in the widths of the shoulders and ditches. Additionally, the cross section for any given segment provides a framework onto which a collection of individual character-defining features has been assembled. An understanding of the cross-section of the various segments of the road is key to understanding the issues of historic character that are to follow in subsequent sections of this report. Figures 39 to 44 illustrate the cross-section for each segment included in this project.

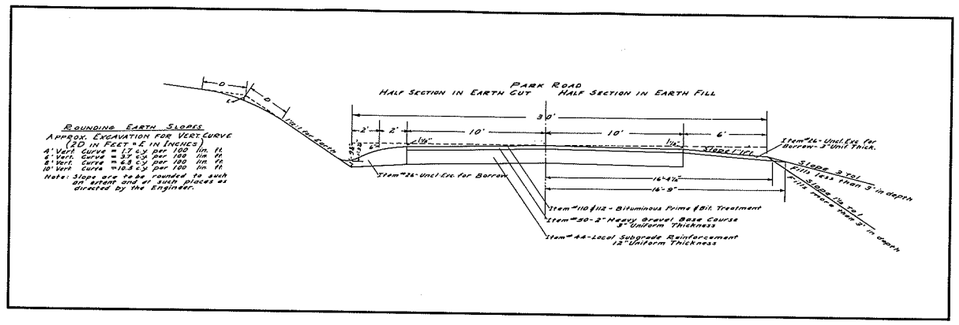


**Figure 37** As built cross-section, Paradise Hill Road, 1941. Drawing courtesy Federal Highway Administration.

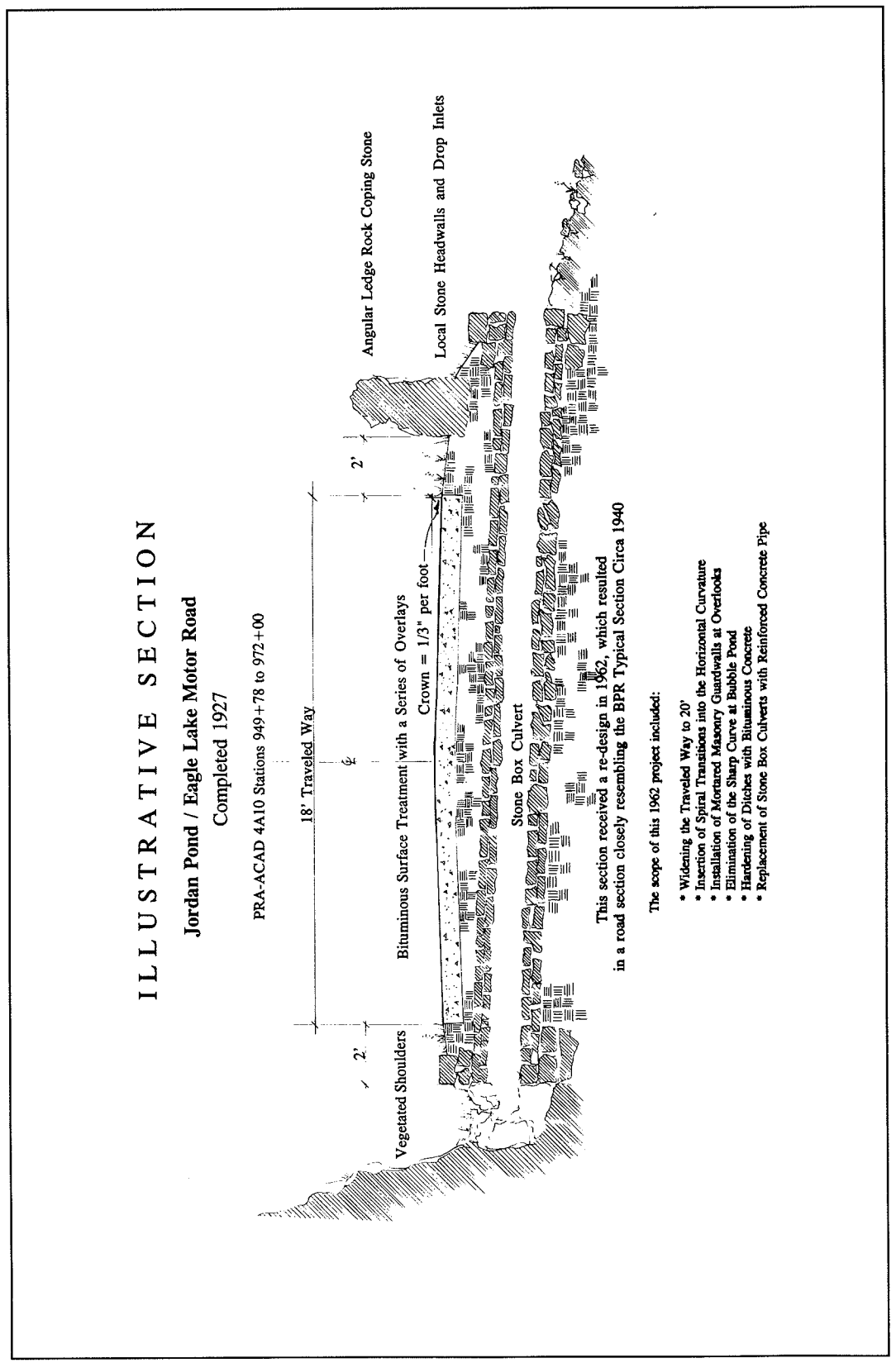


**Figure 38** Illustrative cross-section, Jordan Pond/Eagle Lake Motor Road. Drawing by OCLP.





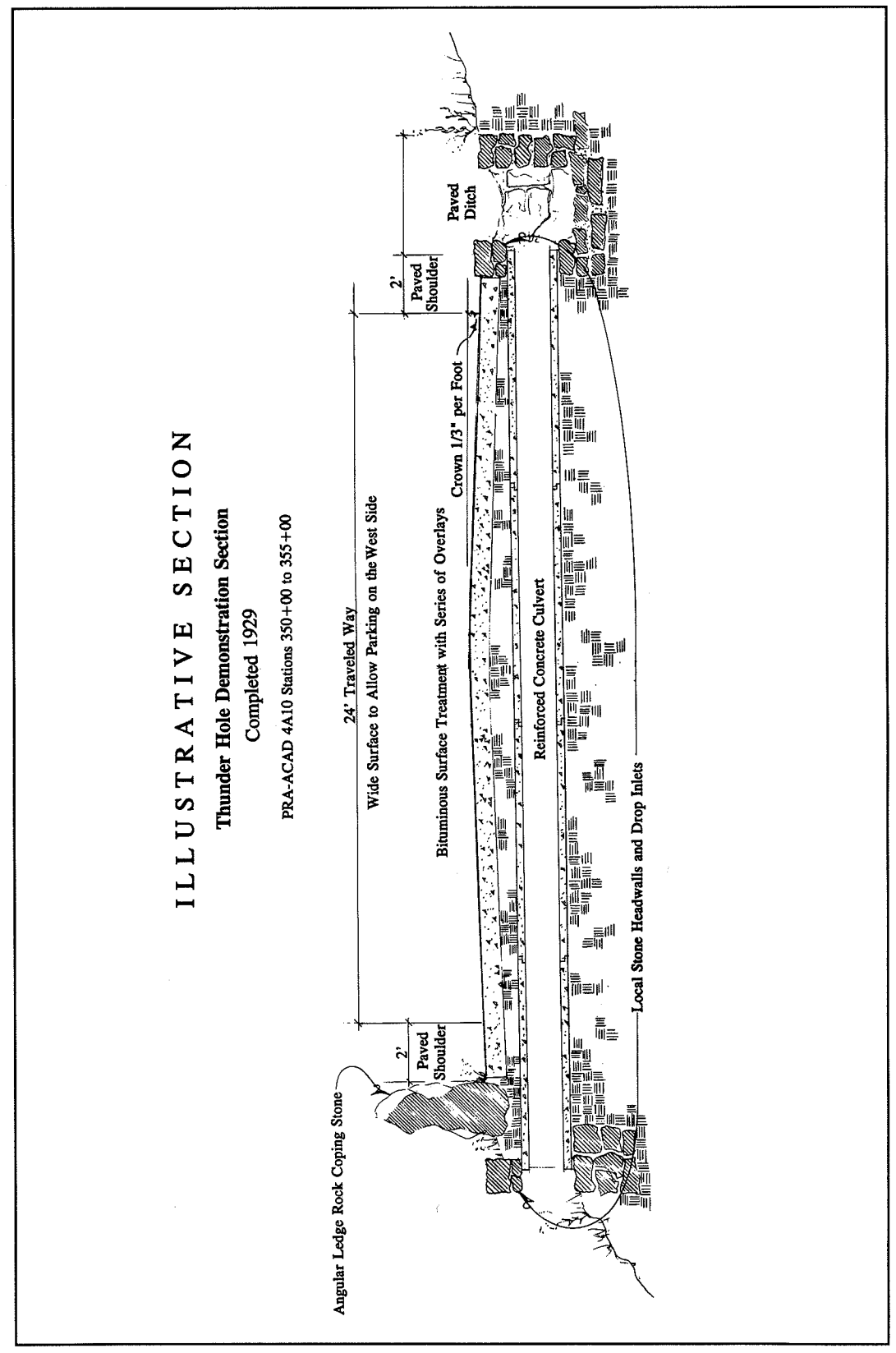


**Figure 39** Illustrative cross-section, Ocean Drive Demonstration Section. Drawing by OCLP.

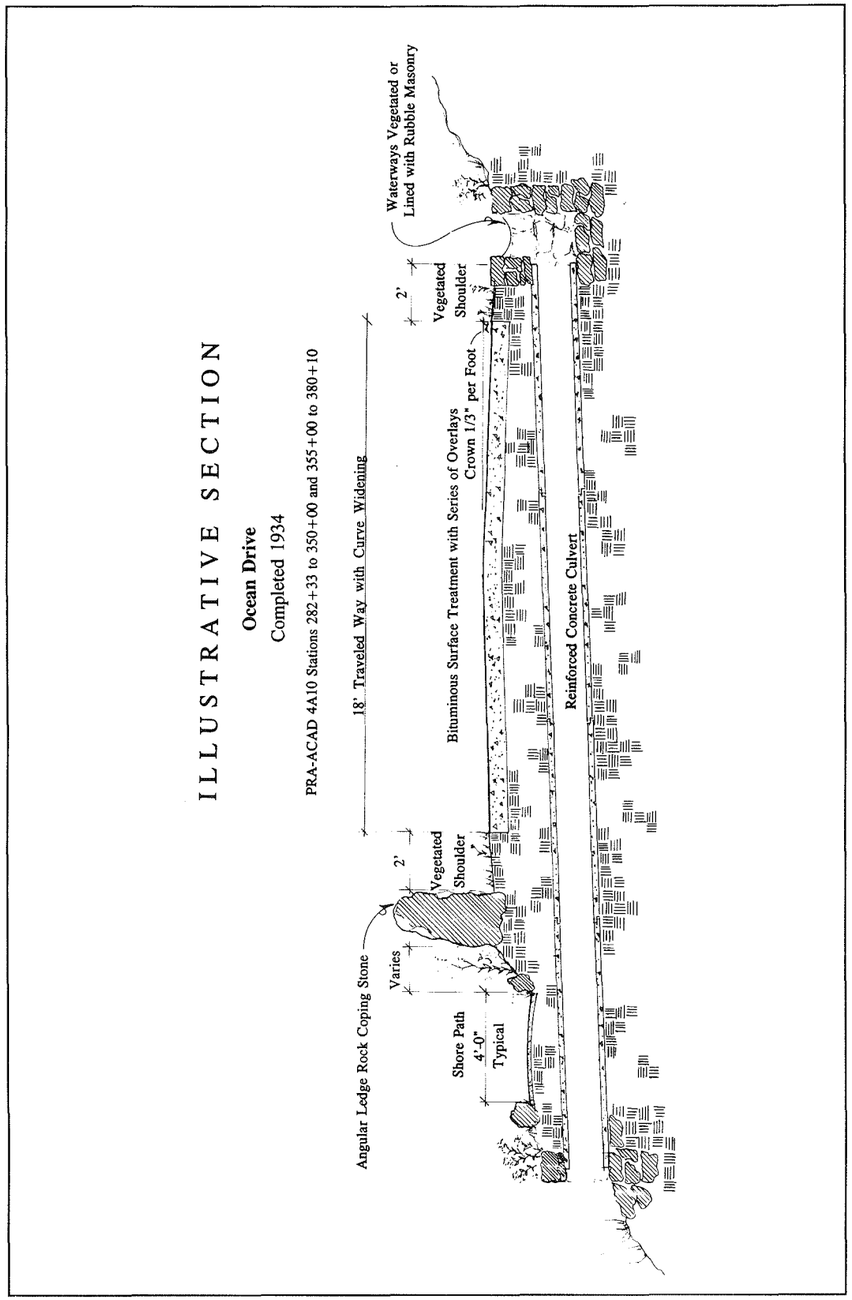


**Figure 40** Illustrative cross-section, Ocean Drive. Drawing by OCLP.





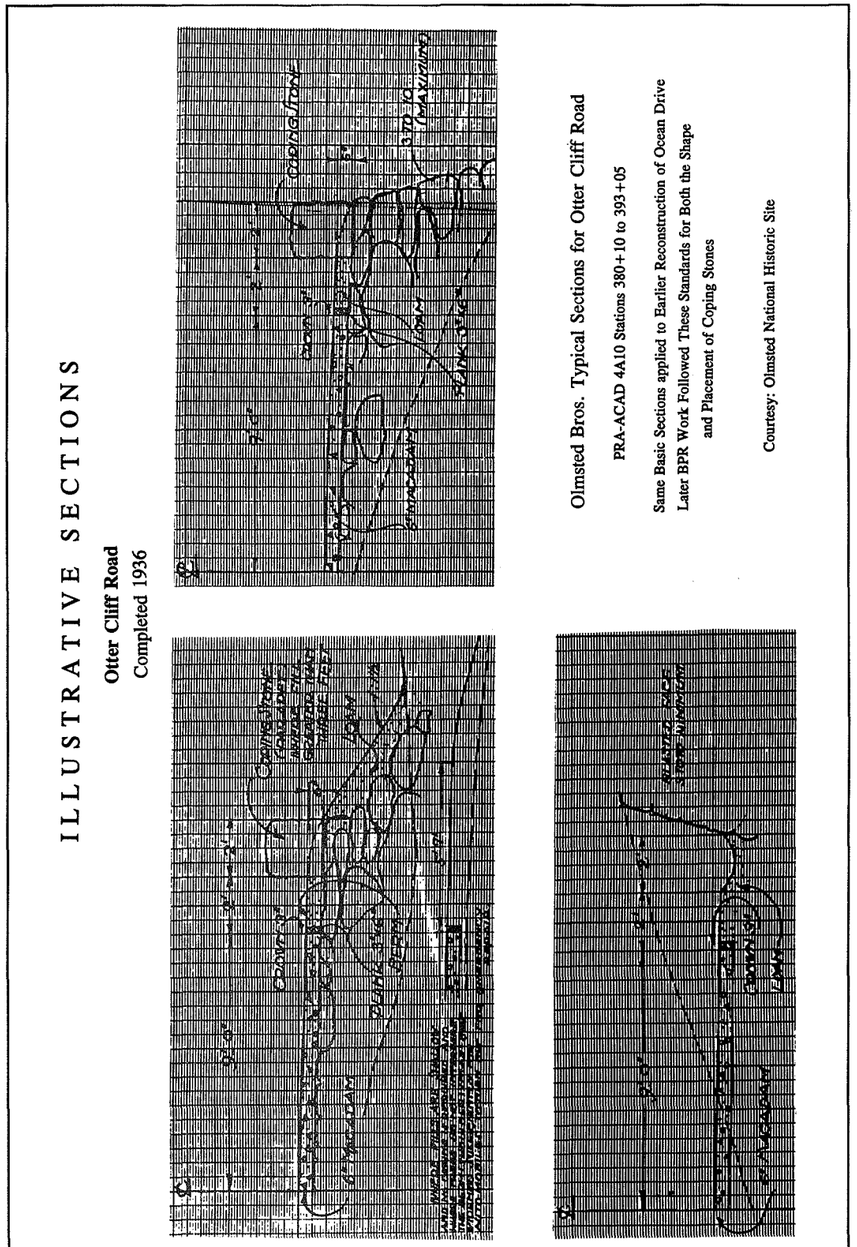


**Figure 41** Illustrative cross-section, Otter Cliff Road. Drawing courtesy National Park Service, Frederick Law Olmsted National Historic Site.

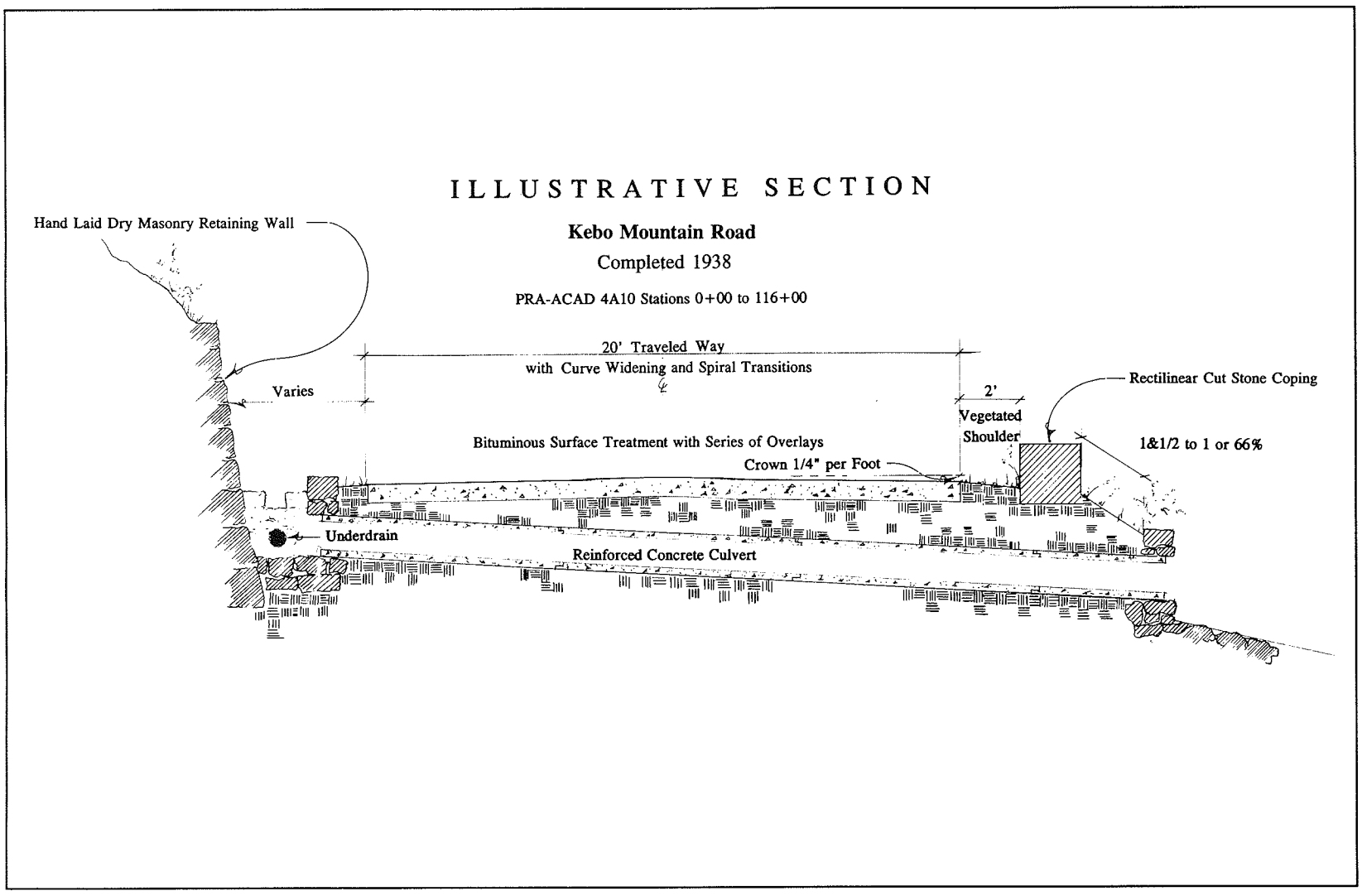




**Figure 42** Illustrative cross-section, Kebo Mountain Road. Drawing by OCLP.



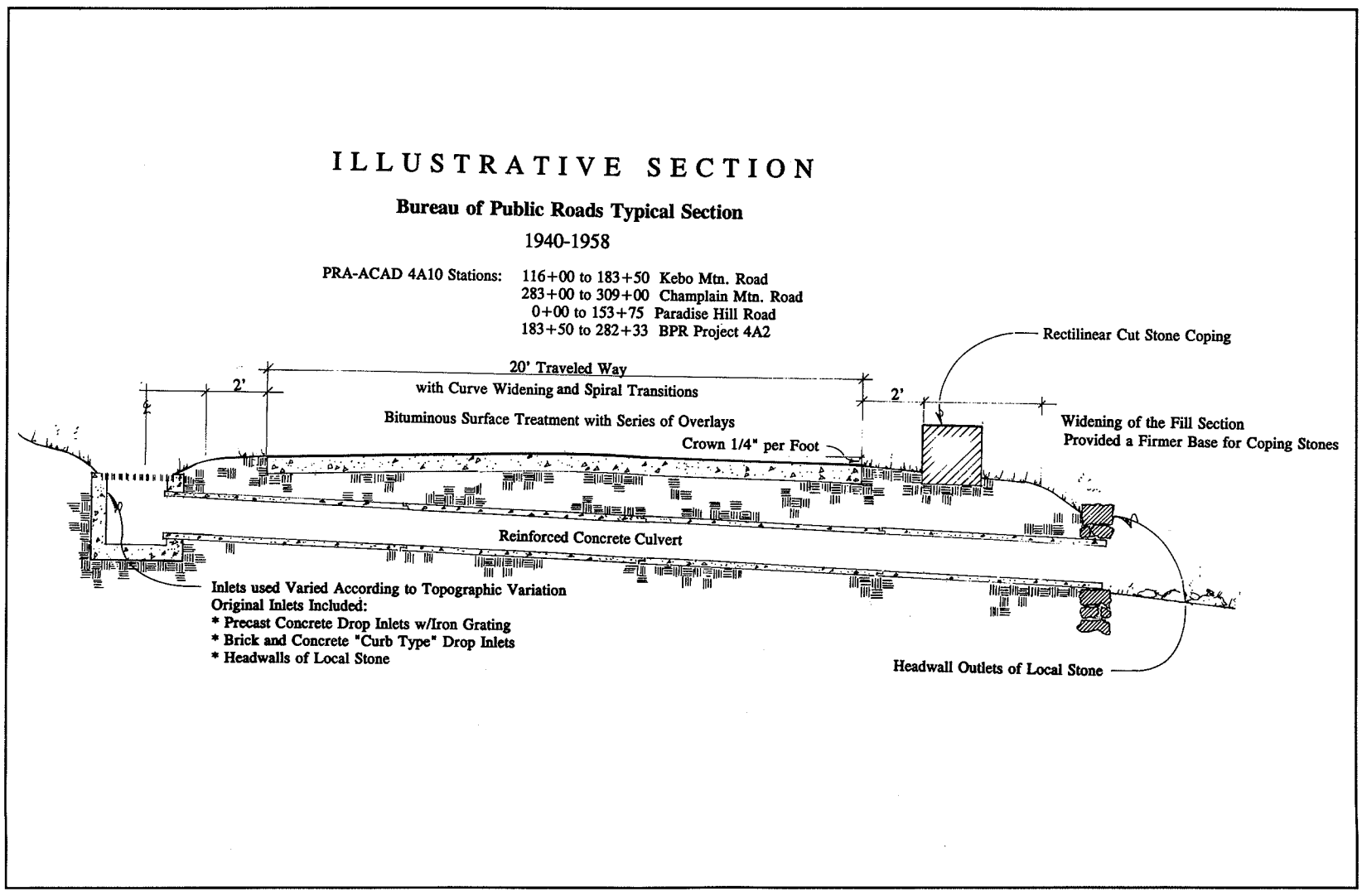




**Figure 43** Illustrative cross-section, post-1940 construction. Drawing by OCLP.

## Views and Vistas

Acadia National Park's Historic Motor Road System is first and foremost, a scenic drive. This does not imply a bias towards the broad sweeping views, but the system was certainly designed to include the spectacular views found on Mount Desert Island. Very little indication is given in the historical narrative that indicates the pre-planning of formal overlooks. Often, formal overlooks were created in the field in circumstances where the quantities of cut and fill did not balance and excess material was available. In these circumstances, the excess stone from a dynamited ledge would be used to create a wider cross-section for pulling off the roadway, and a formal overlook was created.

**Figure 44** A view from Paradise Hill Road, 1993. Photograph by OCLP.

The vegetation below these scenic overlooks had to be managed to maintain an open view. As early as 1941, Assistant Superintendent Hadley had been instructed to formulate a program of perpetual maintenance for the scenic overlooks along the Motor Road. In particular, this program was to address the management of vegetation. It is obvious from the correspondence that the vegetation along the older portions of the Motor Road was becoming mature and obscuring the views.[75]

Today, the park faces the same issues regarding the maintenance of scenic vistas. Vegetation on the island grows remarkably quickly if left alone. The fire of 1947 turned much of the eastern half of Mount Desert Island into a barren wasteland. Photography of the Paradise Hill Road seven years after the fire shows that new vegetation had just barely begun to reclaim the burned landscape. Today, the presence of lush growth makes it difficult to understand the incredible devastation which destroyed a forest and punctuated the end of Bar Harbor's "Cottage Era."

By 1961, the vegetation was well on its way to reclaiming the barren slopes. Rockefeller, crushed by





the loss of so much natural beauty, had sponsored much of the reforestation efforts after the fire. At this time, the park conducted a survey of overlooks to be kept clear of the quickly growing young forest. Even though the 1961 vista plan is outside of the Motor Road's period of significance, it was carried out at a time when the personnel involved in the survey may have had first hand knowledge of the location of historic vistas. The memorandum which accompanied the 1961 vista plan is reproduced in Appendix C.

If read carefully, this memo provides very interesting insight into the ideal strategies of vista management. From this memo it can be understood that the vistas were not to be managed as total clear zones, but to be groomed to allow specimen trees to mature in the foreground. This technique is well established in the traditions of landscape architecture, providing a frame within which to view spectacular scenery. The number and scale of scenic vistas within the scope of the Motor Road System precluded the preparation of individual vegetation plans for each scenic vista. Instead, the vistas were to have been a long-term management proposition which was to proceed under the direction of a sensitive eye, following time worn principles.

Unfortunately, due to shrinking maintenance budgets and personnel turnover, the long-term stewardship of scenic vistas has not been adequate. Many of the Motor Road Systems scenic vistas have since grown over with a maturing forest.

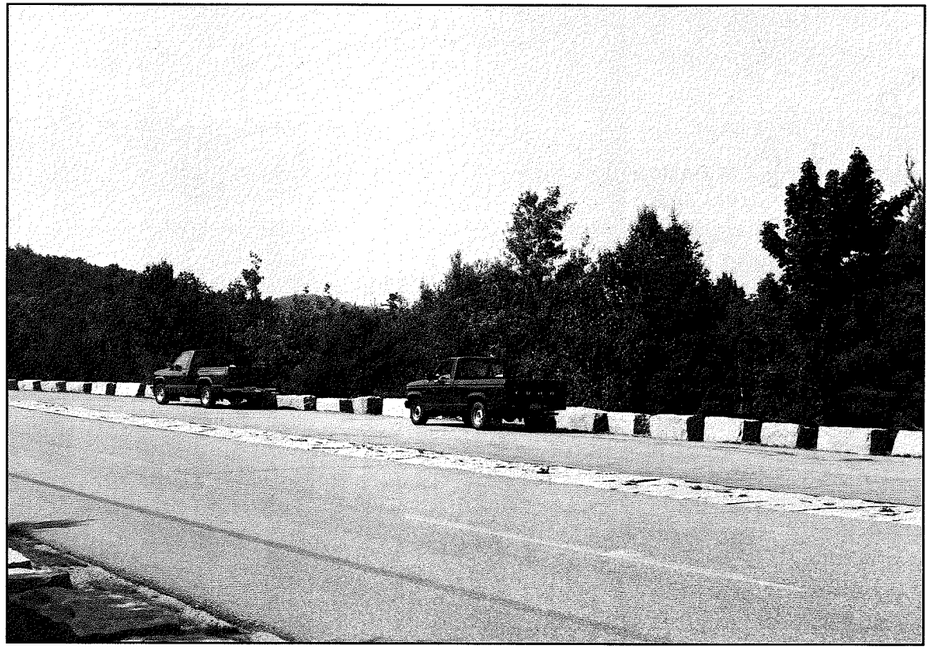

**Figure 45** Overgrown vista, Paradise Hill Road, station 97+55, 1993. Photograph by OCLP.

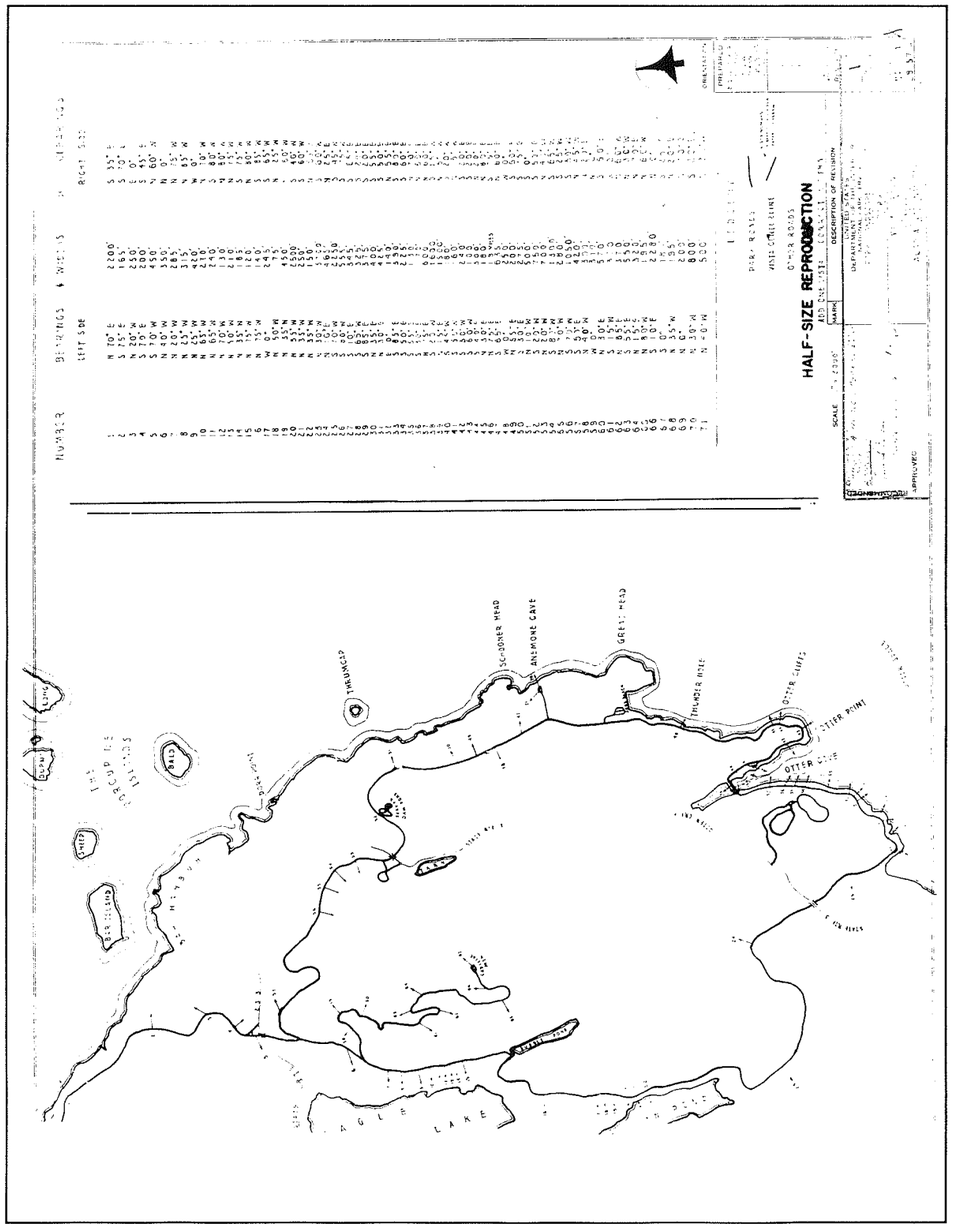


**Figure 46** A vista plan, circa 1961. Drawing courtesy National Park Service, Denver Service Center, Microfilm Collection.





## Vegetation

The vegetation of the landscape off the shoulder of the road is an important aspect of historic character. Rockefeller, Olmsted, and the National Park Service were all very concerned that the scars created during the construction of the road be minimized through good road design. Where landscape scars could not be avoided, great attention was lavished upon their repair. This is true on the work that Rockefeller funded directly, as well as the "New Deal" work of the 1930's and 1940's. The road construction during the New Deal in Acadia made use of the Civilian Conservation Corps for the landscaping of the roadsides. This work was carried out using a native plant palette so as to blend the scars into the greater landscape. This is entirely consistent with the approach followed by the Park Service nation wide.

Rockefeller had a tremendous impact upon the management of the roadside vegetation throughout the National Park System as well as within the confines of Acadia National Park. Rockefeller's concern for the landscape just off the roads margins was the issue that initiated his cooperation with the Park Service in connection with Yellowstone National Park. This early project provided the model for the National Park Service's treatment of the vegetation along park roads nation-wide.

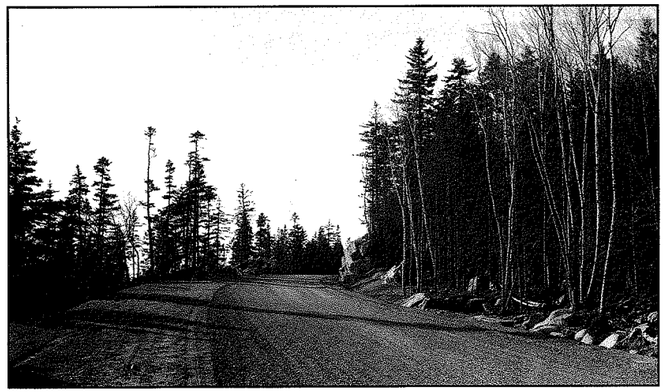

**Figure 47** A view of Blackwoods Road, 1939. Care was taken to protect the trees along the road sides during construction. Photograph from BPR, *Progress Views*.

**Figure 48** Paradise Hill Road, 40 years ago, 1953. After the Great Fire of 1947, Rockefeller personally sponsored much of the reforestation efforts within the park. This photo shows that six years after the fire, the landscape remained quite barren. Photograph from BPR, *Progress Views*.

## INDIVIDUAL CHARACTER-DEFINING FEATURES

### THE ROAD MARGIN: SHOULDER, DITCH AND EMBANKMENT

An assembly of character-defining features occupies the margins of the road, just off the pavement surface. The character of the road margin is an important part of the visitor experience of Acadia National Park. The road margin was designed with rustic values in mind, so as to differentiate the experience of travelling across a park road from the experience of traveling over an ordinary County Road. The assembly of character-defining features which together comprise the character of the road's margin include: vegetated shoulder and ditch, embankments, and coping stone guardwall.

**Figure 49** Kebo Mountain Road, station 24+00, 1993. Photograph by OCLP.





### Vegetated Shoulder and Ditch

The vegetated shoulder and ditch is a very significant part of the historic character of the Motor Road. A vegetated shoulder provides a softer and more rustic edge to the pavement surface than a gravel shoulder or an undifferentiated paved shoulder. The intent of this feature was to blur the line between road and landscape, enhancing the experience of driving through the park. A vegetated shoulder is made possible through the construction of the shoulders using equal proportions of gravel to soil. The addition of gravel, or aggregate, to the shoulder makes it possible for automobiles to pull off onto the shoulder without leaving ruts. The shoulders of some segments of the Motor Road were even constructed with three to one proportion of gravel to topsoil. Just the same, the vegetation growing on this stabilized shoulder cannot be made resistant to any more than occasional traffic. Repeated traffic pulling onto the vegetated shoulder at any one spot will soon destroy the vegetative cover.

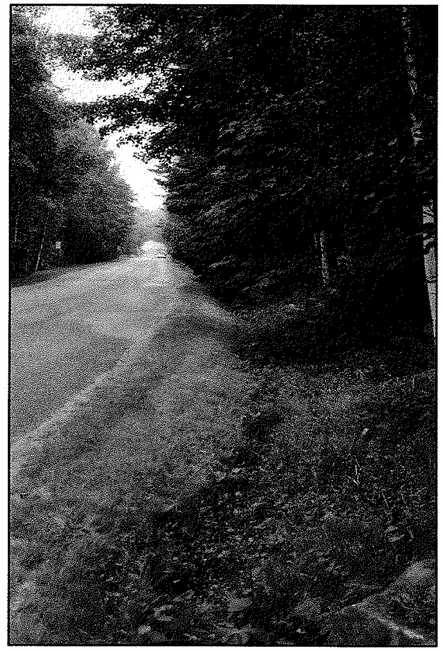

**Figure 50** Champlain Mountain Road, station 300+00, 1993. Photograph by OCLP.

The vegetation of the shoulder and ditch were part of the original design for the Motor Road System. The use of a vegetated road margin is not only true to its rustic design, but a perfectly appropriate technical solution for the stabilization of the road margin. Originally the surfaces were seeded with commonplace mixtures of grass seed to provide quick cover, but the eventual succession of native plants was intended and encouraged.

## Embankments

Roadside embankments, in sections of either cut or fill, were minimized on the Motor Road System through careful attention to the larger issue of choosing the best route and providing an alignment which offered the least impact to the adjacent landscape. However, where large embankments could not be avoided, care was taken to minimize the damage to the landscape. Generally, embankments were vegetated using the same approach used on shoulders and ditches. Where this solution was inadequate due to the size of the embankment alternative measures were employed. These measures included the use of stone retaining wall structures, or hand laid rock embankment, also know as riprap.

**Figure 51** Kebo Mountain Road, dry-laid stone retaining wall, 1938. Photograph from BPR, *Progress Views*.

Throughout the Historic Motor Road System retaining walls are utilized to minimize the apparent size of large embankments in cut sections. In some places, retaining walls were necessary due to the high erodability of the soils over which the road passed. These walls are of dry-laid construction which allows water to easily weep through the joints, thus requiring less of an engineered and more rustic solution to the problem. These walls also have the advantage of being beautifully constructed of local stone, allowing them to blend into the context of the adjacent rock outcroppings.

While dry-laid stone retaining walls were used on the highly visible cut slopes of the road cross-section, another less expensive means was utilized on the less noticeable fill slopes. Where a particularly steep and erodible section of fill was made necessary due to the vertical alignment of the road surface, the typical solution was to stabilize its embankment by the hand placement of large angular stones evenly across its surface. This solution effectively slows down the speed and force of water flowing across the





slope and denies water the opportunity to erode its surface. This treatment has the further advantage of being semi-permeable to air and water. With time, vegetation has taken over these rock faced embankments, further stabilizing the soil.

**Figure 52** Kebo Mountain Road, hand-placed riprap embankment, 1938. Photograph from BPR, *Progress Views*.

## Coping Stone Guardwall

Where sections of fill are greater that three feet in height and have slopes of greater than 1.5 : 1, the historic treatment for this condition was the placement of large stones to serve as a rustic guardwall. This feature of the Historic Motor Road System was in place on Ocean Drive prior to its reconstruction in the 1930's as a vernacular approach to defining the road margin and providing some measure of guardwall protection. However, its widespread use throughout the Historic Motor Road System is the distinctive thumbprint of Rockefeller's involvement with the system's development. Locally, the coping stones are known as "Rockefeller's teeth." There is some indication that Rockefeller first saw coping stones used in this manner on the grounds of his boyhood home in Cleveland, Ohio.[76] Rockefeller first incorporated coping stone guardwalls into his carriage road system. A desire for consistency later led to their use throughout the Motor Road System.

The style of coping stones varies considerably between the different historic segments of the Motor Road System. The earlier sections of Motor Road such as the Jordan Pond/Eagle Lake Motor Road, Cadillac Mountain Road, and Ocean Drive, make use of the angular ledge rock which was available during the construction of the road. The first section of Motor Road to make use of roughly rectilinear coping stones was the work on Otter Cliffs Road. This segment which involved the Olmsted Brothers landscape architectural firm, was the product of drawings which showed the coping stones as rectilinear forms on the shoulder. This detail evolved into the more rigidly rectilinear coping stones installed on the later BPR work that would follow during the New Deal and beyond.

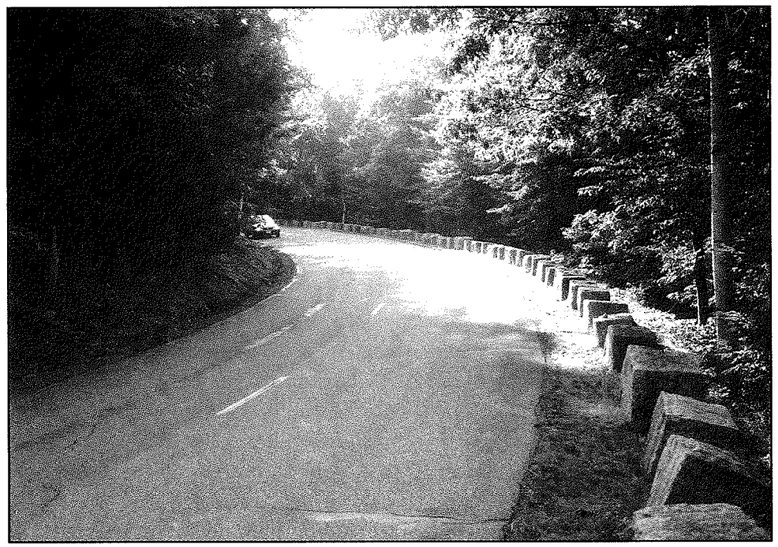

**Figure 53** Rectilinear coping stones, Kebo Mountain Road, station 72+00, 1993. Photograph by OCLP.





## Coping Stone Guardwall

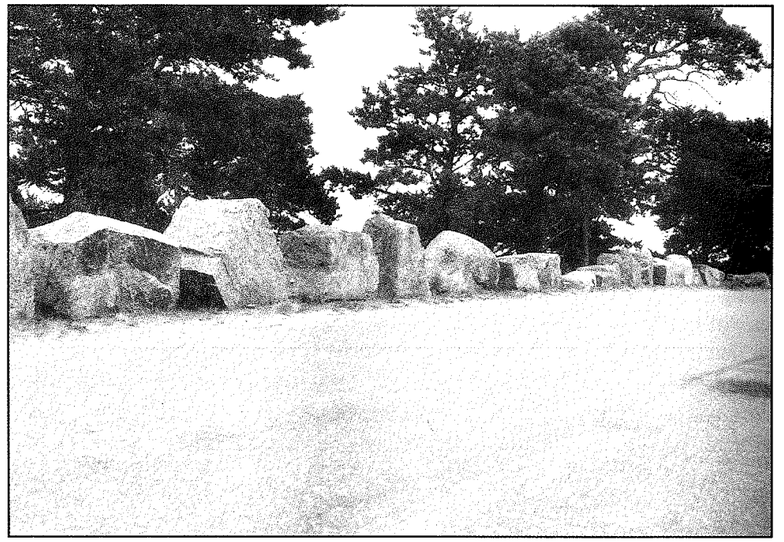

**Figure 54** Angular ledge rock coping stones, Ocean Drive station 315+00, 1993. Photograph by OCLP.

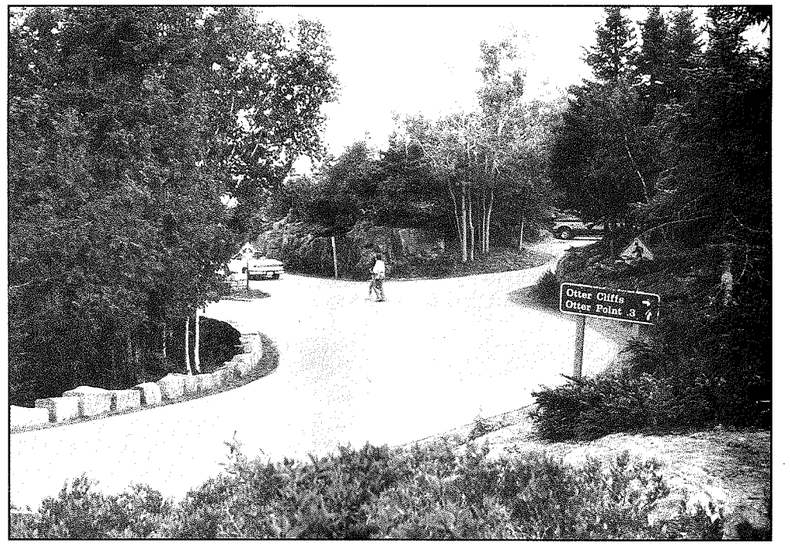


**Figure 55** Coping stones of pink granite, Otter Cliff Road, station 392+00, 1993. Photograph by OCLP.

## ROAD SURFACE

### Wearing Course Texture

A variety of surfacing material have been used on the Historic Motor Road System during various historic periods. The earliest sections of the Jordan Pond/Eagle Lake Motor Road utilized a water bound macadam for the pavement surface. This type of surface, which was also in use on Rockefeller's carriage roads, used clay in the final wearing course to hold the surface together. The first section of Jordan Pond/Eagle Lake Motor Road which ran from Rt. 233 to the entrance to Cadillac Mountain Road employed this surface.

However, before the entire Jordan Pond/Eagle Lake Motor Road was completed in 1927, the road was given a bituminous surface treatment. Here, an asphaltic material was utilized to bind the aggregate of the final wearing course together. Gravel or aggregate for this pavement was typically obtained from small quarries within the park. This was an advantage in reducing the cost of the material by minimizing transportation, but also gave the road the hue of the local stone, and helped to allow the road to blend in with the landscape. There is a great color range in the granite throughout the park. The color of the original road cannot be determined, except for the Cadillac Mountain Road spur. The wonderful effect of the pink granite surface on Cadillac Mountain Road is well documented. The material for surfacing this road came out of the cuts in the mountain made for the road itself. The rock crushing equipment actually moved up the mountain as construction progressed.

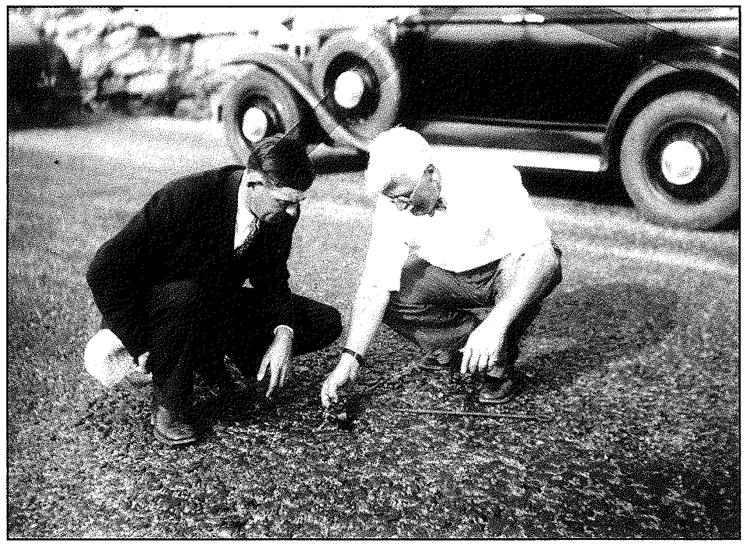

**Figure 56** Highway engineers examining the pavement surface, Cadillac Mountain Road, 1932. Photograph courtesy National Park Service, Acadia National Park Archives.

Apart from the color of this early surface, the character of the road given a bituminous surface treatment





was of a coarser texture than today's plant mixed, hot-asphalt bituminous concretes. This coarse texture was due to the installation of a final "chip coat" of raw, uncoated aggregate to the surface. The sieve sizes of the aggregates making up this chip coat were also larger than what goes into today's modern pavements.

Leo Grossman, the resident engineer for the BPR at Acadia, kept meticulous records as to how these early pavements were typically constructed.[77]

> ...These surfaces were swept clean with hand brooms, using the road machine(grader) at the shoulders where necessary to push back the plant growth and excessive accumulations of dirt...
>
> ...In order that the old surface tar might be enlivened and the cracks and cheeks filled, a prime or tack coat of tar was first applied at the rate on one tenth of a gallon per square yard...
>
> ...Immediately after this tack coat was applied, the cover material, consisting of crushed stone chips, was spread from the tail gate of the truck at the rate of thirty five pounds per square yard.
>
> After the chips were uniformly spread, the mulch application of tar was applied at the rate of 0.27 gallon per square yard over the entire surface.
>
> As soon as practicable after this tar application had been made, the road machine passed over the surface, throwing all of the loose material into a windrow. This windrow was worked back and forth across the road until all particles were thoroughly coated...

**Figure 57** Grader on Jordan Pond/Eagle Lake Motor Road, 1940. Photograph from BPR, *Final Construction Report*.

> ...When the materials had been thoroughly mulched in the windrow, the coated chips were redistributed by the road machine over the entire surface so that it presented a uniform cross section. When the appearance of the surface was satisfactory, it was compacted with a road roller

until all of the stone particles had been set.

After the surface had been exposed to traffic for several days to give the tar time to "break" or set, the seal application was made at the rate of one eighth of a gallon per square yard to half of the width of the road.

Immediately after the seal application had been made, an application of chips at the rate of five pounds per square yard was distributed from the tail board of the truck travelling at high speed. The other half of the pavement was then similarly treated.

To insure uniform distribution of the chips, a heavy brush drag and a section of highway wire fencing were drawn over the road behind a truck travelling at high speed. Bare spots were touched up with additional chips spread with hand shovels from a truck. When the surface was satisfactorily covered it was thoroughly rolled. This operation completed the surface treatment of the road.

During more recent years, plant-mixed hot asphalt bituminous concrete has been introduced into the Motor Road System. The only section originally constructed using plant mix was the BPR Project 4A2, which closed the loop in 1958. The older sections have since been repeatedly overlain with plant-mix over the years. This repeated addition of material to the road surface has in many instances changed cross-sectional relationships of the road surface to other character-defining features.

The pavement surface features minimal surface markings, line striping, etc. The greater portion of the Motor Road has only a painted centerline, allowing the vegetated shoulders to define the edges of the roadway. Cadillac Mountain Road, often shrouded in fog, has had white edge striping installed for safety. The rest of the road has escaped the installation of edge striping due to its low accident rate.

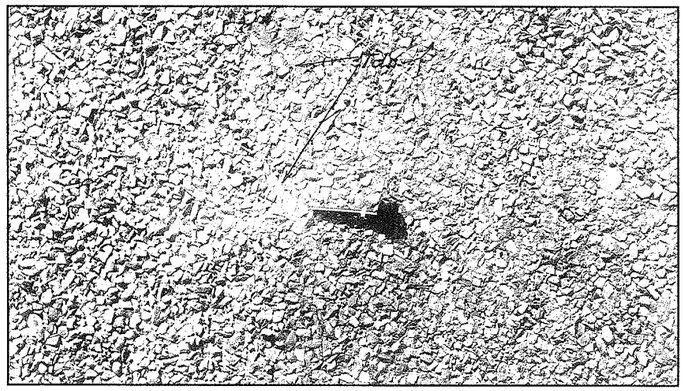

**Figure 58** Texture of early bituminous surface treatment, 1935. Photograph from BPR, *Final Construction Report*.





## DRAINAGE FEATURES

### Masonry Waterways

Wherever the amount of water conveyed in a vegetated ditch was greater than the protection afforded by the roots of the plants, the ditch was historically paved with rubble masonry. Rubble masonry waterway was used exclusively during the Motor Road System's period of significance. The most recent segment of the road which was constructed in 1958 may have the greatest amount of rubble waterway.

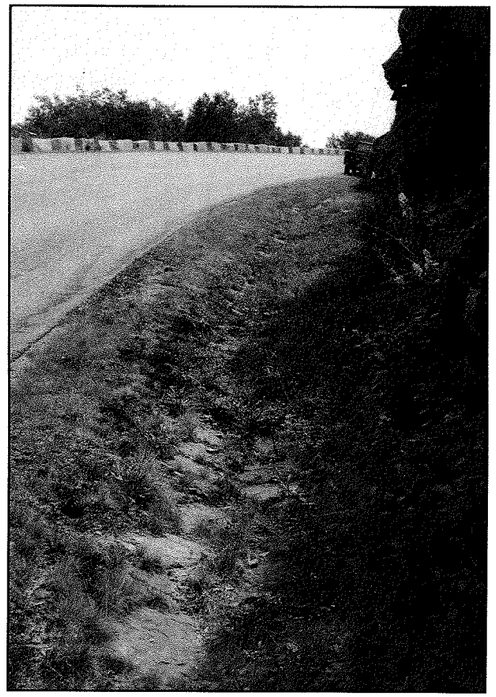

**Figure 59** Rubble masonry waterway, BPR Project 4A2, station 188+00, 1993. Masonry is obscured by vegetation. Photograph by OCLP.

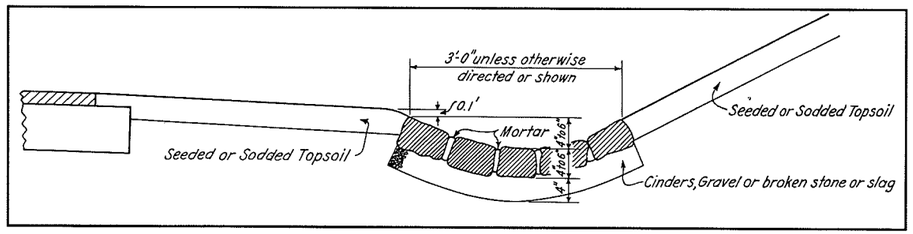


**Figure 60** Historic detail, rubble masonry waterway, 1941. Drawing courtesy FHWA.

## Culverts

A culvert is an assembly between an inlet and an outlet designed to convey stormwater from one side of the road to the other. Examples of stone box culverts exist within the system, however the majority of these features were constructed originally of reinforced concrete pipe.

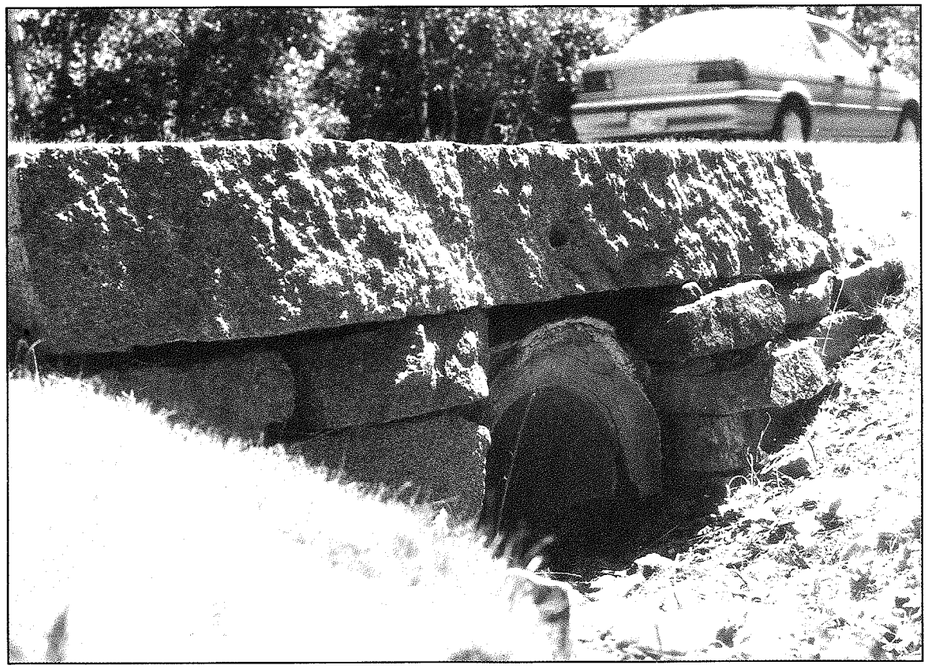

**Figure 61** Reinforced concrete pipe culvert, dry-laid stone headwall, station 114+00, Paradise Hill Road, 1993. Photograph by OCLP.





## Inlets and Outlets

The visible portion of a culvert assembly are its inlets and outlets. The design of these features evolved as the Motor Road System grew. The early portions of the Motor Road featured drainage inlets and outlets constructed exclusively of local stone. Stone was used for both the construction of simple headwalls, and for the fabrication of drop inlets where localized topography demanded them. These inlets and outlets were oftentimes laid up without mortar, and remain as beautiful examples of rustic and appropriate construction.

**Figure 62** A dry-laid stone drop inlet, station 56+90, 1993. Photograph by OCLP.

After the completion of the Kebo Mountain section in 1938, the BPR introduced two modern drop inlet designs, but continued to use stone headwalls in highly visible locations. The selection of any one of these three details was guided by the shape of the roadside margins, shoulder, ditches and embankment. In most instances in post 1940 construction, wherever a modern drop inlet was chosen, it was in an unobtrusive situation and did not compromise the rustic values of the Motor Road System.

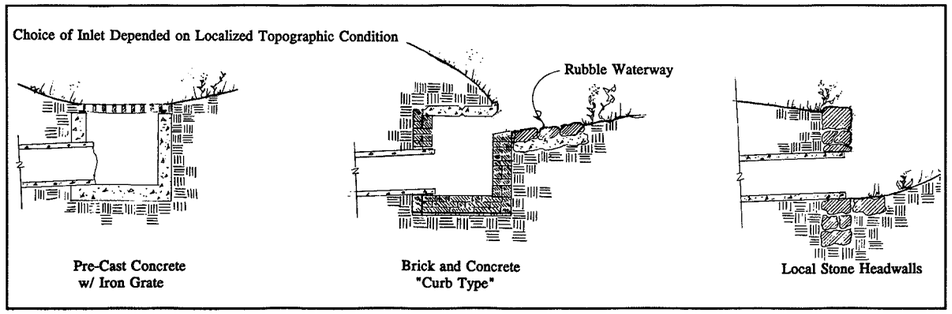


**Figure 63** The variety of post-1940 drainage inlets. Drawing by OCLP.

## Inlets and Outlets

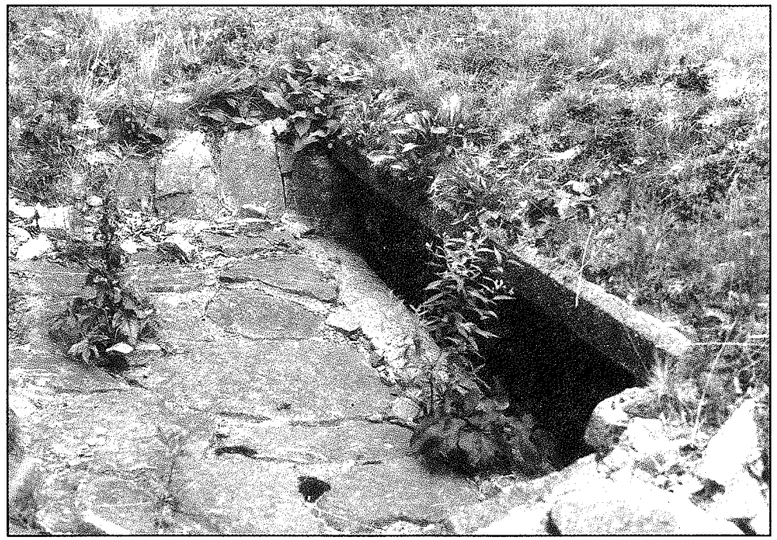

**Figure 64** A post-1940 brick drop-inlet, BPR Project 4A2, station 196+00, 1993. Photograph by OCLP.

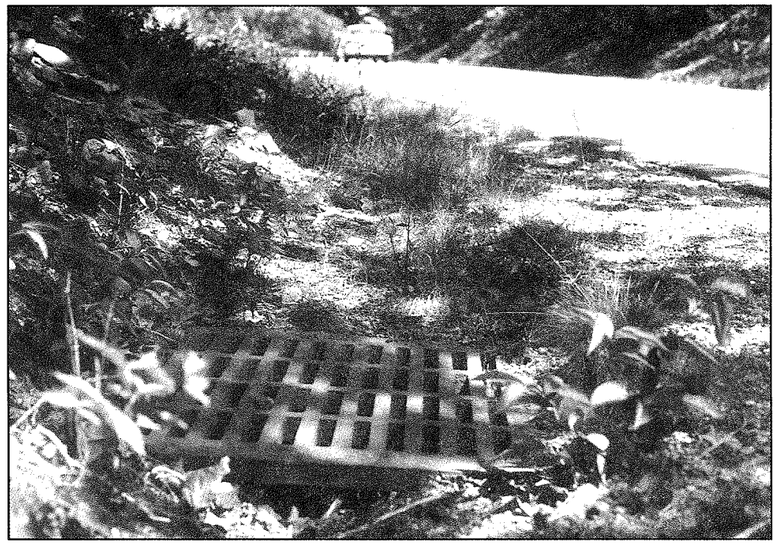

**Figure 65** A post-1940 concrete drop inlet, station 70+00, Paradise Hill Road, 1993. Photograph by OCLP.





# EDGE FEATURES

## Curbing

Like many other features of the early Motor Road, the curbing material used in the first segments tended to be of local natural stone. Reports of the CCC camp at McFarland Mountain suggest that the splitting and tooling of granite curbing was a common work activity. The parking lots on the Ocean Drive segments contain much granite curbing of very short lengths which would be typical of the work of unskilled labor. The curbing material used in the construction of the Cadillac Mountain Road parking area in 1932 is longer in length and of a much higher quality.

**Figure 66** Granite curbing, typical of the Ocean Drive parking lots, station 375+00, 1993. Photograph by OCLP.

During the 1950's, the development projects connected with Mission 66 featured curbing of concrete. This change in materials, while inconsistent with the earlier rustic granite curbing, allows the history and evolution of the Motor Road System to be physically perceived and interpreted. Concrete curbing was in use during the Motor Road's period of significance and what remains is tangible evidence of the systems evolution over time.

Recent projects within the past decade have involved the replacement of areas of concrete curbing with stone. While the intention was to provide a consistent curbing material which was true to the rustic values of the entire system, this new stone curbing is fabricated with sharp edges and smooth surfaces more appropriate to urban conditions, and is not compatible with the historic character of the system.

## Curbing

**Figure 67** Concrete curbing, circa 1958, Precipice parking lot, station 240+00, 1993. Photograph by OCLP.

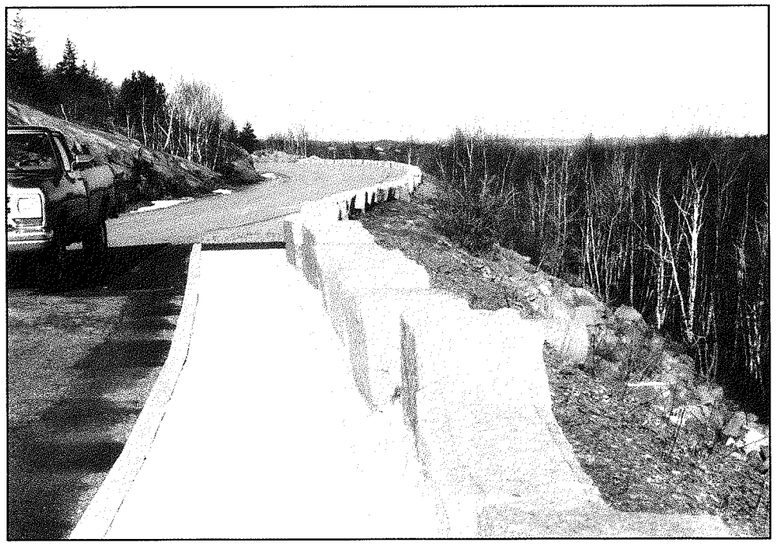

**Figure 68** Champlain Mountain overlook, station 203+00, 1993. This highly finished granite curbing replaced concrete curbing installed in the 1950's. Photograph by OCLP.





## Masonry Medians

Masonry paved medians were installed at a number of scenic overlooks in the 1950's. These medians act as "rumble strips" in providing an auditory warning that the motorist has left the traveled way. The paved medians also provide a psychological sense of separation between the overlook and the roadway. There existence confirms that rustic values were not abandoned during the Mission 66 program.

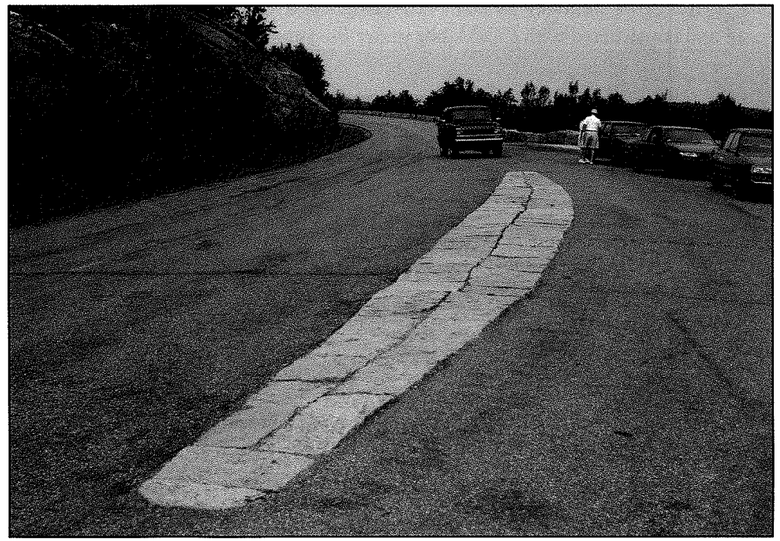

**Figure 69** Masonry paved median, north end of Champlain Mountain, station 204+50, 1993. Photograph by OCLP.

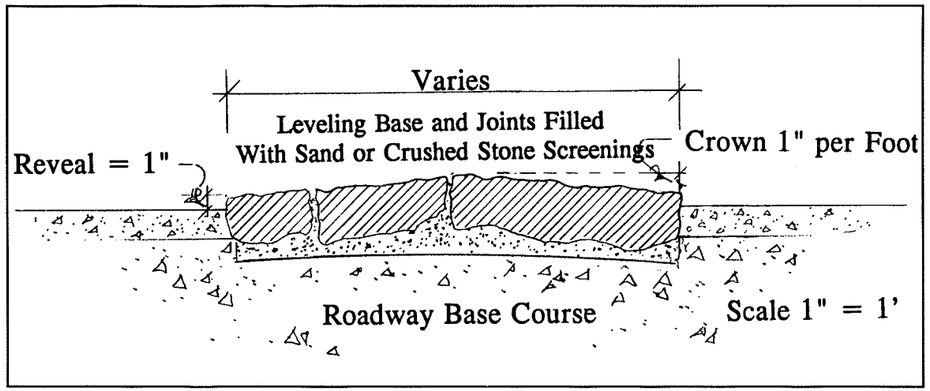


**Figure 70** Masonry paved median, cross-section. Drawing by OCLP.

## Sidewalks, Footpaths and Trails

Often at the edge of a road or parking lot, motorists leave their automobiles and access scenic areas through a system of sidewalks, footpaths and trails that parallel the road. Historically, these pedestrian systems were designed with the same rustic character as the roadway itself.

The Ocean Drive shore path is actually a system of trails which both parallel Ocean Drive and make spurs at right angles to it. This pathway system was designed by Acadia's resident landscape architect, Benjamin Breeze and constructed with CCC labor under the supervision of Superintendent Dorr. George Dorr had considerable experience in trail construction, having personally planned or constructed many of the park's trails even before it had become a National Park. The Ocean Drive path system was constructed much the same way as other paths or trails in the park had been, relying a great deal on hand labor and native materials. The pathway was surfaced with a layer of gravel.

**Figure 71** Ocean Drive shore path, constructed with CCC labor. Station 377+00, 1993. Photograph by OCLP.





Sidewalks which serve the Historic Motor Road System were originally constructed using the same techniques of bituminous surface treatment which was used on the road. This meant that the sidewalks featured a gravel "chip coat" as a final surface. This coarse textured pavement had the advantage of having the appearance of a gravel trail, with greatly enhanced durability. The sidewalks serving the Motor Road have since been either replaced with Portland concrete, or received overlays of modern plant-mix hot asphalt bituminous concrete.

**Figure 72** Bituminous sidewalk at Thunderhole parking area, 1993. Photograph by OCLP.

## SITE DETAILS

### Gates

Small details in any construction project have an additive effect on the whole project. Rockefeller, who provided so much of the vision for the creation of the Historic Motor Road System was clearly concerned with the smallest of details. He wrote in 1938 to Director Cammerer in reference to gates for the park:

> ...unless a definite decision has been reached to let the park be used indefinitely for twenty-four hours a day, the same as town highways, might it not be well to erect a simple gate on the highway at the park boundary near the cemetery so that the public would get accustomed to the idea that the road from that point on was park property and not a public highway? The gate might be left open continuously but its existence would mark the fact of ownership which, without such a reminder, I fear the public will completely overlook. This is merely a suggestion...[78]

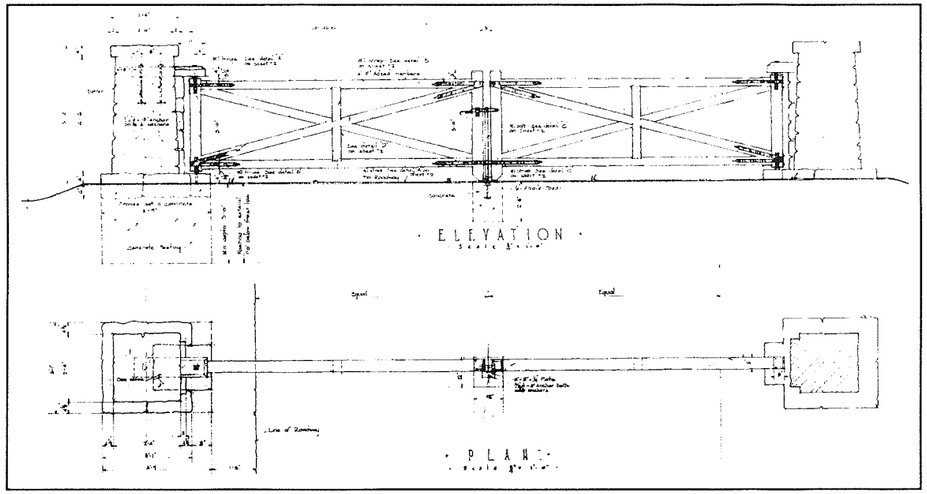


**Figure 73** Rustic gates, designed for Acadia's Motor Road System, 1941. Drawing courtesy National Park Service, Denver Service Center Microfilm Collection.

Typical of the working relationship which Rockefeller enjoyed with the NPS, Director Cammerer responded with instructions to Assistant Superintendent Hadley one week later.

> Mr. Rockefeller made the suggestion that it would be desirable to erect a simple gate on the highway at various park entrances so that the public would get accustomed to the idea that the road from that point on was park property and not a public highway...I think this an excellent idea in connection with all such points as they develop, similar to the installation at both ends of the Jordan Pond Road, although entrance gates of simpler design should be devised. I pointed out one new set of gate posts that was attractive and discussed it with Mr. Breeze and you. Please arrange for such gates for immediate construction, where desirable...[79]





Rockefeller's suggestion resulted in a number of different gate details for different situations throughout the park. Gates were designed for the general access to the Motor Road, and for access to the Carriage Roads. Campground gates, and fire trail gates were also designed and constructed with CCC labor. Today, very few of these rustic gates can be found, having fallen victim to decay or vandalism. The parks gates today are fashioned from lengths of steel pipes, painted brown.


**Figure 74** Contemporary access gate, in place within Acadia's Historic Motor Road System, 1993. Photograph by OCLP.

## Signs

Signs were also details of the Historic Motor Road System which at one time reflected regional traditions and the rustic values aspired to by the entire National Park Service. The directional signage installed on the Motor Road was also a CCC construction project. Its design was an interpretation of many of the vernacular sign posts commonly seen at intersections in the surrounding countryside. Today, none of this rustic signage remains. They have been replaced with modern materials and designs following current standards.

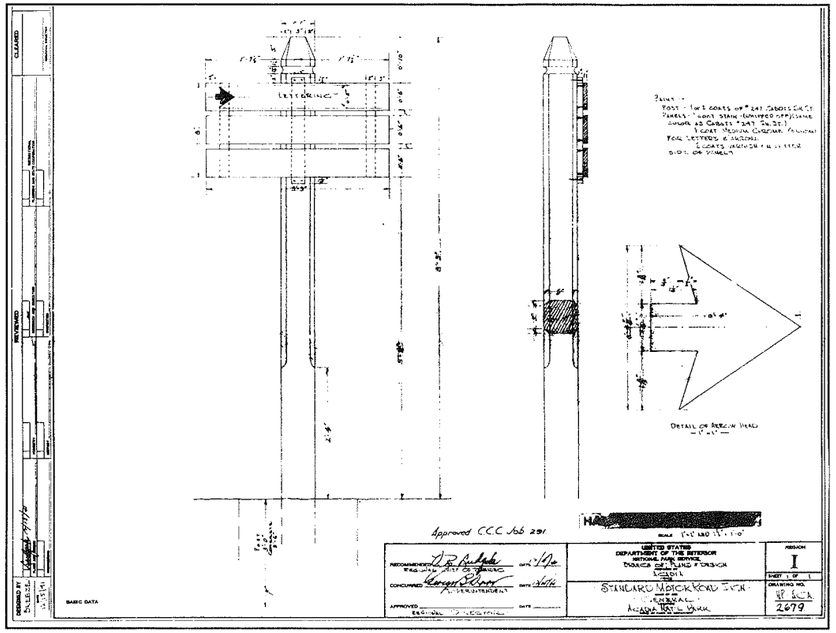


**Figure 75** Historic directional sign detail, designed for Acadia's Motor Road System, 1941. Drawing courtesy National Park Service, Denver Service Center Microfilm Collection.

**Figure 76** A contemporary directional sign, 1993. Photograph by OCLP.





## Fencing

Fencing was another of the site details carried out with CCC labor. The standard fence detail used by the CCC was the "Down East Bunk Rail Fence". This type of fence was commonly in use throughout the region, and could even be seen along the frontage of the "Cottages" on Schooner Head Road. This vernacular fence detail has the unusual and attractive ability to stand with a very limited use of post holes. This is an important consideration given the stony nature of Mount Desert's soil. Today the fencing in use throughout the park is a type of commonplace dowel fencing.

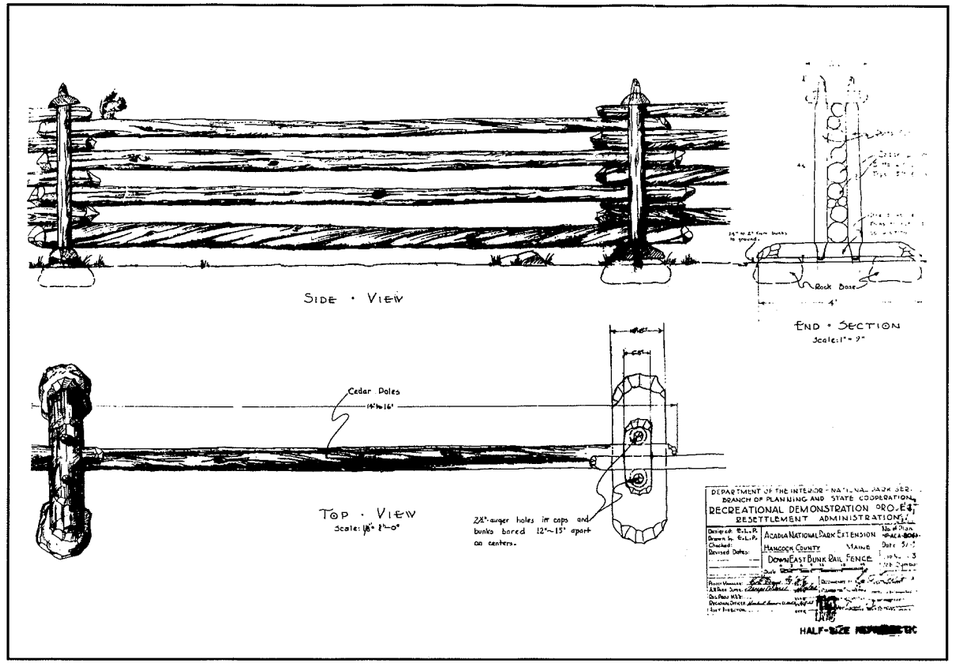


**Figure 77** Fencing detail built with CCC labor, 1936. Drawing courtesy National Park Service, Denver Service Center Microfilm Collection.

## THREATS TO HISTORIC CHARACTER AND INTEGRITY

Over the years, many alterations have been made to the character-defining features of the Historic Motor Road System which compromise the integrity of the entire system. Examined individually, each change may appear quite minor. However, the cumulative effect of all of these minor alterations can be profound. In some cases, entirely new features have been installed which adversely effect the historic character of other features. Among other things, this includes a greater number of larger signs, parking management stones on the road margin, and the reconfiguration of popular historic attractions such as the Thunderhole concourse.

### Informal Pull-offs

In areas where traffic repeatedly pulls off onto the vegetated shoulder, a bare spot is created. An informal pull-off can be defined as a wide portion of shoulder where repeated parking has destroyed the vegetation. This condition typically occurs before and after intersections, at trail heads, and at attractions such as the Beaver Pond. The advent of one-way clockwise traffic in the 1980's created the opportunity to park in the right lane of the two lane road. Although this is encouraged with signs, there appears to be a real psychological resistance to actually doing so. Many of the informal pull-offs were created prior to one-way traffic and may be successfully revegetated. Others though, will always remain as a non-historic features which reflect how the system is now used by the park visitors.

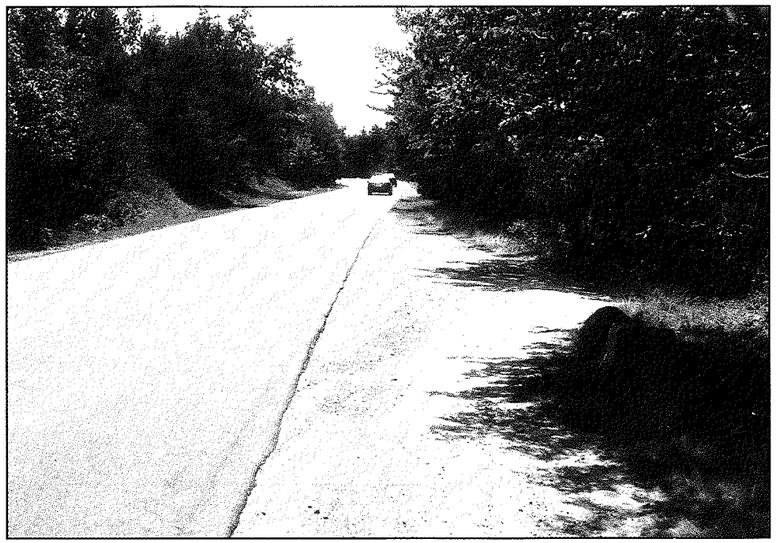

**Figure 78** Informal pull-off, station 24+00, Paradise Hill Road, 1993. Informal pull-offs such as this destroy the road's vegetated shoulder. Photograph by OCLP.





### Parking Management Stones

During the 1970's when visitation increased dramatically at Acadia, informal pull-offs were managed with smaller boulders placed on the road's shoulder. These non-historic stones were installed in an effort to preserve the vegetated shoulder, which is an historic feature. These stones detract from the historic character of the vegetated shoulder, yet remain the most effective and compatible means available to the park for managing parking. These smaller parking management stones are easily distinguished from the historic coping stones, and their installation is easily reversible. With the introduction of one-way traffic, it is possible that many of these stones are no longer necessary.

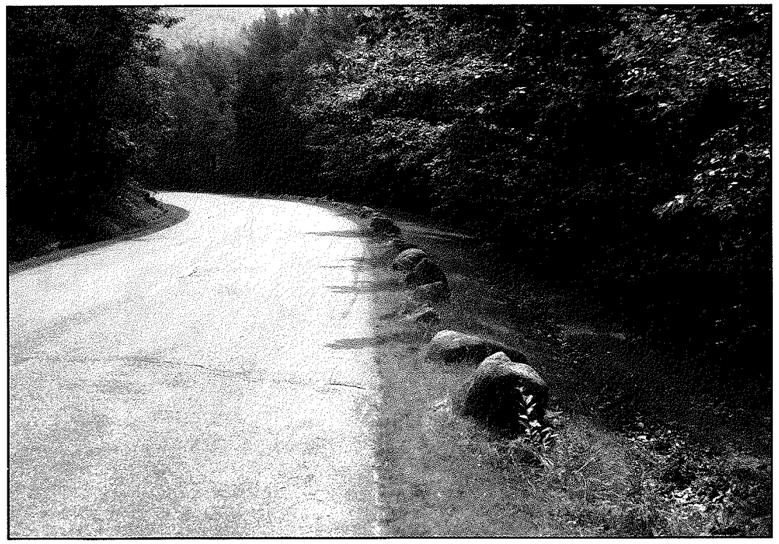

**Figure 79** Parking management stones, near Sieur de Monts Spring, station 155+00, 1993. Photograph by OCLP.

## Road Realignment

During the 1960's, realignment work was undertaken on two segments of roadway which seriously affected the historic integrity of those segments. The first realignment was carried out on the Jordan Pond/Eagle Lake Motor Road. This was the first segment of the system which was completed in 1927. The scope of this project included the widening of the traveled way from 18' to 20' with the addition of spiral transition curves. The higher design speed of the realigned roadway required the elimination of the tight radius curve which brushed the shore of Bubble Pond. At this time, bituminous paved waterway was introduced into the system.

The second realignment was the creation of a "split section" on Paradise Hill Road at the first major overlook south of the Hull's Cove entrance. This is a fine piece of work, and did not destroy the earlier lower alignment, however this project introduced yet more bituminous paved waterway into the Historic Motor Road System.

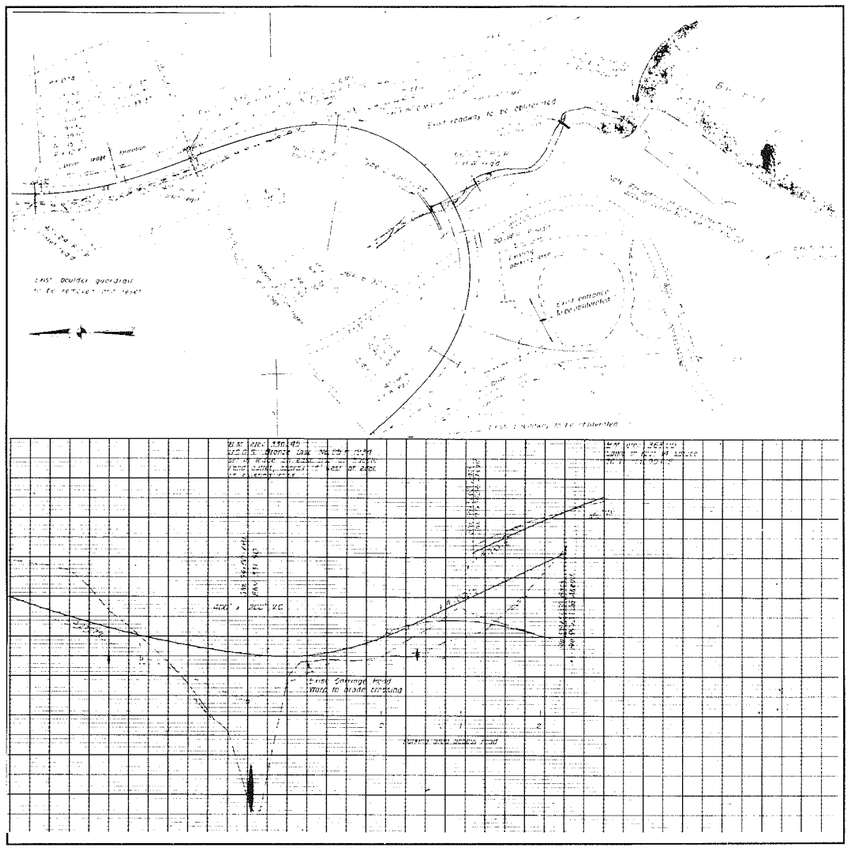

**Figure 80** Road re-alignment at Bubble Pond, 1962. Drawing courtesy of Gladys O'Neil.





## Bituminous Waterway

After the first addition of bituminous waterway was installed shortly after Rockefeller's death, bituminous material became an acceptable solution for eroding ditches. Bituminous paved waterway began to appear throughout the system after the completion of the two realignment projects. By the 1980's, this was the typical details for ditch pavement and this fact led to the pavement of the ditches on Cadillac Mountain Road. Though outside the scope of the proposed FHWA project, the pavement of the Cadillac Mountain Road ditches remains as a serious threat to the historic integrity of the system. Cadillac Mountain Road has historic significance in its own right as one of the first park roads constructed under the inter-bureau agreement between the National Park Service and the Bureau of Public Roads.

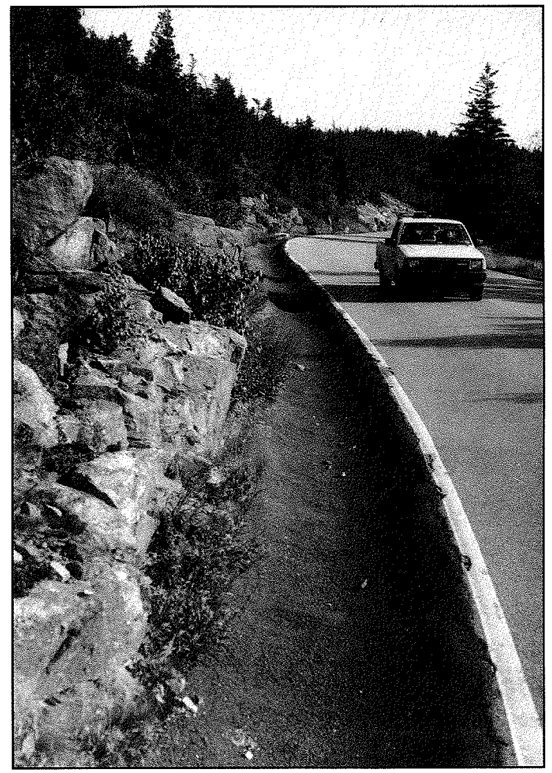

**Figure 81** Bituminous waterway, Cadillac Mountain Road, 1993. Photograph by OCLP.

## Paved Shoulder

The road shoulders of the Historic Motor Road System were designed to complement the rustic values of the entire system. Shoulders were designed for the installation of an aggregate/topsoil mixture which would support the weight of a vehicle and support native vegetation. In limited instances, the shoulder has, regrettably, been paved over with hot mix bituminous concrete. As the un-paved shoulder serves as an important transition zone between pavement surface and ditchline, this practice should not be repeated.

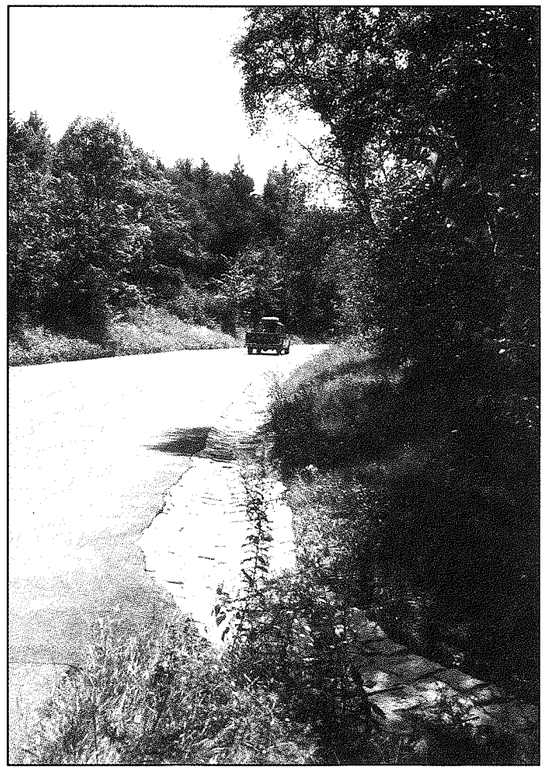

**Figure 82** Paved shoulder, Jordan Pond/Eagle Lake Motor Road, station 960+00, 1993. Photograph by OCLP.





## Alterations to Attractions

Increased park visitation has also increased pressure on attractions along the Historic Motor Road System. The integrity of the park's attractions has been affected by many projects which altered existing historic features. These include alterations to Bear Brook campground, Robin Hood Park, Sieur de Monts Spring, and the Thunderhole concourse.

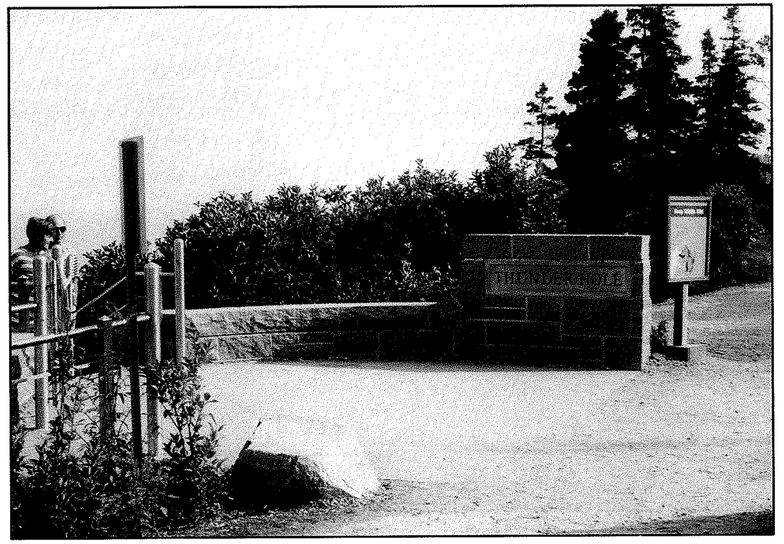


**Figure 83** Recent alterations to the historic Thunderhole concourse, 1993. Photograph by OCLP.

### Competing Land Uses

The Jackson Laboratory has been a neighbor and friend of the park for decades. However the size of the lab has greatly expanded due to phenomenal growth in the field of genetics. This expansion has serious implications to the visual integrity of the park's landscape, in that it impacts historic views.

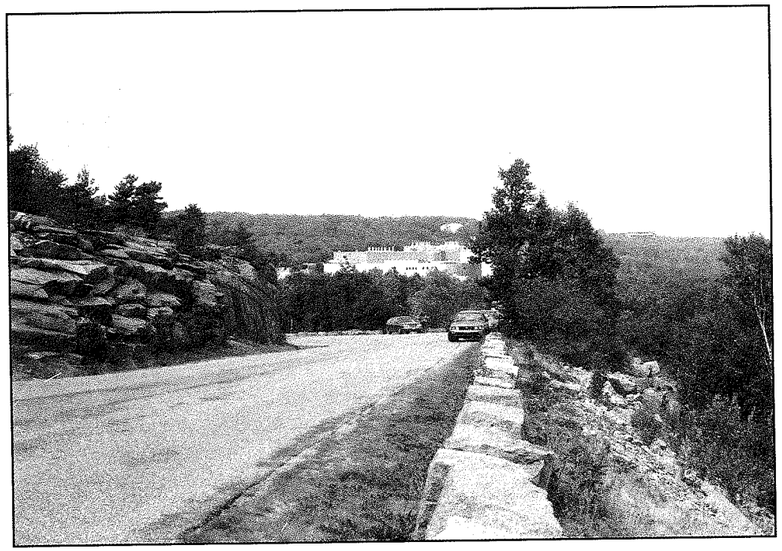

**Figure 84** Jackson Laboratories, from the north end of Champlain Mountain, 1993. Photograph by OCLP.



# GUIDELINES FOR REHABILITATION

## HISTORIC MOTOR ROAD SYSTEM
## ACADIA NATIONAL PARK

### INTRODUCTION

This section addresses recommended revisions to Federal Highways 95% draft drawings for the rehabilitation of the Historic Motor Road, Acadia National Park (FHWA Project # PRA-ACAD-4A10). It includes the following subsections, related to features affected by rehabilitation work: shoulders, ditches, embankments; road surface; drainage features; edge features; and site details. These subsections and the features they include are cross-referenced to the corresponding divisions and sections found in the *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-92* (FHWA 1992). Each subsection begins with a description of the historic condition and a discussion of issues related to the repair of each feature. Recommendations address the specific work in the FHWA plans. In some cases, new details have been provided to modify FHWA typical details to ensure that the work performed is consistent with the *Secretary of the Interior's Standards for the Rehabilitation of Historic Properties* (Appendix B). Character-defining features that are not affected by the project are not addressed in this section.

An annotated set of the 95% drawings accompanies this report.

## SHOULDERS, DITCHES, AND EMBANKMENTS

(Refer to FHWA specifications Division 200: Earthwork, Section 204: Excavation and Embankment and Division 300: Aggregate Courses, Section 303: Road Reconditioning and Section 305: Aggregate-Topsoil Course; and Division 600: Incidental Construction, Section 625: Turf Establishment)

### 1. Road Section

History: The Motor Road System was constructed over a period of thirty-five years. In reality, there is no "typical" section for the entire system. Each segment of the road has its own characteristics and features, representing a stage in the evolution of system as a whole (See Figure(s) 38, 39, 40, 41, 42, 43).

Issues: Proposed reconditioning of shoulders, ditches and embankments, and re-establishment of crown within the scope of the proposed project makes use of a contemporary "typical section," and does not address the original design of the various historic road segments. This difference between the existing historic feature and alterations proposed by FHWA would adversely affect the integrity of the Motor Road System.

Recommendations: The proposed work should be altered to reflect the characteristics of the historic sectional relationships of the road wherever possible. This includes the re-establishment of the original crown and shoulder where feasible. Many instances occur within the older segments of the system which are narrower than the twenty foot traveled way shown in the contemporary plans. It is of concern that these narrower sections not be widened to conform with any "typical" section as a part of this or of future projects.





### 2. Ditch/bank Reconditioning

History: The vegetated ditches and embankments of the road's margins are an important character-defining feature of the roadway. Great attention was given to the landscaping of the road margins by Rockefeller's crews on construction he directly financed. This was also true of the CCC work during the New Deal. The intent was always to minimize the visual impact of the road construction and to allow the road to blend in with the landscape.

Issues: FHWA construction documents call for reconditioning of the shoulder, or the shoulder and ditch. The plans include one typical section for this work. This would produce a more uniform built section than existed historically.

Recommendations: Ditch and shoulder work should only be undertaken if erosion is present, or in the event of the documented drainage failure of a ditch. When these conditions are present, work should proceed using the historic road cross-section as a guide (Figure(s) 38, 39, 40, 41, 42, 43).

The following are areas where reconditioning is not recommended:

STA 042+00 to 043+80 Left (Loop Road)
STA 40+25 to 43+80 Right (Loop Road)
STA 069+35 to 077+85 (Loop Road)
STA 299+60 to 309+10 (Loop Road)

The ditch and embankment reconditioning at stations 57+00 to 76+85, on the right side of the roadway, requires a site-specific solution to minimize alteration of the vegetated embankment. This part of the Kebo Mountain is notable for its unstable, gravelly soils. When these soils were encountered in 1938 during the segment's construction, a change order for the construction of a dry-laid stone retaining wall was required to hold the soil in place. The work proposed by FHWA could result in the destruction in places of up to a thirty foot width of wooded slope along the roadside. The work from station 57+00 to 69+35 is unquestionably necessary and should be pursued. Between these two stations, the slope should by taken back to a stable angle and then re-landscaped. The last 800 feet of the proposed work however, does not appear to be necessary.

Past station 69+35 the backslope of the embankment is quite stable and supports a variety of native plants. Here, the shoulder and ditch reconditioning should take place within the confines of the pavement edge and the existing stable embankment.

Cross-sections which show the impact of the proposed ditch and bank reconditioning have been inserted into the annotated plans which accompany this report. FHWA should review these cross sections and consider alternatives to minimize the impact on the existing vegetation of the shoulder, ditch and embankment. Every effort should be made to address erosion through grading and revegetation with appropriate native plant material. If an engineered solution, such as a new retaining wall is required, additional review will be necessary.

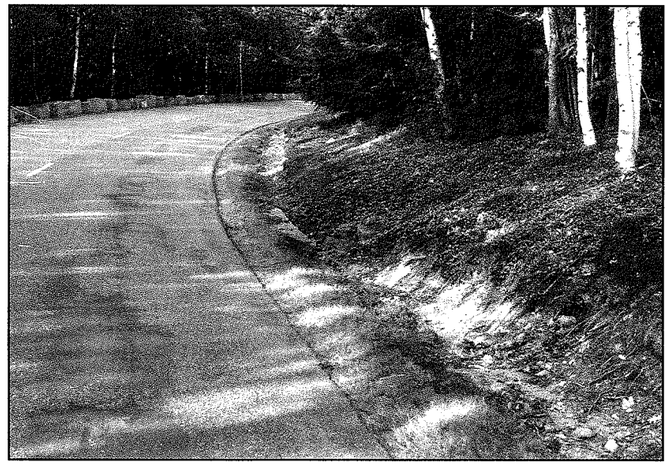

**Figure 85** Kebo Mountain Road, station 60+00, 1993. Gravelly soils are shown eroding off the embankment. Photograph by OCLP.

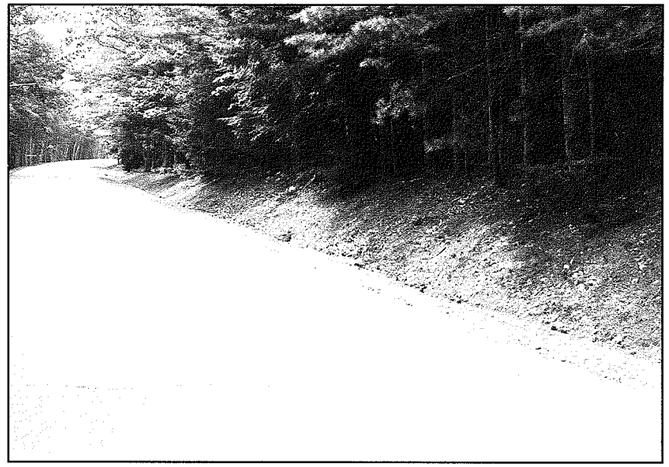

**Figure 86** Kebo Mountain Road, station 69+35, 1993. Showing the stable, well vegetated embankment. Photograph by OCLP.





## 3. Treatment of Historic Coping Stones

History: Coping stones were used historically as a physical barrier between the road and steep side slopes. They were placed on the shoulder, where fills are greater than three feet with a slope greater than 1.5 to 1. The character of the stones varies greatly depending on the history of each road segment and the phase of original construction.

Issues: In some areas, the historic spacing has been altered unintentionally. For example, many of the coping stones on the Kebo Mountain segment have rolled down the embankment due to vandalism and deterioration of the narrow shoulder. Thus, the historic spacing of the coping stones was much narrower than it is at present. FHWA work proposes removing and resetting historic coping stones in several areas. The rehabilitation of the carriage road system at Acadia National Park necessitated specifications for the handling of the coping stones during construction so that they are not damaged.

Recommendations: It is important that the work of resetting the historic coping stones be carried out in such a way that the historic relationship between the stones and the road surface is retained. To ensure this, groups of stones must be kept together so that their distinguishing character is still discernable. The following procedure should be added to FHWA specifications for the handling and resetting of the historic coping stones:

1. Mark road surface to indicate the beginning and end of the stones to be reset.

2. Measure each gap between stones; divide total of gap dimensions by the number of gaps to obtain an average spacing.

3. Lift stones with industrial webbing which will not scratch the surface and expose unweathered granite.

4. Prepare shoulder for resetting stones. Stones will be replaced into a 6" deep channel.

5. Replace stones into 6" channel using the average spacing and beginning and ending at the marks on the road surface.

6. Hand grade between stones.

7. Where feasible, the historic coping stones should not be removed to a staging area while the shoulder is prepared. There is a risk of losing the relationship between groups of stones and specific road segments.

## 4. Parking Management Stones

History: Smaller stones, used to discourage parking on the shoulder have been placed sporadically along the Motor Road beginning in the 1970's. These stones are not historic features.

Issues: While the parking management stones are an excellent strategy for controlling parking along the shoulder, they were not used historically as a parking management tool. Their use has been made necessary due to an ever increasing volume of park visitors. Unfortunately, the parking management stones compromise the historic character of the vegetated shoulder. Parking management stones also create a confusing juxtaposition of historic and contemporary features.

Recommendations: Many of the parking management stones were installed during the time when the "Loop Road" was managed for its original two way traffic pattern. Since the 1980's when clockwise one-way traffic was introduced, parking has been permitted on the right lane of the road surface.

Acadia National Park has re-evaluated the need for all existing parking management stones. Appendix A, lists the revised locations for parking management stones as identified by the park. As indicated, some stones may no longer be necessary on the one way portions of the Motor Road. Wherever shoulder work is required, any existing parking management stones should be removed and not reinstalled if so indicated in Appendix A.

New stones, which are still required along Ocean Drive and beside the Beaver Pool will be installed by the park and will conform to the specifications in Appendix A. This will ensure that these parking management stones are both functional and distinguishable from the historic coping stones.

Rectilinear coping stones of historic dimensions are improperly located at stations: 105+40 to 108+25. These coping stones run along the edge of the Kebo Golf Course, and were placed there after the Motor Road's period of significance. These stones should be moved to storage, and this stretch of shoulder treated with parking management stones as specified in Appendix A.

Rectilinear coping stones also appear in a non-historic location on Paradise Hill Road. These stones appear at stations: 81+35 to 84+20 right, and 82+65 to 83+80 left. It is very likely that these stones were originally located at stations: 90+50 to 92+59 right, and 91+00 to 93+10 left of the circuit portion of the Motor Road. Within the scope of the proposed project, it is not recommended that the coping stones in the non-historic location on Paradise Hill Road be removed.





However, if they are removed in the future, they should be re-installed on the fill section on the Kebo Mountain Road from which they came. At that time, if protection of the shoulder on this section of Paradise Hill Road is necessary, parking management stones should be installed which meet the specification in Appendix A.

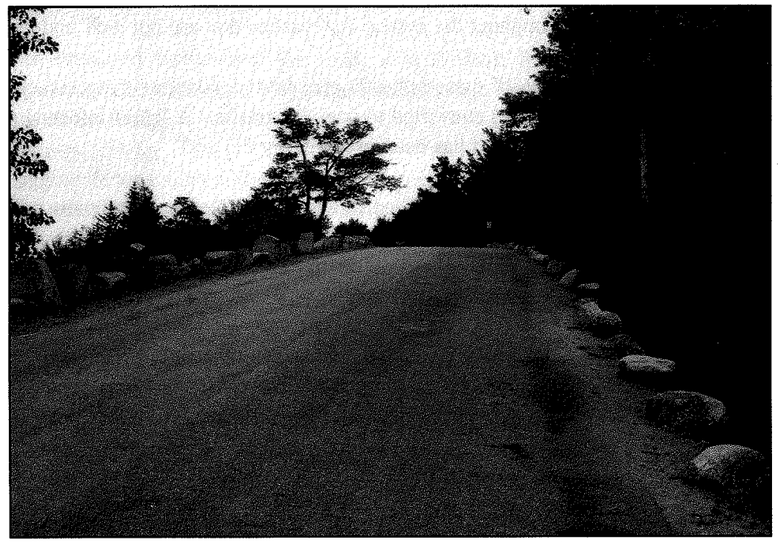

**Figure 87** Parking management stones, on right, station 315+00, 1993. Parking management stones should be distinguishable from historic coping stones. Photograph by OCLP.

## 5. Informal Pull-Offs

History: Informal pull-offs have been created by many motorists pulling off onto the shoulder at the same location. This in time destroys the vegetation, and a bare gravel surface remains. These informal pull-offs typically occur before and after intersections, at hiking trailheads, and at attractions such as the Beaver Pond. Other pull-offs exist throughout the system for reasons that are not well understood.

Issues: Many of these pull-offs may be redundant or unnecessary now that the Loop Road has been converted to one-way traffic. A list of informal pull-offs to be closed and obliterated has been prepared by the park.

Recommendations: Pull-offs to be closed should be scarified to destroy any potential slip-plane, covered with an aggregate topsoil mixture, then reseeded with the NPS/SCS Acadia native plant mix. Fixed object markers are to placed on the edge of the pavement until vegetation is well established.

Station by station instructions for the retention/removal of specific informal pull-offs have been prepared by the park. These instructions appear in Appendix A of this documentation and should be consulted by FHWA prior to the preparation of final construction plans.





## 6. Aggregate Topsoil Course

History: A mixture of topsoil and aggregate was used historically on the shoulder to support vegetation and at the same time be stable enough to support the weight of a vehicle should it pull-off the road surface. The historic mixture varied from 50% aggregate - 50% topsoil to 75% aggregate - 25% topsoil.

Issues: Due to increased traffic over the road, it is difficult for vegetation to become established on the shoulder. Vegetated shoulders are important character-defining feature of the road.

Recommendations: The aggregate topsoil should be tested for optimum pH and presence or absence of toxins, salts, which would inhibit healthy vegetative growth. Fertilizer may be incorporated into the mix before placement, to facilitate re-establishment of the vegetated shoulder.

## 7. Vegetation Re-establishment

History: The exposed ground left after road construction was historically re-seeded with common grass species to serve as a nurse crop until the native vegetation became established. The shoulders and embankments were never intended to be managed to maintain a monocultural stand of grasses. Instead, a diversity of wildflowers and native shrubs were encouraged.

Issues: Ditch and shoulder and embankment reconditioning will create considerable sections of bare ground, requiring revegetation. The project specifications call for up to ten acres of turf re-establishment. Through the cooperative agreement with the Soil Conservation Service (SCS), the park has developed a native seed mixture to aid in the re-establishment of native grasses and plants to heavily trafficked areas.

Recommendations: In areas where an existing embankment is to be reconditioned, the existing vegetative cover, organic matter, duff layer, etc., should be removed to the top of the reconditioned slope for storage. The regrading should then take place and then reseeded. The material stored at the top of the slope should then be raked down over the newly reseeded surface to serve as a mulch. This technique effectively preserves a pool of native vegetative material and the seeds associated with it. This helps to speed the re-introduction of native species to a cut slope.

The standard seed mixture planned for use in the FHWA work should be changed to reflect the SCS mix currently being prepared for the park. Once reseeding is completed, the shoulders should be temporarily protected using fixed object markers.

The native plants being propagated under the NPS/SCS inter-bureau agreement for Acadia National Park are listed below:

| COMMON NAME | SCIENTIFIC NAME |
|---|---|
| **Grasses** | |
| Poverty Grass | *Danthonia spicata* |
| Common Hairgrass | *Deschampsia flexuosa* |
| Red Fescue | *Festuca rubra* |
| **Forbs** | |
| Field Pussytoes | *Antennaria neglecta* |
| Wild Sarsparilla | *Aralia nudicaulis* |
| Large-leaved Aster | *Aster macrophyllus* |
| New York Aster | *Aster novi-belgii* |
| Flat-Topped Aster | *Aster unbellatus* |
| Hay Scented Fern | *Dennstaedtia puncritobula* |
| Canada Goldenrod | *Solidago canadensis* |
| Downy Goldenrod | *Solidago puberula* |





| | |
|---|---|
| Rough-Stemmed Goldenrod | *Solidago rugosa* |
| Yellow Rattle | *Rhinanthus crista-galli* |
| **Shrubs** | |
| Bunchberry Dogwood | *Cornus candensis* |
| Bayberry | *Myrica pennsylvanica* |
| Rhodora | *Rhododendron canadense* |
| Sheep Laurel | *Kalmia angustifolia* |
| Lowbush Blueberry | *Vaccinium angustifolium* |
| Dwarf Juniper | *Juniperus communis* |
| Black Huckleberry | *Gaylussachia baccata* |
| Wild Raisin | *Viburnum cassinoides* |
| Winterberry Holly | *Ilex verticillata* |
| **Trees** | |
| Red Maple | *Acer rubrum* |
| Shadbush | *Amelanchier spp.* |
| White Birch | *Betula papyrifera* |
| White Pine | *Pinus strobus* |
| Red Spruce | *Picea rubens* |

A poor growing season has produced a limited supply of the species listed above. It is fairly likely that there will not be sufficient seed or seedlings available for the entire scope of the proposed work. Since Red Fescue is the only one of the native grasses listed that is commercially available, it should be substituted for the mix of grasses presently appearing in the specifications package for the project, and used to supplement the SCS mix.

# ROAD SURFACE

(Refer to FHWA specifications Division 400: Asphalt Pavements and Surface Treatments, Sections 401 through 409, Division 700: Materials Section 718: Traffic Signing and Marking Material)

## 1. Wearing Course

History: The historic pavement used for the Motor Road System was a bituminous surface, consisting of a layering of aggregate and asphaltic coatings, featuring a final "chip coat." This chip coat consisted of a layer of uncoated aggregate which gave the road surface the color of the raw stone.

Issues: The aggregates used in the historic pavement and chip coat were of a larger sieve size than what is presently specified in modern hot-mix bituminous concrete. This larger sieve size gave the final surface a coarse, pebbled texture, well-suited to scenic drives with low-speed traffic. With the advent of modern hot-mix bituminous concrete, the Motor Road has received a series of overlays, which have altered the character of the original road surface. The contemporary road surface is typically of a finer texture than that of the historic surface.

Recommendations: Two alternatives have been considered for the treatment of the road surface. The first alternative is the addition of a course aggregate chip-coat wearing course composed of native stone to create a rough surface similar to what existed historically. This solution is the most consistent with the historic character of the road. Unfortunately, it is possible that the existing 35 mph speed limit, and heavy traffic would result in seepage of the asphaltic prime coat to the surface, creating two black stripes down the surface of the road. Furthermore, this solution is not practical because a chip-coat surface does not last as long as modern hot mix bituminous concrete, and requires greater maintenance throughout its life span.

The second, and preferred, alternative is to revise the composition of aggregate material making up the hot mix bituminous concrete. This solution allows for a more "rustic" appearance which more closely resembles the historic surface, but is also durable and easy to maintain. The following table compares aggregate composition from three different specification, including the historic mix originally used on the Acadia Motor Road.





**Comparison of Grading Bands**
**Dense Graded Aggregates**

| | Percent Passing | | |
|---|---|---|---|
| Sieve Size | Historic Mix | AASHTO "D" | Maine DOT "C" |
| 3/4" | 100 | 100 | 100 |
| 1/2" | 83 | 97-100 | 80-100 |
| 3/8" | 50 | - | 65-100 |
| #4 | 6 | 57-69 | 40-70 |
| #8 | - | 41-49 | 26-52 |
| #16 | - | - | 17-40 |
| #30 | - | 22-30 | 10-30 |
| #50 | - | 13-21 | 7-22 |
| #100 | - | - | 4-14 |
| #200 | - | 3-8 | 2-7 |

This table illustrates that the Maine Department of Transportation (DOT) "C" classification is more similar to the historic mix than the AASHTO "D" specifications. The Maine DOT mix has been developed specifically for this region, and is presently the primary mixture used on most of Maine's state highways.

For the proposed Project PRA-ACAD 4A10, the specifications should be altered to require the "state alternate". Since this grading band is quite broad in the larger aggregate sizes, it is appropriate to establish targets for these larger sieve sizes. The percentage of the aggregate content which is greater than 3/8" in size is crucial for a mix which approaches the historic characteristics of the road surface.

**Recommended Aggregate Grading Band**
**for Dense Graded Hot Asphalt Concrete**

Based on State of Maine Department of Transportation's Grading Class "C"

| Sieve Size | Passing % | Mix Targets |
|---|---|---|
| 3/4" | 100 | - |
| 1/2" | 80-100 | 15% Min. Retained on 1/2" Screen |
| 3/8" | 65-100 | 15% Min. Retained on 3/8" Screen |
| #4 | 40-70 | 20% Min. Retained on #4 Screen |
| #8 | 26-52 | - |
| #16 | 17-40 | - |
| #30 | 10-30 | - |
| #50 | 7-22 | - |
| #100 | 4-14 | - |
| #200 | 2-7 | - |

This aggregate grading band sets targets for the larger aggregate sizes yet remains within the specifications set out by Maine's DOT for its Class "C". This surface is the most common surface in use within Maine's State Highway System. The "bonier" mixture described by the target values specifies a mix where fifty percent of the aggregate pieces are equal or greater than 3/8" in size. This is of a significantly finer texture than the historic mix, however it serves as a compromise between the coarse textured historic mix and the finer textured aggregates currently being specified. Since the proposed mix, shown in the table above, is based on a state "standard," the use of this blend should present no difficulties in supply for initial construction or future repair work.

While the aggregate's color cannot be historically determined for the "Loop Road" as it can be for Cadillac Mountain Road, the color is nevertheless an important consideration. For the purpose of the proposed project, it will suffice to match the same color aggregate currently in place in the system. In no instance would it be desirable to introduce a lighter colored aggregate than is presently in place on the Historic Motor Road System.





## 2. Pavement Milling

History: Milling away excess thicknesses of bituminous pavement is a relatively new technology. This treatment offers the opportunity to restore the original shape of the road section, and its relation to edge materials, without full reconstruction.

Issues: The employment of pavement milling is included within the scope of the proposed project at reconstruction transitions, bridges, and limited other areas. Additional milling may be required in order to retain the reveal on several edge features.

Recommendations: Ideally, pavement milling would be undertaken to re-establish the roads original cross-section and profile, which has become distorted by years of repeated maintenance overlays. This is not feasible due to issues of hazardous waste disposal and cost. Instead, pavement milling should be expanded to include situations where the historic reveal of edge materials has been obscured, or where the slope of the shoulder to meet the new edge of pavement would exceed eight percent. These conditions are outlined in the annotated plans accompanying this report.

At stations 365+00 to 366+85 of the proposed project, a shore path which was built by the CCC in the 1930's follows the line of a curving masonry wall built in the 1890's when Bar Harbor built the first scenic Ocean Drive. Repeated overlay has reduced the reveal of the barrier curb separating the shore path from the traveled way to 0 to 2 inches. The present construction plans call for another overlay which will raise the road surface flush with the top of the curb. This is unacceptable because it will destroy the relationship between the road surface and curb.

In order to retain the historic reveal, and mitigate shoulder erosion, additional milling should be undertaken at the following stations:

184+50 to 190+00
202+20 to 205+10
365+00 to 366+85
33+00 to 37+30 P. Hill
97+00 to 100+00 P. Hill

## 2. Pavement Milling

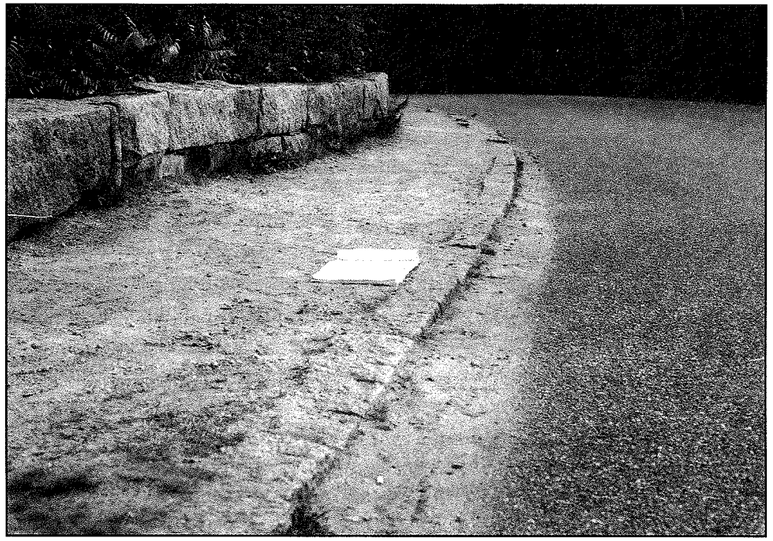

**Figure 88** Historic curb reveal is threatened by additional bituminous overlay, station 365+50, 1993. Photograph by OCLP.

**Figure 89** A steepened shoulder, caused by repeated overlay of bituminous material, station 188+00, 1993. A shoulder which is too steep is difficult to maintain. Photograph by OCLP.





## 3. Pavement Striping

History: During the early years of Acadia's Motor Road System, slower speeds, less traffic, and deference to rustic values kept pavement markings to a minimum. The bituminous surface treatment common to roads of this period made the painting of lines on the coarse gravel surface impractical and difficult to maintain. Painted lines became more widespread after the introduction of hot-mix bituminous concrete, which afforded a smoother surface to accept the painted markings. New types of pavement markings have recently been perfected which use a thermo-plastic material. This new material does not presently exist within the Motor Road System.

Issues: Only centerline striping is proposed within the scope of the proposed project. Edge striping has not been included in the project due to the fact that it presently does not exist, coupled with the road's low accident rate. During the June '93 "plan in hand" review, there had been some discussion as to the advisability of using thermoplastic striping material rather than conventional traffic paint. The park expressed reservations to using this newer material due to its higher cost and unknown durability in Mount Desert Island's harsh winter climate.

Recommendations: ■ <u>Edge Striping</u>

Edge striping should be avoided for this and for future projects. The painting of a sharply delineated edge line for the road runs counter to the designer's original intent that the road blend with the landscape. Ideally, the vegetated shoulder provides all the edge that is necessary, allowing the road surface to visually blend with the adjacent landscape.

■ <u>Paint vs. Thermoplastic Centerlines</u>

Thermo-plastic road marking material should not be introduced into the Historic Motor Road System as a part of this or future projects. Conventional traffic paint should be specified.

## DRAINAGE FEATURES

(Refer to FHWA specifications Division 600: Incidental Construction Section 602: Culverts and Drains, Section 604: Manholes, Inlets, and Catch Basins Section 607: Cleaning, Reconditioning, and Repairing Existing Drainage Structures Section 608: Paved Waterway Division 700: Material Section 705: Rock)

### 1. Culverts

History: A culvert is an assembly between an inlet and an outlet designed to convey stormwater, or a live stream, from one side of the road to the other. The oldest sections of road were built using stone box culverts as the primary type of culvert. Over the years however, most of these early stone box culverts have been replaced with reinforced concrete pipe (RCP). Later segments of roadway were constructed using RCP as the original material.

Issues: Replacement in kind of RCP will not affect the integrity of the road in most instances. However, at station 309+40 an ambiguous condition exists which calls for an alternate approach.

Recommendations: On the construction documents, work is called for at station 309+40 to replace a CMP (corrugated metal pipe) culvert with a culvert of RCP. Field examination short of excavation of this proposed work is inconclusive in confirming the true condition and construction of this culvert. This area is in the vicinity of the original scenic Ocean Drive built in the 1890's. This culvert's inlet and outlets are obscured by soil and vegetation which may hide an original stone box culvert. The road surface shows no outward signs of culvert failure. It is recommended that the inlet and outlet of this culvert be cleaned and excavated and the nature of the original construction determined before this feature is destroyed. If field investigation does reveal a stone box culvert, repairs should be made to preserve the historic feature. In any event, the existing dry laid masonry inlets and outlets should be re-laid to re-establish their original condition. The multi-trunked maple tree encroaching upon the inlet should be removed.





### 2. Inlets/Outlets

History: Prior to 1940, headwalls for inlets and outlets and catch basins were made exclusively of local stone. After 1940, a variety of inlet types were employed depending upon the localized topography of the roadside. In these later segments, it is not uncommon to observe original brick, concrete or stone inlets used within yards of one another.

Issues: The present construction documents call for:

- The removal and reset of existing stone headwalls.
- The construction of new headwalls where none have previously existed.
- The replacement of two failing post-1940 brick headwalls with concrete headwalls faced with stone.

These two brick headwalls are located at stations 228+50 and 238+00. They are only a small portion of the dozens of similar inlet structures installed on post-1940 segments. The original choice of this particular inlet design was ill-suited to the localized topography of the shoulder and ditch.

Recommendations: ■ Existing Headwalls:

Existing headwalls to be removed and reset due to culvert work, or merely reset due to slippage of the stones, should be replaced using the same stones found in the original feature. Experienced stone masons should be employed for this work. Mortared headwalls should be remortared. Dry laid headwalls should be re-laid without mortar. The stones removed from the headwall should be laid out on a tarpaulin near the work site, with no mixing of stones from other headwalls taking place.

## Inlets/Outlets Continued

■ Construction of New Stone Headwalls:

Where headwalls have been found to be necessary where none have existed previously, these headwalls should be constructed according to the detail provided. See Figure 90. This new feature will be compatible with the rustic character of the Historic Motor Road System, yet distinguishable from the historic headwall features.

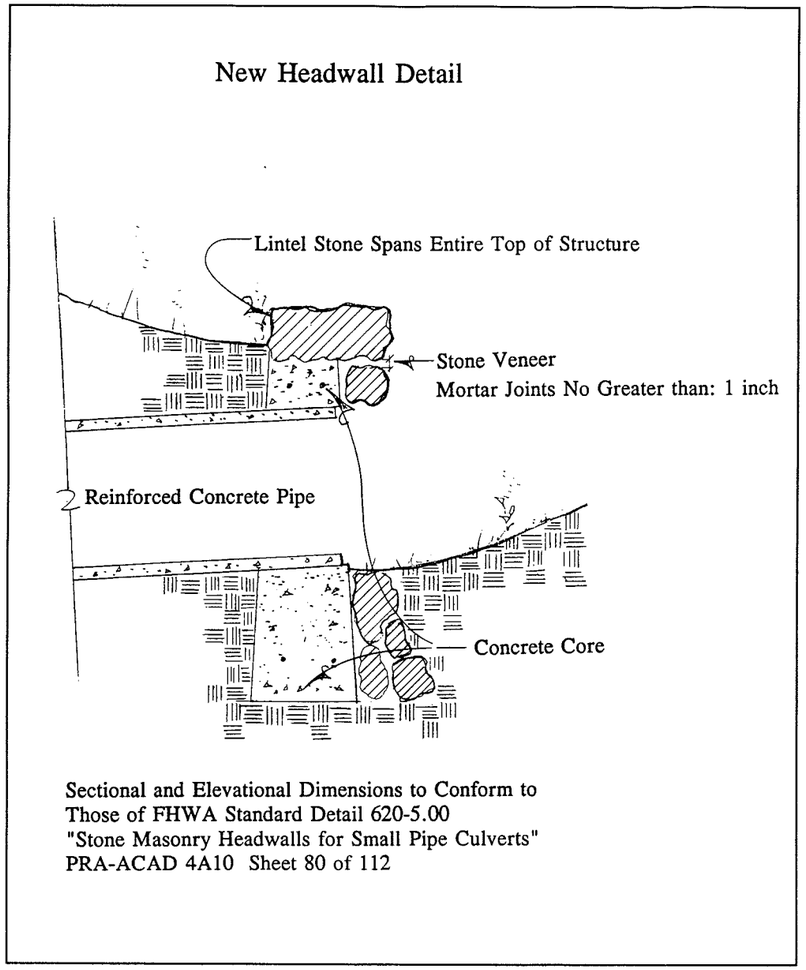


**Figure 90** New headwall detail to be compatible with rustic character of the road, yet distinguishable from historic headwall features. Drawing by OCLP.





## Inlets/Outlets Continued

■ Replacement of Two Failing Brick Headwalls with Concrete Faced with Stone

Where the two failing post-1940 brick headwalls are to be replaced, it is recommended that this be carried out using the same detail provided for the construction of new headwalls.

A stone headwall at these two specific locations is more functionally appropriate due to topography, and is consistent with the nearby stone headwall at station 232+40. Since stone, brick, and concrete were used alternately on the post-1940 segments, the replacement of these two brick units with inlets of stone does not impact upon the historic character of the roadway.

**Figure 91** One of the two failing brick headwalls to be replaced, station 228+50, 1993. Photograph by OCLP.

## 3. Riprap

History: Riprap is a large size angular aggregate typically used to stabilize erodible soils on steep banks and stream channels. Its angular quality allows the material to key together to form a relatively stable surface.

Issues: From one to four tons of Class II riprap is specified for placement at the outlets of various culverts throughout the project. Although this would undoubtably be effective in eliminating erosion, the minor erosion present at these outlets could be controlled with a solution involving much less visual impact.

Recommendations: Rounded stones from glacial deposits should be substituted in similar quantities for the proposed Class II riprap. These rounded glacial stones are common to the region and should be placed individually in a naturalistic manner at the culvert outlets. This solution is more in keeping with the rustic intent of the Motor Road System's designers. These rounded stones will adequately perform the work of diminishing the hydraulic force of the culvert outwash with greatly reduced visual impact.





## 4. Paved waterways

History: Paved waterway is the hardening of the surfaces of a roadside ditch, where it is known that velocities of water will, or have in the past, erode the soil. Generally, wherever water flows at speeds greater than 4 feet per second, soil erosion will occur. Prior to 1962, when it was necessary to pave ditch surfaces within Acadia National Park's Motor Road System, ditch pavement was constructed of rubble masonry. The exception to this rule was the 500' demonstration section constructed at Thunder Hole in 1929. The historic correspondence between Olmsted and Rockefeller reveal their intentions not to repeat this particular detail in future projects. The final segment of road, the one which "closed the loop" in 1958, was BPR Project 4A2, a Mission 66 project. This final segment made use of masonry rubble waterway as part of the original construction.

After Rockefeller's death in 1960, bituminous concrete was used to pave the waterways as part of the redesign of Jordan Pond/Eagle Lake Motor Road in 1962. Additional bituminous waterway was installed in 1963 when the "split section" of Paradise Hill Road was constructed (stationing 121+00 to 145+00). A great deal of bituminous waterway was constructed on Cadillac Mountain Road in the 1980's. Other instances of bituminous waterway are present in the Historic Motor Road System, which have not been documented as to their construction dates. However, the fact that rubble masonry waterway was installed as a part of the original construction of the last segment in 1958, leads to the conclusion that all bituminous waterway existing in the system was introduced after 1958. Thus, the continued installation of new bituminous waterway, or maintenance of existing bituminous paved waterway is incongruent with the historic character of the Motor Road System.

Issues: The proposed project PRA-ACAD 4A10 presently calls for several alternatives for the treatment of paved waterway.

- Repair and clean historic rubble masonry waterway
- Reconstruct or overlay sections of bituminous waterway "in kind"
- Construct new bituminous waterway
- Construct new masonry waterway

Historic masonry rubble waterways have been shown to be more difficult to maintain because they tend to trap seeds and soil in their joint area, promoting weed growth. However, the continued use of bituminous paved waterway as an alternative is a threat to the historic and rustic character of the Historic Motor Road System.

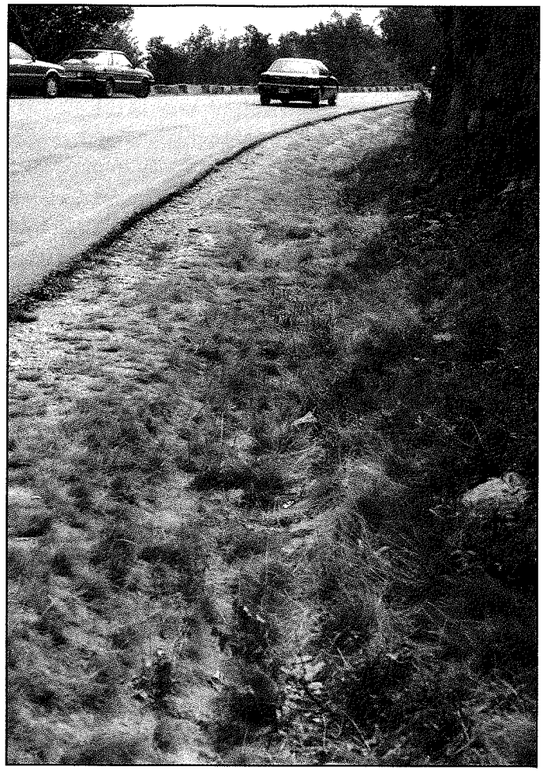

**Figure 92** Existing rubble masonry waterway which is in poor condition, station 188+00, 1993. Photograph by OCLP.

Recommendations: The treatment of paved waterway should be revised to include only the repair of historic masonry waterway and new paved waterway following a new design (Figure 95).

This new detail for paved waterway makes use of much larger stones to greatly reduce the overall joint area of the waterway's construction. This will help to minimize maintenance required in the future. This detail also employs rustic split surfaces which are in keeping with the rustic character of the Historic Motor Road System. The aesthetic effect would be very similar to the texture of the Masonry Paved Median, only inverted. Two different sizes are shown to fit into different situations within the system. The narrower 18" waterway is intended to fit within the limited shoulder area of the Kebo Mountain section of the Loop Road stations: 25+00 to 30+70 and 35+00 to 40+30, when eventual replacement of the existing bituminous waterway becomes necessary.





The four conditions and treatments described above should be revised as follows:

- Repair and cleaning of existing masonry rubble waterway should use non-destructive methods. Replacement of damaged portions of masonry rubble should be done "in-kind".

- Replacement and or overlay of existing bituminous waterway should be deferred until this work can be carried out with the masonry detail provided. This deferral is not intended to include very minor patching of existing bituminous waterway.

- Construction of new bituminous waterway should be deleted from this and future projects.

- Construction of new masonry waterway to generally follow the detail provided (Figure 93). This will reduce maintenance and retain the historic and rustic character of the road.

The presence and continued proliferation of bituminous paved waterway is a serious threat to the historic integrity of the Historic Motor Road System. Its use is inappropriate because this material was not used during the road's period of significance, and it compromises the rustic qualities of the vegetated shoulder.

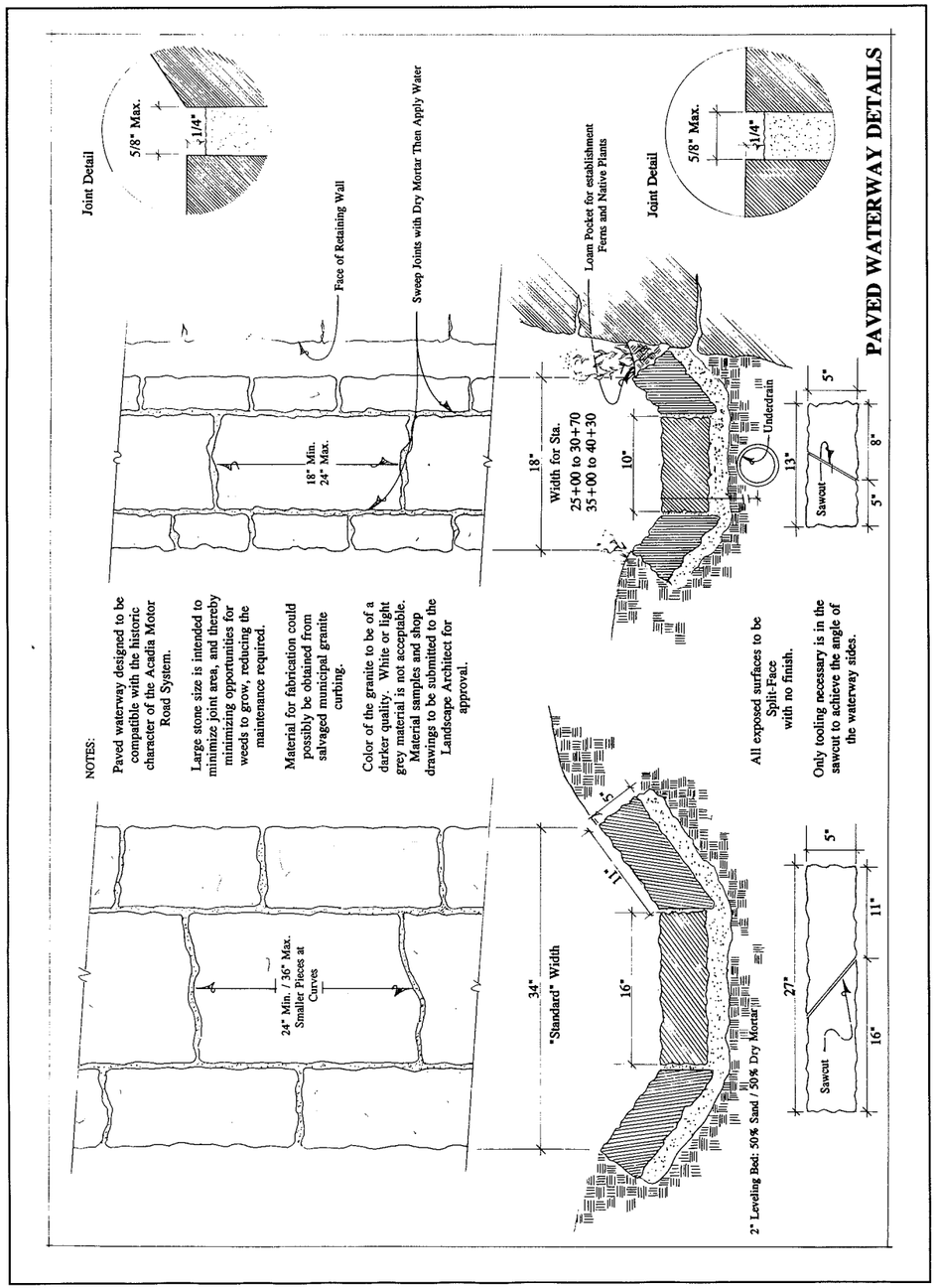


**Figure 93** Masonry waterway detail which is compatible with the rustic character of the Historic Motor Road System, yet distinguishable from the historic features. Drawing by OCLP.





## EDGE FEATURES

(Refer to FHWA specifications Division 600: Incidental Construction Section 609: Curb and Gutter Section 615: Sidewalks, Driveways, and Paved Medians)

### 1. Curbing

History: Prior to 1940, curbing material, used in conjunction with the Motor Road, was of split local granite. The parking lots along Ocean Drive were laid out by Frederick Law Olmsted, Jr., and constructed using the labor of the CCC. The monthly labor reports of the CCC relate that considerable time was spent fabricating the rustic stone curbing found in these parking lots. Curbing installed after 1940 was typically of Portland cement concrete. The 1955 working drawings for the Champlain Mountain Overlook specified an admixture of carbon black into the concrete to render the finished curbing a tone of grey. The concrete curbing at Champlain Mountain Overlook, and other selected concrete curbing has been replaced in recent years with an assortment of granite curbing details. These new granite curbing details were installed in an attempt to achieve a consistency of materials throughout the system. This however, has not been achieved because these new features have surfaces and edges which are highly finished and more appropriate to urban conditions.

Issues: Installation of new curbing is specified as a part of the proposed project. During the June, '93 "plan in hand" review, the replacement of the concrete curbing at Sand Beach Parking Lot, constructed in 1955, was deleted from the proposed scope of work. This curbing was perfectly functional and was part of the original construction. Other instances remain in the FHWA plans where additional granite curbing is to be added to existing.

Recommendations: Concrete curbing which remains in place throughout the system helps interpret the evolution of construction methods and materials after 1940. It is recommended that this material be retained since it is original historic fabric. Its presence allows the system to be understood as a series of segments constructed over many years. Concrete curbing should not be replaced with granite in order to merely present a more consistent use of materials throughout the system.

The new granite curbing, which has replaced some of the original concrete curbing, either uses a smooth sawn top, or is of a slope faced design. Both are inappropriate due to their overwrought construction. Additional sawn-top granite curbing should not be installed as a part of this or of future projects. Any exposed granite surfaces should be of a split face, with tooling kept to a minimum.

The slope faced granite curbing recently installed at the entrance to Sieur de Monts Spring, and at other traffic islands, is also difficult to maintain since the sloped curbing becomes invisible under a layer of snow, and presents problems to snowplowing equipment. Curbing material set at right angles, on the other hand, is discernable even when covered with a moderate amount of snow. Therefore, utilization of sloped faced granite curbing is not recommended. Where the proposed project calls for the realignment or repair of existing slope faced curbing, this material should be replaced with right angled, split-faced curbing material.

The color or tone of curbing material is also an area for consideration. Historically, materials were utilized from local sources. This allowed the construction materials to be compatible with the historic character of the road and landscape. Recent work however has made use of stone which is not local. The color of these materials is of a white or light grey, and visually incongruent with both the landscape and with earlier construction. This is the case with the slope faced curbing at Sieur de Monts Spring. Curbing should be of a darker quality, to allow these materials to recede into the background. It is recommended that the contractor provide product samples for approval prior to construction.

- At the Bear Brook picnic area, the proposed addition of sloped faced curbing should be deleted from the project. The traffic island to which this material was to be installed should receive no curbing treatment due to the informal nature of this area.

- The traffic island to be reconstructed at the Rt. 233 Access Road should be reconstructed using right-angled, split faced curbing material.

- Concrete curbing at West Street Intersection (60 of 112) should be retained through pavement milling or replaced "in kind."

- Concrete curbing at intersection of Paradise Hill Road and the "Loop" road should be retained. This work should be deleted from the drawings.

- Additional curbing to be installed between station 16+55 and 20+52 at the overlook should be of a similar size and surface as what exists. A slight color variation is probable and even desirable to distinguish the new curbing from the existing. New curbing should not be of a white or light grey color. Product samples should be submitted for approval prior to fabrication.

- Additional comments relating to curbing appear in the annotated 95% draft drawings which accompany this report.





## 2. Sidewalks and Trails

### A. Ocean Drive Shore Path

History: The Ocean Drive shore path system was originally envisioned by Rockefeller. The system was designed by Ben Breeze, the park's resident landscape architect, and carried out by the CCC under the direction of Superintendent Dorr. In many instances, the shore path makes use of abandoned portions of the 1890's alignment of Ocean Drive.

Issues: The shore path is now over fifty years old, and in certain areas shows its age. Eroded segments which parallel Ocean Drive are scheduled for reconstruction within the scope of the proposed project. The construction plans call for the introduction of plastic Geoweb brand material to stabilize the base of the path prior to resurfacing.

Recommendations: Acadia National Park has mile upon mile of foot trails within its boundaries, and considerable experience in their maintenance. The park has no experience in using the plastic material specified in its foot trail system. Over time, this plastic material may come to the surface and become visible. This would clearly be an undesirable intrusion into the rustic character of the foot trail system. For these reasons, it is recommended that the eroded portions of the shore path be reconstructed using traditional materials and methods.

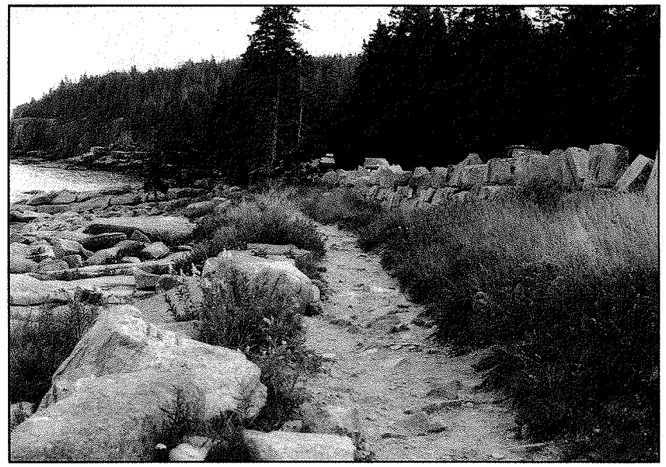

**Figure 94** Erosion on the Ocean Drive shore path, station 372+00, 1993. Photograph by OCLP.

**B. Parking Lot Sidewalks**

History: The surfaces of the sidewalks which served the many parking lots throughout the Motor Road System were historically of bituminous surface treatment, with a final chip coat of untreated aggregate. Sidewalks constructed during the 1950's, after the development of hot-mix bituminous concrete, were paved with the same material used to pave the road surface.

Issues: Many of the sidewalks which serve parking lots within the scope of the proposed project are specified for either overlay or reconstruction. A final chip coat would be appropriate for use on these sidewalks in that it would offer a rustic, non-skid surface for foot traffic, without the functional drawbacks such a surface presents to wheeled traffic.

Recommendations: Due to the increased level of maintenance of a final chip coat, it is recommended that the sidewalks be surfaced with the same material that is to be used in repaving the parking lots and road. This solution should use the recommended aggregate blend recommended above under "Road Surface." The aggregate grading band recommended under that section is intended as a compromise between the coarse historic texture of the road surface and the fine textured surface presently specified. The recommended aggregate grading band would also offer a more rustic surface for the parking lot sidewalks and provide for increased skid resistance.





**3. Masonry Paved Medians**

History: Masonry paved medians were installed during the 1950's to serve as a psychological separation between the traveled way and certain overlooks. These masonry paved medians were designed with a 1" reveal between the pavement surface and the median stones. The stones were originally set to provide a crown of 1" per foot of median width.

Issues: Repeated maintenance overlays have eliminated the original one inch reveal between the pavement surface and the median stones. In some localized instances, the edge of the masonry paved median is actually below the surface of the pavement. The current plans for the proposed project typically call for 2.5" inches of pavement milling and 2.5" of new overlay. This results in no net change from the undesirable existing condition.

Recommendations: Since the surface of some of the median stones is actually below the surface of the pavement, in some places, milling in these locations should re-establish the historic reveal. For this reason, wherever masonry paved medians exist, variable milling should be employed to ensure that a 1" reveal is achieved. Median stones which have heaved or settled should be reset as a part of the scope of work.

## SITE DETAILS

(Refer to FHWA specifications Division 600: Incidental Construction Section 619: Fences, Gates, and Cattleguards Division 700: Material Section 718: Traffic Signing and Marking Material)

### 1. Gates

History: An assortment of rustic gates were designed in the late 1930's and early 1940's, and constructed by the CCC specifically for Acadia National Park's Motor Road and Carriage Road System. Though many of these gates were installed, few remain, having fallen victim to decay and vandalism. Rockefeller recommended rustic gates for the Motor Road System to serve as a visual cue that the motorist had entered the park road, distinguishing it as a separate system from the public highway. So concerned was Rockefeller with these small details, that he was really not that concerned that the gates themselves ever be closed. These gates were constructed and installed by the CCC during the 1930's and 1940's.

The collection of gates designed for both the Motor and Carriage Road Systems were of a rustic nature, constructed of rough adzed lumber and furnished with heavy iron hinges and fasteners. A coat of grey stain was specified for the wood surfaces

Issues: These rustic gates have not survived due to the cost and skill required for the repair of intricate wood construction. They were also replaced because they were so heavy that a single person would have trouble opening them. They have been replaced with dozens of steel pipe access gates throughout the Historic Motor Road System. Though desirable, the replacement of all existing steel pipe gates with an historic gate detail is impossible due to considerations of funding and maintenance.

Recommendations: The proposed project specifies the removal and reset of two steel pipe gates. These gates are located on the access road to State Rt. 233 and on the Sand Beach Residence Road. A new gate is specified for the intersection of Schooner Head Overlook Access Road and the Park "Loop Road" at station 282+30.

The work to reset the existing gates should proceed as planned. However, new gates which are in highly visible locations should be replaced with gates compatible with the rustic intent of the Motor Road System's designers. The new gate to be installed at the Schooner Head Overlook Access Road should follow the new detail provided. This preliminary gate detail has been inserted into the annotated copy of the 95% drawings which accompanies this report. This new detail is a contemporary interpretation of the rustic gates of the period, and is both compatible with the historic character of the road, and distinguishable as a new feature. Its wood construction has been simplified to facilitate repairs.





### 2. Signage

#### A. Regulatory Signage

History: Regulatory signage consists of signs such a "Stop," "Wrong Way," "Speed Limit," etc.. These are not historic features. An inventory or other documentation of historic regulatory signage has not been obtained for the Motor Road System. However it is likely that the quantity of regulatory signs was reduced after the Loop Road was converted to one way traffic in the 1980's.

Issues: A solution must be found that addresses both public safety and the preservation of the Motor Road's historic character.

Recommendations: The park has rescoped this work item of the proposed project to include the replacement of metal sign posts with 4" x 4" wooden sign posts. This change of materials is entirely in keeping with the rustic character of the Historic Motor Road System. No further recommendations with regard to regulatory signage are necessary. However, additional signage proposed in the future should be evaluated carefully to determine its effect on the character of the Historic Motor Road System.

**B: Directional Signage**

History: The directional signage of the Historic Motor Road System is well documented both in historic drawings and photographs. At least two variations of a similar design were carried out by the CCC in the late 1930's and early 1940's. These early directional signs were reminiscent of the vernacular crossroads signage common to the region. These signs featured an overscaled sign post with a simple finial top, with sign boards giving placenames, directional arrows, and distances, fastened individually to the post. The information on the sign was painted with yellow paint on a brown background. None of these signs remain. One of the individual sign boards is preserved, nailed to the wall of the park's current sign shop.

Issues: The existing directional signage along the Motor Road conveys information, but does not communicate the rustic character which one would expect to find in a National Park. There has been some discussion in the park as to the desirability of a return to the rusticity of earlier directional signage, but it is feared that the attractive rustic signs would be attractive to vandals. NPS service-wide policy dictates current specifications for park signs. This policy may not be compatible with the historic character of the Motor Road. However, the "Uni-Core" signs currently in place are easy to fabricate and do meet the service-wide NPS road sign specifications.

Recommendations: While no sign can be made completely vandal proof, the historic sign details can be adapted to render the rustic signs vandal resistant. Modern pressure treated lumber can be employed to give these signs resistance to decay, a marked improvement over the original historic signs.

Although the conversion of the present directional signage to a detail compatible with the historic and rustic character of the road is widely viewed as desirable, this change is not achievable within the scope of the proposed Federal Highways project. The quantity of signage associated with the Motor Road System is significant, and requires further study before an informed decision can take place.

The park's sign committee has been working on a proposal to reduce the size of the lettering on the existing "Uni-Core" system to achieve a smaller sign size. The intent of this proposal represents an achievable compromise between the ideal of rustic signage and practicality. The smaller scale signs produced by this proposal would be a positive step towards the rustic aesthetic of the historic period.





**C: Miscellaneous Informational Signage**

History: Park signage throughout the CCC period was often of unique design, which made reference to the parks regional or vernacular traditions. This signage was intended to convey useful information or placenames, yet harmonize with the landscape. It was often of smaller scale and placed at a lower height than is common today.

Issues: Much of the miscellaneous signage present in Acadia's Historic Motor Road System has lost its historic rusticity. The amount of miscellaneous signage is considerable, yet its replacement falls outside of the scope of the FHWA project.

Recommendations: The park should begin a study of the entire inventory of signs within the limits of the Historic Motor Road System. The goal of this study would be to provide guidance based upon the adaptation of historic signage for a project of sign replacement. This study should evaluate alternatives for new rustic signage to replace existing modern signs. Any informational signage installed should be consistent with the historic rustic character of Acadia's Historic Motor Road System.

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## EPILOGUE

During the fall and winter of 1993-94, FHWA revised the construction documents for the project based on well-informed decisions made by the park. Compliance with Section 106 of the Historic Preservation Act (36 CFR, Part 800) was completed in February 1994. The construction project was advertised and awarded, and work was completed in July 1994. The FHWA Project Engineer has referred to the entire process as "an almost textbook case" of how a construction project should be administered.

This report was never intended to serve as a Cultural Landscape Report for the entire motor road system. Instead, the report selectively focused on the specific segments of the system affected by the FHWA project. Likewise, this brief epilogue is not a comprehensive record of treatment, which is normally the third and final part of a Cultural Landscape Report. This summary has been prepared prior to the completion of the FHWA final construction report, should be considered the official record of work completed. When available, a copy should be added to the park's library. Many of the rehabilitation guidelines contained in this report and the annotated construction drawings which accompanied it, were quickly accepted by all parties as both the obvious and best way to proceed. However, eleven issues required considerable

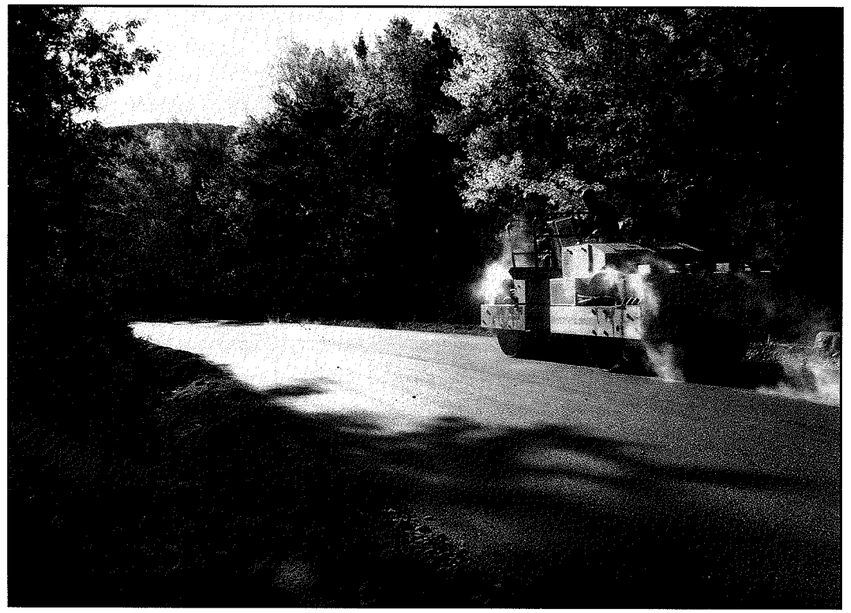

**Figure 95:** Resurfacing operations underway during the autumn of 1994. Photo by OCLP

discussion and resolution (Appendix E). Of these issues, the most difficult to resolve involved the continued use of bituminous material in roadside waterways or ditches. Placement of bituminous (asphalt) in the roadside ditches on Cadillac Mountain Road initially motivated former Superintendent Robert Reynolds to approach the Olmsted Center for technical assistance. Although maintenance concerns had led the park to

install bituminous material in the waterways, a solution was found to address the preservation issues associated with the treatment of the waterways. Existing bituminous waterways will remain, but as they fail or require substantial repair, they will be replaced with rubble masonry.

## Reduction of Project Scope

The scope of the original construction project addressed by this report involved the treatment of over one half of the 26-mile historic motor road system. This included Paradise Hill Road from near the park visitor center to its intersection with the Loop Road, and a large portion of the Loop Road from the Cadillac Mountain Road, around Kebo Mountain and south on Ocean Drive to the stone masonry grade separation at Otter Cliffs. In January 1994, budget limitations required that the project be scaled back to include only 6.77 miles of road rehabilitation. This work included the reconstruction of a southern segment of Schooner Head Road, which is considered outside of the historic motor road system. The reduced scope of work on the Loop Road extends from the intersection with Harden Farm Road east and south to the grade separation at Otter Cliffs.

## Section 106 Compliance

As a process, compliance with Section 106 of the Historic Preservation Act began in June 1993, with historical research and the preparation of rehabilitation guidelines based on research findings. The draft Historical Overview, Analysis of Character-Defining Features, and Guidelines for Rehabilitation contained in this report was discussed with staff of the Maine Historic Preservation Commission (SHPO) in September 1993. This presentation took place approximately four months before seeking formal approval from the SHPO. After review of Section 106 forms (XXX) and this report, the Maine SHPO determined that the project would, as hoped, have "no adverse effect" and forwarded this determination on to the Advisory Council on Historic Preservation for concurrence. The Advisory Council received the SHPO's determination on February 4, 1994 and on February 28 informed the NPS that the 106 process had been satisfied.

## Archeology

Neither the Maine SHPO nor the Advisory Council formally required archeological investigations in order to proceed with the construction project. However, the removal of the pavement surface presented the opportunity to conduct archeological investigations that would enhance knowledge about the road's construction. Seven test pits were excavated by the NPS Regional Archeologist while construction was in progress. Test pits near Harden Farm Road resulted in interesting findings that confirmed documentary research about the history of this segment of the motor road. This investigation confirmed that the motor road was built over an earlier road, once an extension of Harden Farm Road, using "broken stone" construction techniques common during the nineteenth century. This is the same method used on the park's carriage roads, utilizing very large stones for the road foundation or sub-base, gradually building up to the surface with successively smaller stones. The massive stone road foundation eliminated the need for subsurface excavation in the vicinity of Harden Farm Road since the earlier, sub-surface layer could not be



improved with modern materials and methods. Instead, sub-surface drainage was added to solve the apparent pavement failure problems.

## Construction

After advertising and a competitive bid process, FHWA awarded the construction contract to Lane Construction for a bid price of $1,395,279.00. Notice to proceed was given on July 14, 1994 with July 31, 1995 stipulated as the date for completion. On July 15, 1995, a final inspection of the work was conducted, after work was substantially completed on July 1, one month ahead of schedule. This accomplishment is noteworthy considering the complications of construction in a heavily-used tourist route. The contract was also completed almost $80,000 below the preliminary estimate due to what the FHWA project engineer referred to as "the cooperation and good will of the general and sub-contractors and the talented professionals at both the NPS and the FHWA who helped to plan and administer the project."

After the body of this report was completed, additional work with the Federal Highway Administration and the Denver Service Center was completed on alternative design details for select features compatible with the historic character of the motor road system. Examples of these new features include a rustic entrance gate and sign at the Schooner Head Road entrance. These two features are designed to be distinguishable from historic signs and gates, yet compatible with the rustic ideal which shaped the design of the road system and are a successful departure from gates and signs installed during the past thirty years.

Details were also developed for the rehabilitation of a segment of the shore path along Ocean Drive which eliminated the placement of plastic geotextile reinforcement, and instead utilized materials and methods of trail construction. Where new headwalls for drainage culverts were required, a modern yet compatible masonry detail was developed.

Within the re-defined scope of PRA-ACAD 4A10, stone masonry waterways or ditches were not installed inside the limits of the motor road system. However, a part of the contract involved the reconstruction of the adjacent Schooner Head Road including a badly eroded section of roadside ditch. A version of the masonry waterway detail developed as part of this project was installed on this section. While the masonry detail contains a preferable material (stone), the installed stone in this waterway are uniform in character, which is decidedly not rustic. Smooth stone surfaces and sharp edges are more appropriate to urban settings and also inadvisably speed the velocity of storm water. When the hardening of ditch surfaces inside the motor road system becomes necessary during future rehabilitation projects, stone masonry should be used and bituminous avoided. The masonry detail on Schooner Head Road presents a valuable opportunity to further refine the design and rustic character of this detail before it is installed throughout the historic landscape.

## Conclusion

With work now complete on the portion of the motor road system treated under PRA-ACAD 4A10, the results of this approach are evident. According to FHWA project engineer, Greg Holnbeck, National

Register eligibility and Section 106 compliance added nothing to the final cost of the construction project because the added review created an environment where there were "no surprises." The physical condition of the historic motor road system is greatly improved, while its cultural values have not been compromised. As just one measure of the project's success, the National Trust for Historic Preservation selected the project as a case study in their forthcoming publication, "The Community Guidebook for Historic Roads." Indeed, a greater appreciation of this important landscape, and the recovery of the history of its development are among the project's greatest accomplishments.

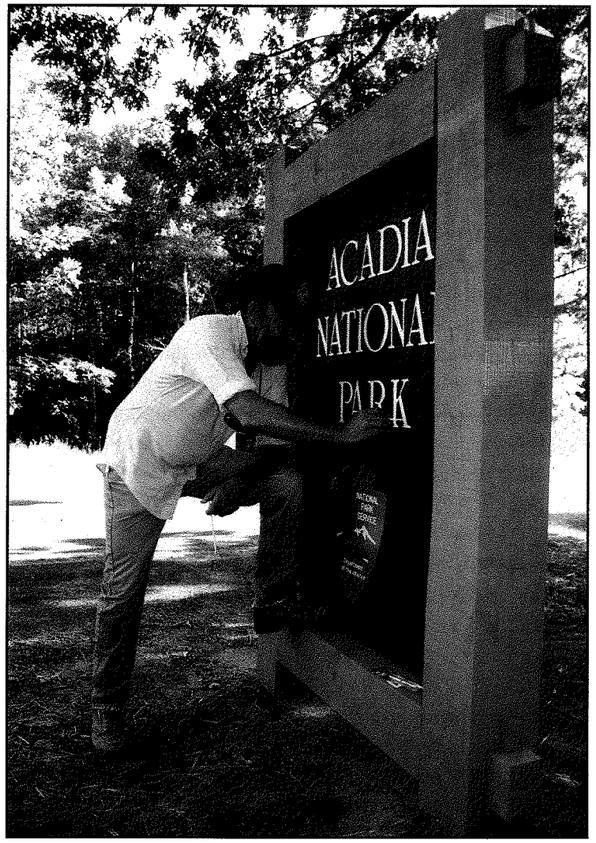


**Figure 96:** FHWA project engineer Greg Holnbeck puts the finishing touches on the rustic entrance sign at the Schooner Head Road intersection. Photo by OCLP, 1995.





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# APPENDICES

## Appendix A

### Park Comments

# United States Department of the Interior

NATIONAL PARK SERVICE
Acadia National Park
P.O. Box 177
Bar Harbor, Maine 04609

IN REPLY REFER TO:

September 29, 1993

D30(ACAD)

Memorandum

To: Regional Director, North Atlantic Regional Office
Attention: Dave Price

From: Superintendent, Acadia National Park

Subject: Comments on FHWA 95% Drawings for PRA-ACAD 4A10

Below are park comments for this project. Please coordinate and forward these comments to DSC for action. These comments are the result of extensive park staff review and are in conformance with review comments and the annotated drawings prepared by the NARO cultural resource division. Sheet numbers for all comments expect those related to signs relate to the August 31, 1993, drawings marked "Distribution for Comments".

PULLOUTS ON LOOP ROAD

1. 0+50 left. Sheet 37. Retain. Drawings OK.

2. 5+00 left and right. Sheet 37. Obliterate. Drawings OK.

3. 50+50 right. Sheet 38. Retain. Drawings OK.

4. 77+20 right. Sheet 39. Retain pullout (Strath Eden trail). Drawings OK.

5. 87+00 right. Sheet 39. Retain pullout. Revise drawings.

6. 99+00 right. Sheet 39. Retain pullout (Jessup trail). Drawings OK.

7. 105+20 right. Sheet 40. Retain gravel road. Drawings OK

8. 107+00 left. Sheet 40. Retain pullout. Drawings OK.

9. 115+00 right. Sheet 40. Obliterate. Add pullout to drawings.

10. 129+00 right. Sheet 40. Obliterate. Revise drawings.

11. 141+50 right. Sheet 40. Obliterate. Revise drawings.





12. 200+50 right. Sheet 42. Obliterate. Add pullout to drawings.

13. 209+00 right. Sheet 42. Obliterate. Add pullout to drawings.

14. 285+00, sheet 44. Obliterate. Add pullout to drawings.

15. 340+00 to 342+00. Sheet 45. Obliterate. Drawings OK.

PULLOUTS ON PARADISE HILL ROAD

16. 0+00-3+00 left and right. Sheet 64. Retain pullouts. Drawings OK.

17. 4+50 right. Sheet 64. Obliterate. Drawings OK.

18. 11+00 right and left. Sheet 64. Retain pullouts. Revise drawing.

19. 14+00 left. Sheet 64. Obliterate. Drawings OK.

20. 23+00 left. Sheet 64. Retain pullout. Drawings OK.

21. 119+00 right. Sheet 66. Retain pullout. Drawings OK.

22. 155+00 left. Sheet 67. Obliterate. Add to drawings.

OTHER PULLOUTS

23. 202+50 right, Schooner Head Overlook Road, sheet 60. Obliterate pullout or incorporate into gate and sign design described below.

PARKING MANAGEMENT STONES

Parking management stones (PMS for short) are the smaller, rounded stones placed on the shoulders at various areas to keep vehicles off the shoulders and preserve the vegetated strip. In some areas, the stones are no longer needed and can be either removed to a park stockpile or used as PMS elsewhere on this project. In other areas, additional stones are needed. Many of the stones in place are under-sized and should be replaced with larger stones.

Specifications for PMS are:

> Stones shall be between two (2) cubic feet and five (5) cubic feet in volume except that from station 305+50 to station 380 of the Park Loop Road, up to 50% of the stones may be a minimum volume of one (1) cubic foot. Stones shall be rounded

"field stones" of a mineral type similar to those found in surrounding rock formations. Stones shall have no visible side worked (a single worked face is acceptable if on bottom.) Set stones such that weathered face, if any, is visible from road.

Stones shall be set at approximately eight feet (8') on center except that from station 305+50 to station 380 of the Park Loop Road, stones shall be set at seven feet (7') on center. Stones shall be set a uniform distance from the edge of pavement. Dimension from edge of pavement may vary from section to section dependent on relationship of pavement, shoulder and ditch, but shall be uniform within each section. Set each stone approximately three inches (3") below grade.

The following is a list of the requested changes, all on the Park Loop Road.

24. 40+25-41+25 left. Remove PMS.

25. 131+95-133+00 left. Remove PMS.

26. 147+40-151+00 right. Remove PMS.

27. 155+20-158+00 right. Remove PMS.

28. 161+70-163+10 left. Remove PMS.

29. 161+70-163+10 right. Remove PMS.

30. 171+00-172+10 right. Place new PMS.

31. 172+10-179+30 right. Remove under-sized PMS and reset to 8' O.C. Some additional stones may be required.

32. 211+10-214+00 right. Remove under-sized PMS and reset to 8' O.C.

33. 240+00-244+20 left. Remove under-sized PMS and reset to 8' O.C.

34. 244+00-253+00 right. Remove under-sized PMS and reset to 8' O.C.

35. 253+00-254+00 right. Remove PMS.

36. 257+05-270+00 right. Remove PMS.

37. 257+50-260+50 left. Remove PMS.

38. 311+40-311+90 right. Reset PMS to 7' O.C.





39. 311+90-314+60 right. Place new PMS.

40. 314+60-328+00 right. Remove under-sized PMS and reset to 7' O.C.

41. 328+00-329+10 right. Place new PMS.

42. 335+00-341+75 right. Place new PMS.

43. Station 343+00 parking area, sheet 55. Extend PMS approximately 60' along radius to right while exiting parking area.

44. 355+00-360+00 right. Place new PMS.

45. 369+00, Gorham Mountain parking area, sheet 57. Extend PMS approximately 60' along radius to right while exiting parking area.

46. 374+00-375+00, 375+00 parking area, sheet 58. Place new PMS.

47. 378+00-380+00 right. Place new PMS. Continue around radius to Otter Cliffs Road.

48. Remove non-historic coping stones from Loop Road stations 105+40-108+25 left and replace with parking management stones. Move these stones to park storage at Liscomb Pit, Eagle Lake Road.

49. The coping stones recently placed on Paradise Hill Road at stations 81+35-84+20 right and 82+65-83+80 left are in a non-historic location. It is suspected that the original location of these stones was at the Loop Road stations 90+50-92+59 left and 91+00-93+10 right. This is a fill area that is known to originally have coping stones of the same size and color as those on Paradise Hill Road. The stones are shown in historic photographs and stones which tumbled down the bank can still be found there. As these stones are needed in their present location, it is not proposed to move them now. However, if it is later determined that they are no longer needed or they must be moved, they should be moved to their original location on the Loop Road and replaced, if necessary, with parking management stones.

OTHER COMMENTS

50. 336+00, Schooner Head Rd, sheet 23. Retain existing stone wall.

51. 42+00-43+80 Left, sheet 38. Delete ditch reconditioning.

52. 40+25-43+80 right, sheet 38. Delete ditch reconditioning.

53. 57+00-69+35, sheets 38 and 39. The backslope in this area is overly steep and eroded. Potential solutions include excavation at

a variable slope as shown on typical sections, excavation at consistent slope, and construction of dry-laid stone wall. As this work has potential for heavy excavation and cost, more detailed design is warranted. We request that cross-sections and design alternatives be prepared. Preliminary work for this has been done by the park and region consisting of a few typical cross sections.

54. 69+35-76+85, sheet 39. This ditch is scheduled for reconditioning. At present, the ditch does not meet the typical section dimension of 3', but the backslope is stable. In order to prevent potential erosion such as in the previous section, it is desirable to leave the backslope untouched. For the ditch reconditioning in this area, a reduced ditch area (2' rather than 3') is acceptable.

55. 150+65-150+95, sheet 41. Delete construction and reconstruction of asphalt paved waterway.

56. 285+35, sheet 44. Add 18" RCP culvert with stone headwall to drawings.

57. Sheet 54. Station 332+00 parking area is named the "Old Soaker" parking area.

58. Sheet 55. Station 343+00 parking area is named "Keyhole" parking area.

59. Sheet 56, Thunder Hole parking area. Align striped crosswalks with paths on drawings.

60. Sheet 40. Station 375+00 parking area is named "Ledges" parking area.

61. Sheet 60, Schooner Head Overlook. Construct two handicap parking spaces instead of one.

62. Sheet 60. Locate a newly designed gate along the Schooner Head Overlook the Schooner Head Road and the Loop Road. The exact location must be coordinated with the proposed entrance sign and a new pullout. A pullout is necessary to provide for visitors wishing to photograph the entrance sign. As with the other gate, sign, and overlook issues, some additional design work will be required. See Elliot Foulds' recommended preliminary gate design with the compliance documentation.

63. Sheets 66 and 67. Delete all overlay and reconstruction of asphalt paved waterways at stations 1+55-5+50, 10+10-11+80, 11+80, 12+70-13+90, 17+85-18+90, 20+25-20+50, and 21+90-22+60. Patch asphalt paved waterways where disturbed by work at inlets only.

64. Sheets 66 and 71, Paradise Hill Road station 8+00 SB, Frenchman's Bay Overlook. One handicap parking space is adequate.





65. Sheet 70, Paradise Hill/West Street intersection. At the plans-in-hand, modification of the islands was discussed. After further staff discussion, it was decided to make no changes.

66. Sheet 71, Frenchman's Bay Overlook pullout at station 8+00 SB. Rehab overlook as shown on sketch submitted with compliance documentation. Design concept will take further work to refine. We suggest that Elliot Foulds be extended to complete work on this and other design details such as entrance signs and gates. This would require FLHP design funds. A portion of the overlook work could be accomplished by park day labor if FLHP funds are available.

67. Recycle pavement removed in milling and reconstruction areas by incorporating into leveling courses where used and lower course on reconstruction areas. Will this result in excess removed pavement? If so, how will that be treated?

68. For areas where backslopes are to be disturbed, rake duff and wood to top of slope before starting excavation. When finished contours are reached, rake saved material back onto finished slope to speed up revegetation and take away raw look. Specifications from FLHP projects in Glacier National Park where this technique has been used successfully are enclosed.

SIGNS

Signs which are in poor condition are recommended for replacement. Listed below are the recommended sign changes and replacements. Locations refer to the sign locations as indicated on the 6/22/93 set of drawings marked "Plan in Hand."

Per the internal park policy memo of September 8, existing signs which require replacement and now have 6" lettering will be replaced with 4" lettering. (By "6" lettering," we mean 6" uppercase letters and 4" lower case letters; and by "4" lettering," we mean 3.75" upper case letters and 2.50" lower case letters.

| LOCATION | | OLD/PROPOSED SIGN | NEW SIGN |
|---|---|---|---|
| 69. Park Loop Sheet 20 | 950+50 | ^ Jordan Pond<br>^ N.E. Harbor<br>< Cadillac Mtn. | same |
| Replace as is due to condition. Use 4" lettering. | | | |
| 70. Park Loop Sheet 20 | 2+20 | Park Loop Road^ | Park Loop Road |
| Replace with no arrow. Use 4" lettering. | | | |
| 71. Park Loop | 142+20 | Last Exit Before $5.00 Fee Station | Same, but brown. |

| LOCATION | | OLD/PROPOSED SIGN | NEW SIGN |
|---|---|---|---|

Replace, change background to brown. Use 4" lettering, but maintain existing width of 114" to match sign on same post.

72. Park Loop, Sheet 23 — 145+10 — None — Park Loop Road / Sand Beach >

Make new sign for traffic entering Loop Road at Sieur de Monts. Install to right of existing one way sign. Use 4" lettering.

73. Park Loop, Sheet 23 — 146+70 — 12'2" — 12'2"

On Sheet 10 replacement color indicated as white on red. Make sign standard black on yellow.

74. Park Loop — 147+30 — Park Loop Road^ — Remove sign.

With number 4 above in place this sign no longer needed.

75. Park Loop, Sheet 24 — 151+36 — Drive With Caution / Parking in Right Lane — Move 2 signs

Move these signs to station 172+50 right and left

76. Park Loop, Sheet 24 — 169+35 — < Bear Brook (symbols) — Bear Brook (symbols) <

Replace sign due to cramped and busy appearance, using only two symbols for Picnic Area and Rest Rooms. Use 4" lettering.

77. Park Loop, Sheet 24 — 170+85 — Do Not Enter — None

Do not install proposed "Do Not Enter" sign. Existing sign is adequate.

78. Park Loop, Sheet 24 — 184+25 — P / Bear Brook / < — Bear Brook <

Replace existing sign using 2". Sign size should not exceed 24" x 36".

79. Park Loop, Sheet 26 — 240+50 — None — Wrong Way (2)

Mount two Wrong Way signs on the back of existing "Drive With Caution Parking in Right Lane" signs near Precipice.

80. Park Loop, Sheet 26 — 274+45 — Right Lane Passholders Only — Right Lane Only

Replace due to condition. Sign must still be hinged in the middle. Use 4" lettering.

81. Park Loop, Sheet 27 — 325+52 — Park Loop Road — None

Remove sign. No longer need to remind visitors of Park Loop Road.





| LOCATION | | OLD/PROPOSED SIGN | NEW SIGN |
|---|---|---|---|

82. Park Loop, Sheet 29 — 378+90 — None — Wrong Way (2)

Install two Wrong Way signs on Loop for traffic entering Loop on Otter Cliffs Road.

83. Park Loop, Sheet 29 — 378+90 — No Parking / One Way / Bike (symbol) / > — Move sign.

Move this sign next to the one way sign at 375+10 so traffic can see it.

84. Bear Brook Picnic Area, Sheet 31

Do not install No Parking Any Time signs or the Picnic Table sign with the double pointed arrow.

85. Sand Beach P.A., Sheet 35 — All Traffic Keep Left — One Way <

Remove all "Traffic Keep Left" signs (2) as shown. These will be replaced by the proposed "One Way" signs shown and will no longer be needed.

86. Sand Beach P.A., Sheet 35, 312+00 left — None — Do Not Enter

Install "Do Not Enter" sign for traffic exiting the main Sand Beach P.A. Existing "Wrong Way" sign is not visible until the wrong turn has been made.

87. Gorham Mtn. P. A., Sheet 39 — P / Gorham Mt. Trail / > — Gorham Mt. Trail >

Reverse sign colors to white on brown. Use 2" lettering for 24" x 36" sign.

88. Ledges P.A., Sheet 40 — None — None

Do not install the four proposed Do Not Enter signs at this area.

89. Ledges P.A., Sheet 40 — One Way — None

Remove existing "One Way" on left (Ocean) side of road.

90. For all parking lot entrances and exits from Old Soaker (332+00) to the Ledges (374+00), install a standard "Stop" sign

| LOCATION | OLD/PROPOSED SIGN | NEW SIGN |
|---|---|---|

with a "One Way >" (longitudinal) sign underneath it on the same post on the right side of the exit. Eight of these will be required for the five lots. There are no "Stop" signs in place now, a safety concern, and the "One Way" signs in this location will not interfere with views along the ocean section of the Park Loop Road.

| | | | |
|---|---|---|---|
| 91. Schooner Head Rd.<br>Sheet 42 | Stop | None |

The intersection of Schooner Head Road and the Overlook Road is a two way stop, not three way. There is currently not a stop sign for traffic returning to Park Loop from the overlook and one is not required.

| | | |
|---|---|---|
| 92. Schooner Head Rd.<br>Sheet 42<br>281+25 on Loop Rd | < Park Loop Road<br>< Sand Beach<br>< Cadillac Mtn. | Park Loop Road<br>< Sand Beach<br>< Cadillac Mtn. |

Remove arrow for Park Loop Road on proposed sign for consistency. Sign is for traffic entering Park Loop from Schooner Head. Use 4" lettering.

| | | |
|---|---|---|
| 93. Schooner Head Rd.<br>Sheet 42<br>Loop Rd intersection | Do Not Enter | Do Not Enter |

Replace Do Not Enter (all words) sign with standard Do Not Enter (symbol) sign for traffic attempting to turn the wrong way on the Park Loop Road.

| | | |
|---|---|---|
| 94. Schooner Head Rd.<br>Sheet 42 | Schooner Head Overlook | None |

Remove sign.

| | | |
|---|---|---|
| 95. Schooner Head Rd.<br>Sheet 42 | None | Acadia<br>National Park<br>(entrance sign) |

No entrance sign presently exists at this major entrance on to the Loop Road. In the winter, this is the only entrance to the road for autos and is also well used in the summer. Add a new rustic entrance sign with same design as that at Rt. 233. Design for this area must include a pullout for photographers and must be coordinated with proposed gate location. See comment on Rt. 233 entrance signs below.

| | | |
|---|---|---|
| 96. Rt. 233 Access<br>Sheet 50 | Acadia<br>National Park<br>(entrance signs) | New design |

Replace entrance signs with new rustic signs. These signs will require a new design. We suggest that Elliot Foulds be extended to complete work on this and other design details such as gates and Frenchman's Bay Overlook. This would require FLHP design funds.





| LOCATION | OLD/PROPOSED SIGN | NEW SIGN |
|---|---|---|
| 97. Rt. 233 Access<br>Sheet 50 | < Cadillac Mtn.<br>< Sand Beach<br>Visitor Center > | Park Loop Road<br>< Cadillac Mtn.<br>< Sand Beach<br>Visitor Center > |

Make new sign and add Park Loop Road to be consistent with other park signs. Use 4" lettering.

| | | |
|---|---|---|
| 98. Paradise Hill Rd. 1+70<br>Sheet 53 | < Park Loop Road<br>< Sand Beach<br>^ Cadillac Mtn. | Park Loop Road<br>< Sand Beach<br>^ Cadillac Mtn. |

Replace due to condition. Remove arrow next to Park Loop Road. Use 4" lettering.

| | | |
|---|---|---|
| 99. Paradise H. R. 21+40<br>Sheet 53 | | |

Replace post on 35 mph sign.

| | | |
|---|---|---|
| 100. Paradise H. R. 22+25<br>Sheet 53 | ^ Visitor Center<br>Route 233 > | ^ Visitor Center<br>Route 233 ><br>Bar Harbor > |

Replace and add Bar Harbor. Use 4" lettering.

| | | |
|---|---|---|
| 101. Paradise H. R. 23+15<br>Sheet 53 | Park Loop Road ^ | none |

Remove sign. Other signing fulfills need.

| | | |
|---|---|---|
| 102. Paradise H. R. 29+45<br>Sheet 53 | | |

Replace post on 35 mph sign.

| | | |
|---|---|---|
| 103. Paradise H.R. 30+35<br>Sheet 53 | ^ Cadillac Mtn.<br>^ Sand Beach<br>< To Route 233<br>< Bar Harbor | ^ Park Loop Road<br>< Bar Harbor<br>< Route 233 |

New sign more consistent with other park signs with Park Loop Road added and park destinations deleted. Bar Harbor signage provides better service to visitors. Use 4" lettering.

| | | |
|---|---|---|
| 104. Paradise Hill Rd<br>Frenchman's Bay Overlook<br>Sheet 55<br>Station 129+50 | None | Handicap symbol |

Add handicap symbol sign at accessible parking spaces.

| | | |
|---|---|---|
| 105. Paradise H.R. 153+70<br>Sheet 56 | ^ Information<br>^ Visitor Center<br>To Route 3 > | ^ Visitor Center<br>Route 3 > |

The arrows on the existing sign are cocked at a 45 degree angle which makes no sense given the situation. The recommended new sign contains a more appropriate message as well. Use 4" lettering.

| LOCATION | | OLD/PROPOSED SIGN | NEW SIGN |
|---|---|---|---|
| 106. Paradise H.R.<br>Sheet 56 | 158+00 | none | 4 Way |

Add 4 Way signs to all four stop signs at this junction.

| | | | |
|---|---|---|---|
| 107. West St. Int.<br>Sheet 58 | | Park Loop Road ^ | None |

Remove this sign as other recommended changes will make it unnecessary.

| | | | |
|---|---|---|---|
| 108. West St. Int.<br>Sheet 58 | | < Cadillac Mtn.<br>Visitor Center > | < Park Loop Road<br>< Cadillac Mtn.<br>Visitor Center > |

Park Loop Road is added for consistency with other park signs. Use 4" lettering.

| | | | |
|---|---|---|---|
| 109. West St. Int. | | ^ Cadillac Mtn.<br>^ Sand Beach<br>< Bar Harbor | ^ Park Loop Road<br>^ Cadillac Mtn.<br>^ Sand Beach<br>< Bar Harbor |

Sign should be placed on Paradise Hill Road before West St. intersection for Southbound traffic. Use 4" lettering.

For questions or further information, please contact Chief of Maintenance Jim Vekasi at 207-288-4646.

Robert W. Reynolds

cc:
Nora Mitchell, NAR-PC
Lauren Meier, Frederick Law Olmsted NHS

Enclosure:
Glacier specifications for slope treatment





F-1

**Section 201.--CLEARING AND GRUBBING**

**Description**

**201.01 Scope.** Add the following:

This work shall also include the salvaging of selected trees for use under Section 686.

**Construction Requirements**

**201.02 General.** Amend as follows:

Add the following to the first paragraph:

Existing pine tree(s) shown on the plans at St. Mary overlook shall be protected by snow fence or other fencing approved by the Engineer. The tree and its roots shall be protected from all operations.

Add the following:

Selected snags 4 to 12 inches dbh shall be salvaged and stockpiled in designated storage areas for subsequent placement on the completed slopes in accordance with Section 686. The trees and snags shall be cut into random lengths from 8 to 30 feet and shall be limbed on one side. Sound snags and dead trees are preferred over live trees for work proposed in Section 686.

Trees larger than 12 inches dbh and trees from 4 to 12 inches dbh not designated for salvaging and stockpiling shall become the property of the Contractor and shall be removed from the park. Trees less than 4 inches dbh and over 3 feet in height shall be disposed of outside the park.

**201.03 Clearing and Grubbing.** Add the following:

Grubbing of stumps shall be accomplished in such a manner as to conserve topsoil material. Nonconventional methods will be required to remove stumps in order to conserve topsoil without contaminating the material with underlying inorganic soils. Pushing trees over with heavy equipment or performing grubbing operations shall not be permitted until topsoil is conserved in accordance with Section 203.

**201.04 Debris Disposal.** Add the following:

Burning of perishable debris within the park will not be permitted. All debris shall be removed from the park and disposed of in accordance with applicable local, state, and federal regulations.

Special Contract Requirements
Project: Montana PRA-GLAC 10(4), Going to the Sun Road

Due to part-width construction, the Contractor shall submit a plan with regard to the protection of the geotextile fabric to be approved by the Engineer.

**203.06 Utilization of Excavated Materials.** Add the following to the fourth paragraph:

Excess material shall be disposed of outside the park in accordance with local, county, State, and Federal regulations.

**203.07 Conservation of Topsoil.** Add the following:

All suitable soil, organic duff, and material capable of supporting vegetation encountered in the excavation and in areas of embankment foundations shall be removed to such extent and such depth as directed by the Engineer.

The conserved material shall be windrowed or stockpiled in a series of small stockpiles at the outer portion of the clearing limits or in areas designated by the Engineer.

The depth of material conserved for topsoil will not be easy to determine for this project. A minimum of 2 inches of material shall be conserved in all cases, and a depth of 12 inches of material is possible in some locations. Live vegetation less than 3 feet in height and limbs less than 1 inch in diameter may be incorporated as topsoil in the stockpiles.

Due to the limited amount of material available for topsoil and the need to establish the best growing medium possible to revegetate the roadside, nonconventional methods will be required to excavate, stockpile, and place the conserved material. Equipment capable of excavating small, isolated pockets of soil; removing stumps as required in Subsection 201.03; and placing material on slopes and in pockets on rock ledges will be required to perform the work under this subsection.

**203.12 Rounding and Warping Slopes.** Amend as follows:

(b) Warping. Add the following:

Where shown on the plans or directed by the Engineer, additional material from the prism excavation shall be incorporated into fill slopes to obtain varying, gently undulating contours; additional rounding at toes of fills; and to construct flatter slopes in selected areas to blend with existing landforms or promote revegetation.

Add the following:

The ends of all roadway cuts disturbed during the excavation operations shall be flared and cut slopes flattened to produce a smooth transition between the cut slope and the existing ground. The cut slope end treatment shall be as shown on the plans.







**203.13 Finishing Roadbed and Slopes.** Delete the second and third paragraphs and substitute the following:

All earth and rock slopes shall be left with a roughened surface as they are being constructed. The slopes shall generally conform to the staked slope ratio but shall be steepened and flattened randomly and intermittently to simulate the irregularity of the existing terrain. Boulders firmly in place and protruding from the cut slopes shall be left undisturbed. All cut slopes shall be sculpted to irregular surfaces preserving segments of large rock outcrops leaving staggered, irregular ledges, shelves, and outcrops with jagged edge appearance and planting pockets suitable for placement of topsoil and plants. Fill slopes shall be warped to provide an irregular surface with staggered ridges steeper than the nominal slope ratio, staggered ledges, planting pockets, and large boulders exposed above the nominal fill slope. Where shown on the plans or directed by the Engineer, additional material from the prism excavation shall be incorporated into the staked fill slopes to obtain additional warping and rounding and to develop landscaped areas for planting, topsoil, and seeding.

Individual boulders shall be buried in the cut and fill slope face in accordance with Section 655.

Snags and trees conserved in accordance with Section 201 shall be placed on cut and fill slopes in accordance with Section 686.

**203.14 Removal and Disposal of Unsuitable Material.** Amend as follows:

Add the following after the first paragraph:

The material to be excavated contains cobble and boulder size material and may be in a saturated condition.

Add the following to the second paragraph:

The excavated area shall be backfilled to the depths shown on the plans.

Delete the fourth paragraph and substitute the following:

The excavated material shall be disposed of outside the park in accordance with local, county, State, and Federal regulations, with the exception of material designated by the Engineer to be used in accordance with Subsection 210.02.

**203.18 Protection of Structures.** Add the following:

An existing 6 inch iron pipe force sewer line and telephone cable runs left of centerline at a minimum depth of 24 inches from existing ground. The Contractor shall excavate to within 6 inches of the estimated pipe depth by use of mechanized equipment. The Contractor shall then, at 200 foot intervals, dig holes by manual method to determine the depth of the pipe. A grade for the pipe will be determined and the Contractor may continue excavation with equipment, taking care not to damage the utilities.

## Appendix B

THE SECRETARY OF THE INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES

**Rehabilitation:**

Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.

Standards for Rehabilitation:

(1) A property shall be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.

(2) The historic character of a property shall be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize the property shall be avoided.

(3) Each property shall be recognized as a physical record of its time, place, and use, Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, shall not be undertaken.

(4) Changes to a property that have acquired historic significance in their own right shall be retained and preserved.

(5) Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.

(6) Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and where possible, materials. Replacement of missing features shall be substantiated by documentary, physical evidence.

(7) Chemical or physical treatments, if appropriate, shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.

(8) Archeological resources shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken.

(9) New additions, exterior alterations, or related new construction shall not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and shall be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

(10) New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

*Revised 1992*





## Appendix C

VISTA PLAN 1961

Vista Plan
Acadia National Park

For the purpose of this report a vista is defined as being: A roadside area of specific location and size as depicted and designated on Drawing NP-ACAD 2857. Each vista is numbered. No other vistas are now contemplated, it being considered this plan is final as to the location of each vista and as to the total number of vistas.

None of these vistas is new, that is, no location will have to be cleared of mature growth to establish a vista. At each of these locations clearing to establish a vista had been done at a previous time or, due to the 1947 fire, a vista has become established that is desirable to retain. Some few are naturally formed by ledge rock.

The work from now on will in the main be to hold conditions at the present status. Two principal exceptions to this will be: 1. To widen or narrow the presently defined-by-bearing locations as growth matures and the necessity of such work becomes apparent and 2. To allow specimen trees within the left and right limits of the vistas, as designated by the noted bearing, to mature. Each of these exceptions is a continuing problem which will be studied on the ground and a determination made before the periodic clearing of each site is performed. The periodic clearing work will be performed by, or under the direction of, Park forces and will consist of the removal of growth which impinges on the desirable view.

A brief description of the view from each numbered vista is as follows:

| Vista | Description |
|---|---|
| 1 | A panorama of Frenchman Bay from Paradise Hill. |
| 2-3 | Closest view of the Porcupine Islands and toward inner Frenchman Bay |
| 4 | View of outer Frenchman Bay and Cadillac from Great Hill |
| 5 | A broad view southwest to the lowlands between Sargent and McFarland Mountains. The left side is located to screen a power line. |
| 6 | Eagle Lake and Southwest Valley. |
| 7 | Eagle Lake, Sargent Mountain, and Blue Hill. |
| 8-15 | All of Eagle Lake and Sargent Mountain from different angles and elevations,with some change probable subject to realignment of this portion of the road that is proposed within Mission 66 |
| 16 | South Bubble Cliffs. |

| | |
|---|---|
| 17-18 | View of the glacial erratic on the near top of the South Bubble. This is known as "The Balanced Rock." No. 18 is a small parking area. |
| 19-22 | The South Bubble, Penobscot Mountain, Jordan Pond and Jordan Cliff, as, roughly, from one end of Jordan Pond to the other end. |
| 23 | View into mixed growth forest from the Jordan Pond House clearing to the junction of Ocean Drive Park Road and Seal Harbor Town Road, all on the East Side Loop Road. |
| 24 | South ridge of Cadillac Mountain across the Hunter's Brooks Valleys. |
| 25 | View into the spruce-fir forest between the State Route 3 overpass of Ocean Drive Park Road and Hunter's Cover Overlook. |
| 26 | View into Hunter's Cove, past Hunter's Cove Head toward the Cranberry Island. |
| 27 | View of Little Hunter's Beach. |
| 28-29 | Across outer Frenchman Bay at Schoodic Point. |
| 30-31 | Seascape eastward towards Otter Point, includes three turn-outs. |
| 32-41 | Views of Otter Cove. #38 and #29 are from the Causeway. #40 is from the Otter Cove Overlook |
| 42-43 | View from Otter Point. |
| 44 | View from the divided road. |
| 45 | View of the ledges and shore line from the closest approach made by Ocean Drive north of Otter Point. |
| 46 | Views of the ledges, the shore line, Egg Rock, Schoodic Peninsula, outer Frenchman Bay, Great Head and Newport Cove, nearly two miles in length and caused naturally by ledge rock. Any tree growth should be encouraged and retained. |
| 47 | Muskrat Pond and across to Schoodic Point through a natural frame of existing trees on the Schooner Head Road. |
| 48 | South end of Champlain Mountain Cliffs with a close view of a tumbledown and the resultant talus slope. |
| 49 | Champlain Mountain Cliffs and a view of Bliss Field from the Precipice Trail Parking Area. |





| | |
|---|---|
| 50 | View of Bliss Field Lowland and flowage including backwater from a beaver dam. A bird wildlife area. |
| 51 | Wide panoramic view of Frenchman Bay and Schoodic Peninsula from Champlain Mountain Overlook. |
| 52 | Beaver Dam Pool. |
| 53 | View across the south expanse of Great Meadow at the Rhodora Area. |
| 54 | View across the north end of Great Meadow at Rhodora Area and Beaver Flow. |
| 55 | View across the north end of Great Meadow at Rhodora Area and Beaver Flow. |
| 56 | Close view of Beaver Dam and Flow. (Moved North 500') |
| 57 | Porcupine Island Overlook from East Side Loop Road, Park Route 4, Kebo Mountain Road. Different view than from Vistas #2 and 3. |
| 58 | View toward Great Hill. |
| 59 | View toward Southwest Valley. |
| 60 | Over Bar Harbor at Frenchman Bay Panorama. First parking area. |
| 61 | Panorama of Eagle Lake and Sargent Mountain westerly at Western Mountains, second parking area. |
| 62 | Same as #61 with broader view. |
| 63 | Higher elevation panorama of Frenchman Bay and surroundings. Third and fourth parking areas. |
| 64 | Long view over Penobscot Mountain and out over southern shore and off shore islands towards Isle au Haut. |
| 65 | Northwest view over island to mainland from near top elevation. |
| 66 | Long view towards the north, as Vista #65, but curving from Northwest to Northeast. |
| 67 | Top of Cadillac |
| 68 | Ship Harbor view from road, not from parking area, straight out over the harbor through the narrow entrance. |

69 Across private land toward the Pretty Marsh.

70 Anemone Cave Parking Area. Future work

Due to the type of growth on Cadillac Mountain, no removal of conifers is planned on Vistas #60 through #67





## Appendix D

ELIGIBILITY FOR THE NATIONAL REGISTER

MAY- 4-93 TUE 15:55 NATL PARK SVC NARO P. 05

United States Department of the Interior

NATIONAL PARK SERVICE
North Atlantic Region
15 State Street
Boston, Massachusetts 02109-3572

IN REPLY REFER TO:

March 17, 1993

H42(NAR-PC)

Mr. Earle G. Shettleworth, Jr., SHPO
Director
Maine Historic Preservation Commission
55 Capitol Street, Station 65
Augusta, Maine 04333

Dear Mr. Shettleworth:

The National Park Service proposes to rehabilitate a portion of the Motor Road System of Acadia National Park, the 26.2 mile scenic route through the park on the eastern portion of Mt. Desert Island, and in accord with Section 106 and Section 110 responsibilities have determined that the Motor Road System is eligible for listing on the National Register of Historic Places.

The Regional Cultural Landscape Specialist and Regional Historian for the North Atlantic Region have reviewed the enclosed Evaluation of Eligibility prepared by landscape architect Catherine Evans and concur that the property meets the criteria for inclusion in the National Register. The period of significance is 1921-58 and meets criteria A and C; those portions of the road designed after 1942 meets consideration G.

If you concur with our determination, please sign on the space provided and return this letter to this office within 30 days. We will submit our assessment of effects, in accord with 36 CFR 800.5, with the necessary documentation for the rehabilitation at a later date. It is our intention to invite your review of the project as it develops.

A copy of this letter is enclosed for your files. Should you have any questions regarding this determination or have questions concerning the documentation, please contact Regional Historian Paul O. Weinbaum at (617) 223-5057.

Sincerely,

Marie Rust
Regional Director

Enclosures

I concur with the above-stated determination of effect.

Maine State Historic Preservation Officer 3/26/93 Date

## Appendix E

### CONCURRENCE WITH RECOMMENDATIONS

United States Department of the Interior

NATIONAL PARK SERVICE
Frederick Law Olmsted National Historic Site
99 Warren Street
Brookline, Massachusetts 02146

IN REPLY REFER TO:

TAKE PRIDE IN AMERICA

To: Robert McIntosh

From: Lauren Meier

Through: Nora Mitchell

Subject: Decisions 9/16 on the Motor Road, Acadia National Park

Date: September 21, 1993

The outstanding issues on the rehabilitation of the Motor Road were discussed and resolved on September 16 in a field check and meeting at the park. Bob Reynolds, Len Bobinchock, Jim Vekasi, and Judy Hazen Connery represented the park. Eliot and myself attended on behalf of cultural resources. Issues discussed and decision are as follows:

1. Cross-section and ditch/bank reconditioning

In the Kebo Mountain segment, an area of shoulder reconditioning outlined on the FHWA plans could result in an impact to 30-50 feet of vegetated embankment. Eliot Foulds and Jim Vekasi measured the bank segment in four locations in this area to determine the potential effect of the FHWA recommendation. As a result of this work, the typical details must be revised to produce a site-specific solution. The guidelines will be revised to require additional work by FHWA to address the slope in this location.

2. Parking Management Stones

The park has reviewed all the existing parking management stones and determined which may be eliminated. In addition, they have recommended additional stones to be placed on the Ocean Drive section and a few other sections as well. The park has also prepared specifications for the size and placement of new stones. This recommendation will be incorporated into the guidelines.

3. Informal pull-offs

The park has evaluated all the informal pull-offs and will provide a list of those to be eliminated in their comments to FHWA.

4. Vegetation re-establishment

It is likely that sufficient SCS seed may not be available for the entire scope of re-vegetation required in this project. Since Red Fescue is both native and commercially available, it should be used to supplement the SCS mix if necessary. The specifications for the Acadia mix will be incorporated into the guidelines.





5. Surface material

NPS will recommend the modified "Class C" mix used by the Maine Department of Transportation. This represents and acceptable alternative to the issues related to historic character and implementation.

6. Pavement milling

The park concurred that additional milling is acceptable in order to retain the 1" reveal on edge features.

7. Inlets/Outlets

The park concurred with the recommendation for new headwalls to be constructed of concrete faced with stone. This includes the replacement of 2 historic brick headwalls which have failed due to problems with their original design.

8. Paved waterway

Existing bituminous waterway will remain provided it is does not require substantial repair or reconstruction. New waterways will be constructed of masonry following the detail provided. When the bituminous waterway is sufficiently deteriorated to require substantial repair or replacement, it will be replaced with masonry throughout.

9. Sidewalks, etc.

Jim Vekasi has prepared a sketch plan for improvements to the Paradise Hill Overlook. If time and budget allows, Eliot Foulds will assist with this project next fiscal year.

10. Gates

The proposed gate detail was problemmatic due to weight and function in snow. This has been revised as a single-cross bar span with an angled brace fabricated of rough sawn lumber.

11. Signs

The park has reviewed the signs on this segment of the motor road and will include specific recommendations in their comments to FHWA. Establishment of rustic signs on the motor road will be deferred until a comprehensive approach can be undertaken. If time and budget allows, Eliot Foulds will prepare a new design for 2 entrance signs in FY 94 (Rte 233 and Schooner Head Road) compatible with the historic rustic signs.

Concurred: Robert Reynolds 9/23/93

Robert Reynolds, Superintendent
Acadia National Park