FINAL
HIGHWAYS TO THE SKY: A CONTEXT AND HISTORY OF COLORADO'S HIGHWAY SYSTEM

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"Auto Highway Map of Colorado" Published by Denver Motor Club, c. 1915
Cover courtesy of Rocky Mountain Philatelic Library, Denver, Colorado

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INTRODUCTION AND PROJECT DESCRIPTION

1.1 Historical Context

For more than a century, road builders and highway engineers have transformed the physical and social landscape of Colorado. Those designers and builders overcame the challenges of building a cost-effective highway system in a sparsely populated, climatically varied region with one of the world's largest mountain ranges looming as an obstacle. Responding to the demands of resident drivers and incoming visitors, state and federal highway authorities transformed a network of trails into uniform and safe roads, and in some cases built modern highways over terrain deemed impassible by previous generations of travelers. The earliest roads and highways improved travel and communications throughout the state and helped bring cohesion to the state's economy. In the late 19th century, crude arteries carved into the landscape fostered the state's mining and agricultural industries. Throughout the 20th century, an ever-expanding network of automobile roads sustained the rise and dominance of Colorado's tourism and recreation industries.

Latter-day Coloradoans speak abstractly of a "Wild West" past as the most important element of the state's heritage, in part because that era is so much removed from modern life as to attain a romantic and idealized status. The single most important historical event separating the Wild West or pioneer era from today's Colorado was the introduction of the automobile at the close of the 19th century. Drivers could conquer distances more quickly, safely, and comfortably by automobile than by personal horse-drawn vehicle. The automobile also offered far greater flexibility than any stagecoach or railroad could offer. The freedom to go almost anywhere by car or haul anything by truck profoundly guided the nature and location of commercial and residential development in the 20th century. This context examines the evolution of Colorado's trails into Interstates, describes the historical value and importance of the state's highways, and presents the reasons why they are worthy of preservation. Built to carry our cars safely to other places, a highway can tell us a lot about where we have been.

1.2 Purpose and Sponsorship

There are few historic context studies of Colorado's roads and highways, in part because these transportation features remain functional components of the modern landscape. With the exception of the Interstate highway system, nearly all of Colorado's highways were constructed in some form more than 50 years ago. Some modern highways have historical associations that began long before the automobile era, such as the portion of U.S. Highway 50 that follows a segment of the Santa Fe Trail through southern Colorado. Other highways later played a vital role in the state's history. State Highway 141 traversed the red mesas of western Colorado, serving both the federal government and private prospectors, toward the development of the nation's uranium and atomic industries during and after World War II. Some Colorado highways contain design features representing certain periods, such as original concrete paving in segments of U.S. Highway 85 near Aguilar, or the New Deal-era stone retaining walls along State Highway 74 along Bear Creek outside of Morrison.

The Colorado Department of Transportation (CDOT) is responsible for planning, building, and maintaining a statewide system of highways. CDOT carries out its mandates with funding from the state legislature and from federal grant-in-aid programs. As a state agency and recipient of federal funds, CDOT must comply with environmental and historic preservation laws and regulations, most notably the National Historic Preservation Act, the National Environmental Policy Act, and the Transportation Act of 1947 as amended and reauthorized. One requirement of these laws and regulations is consideration of possible effects of CDOT's activities on historic resources, which are defined as properties that are eligible for nomination to the National Register of Historic Places (see discussion of criteria in Chapter 10). The ultimate purpose of this report is to provide a basis for evaluating the historical significance and National Register eligibility of individual highways or highway segments throughout Colorado. Information gathered for this report may also be useful for interpretation of routes for public appreciation.

With funding and technical assistance from the Colorado Historical Society (State Historical Fund), CDOT initiated a systematic effort to identify historic highways statewide in early 2001. In April 2001, CDOT contracted with Associated Cultural Resource Experts (ACRE) to prepare an historic highway context. ACRE prepared this context through examination of resources relating directly to the design, construction, use and maintenance of Colorado's automobile roads.

This context is limited in scope. It does not include a discussion of roadside commercial or residential architecture, unless those resources are directly and inherently related to a highway. For example, the architecture of gas stations and motels is not addressed in this study. Substantial bridges are also excluded from this study as bridges were extensively addressed in an earlier historic context. Historic trails are addressed briefly as antecedents to automobile roads and highways. This study is intended to provide information for the specific purpose of evaluating National Register eligibility of highways; the study is not intended to be a complete history of highways, highway transportation, or CDOT and its precursor agencies. This study also focuses nearly completely on highways in the state highway system; it does not extensively address roads and highways built and maintained by county and local governments. This study is also not intended to be a cultural resource management plan for historic highways in Colorado.

1.3 Methods and Procedures

This study focuses on five major questions or information requirements:

A. What is the current state of knowledge concerning historic automobile roads and highways, and what information sources are available?
B. Can the history of automobile roads and highways be understood in terms of specific geographic contexts within Colorado? If so, how are those contexts spatially and thematically defined?
C. What are the themes and subthemes of highway development in Colorado, and how are those themes and subthemes reflected in physical resources?

D. In light of the particular history of Colorado highways, what registration (significance and integrity) criteria are appropriate?
E. Which highways in the state highway system may be eligible for the National Register, and what data gaps remain to determine eligibility?

In addressing these questions and information requirements, ACRE extensively researched primary and secondary source materials. An historical context for Colorado highways had not been prepared previously, but several other states had produced or were in process of producing highway contexts. ACRE contacted architectural historians in all 50 State Historic Preservation Offices (SHPO), asking if they had produced a highway context for their respective state and if the existing context was used for evaluation purposes. ACRE also inquired if each SHPO had suggestions for improving on the character of previously prepared highway contexts. Twenty SHPOs responded to the request for information, and SHPOs in Arkansas, Connecticut, Minnesota, Missouri, Montana, New Mexico and Oklahoma provided copies of historic highways contexts. In September 2001, copies of these contexts were submitted to CDOT's Environmental Program Branch. Those responses helped determine the scope of CDOT's proposed context.

Primary resources were gathered from CDOT's central files, Right-of-Way Section, and library. CDOT's office in Evans, Colorado, also provided engineering and construction designs for highways in the northern and northeastern parts of the state. Space at CDOT's headquarters in Denver does not allow for a century's worth of letters, memos and policy statements. Most of those documents are classified in the "Transportation" record group at the Colorado State Archives in Denver. The Archives holds State Highway Commission/Department of Highways records, letters, maps, and memorandum from 1910 to the early 1970s. These documents offered the only opportunity to gauge the opinions and motivations of the highway department's policy makers and engineers in their own words.

ACRE conducted research in a number of local textural repositories. The Denver Public Library's Western History Department and Government Documents Section hold a great deal of primary and secondary information about road development in Colorado. The

Colorado Historical Society's State Historical Preservation Office is the repository of site survey documentation of the state's roads and bridges. Credit is also due to William Dunn and Robert Brown of the Rocky Mountain Philatelic Library in Denver for providing ACRE use of rare automobile maps of Colorado.

During the course of this project, research turned up one nearly forgotten source of documentation. The University of Colorado's Mathematics Library in Boulder holds a collection of Rocky Mountain Contractor from 1937 to the present day. From 1937 to the early 1950s, the State of Colorado published Rocky Mountain Contractor to update the engineering and construction communities on the progress of state, public, and private works projects with an emphasis on road building.

Regarding the federal influence on Colorado highway and interstate development, the National Archives-Rocky Mountain Region in Lakewood holds a very limited collection of Bureau of Public Roads (Record Group 30) memorandum and letters from the 1920s and 1930s. The bulk of Record Group 30 is located in National Archives II in College Park, MD.

During January and February 2002, ACRE staff conducted site surveys of 10 selected Colorado highways based on discussions between CDOT, Colorado Historical Society and ACRE. Representatives from each organization selected these 10 highways for their potential historic integrity and the social and economic importance they had on a particular region of the state. A further description of each road, and a separate site survey, is found later in this document.

This report also provides an extended bibliography of all resources identified during the records search. This bibliography will assist future researchers in locating records that are not easily accessible.

1.4 Further Areas of Research

Similar to most projects, time and money prevents a researcher from gathering every piece of information on a certain subject. Further development of this context would require research in the following sources of information. Other potential locations include the Department of Transportation's 11 district offices statewide. These offices hold blueprints, designs, and correspondence on every road in that district that may or may not be at headquarters in Denver. Each office also contains the staff's institutional memory of the difficulties and triumphs surrounding design and construction.

When examining a road in a certain county, another potential resource is in that county's engineering office. Each county engineer should have technical information regarding alignment, construction, and maintenance on a particular highway. In addition, each county clerk's office holds county commissioner minutes that likely contain additional information regarding a certain road's funding, construction, and maintenance.

The federal government's influence over highway construction in Colorado is another area worthy of further examination. Unfortunately, the collection at the National Archives in Lakewood is limited. Most of the records of the Bureau of Public Roads (Record Group 30) are in National Archives II at College Park, MD.

Staff historian Robert Autobee, M.A., developed the context with assistance by Teela Labrum, staff historian and Deborah Dobson-Brown, M.S. Architectural Historian. Robert Autobee and Deborah Dobson-Brown conducted the field reconnaissance survey during January and February 2002. Kurt Schweigert served as the project manager. Colorado Department of Transportation historians Dianna Litvak and Lisa Schoch reviewed the documentation. All work was conducted under contract number 01HAA00247.

Chapter 2

SETTING

2.1 General Topographical Description

Colorado's climate and natural features offered road builders challenges few states could duplicate. Extending nearly 400 miles from east to west and nearly 300 miles from north to south, Colorado is the nation's eighth-largest state. Dividing this nearly perfect rectangle is the continent's largest mountain range. The state counts nearly 1,500 peaks rising 10,000 feet or more in elevation. Colorado has a mean altitude of 6,800 feet – higher than any other state. Colorado's broad high plains, occasional sand hills, and isolated mesas do not receive as much recognition as the Rocky Mountains. However, each of these features defines the state's different social and economic cultures (Workers of the Writers' Program, 1987: 4).

2.2 General History of Mining, Settlement and Political Organization

For much of the past 2,000 years of known history, many indigenous peoples migrated over the region's prairies, mountains, and mesas. Many archaeologists and historians believe the Ute Indians habitation of the southern Rockies in approximately 1500 A.D. represents Colorado's first continual settlement.

From the mid-15th to the early 19th century, the Spanish and French Empires both laid claim to the region, but rumors of gold and silver did little to encourage permanent settlement. By 1706, the eastern plains of modern Colorado were claimed by Spain and named the Province of San Luis. Resulting from the Louisiana Purchase of 1803, the United States acquired from France a vast area including what is now most of eastern Colorado. Under orders of President Thomas Jefferson, Lieutenant Zebulon M. Pike and a small party of U.S. soldiers explored the southwestern boundary of the Louisiana Purchase during 1806-07 (Athearn, 1976: 1-2).

In Pike's wake, fur trappers, also known as mountain men, followed to establish commerce on the far edge of America's territorial possessions. A number of New

Mexico-bound fur traders crossed southeastern Colorado in the early 1800s and, a few years later, trappers like Jim Bridger made their way into the mountains in search of beaver pelts. Trading posts — known among trappers as forts — soon sprang at the base of the foothills. Located on the lower Arkansas River near modern La Junta, Bent's Fort gained renown as the hub of frontier civilization during the 1830s and 1840s (Workers of the Writers' Program, 1987: 35).

While the development of the state highway system linked varied landforms and people, the most well traveled route in the state is located in a 30-mile-wide band from the Wyoming state line south to the New Mexico border. With the exception of Grand Junction, most of Colorado's largest cities and towns hug the eastern, or Front Range, of the Rocky Mountains. Supported by the streams trickling out of the Rockies, the first Euro-Americans settled along the Front Range more than 150 years ago. The valleys leading into the mountains also were the easiest routes for fortune seekers after the next big gold or silver strike (Workers of the Writers' Program, 1987: 6).

The region's relative isolation disappeared once stories made their way around the region and back east of gold discoveries during the 1850s. By the end of the decade, a miner from Georgia, Green Russell, discovered small placer gold deposits near the confluence of the South Platte River and Cherry Creek. Rumors and subsequent gold strikes did more than ignite Colorado's first major population migration, it lead to the establishment of the region's first social and political organization. On November 6, 1858, a score of prospectors met and organized the gold fields scattered around Russell's find as Arapahoe County, Kansas Territory. The miners elected delegates to sit in both the territorial legislature and the U.S. Congress in Washington, DC. The first immigrants also established Peoples' and Miners' Courts to quickly resolve personal clashes or mining claim disputes. In 1859, prospectors and settlers organized Jefferson Territory without sanction of Congress to govern the often-unruly gold camps. Within two years, a growing number of people coming to Colorado convinced the U.S. Congress to establish a territory along the boundaries of the present state. By spring 1861, President Abraham Lincoln appointed William Gilpin as Colorado's first territorial governor. By July, Colorado Territory organized its first Supreme Court and selected delegates to send to Congress. As the population grew to 25,371, in September 1861, the first Territorial Assembly met and divided Colorado into 17 counties (Workers of the Writers' Program, 1987: 42, 467-9).

Colorado's early legislators occasionally debated transportation questions and how to connect the isolated state to the rest of the nation. In 1865, the Territorial Assembly passed an act regulating toll roads. Two years later, the Assembly voted to grant small appropriations toward road improvement. It would take the next advance in transportation – and another four decades – before the state legislature directed any serious attention toward highway construction (Workers of the Writers' Program, 1987: 47).

2.3 The Colorado Highway Commission and Succeeding Agencies

The arrival of a new technology to persuaded state officials to take a greater interest in Colorado's roads. Throughout the first decade of the 20th century, Colorado's prominent automobile owners lobbied the General Assembly to establish a state authority over highway construction and development. Swayed by the auto owners' high profile and financial prestige, the Assembly created the Colorado Highway Commission in 1909. Over the next 90 years, the General Assembly occasionally changed the commission's name and direction as a response to increased traffic volume and the ever-expanding role of the federal government in state highway construction. It has been a winding path from the hopes of the first commission to the realities of today's Department of Transportation.

On May 5, 1909, the General Assembly created the Colorado Highway Commission (L. 09, Ch. 57). Appointed by Governor John F. Shafroth, the three-man commission of C.P. Allen of Denver, William M. Wiley of Holly, and Thomas H. Tulley of Durango, selected James E. Maloney as the commission's first secretary and engineer. Operating with an initial budget of $50,000, the commission wanted to conduct a general survey of the state's roads and apportion state aid to the counties. According to the new law, no county would receive state aid unless it agreed to raise and expend an amount equal to twice the amount apportioned by the State Highway Commission (Hafen, 1931: 14). The commissioners first met in Room 27 of State Capital on January 17, 1910. Over the next 12 months, the commission gathered 23 times to map and plan the state's highway system (Merchant, 1955: 76).

The commission did the best they could with their initial $50,000. Nevertheless, road construction in Colorado would end before it ever got started without more money. By 1913, automobile clubs and other enthusiasts worked to put a $10,000,000 bond issue on the ballot for constructing and improving highways. Most Coloradoans had yet to own an automobile and voters rejected the initiative believing it would be a state subsidy of the rich. In spite of the loss at the ballot box, the General Assembly reorganized the State Highway Department in 1913 (L. 13, Ch.88). The Assembly authorized a number of precedents crucial to the Highway Department's development. Legislators established a continuing appropriation for state roads and turned all the accumulated money in the State's Internal Improvement Fund to the state's highways. The money from the Internal Improvement Fund increased the Highway Department's annual budget to $766,311. The 1913 reorganization also directed the governor to appoint a State Highway Commissioner. The commissioner would oversee road development and maintenance assisted by a highway advisory board. The measure also enacted the first laws regarding the registration and licensing of motor vehicles. Colorado's first license fee varied from $2.50 to $10 depending on the horsepower of the owner's car. The state and the 62 Colorado counties then in existence divided the collected licensing revenue (Hafen, 1931: 14).

Between 1914 and 1922, the General Assembly initiated a number of measures providing additional revenue solely for highway construction. In 1914, voters approved a half-mill state tax to build new roads. The State Highway Commission distributed 50 percent of the tax money to counties and retained 50 percent for state highway expenditures. Five years later, the General Assembly levied an additional half-mill to the existing tax and introduced an additional gasoline tax. In 1919, Colorado was one of the first four states to create a gas tax. Originally set at one-cent-per-gallon, the tax grew to four cents a gallon by the end of the 1920s (Maloney and Reedy, 1929: 6-7).

State taxes helped build small projects, but those involved with Colorado's highway program knew that the federal government would provide greater direction and money over time. Responding to the passage of the 1916 Federal Public Roads Act, the Colorado General Assembly transformed the State Highway Commission into the State Highway Department the following year. Under the Colorado Highway Act of 1917 (L. 17, Ch. 78), the Assembly established a fund strictly for the Highway Department's use. The new legislation also retained the office of commissioner, but changed the five-man advisory board to a five-man highway commission. This commission held the authority to approve new road projects (Colorado State Archives, c. 1975: 1).

In 1920, and again in 1922, voters approved multi-million-dollar bond issues to take full advantage of the Federal Highway Act of 1916. The Act provided matching federal funds to state highway commissions eager to build new auto roads. Only one in 10 Coloradoans owned a car in 1920, but approval of both measures reflected how much the attitude of the state's voters had changed toward highway funding in less than a decade (Maloney and Reedy, 1929: 6-7).

In 1921, the General Assembly again reshaped and expanded the bureaucracy of the state highway authority. Colorado's legislators made this decision in response to the federal Bureau of Public Roads (BPR) readiness to unite the nation's highway system. The BPR sought to establish a fully integrated network of highways eligible for federal aid and implement regulations over this system. Under the 1921 law, Colorado established the office of state highway engineer as head of the department, divided the state into seven districts with a member of the advisory board appointed from each district for a term of three years, and gave the highway department the responsibility for construction and maintenance of the state highway system. The state would share maintenance costs with the counties (Maloney and Reedy, 1929: 6-7).

During the mid-1920s, the Highway Department derived revenues from five sources: federal aid, an internal improvement tax, a motor-vehicle tax, a gasoline tax, and a one-half-mill levy (Weiser, April 1924: 7). By the decade's close, the state was spending nearly $2.5 million annually on highways. After the federal government added matching funds to the state appropriations, highway funds were roughly equal to a fourth of the state's total expenditures (Noel, 1987: 43).

Federal public works programs and a voter-approved bond kept construction going during the Depression years. In 1935, Colorado voters approved a $25,000,000 anticipation warrant for new road construction. The bond helped match federal highway funds before it was paid off in the mid-1950s (Colorado Department of Highways, 1954: 12).

A post-war rush of people and cars to Colorado signaled the next transformation of the state highway bureaucracy. In 1952, the General Assembly created the Department of Highways (L. 52, Ch. 57) replacing the State Highway Department. Colorado's governor appointed the chief engineer to serve as the chief administrative officer of the department. The state's chief executive also appointed an eight-member State Highway Commission that replaced the Highway Advisory Board. Serving staggered four-year terms, commission members represented eight different regions across the state (Colorado Department of Highways, 1954: 14).

The Department of Highways thrived during the interstate years of the 1950s and 1960s. By 1968, the General Assembly passed legislation creating a reconstituted State Department of Highways (L. 68, Ch. 53). The 1968 Act entrusted the Governor to appoint an executive director to head the department and transferred the State Highway Commission to the State Department of Highways. The law divided highway responsibilities between two separate authorities: the Division of Highways and the Division of the Colorado State Patrol. Former Department of Highways personnel and the chief engineer transferred from the department to the newly created Division of Highways. In 1971, an amendment to the Colorado constitution (L. 71, Ch. 29) authorized the governor to appoint the Division of Highway's executive director and chief engineer (Colorado State Archives, c. 1975: 4). Over the next two decades, the only substantial change to this system resulted from the transfer of the Colorado State Patrol from the Highway Department to the newly created Department of Public Safety in 1983 (Colorado Department of Transportation, 2000(a): 42).

Since the middle 1970s, the legislature occasionally considered bills to establish a state Department of Transportation designed to oversee highways, public transportation, and aeronautics. After many deaths on the floor of the legislature, the Department of Highways was finally reincarnated as the Colorado Department of Transportation in 1991. The Department of Transportation is managed by the Transportation Commission, which is headed by an executive director. The Transportation Commission is composed of commissioners representing 11 districts. After confirmation by the State Senate, the governor appoints each commissioner to a four-year term. Among its many duties, the commission formulates general policy regarding construction and maintenance of state highways and transportation systems, advising and making recommendations to the governor and the General Assembly relative to transportation policy and adopting transportation budgets and programs (Colorado Department of Transportation, 2000(a): 40).

By the century's close, CDOT received funding from four primary revenue sources: the state Highway Users Tax Fund (HUTF), Senate Bill 97-001, the Federal Highway Users Trust Fund and miscellaneous funds such as interest, fees, and gaming revenue. The state transportation system's leading source of revenue is the HUTF. Seventy-five percent of the HUTF comes from motor fuel taxes with the remainder provided by motor vehicle registration and driver's license fees. Passed in 1987, revenue from HUTF grew an average of 2.8 percent per year during the 1990s, reflecting an increase in the number of register motor vehicles (Colorado Department of Transportation, 2000(a): 31).

Since 1996, all General Fund revenue allocated to transportation by the legislature went directly to CDOT. This is not the case when allocating HUTF to the Department of Transportation. Prior to distribution to CDOT, the legislature appropriates funds to other state agencies related to the HUTF, including the Department of Revenue and the Colorado State Patrol. These appropriations to other agencies are referred to as "off-the-top" deductions. The remaining funds are then allocated among the cities, counties, and CDOT. In Fiscal Year (FY) 2000, the state's total HUTF totaled $715 million, of which $398 million was made available to CDOT. From 1987, the percentage of state revenue directed toward transportation increased from 48.5 percent to 69 percent in 1999. Conversely, in 1987, 48.3 percent of CDOT revenue came from federal sources. Resulting from legislative measures directing more General Fund revenue toward transportation, federal aid to Colorado's highways dropped to 31 percent by the close of the 1990s (Colorado Department of Transportation, 2000(a): 31).

Another important source of funding resulted from the State Legislature passing Senate Bill 97-001 in FY 1997. Effective July 1997 (and originally scheduled to end in 2002), SB 97-001 allocated 10 percent of the proceeds from sales-and-use taxes to the State Highway Funds. Ten percent is the estimated amount of sales-and-use taxes generated by the sales of motor vehicles and related items such as tires and batteries. In FY 2000, CDOT received $609.8 million in state funds for transportation (Colorado Department of Transportation, 2000(a): 31-2).

Colorado still receives a substantial amount of funding from the federal government, and will continue to do so in the near future. In 1998, the U.S. Congress passed TEA-21, the Transportation Equity Act for the 21st century. CDOT expected to see a significant increase in its budget resulting from this legislation. In FY 2000, Colorado received $311.3 million in federal highway funds. In addition, CDOT received $6.6 million in supplemental federal transit funds. Combined with monies from the state, CDOT's budget in FY 2000 totaled $960.3 million (Colorado Department of Transportation, 2000(a): 32-3).

Chapter 3
THE ROAD AHEAD: EARLY TRAILS IN COLORADO

3.1 Native Trails: Pre-history to 1850s

Over Colorado's prairies and mountains, layers of asphalt cover many of the paths first cut by the region's indigenous peoples centuries ago. One route first followed by the Ute Indians symbolizes the transformation of Colorado's footpaths into highways. Nearly 1,000 years ago, the Utes traced a path from what is today Estes Park over the Continental Divide to Middle Park. Subsequent explorers, trappers, and settlers followed the same route, and at some point, the trail took on the name Ridge Road. By the mid-1920s, federal and state bureaucracies erased a half-century of romance and history by renaming Ridge Road to US Highway 34. Other modern highways that trace their lineage back to the Utes include a portion of US 24, crossing the Rockies west of Colorado Springs to South Park, the trail over 10,032-foot Cochetopa Pass that is today's State Highway 114, and US Highway 160 from South Fork over Wolf Creek Pass to Pagosa Springs (Long, 1953: vi) [Figure 1].

In 1540, the first Europeans arrived in Colorado. Twenty-two members of a scouting party under the command of General Don Francisco Vasquez de Coronado wandered across southeastern Colorado in search of the Seven Cities of Cibola. Over the next 150 years, the Spanish struggle to control the Pueblo Indians and other native tribes prevented further colonization beyond Santa Fe, the capital of New Spain's province of New Mexico. In 1694, after putting down a Pueblo revolt, Governor Don Diego de Vargas led an expedition from Santa Fe north along the course of today's U.S. Highway 285. By 1706, a group of colonists established Colorado's first European settlement, a trading post 100 miles south of today's Pueblo (Sprague, 1964: 1, 8). For the remainder of the 18th century, conquistadors and friars followed their own routes through the San Luis Valley. Spanish trailblazers Juan de Ulibarri, Fathers Silvestre Escalante and Francisco Dominguez, and Don Juan Bautista de Anza all left descriptions of Colorado's geography, plants, and wildlife (Christensen, et. al, 1987: 48).

Figure 1 – 1925 Hafen Trail Map

While the Spanish built roads in California and New Mexico, they never launched any similar efforts in Colorado. To the conquistadors and priests, the land north of Santa Fe was too wild, too distant, and seemingly lacked any resources for the Spanish Empire to control and maintain.

3.2 Emigrant and Trade Routes

Resulting from the Louisiana Purchase of 1803, the United States acquired a vast area of the continent that included most of eastern Colorado. During 1806-07, Lieutenant Pike and his men crossed much of southern Colorado, establishing Pike's Stockade at the Conejos River in the San Luis Valley. In 1820, President James Monroe sent Major Stephen H. Long to explore the southwestern boundary of the Louisiana Purchase. After Long's party came up the South Platte River, he dismissed the high plains as the "Great American Desert." Long's remarks created a lasting perception among many Americans for decades to come. Regardless of Long, a handful of solitary outsiders trapping beaver and trading with the natives followed in his wake (Workers of the Writers' Program, 1987: 35).

Over the next two decades, subsequent sojourners followed two important paths into Colorado: the Smoky Hill Trail from Leavenworth, Kansas west to Cheyenne Wells, Hugo, Limon, Bennett and Denver, and the Overland Trail which ran southward along the southeast side of the South Platte River from Julesburg to Greeley before following the Cache La Poudre river to LaPorte (Wiley, 1976: 2-3). The mountain man era concluded abruptly by the late 1850s with the mass migration of the first gold-seekers' wagons. In 1860 alone, nearly 70,000 adventure seekers survived raiding parties, inclement weather, starvation, and drought to take a chance on finding gold—following routes first utilized by the trappers. Elsewhere in Colorado, other emigrant and trade routes live on as the alignments of many of the state's major automobile highways.

3.2.1 Santa Fe Trail

For most of the 19th century, the nation headed west on the Santa Fe Trail. The trail served as the primary link between St. Louis, Missouri and the outpost of Santa Fe, New

Mexico. The trail's history began in the late summer of 1821 when a trading party led by William Becknell left Missouri and ventured through southern Colorado. In November of that year, Becknell and his party reached Santa Fe and established a caravan trade that lasted more than 40 years (Moody, 1963: 186).

The trail was a link between New Mexico over Raton Pass to the markets of the Missouri Valley and the trading posts along the Arkansas River. In 1821, American pack and wagon trams first plodded along the Santa Fe Trail in southeastern Colorado along the route later used by US 50 and 350.

Between 1829 and 1834, William Bent established his fort on the Arkansas River and added a new chapter to the history of the Santa Fe Trail. By the early 1830s, Becknell's original route had fallen into disuse, resulting from Kiowa and Comanche tribesmen incensed by the increasing number of whites trespassing on their land. Traders still seeking a way to Santa Fe established the northern, or "Mountain Branch" of the Santa Fe Trail. Nearly 100 miles longer, the northern route by way of Bent's Fort was removed from the likelihood of Indian attack. In addition to safety, the new route followed the Arkansas River and Timpas Creek where there was water for travelers and their stock. The Santa Fe Trail fell out of favor with the arrival of the railroad later in the century. As the automobile supplanted the train by the 20th century, the Santa Fe Trail became a part of the legend of the American West. The trail does live on as a way west in the alignment of two primary Colorado highways: US 50 and US 350 (Moody, 1963: 209, 220).

3.2.2 Cherokee Trail

As well traveled as the Santa Fe Trail, but not as storied, during the mid-18th century French explorers followed the Cherokee Trail into Colorado. Subsequent men of commerce and adventure began their journey along the Cherokee Trail from the Arkansas River near today's Arkansas-Oklahoma border. Tracing the path of the Santa Fe Trail, once in Colorado the Cherokee branched off at La Junta. From there, the Cherokee continued up the Arkansas River, then followed Fountain Creek to Colorado City, and on to Denver before passing through Virginia Dale to Wyoming. The trail reached its conclusion in the gold fields surrounding Sacramento, California (Long, 1953: 125).

In Colorado, US Highway 50 follows the route of the Cherokee Trail from the Kansas border to the east side of Fountain Creek and then from Pueblo to the town of Fountain. In the mid-19th century, a stage road continued north along the west bank of Fountain Creek to Colorado City. A half-century later, the original alignment of Great North-South Highway (subsequently US Highway 85 and now Interstate 25) followed the alignment of the stage route through this section of southern Colorado (Long, 1953: 138).

3.2.3 Smoky Hill Trail

Three branches comprised the Smoky Hill Trail: North, Middle, and South. During the Colorado's gold rush era, most would-be prospectors followed the Middle Smoky along the Smoky Hill River out of Kansas to Old Cheyenne Wells (north of the current town of Cheyenne Wells) in Colorado. Although it was the most direct route to gold camps, the Middle Smoky was known as "The Starvation Trail." During its heyday in the 1860s, the Middle Smoky measured more than 10 miles wide. The trail traced the contours of the prairie as it followed the flat lower ground while avoiding the surrounding sand hills (Long, 1953: 21). Open to all the elements, more people died from hunger and thirst than Indian attacks along this route. Three modern highways follow the Smoky Hill Trail through Colorado: US 40 from the Kansas border to Limon; State Highway 86 from Interstate 70 exit 352 west to Elizabeth; and State Highway 83 from Parker to Denver (Long, 1953: 20, 27-36).

3.2.4 Overland Trail

Coming out of Nebraska, the Overland Trail ascended the south bank of the South Platte River before entering northeastern Colorado. Through northern Colorado, both the Overland and the Oregon Trails followed the same path before separating at the Upper California Crossing near Ovid, Colorado. The Overland continued along the south side of the South Platte into Denver. The modern alignment of both US 138 and US 6 in northeastern Colorado follows the Overland route (Long, 1953: 170).

From the late 1850s into the mid-1860s, wagons and stages followed a bypass of the Overland Trail known as the Fort Morgan Cutoff. Situated on a diagonal line from Fort Morgan to Denver, the cutoff shaved 40 miles off the journey. Built on heavy sand that stage and freight wagons could not have handled during the mid-19th century, modern US 6 is approximately 40 miles west of the Fort Morgan Cutoff (Long, 1953: 193).

From Denver the Overland stage then turned north mirroring the west bank of the South Platte from Longmont to Loveland. That portion of the stage run duplicates the alignment of today's Interstate 25. Past Loveland, the stage headed west of Fort Collins to LaPorte before eventually crossing the Wyoming state line. That divergence from LaPorte to Wyoming is today's US Highway 287 (Long, 1953: 211).

3.2.5 Trapper's Trail

The Trapper's, or Taos, Trail went from Taos, New Mexico to Fort Garland along the San Luis Valley. Colorado State Highway 159 follows the alignment of the Trapper's Trail. During the mid-19th century, the Trapper's Trail divided at the Huerfano River with one branch following the river to Fort Reynolds while the other went toward Pueblo. The Pueblo branch headed north to Denver. Once in Denver, the trail followed a route paralleling today's Kalamath Street. After departing the banks of the Cherry Creek, the Trapper's trail eventually crossed the border into Wyoming near Cheyenne (Long, 1953: 147-9).

Native Americans and mountain men led the way in establishing routes across eastern and southern Colorado. From the 1820s to the Civil War, the federal government and United States military took an increasing role in locating new pathways over the Mountains and beyond.

3.3 Military Roads and Federal Involvement

President Thomas Jefferson's desire to know more about the northern plains of America's purchase from France prompted the Lewis and Clark expedition. Around the time Lewis and Clark reported to their findings to Jefferson in Washington, Army lieutenant Zebulon Pike was making his way to the central Rockies to study that section of the Louisiana Purchase. In mid-November 1806, Pike and his men discovered the peak destined to bear his name and reach the headwaters of the Arkansas River, near today's Leadville. In 1820, a party led by Major Stephen H. Long pushed farther into the unexplored country, bringing back tales of Colorado as a great desert. In subsequent decades other military parties led by Lieutenant John C. Fremont and Captain John Gunnison gave the American people more detailed information about the far-off Rockies. Their reports, however, did little to inspire mass migration westward (Athearn, 1976: 2).

The 1848 Treaty of Guadalupe-Hidalgo concluded the war with Mexico and placed the Rocky Mountains into the hands of the United States. In the late 1840s and early 1850s, the United States Army Corps of Topographical Engineers, led by Captain Howard Stansbury, surveyed potential supply routes across Colorado, Utah, and Wyoming. Stansbury's officers: John C. Fremont, John Gunnison, and Edward G. Beckwith, recorded their observations and experiences as they made their way through the mountains. Portions of US 50 follow Gunnison's route west of the Continental Divide (Sprague, 1964: 146-150).

Congressional passage of the Kansas-Nebraska Act in 1854 is best remembered as the opening chapter of the Civil War. Nearly forgotten over time is that the Kansas-Nebraska Act also provided the direction and funding for the first federally built roads in Colorado. Under the legislation, Congress placed the land later known as Colorado under jurisdiction of Kansas Territory. In 1855, the federal government detailed plans to build and improve existing trails in both Kansas and Nebraska Territories. Congress authorized a $50,000 appropriation for improvements to the road between Fort Riley, Kansas and Bent's Fort. On this military road, soldiers conducted surveys and escorted civilian construction parties, but watched as crews cleared and improved the trail (Tate, 1999: 56).

Although preoccupied by the Civil War, the federal government continued to survey paths and locate wagon routes over the Rocky Mountains. In 1861, Captain E. L. Berthoud, and his guide Jim Bridger conducted a survey through the Rockies in search of a route to Utah Territory. Traveling north from the headwaters of Clear Creek, Berthoud's party discovered a pass through the Rockies in May of that year. In September, Berthoud's report to the U.S. Army described a 413.25-mile route from Clear Creek to Salt Lake City. It took another 13 years before the first stagecoach conquered the 11,315-foot high pass named in Berthoud's honor (Sprague, 1964: 185-7).

One post-Civil War military route of note is still in use today across remote northeastern Colorado. Between 1880 and 1884, the U.S. Army built the Government Road (now known as State Highway 13) to protect settlers in the wake of the Meeker Massacre of 1879. The original Government Road ran from Ft. Steele in Wyoming to the San Juan Mountains in southwestern Colorado (Colorado Historical Society, 1995).

3.4 Mining-Related Roads

The gold rush of the late 1850s brought stagecoaches into the mountain mining camps. In the spring of 1859, the Leavenworth and Pikes Pike Express began carrying passengers, mail and freight from Leavenworth, Kansas over the prairie before reaching the north banks of Cherry Creek. Stagecoaches followed the trails set before them by Native Americans and earlier trappers and traders. Comfort was still a luxury and often employees and passengers had to pitch in clear the path in order to complete the journey. One story surrounding an early journey between Leavenworth and Denver involved passenger Horace Greeley swinging a pick and manning a shovel to clear the road. Mapped out by B.D. Williams, (later Colorado's first territorial delegate to Congress) the Leavenworth and Pikes Peak line follows the general route of today's US 36. Other stage lines began service to Colorado throughout the 1860s. In 1864, the Butterfield Overland Dispatch (also known as the B.O.D.) hauled its first freight and passengers along the Smoky Hill route. By late 1866, Wells Fargo bought out the small operators and established a monopoly over all transcontinental stage lines coming in and out of Denver (Wiley: 4).

By the late 1860s, stagecoach routes expanded beyond the eastern plains and Denver to serve the isolated mining communities in the foothills and Rockies. Knowing the importance of receiving supplies or a letter from home, the miners took their picks and shovels to gouge roads out of the mountains. In the miner's haste, highway engineering was often an afterthought and a stagecoach journey through the mountains epitomized a "wild ride." On a few crude mountain roads, the grades were so steep that drivers had to drag huge logs as a way to control the occasional breakneck ride (Workers of the Writers' Program, 1987: 71).

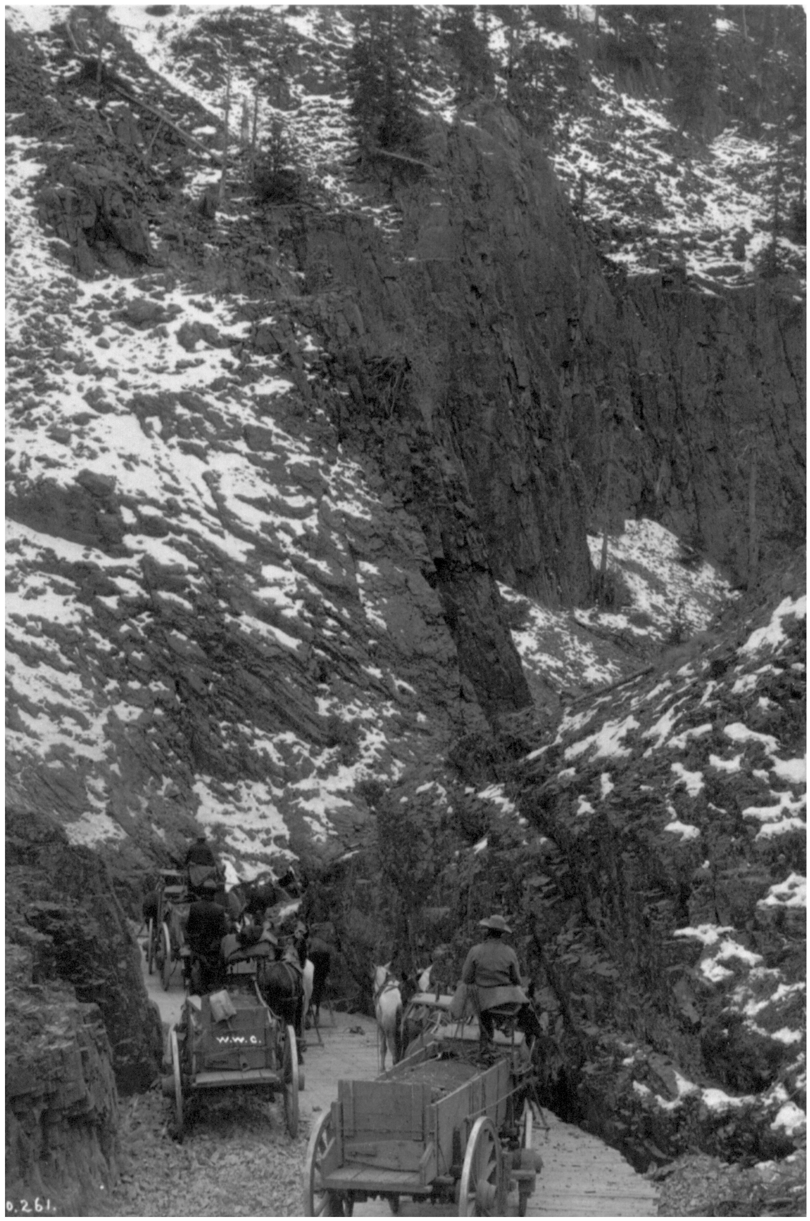

Plate 1. As industries like mining grew, road construction desperately tried to keep pace. In the 1890s, wagons hauled ore over the "new road" from the Last Chance Mine near Creede. Photo: W.W. Crooks. Source: Colorado Historical Society, CHS X4576.

The relative speed and comfort of the railroad ended the dominance of the stagecoach across most of the urban and prairie West. Nevertheless, the stage remained the chief means of travel in the mountains and sparsely populated communities of Colorado. Stages operated by speculators Billy McClelland and Bob Spottswood ran from Denver to Morrison over the route of today's US 285, through Turkey Creek Canyon to Fairplay. In 1873, McClelland and Spottswood expanded their passenger and express service over the Continental Divide by way of today's US 50 to Salida, and then northward along present US 24 from Granite to the town of Oro. The partnership subsequently established separate line between Colorado Springs and South Park that also follows US 24 (Moody, 1967: 297).

Buried by a cloud of locomotive steam, stagecoaches slowly faded from the scene. However, some companies hung on well into the 20th century. From the 1880s to 1918, one stage line made the 30-mile run between Rifle and Meeker along the alignment of today's State Highway 13. In a decision symbolizing the end of the Old West, in 1918, the line's management determined to end the Rifle-to-Meeker run claiming their teams and drivers could not keep up with the increasing automobile traffic (Bury, 1972: 8-9).

3.5 Railroads and the End of the Wagon Trail

During the 1950s, Colorado campaigned and crossed its fingers while it waited for the federal government to expand the national interstate highway system beyond Denver. It was not the first time the state lobbied and fretted over its transportation fate. Nearly a century earlier, in the late 1860s, Colorado fought an economic life-and-death struggle with its neighbor to the north, Wyoming, over who would be the beneficiary of the first railroad line in the Rocky Mountain west. The Rocky Mountains stood as the ultimate double-edge sword for the state's promoters. The peaks lured miners and tourists, but caused concern among road and rail builders.

In the spring of 1869, the bridging of the United States by rail at Promontory Point, Utah, placed Colorado at a crossroads. The Union Pacific Railroad's construction of a transcontinental line over the easy grade of Sherman Hill in Wyoming put the territory in a panic, as everyone realized Colorado needed the railroad to survive. A line from the Union Pacific station in Cheyenne to northern Colorado would allow the rail company to control traffic between the mining camps and eastern markets. By June 1870, the Union Pacific saw the economic advantages of building a line into Colorado and laid track from Cheyenne to Denver. Panic quickly turned to profit after the completion of the Kansas Pacific system connecting Denver with Kansas City and St. Louis later that year (Workers of the Writers' Program, 1987: 71). The railroad coming to Denver provided the impedance for the city to grow and become the urban center of the Rocky Mountain West. The railroad's impact on Denver was immediate. By the close of the 1870s, the city's population increased 700 percent to almost 36,000 residents (Thomas, 1996: 38).

By the early 1880s, the railroad created the foundation for Colorado's agricultural industry; notably dry-land production of sugar beets and winter wheat on the eastern plains. The Atchison, Topeka, and Santa Fe and the Union Pacific rail lines carried the majority of goods and materials between the plains farmer and merchants located in Denver and across the Midwest. In the early automobile age, the railroad influenced the alignment of developing auto highways. During the 1910s and 1920s, the Omaha-Lincoln-Denver road (the precursor to US 6) paralleled the route of the Union Pacific Railroad through northeastern Colorado (Thomas, 1996: 46).

Silver outshone gold during the 1870s and 1880s, as mining camps in the mountains and southwest of Denver boomed. General William J. Palmer led the construction of the Denver & Rio Grande system to create a north-south rail artery along the Front Range. To reach the silver camps high in the mountains, Denver & Rio Grande was the first rail company to lay narrow gauge lines along the steep cliffs. Measuring three feet across, the narrow gauge line had to "curve on the brim of a sombrero" along the canyons in order to reach previously inaccessible camps. (Workers of the Writers' Program, 1987: 72).

The narrow gauge lines through Colorado left a legacy few states can duplicate. As the silver boom went bust in the 1890s and production of other metals began to wane, many small railroads abandoned their lines. Following World War I, the state and private speculators removed miles of track. Over time, adventurous drivers along the Continental Divide and Western Slope rediscovered these grades as some of the state's most scenic auto roads (Wiley, 1976: 27).

In 1938, the Department of Highways reclassified many old rail alignments as state highways as part of a plan to add 4,400 miles to the state's highway system. The department returned most of the rail routes back to the counties during the 1950s, but some still survive as state highways. These include State Highway 67, south of Divide; State Highway 82 between Basalt and Aspen; and State Highway 103 from Clear Creek to Georgetown (Wiley: 28-9).

First paced by man and animal, most of the state's old trails are now beneath the asphalt strips Coloradoans travel in their automobiles. In the 19th century, a migration of people brought commerce and technology to Colorado. Colorado's territorial status gave way to statehood in 1876. From statehood to the end of the century, the state government gradually assumed a greater direction over commerce and technology to build a network of safe roads.

Chapter 4
TERRITORIAL AND PRE-AUTOMOBILE STATE ROADS

4.1 Kansas Territorial Road Improvements

The discovery of gold triggered the first mass migration to Colorado. Illustrating the routes from Nebraska and Kansas Territories to the gold fields along Cherry Creek, the initial April 1859 *Rocky Mountain News* deserves credit for printing Colorado's first road map. In January 1860, the Kansas Territorial Legislature authorized construction of a limited number of toll bridges and roads. These included a toll road from Soda Springs (today's Manitou Springs) into South Park along the "Ute Trail," (now US 24) and a toll bridge across the Arkansas River near Pueblo (Ridgway, 1932: 163, 165). Territorial governments were not the only ones involved in road construction during the gold rush. From the fall of 1859 to the spring of 1860, private-wagon transport companies constructed toll roads from Denver to Bergen Park near Evergreen and from Mount Vernon to Taryall (Ridgway, 1932: 164).

4.2 Building Colorado's Roads, 1861-1876

The United States Congress granted Colorado separate territorial status on February 28, 1861. That September during the legislature's first session, lawmakers authorized construction of a number of toll roads across the territory. On July 7, 1862, the second session of the Colorado Territorial Legislature approved a motion to build a territory-wide network of 19 roads. The proposal's language identified these routes by specific terminal points. One path, "From Denver, by way of Boulder, to Laporte," adapted the route known as the Cherokee Trail. The legislature's description partially traces the path of today's Interstate 25 (Colorado Department of Highways, 1964: 1).

Bridges also played a part in turning mining camps into communities. In 1859, Thomas J. Bayaud obtained a contract from the Denver town managers to build a bridge over the South Platte River at the foot of Fifteenth Street. The following year, another bridge at Larimer Street crossed Cherry Creek. Other bridges followed, but most were destroyed after a May 1864 flood (Christensen, et. al., 1987: 49).

Prospectors across the Continental Divide established camps and settlements in pursuit of gold. Private toll roads, chartered by the Territorial Legislature for five dollars, brought supplies in and ore out. The Denver, Auraria, and Colorado Toll Road Company built the first of these from Denver to Bergen Park in 1859 (Ridgway: 164). From the 1860s to the 1890s, the State legislature charted 43 toll roads statewide, varying from two to 200 miles in length. Tolls varied with the length of the road and cost of construction. Travelers could expect to pay the following prices during the 1870s:

Each vehicle with one span of horses, mules or cattle:	$1.00
Each additional pair of draft animals attached:	.25
Each horse or mule with rider:	.25
Horses, mules, cattle or jackasses driven loose:	.10 per head
Sheep, hogs or goats:	.05 per head
Travel for attendance at funerals:	Free

(Source: Ridgway: 168).

After statehood, and for the remainder of the 19^{th} century, a small portion of the state's Internal Improvement Fund went toward road and bridge construction. Authorized by the first state legislature in 1876, proceeds from the sale of state lands, and interest on deferred payments connected to those sales, supplied the Improvement Fund. Never a sure source of revenue, the Improvement Fund's coffers fluctuated between a few thousand dollars a year to a peak of $341,000 in 1889. Not every citizen approved of how the state distributed appropriations for construction. Many Coloradoans perceived the fund as a "pork barrel" for politicians seeking to repay favors to cronies through construction projects (Merchant, 1955: 75-6).

4.3 Prisoners and Privateers: Road Construction, 1876-1900

As the state government was fiscally and politically unwilling to embark on a road-building program, construction was the province of profit-seeking stage lines, mining companies, and industrious entrepreneurs in the quarter-century after statehood. Embodying the spirit of the times, Otto Mears was a one-man highway department during the 1870s and '80s. Mears built 383 miles of toll road across western Colorado, but is best known for his masterwork, the road over Red Mountain Pass (later referred to as the Million Dollar Highway). In 1881, crews working for Mears blasted a shelf through the solid granite of Red Mountain. Two years later after the road was complete, Coloradoans gossiped that Mears' efforts cost him an estimated $40,000 per mile. Soon after the toll road opened, public support for Mears quickly turned to wrath when he began levying $5 tolls for a team and wagon, $2.50 for a trail wagon, and $1 for saddle animals to cross his road. Public outcry pushed the county and state to assume control of the road by 1887. Despised by his contemporaries for his greed, Mears is remembered as the man who opened western Colorado to the rest of the state (Colorado Highways, March 1926(a): 8; Clay, April 1927: 6).

Across Colorado, toll roads slowly passed from existence by the early 1890s. Increasing numbers of people establishing residency in the various mining districts and counties paid for new road construction through poll taxes. In addition to paying, many communities organized and built local access roads for the common good.

Toll roads may have passed from favor by the 1890s, but Colorado quickly adopted a nationwide trend regarding the use of highway labor. In 1899, the General Assembly passed a bill authorizing convict labor to build a wagon road between Leadville and Pueblo. State officials deemed the experiment a success, and once the automobile came on the scene, Colorado used more of its prisoners in road construction than any other state in the nation. The reliance on prisoners had much to do with the proximity of both men and materials. The state quarried the lime, gravel, and stone necessary for construction from a pit behind the state prison at Canon City. From 1905 to 1926, prisoners built a number of important roads still in use today, including roads from Pueblo to Leadville, Colorado Springs to Leadville, Canon City to the Royal Gorge Bridge, and roads through the Big Thompson, Colorado, and Saint Vrain river canyons. By the late 1920s, complaints by private contractors and regulations by the Federal Bureau of Public Roads prohibiting the use of prison labor on federal-aid projects ended the state's use of convict labor (Maloney and Reedy, 1929: 17).

By the turn of the 20th century, new technologies and new industries shook Colorado's leaders from their complacency regarding the state's roads. Heady from the scent of gasoline, a cadre of influential, automobile owning citizens drove Colorado's elected representatives to a legislative crossroads to make one of the most monumental decisions in state history.

Chapter 5
THE AUTOMOBILE AGE BEGINS, 1890-1930

For the nation, the period between the 1890 and the 1930 were four decades bracketed by two financial depressions and punctuated by two wars. For Colorado during that same era, the event with the greatest impact came on the wheels of an automobile. An increasing number of motorcars heading toward the Centennial State during those four decades symbolized more than a vacation trip or journey's end. The drivers and their cars brought new industries and newcomers and introduced the reality of greater federal involvement into the state's activities.

5.1 More Horses Under the Hood: The Automobile's Early Years

Similar to subsequent other advances in technology, namely television and computers, the cost of the first motorcars prohibited their use to only the wealthy. According to one of the first advertisements for a local car "dealership" from May 1900, a Denver cycling shop offered a steam-powered "Locomobile" for $750 (Hafen, 1931: 3). The Locomobile was a bargain compared to other models of the day. By 1904, 11 European and 24 American manufacturers sold cars in the United States. A potential horseless carriage owner could drive away in a domestically built model at around $3,700 while imports averaged $8,000 (Lewis, 1997: 31).

Guided by Midwestern simplicity and driven by populist beliefs, Henry Ford democratized the nation's auto industry by building and selling an affordable automobile. Introduced in October 1908, Ford's Model T was a workingman's car built for work. Ford designed his vehicle with high axles and 3.5-inch-wide tires to better travel rutted roads cut deep by farm wagons. The first Model T sold for $850 – windshield, top, and headlamps were extra. By 1914, Ford began building his chassis for the Model T on a moving assembly line. This first step toward full mass production meant it became increasingly cheaper to buy a car. According to the 1920 census, there were 9.5 million car and truck registrations nationwide. In 1924, nearly anyone could own a Model T for $290 and the American auto industry produced close to 3.5 million cars (Lewis, 1997: 31-3). By the 1920s, the rise of the Model T and safer, better designed roads to handle increased auto traffic, erased memories of how previous generations of Americans struggled just to travel a few miles away from home.

5.2 The Automobile and the Good Roads Movement

Mud and uncertainty were the constant companions of traveling Americans during the 19th century. Travel by wagon or foot in the nation's cities or countryside was often a dirty, dusty nuisance. After the Civil War, the prominence of the railroad, aided by the national government's issuance of land grants, convinced many that roads for foot or horse travel would ultimately become unnecessary (Holt, 1923: 4). This perception changed in 1878, when Colonel Albert Pope introduced a "safety bicycle" and subsequently touched off the cycling craze of the last quarter century. By 1900, more than 300 companies produced over a million bicycles a year (Lewis, 1997: 7).

In order for his bicycles to travel the land safely, Pope became the nation's loudest advocate for what he termed "Good Roads." In his pamphlet, Highway Improvement, Pope wrote: "American roads are among the worst in the civilized world, and always have been. I hope to live to see the time when all over our land, our cities, towns, and villages shall be connected by as good roads as can be found." (Lewis, 1997: 7). In the 1880s, Pope organized the League of American Wheelmen lobbying group and built a short stretch of macadam road in Boston to demonstrate the safety and sense of traveling a smooth path.

Each edition of the League's publication, Good Roads, found the Wheelmen supporting the activities of good road associations across the country, holding conventions, and lobbying state legislatures for road improvements. The movement's first success came in 1891 when the New Jersey legislature passed the first state-aid bill for road construction in the nation. Two years later, Pope and the League of American Wheelmen persuaded the Department of Agriculture to create an Office of Road Inquiry to provide the public information about road construction. From 1893 to 1913, the relationship between the states and federal road authority remained indirect. The Office of Public Roads produced pamphlets on how to build good roads, but did not assist in the work itself. The automobile later stimulated widespread and insistent public demand for direct federal participation in construction (Holt, 1923: 8-12) [Figure 2].

Figure 2: 1916 State Auto Map (See back pocket for illustration)

5.3 The Romance of the Open Road: The Early Years of Automobile Touring

The automobile liberated Americans to travel whenever, wherever they pleased. Unfortunately, the highways of the early 20th century could only take a driver so far, as none of the states, or any county in those states, could boast of a completed highway system designed for auto travel.

Not long after automobiles first began appearing on the nation's streets and county lanes, a loose alliance of motorists, automobile industry executives, community boosters, and speculators envisioned the construction of a transcontinental automobile highway. On August 1, 1912, Colorado congressman Edward T. Taylor introduced a bill "establishing the Lincoln memorial highway from Boston, Mass. to San Francisco, Cal." The bill died in the House Agriculture Committee, but the name caught the nation's attention (Wolfe, 1999: 4). A little more than a month later on September 6, Carl G. Fisher, developer of the Indianapolis Motor Speedway, presented his plans for the creation of a Coast-to-Coast Highway to an approving audience of automobile manufacturers. In less than a year, various individuals and groups pledged $4 million toward construction. In July 1913, Fisher and the other organizers agreed to call their venture the Lincoln Highway Association (AASHO, 1952: 109).

The Lincoln Highway Association planned to build an automobile highway along the most direct route from New York to San Francisco. The auto owners of the mid-1910s faced a decision similar to one confronted by the leadership of the Union Pacific Railroad during the late 1860s – how to build a transcontinental road that would safely and economically cross the Rocky Mountains. Like Union Pacific, the Lincoln Association selected South Pass in southern Wyoming as the most practical route over the Continental Divide. Not wanting to lose tourist dollars to Wyoming, the Denver Chamber of Commerce and Colorado Governor Elias M. Ammons attempted to broker a deal with the Association's leadership. In discussions with the Association, the governor and Denver's boosters wanted the Association recognize a spur from Julesburg in northeastern Colorado along the path of today's US 6 to Denver and then north to Fort Collins before following the North-South Highway (modern I-25) back to Cheyenne and onto the main road as part of the main Lincoln Highway. The state promised to maintain the road at no cost to the Association. A rough and rocky drive by Lincoln Highway officials through Western Colorado did not help the state's chances and soon the Association's leadership viewed Colorado as a "state full of malcontents." Relations grew to the point where the Lincoln Highway Association eventually warned travelers to avoid the loop – and consequently Colorado – in its 1916 auto guide (Wolfe, 1999: 12-13, 17, 19).

The sting of not being on the Lincoln Highway did not hurt Colorado for long. By 1916, a number of named interstate roads entered the state from all directions. Some, like the National Roosevelt Middle Trail and the Victory Highway, followed the route of modern US 40 over the plains into Denver and on to the Western Slope. Mostly tracing modern U.S. 50, the National Old Trails Highway served as the primary auto highway for southern Colorado while the Great North and South Highway ran south from the Wyoming border to the New Mexico state line. Along the Omaha-Lincoln-Denver (OLD) Road, early drivers could easily identify their location from an 18-inch-wide band of white paint on telephone poles or fence posts. The President of the Omaha-Denver Good Roads Association, W.A. Taylor, wrote to Colorado Highway Commission Chairman C.P. Allen with praise for how well-marked the road was west of the Nebraska-Colorado line. Taylor's comments recall the "frontier" era of auto travel when the brave motorist ventured on rough roads without the aid of traffic or direction signs, reliant only on painted posts to guide his way:

> "From Fleming on westward, the road is quite well marked. I found on my way coming home traveling along the road that there was wonderful satisfaction whenever I was in sight of the white band on the telephone post or post, and I am satisfied that tourists who are strangers through the country will have very much the same feeling in regard to it as I did" (Colorado Department of Highways, 1911(a)) [Figure 3].

Figure 3 1922 Auto Symbols Map

By 1925, the establishment of the numbered highway system nationwide ended the era of the named highway. Resulting from the federal numbers game, the Lincoln became US Highway 30 (now Interstate 80) and the National Old Trails Road was renamed US Highway 40. One of the beneficiaries of the change to a numeric system was Colfax Avenue. Boasting a dual identity as neighborhood street and transcontinental highway, Colfax Avenue was also the alignment for US 40 through Denver. During the 1920s, motor inns, restaurants, and curio shops rose along blocks of Colfax from the prairie to the foothills west of Denver. Following a national trend after World War II, business owners along Colfax took the “exaggerated modern” form of architectural design to new extremes. On either side of the Avenue from Aurora to Lakewood were larger-than-life structural components, neon signs, oversized roofs, V-shaped columns, and visual fronts. For 26 miles, the eclectic atmosphere of the existing gaudy restaurants, motels, and storefronts along Colfax recognizes the fun and freedom that continues to fuel the passion Americans feel toward the automobile.

Plate 2. In 1914, construction along Denver's main thoroughfare, Colfax Avenue, grew west from the city's downtown. The president of the city's Board of Public Works, Seth B. Bradley, boasted that the new viaduct would "cut a quite a figure" as it provided easy access to the mountains from Denver. A consortium of the Denver Tramway Co., the Denver and Rio Grande, Colorado and Southern and Burlington Railroads, the City of Denver, and the state spent $853,316 to complete the project. Postcard courtesy: Lyle Miller.

5.4 Who's Behind the Wheel: Early Motoring in Colorado

The mists of time, in the guise of clouds of exhaust, have made it difficult to determine who operated the first motorized vehicle in Colorado. Depending on the account, during the 1890s, the horseless carriage's first appearance in the state was either as a circus attraction or a hobbyist's backyard project.

The distinction of being the first in a long line of Colorado motorists rightfully belongs to a carnival performer, Achille Philion. During June 1892, Philion and his four-wheel, steam-operated carriage chugged around the Manhattan Beach amusement park on the northwest shore of Sloans Lake in Denver. An advertisement in the June 11, 1892 Denver Times heralded the steam carriage's arrival as "a grand day for Denver." Illustrations of the steam carriage show it to be little more than a chair attached to four bicycle wheels with a boiler placed precariously in the middle. There is no record of how fast Philion's contraption went, or if it ever ventured off the grounds of Manhattan Beach. (Miller, 1999: 25).

A diary located in the archives of the Colorado Historical Society makes the case for Denver's David W. Brunton as the state's first automobile owner. A mining engineer, Brunton found himself intrigued after viewing an exhibition of motorized vehicles in Boston. In an October 14, 1898, diary entry, Brunton wrote: "Went to automobile show at Mechanics Institute, Boston, and tested several motor cars." A few months later in May 1899, Brunton noted in his diary: "May 7. Left Butte [Montana], reaching Denver on the 9th. Found Columbia electric automobile awaiting me. Spent day setting it up. May 10. Ran electric carriage on the streets in Denver" (Hafen, 1931: 2).

In the wake of Brunton's first trip in his Columbia, the first decade of the new century saw the motor car attempt to travel to almost every inaccessible corner of the state. In September 1900, entrepreneur John Brisben Walker failed in his attempt to ascend Pike's Peak by car. Walker's ten-horsepower "mobile steamer" reached an elevation of 11,000 – 3,110 feet short of the summit, but higher than any car and driver in the world had reached at that time. Walker later recounted that the drive back down was similar to "plummeting down a toboggan chute." (Miller, 1999: 26). On August 12, 1901, W.B. Felker and C.A. Yount of Denver made their attempt to reach the summit of Pike's Peak. Above timberline, the steep road offered a challenge to the duo's Locomobile, and at one point, the pair had to lift the machine over a snowdrift. The Locomobile reached the summit just as the 3:20 p.m. cog train left from Pike's Peak to Manitou Springs. A week later, on August 28, J.E. Barnes crossed "the Crest of the Continent" when his horseless carriage reached Leadville. At times on the journey from Denver to the Divide, Barnes wrapped ½-inch rope around the rear wheels to prevent his car from slipping on the steep grades (Miller, 1999: 26-7).

In less than two-and-a-half years, stories of the horseless carriage filled Denver's police stations, courts, newspapers, and clubs. In January 1902, a Denver police court fined a driver for operating "his machine along the streets of the city at a speed which endangered the lives of the pedestrians." Clocked by a police officer going 40 miles per hour on 16th Street, the judge fined the speeder $25 and costs (Hafen, 1931:5-6). The freedom already associated with the automobile provided an interesting counterpoint to the ironies and inequalities of early 20th century America. For the first decade-and-a-half after its arrival in Colorado, the automobile remained the province of wealthy, white males. Regarding the control of the state's steering wheels in the hands of one group, in November 1902, the Denver Post commented: "Out of the 200 owners of machines in town today about a dozen women only have had the courage to take their levers and their destinies in their own hands, and face the world." There was no mention in the account if any of the women owned a vehicle outright (Hafen, 1931: 6).

Plate 3. Bumper-to-bumper traffic held a different meaning on the streets of Denver at the turn of the 20th century. These proud horseless carriage owners met at the corner of 18th and Stout in front of the Colorado Winton Motor Carriage Company. Source: Denver Public Library, Western History Department. ©1995-2002 Denver Public Library.

5.5 The Dawn of Auto Tourism in Colorado

Those able to afford an automobile naturally wanted to see how fast and how far their new toy could travel. Colorado's scenery made the state a logical journey's end for the initial generation of car owners. In 1903, the first automobile to venture from San Francisco to New York passed through Colorado. Driven by E.T. Fetch, with M.C. Krarup as passenger, a 12-horsepower, one-cylinder Packard crossed the state by way of Grand Junction, Glenwood Springs, and Colorado Springs before reaching Denver on July 20. When asked by the Denver Post about the drive over rocky, hilly mountain trails, Krarup responded: "At times the sand has been so deep that canvas had to be spread in front of the machine in order that it might be moved. Heavy chains were necessary to be wrapped around the wheels at other times in order that the steep mountain grades might be overcome" (Hafen, 1931: 10).

During the summer of 1911, a rumor spread that Colorado charged out-of-state motorists $15 for a state travel permit and $20 for extended stays beyond a month. In the vernacular of the day, the "bleaching" of tourists had the State Highway Commission's leadership feverously writing neighboring Good Roads Associations to quash those stories. In June 1911, Highway Commissioner C.P. Allen notified Nebraska's Omaha-Denver Good Roads Association of Colorado's concerns in a comment that subsequently became a state mantra: "Colorado is looking for all the tourists she can get" (Colorado Department of Highways, 1911(b)).

During the 1910s, each driver venturing across Colorado's came back with their own opinion – from splendid to treacherous – regarding the quality of the state's roads. A 75-mile auto trip between Denver and Colorado Springs – part of the Great North and South Highway – took five hours and 20 minutes over gravel, steep grades, sharp turns, ruts and chuckholes. Despite those obstacles along the state's primary north-south route, the drivers kept coming. By 1915, the amount of traffic between Denver and Colorado Springs averaged 253 cars per day, with 85 of those vehicles from out-of-state (Colorado Highways, April 1929(a): 8).

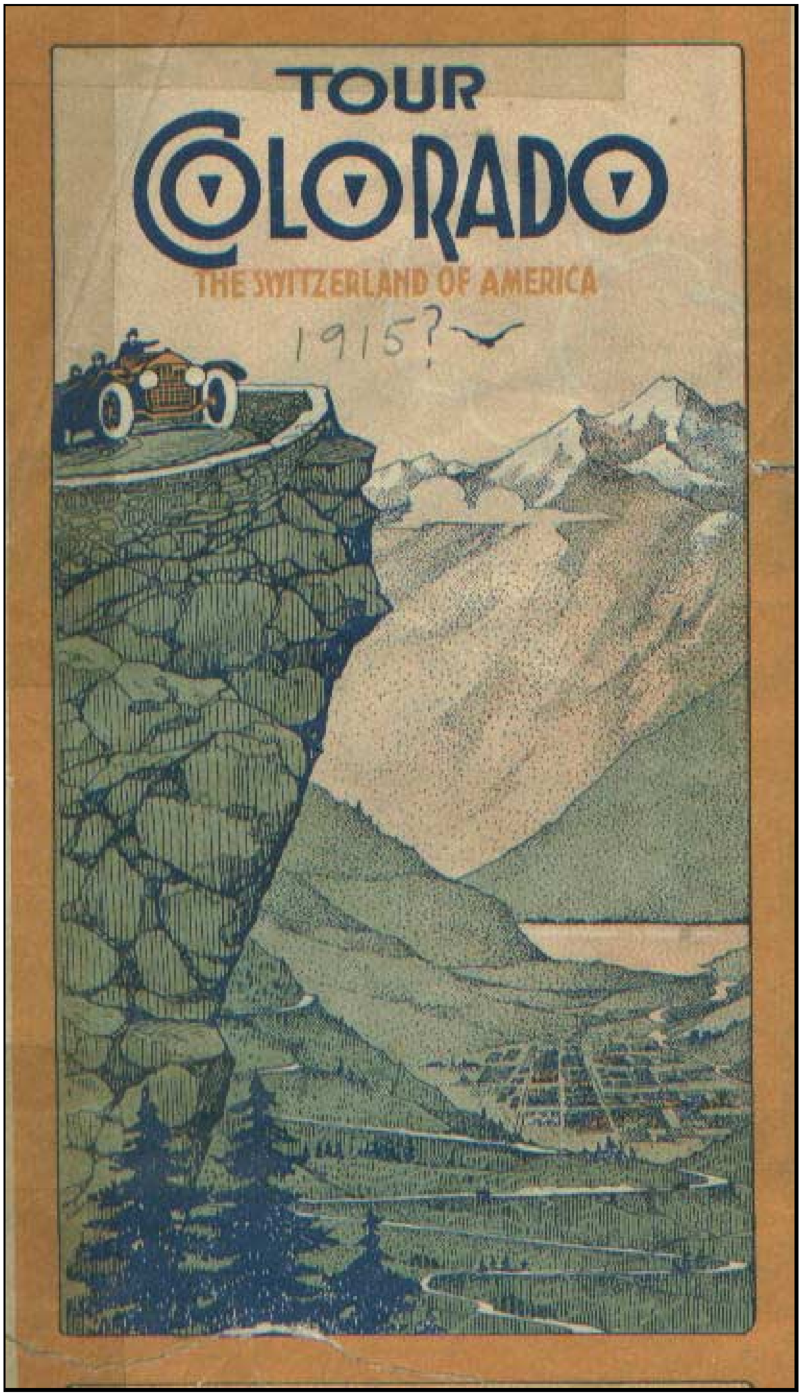

Plate 4. Tourism, the automobile and Colorado were made for each other. In 1915, the Denver Motor Club issued this map urging motorists to see “The Switzerland of America.” Source: Rocky Mountain Philatelic Library.

To promote their hobby, and to bond with other owners, auto clubs developed in the state's larger cities. Similar to organizations in other states and nationwide, Colorado's auto clubs helped develop a number of scenic roads across the state. By the mid-1910s, motorists could pay a $2 toll to the top of Pike's Peak, travel the Fort Collins and the Poudre Canyon Road, Durango's Electra Lake Drive, or venture down Trinidad's Stonewall Canyon Road. (Bartlett, November 1918: 10). Automobile clubs played a vital role nationwide toward the construction of better highways in general and scenic roads in particular. However, their role in the state's highway history was influential and brief. By the late 1910s, as more drivers ventured on the road and the federal government took an increasing role in construction, the auto clubs influence in developing and maintaining roads began to fade.

5.5.1 The Colorado Automobile Club

From 1899 to 1902, a cadre of Colorado's well-to-do doctors, lawyers, and businessmen introduced the automobile to the state. In October 1900, a "Good Roads Convention" met in Denver. At this gathering, delegates presented papers in favor of building a national highway from Denver over Berthoud Pass to Salt Lake City (Hafen, 1931: 12). The number of the city's automobile owners grew over the next two years. In May 15, 1902, 42 devotees of this exclusive hobby met in Denver and organized the Colorado Automobile Club. Membership elected the state's first automobile owner, David W. Brunton as president. The organization's constitution listed the following "objects" of the club:

1st. The securing of rational legislation.
2nd. The formation of proper rules governing the use of the automobile.
3rd. To protect the interests of automobilists against unjust discriminations.
4th. To maintain their lawful rights and privileges.
5th. To encourage prudence and care in driving automobiles.
6th. To promote the good road movement. (Hafen, 1931: 8).

Similar to other highway organizations in other states, the Colorado Automobile Club lobbied local politicians to upgrade the state's roads. The automobile enthusiasts voice and political clout reached its apex during the first decade of the 20th century. At the suggestion of Governor Jesse F. McDonald, 65 owner-delegates from across the state met in Denver and formed the Colorado Good Roads Association in July 1905. At the next convention the following summer, membership drafted language supporting the creation of a State Highway Commission. A number of powerful state legislators opposed state control of the roads and the bill never reached the floor of the House or Senate during the 1907 session. Undaunted, Association membership launched another effort during 1909. Through a well-managed information campaign, Association members demonstrated to legislators the economic benefits of good roads for all the state's citizens. Their efforts convinced the General Assembly to pass the state's first highway bill on May 5, 1909 (Maloney and Reedy, 1929: 2-3).

Colorado's earliest auto owners followed more than one avenue in their quest to construct roads to their liking. Some high-profile members of Colorado's motoring class used their money and notoriety to develop automobile trails through some of the state's most scenic regions.

5.5.2 Colorado's Private Auto Roads

Colorado points with pride to its egalitarian roots, but some of its first important auto roads were built by the wealthy for the wealthy. Two men – Frelan Stanley and Spencer Penrose – symbolized the elitist nature of the automobile's first decade in the state.

In 1903, one of the inventors of the Stanley Steamer, Frelan Stanley, successfully drove his motorized namesake from Denver to Estes Park, then an exclusive resort near Long's Peak. Upon completing his journey, Stanley believed that the Rocky Mountains should be the highlight of every automobile owners cross-country travels. Stanley proceeded to clear a huge tract of land, build a hotel, and run a fleet of Stanley Steamer Wagons from Denver and other Front Range cities to his new resort. During the ensuing decade, a torrent of visitors to the Stanley Hotel turned Estes Park from an isolated retreat for wealthy hunters to one of the leading tourist attractions in the state. By 1913, Estes Park counted 50,000 visitors a year (Thomas, 1996: 55-6).

Other well-to-do car owners took their passion for speed in other directions. Colorado Springs mining baron Spencer Penrose boasted a fleet of cars at a time when many Coloradoans had yet to see one drive past. The Colorado Springs Gazette noted in 1910 that Penrose had to build an oversized garage on to his home to house his four canary-colored Lozier cars costing some $5,000 each (Breckenridge, 1985: 186). When he was not out buying automobiles, Penrose stayed active in the Colorado chapter of the National Good Roads Association, the Rocky Mountain Highway Association, and played a role in the creation of the State Highway Commission in 1909. Penrose spent a quarter of a million dollars to transform an old carriage road into the Pike's Peak Auto Highway. Completed in July 1915, Penrose sponsored an annual auto race to peak's summit to demonstrate the practicality of auto travel in the mountains. On Labor Day 1915, the first Pikes Peak Hill Climb brought thousands of spectators to see the nation's best drivers tearing along the narrow shelf roads only inches from sheer drops of 1,000 feet. The first hill-climb winner, Ray Lentz of Seattle, drove his Romano Special to the top of Pike's Peak in 20 minutes and 55.6 seconds (Breckenridge: 187).

5.5.3 Denver Mountain Parks

Looking west from the offices and municipal buildings of downtown Denver, the city's elite viewed the mountains in a different light after the first automobiles passed through town. Denver's power brokers realized that automobile tourism held unlimited economic potential for both the city and across the Front Range. Recognizing an opportunity to gather an unprecedented amount of tourist dollars, Denver's municipal leadership devised a plan to link the city with the mountains.

In 1909, Mayor Robert Speer proposed to a Chamber of Commerce banquet the possibility of bringing the high country to the city through the annexation of a chain of mountain parks west of Denver (Author Unknown, n.d.(a): 1). Four years later, in 1913, the city obtained an amendment to the State Constitution allowing purchase of land in neighboring counties, primarily Jefferson County. To acquire land for parks and mountain roads, the city proposed that Denver property owners invest one-fifth of a mill over a five-year period. Subsequent negotiations with Jefferson County proceeded without a hitch. Speer commissioned a scion of the renowned Brookline, Massachusetts landscape design family, Frederick Law Olmsted, Jr., to plan the city's mountain parks and scenic roads. Olmsted initially ruffled a few feathers with his proposal that the Denver Tramway Company build trolley lines to the mountain parks. The city administration blocked Olmsted's suggestion outright as his idea did little to lure well-off motor tourists. Olmsted did claim a victory when he blocked Denver Mountain Park's Superintendent Edward S. Letts' plan to level the summit of Genesee Mountain, the city's first mountain park, to make it more accessible to automobiles (Noel, 1987: 44). Olmsted designed for almost nine miles of mountain roads. Among the roads recommended was a passage through Mount Vernon Canyon, near Lookout Mountain. The designer predicted that this route would "become the most direct and probably the most useful business road to the mountains from Denver." Olmsted's foresight was uncanny, as a half-century later, the Mount Vernon alignment served as the right-of-way for Interstate 70 west of Denver (Thomas, 1996: 87).

Within the five years mandated by the state to raise tax money for the project, Denver acquired more than five square miles of parkland for $34,000 and invested $225,000 for construction of 75 miles of roads. The mountain park system expanded after the federal government sold the city several thousand acres for the park at dirt-cheap price of $1.25 per acre. Nineteen twenty-seven saw the completion of the "The World's Highest Auto Road" to the summit of 14,260-foot Mount Evans. By the Great Depression of the 1930s, New Deal work programs provided money and men to realign and protect roadways from flooding and complete Red Rocks Park outdoor amphitheater (Thomas, 1996: 88). Depression-era improvements to the park's buildings, highways, shelter houses, picnic grounds, parking eventually totaled $3 million. The 380-square-mile Denver Mountain Parks system remains a tourist attraction featuring Buffalo Bill's grave on Lookout Mountain, nature trails, and the Winter Park Ski Area (Noel, 1987: 45).

While the city government planned the mountain park system, the municipality offered weary motorists a place to rest while in Denver. In 1915, Denver built its first free municipal auto camps in City Park. In operation until 1918, the City Park camp was a welcome site to cross-country motorists. One traveler, Horace Albright, assistant director of the National Park Service, expressed his admiration for the city's accommodations:

> "It is an inspiring sight to go into a park like the beautiful City Park of Denver and see several hundred cars parked in their allotted spaces and their happy owners, many of them with large families, enjoying camp life" (Athearn, 1986: 147).

Subsequent urban camps expanded on the City Park concept, notably Rocky Mountain Park in northwest Denver and Overland Park on the South Platte. Opened in 1920, Overland Park featured campsites, water, fuel, toilets, and showers—all things the weary traveler sought after a long journey to Colorado. Overland Park also boasted a billiard room, restaurant, barbershop, and dance floor. Some condemned Overland Park as dangerous to public morals. In 1923, the city charged 50 cents a night to help finance the upkeep of the site in hopes of attracting a "better class of tourist" (Noel, 1987: 47). As the darkest days of the Depression headed towards Colorado, poor migrants from the southwest flocked to the grounds. Overwhelmed by crowds of the poor and hungry and their ramshackle vehicles, the city closed Overland in 1930. Historian Thomas Noel explained the symbolism representing the end of Overland Park: "Poor motor migrants of the 1930s killed the idea that automobiles were only toys of the rich." (Noel, 1987: 47).

Developed by the automotive elite, Colorado's scenic and tourist roads subsequently became a source of civic and state pride and provided the foundation of the tourist industry. As more people owned automobiles, visiting and resident drivers demanded better roads to the Colorado's best-known locations as well as to farms, mines, and growing towns and cities. The creation of a highway authority to build roads signified the first serious attempt by state government to address Colorado's diverse transportation needs

5.6 Highway Construction in Colorado, 1910-1920

Effective January 1, 1910, the General Assembly established a state authority to build and construct Colorado's roads and highways. Governor John F. Shafroth appointed C.F. Allen, William Wiley, and Thomas H. Tully as Colorado's first highway commissioners. Hemmed in by an initial budget of $56,000, the trio's primary responsibility was to map and lay out a state road system for automobile use. The commission asked each county to submit maps and documentation indicating their most heavily traveled roads. Thirty-three counties sent maps to the commission during 1910, from which the commission designated the first system of state primary roads totaling 1,643.5 miles. Only 33 of Colorado's 62 counties bothered to survey, forcing the commission to schedule an automobile expedition to examine the condition of the state's roads (Wiley, 1976: 11).

Likening himself to the pioneers, commissioner Thomas H. Tully found that both nature and the average citizen were unprepared for what a state highway system would mean to the state:

> "We found that the people were apathetic. There didn't seem to be any particular interest in highways. There was a disposition manifested in virtually every section of the state of jealousy of some other section. The belief seemed to prevail that all the highway commission was after was to put in a few good roads around Denver" (Colorado Highways, April 1929(b): 9).

The commission faced more than apathy and suspicion. Tully recalled that the most disheartening aspect of their adventure was driving over the same rutted ground covered by the pioneers' wagons a half century earlier:

> "We traveled 1,600 miles in the state and the motorist today who is not familiar with the highway conditions of that day has no conception of what we had to contend with. We found bridges we did not dare to cross in a car, encountered mud that stuck us, found grades we managed to crawl up at a speed a snail could beat, and roads that were never meant for anything but a horse-drawn vehicle" (Colorado Highways, April 1929(b): 9)[Figure 4].

Seeing that they had their work cut out for them, the commission moved quickly in their first year. Tully described in a letter sent to a colleague in Texas his commission’s expediency regarding road construction:

“Since the creation of the commission last January we have declared 1,600 miles of state highway and there is now work underway at fifteen different points in the state by contract and at three different points in the state by convict labor” (Colorado Department of Highways, 1910).

Drawing from their experiences, the commission sent its first annual report (1910) to the governor filled with recommendations. The commissioners supported the creation of a permanent Internal Improvement Fund directed solely for road construction, replacing wooden bridges with concrete, continued use of convict labor in road work, and installation of uniform, statewide road signs (Colorado State Highway Commission, 1910: 30-1).

Figure 4: In 1910, the first State Highway Commission traveled Colorado’s roads in preparation for developing a highway system. In the northwest corner of the state, stagecoaches still competed with automobiles for space on the Meeker Road. By the mid-1920s, the Department of Highways changed the name of the Meeker Road to State Highway 13 (Denver Chamber of Commerce, c. 1912: 148).

A number of Colorado cities revealed their own ingenuity when laying out their first traffic grids. In 1909, a segment of one of the state's oldest routes, the Santa Fe Trail, received a modern makeover after Pueblo County Commissioners contacted Thomas Tynan, warden of the Colorado penitentiary. The commissioners sought the use of 35 convicts to perform "experimental road work" towards hard surfacing a portion of the Old Santa Fe Trail located on Pueblo's eastern city limits. Convicts graded an adobe roadbed for drainage, then placed a foundation of smelter slag from the Colorado Fuel & Iron plant, and rolled the material into the roadbed. Corrugated iron culverts placed below road level eliminated bumps along the surface. The final stroke required soaking and rolling a layer of gravel into the slag. After completion, residents of Pueblo boasted, "the Santa Fe Trail became the most modern section of highway in the West" (Taylor, March 1927: 9).

During this period, Denver also weighed how to plan and pave an urban grid. Experimenting with four separate materials, the city paved four blocks of Speer Boulevard in 1910. On succeeding blocks, city crews alternated between asphalt concrete, tar concrete, a patented type of bituminous concrete known as "Amiesite" and tar concrete placed over an existing Macadam base. The city committed to asphalt concrete when it paved eight additional blocks of Speer in 1912. From 1916 to 1918, the city paved 35 to 40 blocks with asphalt and asphalt concrete. Denver owned and operated the plants and trucks while day labor performed all grading and sub-grading (Johnson, 1922: 20).

The automobile brought rapid change to Colorado's cities, but many areas of the state had to yet to take part in this revolution. Residents of Southwestern Colorado sought a road east over the Continental Divide to open traffic between Alamosa, the San Luis Valley, and the rest of the state. The only route connecting the two regions at that time was a rough wagon road over Elwood Pass, where grades ran as high as 25 percent.

Responding to those pleas in 1913, the Highway Commission searched for a way over the San Juan Mountains and considered both Elwood Pass and a recently surveyed route near Wolf Creek. The commissioners took a "hair-raising" ride over Elwood Pass's 25-

percent grade, and while the engine was still warm, immediately confirmed Wolf Creek the winner. During 1916, crews cleared Wolf Creek Pass at a cost of $100,000. Subsequently surfaced with dirt and gravel, the road measured from six-feet to 12-feet wide with occasional turnoffs allowing cars traveling in opposite directions to pass. To avoid expensive blasting over the South Fork Canyon, engineers located a portion of the roadbed along steep cliffs bordering the canyon. On completion of the road in 1916, drivers by the hundreds took a chance to cross the new pass (Federal Highway Administration, n.d.: 4).

By the time of America's entry into World War I, the state and federal government shared the same aspirations for better roads. Colorado was limited in the amount of roads it could build by the state's lack of funding resources and the extreme cost of building in the mountains. The end of the war signaled the start of a long partnership between the state and federal government.

5.7 The Federal Presence in Colorado and the 1916 Public Roads Act

In 1916, the U.S. Congress considered a number of measures related to federal funding toward building a national highway system. Colorado Congressman Edward Taylor sponsored four pieces of highway legislation that session, including a bill proposing the sale of public lands in Colorado, Arizona, Idaho, Montana, New Mexico, Nevada, Utah, Wyoming and Oregon, with half of the revenues going toward a "public-roads fund" (Thomas, 1996: 63).

Passage of the Federal Highway Act of 1916 required the U.S. government provide federal funds for highway construction that matched funds collected by each state's highway commission. The legislation also asked each state select 7 percent of their total road mileage, which roads would be eligible for federal funds. Each state designated their most important roads as either "primary" or interstate and labeled the remainder "secondary." In 1917-18, Colorado's first installment on what would eventually total into the hundreds of millions of dollars amounted to $17,000 (Zahn, 1922: 10).

In time, the state-federal partnership went smoothly, but initially some in the Highway Department felt that the federal government should do more for Colorado. In 1916, responding to an inquiry from the editor of Motor Print magazine, Commissioner Thomas J. Ehrhart explained the view of many Coloradoans looking from the other end of the federal funnel:

> "A very large percentage of the land area of Colorado is included in forest reserves and other public lands, from which the federal government is deriving an income through its system of Landlordism from our own people and the state and the county governments of Colorado are spending many thousands of dollars each year on public highways across the public lands." (Colorado Department of Highways, 1916).

One additional element of the 1916 Federal Act required every state's highway commission to meet certain minimum organizational requirements in order to receive and distribute aid. The federal government determined that Colorado was one of 15 states that did not meet those standards. In 1917, the State Legislature passed a new highway act creating a State Highway Fund to distribute state and federal funds for the development and maintenance of the State Highway system. Lawmakers also reorganized the State Highway Commission into the State Highway Department. A commissioner and a five-man advisory board were responsible for the new department's policies (Wiley, 1976: 15).

The same year Congress passed the Federal Highways Act, the federal government established Rocky Mountain National Park near Estes Park. Within in a short drive from Denver, the park is unique among other facilities in the National Park System due to its proximity to a major urban center. By 1919, three years after its creation, Rocky Mountain Park drew almost 170,000 visitors. A motor guide leading drivers through the park advised use of "extreme caution" and to "blow the horn at every turn" while maintaining a speed below 12 miles per hour (Noel, 1987: 46). According to the National Park Service, the Rocky Mountain National Park was the leading tourist destination out of all the national park by the early 1920s (Thomas, 1996: 89).

At the initial meeting of the Highway Advisory Board on December 6, 1917, membership approved the first direct highway construction contracts let by the State Highway Department. Colorado and the federal government split the costs on the following six projects:

Federal Aid Project (FAP)-1 Denver-Littleton (Santa Fe) $73,939.74
FAP-2 Pueblo-Trinidad $267,191.91
FAP-3 Granite-Twin Lakes $37,089.90
FAP-4 Rifle-Meeker $79,082.85
FAP-5 Placerville-Norwood $7,480.00
FAP-6 Lamar to Springfield $10,030.90

Supported by FAP money, the Highway Department laid its first stretch of concrete pavement south of Denver along today's Santa Fe Drive (U.S. Highway 85) in 1918. In the early days of the automobile in Colorado, Santa Fe Drive was part of the Great North and South Highway extending along the Front Range from the Wyoming to the New Mexico border. Taking nearly a year, contractor Charles Connor of Denver poured a four-mile long, 16-foot-wide strip of concrete from Denver to Littleton at a cost of $77,571. Traffic volume along this section concurred with the wisdom to concrete this section first. By 1923, the state counted 1,200 to 3,500 vehicles a day between Denver and Colorado Springs. Also that year, the Highway Department widened the road to 18 feet to accommodate more vehicles and renamed the Great North and South Highway, State Highway (SH) No.1 (Maloney, 1924: 8-9). In 1927, a subsequent Federal Highway Aid program re-designated SH 1 as U.S. Highway 85. U.S. 85 remained Colorado's major north-south highway until the construction of Interstate 25 during the late 1950s and early 1960s (Herbst and Rottman, 1990).

It took a while before the impact of the Model T opened the nation's roads to all classes of drivers. After initial distrust of the auto as a rich-man's toy, rural Coloradoans enthusiastically took the wheel after cars became more affordable. In 1919, after almost a decade of state statistic keeping, a State Highway Commission publication chronicled the impact of the auto on the state's farms and farmers:

> "The biggest advance made by any industry in this state in the past decade has been in agriculture; road building, perhaps, stands second. The former has been the result of bringing under cultivation hundreds of thousands of acres of fertile land in nearly all sections of the state and of the introduction of better methods in eastern Colorado. The latter has been largely the result of the agricultural growth of the state, for new and better highways have been required to transport the immensely increased products of our farms to market" (Colorado Highways Bulletin, July 1919: 14).

Plate 5. On Colorado's eastern plains, the automobile was a familiar sight by the early 1920s. However, the ruts in this photo attest to how far the country had to catch up with the state's cities when it came to road construction. Postcard courtesy: Lyle Miller.

The same study showed that the state's highway mileage grew from 25,000 in 1909 to 45,000 by 1919. Over that same period, the number of farm acreage grew from 2,614,312 acres to 4,500,000 acres – an increase of more than 70 percent (Colorado Highways Bulletin, July 1919: 14).

In the 1920s, the combination of federal dollars and gasoline tax revenues encouraged the Highway Department to tackle new challenges. Flush with more funding, and pushed by an increased number of drivers, the department headed for the hills.

5.8 High Altitude Highways: Mountain Road Building, 1920-1930

During his 50 years with the Highway Department, Charles E. Shumate participated in nearly every aspect of road construction from road crew to determining the alignment of the interstate highway system in Colorado. Shumate ultimately served as Colorado Department of Highways executive director from 1963 to 1975. Looking back on his life's work in 1974, Shumate remembered her derived the greatest amount of frustration and satisfaction from building roads over Colorado's most formidable natural landmarks:

"Other states have short areas of difficulty in highway construction. Washington and California have some challenging terrain, but every highway west of Denver has to go through the mountains. I don't think any other place in the United States presents the problems that Colorado has in highway construction" (<u>Denver Post</u>, 1974: 18).

There are 34 mountain passes on the state highway system. Two of these passes are over 12,000 feet, seven top 11,000 feet, and 10 are over 10,000 feet above sea level. The most traveled, and occasionally, feared include Raton, La Veta, Cochetopa, Poncha, Tennessee, Monarch, Berthoud and Rabbit Ears Passes. Inspired by their occasional inaccessibility, the Rockies offered Colorado's highway engineers and designers' challenges few states could match.

Since the first whiff of automobile exhaust in the high country air, both the state government and the national media have extolled the scenic wonders of Colorado. Inspired by a 1915 Kansas City Post article describing the Rocky Mountains as the "Playground of America," many drivers came from across the nation to the see Colorado's natural wonders (Colorado Highways, March 1926(b): 9). The automobile fostered tourism in its development as one of the state's most important industries. After World War I, it was the job of the Highway Department to keep visitors coming back to Colorado along well-designed roads.

In 1919, the Highway Commission supervised its first major post-war mountain construction project over 11,400-foot Monarch Pass. Two-thirds of the 27.5-mile long Monarch Pass Highway ran through Cochetopa National Forest with the U.S. Forest Service contributing $204,450 to complete the job through the national parklands. Returning servicemen from World War I cleared the road from the face of the mountain with pick and shovel while supply teams and wagons navigated the steep elevations and tight curves of the narrow canyons (Colorado Highways, April 1922: 8; Jeffrey: 1922). Completed in 1922 by the federal Bureau of Public Roads, Monarch Pass Highway was considered an engineering triumph. Rattled motorists held a different opinion after completing the difficult and dangerous ride. In the late 1930s, the Highway Department rerouted Monarch Pass less than a mile southeast of the original alignment. Re-opened in 1939, the upgraded highway featured wider, easier curves over the 11,312-foot high pass (Rocky Mountain Contractor, October 12, 1938: 6).

The first generation of high-country construction strictly for automobiles spread across the Rockies during the 1920s. In the San Juan Mountains, the highway department, with funding from the federal government, expanded Otto Mears' toll road to 78 miles. Between 1921 and 1924, crews' widened curves, lowered grades, and surfaced the roadway from south of Ouray to the top of Red Mountain Pass.

Normally, the bidding process to determine a contractor for a construction project is devoid of memorable phrases. In 1921, the submission of bids to upgrade Mears' road added a touch of legend to one of the state's most scenic roads. As county and state officials reviewed the bids, one contractor spoke up after he realized all the work necessary to improve the road. Referring to the project as "the million dollar highway that we're building" the phrase soon spread from southwest Colorado to across the state. Three years later, in July 1924, local promoters prominently displayed a sign bearing the name "The Million Dollar Highway" at the ribbon cutting ceremony opening the highway. After completion, the Department of Highways publication Colorado Highways commented that although the Million Dollar Highway offered "some of the most difficult and costly road-building in the world" it was in "as fine condition as the best of the Denver boulevards" (Wilson, 1924: 4). Since the 1920s, the "Million Dollar" moniker has remained the popular reference for the entire 129 miles of US 550.

In 1915, members of the Denver Mountain Parks Commission conceived the idea of constructing the highest highway in the world to the summit of Mt. Evans. By the mid-1920s, the city of Denver, the federal government, and the state each contributed funds to the quarter-million-dollar road. State highway engineers designed the route to meet the standard road width of 20 feet and a six-percent grade from Bergen Park to the mountain's summit. From the summer of 1924 to October 1927, four different contractors worked to complete the road. The last section from Echo Lake and the saddle between Mount Evans and Mount Epaulet offered its own set of problems. Engineers and crews scrambled to get as much due as possible during a three-month window for construction. Additionally, the thin atmosphere above timberline made hard jobs like blasting rock and clearing away the remains all the more difficult. The Mt. Evans Road opened in 1927; ready for any driver to conquer its 14,126-foot summit. Mt. Evans Road remains the highest automobile highway in America (Colorado Highways, April 1927: 4).

Despite a decade of accomplishments, some out-of-state bureaucrats thought Colorado had not done enough since the passage of the 1916 Federal Highways Act. The usually taciturn Chief of the Bureau of Public Roads, Thomas H. MacDonald, stated in 1928: "Colorado is overlooking one of the biggest opportunities that could possibly come to a state. She is letting the big stream of traffic go by her to the north through Cheyenne, and south over the old National Trail, instead of bringing it into her state and making provision for it to travel through the Rockies" (Colorado Highways, April 1928(a): 4). Colorado turned the argument back on Washington, claiming a large number of the state's roads passed through untaxable federal lands, thus preventing the state from drawing on a large revenue base for highway construction. State officials pointed to the abundance of federally held property as the reason Colorado ranked 40th of out of the 48 states in total highway revenues (University of Denver 1940: 15). All was forgiven between Colorado and the federal highway authorities within a few years of McDonald's observations. The depravations of a worldwide financial collapse offered Colorado the opportunity to build roads like it had never done before.

Chapter 6

GOOD THINGS OUT OF BAD TIMES: DEPRESSION AND WORLD WAR II, 1930-1945

During the Great Depression, Colorado went on a road-building binge funded by a succession of federal back-to-work programs for the state's unemployed. The years between the stock market crash and the beginning of World War II was a time of standardization and modernization for Colorado's highways. The man who envisioned and executed these changes was State Highway Engineer Charles D. Vail. Appointed in December 1930, Vail immediately established a policy of oiling the state's roadways to ensure miles of safe, dustless, hard-surfaced highways. A colleague described Vail as "blunt, undiplomatic, tough as leather, he never dodged a fight or an issue" (Williams, 1945: 30). Vail used those characteristics to win appropriations from the state legislature and the federal government to build and improve the state's roads. In 1930, Colorado counted only 533 miles of hard-surfaced routes with most of the mileage covered in concrete. By 1941, asphalt covered 4,200 miles of highways statewide (Rocky Mountain Contractor, January 8, 1941: 22-3) [Figure 5].

6.1 Back to Work – PWA/WPA Building Roads in Colorado, 1933-1941

If Vail had the vision, federal New Deal programs supplied the money to hire and pay the necessary labor. In the early 1930s, drought and dust storms blew Colorado's agricultural economy toward disaster. Combined with an increasing number of jobless in the state's towns and cities, the economic situation in Colorado was as a bleak as at anytime in its history (Colorado State Highway Commission, Minutes of Highway Advisory Board Session, April 12, 1935: 8-9).

Figure 5 1930 AAA Map showing hard surfaced roads in Colorado.

Throughout the 1930s, federal work programs improved the state's roads, provided work to thousands of citizens desperate for a job and left a legacy that benefits today's drivers. By the close of 1939, there were 900,000 enrollees building Colorado's highways and streets (Thomas, 1996: 115). In Colorado, WPA employees built or improved 5,760 miles of highways and constructed or repaved 2,553 bridges from July 1936 to December 31, 1939. Most of this work was concentrated in rural Colorado, where WPA men widened, graded, and resurfaced 5,065 miles of farm-to-market roads. Some important WPA jobs included reconstruction and oil-surfacing of 38 miles of State Highway 12 west of Trinidad in Las Animas County; construction of 31 miles of new oil-surfaced highway north of Fort Collins to the Wyoming border; and the completion of a four-lane, oil-surfaced highway extending West Alameda Avenue 11 miles through Jefferson County. Construction on the new West Alameda skirted Green Mountain before joining US Highway 40 on the other side of the hogback rock formation. In addition to roads, WPA workers also built 1,698 bridges across Colorado from 1936 to 1939 (Rocky Mountain Contractor, March 27, 1940: 8).

Despite the Depression, tourism remained an important element of the state's economy. During the 1930s, tourist travel contributed "an estimated gross income of $100,000,000 a year" while the transportation and communication industries regularly employing "some 35,000 Coloradoans" (Workers of the Writers' Program, 1987: 73). Both the Highway Department and federal work programs were involved with a number of mountain construction projects throughout the 1930s. Work progressed on six main highways leading to the Rockies: the Big Thompson and North Saint Vrain highways serving Estes Park and the Rocky Mountain National Park in northern Colorado; the Mount Vernon Canyon-Floyd Hill highway on US Highway 40 between Denver and Idaho Springs; US Highway 24 west from Colorado Springs and Manitou Springs by the Ute Pass and Florissant to Buena Vista and Leadville; US 50 west from Canon City to Salida; and US 160 west of Walsenburg over La Veta Pass to Alamosa and then over Wolf Creek Pass to southwestern Colorado. Approximately 1,700 miles of new roads were built during the last half of the 1930s. A large portion of that mileage went through the Rocky Mountains. Construction through the Rockies did not come cheap -- engineers estimated that blasting an auto road through the solid granite of a canyon cost between $25,000 to $130,000 or more per mile (Figure 6).

Figure 6 – During the 1930s, the State Highway Department transformed US Highway 24 across Colorado from a graveled road to a hard-surfaced highway (Rocky Mountain Contractor, September 10, 1941: 8).

During the late 1930s, the state highway department rebuilt US 160 and Wolf Creek Pass along its present alignment. US 160 linked the San Luis Valley to the Colorado-Utah border. The highway covered a distance of 315 miles from Walsenburg to the Utah state line past Cortez. Construction of a 7.5-mile road segment proceeded along "precipitous walls of granite" at a cost of $2.6 million. Completion of US 160 and upgrading Wolf Creek Pass in 1938 brought far southwestern Colorado several hours closer to the rest of the state with its completion (Williams, 1937(a): 7).

By the late 1930s, the Public Works Administration (PWA) replaced the WPA as the primary federal work provider in the state. PWA labor forged a new route between Wheeler Junction and Minturn, now known as Vail Pass. In June 1936, the Highway Department conducted a reconnaissance survey from the road near Shrine Pass northwesterly over the top of an unnamed pass near Black Lake and following Black Gore Creek to Gore Creek. During 1939 to 1940, two crews of PWA labor built 4.6 miles of highway between Wheeler Junction and the top of the new pass, while a contractor tackled the 9.5-mile stretch from the top of the pass down the west side to Gore Creek. Another contractor built the remaining 9.8 miles from Gore Creek to the town of Dowd. Several mountain counties passed resolutions urging the department to name the new road Vail Pass, after State Highway Engineer Charles Vail. Bowing to popular demand, in December 1939, Vail ordered the department's shop to create signs along the pass bearing his name (Wiley, 1976: 27).

Vail also was busy behind the scenes. Eager to gather additional federal-highway funding, the highway department passed a resolution expanding the state highway system by 2,700 miles of previously local roads in 1938. State Highway Engineer Vail recommended this should be accomplished "in such a way as not to materially change the proportion of the mileage of state highways in each county." Many of these routes were short spurs and links that the state eventually turned back to local jurisdictions by the late 1940s (Colorado Department of Highways, Minutes of Advisory Board Session, April 22, 1938: 2).

The crafty Vail knew that the state would need all the miles it could count as state highways when Congress passed another highway aid package. This maneuver was Vail's final contribution to the state, as he died in office in January 1945 (Figure 7).

Figure 7. Published by the State Highway Department, this 1938 map illustrates Colorado’s recently expanded 12,395-mile highway system (Colorado Department of Transportation, 1938). [See back pocket for map.]

Chapter 7

THE INTERSTATE ERA, 1945-1973

Bound by governmental budget constraints, and the attention of its citizens diverted overseas, Colorado mostly ignored its highways during World War II. This inattention did not stop military trucks and transports pounding the state's road system from Camp Hale near Leadville to the military bases around Denver and along the roads carrying material for Manhattan Project activities on the Western Slope. Due to shortages in manpower, equipment, and materials an enormous backlog of maintenance needs piled up during the war years. Highway Department leadership worried that roads considered "a high type of construction" during the late 1920s and early 1930s had not kept up to "the rapid advance in motor equipment and the ever-increasing volume of heavy and high-speed traffic" (Watrous, 1946: 13). The root of this dilemma stemmed from the relatively small funding resources the Department of Highways could draw upon. During the 1940s, the state's average highway income per vehicle placed Colorado 43rd among the 48 states (Colorado Department of Highways, 1945: 2).

Meager revenues were at odds with the extent of the state's highway network. Colorado's highway system totaled 12,394 miles by the mid-1940s, making it the 11th largest among the 48 states -- only 1,500 short of California's 13,891 highway miles. Colorado's Federal Aid Primary System roads measured 4,050 miles, comprising only 5.3 percent of all mileage in Colorado. However, those roads carried 60 percent of all rural traffic, primarily heavy truck and bus traffic. In addition to those totals, 63,000 miles of county and local roads criss-crossed rural Colorado (Colorado Department of Highways, 1945: 1,3).

Vail's successor as State Highway Engineer, Mark Watrous, complained in print about the possibility of remaking the state's road system after the war: "Money, man-power, materials, and time are the essential components of highway building. Colorado is far, far short of having any single one of these essential components" (Watrous, 1946: 13). In

1945, a state traffic study counted 600,000 motor vehicles and 800,000 cars and trucks passing through Colorado annually. The same study encouraged the construction of four-lane highways through the state's most traveled areas (the Denver metro area, the Front Range, and into the Rockies) that would cost from $40,000 to $100,000 per mile. The state's less-traveled roads also demanded attention. Of 3,500 miles of secondary roads, the Department of Highway determined that less than 1,000 miles were satisfactory to carry the anticipated post-war traffic volume. The estimated cost of improving the state's farm-to-market and other rural roads ranged from $8,000 to $10,000 a mile (Colorado Department of Highways, 1943: 1; 1945: 3).

In 1949, a division of the Department of Highways, the Highway Planning Commission, began a four-year odyssey to examine and recommend improvements to the state's highway system. The commission published its findings in 1953. The four-pound report suggested a reorganization of the department and favored returning nearly 4,000 miles of highway back to the counties. Effective January 1, 1954, the "Big Switch" reduced the state highway system from 12,400 to 8,000 miles. In announcing the Big Switch, the Department claimed that under the larger system, it actually had less responsibility, since it maintained only 4,000 miles of primary highways. After the switch, the Department was responsible for the construction and maintenance of all state highways, including over 3,900 miles of federal-aid secondary roads previously maintained by each county (Colorado Department of Highways, 1954: 14).

Making up for years of sacrifice, the nation went on a consumer goods spending spree after the war. Leading the list of new purchases was the automobile. As more people took to the road, Colorado was one of many voices in the chorus of states' asking Washington to improve the nation's highways. The federal government responded with the last, greatest, and most expensive round of highway construction of the 20th century.

7.1 Tourism All-Year Long

In the decades before World War II, Colorado's boosters and promoters played up visits to the Rockies during spring and summer before ice and snow cloaked the mountains in winter's isolation.   The automobile provided a few hardy individuals the means to venture into the high country off-season, and as early as 1929, a Denver newspaper suggested that Colorado could draw more visitors in wintertime if private interests developed ski runs, jumps, and skating facilities (Leonard and Noel, 1990: 437).

Outlasting the economic hardships brought by the Great Depression, by 1940, tourism was Colorado's third-largest industry after agriculture and manufacturing. During the war years, constraints such as travel restrictions and gasoline rationing limited summer auto travel. Across the West tourist revenue dropped by a third, but Colorado was less affected than neighboring states. Things began to pick-up in the months after the war, as the Colorado Publicity Bureau received as many as 50 inquiries a day from ex-servicemen looking to return to Colorado (Athearn, 1976: 289). One notable group of soldiers, the 10th Mountain Division based at Camp Hale, trained on the west side of Tennessee Pass near Leadville. After the war, some members of the 10th Mountain came back to Colorado to lay the foundation of the state's ski industry in resorts like Aspen, Vail, and Breckenridge (Fay, 2000: 65). The ski industry became one of the primary benefactors of state and federal improvement of existing mountain roads and development of Interstate 70 through the Rocky Mountains. By the end of the 20th century, Colorado counted 55 ski areas and the number of skier days reached 10 million (Leonard and Noel, 1990: 438).

One of the first post-war projects completed by the Department of Highways was the widening and paving of US 6 over the summit of Loveland Pass. Completed in 1950, one construction worker recalled how difficult it was to get a day's work done at 11,000 feet: "The year round, you can dig into mountain mud and within a few feet strike ice, and when that happens, the work really gets rugged" (Christensen, et. al. 1987: 54).

Encouraged by the state's "Colorful Colorado" tourism campaign, each community in the state developed its own way of luring auto tourists during the 1950s and 1960s. Some critics felt many of Colorado's small towns engaged in overkill. Towns such as Central City "stood out as the classic example of fakery in the world of tourist traps" while the one-time mining metropolis of Victor survived as an example of "a place where one could . . . drive along streets of abandoned buildings without the feeling that these relics had been embalmed for viewing by paying customers" (Athearn, 1976: 324).

By the late 1960s, Colorado's inherent desire to sell and promote the wonders of the state to the rest of the nation ran headlong into a new spirit of environmentalism laced with non-commercialism. In the battle to preserve the natural wonder that made the state special in the first place, developers and environmentalists fought many skirmishes on a new battleground – the interstate highway.

7.2 The Freeway Era Begins

As federal money developed and supported mountain roads during the 1920s and 1930s, post-war highway construction brought the greatest immediate benefits to Denver. Since the 1930s, the city had proposed a number of expressway projects to federal authorities with little success (Hermsen Consultants, 1999: 15).

In 1941, State Highway Engineer Vail convinced the State Legislature to pass the Freeway Act to provide funding for construction of a multi-lane thoroughfare through Denver. In September 1944, Vail commissioned consulting engineers Herbert S. Crocker and Alfred J. Ryan to study "The Denver Project," a north-south, limited-access highway through the city. Their report, "The Valley Highway: A North-South Limited-Access Highway" marked the first recorded use of the name "Valley Highway;" a reference that later became part of the local jargon (Crocker and Ryan, 1944: 29). The engineers' visualized a traffic-way "independent of the cross-flow of city traffic and will serve as an artery of unimpeded transport while at the same time providing fully for distribution and reception of traffic destined to or from Denver. It is clear, also, that a vital facility of this kind must be planned for enduring service. Its function is to carry not merely the traffic of today or of the next few years but that of the future, so far as can be foreseen" (Crocker and Ryan, 1944: 35).

Adapting elements from existing freeways like the Davidson in Detroit, and the Arroyo Seco across Los Angeles, the Valley Highway was unlike anything ever attempted in Colorado. At a cost of $14.5 million, including acquiring right-of-way, the Valley route was the least expensive of four proposed to the State Highway Department (Crocker and Ryan, 1944: 43-4). Every interchange and all intersections where city streets or railroads carried across the freeway required overpasses and underpasses to separate traffic flow. The final design incorporated 62 structures over the highway's 11-mile course. All interchange ramps were concrete rigid-frame construction built with moment resistant connections between the superstructure and the substructure to produce an elastic finished product. The river bridge, and the bridges carrying the main line railroad tracks over the highway, rested on steel plate-girder structures placed on concrete substructures. The Valley Highway represented the Highway Department's first use of rigid-frame highway bridge construction. Comprised of a concrete beam superstructure tied rigidly to the abutments with steel reinforcing bars, rigid frame bridges differed materially from conventional support spans. Rigid frames were also well suited to support thousands of cars and were aesthetically pleasing (Hermsen Consultants, 1999: 32, 34).

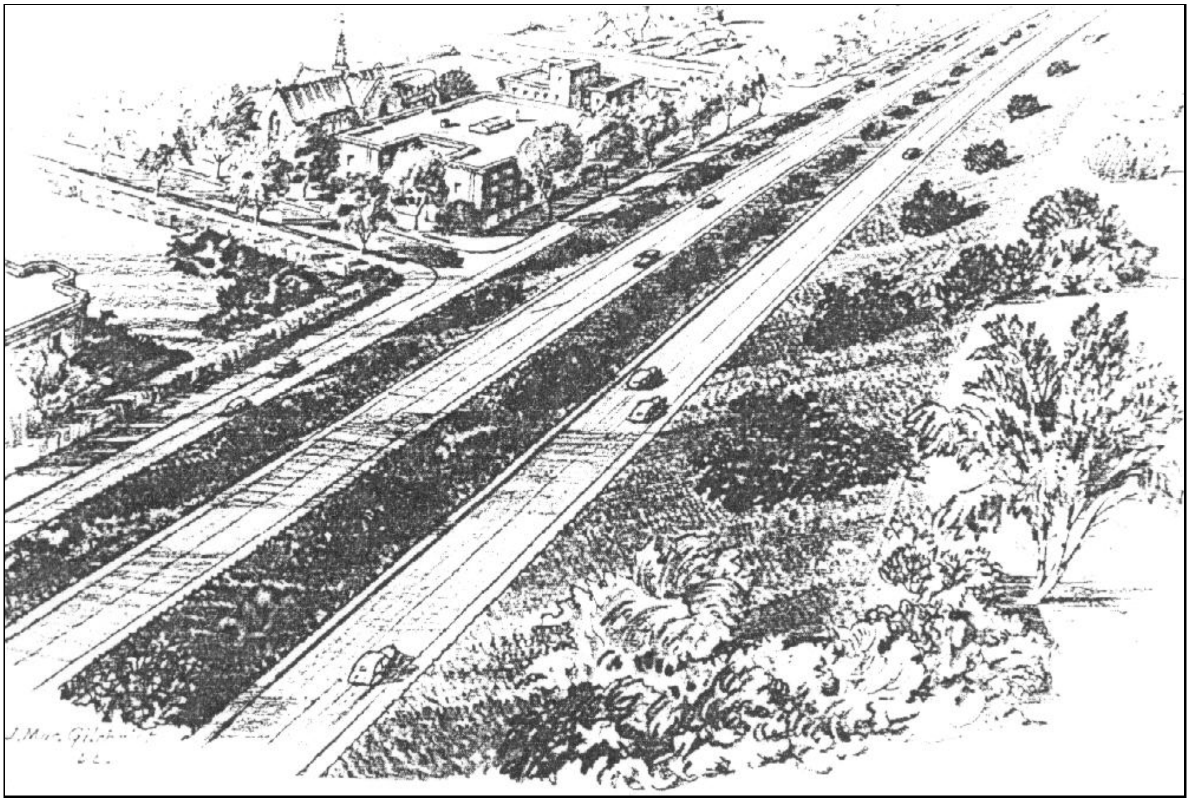

Plate 6. Engineers Herbert Crocker and Alfred J. Ryan emphasized aesthetics when proposing the state's first freeway (later known as the Valley Highway) in 1944. While modern Interstate 25 bears little resemblance to the illustration, Crocker and Ryan's original design featured "dual roadways separated by a landscaped median strip and bordered by service roads" (Herbert Crocker and Alfred J. Ryan, The Valley Highway: A North-South Limited Access Highway Through Denver, 1944: 63).

Lack of funding slowed the Valley Highway's progress during the late 1940s and early 1950s. As work crept along Denver's north side, a popular effort grew to build a direct route between Denver and Boulder. For most of the automobile era, right-angled State Highway 7 served as the primary route between Colorado's biggest city and the home of the state university. Roderick Downing, a University of Colorado Professor in the School of Engineering, led the campaign to build the proposed highway.

The citizens of Boulder were much more vocal in their support for a new freeway than their neighbors in Denver. In 1949, following a recommendation from the Highway Advisory Board, the State General Assembly adopted a resolution authorizing the highway department to issue bonds for the construction of a toll turnpike. Reflecting tight state budgets after the war, it was the first time the legislature approved construction of a toll automobile highway. The consulting engineering firm for the project, Howard, Needles, Tammen, and Bergendorf, drew plans and supervised construction under direction of the Highway Departments. After court action legalized clearance of the bonds, the department purchased the right-of-way and construction began October 2, 1950 (Portland Cement Association, 1952: 1).

The state prepared and sold bonds totaling $6.3 million, payable over 30 years. Money collected from tolls went to liquidate those bonds. From 1950 to 1952, three private firms did the grading and ballast over three separate portions. (Colorado Department of Highways, 1949(c): 70-4)

Completed in January 1952, the Denver-Boulder Turnpike featured fully controlled access with two 12-foot lanes traveling in each direction. Eight bridges spanned the turnpike to accommodate cross-traffic. Twelve major structures, primarily the tollbooths, lined the turnpike. The turnpike experiment opened on January 1952. Many thought it would be part of the local scene for years to come (Portland Cement Association, 1952: 4-5).

The turnpike exceeded all expectations from the first day of operation. The engineering consultants forecast a daily average for turnpike traffic between 1950 and 1960 at 2,580 vehicles, but the actual count reached 7,000 a day by the mid-1950s before increasing to 13,774 vehicles a day by 1966. A quarter toll paid for the 17.3-mile ride from Denver to Boulder. An unexpected windfall of spare change paid off $6.3 million in bonds plus $2.3 million in interest by 1967; 15-and-a-half years after completion.   Honoring a promise future generations of Colorado politicians later regretted, the state removed the last tollbooth on September 14, 1967. The Denver-Boulder Turnpike remains the only toll road located on the U.S. public highway system ever to revert to a free highway. Part of US 36 since 1967, the Denver-Boulder Turnpike represents a good design compounded by a good deed (Colorado Department of Highways, 1950(b): 86; Wiley, 1976: 33).

Elsewhere across the state, other communities across Colorado needed bigger roads to handle more traffic. In 1949, a 10-year project began to build a four-lane highway for travel from Pueblo to Denver. Along with the Monument Valley Freeway, completed by 1960 and transecting Colorado Springs, created the modern Interstate 25 through southern Colorado (Christensen, et. al., 1987: 54).

One other important road project after the war involved completing the Clear Creek Canyon road. The highway tied directly into 48th Avenue and provided mountain access for Denverites. Delayed by wartime shortages, this route finally opened as part of US 6 through Clear Creek Canyon in 1952 (Christensen, et. al., 1987: 54).

7.3 Colorado Joins the Rest of the Nation – The Interstate System, 1956 to the Present

Ever since the First World War, a nationwide alliance of politicians, military, engineers and the tourism industry supported an interstate highway system. In Colorado, a national highway would do more than link the state to the rest of the nation; it would bring the eastern and western halves of the state together. As one Coloradoan noted in the years before the interstate, “Colorado was more like two states independent of each other. There were months and months when you didn’t go to Steamboat Springs on the highway; you didn't go to Grand Junction; you didn't go any place on the Western Slope"(Lewis, 1997: 254).

Inspired by 19th century achievements to link the continent by pony express, telegraph and rail, and 20th century examples like the Autobahn; the Federal Highway Act of 1944 authorized a system of interstate highways. The 1944 Act appropriated $500 million a year for each of the three fiscal years following the war. The money was divided between $225 million for primary federal aid roads, $150 million for secondary and $125 million for intercity streets. Colorado's allotted mileage under the Act included what is now Interstate 25 between Cheyenne, Wyoming and Raton Pass on the New Mexico border, I-80 South (now I-76) from Denver to the Nebraska line at Julesburg and Interstate 70 from Denver east to the Kansas line.

President Harry Truman approved plans for the first National System of Interstate and Defense Highways on August 2, 1947, but the nation would not see any results until the late 1950s. To concur with the tenets of the Federal Act, the State Legislature made a slight reorganization to the Highway Department in 1952. The Highway Department became the Department of Highways and the fiscal year changed from a calendar year to one ending June 30 to match the timetable used by the U.S. Bureau of Public Roads. Led by a Chief Highway Engineer, an eight-man Highway Commission replaced the existing Advisory Board (Colorado State Highway Commission, Book 1, Feb. 26, 1952: 1-5). The department immediately overturned Charles Vail's 1938 mileage expansion and returned some 4,000 miles of state highways back to the counties. The reduction to 8,000 state highway miles placed full responsibility for maintenance with the department while counties and cities held responsibility for their roads and streets (Colorado Department of Highways, 1954: 14).

7.4 Interstates Cross Colorado

As the automobile accelerated the pace of life in Colorado at the start of the 20th century, the arrival of the interstate highway system propelled the state closer to a long-held dream. In 1956, the U.S. Congress passed the Federal Aid to Interstate Act. The proposed 42,500-mile system would connect important centers of population and areas of national strategic importance by four-lane divided highways with a grade separation at points of crossing and interchanges at points of ingress and egress.

When the federal government first considered the original 40,000-mile interstate system in 1956, I-70 began at Washington, D.C. and terminated in Denver. The Bureau of Public Roads were initially fearful of the amount of manpower and money needed to build a road through the Rockies. Colorado Governor Edwin C. Johnson offered Washington a deal that Colorado would build its own Continental Divide tunnel as long as the interstate went through. Construction of a four-lane highway to the western state line would ensure tourism as the state's primary industry. Johnson crafted a personal campaign toward an occasional visitor to Colorado -- President Dwight Eisenhower. On fishing holidays, Eisenhower – like many others stuck in traffic – complained about the traffic jams between Denver and the mountains. Governor Johnson heard and subsequently played on those concerns in letters and personal appeals to the president (Thomas, 1996: 208).

Eventually bowing to concerns from Western congressional delegations, by 1958, the Federal Highway Administration (FHWA) extended I-70 by an additional 547 miles to connect with Interstate 15 near Cove Fort, Utah. Across Colorado, much of I-70 and US Highway 6 follow the same path. After the federal government revised its intentions to complete the interstate through Colorado, the state's Chief Highway Engineer, Mark U. Watrous, remarked that their reassessment was "as important to Colorado as the discovery of gold" (Reef, 1961: 17).

Supported by federal funding, the Highway Department immediately went to work in October 1956 on a six-mile section between known as the Floyd Hill-Idaho Springs complex. Some of the engineering challenges this section presented included drilling twin two-lane, one-way tunnels through a promontory, four-lane the existing road over Clear Creek; and completion of nine concrete bridges. After five years of work from

1956 to 1961, the federal and state government spent $7.5 million on the first stage of the interstate projects through the Rockies (Reef, 1961: 16).

Another beneficiary was the stalled Valley Highway project. In lean funding years during late 1940s and early 1950s, the state continued to acquire right-of-way and award new contracts when funds became available. Federal money helped the state meet its 10-year construction goal. In November 1958 the $33-million, 11.2-mile highway opened with the finishing of the Broadway Viaduct and the completion of the last section between South Emerson Street and West Third Avenue. Use of the road quickly surpassed design, and expansion of the highway was required in less than a decade (Colorado Department of Highways, 1958:1-3).

During the 1960s, the Valley Highway was expanded, I-25 was completed, and work was started on I-70. When the plains segment of I-70 opened to Denver traffic in 1964, it terminated as an elevated highway at 46th Avenue. For the next two decades, the Valley Highway interchange at 46th Avenue served as the crossroads between I-70 and I-25.

The Interstate program required patience in the city and old-fashioned blasting and building in the high country. From the early 1960s to the late 1970s, the last great combination of highway design and construction would culminate beneath the Continental Divide (Figure 8).

Figure 8 Interstate map

7.5 The Eisenhower Tunnel

When the state highway department opened bids in 1967 to bore through the Rockies, it was the final step toward resolving Colorado's greatest remaining engineering challenge – how to build an interstate highway over the Continental Divide. Construction of one or more tunnels was clearly needed to allow unimpeded highway traffic to cross the rock spine that formed 11,992-foot Loveland Pass.

Based on information gathered during a 1963-65 pilot boring for the Straight Creek Tunnel Project (renamed the Eisenhower Tunnel by the state legislature in 1972), the department planned to drill the first of two tunnels above the town of Bakerville and go under the Continental Divide between Clear and Straight Creek Canyons. A consortium of Al Johnson Construction Co. of Minneapolis, Gibbons and Reed Co. of Salt Lake City, Western Paving Construction Company of Denver, and Kemper Construction Co. of Los Angeles presented the low bid of $54.1 million on October 3, 1967. Adopting the name Straight Creek Contractors, the builders began tunneling the western portal on March 13, 1968. By October of that year, Straight Creek completed the tunnel's top heading to the midway point. Excavation for the heading on the east portal started on December 11, 1968 (Colorado Division of Highways, 1973: 2).

Charles Shumate, state highway engineer, led the department through a gauntlet of engineering challenges never faced before the Straight Creek Tunnel. Shumate likened the task of building a tunnel at 11,000 feet similar to "putting a five-story building through a mountain" (Lewis, 1997: 254). Shumate and all involved soon found out that the threat of landslides, rock falls and cave-ins were only some of the roadblocks toward completion. During construction, movement in surrounding rock created a squeezing action on a section of tunnel floor, causing it to rise almost 1.4 feet in two months. Employing resourceful corrective measures, crews avoided any cave-in during the tunneling process. Finally, engineers and workers prevented major earth slides before the west approach to the tunnel by controlled runoff drainage (Christensen, et. al., 1987: 55).

Plate 7. Perhaps the greatest engineering accomplishment in state history, the Eisenhower Tunnel took 13 years and $125 million to complete. Vital to the completion of Interstate 70 through the Continental Divide, the tunnel linked for the first time the eastern and western halves of Colorado. Source: Denver Public Library – Western History Department © 1995-2002 Denver Public Library.

The first bore of the Eisenhower Tunnel measures 1.693 miles in length with two 13-foot-wide lanes. Ceiling placement of huge exhaust and fresh air ducts bring the roadway's overhead clearance to 16 feet, four inches. Eight fresh-air fans moved 533,000 cubic feet of air per minute, while eight exhaust fans dispersed 542,000 cubic feet per minute. According to a sign located at the tunnel's west portal, Eisenhower's official elevation is 11,158 feet. While state officials have never made a claim, Eisenhower Tunnel is most likely the highest part of any interstate highway in the United States and the highest vehicular tunnel in the world. Governor John A. Love opened what is now the westbound bore of the tunnel to two-way traffic at noon on March 8, 1973 (Lewis, 1997: 256).

In 1972, the Department of Highways designers planned to build a second tunnel to serve eastbound traffic. Officials opened bids on August 8, 1975 for the mining, lining, drainage, support and approach roads. A joint low bid of $102,800,000 presented by Peter Kiewit Sons' Co. of Omaha and Brown and Root of Houston won the bid to build the next phase. Preparatory work outside the mountain started on August 18, 1975, and excavation of the tunnel began that November. The eastbound bore opened in 1979 and was named for Colorado Governor and U.S. Senator Edwin C. Johnson. It took 13 years, nine months and $125 million to complete the Eisenhower Tunnel, about two and half times the original estimate. A few years into retirement, Shumate remarked, "I told many people that one of those (tunnels) in a lifetime is enough" (Lewis, 1997: 256).

Traffic through the first of the twin tunnels increased beyond all projections, as tourists and skiers swarmed to and from the slopes. Approximately 3.4 million cars went through the tunnel during the first full year of operation in 1974, and volume increased 3 to 5 percent annually after 1974. Completion of most four-lane construction in 1978 made I-70 perhaps the most popular mountain vacation route and one of the most important general transportation routes in the nation, with upward of one million cars a month passing through the tunnels during July and August. The Colorado Department of Transportation predicts four times as many cars will travel I-70 by 2008.

Chapter 8

NOWHERE LEFT TO DRIVE, 1973-2000

By the mid-1980s, there were few new roads built in Colorado. However, eighty years of construction did not suddenly end. Instead, it began to centralize and play catch-up in those areas of the state burdened with the largest traffic volume. During the last 15 years of the 20th century, most road- building projects either began or ended in Denver. In 1985, the state completed 1.2 miles of I-76 from Wadsworth Boulevard to Sheridan Boulevard. That mile-and-a-fraction represented the first interstate opening in Colorado since the May 1976 completion of I-225 in Aurora. With the completion of a 1.7-mile gap between Pecos Street and Interstate 25, the CDOT declared I-76 complete in 1993. Construction of multi-lane highways also looped their way around Denver by the mid-1980s. In 1985, the first 9.5-mile segment of the controversial Centennial Parkway (C-470), between I-25 and Santa Fe Drive (US 85) opened to public. Two years later, the second segment of C-470 opened from Wadsworth Boulevard to Ken Caryl Avenue, followed in 1988 with a third segment south of Golden.

8.1 Growth Demands Pavement: Colorado's Economic and Population Boom

The expansion of the nation's interstate system opened Colorado to more visitors and transplants in search of a new home. Much of the inspiration leading newcomers to Colorado is rooted in the environmental movement of the 1970s. In the national mind, Colorado represented a refuge of mountains untouched by over-development, urban decay, and sprawl. Ironically, the primary way to get to and travel around this idealized paradise was behind the wheel of an automobile.

In the state's largest city, the car continued to direct design and policy making while contributing to Denver's growth. By 1974, metropolitan Denver had almost as many vehicles (1,178,054) as people (1,498,000). However, during the 1970s the population of the City and County of Denver declined from 514,678 in 1970 to 492,635 in 1980. During the same 10 years, the surrounding counties of Adams, Arapahoe, Boulder, Clear Creek, Douglas, Gilpin and Jefferson jumped from 728,686 to 1,133,404 (Noel, 1987:

48). The automobile remained at the very foundation of Colorado's economic fortunes during the 1980s. At the start of the decade, Colorado had the sixth-highest per capita motor vehicle registration in the country (Noel, 1987: 42). These numbers only grew as the state basked in its longest period of economic and population growth during the 1990s. Over the last decade of the 20th century, the state gained more than a million people from 3,294,394 in 1990 to 4,301,261 in 2000 (http://www.dola.co.us/demog/Censusdata/oldcensi.html).

In the face of increasing air pollution and traffic congestion, the state's voters concluded a decade of growth with the approval of a multi-billion-dollar package to upgrade Colorado's primary thoroughfare – Interstate 25. The vote ensured that Colorado's dependence on cars would continue into another century.

8.2 The Toll of Traffic

By the 1980s, Colorado's heaviest traveled roads could not stand the strain any longer. When I-25 and I-70 were completed in the 1950s and 1960s, few could have seen the enormous growth along the Front Range. Engineers could not have guessed what bigger, faster, and heavier trucks could do to a road system. Nevertheless, design faults in the interchange I-25/I-70 became evident almost immediately after completion. These included substandard ramps and curves that engineers and drivers alike blamed for numerous accidents. One of Denver's air-traffic reporters nicknamed the knot of concrete "The Mousetrap," because drivers were never sure as they entered if they would leave in one piece. The flawed design did not stop traffic and the dangerous interchange remained in place for another two decades. By the mid-1980s, the interchange carried over 300,000 vehicles a day.

A spectacular accident on August 1, 1984, led to the reconstruction of the interchange. Early that morning a truck carrying six Mark torpedoes overturned on a ramp. Flammable propellant leaked from one damaged torpedo that threatened to start a fire resulting in a major explosion. As a result, traffic on Interstates 25 and 70 was rerouted for the next eight hours while more than 100 people evacuated homes and business near the interchange. One of the reasons for the accident was the obsolete design of the interchange. Truckers avoided it because of its dangerous curves and heavy traffic. It was later revealed that the driver that caused the accident had been advised to use an alternate route through Denver. The incident made the national news and alerted the U.S. Congress to the dangers of the Mousetrap (Christensen, et. al., 1987: 48).

In 1987, the federal government authorized $186 million to upgrade the Mousetrap from an area bordered by 58th Avenue on the north, 38th Avenue on the south, Pecos Street on the west, and Washington Street on the east. The new construction elevated the I-70 interchange above Interstate 25 and widened ramps for greater capacity and higher operating speeds. The Department of Highways eventually expanded the project to the east along I-70 to Brighton Blvd., raising the cost to $266 million and pushing the completion date to 2002 (Colorado Division of Highways, 1987: 11).

Construction projects went much smoother outside of the city. Nearly 75 percent of Colorado's interstate highways were complete by 1970. Federal and state officials opened the last portion of the 299 miles of Interstate 25 from the Wyoming line to Raton Pass in 1967. CDOT completed the 184-mile route from Denver to the Nebraska state line originally designated as Interstate 80 South (now known as Interstate 76) with the opening of a 1.7-mile section across northwest Denver in 1993. The section connected I-25 south of the Boulder turnpike (U.S. 36) to I-70 near the Wadsworth Boulevard exit. The final 1.7 miles took four years and $91 million to complete (Rocky Mountain News, September 15, 1993: 4-A).

The state's east-west route, I-70, runs a total of 449.66 miles across the state: 175.62 miles between the Kansas state line to Denver, and 274.04 miles west from Denver to the Utah border. After 12 years of controversy, the Colorado Department of Transportation (CDOT) completed work on the last 12-mile portion of the I-70 through Glenwood Canyon in October 1992. In opening the $490-million-dollar project to traffic, Governor Roy Romer labeled Glenwood Canyon's highway design as timeless: "As a society we need to save, to invest, and to forgo instant gratification to build these kinds of monuments so when they unearth our remains in 2,000 years, they will say, ‘Yes, civilization does progress’” (Rocky Mountain News, October 15, 1992: 10). After nearly a half century of construction, Colorado’s interstate system – north to south, east to west—totaled 951 miles (Colorado Division of Highways, 1987, 8).

8.3 The Road Keeps Going -- Highway Projects: 1973-2000

Without the fanfare of the early automobile age, Colorado saw its most monumental highway projects completed or begun during the last quarter of the 20th century. The period began with the opening of the westbound bore of the Eisenhower Tunnel and the completion of the east bore six years later. During much of this era, a battle raged over completing the last 12 miles of Interstate 70 in Colorado through the Glenwood Canyon before design and exhaustion overwhelmed both supporters and detractors. Along Colorado’s two other interstates, drivers and their vehicles kept coming. Between 1985 and 1995, traffic on Colorado’s interstates increased by 43 percent. In 2000, a traffic study listed metro Denver as the seventh-most congested metropolitan area in the United States. More than 230,000 vehicles drove the I-25 corridor between Broadway in Denver and Douglas County each day (Colorado Department of Transportation, 2002: 3-7).

The century of the automobile in Colorado closed with voters agreeing to fund the largest construction and improvement project in state history – the $1.67 billion Transportation Expansion (T-REX) project. The primary objective of the T-REX project is to improve mobility through the most congested traffic corridor in the state – Interstate 25 from Broadway in Denver to Lincoln Avenue in Douglas County. In many ways, the atmosphere that set the stage for T-REX project of the early 21st century resulted from highway builders adapting and outlasting their opponents to complete the last portion of Interstate 70 during the 1980s and early 1990s. This 12-mile piece of interstate encapsulates the struggles and triumphs of highway construction in Colorado.

8.4 The Last Challenge: Glenwood Canyon, 1975-1992

Those who drove US 24 through the Glenwood Canyon in the 1920s were always grateful to tell how they survived the journey. Falling off into the canyon while driving near Shoshone Dam was always possible regardless of weather conditions. Dr. Woodrow E. Brown grew up in Eagle and remembered the adventure of passing along the road during 1920s:

> "The road was extremely narrow (an estimated width of a lane-and-a-half) and if you met a car you darn sure got over, got to a wide place and let 'em go by" (Schader, 1996: 131).

Between 1936 and 1938, WPA crews blasted rock from the canyon and pushed the debris into the Colorado River to clear the broader highway. The widening and paving of the road through the canyon cost $1.5 million. After completion of improvements to US 6 and US 24, the state re-opened both roads on August 1, 1938. The reconstructed highway provided a paved lane eastbound and another westbound for traffic in the canyon (Schader, 1996: 133-4).

The late 1960s and early 1970s brought the interstate to the canyon. In 1971, the Division of Highways estimated that completing Interstate 25 through a 12-mile stretch of Glenwood Canyon would cost $65.2 million. Six years of debate saw the cost climb to $211.9 million. By the 1980s, the 12-mile Glenwood Canyon interstate averaged slightly over $40 million per mile, or more than 40 times the 1957 projected cost of a mile of interstate highway. The $490 million segment cost more than twice the first estimate for all of I-70 from Denver to the Utah border. The rise of the environmental movement and the passage of the National Environmental Policy Act (NEPA) of 1969 reversed many people's opinions that highways in and of themselves were a good thing. The effect of the environmental movement was to delay Glenwood Canyon and other highway projects by greater preliminary planning and environmental-impact studies. After the project was approved in 1975, opponents filed suit, lobbied against funding, and proclaimed that the interstate would wreck the canyon's natural beauty (Thomas, 1996: 299).

Despite initial opposition from environmentalists, work on the 12-mile section of Glenwood Canyon finally got underway in 1981. Project engineers worked within a number of environmental, recreational, and aesthetic constraints. Over time, the design of bike paths, cantilevered lanes, rock-toned concrete, alpine landscaping and dozens of other design innovations "won over the staunchest opponents." Sam Caudill, an Aspen architect who headed local opposition to project announced at the highway's opening: "This 12 miles of highway is sensitive to the environment and graceful. This was a win-win all the way" (Rocky Mountain News, October 15, 1992: 10).

The 1980s closed with the opening of bigger and better roads along the northern Front Range. In 1988, new off-ramps known as "flyovers" loomed over the heads of drivers on I-25 and I-70, guiding cars along at greater speeds. Other accomplishments included completion of the Boulder and Foothills Parkways and Denver's six-lane Walnut Street Viaduct. In the 1990s, the latter road served as the front gate to Lower Downtown of Denver and contributed to a resurgence of residential and business development in that area of the city.

In 1991, the legislature approved changing the Department of Highways to the Colorado Department of Transportation, or CDOT. A State Transportation Commission directs CDOT's management of the Colorado's highway system. The Transportation Commission formulates general policy and builds and maintains state highways and transportation systems. The commission is composed of 11 commissioners representing specific districts, headed by a chairman. Each commissioner is appointed by the governor, confirmed by the Senate, and serves a four-year term (Colorado Department of Transportation, 2000(a): 40).

On August 15, 1996, the State Transportation Commission adopted the Strategic Transportation Project Investment Program. The program identified 28 high-priority projects for placement on an accelerated construction schedule. By using projected Transportation Commission funds alone, the state originally estimated it would take 48 years to complete the Strategic Projects. Passage of Senate Bill 97-001 allowed the state to take a portion of the state General Fund revenue over five years for completion of strategic highway projects. With the indefinite extension of SB 97-001, and the ability to issue bonds granted by voters in 1999, CDOT now predicts completion of most projects within 10 years (Colorado Department of Transportation, 2000(a): 5).

A 1995 study by the Denver metro area's planning organization, the Denver Regional Council of Governments (DRCOG), found growth had overwhelmed Interstate 25's original design from Denver to Douglas County. In 2000, daily traffic counts totaled 230,000 vehicles per day. This topped the 1995 estimate that the corridor would reach maximum capacity – 183,000 vehicles per day – by 2015 (Colorado Department of Transportation, 2002: 5). In November 1999, Coloradoans voted to allow CDOT to bond for future construction projects. CDOT's first sale of bonds in May 2000 brought $530 million into the department's construction budget. CDOT made news and caused a few headaches with the biggest highway project since the beginning of the interstate era – the Transportation Expansion Project, better known as T-REX. The project brought together CDOT, the Regional Transportation District (RTD), the Federal Highway Administration, the Federal Transit Authority, several counties, and cities and business districts. TREX's primary objective was to modernize and expand the state's most important road, Interstate 25 from Lincoln Avenue in Douglas County to Broadway in Denver, and I-225 from Parker Road in Aurora to I-25. Barring delays, the 17-mile-long T-REX project will continue until 2006 and will carry the largest price tag in state highway history – $1.67 billion (Colorado Department of Transportation, T-REX website, http://www.TREXProject.com/about.asp/).

Chapter 9

DESIGN, CONTEXT, AND THE COLORADO HIGHWAY

The precise science of engineering brought order to the chaos of Colorado's trails and early auto roads. The first wave of gold seekers followed existing native trails, or blazed new paths, with little consideration for configuration or design. A subsequent movement of settlers brought with them concepts of civilization and commerce that demanded better, safer roads in order to thrive. Within the first decade of Colorado's statehood, its elected leaders made their first attempts to improve the state's roads. However, from the 1870s to the early 20th century, commerce directed the layout of the state's rail lines and toll roads. A change came on the wheels of a horseless carriage. The self-reliance promised by the automobile ironically bound individuals together in demands for better highways. By the mid-1910s, both state and federal governments responded to those demands with the creation of the first standards regarding highway design, grade, and materials. Under the authority of state and federal agencies, highway design and standards evolved and improved throughout the century. Today, drivers across Colorado travel over a highway system that incorporates a variety of construction and design elements reflecting the period in which it was built and the economic and social character of the region it traverses.

9.1 Wagon Road Construction

Trails led gold seekers and settlers to Colorado. Countless wagon teams following the same general path left the prairie rutted and scarred. On the eastern prairies, early travelers faced the hazards of bogs and swollen rivers, as well as attack from outlaws and native tribes. Travel by wagon to the west was expensive and slow. However, on the plains they could go anywhere without any difficulty until they reached the gold camps of the Rocky Mountains. The design of the covered wagon meant it could cling to the steep side slopes of a mountain. In addition, there were no sufficient draft animals available to pull it over the seemingly endless summits. Overlooked in the haste of the Gold Rush was the time to build safe and suitable wagon roads.

The earliest roads were nothing more than wagon tracks with the largest stones removed. On the prairie, no one made the effort to keep them level transversely. Only when a wagon threatened to tip over did most drivers think of returning to level ground. A trip west by wagon required the pioneers to get out and do some work on the road itself in order to get over it (Ridgeway, September 1932: 162).

Over the eastern plains, the first wagon roads were built quickly and were rough surfaced compared to the first unpaved automobile roads. Across the prairie, these trails were "little more than many pairs of ruts made by the wheels of heavy wagons" (Workers of the Writers' Program, 1987: 70). When a pair of ruts had been worn too deep for use, wagons straddled the old ruts and created new ones. The pioneers exerted little effort to level the roads, so their wagons were forced to climb or descend very steep slopes and to ford streams. In addition, strong rains and heavy snowfall made passage on the plains more difficult while heavy snowfalls in the mountain shut down the passage of both mail and passenger traffic. A number of different conveyances traveled over Colorado's first trails – from the cumbersome Spanish two-wheeled ox-driven *caretta* to the prairie schooners of the gold rush era (The Workers of the Writers' Program to Colorado: 71).

The Homestead Act of 1862 encouraged settlement of Colorado and other western territories. After the General Land Office completed land surveys in the early 1870s, small towns sprang up across Colorado. The space between most towns generally measured no more than 10 miles apart – the distance a team and wagon could travel from a nearby town and back in a day (Scott: Historic Trail Map of the Denver 1° X 2° Quadrangle, Central Colorado: 5).

9.2 Early Auto Highways 1900-1930

In 1908, James E. Owen, in an address before the Good Roads-Automobile Convention in Atlantic City, New Jersey, explained the transitional nature of the nation's roads from horse and carriage to horseless carriage:

> "Just consider what a road has to undergo. A heavy team comes tearing along with the horses' caulked feet, hammering and packing the stones for

> the heavy wheels to grind them to powder. Behind this comes a light buggy with a fast trotting horse and rubber tires, stirring up the loose material, then as a climax a six-ton motor car at 45 miles – excuse me, 21 miles [New Jersey speed limit] whizzes along throwing and hurling this loosened material into the gutter, or gently bedewing a strawberry patch with pure stone. Then what becomes of the road?" (AASHO, 1952: 105).

Since its beginnings, the State Department of Highways established and followed certain standards for all graded and surfaced roads. According to the department's first Chief Engineer James E. Maloney, the department's principles were "the outgrowth of our experience with the construction of different roads in different parts of the state." For graded and paved roads, the state demanded of a 60-foot-wide right-of-way in which to place a 24-foot-wide road. The spacious right-of-way allowed room for additional lanes and future surfacing. The department wanted standardization so that any grader or scraper could build roads that would be, in Maloney's words, "uniform, sightly, practical, and I believe, more economical." Conversely, the chief engineer warned that a crooked line of ditch and grade was "unsightly and unworkmanlike, indicating either carelessness or lack of skill" (Maloney, June 1918: 9).

With the federal government taking a greater hand in road construction nationwide, the highway engineers of Colorado and 47 other states followed a general Bureau of Public Roads (BPR) guide for surveys and plans. In surveying a potential road, a survey party comprised of a field engineer in charge, instrument man, rodman; two chainmen, one or more axemen and a camp man had to obtain the following information:

> "All fence and property lines, and intersecting roads. These should be carried back at least 300 feet. Telephone, telegraph and power lines – the number on several of the poles should be noted, and street or stream or electrical railroad lines crossing or parallel to surveys, if within 500 feet, culverts and siphons. The span, width of roadway, and character of all bridges, also diameter, length and kind of culverts – also the angle at which the stream crosses the road, the profile of the stream crossings and all information that can be had as to depth of foundation and area of drainage – also a profile up and downstream for 500 feet is to be taken when the bridge is on a stream that is liable to scour. Location and character of all material suitable for road surfacing or construction should be noted." (Colorado Highways Bulletin, June 1919: 21).

Both the BPR and the Highway Commission followed a set of rules regarding grade limits and road curvature. Engineers knew that the grade could not exceed 6 percent, except for short distances not exceeding 2,000 feet, where 7 percent would be favorable to avoid heavy work. Regarding road curvature, BPR philosophy maintained “A great many of the present curves on the roads are unnecessary and could be eliminated by a little grading work.” However, where that was impossible, the BPR recommended a radius of not less than 100 feet. Unfortunately, in the tight spaces of the Rocky Mountains, a 100-foot radius was not possible economically. The BPR suggested a radius of no less than 40 feet on any mountain switchback or curve (Colorado Highways Bulletin, June 1919: 21).

The Bureau of Public Roads set the standard for Colorado’s auto highways from the late 1910s forward. The pavement of the first Federal Aid concrete road laid in the state – Federal Aid Project No. 1 from Denver to Littleton – measured 16 feet wide, 5.5 inches thick at the edges and 6.5 inches at the center. Within five years of completion, BPR engineers noted that US 85 showed “more defects, especially in the corner cracks, than any other project” due to a lack of a sand cushion, the narrow width of the pavement, causing the load to come closer to the edges (Bureau of Public Roads, 1923).

Local representatives of the Bureau of Public Roads took a keen interest in the developments of the burgeoning highway departments in each state. In 1917, BPR’s Acting District Engineer J.W. Johnson wrote to his boss, Thomas McDonald, the engineer in charge of federal road work for the BPR, that construction progress in Colorado was hindered by the state highway law that required a large portion of the state road fund be pro-rated to the counties and construction work in the individual counties be performed to their share of state funds. Johnson found that “the commission has been forced to submit a number of very small projects, several of them being concrete surfaced roads averaging from 2200 feet to a mile and a half . . . The character of the projects submitted could be very materially improved were it not for the fact that the State Highway Commissioner of the individual district apparently attempts to please everyone by the submission of a number of small projects rather than to submit a smaller number of projects and have them substantial in size and quality." (Bureau of Public Roads, 1919: 10). Johnson concluded: "If the Colorado Highway Commission would form a proper kind of an organization for carrying out the work and submit projects more from the point of view of improvement of state highways, it is believed that a decided betterment would result." (Bureau of Public Roads, 1919: 11).

From the 1920s forward, federal aid paid for practically every concrete road in Colorado. These roads measured 18 feet wide, six inches at the sides and 7.5 inches at the center (Bureau of Public Roads, 1923). Because of BPR regulations, all pavements in Colorado were laid with traverse joints every 30 feet on a two-inch sand cushion wherever the soil had a large percentage of clay or adobe. Most of Colorado's soil is sandy loam. Colorado also used a 6-inch sand or gravel shoulder on the sides of the road, 4 feet in width. Before the Bureau of Public Roads instituted their statues, the State Highway Commission placed sand and gravel shoulders only two in depth. Once the state followed the federal agencies guidelines, the BPR gave Colorado's roads good marks. A 1923 BPR review noted "the pavements in Colorado are today in good shape. The only defects are minor in character, due to poor construction such as slight unevenness or roughness at the joints, or irregularities in the slab itself." (Bureau of Public Roads, 1923).

First World War technologies benefited the quality of road building across the United States and in Colorado after the war. Colorado contractor Edward Honnen told the Denver Post that machines built for war helped the state build better roads in peacetime:

> "When I took over my dad's company in 1920, there had been very little change in the tools from about 1860 to 1920. World War I had the greatest effect on the construction industry because they (the U.S. Army) developed a power unit. And from then on, we pulled wagons, we pulled plows, we pulled scrapers, we pulled everything" (The Denver Post, 1974: 14).

The reorganization of the State Highway Department in 1921 opened the increasingly distant lines of communication between headquarters and construction jobs in the field. The new department established an engineering division under supervision of an assistant highway engineer. Before creation of the engineer's division, communications between headquarters and the field was haphazard. In the remote areas of the state, crews relied on their own judgment to survey. Under the new system, highway location crews made initial surveys and were followed by other teams that conducted the final engineering surveys. Headquarters in Denver prepared construction plans and specifications based on the two surveys to bring the prospective project to contract (Wiley, 1976: 17).

After 1921, the influence of the federal government took the dominant role in the Colorado and other states road construction. Road building between the two world wars took place within "the federal-aid structure of shared power, responsibilities and finances."(Seely, 1987: 67). The Federal Highway Act of 1921 (42 Stat. 212) retained the outstanding features of the Federal-Aid Road Act of 1916 and added the important requirement that the Secretary of Agriculture and the several State Highway Department should jointly designate a system of important interstate and intercounty roads, limited to 7 percent of the country's total road mileage, to constitute the federal-aid highway system on which all future federal appropriations were expended (Strobridge, 1962: 4).

In 1923, the Highway Department authorized $70,000 toward erecting route markers in conjunction with introduction of a new highway numbering system. The department made an arrangement with the Mountain States Automobile Association to furnish the markers free. The department's maintenance division would install 1,500 signs in the first year. The new road signs required renumbering the state's highways, and the roads leading from adjoining states carrying heavy tourist traffic were marked first. Part of the $70,000 went toward the state's first traffic census. The census helped determine what kind of road to build in certain areas of the state by that area's traffic volume. The commission planned for 169 numbered highways, with the first 49 numbers reserved for interstate roads funded by the federal government. (Colorado Highways, June 1923: 13).

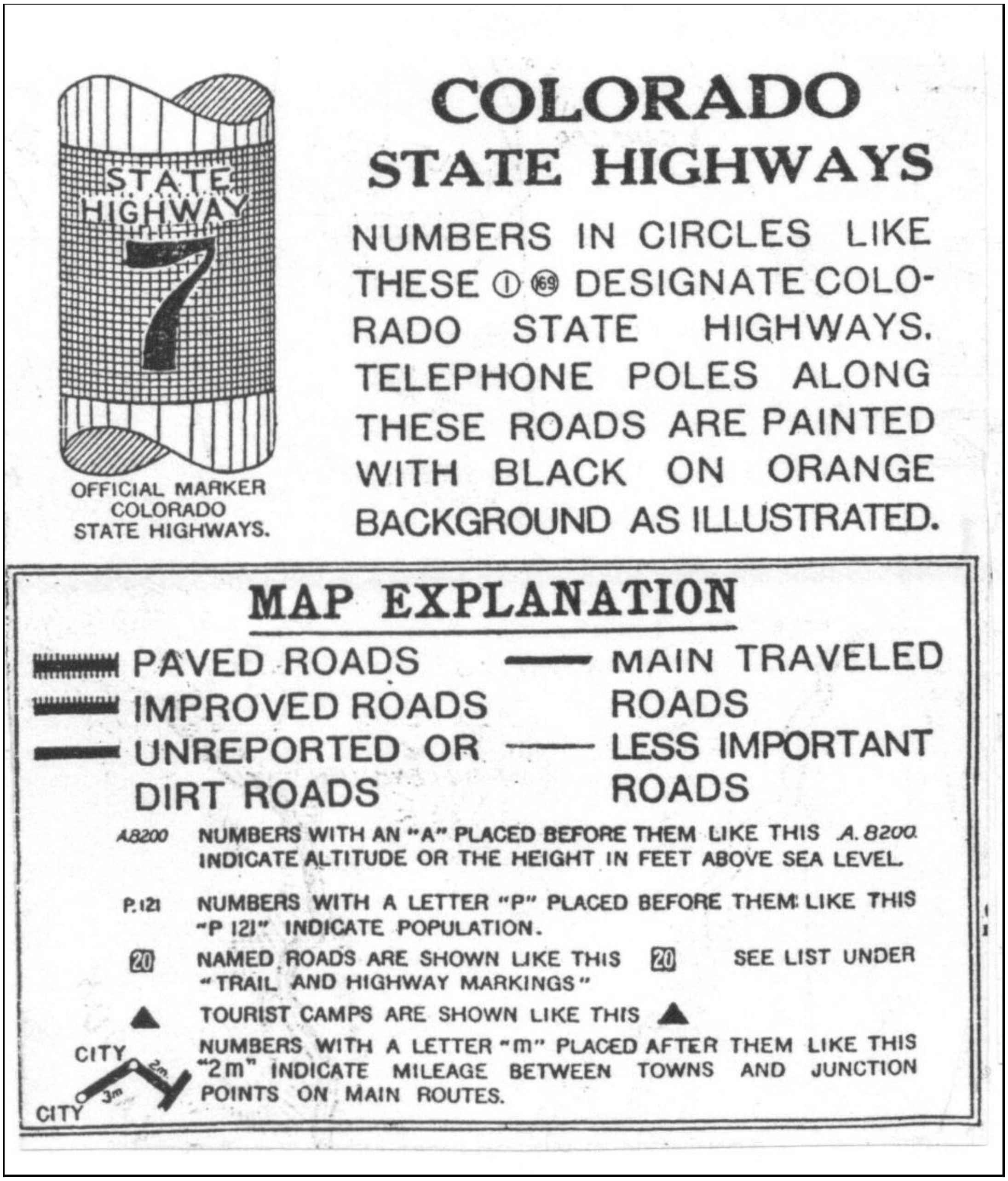

Plate 8. The federal government's heightened role in building the nation's highways demanded standardization of road signs and maps. The Rand McNally Map Company published this diagram a year after Colorado introduced its first road identification system in 1923. (1924 Rand McNally Roads of Colorado Map. Located in Denver Public Library, Western History Department).

By the start of the 1920s, screened or crushed gravel, stone and/or shale constituted most of Colorado's surfaced roads. The state constructed gravel roads in two courses, or layers. A 2.5-inch base of stone formed the bottom layer while three inches of gravel running to a feathered edge to the sides formed the top course. A road roller weighing 300 pounds compacted the material to a three-inch thickness (Colorado State Highway Commission, 1919: 14). As the 1920s progressed, the state built more concrete roads. An abundance of raw material and available labor convinced engineers to use the durable concrete at every opportunity. A 1923 Highway Department audit found that the cost of concrete paving in Colorado averaged $2.22 per square yard, lower than in 35 other states (Colorado Highways, October 1923: 11; December 1923: 16).

The heyday of concrete-highway construction in Colorado lasted from the late 1910s to the 1930s. During this period, builders used three standard mixes for construction: paving mix for concrete roads and Class A and Class B concrete. The paving mix consisted of one part cement, two parts fine aggregate (sand), and three parts coarse aggregate (gravel or crushed rock) added with enough clean water to form a stiff, workable substance. The Colorado Department of Highways used Class A and B concrete to form bridges, culverts, headwalls, and spillways. Class A concrete consisted of one part cement, two parts fine aggregate and four parts coarse aggregate with just enough water to make the concrete flow easily into place. Mixing Class B concrete required one part sand, 2½ parts fine aggregate and five parts of coarse aggregate together combined with enough water to form concrete with the same consistency as the paving mixture (Pierce, 1923: 5).

The vagrancies of Colorado's topography played a large role in the construction of its first concrete roads. Most of the state's sand and gravel could be found in creeks, riverbeds, and along valley slopes. Unfortunately, in most of Colorado's waterways, the heavy gravel remained in the bottom of the creek bed, and currents carried the sand hundreds of miles downstream. In eastern Colorado along the valleys of the Platte and Arkansas Rivers, good sand was obtainable, but there was little coarse gravel available. In the valleys of the Colorado River and its tributaries on the Western Slope, good gravel was available, but the sand was mixed with oil shale or dirt. Faced with this situation, the State Highway Department soon established a laboratory to test samples well in advance of road construction (Pierce, 1923: 5-6).

Under the leadership of State Highway Engineer Charles Vail, asphalt was the material of choice to pave most of the state's roads during a 10-year period from the 1930s to the 1940s. Asphalt's popularity resulted from its durability and ease of placement. In the 19th century, bituminous materials for roads in the United States were limited primarily to the use of natural deposits and bitumens found in limestones and sandstones impregnated with asphalt. After 1900, discovery of additional crude petroleum sources and a heightened demand for fuels and lubricants resulted in construction of more asphalt roads. Since Vail's era, the Hot Mix Application process has served to blacktop Colorado's roads. The Hot Mix process required transporting, placing, and compacting hot asphalt over a road site to ensure a uniformly dense pavement layer (Baker, 1979: 515).

By the early 1920s, the Highway Department increasingly experimented with asphaltic materials. The Denver firm of Miller, Douglas & Haines poured the first mile of state-funded asphalt paving under a $36,618 contract to the Colorado Highway Department during August 1923. Crews spread a two-inch-thick asphalt top that covered a six-inch concrete base along the Victory Highway (now U.S. 40) near Fitzsimmons Hospital, east of Aurora (Colorado Highways, August 1923: 1).

A 5.3-mile project between Romero and Antonito in the San Luis Valley launched the department's first attempt at oil surfacing in 1928. Pople Brothers Construction of Trinidad won the contract supervised by Colorado Highway Department's resident engineer W.J. Walsh. After the contractor placed a gravel surface, crews started an oil distributor to spread three applications of about a half gallon per square yard. After each pass, crews used a double-disc harrow to work the oil into the gravel. The machinery bladed the oil back and forth until it thoroughly mixed and spread the material over the road. Cars could now drive over the road without getting splattered with fresh oil, as traffic compacted the mixture into place. Walsh later recalled that the road lasted for a number of years before resurfacing. This experiment on an isolated Colorado road convinced the Highway Department to build fewer concrete and more asphalt-based roads (Wiley, 1976: 24).

The first generation of highway road builders knew the importance of drainage in maintaining roads. Roy J. Randall, supervisor of Federal Aid Projects for the Bureau of Public Roads (BPR) wrote in 1922, "The most important factors to be considered in the improvement of highways are foundation and drainage" (Randall, 1922: 1).

Across rural Colorado, bridges, culverts, and siphons were necessary where there was a natural cross-drainage, such as streams, swales, and arroyos. On long grades of highway, engineers placed culverts at proper intervals to carry drainage across and away from the roadway, prevent overflow and wash in the side ditches. As the Highway Department graded the state's first earth roads for the automobile, engineers paid attention to maintaining clean, free-flowing gutters or side ditches, adequate culverts in sufficient numbers and unobstructed free-flowing outlets. The Bureau of Public Roads warned that these ditches "must not be so deep as to be a menace to travel" (Whittaker, February 1919: 13, 21; Randall, 1922: 1).

Throughout the irrigated agriculture lands of northeastern Colorado, highway builders dug side ditches along roads like the Omaha-Lincoln-Denver Highway (now US 6) that were deep enough to transport storm water and carry moisture from the crown to the shoulder. (Randall, 1922: 1).

By the early 1920s, there were a number of different types of culverts beneath the nation's roads. These included cast iron, corrugated metal, reinforced concrete boxes and pipes, vitrified tile, and wooden boxes. Among early 20th century engineers and road builders, the cast-iron culvert was considered the standard of excellence. During the early years of highway construction, engineers avoided using cast-iron because of its excessive weight and cost (Randall, 1922: 1,12).

Subsequent to the introduction of federal standards by the late 1910s, the Bureau of Public Roads attempted to codify culvert construction nationwide. The BPR recommended placing culverts low enough to allow water to enter and yet not be so low as to become filled with sediment. The culvert also needed protection from above through sufficient cover to prevent road traffic from breaking them. All culverts meeting federal regulations required headwalls at the ends to hold the earthfill in place. Additionally, the culverts had to be easily identifiable. Randall recommended one further construction tip: "the best economy lies in using the most permanent structure at the first installation" (Randall, 1922: 12).

Because of Colorado's variations in topography and subsoil, there remain a number of different kinds of culverts. The State Highway Department's "Standard Specifications for Road and Bridge Construction" (1930) required all non-cast or built-in-place culverts to lie in a trench excavated to the depth and grade established by the project engineer. Concrete in substructures were placed so that all construction joints were horizontal unless otherwise shown on the plans, and in locations difficult to detect in the finished structure. State specifications also reminded engineers to watch for placing construction joints through parallel wingwalls or any surfaces designed for additional architectural treatment. Trenches for pipes had to be completely filled and the pipe covered to a depth of one foot. At that point, crews would place and properly compact materials before the construction of the embankment over the culvert (Colorado Department of Highways, 1930(b), 152-4).

Today's standard "multiple-type" culvert was first used during the building of the Mount Vernon Highway in 1937. The multiple-type culvert consists of thick, corrugated iron plates that are curved, punched, and galvanized. The plates were delivered to the job unassembled. Workers on site bolted the pieces together to fit the design specified by the engineer. On the Mount Vernon Highway (US 6) there were four culverts installed with the longest measuring 338 feet. The amount of earth required covering the culverts averaged 68.5 feet (Tracy, November 10, 1937: 10-11).

Snow is the biggest natural obstacle to safe passage along Colorado's mountain highways. Before mechanical snow plows, men began shoveling passes in May so that traffic could move through the mountains around the middle of June. In 1923, a rotary plow designed by State Highway Engineer L.D. Blauvelt cleared Berthoud Pass in less than 72 hours. Crews nicknamed the machinery the "Bull of the Woods" to honor Major Blauvelt. In 1927, the maintenance department mounted a rotary plow on a four-wheel drive Coleman truck with a separate engine to drive the rotary head. The rotary plows demonstrated their worth during the winter of 1928-29, as they kept an important route between over the Continental Divide – Tennessee Pass along US 24 – open all winter. It marked the first time any vehicular mountain pass in Colorado remained open to traffic year round. By 1939, state maintenance crews kept all major passes over the mountains open throughout the winter (Wiley, 1976: 22).

From 1905 to 1920s, the state extensively used concrete in bridges because it held up under traffic and resisted flood more than truss bridges. The Luten arch bridges were the forerunner of other concrete bridge types. The Luten arch was dependent on steel reinforcement allowing relatively thin concrete sections at the midspan. In 1921, the Highway Department built a segmentally reinforced concrete bridge just south of Boone on US Highway 50. Subsequent floods destroyed almost all of the trusses in Pueblo County, but the concrete bridge remained structurally intact (Christensen, et. al., 1987: 51).

9.3 New Deal/New Roads, 1930-1945

Nearly three-quarters of a century later, Depression-era federal work programs continue to benefit modern drivers. The road constructed with New Deal-era funding continue to provide numerous aesthetic elements to Colorado auto travel that subsequent generations of highway designers chose not to duplicate. Under the Works Progress Administration (WPA) of the mid-1930s, over 2,000 miles of Colorado roads were improved and more than 600 highway bridges were completed. Rural areas benefited the most from construction of all-weather roads along with grading, and graveling, and bridge building.

WPA workers commonly constructed coursed-stone-roadway bridges. The Douglas Crossing Bridge over Two Butte Creek remains an example of this type. Completed by an eight-man crew in 1936, the Douglas Crossing Bridge needed a large volume of stone for its six 14-foot-span semicircular arches (Christensen, et. al., 1987: 53).

9.3.1 Blacktopping Colorado: Vail's Vision in Asphalt

State Highway Engineer Charles Vail's decision to asphalt the state's roads did not come without controversy. During the mid to late 1930s, it was Department of Highways policy to coat as many main roads as possible with a slow-curing oil containing a low asphaltic content. Asphalt oil acted as a binder that held together particles of sand and rock. When the oil is rich with asphalt, the surface of the road cures and dries rapidly, becoming very hard. The department told crews to spread a comparatively thin oil mat of less than half the amount required by federal specifications. Some critics of the department complained this policy resulted in inferior roads and precluded the possibility of obtaining federal aid for oiling (University of Denver, 1940: 14-5)[Figure 9].

Figure 9. State Highway Engineer Charles Vail's greatest legacy was blacktopping Colorado's highways during the 1930s. A 1941 Department of Highways map illustrated his progress statewide.

A 1941 study classified the kinds of materials and total number of state highway miles:

Unimproved (projected, primitive, and bladed)	2,034 miles
Graded and drained	1,256 miles
Gravel surfaced	4,688 miles
Low-type Bituminous (oil)	3,764 miles
Paved (concrete, brick, etc.)	626 miles
Total	**12,368 miles**

(Colorado Department of Highways, 1941).

9.3.2 Guardrails and Safety

As traffic in Colorado increased by the late 1930s, state highway engineers paid greater attention to safety. This was especially true for roads constructed through the Rockies. Six major highway projects constructed during this period (Big Thompson Canyon-North St. Vrain, the Mt. Vernon-Floyd Hill Highway on U.S. Highway 40 between Denver and Idaho Springs, U.S. Highway 24 west of Colorado Springs to Leadville, U.S. Highway 50 west from Canon City to Salida, and U.S. Highway 160 west from Walsenburg to southwestern Colorado) reflected those concerns. Each design featured wider roadways and curves, longer sight distances, and easy grades rarely exceeding five or six percent. A 1938 study by the Colorado Highway Patrol uncovered the "increasing danger" of fast highways unprotected on curves and high embankments (Rocky Mountain Contractor, May 10, 1939: 11). In the late 1930s, the department installed semi-rigid guardrails to prevent cars from going over steep embankments. Earlier forms of guardrail did not "give" on impact, resulting in serious injuries or death. The state design required installation of a series of rigid posts, with protruding eight-inch, strong springs supporting an outside steel rail or beam. First used along the Mount Vernon Canyon road, this design deflected cars back onto the road and away from the supporting posts (Williams, 1937(b): 17). The regional trade publication, Rocky Mountain Contractor, praised the guardrails 'as modernly streamlined with (its) curved convex beam surface gleaming" as it offered drivers an unobstructed view of the state's "scenic beauty" (Rocky Mountain Contractor, May 10, 1939: 11).

9.3.3 A Road Crew's Work is Never Done: Highway Maintenance

Colorado's heavy snows, scant humidity, hot summers, and continual use by motorists demanded that the state set aside much of each year's highway budget toward maintenance. As early as 1922, C.T. Brock, assistant superintendent of maintenance in Division 1 (Denver), stated that maintenance was "the most important function of the Highway Department" (Brock, 1922: 6). In dry weather, Colorado's sand-clay roads needed continual dragging, as they soon rutted and turned impassable. A tractor and a grader moving at a rate of one mile a day kept roads smooth. A crown of too much loose sand or gravel quickly turned the road into a washboard. In wintertime, crews dumped loose gravel from the side of the road back onto the crown to further harden the surface (Brock, 1922: 6; Taylor, 1923: 8-9).

Repairs to the state's concrete roads offered their own set of problems. In the early 1930s, the maintenance division devised their own system to bring worn concrete slabs up to grade. The method for maintaining undergrade depressions required pressure pumping mud and cement underneath the slabs. Crews drilled two-inch-diameter holes in the center of the most depressed section. Selected loam material (in the ratio of two parts to one part cement) and water brought the material to a "soup" consistency. The mixture was then forced through a hose leading to the point of application. Crews drilled holes at six-foot intervals, starting at the center of the most depressed portion of the slab. The Highway Department claimed this method filled nearly 85 per cent of the depression beneath a selected slab (Williams, 1937(b): 18).

The wave of asphalt sweeping over Colorado's roads during the 1930s still required the state to perform upkeep. Douglas N. Stewart, superintendent of maintenance, stated that maintaining oil-surfaced roads required "constant vigilance" (Rocky Mountain Contractor, October 13, 1937: 8). Small holes caused by oversized gravel, friction, or water, caused potholes to expand across the road's surface at a relentless pace. Crews fixed these ruts with pre-mix asphalt to maintain a smooth road surface.

9.4 General Highway Design Standards, 1945-2000

Anticipating a post-war public demand for a national highway system, the Federal Highway Act of 1944 authorized construction of road network connecting the nation's big cities. Under the legislation, all designs minimally featured four-lane divided highways, expanding to six to eight in and near large metropolitan areas. In 1947, Congress approved final planning for the National System of Interstate and Defense Highways. Colorado's allotted mileage included Interstate 25 between Cheyenne and Raton Pass, Interstate 80 South (now I-76) from Denver to the Nebraska line at Julesburg, and Interstate 70 from Denver to the Kansas border (Christensen, et. al 1987: 53).

Since 1937, the American Association of State Highway and Transportation Officials (AASHTO) in Washington, D.C. has published *A Policy on Geometric Design of Highways and Streets,* better known as the Green Book. The Green Book addresses every element of the nation's road design from city curbs, residential cul-de-sacs, posted speeds on the interstate, design of rest areas, commercial intersections, and recreational roads (Marriott, 1998: 69). Similar to the other 49 states, Colorado adheres to the guidelines set for in the Green Book. However, the Green Book only recommends guidelines to the states and local governments for design of roadways; no state is forced to adopt AASHTO's rules. The Federal Highway Administration (FHWA) adopted the Green Book as the standard for all federal roads and construction projects. Projects not a part of the National Highway System (NHS) do not have to follow the Green Book, however, because of the expense of developing and enacting their own guidelines, most state and local governments follow AASHTO regulation regarding non-NHS construction (Marriott, 1998: 71).

In the first years of interstate construction all 48 states were happy to follow the rules laid down by Washington. The interstates that cross Colorado today share the following characteristics to interstates nationwide:

Highways would have to meet the projected traffic numbers for 1975. Traffic lanes would be at least 12-feet wide and shoulders 10-feet wide. In rural areas the median strips dividing oncoming traffic would be at least 36-feet wide, while in urban areas the strips would be as narrow as 16-feet wide. The roads were engineered for speeds of 70 miles per hour and feature grades not greater than three percent. No railroad crossings or grade-level intersections interfered with traffic, and overpasses had to stand at least 14 feet above the road. Access to take flight on these new roads was strictly limited to entrances and exits (Lewis, 1997: 140).

The hallmark of the Federal Interstate Highway System is homogenization. This sameness went beyond the same fast-food restaurants and motels at the next exit. The interstate system standardized construction and safety standards nationwide. Since the federal government funded 90 percent of interstate construction, they held the authority to determine the rules of the road.

In 1956, the Bureau of Public Roads established for interstate construction standards it had worked out with the American Association of State Highway Officials (AASHO). Colorado was one of only a handful of states with a basic highway design manual, let alone a design standard for superhighways. In August 1957, the AASHO also established the tri-color federal shield designating the nation's interstates and reversed the numbers of the interstate routes originally established in 1926. AASHO first decided that north-south roads would ascend numerically in odd numbers from Route 1 on the East Coast and 101 on the West. Roads running east-west descended numerically in even numbers from Route 2 in the North to Route 90 in the South. From the late 1950s, Interstate 95 has been the east coast's main thoroughfare from Florida to Maine while bumper-to-bumper traffic clogs Interstate 5 through greater Los Angeles. Interstate 90 runs along the nation's northern border while across the southern United States, the primary highway is Interstate 10 (Lewis, 1997: 136-7).

Historian Tom Lewis commented on the uniformity of the interstate in his 1997 book, Divided Highways:

> "The Bureau of Public Roads and the American Association of State Highway Officials issued specifications for construction that left little leeway for interpretation. Engineers simply applied the rules to the task at hand, be it Interstate 10 through Santa Monica, California, or Interstate 94

> through Dickinson, North Dakota. They simply repeated the tasks in small increments of usually five, ten, twenty, or thirty miles many times over: surveying, walking the line, grading the land, laying the substrate, laying the asphalt or concrete, painting the lines, erecting the signs, holding the ribbon-cutting ceremony, and moving on" (Lewis, 1997: 253).

In spite of the direction of the "unseen hand" of the federal government, Colorado's highway engineers did experiment with different materials and environmentally friendly designs after World War II. In the early 1950s, the State Highway Department conducted experiments with "rubber roads." For five years, engineers studied placement of one-mile sections between Blakeland and Castle Rock and south of Pueblo. It was the first attempt with rubber on any highway in the West. The process required two-percent basic rubber blended with penetration asphalt at the refinery and laid in a special section on each highway. The rubberized section bore no distinguishing physical characteristics, but engineers were intrigued by its propensity for greater resiliency and resistance to skidding. However, the state chose not to continue laying rubber by the late 1950s (Colorado Department of Highways, 1954: 54).

9.4.1 Post-War Safety Standards and Design

Retaining walls are an important element in Colorado highway design. In the mountains, walls made of wood, rock, metal and preformed concrete protect drivers from rock fall or tumbling off the side of the road.

By the early 1970s, AASHO added the word "Transportation" to its name and became the American Association of State Highway and Transportation Officials (AASHTO). However, AASHTO regulations regarding highway design remained the same. According to AASHTO, retaining walls should be located no closer than 10 feet from the edge of the pavement and preferably at least two feet from the outer edge of the shoulder, whichever is greater. Where walls are located the same distance from the edge of the pavement as from the bottom of slopes, the effective shoulder width is less and appears narrower. Where the top of a retaining wall is at the level of a frontage road or ramp, the face of parapet, or rail preferably, should be at least four feet from the edge of the traveled way. Where a retaining wall is adjacent to an auxiliary lane or ramp, the wall should provide ramp shoulder lateral clearance of at least four feet between the edge of traveled way and the face of the wall. Where walls are located near the traveled way, the contour of the lower portion should appear as a slope-faced barrier, to effectively redirect errant drivers and minimize damage to the vehicle. Along Interstate 70 through the Rocky Mountains, particular attention was paid toward aesthetics. Concrete walls used textured forms to complement the surrounding scenery between Vail and Glenwood Springs. The environmental sensitivity of retaining structures along 12 miles of I-70 through Glenwood Canyon brought state highway engineers international plaudits (AASHTO, 1973, 386-7; Rocky Mountain News, October 15, 1992: 10).

Curbs are a related element of highway design. Curbs border all types of highways to control drainage, deter vehicles from leaving the pavement at hazardous points, protect pedestrians, delineate the edge of pavement, present a more finished appearance, and assist in the orderly development of the roadside. There are two general classes of curbs: barrier and mountable. Barrier curbs are relatively high, steep-faced and designed to inhibit, or at least discourage, vehicles from leaving the roadway. A typical barrier curb features a vertical face, a half-inch radius and a height of at least six inches. Barrier curbs are not used in highways designed for speeds in excess of 50 mph, because when struck at high speeds, drivers risk losing control of their automobiles.

The design of mountable curbs allowed vehicles to clear with varying degrees of ease. The height of the mountable curb should not exceed more than four inches high. When placed on the outer edge of a shoulder the mountable curbs also help to control drainage, improve delineation, and reduce erosion. Nationally, both types of curbs are made of either Portland cement or asphalt or granite (AASHTO, 1973: 356-9). In Colorado, older highways like US 6, between Brush and Sterling, retain both asphalt and timber curbing.

In 1979, a resurfacing project on US 160 between Durango west to the town of Hesperus employed a new recycling process for a portion of the work. Crews lifted the existing bituminous mat and reprocessed the roadway through a hot plant with additives and additional material and then re-laid the mat. The Division of Highways expressed their pleasure over the results in its 1981 Annual Report: "In a time of declining revenues and resources, pavement recycling will become more prevalent. This project helped develop the technology and experience necessary to make such recycling work on a continuing basis." (Colorado Division of Highways, Annual Highway & Transportation Report, 1981: 55).

The completion of Vail Pass in 1979 on Interstate 70 came with a set of engineering features unlike any other mountain highway in the state. A precast retaining wall system controlled erosion, while slope stabilization and revegetation methods successfully protected the surrounding environment. Another innovation involved construction of twin bridges utilizing segmental construction. The segmental bridges were built in relatively short sections involving repetitive sequences of operations. The segments are precast permitting their placement as soon as piers are completed, thereby shortening construction time. In order to conform as much as possible with the surrounding environment, trees were left in place beneath the structures and engineers designed special underpasses to accommodate game animals (Christensen, et. al., 1987: 57).

9.4.2 The Triumph of Design: I-70 Through Glenwood Canyon

The debate over building a 12-mile section of Interstate 70 through the Glenwood Canyon took the better part of two decades. A number of groups fought the road on the grounds that a major interstate would have destroyed the canyon's beauty. The disputed stretch was in a 2,000-foot-deep Colorado River gorge. Completed in 1992, engineers developed a variety of features that attempted to minimally impact the canyon's wild splendor. Many sections featured pre-stressed concrete slabs cantilevering six feet over the retaining walls. A number of the 39 bridges along the route were prefabricated superstructures, including several segmental box-girder bridges that were trucked in rather than constructed on site. Perhaps the most difficult element of the project, the $103 million Hanging Lake Tunnel, challenged four construction companies to build two 3,880-foot long tunnels to facilitate traffic movement and protect the Hanging Lake Park area from the highway. At the portals of both tunnels, heated water from nearby springs controlled winter icing (Christensen, et. al. 1987: 57). On the project was completed, the

Rocky Mountain News noted that 265 engineers worked 800,000 hours, or the equivalent of 91 work years, "to pioneer the techniques that will win awards for years to come" (Rocky Mountain News, October 15, 1992: 10).

Completion of the last mile of I-76 northwest of Denver signaled the end of the interstate era in 1993. The Colorado Department of Transportation kept busy with maintenance and construction small stretches of highway for the rest of the 1990s. However, a series of potholes forming on the state's most traveled highway signaled the start of the next important chapter in the Colorado's highway history.

On May 5, 1996, a three-foot hole, nearly 18-inches deep, opened in the center lane of the Yale Avenue bridge over Interstate 25. A few days previous, another pothole dropped fist-sized rocks of concrete on to the highway below. CDOT repair crews tamped quick-setting concrete into the holes before the department completely rebuilt the bridge in 1997 (Colorado Department of Transportation, 2002).

The potholes symbolized only one of many transportation headaches on I-25 from Southeast Denver to Douglas County. By the late 1990s, CDOT sought help from metro Denver's Regional Transportation District (RTD) to stem the rising tide of traffic through this corridor.

In 1999, voter approval of a $1.67 billion reconstruction project through this corridor gave the green light to CDOT and RTD to improve 17 miles of two interstate highways in metro area and add 19 miles of light rail transit line. Under the Transportation Expansion (T-REX) project, both organizations aim to increase transit options, enhance safety for motorists and replace aging infrastructure. CDOT's planned highway improvements include:

- Four through lanes in each direction on I-25 from Logan Street to I-225
- Five through lanes in each direction on I-25 from I-225 south to the C-470/E-470 interchange

- Three through lanes in each direction on I-225 from I-25 to Parker Road in Aurora

CDOT will also improve inside and outside shoulders, replace bridges, interchanges and drainage and upgrade acceleration/deceleration lanes or collector/distributor roads between the interstate and local roads (Colorado Department of Transportation, 2002).

Annually, the Colorado Department of Transportation expends a good deal of money and attention toward problems beyond a 17-mile corridor south of Denver. Year-round heavy traffic, and winter ice and snow, will always demand maintenance of the state’s roads. According to the FY2000 budget, CDOT apportioned $124.5 million, or $960.3 of its total funding (roughly 13 percent) toward maintenance (Colorado Department of Transportation, 2000(a): 32).

Chapter 10

EVALUATION CRITERIA FOR HISTORIC HIGHWAYS

10.1 Recognition of Historical Significance

Highways are among the most difficult elements of the built environment to evaluate for historical significance. Highways are extremely common as a structure type, and with rare exception highways are similar in materials, design, and general appearance. Highways are also exceptionally vulnerable to alteration over time as a result of maintenance and modernization, so that a highway cannot be expected to retain all of its original materials and design elements for more than a few years after initial construction. Highways are often defined more by their settings than by their physical nature, but the settings can also change dramatically over time, so that the original purpose and effect of a highway is no longer evident. Highways are also among the largest man-made structures, in some cases hundreds of miles long and with various materials, features, environmental and cultural settings, and integrity. The historical significance of a highway, like that of a railroad, trail, or canal, may be associated with the whole length of the resource, rather than a specific site.

Because of the ubiquity of highways, no single highway is likely to be considered historically significant simply because it exists. Rather, historic highways usually have significance because they allowed other human activities to occur that are considered to be important in our past. Some highways may have had particularly important construction histories or may represent variations in materials or structures, but in general, highways are historically important because of their role in affecting economic and social changes in our society. For example, Interstate 70 through the mountains of Colorado includes a number of outstanding engineering features, but those features are fundamentally important because they contributed to the opening of high-volume, high-speed transportation through the Central Rockies. I-70 has had tremendous effects on the tourism, skiing, and general commercial industries in Colorado, and the highway has substantially affected residential and related development in mountain areas along the route.

The historical context of a highway is therefore usually the key element in determining historical significance. The Criteria for Evaluation of properties for nomination to the National Register of Historic Places (36CFR60) provide general guidance for determining whether a highway or other property has historical significance:

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:
>
> (A) That are associated with events that have made a significant contribution to the broad patterns of our history; or
> (B) That are associated with the lives of persons significant in our past; or
> (C) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> (D) That have yielded, or may be likely to yield, information important in prehistory or history.

Criterion A addresses the importance of a property in broad patterns of history, and therefore highways are most likely to be eligible for nomination to the National Register under this Criterion. In rare occasions, a highway may have been the scene of a particular event important in history. In most such cases, only a small segment of the highway is a contributing element of a site or district; the highway as a whole usually does not attain historical significance for its association with a specific event.

Highways are rarely eligible for nomination to the National Register under Criterion B, because this Criterion requires that a property must (1) be directly associated with a person important in history and (2) be directly associated with the events or work for which the person is important.

Criterion B is applicable if a highway is associated with historically important persons other than the designer or building; associations with the designer or builder are addressed under Criterion C. A highway might be significant under Criterion B if the highway represents the efforts of a specific individual to secure construction of a highway for the economic development of a community or area of the state. These kinds of efforts tend to be associated with organizations rather than individuals, and therefore examples of significant highways under Criterion B are rare.

A highway can be eligible for nomination to the National Register under Criterion C on the basis of engineering or construction features embodied in the highway. A highway can include distinctive characteristics of a type, period, or method of construction, such as stone retaining walls or drainage features built by the WPA or CCC during the Great Depression. A highway can (rarely) represent the work of a master or possess high artistic values, although those characteristics are usually confined to specific structures such as bridges. Most historic highways correspond to "a significant and distinguishable entity whose components may lack individual distinction." Historic highways usually are eligible for nomination to the National Register under a combination of Criteria A and C, where physical features of the highway or the highway as a whole entity can be understood in terms of its relationship to important broad historical patterns.

Highways are extremely unlikely to be eligible for nomination to the National Register under Criterion D. Automobile highways are relatively recent phenomena, and the technology of highway construction is well understood and documented. Study of a physical highway is therefore unlikely to yield information important in expanding our understanding of history. Study and documentation of physical features of a highway are more likely to be applicable to Criterion C considerations.

Highways usually include a number of discrete segments, such as the route between two towns or the route over a mountain pass. Segments of a highway may have substantially different origins, historical associations, and physical features, so that different segments of the same highway may be historically significant for different reasons (and eligible for the National

Register under different Criteria). A short mountainous segment may demonstrate 1930s engineering for mountain construction, while an entire highway of many segments may be significant for its importance in economic development of a community or area. Length of a segment is not a determinant of historical significance or National Register eligibility, as long as the segment retains integrity as discussed below.

10.2 Consideration of Integrity

The National Register Criteria for Evaluation requires that, in order for a property to be eligible for nomination to the National Register, it must possess integrity of location, design, setting, materials, workmanship, feeling, and association. As indicated above, highways are very susceptible to change over time, to the extent that a "pristine" historical highway is extremely unlikely to exist.

<u>Location</u> is the place where the historic highway was constructed. Highways are sometimes locally re-routed to lesser or greater extent, and the names or number designations for particular highways are sometimes changed so that a current route may bear little or no resemblance to an historic highway of the same designation. The principal consideration of integrity of location are (1) the extent to which a highway corresponds to the general route followed during the period in which the highway attained its historical significance, and (2) the relative importance of the route as an element of the significance of the historic highway. For example, a highway over a mountain pass would not be considered to have integrity of location if the original 1930s route crossed a different pass to reach a mining camp. Similarly, a highway bypass would not have integrity of location if the original route passed through a town's main street. Relatively minor variations of route, such as relocation slightly higher on a slope or road straightening, are usually more appropriately addressed under consideration of integrity of design.

<u>Design</u> is the combination of elements that create the form, plan, space, structure, and style of a property. Elements of highway design include the height and width of the roadbed, surfacing methods, shoulder width and sloping, ditching and other drainage features, alignments, intersections, pullouts, retaining walls, guardrails and other safety features, bridges and culverts,

and signs and signals. The principal consideration of integrity of design for a highway is the extent to which the highway retains the features that defined the physical nature of the highway during the period of its significance. All elements of original (or period of significance) design do not have to be present for a highway to retain its essential physical nature. For example, most signs and many culverts may have been replaced, but these are usually relatively minor elements of a highway as a whole. However, if a highway has been re-graded and substantially widened, the highway has lost important elements of design.

Setting is the physical surrounding of a highway, including the topographic, vegetative, and cultural character of the location of the highway. Cultural character primarily refers to the built environment, including buildings and other structures, but it can also refer to ethnic and other social factors. Every highway was designed to accommodate its setting, whether the highway is in a narrow mountain gorge, a city, or a wide open plains environment. The principal consideration of integrity of setting is the extent that the general environment and any particular elements of the environment that affected location, design, construction, and use of the highway remain intact from the highway's period of significance. Natural environments tend to remain basically unchanged unless disturbed by man, but cultural environments are much more prone to change. For example, a forest fire near a highway in a mountain canyon would not substantially alter the setting of a highway, but construction of a condominium complex in the same area might significantly degrade the setting in that locality. Redevelopment of a 1930s commercial area adjacent a highway would very likely adversely affect the historic setting of the highway.

The extent of the effective setting of a highway varies according to all of the elements that comprise the setting. The effective setting is usually the viewshed from a highway, meaning all natural and cultural features that can be clearly discerned with the naked eye. In many urban settings the viewshed extends only to the first or second tier of buildings from each side of a highway, but in some rural areas the viewshed may be many miles wide. Regardless of the extent of the viewshed/setting, the key integrity consideration is the retention of salient features from the period of significance of the highway.

Materials are the physical elements that were combined or deposited to form a highway and its associated structures and objects. Materials are the aspect of highways most likely to have been changed during and after the period of significance, particularly the materials in the driving surface. The principal integrity consideration for materials is the extent to which the highway retains the same general types of materials that were present during the highway's period of significance. For example, a highway that had a concrete driving surface has lost some integrity of materials if the driving surface is now asphalt. A highway that had an asphalt driving surface has lost little integrity of materials if the highway has been resurfaced with similar asphalt materials (assuming the resurfacing was similar in area and location).

Workmanship is the evidence of the particular skill of an artisan in building features or an entire highway, and it can include applications of technology as well as aesthetic principles. Examples might include ancillary statues or structures of concrete or stone or the dry-laid stone retaining walls built by the WPA. Again, the principal integrity consideration for workmanship is the extent of retention of distinctive artistry from the highway's period of significance. Workmanship is rarely a primary integrity consideration in evaluation of highways, except for portions of highways built mostly by hand by WPA, PWA, and CCC program workers during the Great Depression.

Feeling is a highway's expression of a particular period of time. In essence, feeling is the quality of a highway that results from combination of location, design, setting, materials, and workmanship. This aspect of integrity is more subjective than other aspects, but clearly a solitary ribbon of highway through Monument Valley elicits a feeling that would be diminished if any of the component qualities were compromised. Although it has lost integrity of design and materials in some areas, Colorado State Highway 74 generally elicits the feeling of the period of initial automobile tourism into the Colorado mountains.

Association is the direct link between an important historical event or person and a highway, usually meaning that distinctive physical features exist as part of the highway that clearly demonstrate the connection to the event or person. For example, remaining dry-laid retaining walls represent the WPA era/event in Colorado, particularly the reconstruction of State Highway

74 after a devastating flood. Association can also mean that individual elements of a highway remain visually and/or functionally connected, so that the historic highway can be easily recognized as a single entity. For example, a tunnel that is no longer part of a highway may still have essential association with the highway if the tunnel is visible from the highway and the former highway route to the tunnel is evident.

10.3 Consideration of Age and Period of Significance

The National Register Criteria for Evaluation requires that a highway must ordinarily be 50 years old or older to qualify for eligibility for nomination to the National Register, in addition to qualifying under at least one of the primary significance criteria and having sufficient integrity to convey its significance. The Criteria for Evaluation contains three possible exceptions to the 50 year age rule:

1. The highway is an integral part of an historic district that otherwise qualifies for nomination. Many historic districts, particularly in central business districts, were built along highways or major roads that became highways. Rural historic districts and other cultural landscapes are also often anchored by a road or highway.
2. The highway has been reconstructed, and the reconstruction has been accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived. This situation is extremely rare, but theoretically a faithful restoration of any highway could qualify under this consideration.
3. The highway is of exceptional historical importance. For example, the highway/causeway built to carry the space shuttle from the assembly building to the launch site is of exceptional historical importance. In Colorado, the Glenwood Canyon segment of Interstate 70 might qualify under this consideration.

Most highways in Colorado originated in some form more than 50 years ago, and therefore most of the state's highways technically meet the ordinary age requirement. A more useful application of age in the evaluation of significance involves assignment of a highway to one or more of the four principal historic periods of automobile highway construction in the state, and then assessment of the integrity of the highway to that period. As discussed elsewhere in this document, the principal historic periods of highway construction in Colorado are:

1890-1930, The Pioneer Automobile Era
1930-1945, Depression and World War II
1945-1973, Postwar Boom and the Interstate Era
1973-2000, Completion and Expansion of the Highway System

Nearly all highways in Colorado have been in use during more than one of these periods; the earliest highways have been in continuous use through all of the periods. The focal period for historical significance of most highways is the period in which they were constructed and first used. In that initial period, the highway met the need for which it was built, and in that period the highway probably had its most definable effects on the economy and culture of the highway's service area. Use of the initial construction period as the beginning point of a highway's period of significance also establishes a basis for identifying change and assessing integrity of the physical characteristics of the highway. For highways that are significant primarily for their engineering and construction features, the period of significance may appropriately end with the completion of the highway or a particular segment of the highway.

The ending point of a period of significance is more problematic for most highways, because most highways continue to be vital to the transportation, commerce, and general culture of their service areas. The period of significance is the time in which the highway performed the special function or role that distinguishes it from other highways. The initial construction of a highway will correspond to one of the four principal historic periods listed above, but the period of significance for a particular highway may be only a few short years or may span more than one of the principal historic periods, depending on the particular historical context of that highway. For example, State Highway 141 in western Colorado began as a community funded road in 1921, and was improved by the Department of Highways with funding from the federal government from the 1920s into the 1950s. From the 1940s to the 1960s, SH 141 served a vital role as a supply and haul road for uranium processing for the Manhattan Project and for private mining and development of uranium resources. State Highway 141 continues to serve as an important transportation route across southwestern Colorado, but its importance lessened after the 1970s as the concerns over nuclear power cooled the uranium boom. The period of significance for State Highway 141 as an automobile highway therefore extends from 1921 to the mid-1950s (this route also has significance in historic contexts other than automobile highways).

10.4 Other Considerations in Evaluation of Historic Highways

There has been a nationwide campaign to preserve historic highways over the past decade. This movement first gathered national attention in 1995, when the National Trust for Historic Preservation placed the Bronx River Parkway – the first modern motor parkway – on its list of "America's Eleven Most Endangered Historic Places." The subsequent struggle to maintain the historic integrity of the Bronx River Parkway (constructed 1907-1924) inspired other local preservationists to fight to maintain the Lincoln Highway in Nebraska, the Arroyo Seco Parkway in California, and the Merritt Parkway in Connecticut.

The National Task Force for Historic Roads (NTFHR) was formed in the mid-1990s as an ad hoc organization seeking the participation of anyone interested in historic roads. The NTFHR is part of the Rural Heritage Program of the National Trust for Historic Preservation in Washington, D.C. The NTFHR's mission is to maintain the integrity, design, purpose, and use of historic highways in ways appropriate and responsive to modern safety needs. The primary purpose of the NTFHR is to promote the recognition of historic roads. To better identify the historical use of the nation's roads, the NTFHR established three classifications of historic roads: aesthetic routes, engineered routes, and cultural routes:

Aesthetic routes are roads designed for a specific interaction with the natural or built environment. Colorado boasts a number of highways where views and natural detail were central to their design. The automobile highway up Pike's Peak near Colorado Springs is an example of a highway built specifically for appreciation of the aesthetic qualities of the mountain setting. Other highways in Colorado that were originally designed and built for non-aesthetic uses have evolved into aesthetic routes because of their spectacular settings. Some of these highways have been partially re-engineered to support aesthetic uses, including construction of pull-outs and parking areas at scenic locations. Examples of these evolved aesthetic routes include US 550 from the Colorado-New Mexico line to Ouray and State Highway 141 from Whitewater to Dove Creek (Marriott, 1998: 11-14)

Engineered routes are roads designed for a specific transportation goal. The movement of drivers and their vehicles is the principal underlying force behind the design of an engineered route. Engineered routes, like aesthetic routes, have a documented origin or authorization and construction date. In Colorado, Interstates 25, 70 and 76 and US Highway 160 meet these criteria (Marriott, 1998: 222).

Cultural routes are legacies handed down from the first people to venture through a mountain pass or who trekked over the prairie. Cultural routes represent routes adapted over time that evolved through necessity or tradition. Some examples of roads used by the first indigenous peoples to Colorado to the present day include US 24 and US 40. State Highway 13 in the northwest portion of the state is a latter-day example. It began as a route built by the military to protect settlers and remains the primary north-south thoroughfare in that corner of Colorado (Marriott, 1998: 221).

In Colorado, the national and local movements for recognition and preservation of historic highways have resulted in the listing of seventeen of Colorado's historical roads to the National Register of Historic Places. These nominations reflect both the importance of highways in the rise of the state's tourism industry and the legacy owed to the designers and builders of routes like the Trail Ridge Road and the Denver Mountain Parks system. Several of these highways were nominated to the National Register under various thematic and multiple property designations, each road is individually listed in the National Register.

TRAIL RIDGE ROAD

Larimer County

Listed: November 14, 1984

Period of Significance: c. 1926-1941

• Built by S.A. Wallace, Roger Toll, et al.

• Engineering feat, the highest continuous highway in the United States

• Spectacular scenery

• 37.9 miles through Rocky Mountain National Park

RIM ROCK DRIVE HISTORIC DISTRICT

Mesa County

• Rim Rock Road Historic District includes the road, three tunnels, and numerous associated roadway features which were a part of the road design including scenic overlooks, guard walls, retaining walls, culverts, ditchers, drop inlets, and drainage tunnels.

• One of the major purposes of the road was to allow travelers' scenic vistas and views of the magnificent geological formation of the monument

DENVER PARK AND PARKWAY SYSTEM THEMATIC RESOURCE

Colorado

Listed: September 17, 1986

Period of significance: 1907-1914

12 road-related listings are included in the Denver Park and Parkway System TR:

• East Seventeenth Avenue Parkway

• Richtofen Place Parkway

• West Forty-sixth Avenue Parkway

• Monaco Street Parkway

• South Marion Street Parkway

• Williams Street Parkway

• Clermont Street Parkway

• Downing Street Parkway

• East Fourth Street Parkway

• East Seventh Street Parkway

• Forest Street Parkway

• East Sixth Street Parkway

DENVER MOUNTAIN PARKS MULTIPLE PROPERTIES SURVEY

Colorado

Listed: November 15, 1990

Period of significance: 1912-1941

Two road-related listings are in the Denver Mountain Parks MPS:

• Bear Creek Canyon Scenic Mountain Drive (listed November 15, 1990)

• Lariat Trail Scenic Mountain Drive (listed September 26, 1990)

CORLEY MOUNTAIN HIGHWAY (AKA GOLD CAMP ROAD)

Colorado Springs and Goldfield

Listed: March 25, 1999

Period of significance: 1900-1939

• Originally cleared for the Colorado Springs & Cripple Creek District Railway; the 31.8-mile Gold Camp Road is one of the few intact mountain highways from the early days of high country auto tourism (listed March 25, 1999)

(Source: Marriott, Saving Historic Roads, 1998: 182-3; United States Department of the Interior, National Register of Historic Places Registration Form: 1998).

Chapter 11
HISTORICAL SUMMARIES OF TEN COLORADO HIGHWAYS

In November 2001, representatives of the Colorado Department of Transportation, the Colorado Historical Society, and Associated Cultural Resources Experts met at CDOT headquarters in Denver to select 10 Colorado highways to study and determine their potential candidacy on the National Register of Historic Places. Selection was based on the following qualifications: historic integrity, engineering features, and use and importance of the highway to the citizens of that particular region. During January-February 2002, ACRE staff conducted site surveys of each of the 10 roads. Incorporated into each historical summary is a description of highway features based on those surveys. Each summary also includes a determination of the eligibility of each highway under the National Register of Historic Places and what category (aesthetic, engineered, or cultural) that best describes that road according to the National Task Force for Historic Roads (NTFHR).

11.1 Historical Summary of US 550 (5LP6654; 5MN6047; 5OR294; 5SA958)

More than a century after its initial construction, US 550 remains one of the most scenic examples of road engineering in Colorado. In 1910, the State Highway Commission originally designated the road as State Highway 13. The commission changed 13 to State Highway 19 during the 1920s. In 1937, the federal government stepped in and renamed SH 19 as US 550. For nearly 80 years, most travelers have ignored the numbers game and referred to the road by only one designation, “The Million Dollar Highway.”

Today’s US 550 runs from milepost 0.00 at the New Mexico border to milepost 129.95 at the junction of US 50 and State Highway 90 in Montrose. One of the state’s most scenic highways, US 550 follows the Animas River north through Southern Ute Indian Reservation before joining US 160 southwest of Durango. The entire highway takes its nickname from its most storied 12 miles – a stretch of tight, winding road through the Uncompahgre Gorge (Figure 10).

(Figure 10)

The road eventually known as the Million Dollar Highway began as an entrepreneurial effort to transport men and supplies to mining camps located over the rugged Red Mountain Pass. In the early 1880s, southwestern Colorado's premiere road builder, Otto Mears, blasted a shelf out of the San Juan Mountains for a toll road from Ouray to Silverton. In 1881, Mears finished the first stretch of road between Ouray and the mining supply camp of Ironton. During 1882-83, construction followed along Red Mountain Creek over Red Mountain Pass, down Mineral Creek before eventually leading into Silverton.

In 1882, crews cleared 8.5 miles of rock and debris at a cost to Mears and his backers of $40,000 per mile. Mears' original course was extremely narrow. Outside the town of Ouray, the original alignment sat closer to the Uncompahgre River than modern US 550, but above Bear Creek Falls, the auto highway still follows Mears' initial path. Upon completion in 1883, Mears attempted to recoup construction costs by charging a $5 toll for a team and wagon, $2.50 for a trail wagon, and $1 for saddle animals. Local merchants and miners who contributed money and labor toward completing the road gradually turned on Mears. By 1887, San Juan County and the State of Colorado assumed control and maintenance of the road, thus ending one man's dominance of Red Mountain Pass (Clay, 1927: 6).

The first automobile descended the Red Mountain wagon road to Ouray in 1910. However, there is no record indicating whether the car made the return trip up the mountain. The first recorded ascent of the pass came a year later. Ouray doctor L.G. Crosby and some companions made the six-mile journey from Ouray to Ironton on a house call. The group recalled the trip up Red Mountain as especially arduous, but the doctor's new Model T handled the climb with ease. By six o'clock that evening, news of the party's exploits reached Montrose. The following day, the town's newspaper crowned Dr. Crosby and his passengers as heroes:

> "It was a trip that few believed could ever be accomplished. It was one of the most exhilarating, thrilling, unusual, and stirring automobile trips that

> could be taken or imagined" (Colorado Department of Transportation, 2000(b): 6-7).

Interest in automobile tourism was spreading across Colorado. As a result, both state and local interests sought to improve the scenic road. In 1916, the state and Ouray County spent $8,000 to improve the first two miles of road north of the town of Ouray. In 1920, with $50,000 in Federal Aid Project money, the state began work on 1.15 miles of road below Bear Creek Falls, including a 200-foot-long, 17-foot-wide tunnel. Clinging to the side of the mountain, men and machines bored through the hard quartzite rock above a sheer drop of 223 feet to the canyon below. Part of the group risking their lives was a crew of Navajo Indians who worked to clear the tunnel (Author Unknown, n.d. (b): 2; Colorado State Highway Commission, 1920: 6).

In 1924, the Colorado Highway Department expanded and updated the Mears toll road for automobile travel. State engineers redesigned a 12-mile section between Ouray and Red Mountain Pass on a higher grade, and crews widened and graveled the improved road. On July 4, 1924, state officials dedicated the Durango-Silverton-Ouray (DSO) Road, but most Coloradoans already called the engineering accomplishment the "Million Dollar Highway." The most reliable story surrounding the name has its origins from the bid opening, where one contractor spoke of the "million-dollar highway we're building" after considering what it would take to complete the job. A more fanciful anecdote had the Highway Department spreading a million dollars worth of silver and gold mine tailings to pave the road (Colorado Historical Society: 1996). Over time, the Million Dollar Highway name came into use to describe the entire 130-mile route between Ouray and Durango. By 1930, a Department of Highways map showed US 550 alternating between graveled and surfaced road (Colorado Department of Highways, 1930(a)). In 1935, the state extended the road south about 15 miles from Durango to the New Mexico state line (Colorado Department of Highways, 1938(b)).

High-country winters took their toll on drivers and US 550 over the years. At Riverside Slide alone, 1.5-miles south of the Ouray tunnel, snow slides claimed the lives of five people since the 1930s. Armed with improved snow-clearing machinery, the Department of Highways kept the road open year round for the first time in 1935. However, fast, pounding blizzards can still close the highway (Author Unknown, n.d. (b): 2).

In the early 1940s, the state rebuilt eight miles of US 550 along Coal Bank Hill between Durango and Silverton. The new alignment replaced a segment of original road that traipsed along an overhanging shelf. Redesigning US 550 also shortened the distance between Cascade Creek and Coal Creek by four miles. The improved US 550 still reaches a maximum elevation of 10,600 feet on a grade of 6 to 7 percent (Rocky Mountain Contractor, September 10, 1941(a): 6-7).

The highway over Red Mountain Pass played an important part toward winning World War II. As the United States Army developed atomic weapons under the top secret Manhattan Project, large deposits of necessary uranium ores were located across southwestern Colorado. From 1943 to 1945, the success of the Manhattan Project depended on clear roads to transport materials in and out of southwestern Colorado to the refining facility in Grand Junction. State maintenance crews, driving a fleet of 60 trucks, kept the highway over Red Mountain Pass open year round so that the Army could haul sulfuric acid and other supplies from Grand Junction to support facilities in Durango (Schweigert, 2002: 7).

Maintenance projects replaced the Manhattan Project along sections of US 550 after World War II. In 1955, the state paved and broadened various sections of the highway. Three years later, the highway department widened the Ouray Tunnel to 27 feet. By the mid-1990s, moisture and freezing inside the tunnel destabilized the rock to the point where engineers feared it would fall down onto motorists. Rather than cutting the tunnel open, or realigning the road, the state repaired and stabilized the tunnel while preserving its historical appearance. The project included cleaning and grouting the portal voids with shotcrete and reinforcing the interior rock walls (Author Unknown, n.d.(b), 2) [Plates 9 & 10].

Plate 9. Northwest of Ouray Tunnel.

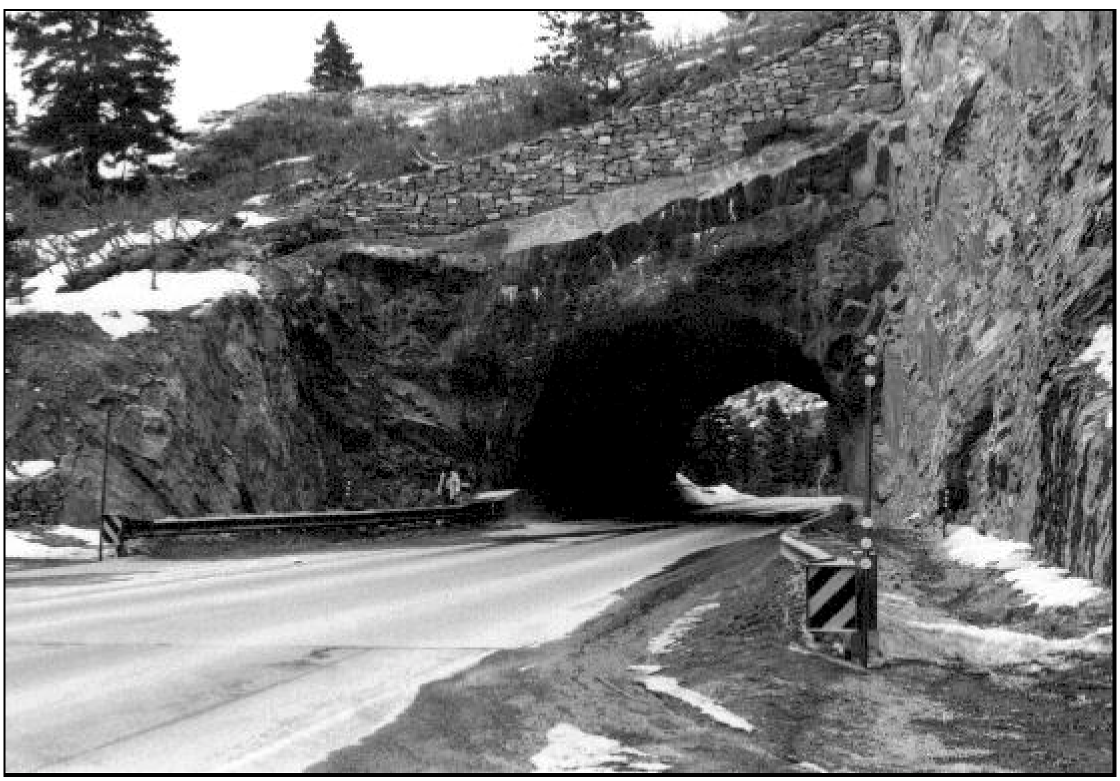

Plate 10. Rockwork above Ouray Tunnel.

In the late 1970s, the Colorado Division of Highways completed two realignment and relocation projects to US 550. The most complex of the jobs involved completing a bypass of US 550 and US 160 south of Durango. US 550's original 2.18-mile alignment hugged the canyon south of Durango to Main Avenue downtown. The Division upgraded this section from two lanes to four from Durango to the junction of US 550/160, approximately five miles south of the city. In December 1979, the Division completed a 5.5-mile relocation of US 550 around the Dallas Reservoir site, north of Ridgeway in Ouray County (Colorado Division of Highways, Colorado Annual Highway & Transportation Report, 1981: 55).

Work began in June 1999 to widen shoulders and add safety improvements to 3.6 miles of the highway near the New Mexico State Line. In November of that year, Colorado voters passed the Transportation Revenue Anticipation Notes (TRANs) initiative. Drawing from this source, the Colorado Department of Transportation (CDOT) will expand 13 miles of this highway to four lanes from Durango to the New Mexico border. At a cost of $48.8 million, CDOT estimated that the expansion project would be complete by 2006 (Colorado Department of Transportation: 2000(a): 8; Colorado Department of Transportation, http://www.TREXProject.com/about.asp).

11.1.1 Eligibility of US 550

Highway builders overcoming the dangers of mountain road construction to create a road that generations of subsequent motorists could enjoy is the legacy of US 550. The "Million Dollar Highway" qualifies under the National Register's Criterion A for its historical significance in two separate time frames. From more than 300 miles of toll roads across southwestern Colorado, the way cleared by Otto Mears between Ouray and Silverton remains his greatest accomplishment. The Colorado Department of Highways improved on Mears' work during the 1920s when they expanded and upgraded US 550 for automobile travel. The Department of Highways primary contribution to US 550 was the completion of the 200-foot-long, 17-foot-wide Ouray Tunnel. The tunnel remains in service with its original integrity still intact. First designed for commercial use, with later assistance from the Department of Highways, Mears' narrow, twisting alignment evolved into one of the state's most spectacular drives. Because of generations of automobile drivers have traveled this route to enjoy the surrounding scenic wonders, US 550 is best classified as an aesthetic route under the National Task Force for Historic Roads criteria for historic roads.

11.1.2 Site Survey Synopsis of US 550 – 129.25 miles from milepost 0.00 at the New Mexico border to milepost 129.25 at the junction of US 50 and SH 90 in Montrose (surveyed February 8, 2002).

Starting at the border of New Mexico and Colorado in La Plata County, this section of US 550 is a two-lane highway with wide shoulders and no drainage ditches. Heading north to Bondad Hill, the road has a steep grade of 6 percent. There are no shoulders and the road has been cut through the rock. Past Bondad Hill, drainage ditches become evident, as there is farmland and pasture. The crown of the road appears to be higher for approximately two miles. It also at this point near the Sunnyside School where the road has undergone numerous patches.

US 550 connects to US 160 south of Durango. At this intersection the road has a traffic light and widens to a four-lane highway. Prior to entering the Carbon Canyon Junction, US 550 splits with a new road crossing the Animas River to the west. This new section is a divided four-lane highway and extends to the junction of US 160. The original roadbed (known as State Highway 3 since 1981) of US 550 continues along the east side of the Animas River and is cut into the side of the hill. The two-lane road has no shoulders and worn, older asphalt. This road turns west onto 6th Street, a busy two-lane commercial street. The road is seamed concrete. The road continues west, connects to US 550 at the intersection of US 160, and continues on the west side of Durango.

Heading north outside of Durango, the highway measures four-lanes wide with a passing lane. The road is covered with asphalt with ample shoulders. The road from Durango to the hamlet of Trimble has deep embankments and large, modern drainage pipes (some are approximately 36 inches in diameter). The road is allocated approximately 50 to 100 feet from the Denver and Rio Grande Western Railroad. Immediately west of Shalona Lake, the road crosses the railroad track via an overhead bridge. The bridge has 10 feet of protective fence embedded in the Johnson Wall concrete barriers. After crossing the bridge, the road has an exceptionally steep incline as it passes the Hermosa Cliffs. The road is cut out of the cliffs on the west side and there are guardrails on the east side of the pavement.

Entering into the Purgatory area, US 550 opens into four-lane highway with wide shoulders. After leaving Purgatory, the road begins its steep climb to Red Mountain. Because the road was cut from rock in several areas, and there are no embankments or shoulders and it is very narrow. Portions along the highway have flat “turn off” areas that have been created to handle the avalanche and rock slides that occur in the springtime. The road is winding and hugs the mountains in several areas. Switchbacks lead the road through Coal Bank Pass and Molas Pass prior to its descent into the town of Silverton.

The road travels northwest out of Silverton and continues a gradual incline to Red Mountain Pass. The road is notable for several switchbacks and sharp hairpin turns and lacks embankments and shoulders. Again, the highway has flat “turn-off” areas that have been created to handle the avalanche and rock slides which occur in the springtime. North of Red Mountain Pass, the road gradually declines 2,000 feet and enters Ironton Park. This area of the road is flat and surrounded by marshes. An old stone building, which appears to be a garage, is located at the northern end of the park. The road continues to switchback until it approaches the East Riverside Slide. This modern tunnel has a slide roof to prevent the closing of the road when a rockslide occurs (Plate 11). The road continues to descend 1,000 feet to the town of Ouray. Prior to entering Ouray, there is a rock tunnel constructed during the early 1920s. The tunnel has dry laid rock retaining walls. The tunnel has been blasted out of the mountain and displays a smooth finish (Plate 12).

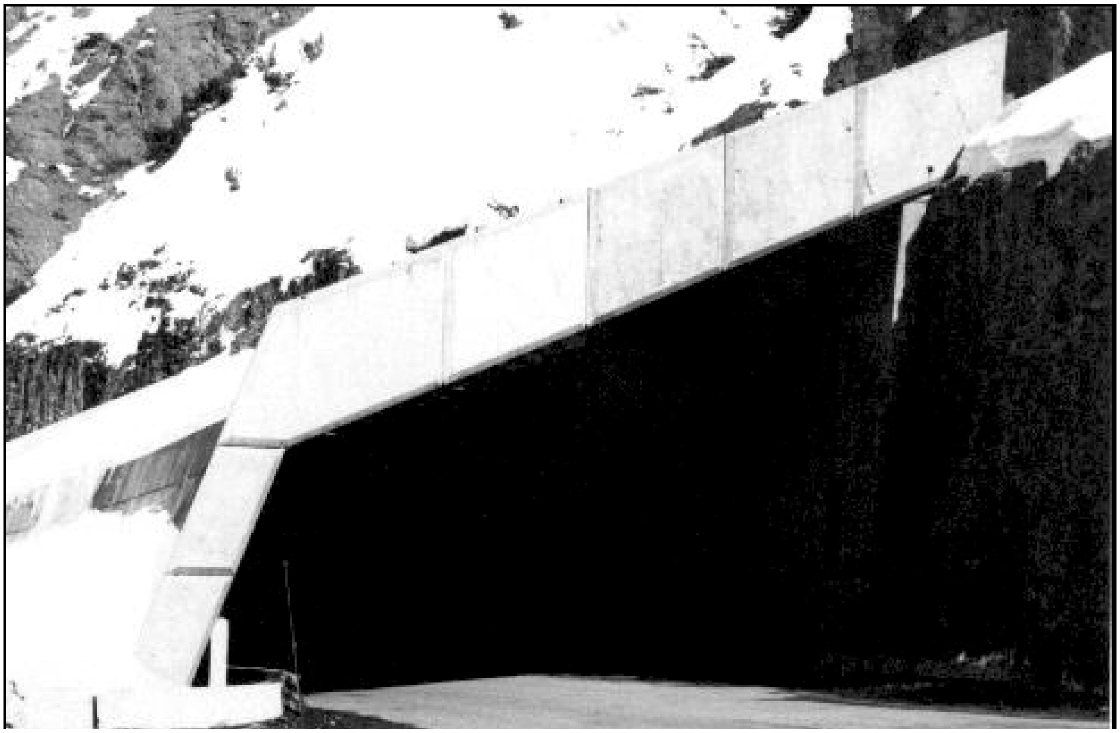

Plate 11. Northeast view of Riverside Slide, a block and concrete tunnel.

Plate 12. Dry-laid stone wall south of Ouray Tunnel on US 550.

Heading north out of Ouray, the road flattens out and remains narrow. There are no shoulders on the road and a shallow drainage ditch becomes apparent. The road continues like this until it reaches the town of Portland, where the ditches become deeper. The road remains unchanged through Ouray County and into Montrose County. Passing through the hamlet of Uncompahgre, the road becomes slightly wider, the result of new asphalt laid in 2001. Two miles south of Montrose, the road widens to a five-lane divided highway until it reaches the incorporated boundary of Montrose. At that point, the road narrows to a four-lane, undivided road with concrete curbs and sidewalks to the terminus of US 550 at Main Street.

11.2 Historical Summary of State Highway 112 (5AL674; 5RN753; 5SH1963)

On a map, State Highway 112 appears to be a cohesive linear route. Road maps, however, ignore the highway's origins as a patchwork of pavement that grew into a unified roadway by the early 1920s. State Highway 112 service history as a "farm-to-market" road reflects the aspirations of rural Coloradoans wanting a highway to connect them to the rest of the state once the cost of an automobile came within their reach.

SH 112 runs through the irrigated farmland of the San Luis Valley. The valley is a fertile high alpine basin in south-central Colorado placed between the mountains of the San Juan range. Potatoes are the valley's primary crop and its farmers consistently rank among the top five producers in the United States. Never intended as a tourist road, SH 112 sees few visitors from outside the valley. In spite of its relative isolation, SH 112's role as the commercial lifeline for this corner of Colorado will continue for years to come.

The earliest documents surrounding SH 112 illustrate that the 28-mile highway evolved over time rather than following the usual path from drawing board to road crew. In 1916, the Colorado State Highway Commission published its first road map. The guide shows 12 miles of gravel-surfaced road, identified as State Highway 10-S, between the communities of Center and Hooper. South of Hooper, an unsurfaced portion of 10-S continued through the San Luis Valley before concluding in Alamosa (Colorado State Highway Commission, 1916) [Figure 11].

Figure 11

In the late 1910s, the Department of Highways built a new road -- State Highway 68 -- on a diagonal path north from Del Norte to connect with SH 36 in Saguache County. On a map the alignment of SH 112 resembles a rifle. The original SH 68 is best described as the butt-end of the current road. By the early 1920s, there remained a five-mile gap along the Rio Grande-Saguache county line to Center (Colorado Highways Bulletin, April 1918: back cover). With the coming of the first Federal Aid money for highways, the state paved that gap. In 1922, the State Highway Department issued a new map that displayed all of the 8,800 miles of Colorado's primary highway system. For the first time, the state designated an 18-mile stretch of between Del Norte and Hooper as SH 112 (Colorado Highways, August 1922: 13). Since its completion in the early 1920s, the Department of Highways has never realigned SH 112.

The department's 1926 highway budget contained one of the first subsequent improvements to the road. That year, the state authorized $3,000 to gravel and grade SH 112 north from Del Norte to the Saguache-Rio Grande county line (Colorado Department of Highways, 1926). It took a number of years, and a lot of effort by county politicians and residents, before the state paved the entire highway.

According to the 1930 State Highway map, the Department of Highways blacktopped SH 112 from the town of Del Norte to the Saguache-Rio Grande county line and graveled and graded the remainder from that point to Hooper (Colorado Department of Highways, 1930(a)). Throughout the 1930s and 1940s, the Department's Highway Advisory Board made time every year to listen to a San Luis Valley residents ask the state to improve their roads. Unfortunately for the people of the valley, other projects always received the money and attention (Colorado Department of Highways, 1940(b): 129).

The state made up for lost time after World War II. In 1946, the state placed six inches of gravel or crushed rock surface from Del Norte northeast to the Rio Grande-Saguache county line (Colorado Department of Highways, 1946). Work was expensive, as in 1948, the commission agreed to pay $45,000 in cost overruns. It was the largest amount of money among nine projects the board passed during that fiscal year (Colorado State Highway Commission, 1948: 310).

The following year, Rio Grande and Saguache Counties and the federal government divided payment of $140,000 to oil-surface along the county line. In accordance with department standards, the state placed Asphaltic Road Material MC-0 over the road (Colorado Department of Highways, 1949(a): 70-4; 1949(b): 12).

11.2.1 Eligibility of SH 112

Scant traffic and few changes characterize the service history of SH 112. The road maintains the agricultural economy of the San Luis Valley. SH 112's significance is tied to the agricultural economy of San Luis Valley. This linear "farm-to-market" road has cut through three farming counties since the 1920s. Despite a lack of unique facilities like bridges and surfacing, SH 112's original and continued purpose as a farm-to-market road, and unchanged alignment, make it a candidate for eligibility under National Register Criterion A. State Highway 112 symbolizes other seldom-recognized Colorado highways that continue to serve their communities. In the same regard, under the NTFHR, SH 112 is best categorized as an engineered route as it was first designed to move people and goods.

11.2.2 Synopsis of Site Survey SH112 – 27.90 miles from milepost 0.00 at the junction of US 160 in Del Norte to milepost 27.80 at the junction of CO 17 in Hooper (survey conducted January 29, 2002).

State Highway 112 runs a little over 27 miles through one of the world's largest high-desert valleys. SH 112 begins on Oak Street in central Del Norte, crosses the Rio Grande River, bends to the northeast, and straddles the Rio Grande-Saguache County line. Twelve miles east of Del Norte, SH 112 crosses US Highway 285. East of US 285, SH 112 skirts the south side of the town of Center along 8th Street. State Highway 112 continues due east until it concludes at an intersection with State Highway 17 on the north side of the town of Hooper. Under the National Task Force for Historic Roads (NTFHR) system of classifying roads, SH 112 should be identified as an engineered route. According to the NTFHR, an engineered route, like an aesthetic route, will have a documented origin or authorization and construction date, but “the aesthetic experience was often secondary” to motorists (Marriott, 1998: 13). Developed to improve traffic in a relatively isolated portion of the state, the Colorado Department of Highways built SH 112 to aid the movement of people, goods and services through the San Luis Valley.

Overall, the road is flat for the entire stretch of the survey. State Highway 112 begins in a northerly direction from Del Norte. Approximately one mile outside of town, the road crosses the Rio Grande Canal over the Rio Grande Overflow Bridge (CDOT Structure ID# N-11-E). Built in 1947, the bridge features steel supports, concrete rails, and abutments. The road is asphalt covered and lacks shoulders or embankments. The road then turns eastward, serving as the dividing line between Rio Grande and Saguache Counties [Plate 13]. The road has a gradual embankment and no shoulders. Located approximately two miles from the eastward bend is a deep drainage ditch. This ditch – identified as Twelve Mile Lateral No. 5 -- runs parallel along the southern side of the road. Intermittently there are wood diversion gates built by farmers to aid in farmland irrigation. Wherever diversion gates are present, corrugated metal drainage pipes run below the roadbed.

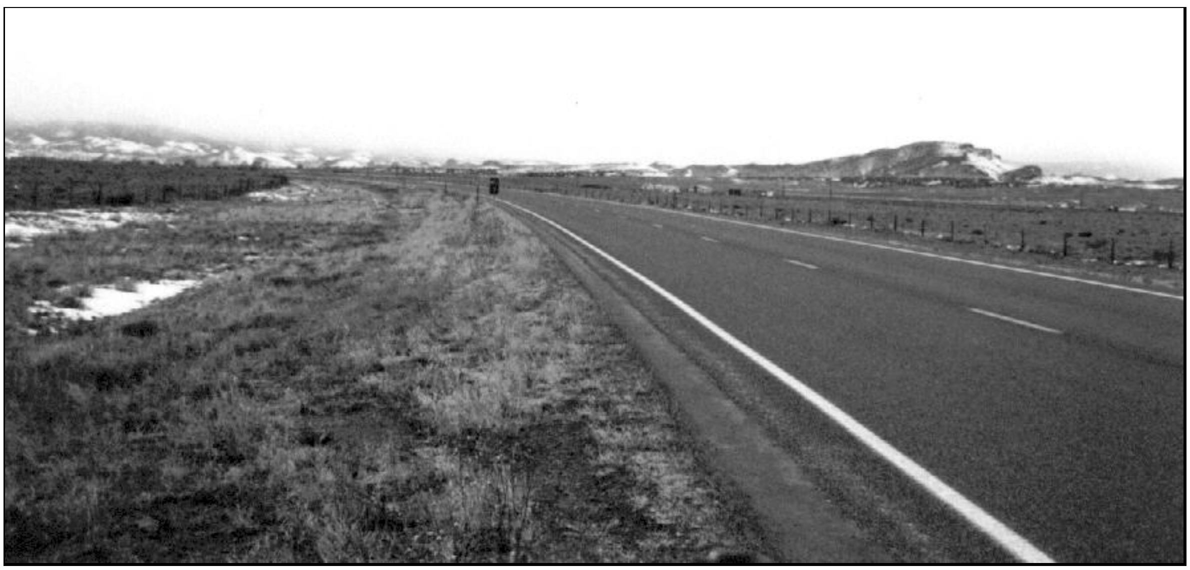

Plate 13. View south of SH 112 along the Saguache and Rio Grande County line.

The Farmers Union Canal crosses the road just west of US 285. Built in 1948, the concrete Farmers Union Canal Bridge features a 66-foot span over the canal. West of US 285, the road has newer asphalt, three-foot-wide shoulders and deep berms. Entering the town of Center, the road changes. There are no shoulders on the north side of the road. Gravel shoulders and drainage ditches are located on the south side alone. Extending outside of the town, the ditch is shallow as compared to the ditch located west of town. Entering into Alamosa County, the drainage ditch again becomes deeper. The road also has a very narrow shoulder and the asphalt looks new. Six miles east of the Alamosa County line, the drainage switches from the south side to the north side of the road. One and a half miles west of the town of Hooper, the asphalt looks new and there are no drainage ditches on either side of the road. The road is flat with narrow shoulders.

11.3 Historical Summary of State Highway 141 (5DL2414; 5ME13044; 5MN6048; 5SM3670)

When Grand Junction's city fathers first considered an automobile road during the 1920s, little did they know how their civic pride would later influence world events.

In 1921, the Grand Junction Chamber of Commerce decided to stimulate the local economy through construction of two automobile roads leading in-and-out of the city. The Chamber of Commerce convinced the community to raise $30,000 to build two highways – one running from Grand Junction north to Rangeley and the other heading south into the Paradox Valley. The Paradox Valley route later became important as it passed through one of the world's richest deposits of uranium, vanadium, and radium (Colorado State Highway Commission 1922(a): 6).

The 161.99-mile State Highway 141 begins at the junction of US 666, west of the town of Dove Creek. SH 141 then turns and curves east to the town of Slick Rock. Going up and over 6,100-foot Gypsum Pass, the highway crosses State Highway 145 east of Naturita at the confluence of Naturita and Maverick Creeks. State Highway 141 heads south through the towns of Naturita and Vancorum before tracing the path of the San Miguel River northwest to Uravan. West of Uravan, the road mirrors the twists and turns of the Dolores

River to the town of Gateway. The road turns northeast up the West Creek, winds its way over a ridge, and traces the path of the East Creek before going northeast to US 50 at Whitewater. Finally, State Highway 141 shares the path of the US Highway for two miles, then turns north toward I-70, stopping at the junction of I-70 west of Clifton (Figure 12).

Figure 12

SH 141 grew in segments and was known by many names over the years. In the 1920s, the highway first ventured from Colorado 90 at Naturita north to US 50 at Whitewater. The Department of Highways later added five miles north of US 50 and a winding 50 miles between Naturita and Dove Creek. With the advent of federal funding for highway construction, the state built a 62-mile road (known as State Highway 80) from Naturita to Dove Creek throughout the 1920s. In 1929, the state, Mesa County, and Whitewater Granite Company cooperated to straighten the approaches to the bridges, adjust the road's alignment, and eliminate heavy grades over 16 miles of highway through Mesa County. The $5,000 project began on June 1 and concluded the first week of November (Colorado Department of Highways, 1929). The 1930 State Highway map shows SH 141 graded along its 62 miles (Colorado Department of Highways, 1930(a)).

Much of the nation's uranium ore supply is located in southwest Colorado. As America entered World War II, forces with influence greater than the Grand Junction Chamber of Commerce soon sought improvements to the highway. Few outside of the worlds of science and the military knew of uranium's role toward developing atomic weapons. Many involved in the mining industry assumed the military would need the ore for steel alloys (Colorado Department of Highways, 1940(a): 125). When the State Highway Advisory board met in December 1941, Governor Ralph Carr attended the meeting. During his brief appearance, the governor reminded the commissioners of the "necessity of constructing an adequate road from Naturita to Uravan to serve the uranium and vanadium mines" (Colorado Department of Highways, 1941:152).

During World War II, a secret facility outside of Grand Junction processed uranium and vanadium as part of the U.S. Army's Manhattan Project. Both the Army and the Department of Highways maintenance crews kept State Highway 141 open from the Uravan mills to Grand Junction from 1942 to 1945. The road's importance shifted from military to commercial as the nation transitioned into the Cold War. Beginning in 1947, the Bureau of Public Roads and the Atomic Energy Commission supported a program to improve access between mines, mills, and a refining laboratory in Grand Junction. Federal construction and improvements after the war launched a "Uranium Boom."

During the 1950s, SH 141 saw the greatest amount of traffic in its history as prospectors ventured out in jeeps, armed with Geiger counters, to seek out uranium and vanadium.

The counties, state, and federal highway agencies also made their contributions to keeping SH 141 serviceable. In 1951, the Highway Advisory Board and Montrose County matched a quarter of the $130,000 in federal money required to put on base and blacktop on the highway (Colorado Department of Highways, 1951: 126) On July 6, 1955, the Department of Highways opened bids for improving and paving about eight miles of a narrow shelf north of Uravan. The estimated cost of the job totaled $616,873, with most of the money coming from the Atomic Energy Commission's access-road program. The Department of Highways expended $120,800 of its own funds for the project (Denver Post, June 18, 1955: 16).

For Fiscal Year 1960, the Highway Department split $500,000 for improvements on SH 141. During that year, the state authorized $400,000 for right-of-way and construction from the town of Gateway south to the Mesa county line; and $100,000 for paving SH 141 from Whitewater south to the Montrose county line (Rocky Mountain Construction, June 15,1959: N-18). In 1963, the state authorized $400,000 for construction of nearly 40 miles of SH 141 from Gateway northeast to the connection with US 50 at Whitewater (Rocky Mountain Construction, June 11, 1963: N-8). As the public grew increasingly concerned over nuclear power during the 1960s and 1970s, the uranium boom slowly fizzled. Currently there are no mines operating in the area and the towns of Uravan and Vancorum have been dismantled. As a consequence, traffic volume on SH 141 has dramatically declined, leaving SH 141 mostly to local farmers, ranchers, hunters, and the occasional government official.

In 1971, the state added 50 winding miles from Naturita to Dove Creek and filled the five-mile gap from US 50 to Clifton. The Highway Department re-designated State Highway 146 as part of State Highway 141 in 1986 (Colorado Division of Highways, 1987: 14). State Highway 141 most recent upgrade concluded in 2000 when the state resurfaced 12.5 miles of asphalt north of Naturita (Colorado Department of Transportation, 2000(a): 14).

11.3.1 Eligibility of SH 141

SH 141 is one of many of the back roads across the country that the United States traveled on the way to deciding World War II. Engineers, miners and soldiers assigned to the top secret Manhattan Project used SH 141 between the uranium mines at Naturita and the processing facility in Grand Junction. From 1943 to 1945, the US Army told the Colorado Department of Highways little regarding the Manhattan Project other than to ask for their help in keeping SH 141 open year round. During the 1950s, SH 141 was the primary path leading to one of the nation's largest uranium deposits, touching off one of the West's last mineral rushes. For it's significance during the war and the post-war mineral boom, SH 141 qualifies under National Register Criterion A – a highway that defined an important event or period in the nation's history.

The stark, rust-colored mesas framing SH 141 through uranium country between Gateway and Naturita could classify the highway as an aesthetic route under the NTFHR system. However, the highway is best categorized as an engineered route because of the role it played in keeping the nation's uranium industry running in war and peace.

11.3.2 Synopsis of Site Survey of State Highway 141 – 161.99 miles from milepost 0.00 at the junction of US 666 to milepost 161.99 at the junction of I-70/ US 6 west of Clifton (survey conducted February 7, 2002).

SH 141 begins in Clifton as a wide, six-lane, paved highway. The road narrows to four lanes and then down to a two-lane highway approximately one mile south of the SH141 and SH 50 junction in Clifton. Proceeding south, where SH 141 and SH 50 meet again, the road becomes a divided highway with two lanes on either side. SH 141 splits again from SH 50 and proceeds west. At this point, the road is two-laned with very narrow, dirt shoulders (Plate 14).

The road winds through Unaweep Canyon next to East Creek. There are no shoulders but several pull-off areas to view the canyon. Several areas have guardrails to protect against the steep canyon grade (Plate 15). The road through this canyon is flat with several curves. There were no drainage ditches or embankments viewed along this portion of the road. The road passes over several washes and gulches that feature wooden retaining supports, frequently rotted or collapsed (Plate 16). Further west and adjacent to West Creek, the road is cut through rock and there are no shoulders. Entering into the town of Gateway, newer asphalt is evident as are modern culverts for drainage. The road is narrow and has a slight embankment – again without shoulders. Crossing the Dolores River, the road flattens and the embankments range from flat to steep depending on the topography. The stretch along the river has no drainage ditches. Crossing into Montrose County, the road has been cut close to the rock on the west side of the road. The road is narrow between mile markers 91 and 92.

The road widens to four lanes in the town of Naturita. There are some asphalt curbs on the west end of town and one block of newer concrete curbs with sidewalks on the east end. The road then travels southeast through Naturita Canyon. The road is winding with sloped embankments and no shoulders. Some of the road has been patched. This continues into San Miguel County. Through the Gypsum Valley, the road is steep with guardrails along the side. There are also modern, metal supports over the washes in the valley. Entering Disappointment Valley, the asphalt is older and the road offers narrow shoulders and a sloped embankment. The road grade increases rapidly entering the Joe Davis Canyon. The grade is very steep and the rocks hug the road, offering no shoulder or embankment. Leaving the canyon, the road flattens out and is surrounded by open field. The embankments are steep entering Dolores County. Once the road enters Dove Creek, the road widens into a five-lane highway with wide shoulders.

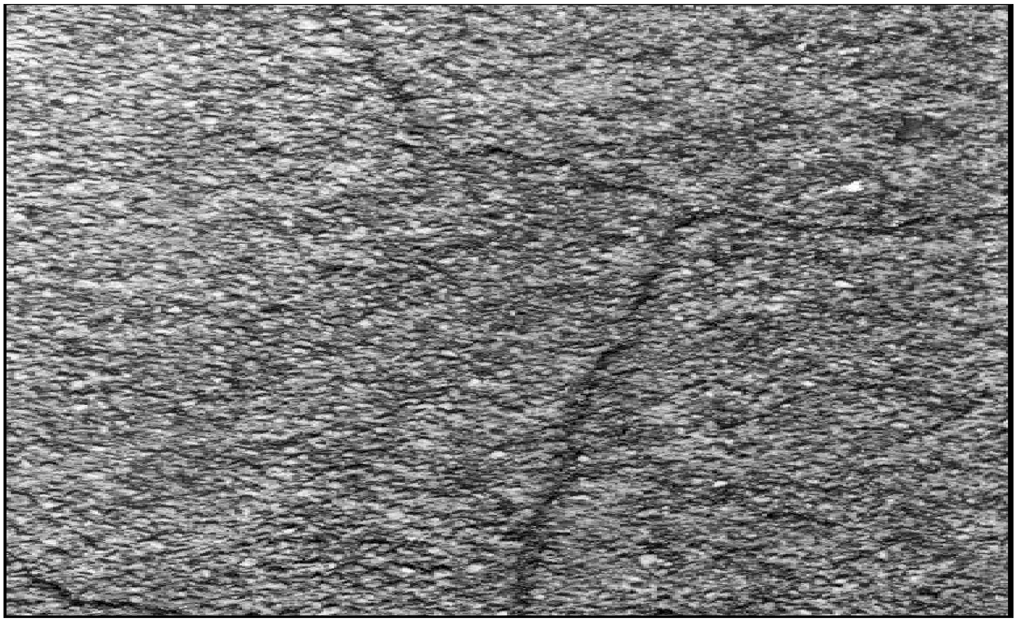

Plate 14. State Highway 141's weathered asphalt between Gateway and Uravan.

Plate 15. Eroded metal retaining wall above East Creek on SH 141.

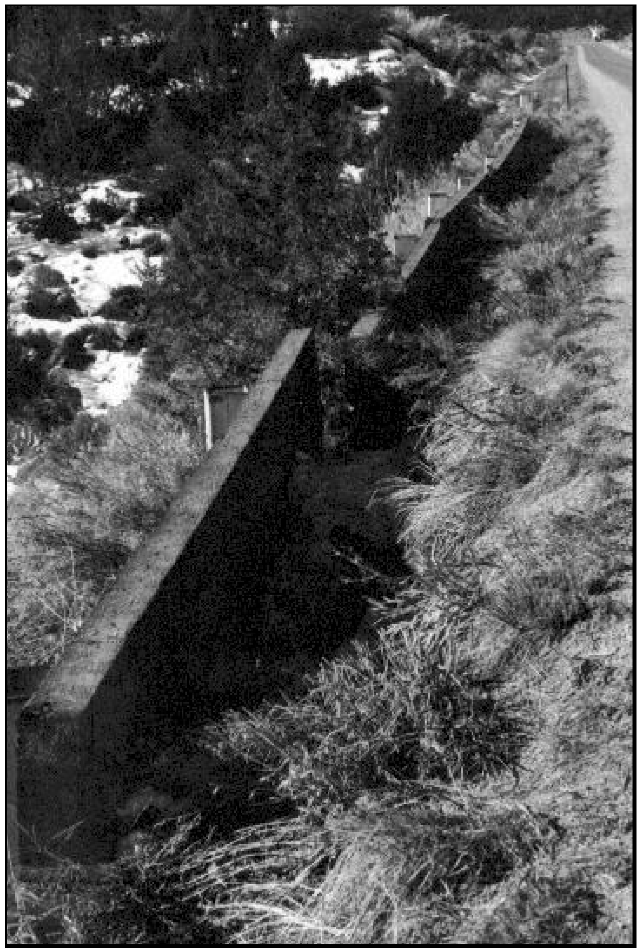

Plate 16. View west of wood retaining wall over wash on State Highway 141 in Mesa County.

11.4 Historical Summary of State Highway 74 (5JF2733)

Following the curves of Bear Creek, State Highway 74 is Denver's well-worn path to the beauty of the high country. Native Americans first used this route for access between the plains and mountain clearings of the Eastern Slope. Over the past century, municipal and federal funds built automobile roads through Bear Creek Canyon to support the creation and allow access to a chain of recreation and tourism spots unlike any other park system in the United States.

State Highway 74 begins at a junction with State Highway 8 in Morrison and runs for 17.99 miles to Exit 252 (also known as the El Rancho exit) on Interstate 70. Some of the historic highlights along the 18-mile road include Red Rocks Park; the first home of the Denver Motor Club adjacent to Starbuck Park near Idledale; the town of Kittredge; and the town of Evergreen (Denver Public Library, n.d.)[Figure13].

In 1873, former Territorial Governor John Evans built a toll road running from Morrison along the Bear Creek Canyon. Evans' road offered an entrance into the mining camps of Gilpin and Clear Creek Counties and the hay meadows and immense pine-timber resources on the upper Bear Creek and its tributaries. The primitive road crossed Bear Creek 22 times in the 11 miles between Morrison and Evergreen. Laborers working for Evans built bridges of rough timber set on log cribs with stringers of round timber cut from the hillsides adjacent to the structures. The road's tollgate was located a canyon bend about two miles west of Morrison (Cowden, 1934: 45). During the 1870s and 1880s, increased traffic encouraged Jefferson County to improve the road, but for most travelers it remained a "rough and rocky path" along the foothills until the arrival of the first automobile (Johnson, 1918: 9).

Figure 13. State Highway 74 – 17.99 miles from milepost 0.00 at the junction of the I-70 Exit 252 interchange to milepost 17.99 at junction State Highway 8 in Morrison (1999 Colorado State Map, Colorado Department of Transportation).

Flooding plagued this road on a number of occasions. The first deluge of note came from the skies in July 1896 when Bear Creek topped its banks and nearly wiped out the town of Morrison. Nearly three decades later, in 1925, another devastating flood threatened picnickers and carried several cars into the stream. Attempting to corral the creek's tempestuous nature, Charles D. Vail, Denver's manager of improvements and parks (and later chief engineer of the State Highway Department) proposed to control Bear Creek with a dam upstream at Dedisse Mountain Park in Evergreen. Completed in 1928, the 65-acre Evergreen Lake provided the impetus for the town to bloom as a tourist destination (Litvak, 1999: 4).

The automobile encouraged new concepts in urban design, and the road winding around Bear Creek Canyon was the start for an unusual proposal. In 1909, Denver Mayor Robert Speer sought to create a chain of parks in the mountains west of the city. After the state legislature passed a charter amendment in 1913 authorizing the city to purchase land in other counties, Denver's city planners went about designing the world's first municipally operated mountain park system. Through the park system, the city sought to showcase a wide variety of trees and 300 types of wildflowers. The city also stocked Bear and Turkey creeks with rainbow and black- spotted trout (Author Unknown, n.d.(a): 2). Today, the Denver Mountain Park System along SH 74 includes Red Rocks, Starbuck, Little, Corwina, Dedisse, and Bergen Parks.

The influence of wealthy car owners brought city planners and local landowners together. Local developer John Starbuck donated 11 acres to Denver Mountain Parks in 1911, and he sold 65 adjacent acres to the Denver Motor Club in 1916. The parcel became the motor enthusiasts "country home," complete with clubhouse, dance pavilion, and water rights dating back to 1870 that controlled one-fifth of Bear Creek water. Remnants of the clubhouse and the original alignment of State Highway 27 (as the Highway Commission designated State Highway 74 until 1923) still exist along the creek. In 1917, the state constructed a number of concrete bridges and rebuilt the road along Bear Creek high enough above the stream to be safe during any ordinary high water. In building the modern auto highway, state engineers were unable to compensate for a number of sharp curves along the canyon. Unfortunately, budget limitations prevented engineers and crews from cutting through the numerous sharp points in the canyon to reduce curvature (Cowden, 1934: 45). The Colorado Highway Department raised and realigned SH 74 away from Bear Creek during the 1950s. Since that time, private landholders along the creek have used the abandoned road as a footpath or driveway to their homes (U.S. Department of the Interior, 1995: sec. 8, page 2; Lomond, 1996: 2-5).

As more people drove the mountain road during the 1910s, the State Legislature granted the city of Denver the authority to police mountain parks and mountain-park roadways. According to a 1919 law, the city could fine motorists traveling in excess of 20 miles per hour up Bear Creek Canyon and over 15 miles per hour going downhill (City and County of Denver, 1919: 15). Park police also cited motorists caught removing or destroying trees, picking flowers, building fires in undesignated areas or fording Bear Creek in their automobiles (Author Unknown n.d.: 4(a)).

In the fall of 1928, the city of Denver supervised the first oiling of State Highway 74 from Morrison to Evergreen. Supervised by City Highway Commissioner F.J. Altvater, crews used a process known as "mat treatment" that required working an asphalt-based oil into the gravel. Once the oil set, it formed a surface resembling asphalt (Colorado Highways, October 1928: 14). The city oiled the road to a depth of one to 1½ to two-inches. The stabilizing qualities of the oil surfacing were evident after a July 7, 1933 flood. Three miles of roadway remained almost entirely underwater during the flood, but in only a few instances did the surface erode. Where any portion of the road remained, the oil surfacing stayed intact (Cowden, 1934: 45).

Due to the steep slopes of the canyon walls there was little possibility for escape if anyone was caught on the road. A state engineer later commented that five people died from the flood, but added, "Had it occurred on a Sunday or a holiday, when the canyon is usually crowded with cars and picnic parties, the loss of life might have been appalling" (Cowden, 1934: 47).

During the 1920s and into the early 1930s, SH 74 started at current State Highway 103-5 at Echo Lake, and took current State Highway 103 east, through Bergen Park and Evergreen, to US 285 at Morrison. The 1938 State Highway Map shows State Highway 68 replacing SH 74 from Echo Lake to Bergen Park, and SH74 was turned northward to US 40 as in its current configuration (Colorado Department of Highways, 1938(b)).

The City of Denver sustained State Highway 74 during its first two-and-a-half decades as an auto road, but it took nature's capriciousness and federal New Deal money to create the modern highway. Civilian Conservation Corps (CCC) Camp SP-13-C was established on June 30, 1935, just west of Morrison, below a bend in the highway. The young men stationed at the camp were primarily engaged in building a huge amphitheater in the Park of the Red Rocks. It took five years and 120 enlistees to shape the open-air theatre out of the surrounding rock and create a centerpiece of the Mountain Parks system. The only remaining CCC camp in Colorado, the barracks received a listing on the National Register of Historic Places on May 8, 1990 (Gleyre and Alleger, 1936: 79-80; Marriott, 1998: 182-3).

By the late 1930s, another federal work program, the Works Progress Administration (WPA), took charge of a reconstruction project in the wake of a September 1938 flood. Funded by $486,588 in federal money, WPA enlistees blasted a 40-foot-wide shelf for the highway and built retaining walls along Bear Creek Canyon from Morrison to Starbuck during the spring of 1939. Crews raised nearly 4,600 feet of masonry rubble walls to protect the highway at points where the floodwaters struck the previous year. The walls measured seven to 34 feet in height and from 3.5 to 17 feet wide at the base (Rocky Mountain News, May 28, 1939: 2).

In 1956, the State Highway Department adopted a resolution to realign SH 74 according to Federal Aid Secondary Project No. S 0098 (1) and abandon certain portions of the highway along Bear Creek (Colorado Department of Highways, 1956: 282). The following year, the Highway Department widened and resurfaced three miles of the road between Evergreen and Kittredge with $365,000 in allocated funds (Rocky Mountain Construction, June 15, 1957: N-2).

During the 1990s, CDOT expanded the highway between Evergreen and the interstate into an expressway. Work began in the summer of 1993, when CDOT spent $8 million to widen a mile of SH 74 and improve the El Rancho Interchange at I-70 (Rocky Mountain News, May 16, 1993: 34-A). Since 1996, this portion of SH 74 has been a four-lane divided highway from I-70 south to the south end of Bergen Park. From Bergen Park, the highway grows to a five-lane undivided expressway to west Evergreen. The most recent additions to SH 74 came in 2000, when the state replaced bridges over Saw Mill Gulch near Idledale and Cold Springs Gulch north of Evergreen (Colorado Department of Transportation, 2000(a): 13).

11.4.1 Eligibility of SH 74

SH 74 is the primary road through the Denver Mountain Parks system. First dreamed of and built during the early 1910s, the Denver Mountain Parks system remains a unique example of a municipality preserving a variety of natural resources beyond its city limits. SH 74 also showcases PWA-era rock walls and retains a handful of structures left by the Denver Motor Club in the early 20th century and the Civilian Conservation Corps in the 1930s. In 1990, Bear Creek Canyon Road (SH 74) from Morrison to Evergreen was listed on the National Register of Historic Places. (Marriott, 1998: 183) It is included in this historic highway context to identify the changes to the highway since placement and to encourage preservations to follow the examples set by the submission.

According to the National Task Force for Historic Roads (NTFHR), aesthetic routes such as parkways and park roads were designed and developed for leisure, recreation and commemoration. These roads “typically follow the natural topography of the region and are most often associated with a designed landscape or park space” (Marriott, 1998: 11). Following these principles, SH 74 from Morrison to Evergreen is a prime example of an aesthetic route.

11.4.2 Synopsis of Site Survey of SH 74 – 17.99 miles from milepost 0.00 at the junction of I-70 Exit 252 interchange to milepost 17.99 at junction of SH 8 in Morrison (survey conducted February 13, 2002)

SH 74 at the I-70 junction is a modern six-lane road completed in the early 1990s. The road narrows to four lanes and is divided by a concrete Johnson Wall guardrail. The road continues as six-lanes until it reaches Bergen Park. At this point the road narrows to four lanes. At mile five, there is a steep rise in the road wherein the road narrows again to a two-lane highway. The road then curves around Bear Creek Lake and enters the town of Evergreen. The road in Evergreen is narrow and has broken curbs. The asphalt is old and crumbling.

Exiting the town of Evergreen, the road remains a two lane and begins to broaden, following the curve of Bear Creek. A curve in the original road was straightened. A new bridge has been built to span Bear Creek. The original concrete bridge is located approximately 75 feet east of the new bridge. The original bridge has a concrete platform, but new steel guardrails have been installed. This portion of the road is dirt and tree-lined.

Driving east, the road curves as it traces Bear Creek. The road is narrow, with limited areas for turn-offs. The north side of the road is cut from the side of the hills. Immediately past Cole Springs (where there is a bridge) exists a stone embankment wall on private property. The wall is dry-laid and consistent with CCC construction methods.

Immediately east of the town of Idledale is a section of old SH 74. The road is on the south side of the current SH 74. Currently, the road is dirt and serves as a private drive to several private homes. Situated along the north side of this road is the old spring pavilion. The pavilion has a pyramid roof. The supports and walls are stone (Plate 17).

Plate 17. Spring shelter along Shady Lane – the old alignment of SH 74 near Idledale. Note the current alignment above the shelter.

Traveling further east the road winds through Bear Creek Canyon for three miles. It is here that the road is cut from the side of the mountain with no turn-off areas. The CCC had built a large stone embankment located at mile 17. The stone embankment is approximately 200 feet in length. The embankment is very steep. Photography of the embankment is difficult as there is no shoulder at this point of the road and the guardrails run alongside the road.

After leaving the canyon, the road slopes downward towards Morrison and SH 8. The junction of the two highways is monitored by a traffic light and divided by a concrete median. There are no shoulders and the embankment on the south side is gently sloped. Immediately south of the road and prior to reaching the junction is the location of the CCC camp. The camp is visible from the road and retains its original integrity. Original buildings and stone features remain within the camp. A survivor of the era, the camp is today used as a Denver Mountain Park facility.

11.5 Historical Summary of US Highway 6 From Brush To Sterling (5LO479.1; 5MR743.1; 5WN171.1)

The advent of automobiles on the Omaha-Lincoln-Denver motor trail through northeastern Colorado brought significant change to the region. Similar to the rest of rural America, the farming communities of this region realized the need for decent "farm-to-market" roads.

Funded by civic and commercial groups, auto trails like the Omaha-Lincoln-Denver Highway was an early component of today's US Highway 6. Colorado's portion of US Highway 6 crosses 467 miles of the state, but this summary examines the development of 35 miles from milepost 371.69 at the junction of I-76/Spur US 34 Exit 92 interchange east of Brush to milepost 406.56 at the Junction I-76 at the Exit 125 interchange east of Sterling (Figure 14).

Figure 14. **US 6 –** Approximately 35 miles from milepost 371.69 at the Junction of Interstate 76/Spur US 34 Exit 92 interchange east of Brush to milepost 406.56 at the Jct I-76 Ext 125 interchange east of Sterling (1994 Rand McNally Road Atlas).

The state's involvement in automobile road construction through northeast Colorado began on June 15, 1910, when the State Highway Commission classified 112 miles of the Omaha-Lincoln-Denver route from Fort Morgan to the Colorado-Nebraska state line as State Primary Road No. 9 (Denver Chamber of Commerce, c. 1912: 35)[Figure 15].

Published in the 1910s, the state's first tourism guide, Highways of Colorado, found that the 42.3-mile drive from Brush to Sterling featured "good graded roads partly dragged, somewhat slippery after rains," but "dried out quickly." However, the road demanded a motorist's complete attention, because there were 20 "tortuous twists and right angles" from Merino to Brush and frequent railroad crossings (Denver Chamber of Commerce, c. 1912: 49).

Northeastern Colorado's small farming towns welcomed automobile highway construction. One commented: "As more miles of highway became paved and attracted more cars and trucks, there was a need for garages to sell them, mechanics to repair the vehicles, filling stations to provide gas and hotels and cafes where travelers could stop for the night or eat meals" (Fort Sedgwick Historical Society, 1982: C-34). Most rural Coloradoans saw the car as a way out rather than a medium bringing in tourist dollars. Similar to other agricultural regions nationwide, residents of northeastern Colorado wanted better roads to take their products to market and to shop in the state's cities. Early in its existence, the State Highway Commission realized the importance of this road. In a 1911 letter from Commissioner Thomas Tully to the Nebraska State Road Association, Tully explained the importance of this link between both states and the rest of the nation:

"Colorado has during the past year expended considerable money extending her roads through Morgan, Logan and Sedgwick Counties to meet the road following along the Union Pacific." (Colorado Department of Highways, 1911 (c)).

In 1919, a Federal Aid appropriation of $11,000 (of which the state provided $5,500) paid for the first half mile of concrete on State Road No. 9, south of Sterling (Colorado Highway Bulletin, January 1919: 13).

Figure 15 – Stair stepping along property divisions and county lines over the Eastern High Plains, the Omaha-Lincoln-Denver Highway was the primary automobile route into Denver in 1910 (Source: Denver Chamber of Commerce, c. 1912: 48).

In May 1923, the State Highway Department renamed State Road No. 9 to State Highway 2 (SH 2) from Sterling to Wiggins. The Highway Department planned to take the kinks out of SH 2 and provide a direct route from Nebraska to Denver. In the early 1920s, department engineers designed a through, trunk highway from Sterling to Fort Morgan. The project included concreting the the last gap between Brush and Merino. An improved SH 2 failed to happen, due to a battle between the participating counties of Morgan, Washington, and Logan over the right-of-way between Brush and Merino. In 1924, the state intended to spend $93,000 on a highway west of Fort Morgan. Fort Morgan's city fathers also found themselves in a fight over a separate right-of-way issue. Fort Morgan's troubles presented an opportunity to complete the road from Brush to Merino. The state publication Colorado Highways commented:

"The securing of the right-of-way from Brush to Merino has been the result of conferences between the county commissioners of Morgan, Washington and Logan counties and the state highway officials. The $93,000 was to have been expended for a road west from Fort Morgan, but inability to secure an acceptable right-of-way at the present time led to the money being switched to the Brush-Merino projects. It is thought that the $93,000 will be sufficient to put the roadbed in shape thru the three counties" (MacDonald, 1924: 18).

On April 16, 1925, the State Highway Department opened bids for construction of 19 miles of grading and sand-clay surfacing between Merino and Brush. This road was an entirely new line through parts of Logan, Washington, and Morgan counties, and the new route eliminated the stair-step stretch of road between Merino and Brush. Road crews routed cars along the old SH 2 while work on the new road progressed. Crews used a light coating of sand and gravel for surfacing, preparatory to paving the road during the summer of 1926. It was the largest grading project contracted by the state at the time. The contracting firm of Scott & Curlee completed the grade in late summer of 1925 at a cost of $102,627 (Colorado Highways, April 1925, 16: June-July 1925: 5).

On August 15, 1927, the Highway Department awarded a contract to Fort Morgan's Edward Selander to lay 10 miles of standard 18-foot concrete pavement between Merino and Brush on State Highway 2. Construction lasted 200 working days and cost $245,043. The project included laying 102,750 square yards of concrete at a cost of $2.07 per square yard. The State Highway Department wanted the job done quickly because State Highway 2 had grown in importance as a feeder road for traffic coming off the Lincoln Highway at Julesburg into Colorado (Taylor, August 1927: 5).
In 1927, the Highway Department modified its road numbering system and re-identified State Highway 2 from Greeley to Sterling as US Highway 38. This designation lasted until 1932, when the Roosevelt Coast-to-Coast Highway extended into Denver. During the late 1920s and 1930s, the federal numerical designation for the Roosevelt Highway was US 6. According to the state road map, the Roosevelt Highway was paved from Sterling to west of Hillrose and surfaced from Hillrose to Brush (Colorado Department of Highways, 1930(a)).

In July 1959, the state began an asphalt-surfacing overlay project of 45.3 miles on US 6 between Brush and Julesburg. (Colorado Department of Highways, 1959(a)). A department examination from that year reported a mixture of surfaces over a 25-mile stretch between Brush and Atwood, from oiled mat to concrete to a combination of concrete and oil. The longest expanse, 8.2 miles of concrete, survived decades of high-plains weather in "good condition" according to the district construction engineer. Covering all the old surfaces with asphalt paving began in August 1959 (Colorado Department of Highways, 1959(b)).

In the 1960 Fiscal Year highway budget, the state granted $200,000 for right-of-way to construct two additional lanes of traffic southwest of Sterling. Additionally, the various mixtures of pavement through Morgan, Logan and Sedgwick Counties would be covered with asphalt from a $300,000 appropriation for resurfacing (Rocky Mountain Construction, June 15, 1959: N-18).

After completion of I-76 through northeastern Colorado during the 1970s, US Highway 6 existed autonomously from I-76 at exit 92 northeast of Brush, then following the South Platte River parallel to I-76 northwest. US Highway 6 is a four-lane divided highway from Atwood to Sterling. Despite an array of number designations and highway realignments, the original US 6 remains the main street of three northeastern farming communities–Hillrose, Merino and Atwood. In these small towns, the importance of good roads, first expressed by rural Coloradoans nearly a century ago, remains evident.

11.5.1 Eligibility of US 6 from Brush to Sterling

Since the gold rush, US 6 has served as Colorado's link to Nebraska and other points further east. During the automobile era, US 6 began life as the Omaha-Lincoln-Denver (OLD) road. During the 1920s, both state and federal governments spent a great deal of money hard-surfacing and realigning the highway. For most of the 20th century, it was rural Northeastern Colorado's lifeline to ship goods and to shop in the larger cities along the highway. US 6 is worthy of submission under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history). US 6 reflects the agricultural nature of the region it traverses. The bridges, ditches, and the individual designs of culverts underscore the historic importance of this highway.

US 6 retained much of its original character as an engineered route. As an engineered route, US 6 continues as one of the primary "farm-to-market" roads for northeastern Colorado's agricultural communities and survives as an important link between Denver, northeastern Colorado and Nebraska.

11.5.2 Synopsis of Site Survey of US 6 – approximately 35 miles from milepost 371.69 at the junction of Interstate 76/Spur US 34, Exit 92 interchange east of Brush to milepost 406.56 at the junction I-76, Exit 125 interchange east of Sterling (survey conducted February 1, 2002)

US 6 is a two-lane highway with broad shoulders. The road appears to have new asphalt and a sloped embankment on the east side of the road. The road is approximately 24 feet wide. The embankment on the west side of the road is steep with no shoulders. There are several wooden bridges along this highway; all are identical and constructed according to State Highway Department design standards. The bridges consist of wood planks, wood piers, and abutments (Plate 18). Scattered along US 6 were five concrete bridges – similar in design, period of construction (early 1940s), and materials. These bridges feature flat rails with arches and flared approaches. They were also coated with a reflective paint (Plate 19).

The road retains its two-lane passing width through the towns of Hillrose, Merino and Atwood. Along this stretch of the highway, large, concrete, gated irrigation ditches are located on both the west and east side of the roads. Large concrete culverts are also situated along this stretch. The irrigation ditches link to the highway culverts to assist in the irrigation of the nearby farmlands. One culvert, in particular, has an elevated, concrete-flared abutment standing two feet high. The drainage pipe is positioned at a severe downward angle running underneath the road (Plates 20 & 21).

Two large, modern (c. 1966) bridges (both identified by CDOT as the South Platte River Bridges) have been constructed over the South Platte River. The South Platte River Bridges have new concrete platforms, steel rails, and approaches. Evidence of the old highway curbing was found on the east side of the bridges and in the structure of drainage culverts (Plates 22 & 23).

Immediately south of the town of Sterling, the road is divided and the asphalt is new on the southbound lanes. The two lanes heading north appear to be the original highway, judging by an older wooden bridge (Structure ID No. B-23-A, built 1941), over Pawnee Creek on this side of the road. The bridge includes original wooden curbing on its east side. The bridge on the southbound lanes has modern metal guardrails and no curbing. According to the Colorado Department of Transportation, the state completed this portion (Structure ID No. B-23-AG) over Pawnee Creek in 1961 (Colorado Department of Transportation, 1999: 8(b))

Plate 18. Timber curbing along bridge over Pawnee Creek, Logan County. View south down US 6.

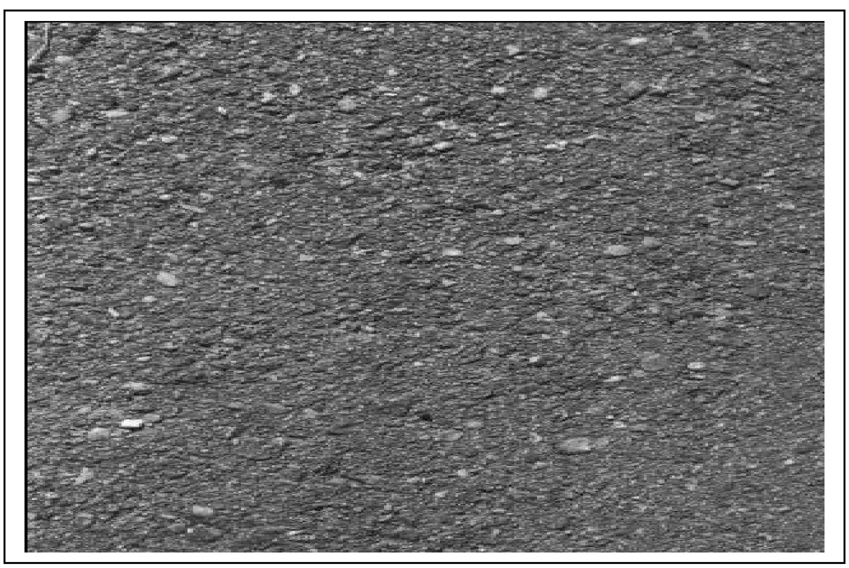

Plate 19. Close-up of asphalt on US 6.

Plate 20. Raised culvert on north side of US 6 (c. 1925). Culvert stands 2’8” high.

Plate 21. Concrete culvert with grate. North of Merino on US 6.

Plate 22. Asphalt mountable curbing inside guardrail on US 6.

Plate 23. View east of curbing leading to drainpipe near South Platte River on US 6.

Due north of Pawnee Creek is another raised culvert. Again, the culvert is over two feet in height and the drainage pipe is positioned at a sharp angle to run under the roadway. Entering the town of Sterling, US 6 becomes South 3rd Street and the road's surface changes from asphalt to concrete. This portion of concrete is seamed and grooved. The survey concluded at the crossroads of US 6 and US Highway 138 in downtown Sterling.

11.6 Historical Summary of US Highway 85 From Trinidad To Walsenburg (5HF1925.1; 5LA9132.2)

The completion of Interstate 25 in 1967 ended one era and launched another. Since the mid-1960s, I-25 has served as the main highway along Colorado's Front Range. Houses, hotels, and businesses hug the I-25 corridor from Fort Collins to Colorado Springs. On highway maps and some old road signs, Interstate 25 co-exists with its earlier incarnations as US 85 or US 87. This summary focuses on the approximately 37 miles of US Highway 85 in the Purgatoire Valley from Trinidad to Walsenburg (Figure 16).

US Highway 85 is another Colorado highway known by many different names and numbers. The Highways of Colorado auto tourist guide from the early 1910s first identified the automobile road from Cheyenne through Colorado to Raton, New Mexico as the Great North and South Highway (Denver Chamber of Commerce, c. 1912: 176-7). The first state highway map (1916) shows the unimproved state highway between Walsenburg and Trinidad as State Highway 26. That year, crews started pouring concrete along SH 26 from Pueblo to the Huerfano county line (Colorado State Highway Commission, Map of the State Highways of Colorado, 1916). In May 1922, the Colorado Highway Advisory Board renumbered the state's roads. The first road map after renumbering labeled the highway from Fort Collins to the New Mexico State Line as State Highway 1 (Colorado State Highway Commission, 1922(b)). The establishment of the national highway numbering system in 1927 added another set of numbers, due to the state's unusual policy of keeping the old state highway numbers along with the new US highway designations on maps and signage. Since the late 1920s, the portion of highway between Trinidad and Walsenburg was a part of US Highway 85.

Figure 16. US 85 – Approximately 40 miles from milepost 13 in Trinidad to milepost 50 in Walsenburg (1994 Rand McNally Road Atlas).

In 1917, Colorado received its first highway funds from the federal government. The largest sum, $267,191.91, went toward grading and graveling Federal Aid Project No. 2 between Pueblo and Trinidad (Wiley, 1976: 16). The auto road's original alignment ran along the eastern base of the mountains through a number of small, coal-mining towns. The highway symbolized a divide between the two great economies of the region. Most of the land east of the road was dry-land farms, while the mines and mining towns sat west of the highway.

The Highway Commission graded four sections of State Highway 1 between Walsenburg and Trinidad during the summer of 1919 (Colorado State Highway Commission, 1919: 1). The infusion of federal funding had state engineers estimating would it cost to further improve the road. According to the State Highway Commission's Annual Budget for 1920, the cost of concreting the highway through Huerfano and Las Animas counties would total $549,294.22. Both the federal and state government faced an additional financial burden of $282,102.31 each to complete this portion of the highway (Colorado State Highway Commission, 1920: 4). Progress to surface this 40-mile section crept along for the remainder of the 1920s. The 1930 State Highway map showed US 85 from Walsenburg to Aguilar remained graveled while the Highway Department had paved 15-mile stretch from Aguilar to Trinidad (Colorado Department of Highways: 1930(a)).

Federal New Deal programs like the WPA and the Public Works Administration eventually asphalted US 85 during the late 1930s. A 1941 progress map published by the Highway Department showed all of US 85–including Walsenburg to Trinidad–covered in asphalt (Rocky Mountain Contractor, September 10, 1941(a): 6). Pre-war drivers showed their appreciation by making the Trinidad port of entry on US 85-87 the third-most-popular route into Colorado, as 9,948 vehicles passed through that location from August 9-17, 1941. During those nine days, only the Limon entry into Colorado (US 24 and US 40) and the Holly port (US 50) welcomed more visitors (Rocky Mountain Contractor, September 10, 1941(b): 8).

Everyone involved with the state's highways knew that traffic would only increase after World War II. To address the anticipated traffic increase, Interstate 25 was planned as the primary north-south route through eastern Colorado. I-25 was built along much of the alignment of US 85 and 87. In the study area, there remains much of the old road west of I-25 between exits 34 to 42. The largest town in the vicinity of the old US 85 is the mining community of Aguilar. A map in the 1957 Annual Report of the Colorado Department of Highways shows the realigned I-25/US 85-87 for the first time. Actual construction, however, continued into the mid-1960s (Colorado Department of Highways, 1957: 5).

In the Department of Highways budget for Fiscal Year 1960, federal dollars changed the alignment of US85/US87/SH 1 in Las Animas and Huerfano counties. That year, the state allotted $1.5 million to grade a portion of the new interstate known as the Aguilar bypass in Huerfano and Las Animas Counties and another $800,000 for the realigned interstate south of Walsenburg in Huerfano County (Rocky Mountain Construction, June 15, 1959: 16-N). The following year, the state apportioned $1.5 million to pave the Aguilar bypass and another $180,000 for grading and structures from Walsenburg south to the Huerfano County Line (Rocky Mountain Construction, June 20, 1960: N-12). According to October 1961 Bureau of Public Roads Construction Inspection Report, 74 men worked on a 14-mile stretch of the new Interstate 25 near Aguilar (U.S. Department of Commerce, 1961).

During the 1960s, the State Highway Department began the work of building a new Interstate 25 over the remnants of US 85-87. The work included banking (known in the highway engineers' lexicon as superelevation) and widening of curves on crowned and divided highways. Superelevation of the interstate allowed cars to maintain a speed consistent with the roadway's posted speed. Crews also had to place traffic and identification signs, and dig and install culverts, concrete pipe, barriers, and snow fences (Colorado Department of Highways, 1964).

In 1966, the Pueblo Chamber of Commerce petitioned the Department of Highways to four-lane U.S. 85-87 from Pueblo to the New Mexico border. The chamber's request went to the Pueblo's city and county officials before submission to the State Highway Commission for their 1967 budget (Rocky Mountain News, October 3, 1966: 37). In the summer of 2000, the state opened the El Moro/Trinidad rest area, replacing the two existing tourist facilities (Colorado Department of Transportation, 2000(a): 15).

11.6.1 Eligibility of US 85 from Trinidad to Walsenburg

Following a path that was in place before the first Europeans, US 85 served as the state's primary transportation artery east of the Front Range for more than 150 years. Despite its proximity to modern I-25, US 85 between Trinidad and Walsenburg remains in excellent condition and leads to a number of old coal mining towns forgotten by the designers of the interstate route. Between those two points are numerous well-preserved examples of surface types, bridges, culverts and signage. It is for these reasons, the 40 miles of road between Trinidad and Walsenburg qualifies under National Register Criterion A, as it made a significant contribution to Colorado's highway history. This stretch of US 85 is one of the best candidates for submission to the National Register among the ten surveyed for the integrity of the existing features and materials.

For the role it played in moving people along the Front Range during the first decades of automobile travel in Colorado, this portion of US 85 should be classified as a cultural route under National Task Force for Historic Roads standards. The integrity of the road, and the well-maintained towns along its route, provide the preservationist with a true sense of what it was like to travel this route during the early 20th century.

11.6.2 Synopsis of Site Survey of US 85 – approximately 40 miles from milepost 13 in Trinidad to milepost 50 in Walsenburg (survey conducted January 29, 2002)

Exit 13 in Trinidad is a multiple-exit area of the highway. Overhead bridges constructed out of concrete conform to highway design standards. The highway has asphalt shoulders on the right-hand side of the road and is wider than the shoulder on the left side of the road. The original US 85 begins north of Trinidad and is currently known as North

Linden Avenue. North Linden Avenue is also known as County Road 71.1 north of the Trinidad city limits. This portion of US 85 north of Trinidad was at one time paved. Now, only small patches of pavement remain and in most places consist of hard-packed dirt (Metcalf Archaeological Consultants, 2000). The old highway continues as a narrow two-lane, paved road and extends for five miles north out of the city where it dead ends on the west side of I-25. Old US 85 picks up on the east side of I-25 at Exit 23. It is currently used as the frontage road for the highway. The road consists of the original asphalt and is approximately 24 feet wide. The road continues for two miles before it crosses underneath I-25 to the west side of the highway. US 85 dead ends approximately half of a mile later into a field of hay (Plates 24 & 25).

The road picks up again on the west side of I-25 at Exit 27. It is currently known as CR 63. It extends north for four miles prior to turning westward into the town of Aguilar. These four miles are flat, narrow and have no embankments. Portions of the old, seamed concrete is visible under the asphalt. A lone bridge over the Del Agua Arroyo has concrete rails, platforms and supports. The bridge is a victim of neglect. Numerous old reflector posts, which are approximately three feet high, are painted yellow with yellow reflectors (Plate 26).

Old US 85 through Aguilar is concrete with an asphalt covering. A concrete road bridge is located at the northern edge of town. As the road travels north, there are several portions of the seamed concrete in good condition. Other parts of the road are covered with dirt and old, broken asphalt. Several bridges are also located on this portion of the road. They are wood rail with wood supports and asphalt platforms. North of Aguilar, this road is also referred to as County Road 53.7. This portion continues north for seven miles before crossing beneath I-25. The road then follows north on the eastern side of the Interstate (Plate 27).

Plate 24. Large chunks of aggregate on old US 85; approximately 500 feet west of I-25.

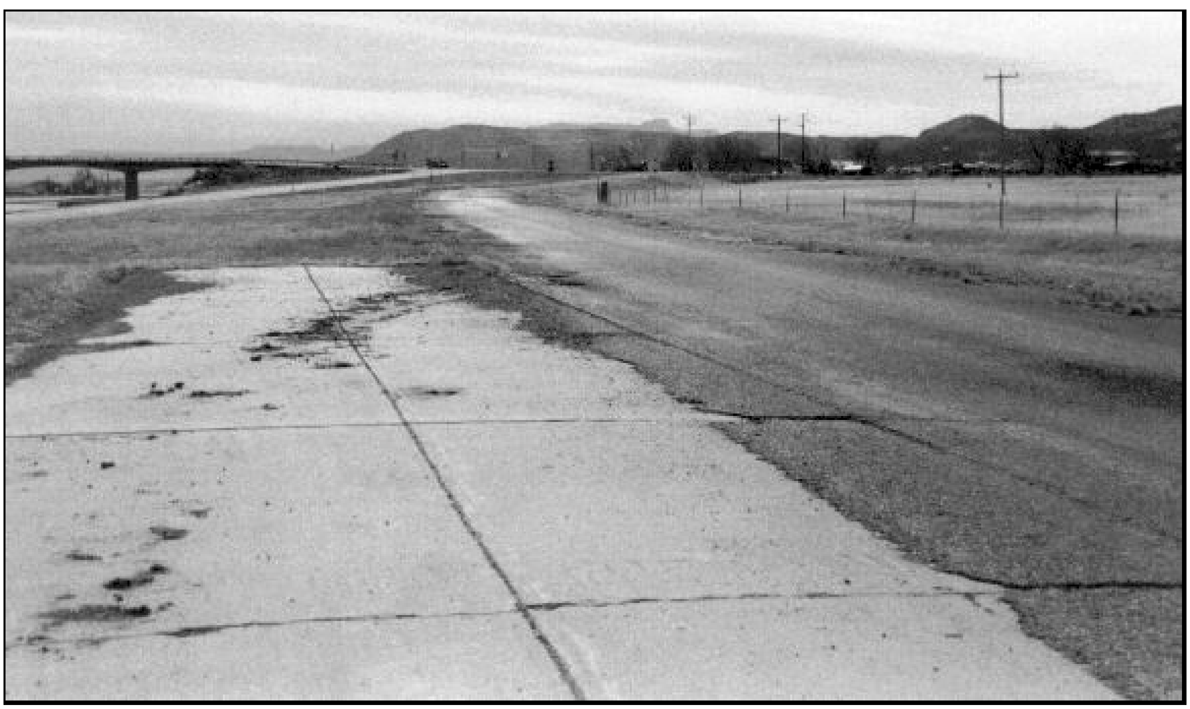

Plate 25. Old asphalt gives way to concrete. Southwest view of US 85.

Plate 26. Battered wooden reflector poles looking north, Huerfano County, US 85.

Plate 27. West view of wooden culvert on old US 85, Las Animas County.

The road on the east side of I-25 has several rises and dips. It appears that this road floods easily in heavy rains. The road is made of asphalt, has no shoulders and is approximately 24-feet wide. Old US 85 ends at Exit 49 in Walsenburg.

11.7 Historical Summary Of US Highway 385 From Springfield To Cheyenne Wells (5BA879.1; 5CH198.1; 5KW121.1; 5PW171.1)

Visited by generations of travelers, southeastern Colorado has been a destination point for only a few. Traders, soldiers and farmers have left their mark on the region's historical and economic character, but this corner of Colorado remains sparsely populated. The automobile's arrival ushered in the most drastic change over the past hundred years. Supported by federal funding, the State Highway Department built State Highway 51 (SH 51) during the 1920s. The hard-packed road connected agricultural communities like Cheyenne Wells and Springfield as they sought to survive economic isolation from the rest of Colorado. SH 51 was re-designated US Highway 385 in 1957, but the road remains Colorado's most isolated thoroughfare. A 1996 traffic census conducted by CDOT confirmed that US 385 is the state's least traveled US Highway. That year saw the largest number of vehicles, 16,500, pass just south of US 50 at Lamar, while CDOT counted only 520 vehicles near the town of Sheridan Lake (Salek, The Highways of Colorado, http://www.mesalek.com.highways).

The complete US 385 runs 317.63 miles northward from the Oklahoma State Line to the Wyoming State Line northwest of Julesburg. The portion of the road addressed here is about one-third of the total length of the highway in Colorado. From the Oklahoma border to Lamar, US 385 is co-located for 77 miles with US 287. From the intersection of Main and Olive streets in Lamar, US 287 follows US 50 west toward Pueblo, while US 385 follows US 50 east on Olive. US 50 and US 385 continue east to the town of Carlton before heading into Granada via Goff Avenue. US 385 diverges from US 50 north on Granada's Main Street and heads north to Bristol. The road crosses State Highway 96 just west of Sheridan Lake before turning north to Cheyenne Wells (Figure 17).

Figure 17. US 385 – Approximately 95 miles from milepost 28.77 at the junction of US 160 south of Springfield to milepost 149.70 east of junction with US 40 at Cheyenne Wells (1994 Rand McNally Road Atlas).

The 15 miles US 385 shares with US 50 between Lamar and Granada boasts a distinguished travel history. During the 1850s, the U.S. Army opened the Fort Union Military Road, which was alternately known as the Granada-Fort Union Wagon Road and the Fort Leavenworth Road. Freighters moving military goods and arms from Fort Leavenworth, Kansas to Fort Union, New Mexico primarily used this road. This portion was part of the Santa Fe Trail that went southwest from the Mountain Branch at Old Granada, Colorado to Emry Gap to Fort Union. Between Lamar and Springfield, US 385 can trace the path of a wagon road used heavily during the latter 19th century (Norgren, 1998: 5).

The State Highway Commission began designating (numbering) highways in the early 1910s. On March 2, 1912, the commission created State Primary Road No. 34 "starting at the limits of the city of Lamar, thence in a southerly direction to the town of Springfield" (Colorado State Highway Commission, 1912: 267). Teams of scrapers graded SH 34 south of Lamar the following year (Norgren, 1998: 5).

Concurrently, the State Highway Commission numbered and graded roads in Kiowa and Cheyenne counties. During the first years of automobile use in Colorado, the only way to drive from Cheyenne Wells to Springfield was to head west along the elbow-jointed State Highway 32 to Highway 17-S at the town of Kit Carson. Highway 17-S coursed southward, bent around the Neeso Pah and Nee Grande Reservoirs, and ended at Lamar. At Lamar, the road became State Highway 34. South of Lamar, SH 34 continued on to Springfield and to the Oklahoma border (Colorado State Highway Commission, 1916).

Each year during the 1910s, rural counties received a stipend from the state and/or the federal government to build automobile roads. Highway Commission minutes from the 1910s and 1920s illustrate the slow growth of the region's roads. The portion of SH 34 between Lamar and Springfield received much initial attention from the commission. In 1914, the commissioners approved a contract for grading and placement of cross drains and surfacing between Lamar and Granada. In 1919, Colorado graded and drained 30 miles of SH 34 from Lamar South, at a cost to the state of $6,000. A subsequent project graded and drained 15 miles from Springfield north at a total of $3,000 (Colorado Highways Bulletin, January 1919: 13).

In 1920, counties on the eastern plains counties obtained their first federal funding for roads. Prowers County received $24,689.71 in Federal Aid Project (FAP) money to grade the road from Lamar south to Springfield. Kiowa County received $25,000 in FAP funding to improve State Highway 17-S from Eads to Kit Carson and $30,000 for improvements to State Highway 32 from Cheyenne Wells west to Kit Carson (Colorado State Highway Commission, 1920: 5-6). In 1922, the state spent $5,000 on a bridge across Rush Creek between Kit Carson and Eads (Colorado State Highway Commission, 1922(a): 16).

Federal money and state initiative built State Highway 5l from Granada to Cheyenne Wells during the early 1920s. By 1930, portions of the road from Springfield to Lamar and Lamar to Granada were oil processed. From Granada north to the Cheyenne County border, the state graded SH 51. From the Cheyenne County border to Cheyenne Wells, the road was surfaced (Colorado Department of Highways, Map of the State Highways of Colorado, 1930). The highway's original design connected with Kansas State Highway 51 east of Granada. In 1955, the state abandoned that connection to make way for the redesigned US 385. In 1957, SH 51 was re-designated US 385. Today's US 385 is the same route first designed and built by the state in the 1920s. (Norgren, 1998: 5).

US 385 was improved to modern standards in the early 1960s, with funding provided under the Federal Aid Highways Act of 1956. Much of the construction occurred during the summers of 1960 and 1961. In 1960, crews laid 15 miles of asphalt paving south of Lamar at a cost of $104,417 (Colorado Department of Highways, 1960: 5-6, 9). In September 1961, contractors laid 11.581 miles of asphalt surfacing from the town of Cheyenne Wells south to the Cheyenne County Line under a $200,000 Highway Department appropriation (Rocky Mountain Construction, September 4, 1961: 8). In 1961, the state authorized $90,000 in paving from Sheridan Lake south to the Kiowa County Line (Rocky Mountain Construction, June 12, 1961, N-4). In the 1964 fiscal year, the state authorized $400,000 for 10 miles of asphalt paving north from Sheridan Lake to the Kiowa County border (Rocky Mountain Construction, June 11, 1963: N-5).

Since its modernization in the early 1960s, US 385 has attracted little attention beyond the Arkansas Valley and the Eastern Plains. That changed on the morning of September 27, 1977, when a tractor-trailer carrying 21 tons of yellowcake, or uranium oxide, overturned on US 385 approximately 15 miles north of Springfield. It was the largest spill of yellowcake in the nation's history. Fortunately, wind failed to carry the uranium oxide beyond the accident site. The Environmental Protection Agency subsequently claimed the spill did not endanger public health. The incident heightened public awareness to the dangers of transporting hazardous materials over the nation's highways (Denver Post, 1977: 2).

The entire length of US 287 underwent an upgrade during the late 1990s, including completion of a 12-mile concrete reconstruction of US 385/US287 north of Springfield in 2000 (Colorado Department of Transportation, 2000(a): 6).

11.7.1 Eligibility of US 385 from Cheyenne Wells to Springfield

Since the 1910s, US 385 has served as the primary north-south road though rural Southeastern Colorado. As funding became available, the state and federal governments improved the highway sporadically beginning in the 1910s and on through the interstate age of the 1950s. From a socio-economic viewpoint, US 385 symbolizes attempts by governmental authorities to sustain the economy and people of a certain region through highway construction. From a preservation perspective, other than the fact that is the main thoroughfare for southwestern Colorado, there is not much left that makes US 385 worthy of eligibility for the National Register. The highway surface has been reconditioned over the years and there are few historic examples of culverts, asphalt, and other elements of design.

Under definitions established by the National Task Force for Historic Roads, US 385 is best described as an engineered route. The highway is an important element in maintaining the agricultural economy of southwestern Colorado.

11.7.2 Synopsis of Site Survey of US 385 – approximately 95 miles from milepost 149.70 at junction US 40 in Cheyenne Wells to milepost 28.77 at junction US 160 in Springfield (survey conducted January 28, 2002).

US 385 at the US 40 junction is a two-lane highway covered with asphalt. The road has narrow shoulders and drainage ditches. The road is flat and straight and crosses washes. A wide shoulder is situated on the west side of the road and the embankment is sloped. There are several wooden bridges situated along the highway, all of which appear to have been built during the early construction period of the road. The bridges are wood timber.

The road passes through the towns of Granada and Carlton. West of Carlton the road widens to approximately five lanes (central turn lane). The road changes to a divided highway in Lamar and consists of two lanes on either side of the highway. Exiting from the town, the road again is flat and straight. A wide shoulder is situated on the west side of the road and the embankment is sloped. New concrete has been poured on the highway approximately 10 miles south of Lamar. The remaining road is asphalt overtly in good condition. The road is virtually unchanged throughout the entire 95 miles of inspection (Plate 28).

Plate 33. Steep embankments on both sides of US 385 southwest of Lamar near the local airport.

11.8 Historical Summary of State Highway 13 (5GF2949; 5MF5138; 5RM4486)

From Indian massacres to oil-shale exploration to tourism, the trail that became State Highway 13 is the corridor through northwestern Colorado history. State Highway 13 begins at the Wyoming border south of the town of Baggs and courses 127 miles southward to Rifle. Since the 1880s, it has been the route connecting the region's three oldest and largest communities: Craig, Meeker and Rifle (Figure 18).

The U.S. Army established the original route of State Highway 13, then known as the Government Road, between 1880 and 1884. The Government Road ran from Ft. Steele in Wyoming to the San Juan Mountains in southwestern Colorado (Colorado Historical Society, 1995). Settlers later referred to the northwest Colorado portion of the road as the Meeker Trail. Before transformation into an automobile road, stagecoach and horse were the fastest forms of transportation over the trail. One passenger recalled that it took eight to 10 hours in 1892 to carry the mail approximately 30 miles from Rifle to Meeker, including three changes for new mounts. The Meeker Trail stagecoach run for passengers and mail lasted until 1918 (Bury, 1972: 8-9).

The first recorded mention of an automobile trip in Northwest Colorado was a Stanley Steamer chugging along Rifle's dirt streets in 1906. Other automobiles followed quickly in the wake of the initial horseless carriage. The Highways of Colorado tourism guide commented that the Meeker Trail was slippery when wet for automobiles, but kept in fair condition for stagecoaches (Denver Chamber of Commerce, c. 1912: 149). Driving was especially treacherous during the spring runoff. Melting snows turned the trail to mud, forcing many travelers to abandon automobiles and return to their horses for transportation. Rio Blanco and Garfield counties left the maintenance of Meeker Trail to local farmers. The counties required each farmer living near the trail to keep a certain section passable, using a team of four horses and a road drag (Bury, 1972: 8).

Figure 18. State Highway 13 – 127.99 miles from milepost 0.00 at the junction of I-70 Exit 90 interchange south of Rifle to milepost 127.99 at the Colorado-Wyoming border (1994 Rand McNally Road Atlas).

The State Highway Commission designated the Craig-to-Rifle portion of the Meeker Trail a primary state road (No. 42) on March 2, 1912. Passage from Craig to the Wyoming State Line, and Meeker to the Utah border received the same distinction on December 16 -- the state identified all three sections as State Highway 42 (the Meeker to Utah portion of SH 42 later became State Highway 64). In 1916, underscoring the importance of this road, the State Highway Advisory Board selected 42-miles of State Primary No. 42 from Rifle to Craig as one of the first recipients of federal aid money. The federal government and the state split the estimated construction cost of $79,082.85 of Federal Aid Project No. 4 (Colorado State Highway Commission, 1917(a): 214).

New highway construction on SH 42 continued throughout the decade. In December 1917, the state and federal government agreed to construct 17.5 miles of road from the town limits of Meeker north to the Rio Blanco County Line (Colorado State Highway Commission, 1917(b): 226). In July 1918, the Department of Highways reported upon "a few rough spots" from Meeker to the town of Axle, but stated that the highway from Axle to Craig was in first-class condition. The same year, the department reduced the grade and widened the road on Wise Hill, outside of Craig. At a cost of $5,000, the road was widened from eight to 20 feet, and the grade was lessened to 5.8 percent. From the Rio Blanco County Line to Meeker, the Highway Department listed the road in excellent condition over Nine-Mile Hill. In 1919, the state received more funding from the federal government to widen other dangerous narrow stretches (Colorado Highways Bulletin, October 1919: 22). Also that year, Meeker petitioned the commission to run SH 42 through the main street of town – a distance of 5,570 linear feet. The commission unanimously voted to make Meeker's main street a part of SH 42 (Colorado State Highway Commission, 1919: 302).

The next round of construction came nearly a decade later. In 1929, the state appropriated $75,000 to gravel-surface six miles of road south of Craig. In August of that year, the state awarded a $47,125 contract to Steamboat Transportation & Storage Company of Steamboat Springs to gravel-surface 19 miles of road between Rifle and Meeker. South of Meeker, the firm paved the road with crushed rock to upgrade the improvements made a decade previous (Colorado Highways, August 1929: 14). Modern alignment between Meeker and Rifle eliminated many of the curves, minor rises and dips left by the earlier grade. The enhanced road featured a 20-foot-wide crown with ditches along either side (Colorado Historical Society, 1995). During 1930, another contract for three miles of grading and gravel surfacing on the Meeker-Craig highway was awarded to Utah Construction Company. Completion of the project established a standard gravel road beginning at Craig and running 14 miles south to the Moffat County oil town of Hamilton (Colorado Highways, July 1931: 20). At the dawn of the 1930s, SH 13 was graded from the Wyoming state line to Craig, surfaced from Craig to the town of Hamilton, graded from Hamilton to 10 miles north of Meeker, and again surfaced 10 miles north of Meeker to Rifle (Colorado Department of Highways, 1930(a)).

In 1937, the State Highway Department abandoned much of the old SH 13 to realign and build a new highway. From the days of the Meeker Trail to the mid-1930s, the highway's original alignment between Meeker and Rifle closely followed the base of the Grand Hogback, placing it high above the Government Creek Valley bottom. The new alignment ran closer to Government Creek. For the new alignment, crews placed two inches of gravel surfacing at a rate of 27 tons per 100 linear feet of roadway, and at a rate of 58 tons per 100 linear feet of roadway for the 4-inch bottom course (Colorado Department of Highways, 1937). Two segments of abandoned road near Rifle remain in use as major local access roads (Colorado Historical Society, 1995).

In 1949, the state and federal government agreed to oil surface SH 13 from Craig to Meeker at a cost of $306,800 (Colorado Department of Highways, 1949(c)). During July of 1950, crews laid on top of the existing road approximately two inches of gravel placed at a rate of 30 tons per 100 linear feet of roadway. Standard specifications required that on top of the bottom layer, another two inches of compacted gravel would be placed at a rate of 25 tons per 100 linear feet of roadway. Road workers spread a medium-cure asphaltic road material as a prime coat over a 26-foot-wide area before placing oil-processed material. After placement, a flat-wheeled roller equipped with rubber tires compacted the mat to a smooth, firm surface (Colorado Department of Highways, 1950(a)).

Once the asphalt cooled, State Highway 13 became part of the multi-state, Canada-to-Mexico highway (US789). State maps identified SH 13 as US 789 from 1954 to the mid-1980s (Colorado Division of Highways, 1987: 3).

In 1975, the state extended the southern end of SH 13 from U.S. Highway 6 south to Exit 90 of Interstate 70, south of Rifle. Originally, the department built a half-mile spur from SH 13 south of Rifle, later redesigned into the existing highway. The department also realigned SH 13 through Craig during the mid-70s, going from Ranney Street north of Craig west along its current configuration. The state completed two major restructuring projects on SH 13 during 2000. First, it replaced a 1936 bridge over the White River; second, it leveled and resurfaced approximately eight miles of highway from Meeker's Airport Road to the foot of Nine Mile Gap (Colorado Department of Transportation, 2000(a): 14, 16).

11.8.1 Eligibility of SH 13

State Highway 13 is known by two other names – Garfield County Road 296 north of Rifle and Main Street in Meeker – for part of its alignment. There is a minimum amount of traffic on both sections and the integrity of the curbing, drainage, asphalt, and bituminous concrete is readily visible. Unfortunately, much of SH 13's original 1880s-to-1930s alignment hugging the mesas north of Rifle is on private land. Much of the remaining 127 miles has been improved and realigned over the years.

Because of the high degree of integrity remaining on Garfield County Road 296 and Meeker's Main Street, the National Register should consider State Highway 13 under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history). The culverts along County Road 296 and bituminous concrete surface retain a great deal of their integrity while Main Street is notable for its general alignment and asphalt curbing.

In accordance with definitions established by the National Task Force for Historic Roads, SH 13 is an engineered route based on the importance it holds in the lives of the region's residents and its foundation for northwestern Colorado's mining and ranching economies.

11.8.2 Synopsis of Site Survey of State Highway 13 – 127 miles from milepost 0.00 Jct I-70 Exit 90 Interchange south of Rifle to milepost 127.90 at the Wyoming border (survey conducted February 6, 2002)

SH 13 at the I-70 interchange begins under the overpass of I-70. The road is four-lanes wide with turn lanes for entrance onto the freeway. The road material is new asphalt. Entering into the town of Rifle, the road turns into a two lane with a center turn lane. Approximately 1-¼ mile north of town, the original SH 13 veers off to the east. This road is now known as County Road 296, and continues for approximately three quarters of a mile before reentering the current SH 13. The road is made of bituminous concrete and is 28 feet wide (Plate 29). Driving north on SH 13, the road's shoulders are approximately one car-length wide. The asphalt road has received repair work over the years. Various portions of the road feature guardrails along steep embankments. These rails are modern steel with wood-beam supports. Starting at mile marker six, the asphalt is newer than the previous five miles extending south into Rifle (Plate 30).

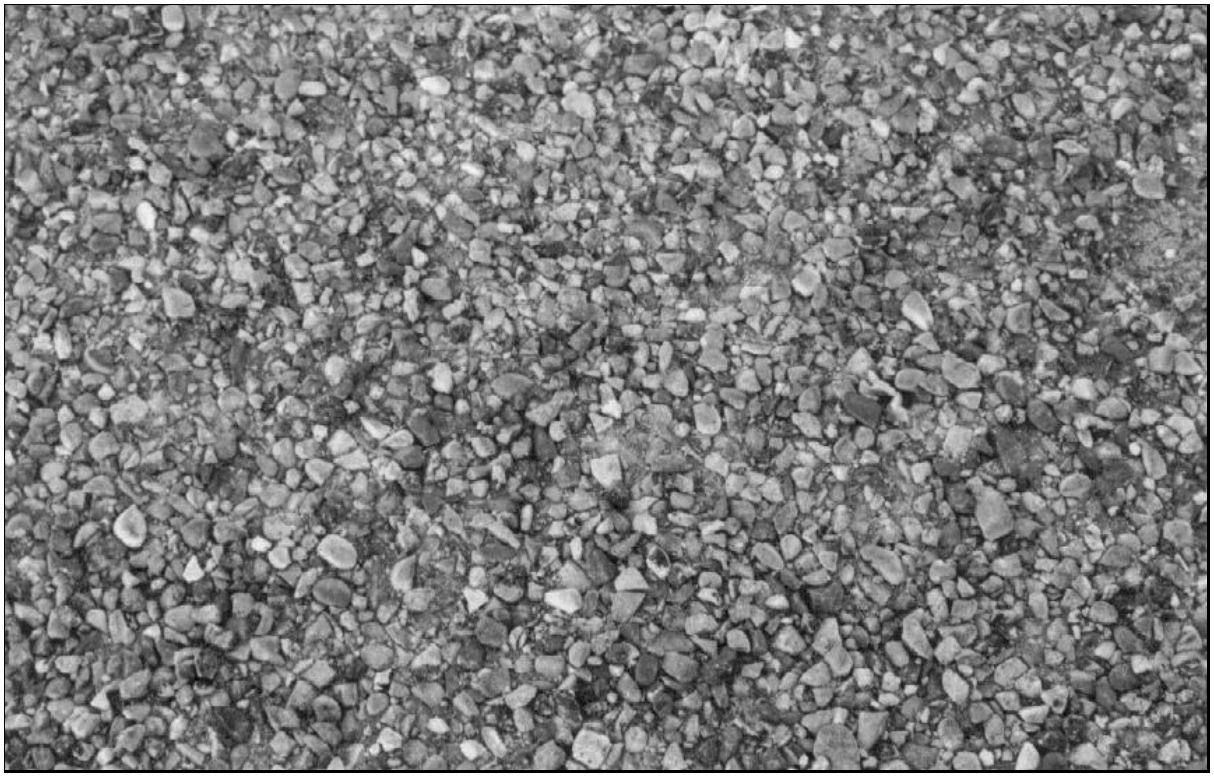

Plate 29. Bituminous concrete on old alignment of SH 13 in Rifle.

Plate 30. West view of concrete culvert beneath old alignment of SH 13.

As the road winds through the hogback, the shoulders become smaller, and the embankments slope. Several washes pass underneath the road and guard rails have been placed in these locations. Road reflectors were noted approximately every one tenth of a mile. Also situated along this portion of the highway are large, flat areas on the east side to accommodate heavy snow removal. No drainage ditches were identified along this highway due to rock and steep embankments.

In the town of Meeker, old SH 13 veers off to the north of present-day SH 13, becoming Main Street. The road is two lanes, widening to four once it reaches incorporated Meeker. The road is old asphalt with asphalt curbs. There are no sidewalks along this portion of the road until Main Street crosses 8th Street. New curbing and sidewalks are visible until 15th Street, when the road turns south and connects to the present SH 13. (Plate 31)

The road continues with wide shoulders and shallow embankments. Entering into the town of Hamilton, the road has steep embankments and no shoulders. Few culverts are identified from this point of the highway north. The culverts are large, modern steel-corrugated pipes, approximately 36 inches in diameter. Entering into Craig, the road is wide with shoulders and no embankments (Plate 32).

Plate 31. Worn asphalt. State Highway 13 (Main Street) in Meeker.

Plate 32. Corrugated metal culvert viewed from the west side of SH 13.

11.9 Historical Summary of I-70 From Vail Pass to Georgetown (5EA1826.1; 5CC1189.1; 5ST892.1)

Everything was big surrounding the construction of Interstate 70 across Colorado. Endless vistas, daunting engineering challenges, and substantial political and economic conflicts -- driven by tourism and environmental issues – influenced the progress of an unbroken strip of concrete from border to border.

Not yet 50 years old, and subsequently not eligible for submission to the National Register of Historic Places, Interstate 70, however, remains significant for its engineering feats and the changes it brought to Colorado and the Rocky Mountain region. This examination of a 36-mile stretch of I-70 is a tale of two cities kept alive by tourist dollars. One old community – Georgetown -- sought to benefit from construction of the nation's primary east-west interstate on their front step. The new community -- Vail -- grew on the promise of a mountain interstate bolstered by a rapidly expanding ski industry.

When the federal government first considered the original 40,000-mile interstate system in 1956, I-70 would begin in Washington, D.C. and terminate in Denver without facing up to the engineering migraines presented by construction over the Continental Divide. Bowing to concerns from western congressional delegations, the Federal Highway Administration (FHWA) extended the plan for I-70 by an additional 547 miles, so that I-70 would connect with Interstate 15 near Cove Fort, Utah. The Colorado Division of Highways subsequently contracted a study on how to build an interstate through the Rockies. In April 1960, the division issued the Pavlo Report (named for New York engineering firm E. Lionel Pavlo). The study recommended that I-70 should follow the existing U.S. 6 west from Denver, pass through a tunnel beneath the Continental Divide, and follow the Eagle River Valley down to the town of Dotsero (U.S. Department of Transportation, 1971: 2). Once construction began, the highway's surface would contain one inch or more of mixed bituminous material. Federal Highway Administration guidelines required I-70 measure 24-feet wide with 10-foot-wide shoulders of gravel or bituminous surfacing (Colorado Division of Highways, 1972)(Figure 19).

More than any other highway project in state history, environmental concerns weighed greatly on I-70's design and construction. These concerns reflected America's increased environmental awareness during the 1960s and 1970s. At Clear Creek outside of Georgetown, state and federal authorities designed a four-lane, divided highway. Construction required altering the flow of Clear Creek in certain spots so work could continue. Contractors working for the Highway Division, in cooperation with the State Division of Game, Fish and Wildlife, placed blasted gravel and rock on the old mine tailings along the stream and built concrete aprons at heavy runoff areas so that erosion from fills and cuts would not contaminate the creek (Colorado Department of Highways, n.d.: 11).

Figure 19: I-70 – (36 miles) From milepost 190.0 at Vail Pass to 226.0 in Georgetown.

Construction next passed the old mining camp of Georgetown. Before work began, residents and town officials protested the I-70 preliminary design, fearing the new interstate would turn Georgetown into a ghost town. Initially, plans for an eastbound-traffic access road off the interstate, into the west side of Georgetown, simply did not exist. During 1962 and 1963, the Colorado Department of Highways signed an important agreement with Clear Creek County and the city of Georgetown. It addressed public ingress and egress from the arterial lanes onto the freeway, and from county highways affected by construction. (Colorado Department of Highways, 1962). Georgetown Mayor Ernest R. Baker said the town's more than 300 residents needed the access road or "we are dead" (Rocky Mountain News, July 16, 1966: 30). Since the 1960s, Exit 228 to Guanella Pass Road is the entryway into Georgetown.

West of Georgetown is the crowning achievement of highway engineering in the state: the Eisenhower-Johnson Memorial Tunnel. Preliminary work began in the early 1960s; actual boring of what became the westbound tunnel started in 1968. As they made their way under the Continental Divide, engineers and construction crews encountered weak rock and shifting load pressures inside the mountain. Some believed the mountain tried to close its wounds, as holes bored through the rock contracted overnight. Consultation between the contractor and state and federal authorities led to an agreement to use multiple drifts in soft-rock areas. Multiple-drift tunneling requires drilling a succession of small diameter tunnels rather than a single large one. Workers filled the drifts with concrete around the periphery of the main bore to protect the tunnel's sides and crown. Of the 7,789 feet of tunnel, approximately 1,900 feet required multiple drifts. Crews ensured the safety of the tunnel by installing supporting steel and concrete along the length of the bore (Colorado Division of Highways, 1985:1) [Plate 33].

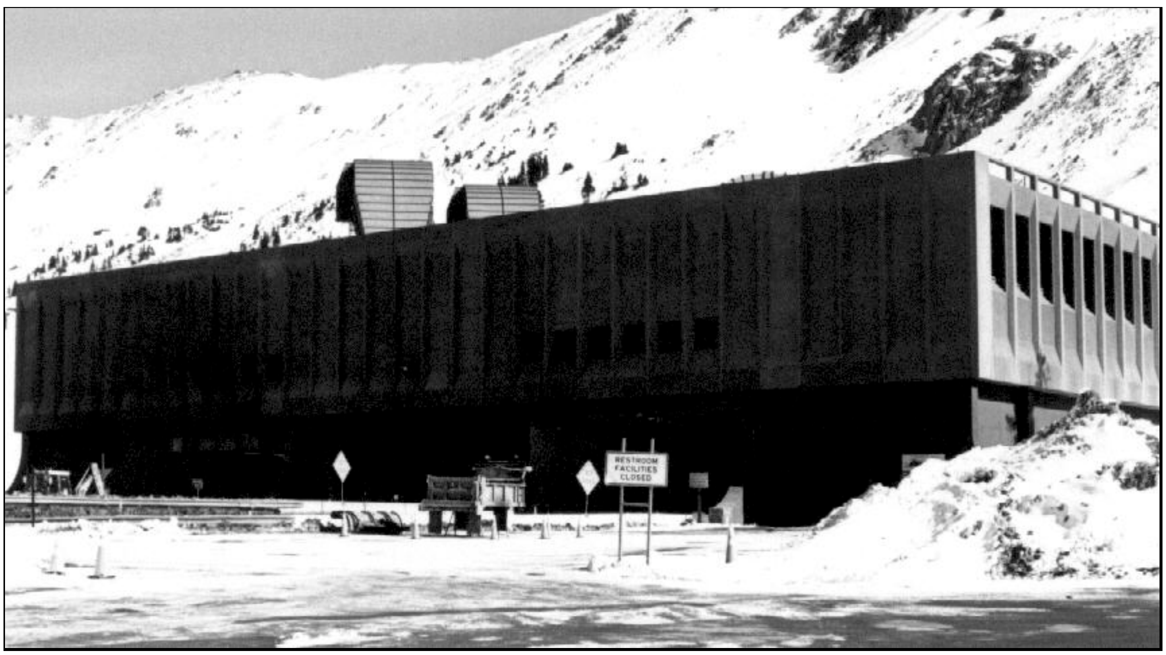

Plate 33. Eastbound bore (named for ColoradoGovernor Edwin C. Johnson) of the Eisenhower Tunnel.

Originally scheduled for completion in three years, working in the high country posted a series of roadblocks. Throughout construction, men and machines labored at lowered efficiency at 11,000 feet while winter weather kept the working season short. Federal aid accounted for nearly 92 percent of the $108 million needed, administered by the Federal Highway Administration (FHWA). The remaining 8 percent came from state funding. At the height of construction in the early 1970s, as many 1,140 people worked three shift, 24-hour days, six days a week. One veteran engineer declared: "We were going by the book, but the damned mountain couldn't read" (Colorado Division of Highways, 1973).

Five years of hard work, "bad rock" and budget overruns culminated in the completion of the first bore by early 1973. Beyond the engineering achievement, the bottom line for most motorists was the tunnel saved 30 minutes to an hour of drive time compared to traveling U.S. 6 over Loveland Pass. However, the tunnel was a bottleneck where four lanes of traffic were squeezed down to one lane in either direction. In July 1972, Highway Department engineers designed an eastbound tunnel. After three years of preparation, excavation of the second bore began in August 1975. More than 800 workers were employed on the project, including some 480 employees who participated in drilling operations. After four years of boring and construction, the Johnson Bore was opened to eastbound traffic in 1979 (Colorado Division of Highways, 1985:1). The second bore was a temporary measure as tunnel congestion grew. At the start of a new century, the Colorado Department of Transportation is considering a number of options -- including another tunnel -- for traffic relief.

West of the tunnel, Colorado highway engineers and the U.S. Forest Service designed and built an interchange near the Dillon Reservoir west of the Arapaho National Forest. The exit off I-70 onto State Highway 9 leads to motels and campsites along the reservoir. By 1973, the state opened I-70 from Dillon through the completed Eisenhower Tunnel.

Immediately west of Dillon, engineers and politicians faced an ethical fork in the road. In 1967, the Colorado Division of Highways supported a plan to build a portion of

Interstate 70 through the Gore Creek Valley along what was known as the Red Buffalo Tunnel route. Engineers designed the interstate to ascend the west side up Gore Creek, pass under the summit by way of tunnel, and descend on the east side along a direct route to the west portals of the yet uncompleted Straight Creek (now Eisenhower) tunnel. The Red Buffalo route would have been 10 miles shorter, but three times more expensive than staying along the existing path of U.S. 6 over Vail Pass. The debate took on national proportions as newspapers and the public argued over the merits of each option.

The U.S. Secretary of Agriculture Orville L. Freeman settled the argument in 1968 when he denied the Division of Highways an easement through the Gore Range-Eagles Nest Primitive Area. The reserve was within the Arapaho and White River National Forests and under the secretary's jurisdiction (Colorado Department of Highways, n.d.: 18). Later that year, the Division of Highways reexamined the location of I-70 over Vail Pass along the general route of US 6 (Colorado Division of Highways, 1971(a): 1).

Before the arrival of the interstate, the only road leading through the Vail Valley was U.S. 6. The two-lane highway ran down the middle of the valley. A meadow covered most of the valley floor, which was broken only by Gore Creek. One observer recalled: "There just wasn't much reason to stop there . . . No picturesque little mining town, not even a grimy little gas station or roadside cafe, graced the glen; in fact, the landscape evinced very little human presence at all" (Philpott, 1994: 1).

State highway planners met with residents and utility-company officials to devise the location of the interstate and allow for the expansion of a new resort community named Vail. In exchange for excavating gravel from private lands, the division shaped the highway to conform to the future development plans of the resort town's ownership (Colorado Department of Highways, n.d: 19).

From the first discussion of the interstate's alignment in the early 1960s, Vail's developers sought construction of a high-speed highway through their vacation community. The town's corporate founders, Vail Associates, felt the interstate would bring added value to their resort. However, as construction crept closer, some of the associates saw the highway as a “mixed blessing” that would “destroy scenic values and otherwise reduce the desirability of the Vail resort location” (Philpott, 1994: 86). As one commentator put it: “Beneath its faux Swiss chalet architecture . . . lay what the highway had created: a mountain suburb” (Thomas, 1996: 279).

In the wake of I-70, strips of stores and condominiums replaced mountain meadows, and ski trails cut through the aspen and pine along the slopes. In 1973, the Denver Post commented that the “smog in the Upper Eagle Valley matches Denver’s eye-stinging quality when temperature inversions clamp an atmospheric lid over the valley” (Denver Post, July 15, 1973: 1). Growth continued for the rest of the 1970s, spurred by the completion of the Eisenhower Tunnel. In time for the nation’s bicentennial, I-70 crossed a portion of Vail Pass and by the following year, the interstate conquered the entire pass.

In 1984, the I-70 corridor west of Denver constituted the greatest concentration of ski resorts in the nation, as eight of the top-20 ski resorts in the United States were in Colorado (Thomas, 1996: 280). At the century’s close, building projects in Vail have sprawled along the entire length of the valley floor, all crowed around the four-lane I-70 (Philpott, 1994: 4).

Interstate 70 is a rare example of a construction project whose impact is felt when it is still on the drawing board. In 1988, Governor Roy Romer observed: “Because of I-70, tourism guides decision-making in Colorado” (Thomas, 1996: 300). One environmental advocate lamented that I-70 “changed rural Colorado into non-rural Colorado” (Thomas, 1996: 300).

Interstate 70 brought late 20th-century automobile culture and resulting sprawl to the tranquility of the mountains, but I-70 serves as a reminder of how engineering can capture the beliefs and ambitions of a certain period in history.

11.9.1 Eligibility of I-70 from Vail Pass to Georgetown

The Eisenhower Tunnel, and the introduction of suburban design in the Rockies represented by the town of Vail, are the two most notable features in this 36-mile portion of Interstate 70. The completion of the superhighway did more than any previous event to increase the population and alter the character of the Rocky Mountains. Following the National Register guidelines, completion of I-70 is too close in recent memory to make a balanced determination regarding the highway's integrity. With time, the Eisenhower Tunnel, the interstate's features and design, and other highway facilities will be ready for further study regarding their eligibility. It is determined that this portion of I-70 is ineligible for submission to the National Register at this time.

The entire length of Interstate 70, including the 36-mile stretch between Georgetown and Vail Pass, was built to Federal Highway Administration and Colorado Division of Highways standards. In accordance with the National Task Force for Historic Roads definitions of road types, I-70 is an engineered route. Interstate 70 brought new businesses and people to the mountains and greatly benefited Colorado's ski industry. It also reduced the amount of time drivers could safely travel from the Front Range to the Western Slope.

11.9.2 Synopsis of Site Survey of I-70 from Vail Pass to Georgetown (survey conducted February 13, 2002)

The selected 36-mile portion of I-70 begins at the Vail Pass as a divided highway. There is a large median dividing the eastbound and westbound lanes. The two sets of lanes are split; the westbound lanes are elevated from the eastbound. The highway has wide shoulders and concrete Johnson Wall guardrails where turns are steep and sharp. A biking/hiking path is located within this median and follows the West Ten-Mile Creek. The path is concrete and tree lined. Between exits 195 and 201, the highway is cut through the Ten-Mile Range Canyon. It is here that the highway is level with regard to topography, but the wide median is still retained. Past Exit 201 through Exit 205, the highway passes through the towns of Frisco, Dillon and Silverthorne. The road -- which starts as two lanes -- widens to three lanes with wide shoulders in either direction. A modern concrete-and-steel beam bridge crosses the Blue River in Silverthorne. Heading eastward, the highway begins a gradual incline of capping at 7% near the Eisenhower Tunnel. The eastbound lanes are again situated lower than the westbound lanes. The westbound lanes have been cut close to the mountainside.

The Eisenhower Tunnel is 1.75 miles long. The tunnel divides the eastbound from the westbound lanes and each direction is two lanes wide. The central core of the tunnel houses road equipment and exhaust machinery. The highway begins its descent upon exiting the tunnel. Again, the highway has wide shoulders and a grass median.

11.10 Historical Summary of US 24 From Manitou Springs To Antero Junction (5EP5118.1; 5PA2004.1; 5TL301.)

US Highway 24 crosses 314 miles of Colorado from the eastern plains to the central Rockies. The highway links most of the state and, at certain points, connects modern Colorado with the various people who have inhabited this region over the centuries. This summary focuses on a 70-mile section of that highway from Antero Junction on the eastern edge of the Pike National Forest to the town of Manitou Springs.

At Antero Junction, US 285 and US 24 diverge; US 285 heads toward Denver, while US 24 courses northeast to Hartsel. US 24 then heads east, then southeast to Lake George, Florrisant, Divide and finally northeast to Woodland Park. This mountain tour features three passes: Wilkerson, with an elevation of 9,507 feet and a 5.8% grade, Ute Pass (elev. 9,165 feet, 5.6% grade), and Trout Creek Pass (elev. 9,364 feet, 5.2% grade). US 24 passes Woodland Park on Midland Avenue. Leaving Woodland Park, US 24 turns into a divided highway (the Midland Expressway) going through Crystola and Cascade. Upon reaching Manitou Springs, US 24 becomes a business route for 4.3 miles (Colorado Department of Transportation, 1999(a)) [Figure 20].

Generations before white settlement, the Ute Indians made their way over the Continental Divide to hunt or fish via a pass later to bear their name. In the mid-19th century, gold seekers, stagecoaches and settlers followed, culminating in the arrival of the Denver and

Rio Grande and the Denver, South Park and Pacific railroads during the 1880s. The arrival of the railroads established tourism as an important industry in southern Colorado (Held, 2000: 2-3).

This route also has a long history with the automobile. On July 21,1899, E.J. Cabler, his wife, their friend Robert Temple – and 1,000 pounds of luggage -- left Denver for Colorado Springs and Victor. The automobile-wagon built by Temple ran out of gas six miles north of Palmer Lake. An emergency telegram to Colorado Springs requesting a refill of "oil that provides motive power" got the party back on the road. Days later, it was the first machine to travel a Colorado mountain road when it climbed Ute Pass through Woodland Park (elevation 8,437 feet) before stopping in Cripple Creek and Victor on the southwest slope of Pikes Peak (Miller, 1999: 26).

The succeeding decade saw increasing standardization in the wake of the Cablers and Temple. The South Park Highway followed this route from Manitou Springs to Buena Vista. The first state-tourism publication, Highways of Colorado (c. 1912), remarked that the Ute Pass Route over the South Park Highway contained "some sharp curves and steep grades, but good road." The road forked at a point 17.8 miles outside of Manitou Springs, with the right bend leading to Woodland Park. Unusual in the days of graveled roads, the guide listed the South Park Highway as "fast" and a "very good wet-weather road" despite some sharp curves and fairly steep pitches (Denver Chamber of Commerce, c. 1912: 124-5).

According to the first road map issued by the Colorado Highway Commission in August 1916, State Highway 8 ran from northern Colorado Springs along the South Park Highway to the town of Crystola (Colorado State Highway Commission, 1916). By the early 1920s, the Highway Commission re-designated SH 8 into State Highway 4. SH 4 followed the route of today's State Highway 24 across Colorado, and its designation as State Highway 4 remained on state highway maps until the 1950s.

Figure 20 MAP OF US 24

Increased auto travel during the 1910s added another chapter to this road's history. As early as 1912, the Pikes Peak Ocean-to-Ocean (PP-OO) Highway spanned the continent from New York City to Los Angeles. Unlike other named motor trails in Colorado (like the Omaha-Lincoln- Denver route and the Victory Highway), the PP-OO followed the back roads of the nation. Civic and commercial groups raised money for building, paving and promoting the highway.

In Colorado, the PP-OO came off the eastern plains and turned south to avoid Denver before reaching its namesake mountain and continuing along the route of today's US 24 west to Utah. Named motor trails fell out of favor when the U.S. government increased their authority over the nation's roads in 1926. From 1927 to 1936, State Highway 4 was re-designated US 40-N and US 40-S, with US 40-S running from Limon to Grand Junction. In 1936, the federal government decided on US 24 -- the name has stuck ever since (Pikes Peak Ocean-to-Ocean Highway, http://www.prairienet.org/us36).

State Highway Engineer Charles Vail blacktopped the majority of Colorado's roads during the 1930s and 1940s. As one of the state primary tourist routes, Vail's Highway Department lavished a great deal of attention and funding during the Depression years. From 1919 to 1930, the state spent only $4,342,926 to improve this artery through Colorado (Rocky Mountain Contractor, September 4, 1941: 8). The road needed modernizing: Only 21 miles of the 474 miles then in existence were hard surfaced. In 1930, the highway was surfaced from Manitou Springs to Lake George, graded from Lake George to 10 miles east of Hartsel, and again surfaced from 10 miles east of Hartsel to Antero Reservoir (Rocky Mountain Contractor, September 4, 1941: 8(a); Colorado Department of Highways: 1930(a)).

From 1931 to July 1941, the state and federal government spent over $11.5 million to modernize the entire highway. In the early 1930s, the state completed improvements to Wilkerson Pass and planned a new highway over Ute Pass in what was designated Federal Aid Project 158-A. Engineers boasted the new highway between Manitou Springs and Cascade would "conquer tremendous natural obstacles." In preparation for construction, Colorado negotiated to obtain the necessary right-of-way at the site of a nationally famous mineral springs. The springs flowed through a honeycomb of rock, and many feared blasting the granite walls and cliffs of Ute Pass would forever ruin the waters. In addition, engineers were required to lay a grade that would meet state and federal requirements while providing space around the springs and buildings on the property (Farley, November 1931: 7). District Five Division Engineer Ernest Montgomery reached a compromise with property owners and redesigned the road to a new location on the opposite side of the canyon below Rainbow Falls (Height, April 1932: 4).

Grading operations began simultaneously from both ends of the four-mile road in the fall of 1931. Culvert crews kept ahead of graders while a crew of stonemasons and helpers built retaining walls. Contractors built long booms of suitably braced telephone poles mounted on truck beds. These improvised derricks picked up and carried boulders by cable. Men lowered the stones off the derrick line to permanent place in the retaining walls. The fills also required special treatment. Their height – in some cases 60 feet – and proximity to the stream, would have caused slopes to fill the creek and create an impossible condition for drainage. Retaining walls made of cement rubble masonry provided the solution. A total of 3,500 cubic yards of rock wall lined the highway west of Manitou Springs. They remain protected by metal guardrails (Height, April 1932: 5).

Starting in the fall of 1931 and through the spring of 1932, highway rerouting and bridge construction over Rainbow Falls forced residents of Cascade, Chipita Park, Green Mountain Falls, and Woodland Park to compromise. They could either ride the Midland Railway trains to Colorado Springs or drive Mount Herman Road to Monument and then travel south to Colorado Springs -- a round trip of about 100 miles (Breckenridge, 1985: 187). Dynamite crews blasted more than 200,000 cubic yards of rock from the canyon walls. Contractors estimated that they drilled over nine miles of drill holes and used 50 tons of high explosives. The improved road measured 36-feet wide, had a steepest grade reaching 7%, and cost nearly $300,000 to complete (Height, April 1932: 4-5, 14) [Figure 21].

Figure 21 US 24 map from Denver Chamber of Commerce

In February 1937, Works Progress Administration labor forces widened, graveled, and graded four miles of US 24 through Manitou Springs. These improvements to the road cost $15,048 (Rocky Mountain Contractor, February 24, 1937). In 1941, the state modernized US 24 over Tennessee Pass (Rocky Mountain Contractor, September 4, 1941: 8(a)).

Daily traffic through Manitou Springs increased during the 1960s. In 1967, traffic in and west of Manitou Springs totaled 11,800 vehicles on an average weekday. During 1968 and 1969, the state began the Manitou By-Pass Project to relieve traffic. Under the initial allocation of $1,414,541, the Colorado Division of Highways designed and modernized the highway west of Rainbow Bridge to the Cave of the Winds Road. Concurrently, the state built the Midland Expressway west from Manitou Springs to Cascade. An extension to Woodland Park was completed by the mid-1970s (Rocky Mountain Construction, June 4, 1968: 26).

11.10.1 Eligibility of US 24 from Antero Junction to Manitou Springs

The path now known as US 24 began as an Indian trail through the mountains. Today, portions of that trail serve as an expressway west of Manitou Springs. Since the early 20th century, tourism has been the primary industry of the survey area. Generations of travelers followed this section of US 24 to visit the Broadmoor Hotel, Pikes Peak, Manitou Spring, or continue further into the mountains. During the early years of the automobile in Colorado, US 24 was known as the Pikes-to-Peak Ocean-to-Ocean Highway. The highway's role as one of Colorado's most important tourism routes continued into the 1930s and 1940s. In the 1930s, both the state and federal government added a number of safety features notable for their aesthetic qualities. These include the rest stop at Wilkerson Pass, to the Twin Creek Bridge, to the cement rubble masonry retaining walls along Fountain Creek.

Because of US 24's long history as a native, commercial and automobile trail, and the remaining integrity of the bridges and walls built in the 1930s, the highway is best eligible for placement on the National Register under Criterion A (associated with the events that have made a significant contribution to the broad patterns of our history).

According to the guidelines established by the National Task Force for Historic Roads, US 24 from Manitou Springs to Antero Junction best exemplifies a cultural route. A cultural route represents a road "that evolved through necessity or tradition." Much of Ute Pass developed without the "intensive engineering and design practices associated with aesthetic and engineered routes." Ute Pass, like El Camino Real in California and the Boston Post Road from New York to Boston, underwent significant changes in the wake of the automobile. Continual improvements in the name of motor travel resulted in multiple layers of development. These improvements (walls and curbing along Fountain Creek and the Wilkerson Pass rest stop) offer preservationists a chance to study different periods and types of historic highway resources within close proximity (Marriott, 1998: 16).

11.10.2 US 24 – approximately 70 miles from milepost 226.55 east of junction US 285 at Antero Junction to milepost 297.08 at west junction of US 24 in Manitou Springs (survey conducted January 31, 2002)

US 24 is a two-lane highway with narrow shoulders and sloped embankments. Heading east, the road has a gradual rise and is surrounded by open plains. The asphalt shows signs of repair and appears to be a new mix of materials (without as much rock in the mix). Modern metal reflectors are situated roadside. Passing through the town of Hartsel, the road widens to four lanes with a parking lane. There are no visible curbs or sidewalks through town. The road narrows at the town limits.

Wood bridges are located along the western portion of the highway. These appear to be highway-standard bridges, all constructed from wood planks, with wood piers and abutments.

At Wilkerson Pass, the road curves and there is a rest area. The walls and stone steps are dry laid and appear to have been constructed by the CCC. Construction work is being done on the public facilities and no inspection was made. Heading east from the rest area, the road begins a gradual downward grade with slight-sloping embankments. A concrete and rock culvert is situated on the south side of the highway near mile-marker 261. The north side of the highway shows a culvert with modern, flared concrete abutments surrounding a metal pipe. The asphalt along this stretch appears to have more rock in it than the stretch west of the pass.

The Twin Creek Bridge has concrete rails with arches. A metal date plaque stating the name, engineer and date of construction (1937) is situated on the north rail, east end of the bridge. The concrete abutments, rails and piers show deterioration. The bridge approaches are coated with reflective paint.

The road widens to five lanes entering the city of Woodland Park. The road passing through town has newer asphalt with curbs and sidewalks. A roadside park, located in town on the south side of the road, includes a picnic pavilion, stone steps, walls, band shell and an interpretive sign with stone pillars. The park appears new but materials and construction methods mimic CCC design. The park brings continuity to the CCC construction located east on the road entering Manitou Springs.

Leaving the town of Woodland Park, the road splits and becomes a divided highway. The westbound lanes are elevated, with a steep embankment leading downward to eastbound lanes. The shoulders are wide, with several modern, metal guardrails. The highway remains split all the way into Manitou Springs.

Approximately five miles west of Manitou Springs, the CCC built retaining walls on the south side of the westbound lanes. At this point of the highway, the road runs parallel to Fountain Creek. The median is heavily wooded and retaining walls support the roadway from erosion. The embankment is steep and retaining walls are visible from the eastbound lanes alone. A concrete culvert surrounded by stone is situated in the median, within the portion of the CCC retention wall. The wall extends for approximately 500 feet (Plates 34, 35, 36 & 37).

Prior to milepost 297, a stone footbridge and culvert are located near a parking area along the south side of the road. The footbridge appears to have been constructed by the CCC and is collapsed in its center. The culvert has stone and concrete, but was unable to be examined as the steep embankment and broken bridge prohibited closer examination. Next to this walkway,

Plate 34. Concrete culvert inside rock work. View from east side of US 24.

Plate 35. Cement rubble masonry wall along Fountain Creek on US 24.

Plate 36. Cement and masonry wall from inside the guardrail above Fountain Creek.

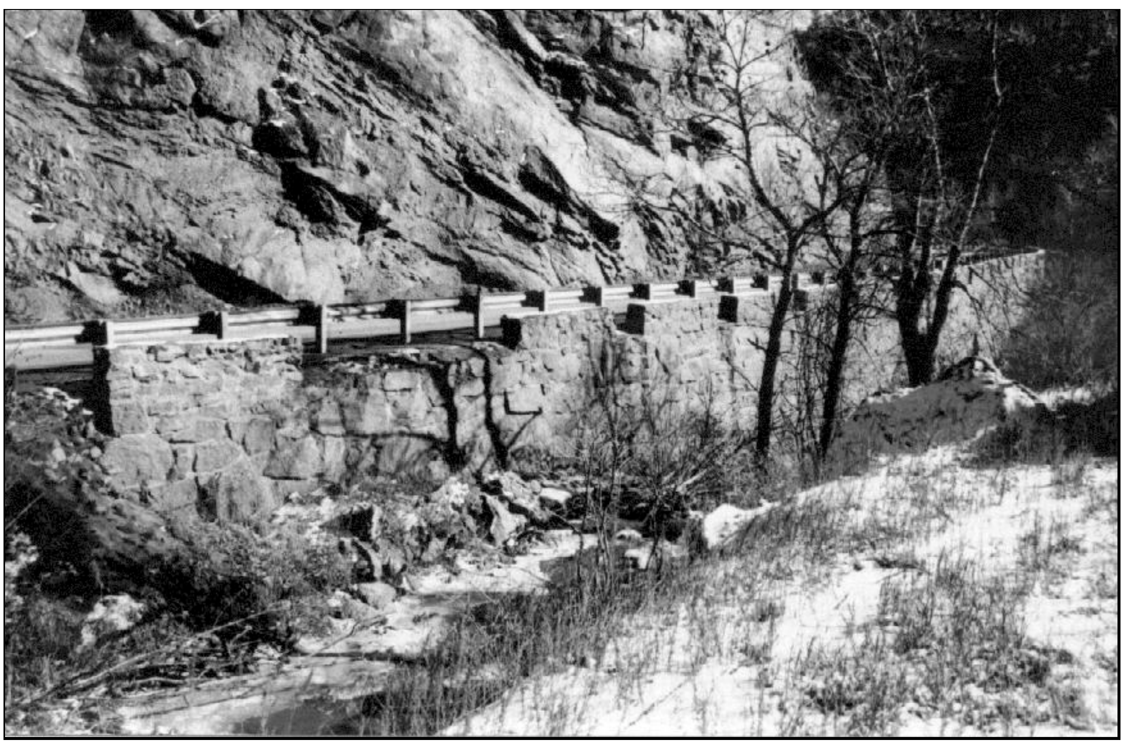

Plate 37. Stonework along Fountain Creek. View from eastside of US 24.

remnants of old asphalt curbing were found. The curbing materials consisted of red stone and an asphalt mix (Plate 38).

The last bridge before the exit, the Fountain Creek Bridge, is a single-span, open-spandrel arch bridge constructed in 1932. Fountain was formed of concrete and identical in design to the Twin Creek Bridge. It is slated for demolition in 2002.

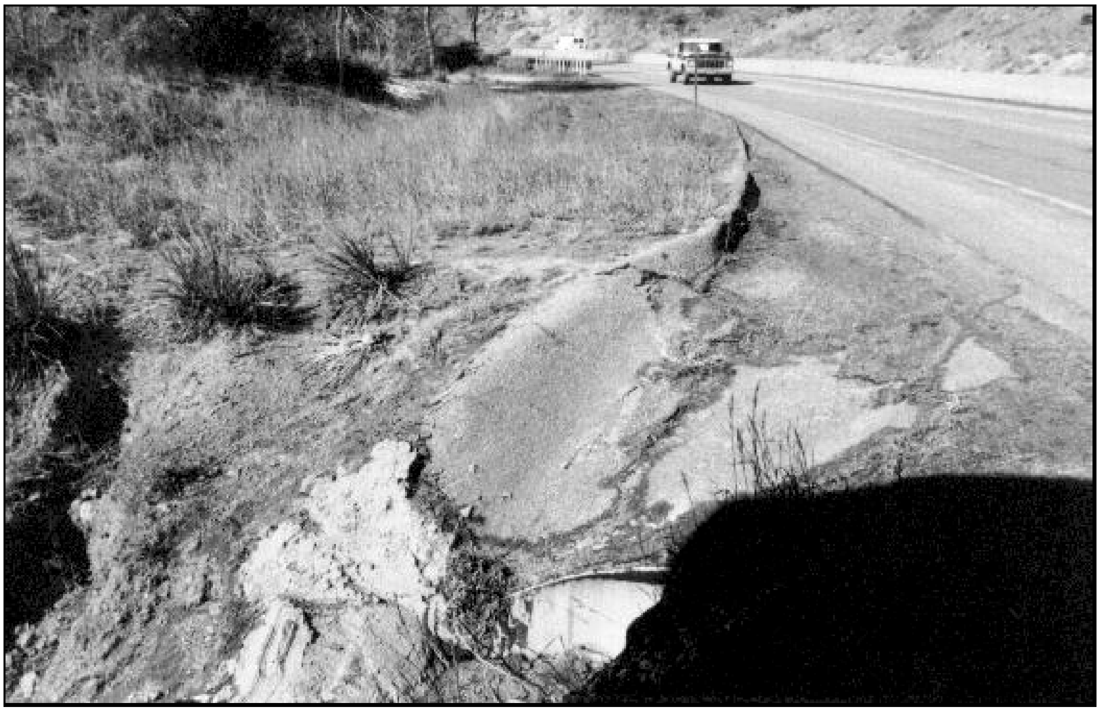

Plate 38. Curbing placed by PWA crews during the 1930s on US 24 west of Manitou Springs. Materials included a mixture of red rock and asphalt.

11.11 Colfax Avenue through Denver

On November 13, 2001, representatives of CDOT, CHS and ACRE drove a 20-mile stretch of Colfax Avenue from I-225 in Aurora west to Exit 262 in Golden. As part of US Highway 40, Colfax has represented Denver's auto and tourist culture for nearly 80 years. However, as one of the city's most traveled thoroughfares, Colfax is in constant flux. Examining the road for historical integrity, the group mutually agreed that little of the original character of Colfax Avenue remains for further study.

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APPENDIX A – CHRONOLOGY OF HIGHWAY DEVELOPMENT IN COLORADO

15th c. -18th c. Spanish venture from Mexico through the San Luis Valley and around San Juan Mountains

c. 1820 Traders cut the Santa Fe Trail through the Arkansas Valley.

1859-1876 Stage lines, mining companies and private individuals invest and build toll roads across Colorado territory. Toll road construction continues until the end of the 19th century.

1899 On May 10, David Brunton takes the first ride on the streets of Denver and is remembered as the state's first automobile owner**.**

1905 Colorado Good Roads Association formed in Denver.

1909 State Legislature created the first State Highway Commission. Three members appointed to Commission, taking their posts on January 1, 1910.

1910 C.P. Allen serves as the first Highway Commission chairman. City of Denver experiments with various road-surfacing materials along Speer Boulevard.

1913 Thomas J. Ehrhart appointed as first commissioner of the Colorado Highway Commission.

1916 Passage of the Federal Aid Highway Act provided federal matching funds for state highway projects. Wolf Creek Pass opened to traffic.

1917 State Legislature passed the Highway Act, reorganizing the Highway Commission into the State Highway Department and creating a State Highway Fund to distribute state and federal funds for the development and maintenance of the State Highway System.

1918 First concrete pavement laid in the state from Denver to Littleton along Santa Fe Drive.

1919 State Legislature approves first gasoline sales tax of a penny per gallon.

1921 Legislature repeals four-year-old Highway Act. New law creates the State Highway Department. Thomas J. Ehrhart ends term as commissioner. In May, Major L.D. Blauvelt appointed as State Highway Engineer.

1922 U.S. Bureau of Public Roads approved Colorado's first federally aided road system, covering 3,332 miles.

1924 State completes "Million Dollar Highway," or US 550, in Southwestern Colorado.

1927 Highest auto road in the world completed to the summit of Mt. Evans. Federal government establishes modern highway numbering system.

1930 On October 26, Major L.D. Blauvelt dies. In December, Charles D. Vail appointed State Highway Engineer.

1930s Federal work projects help Colorado to construct and maintain state highway system. Asphalt surpasses concrete as the Highway Department's preferred road material.

1938 Colorado expands highway system to nearly 12,000 miles. Road over Berthoud Pass completed.

1939 Work on Monarch Pass completed.

1940 Original highway (US 6) over Vail Pass completed.

1944 The Federal Highway Act of 1944 authorized the Interstate Highway System.

1945 In January, Charles Vail dies. A.F. Hewitt serves as acting State Highway Engineer until 1946.

1946 After winning a court battle over the civil service examination, Mark U. Watrous begins term as State Highway Engineer.

1948 Work began on Denver's Valley Highway (I-25)

1950 Construction commences on the Denver-Boulder Turnpike.

1952 Denver-Boulder Turnpike opens.

1953 The State Legislature passes a new law reorganizing the Highway Department. Watrous' title from State Highway Engineer to Chief Engineer.

1956 Congress passes the Federal Interstate Highways Act. First mountain construction begins on the Floyd Hill-Idaho Springs complex of Interstate 70.

1957 U.S. Bureau of Public Roads approved the I-70 route designation west of Denver and into Utah.

1958 Valley Highway opens.

1963 In August, Watrous retired as Chief Engineer. Governor John A. Love appoints Charles E. Shumate to lead the Highway Department as Chief Engineer.

1964	Federal funding expands the Valley Highway (I-25) and I-70. I-70 opens to traffic.
1968	U.S. Secretary of Agriculture ordered alignment of Interstate 70 near Vail along the existing US 6 route. Reorganization of the Department makes Shumate Executive Director of the State Department of Highways.
1973	On March 8, the westbound bore of I-70's Eisenhower Memorial Tunnel dedicated.
1975	Charles Shumate retires as Executive Director. Jack Kinstlinger begins term as Executive Director.
1976	I-225 opens.
1978	On Vail Pass, state dedicates I-70's full four-lane configuration after five years of construction.
1979	Eastbound bore opened through Eisenhower Memorial Tunnel.
1980	Construction begins on I-70 through Glenwood Canyon.
1982	Joseph Dolan appointed as Executive Director, replacing Jack Kinstlinger.
1984	Accident on I-25/I-70 interchange grabs national attention.
1985-88	Construction of the first three phases of the Centennial Parkway (C-470).
1987	Work begins on reconstruction of I-25/I-70 interchange. Lowell B. Jackson assumes Executive Director's job replacing Joseph Dolan. Later in the year, A. Ray Chamberlin takes over from Jackson.
1991	Department of Highways becomes Colorado Department of Transportation.
1992	Twelve years of construction conclude on a 12-mile portion of Interstate 70 through Glenwood Canyon.
1994	Guillermo V. Vidal appointed as CDOT's executive director.
1999	Voters approve $1.67 billion TREX project. Thomas E. Norton appointed as CDOT's executive director.

APPENDIX B – ANNOTATED BIBLIOGRAPHY

ANNOTATED BIBLIOGRAPHY

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1988 E-470 Beltway Survey Report, Historic Resources
Eight eligible sites, nothing applicable.

Engleman, Craig A. and E. Kinzie Gordon
1979 Cultural Resource Inventory Report, Proposed Kipling Street Extension Project, Jefferson County, Colorado.
Paleontology resources only.

1980 Cultural Resources Inventory Report, Proposed North Sheridan Blvd. Expansion Project, Jefferson County.
Mention of Leyden Junction Overpass and the Overland Trail.

Euchner, Julie
1979 A Cultural Resource Report Dotsero-Gypsum, Right of Way for I –70 (C-26617).
Only archaeological sites – none determined eligible.

Farley, Frank
1931 “Work Started on the Historic Ute Trail.” Colorado Highways. November: 7.

Fay, Abbott
2000 A History of Skiing in Colorado. Ouray, CO.: Western Reflections, Inc.

Federal Highway Administration
n.d. Project FC 160-2(21) US 160 from South Fork to Wolf Creek Pass.

Felsburg, Holt and Ullevig
1989 McLellan / C470 Interchange, Environmental Assessment.
No applicable historical resources identified.

Ferster, Andrea, and Christopher Bender
1997 “Federal Design Standards.” Progress. September: 3-4.

Fitzgerald & Halliday, Inc. and Donahue Group, Inc.
1995 Managing Travel in Connecticut: 100 Years of Progress. Connecticut Department of Transportation.
Connecticut’s historic highway context.

Fort Sedgwick Historical Society.
1982 History of Sedgwick County, Colorado. Dallas, Texas: National ShareGraphics.
Local history of northeast Colorado county.

FRASERdesign
1999 Documentation of Kiowa Creek Bridge, 5AM1279
Cultural resource survey and mitigation of adverse effects for one bridge.

2000 Documentation of Sand Creek Bridge
File also includes correspondence.

Front Range Research Associates
1987a Survey Report E-470 Roadway Project I-25 North Interchange.
Project area: T 1S, R 68W, sec 10, 11. Eastlake Quadrangle. One resource identified, 5AM457 – a canal. Determined not eligible.

1987b Survey Report E-470 Roadway Project I-25 North Interchange.
Project area: T 1S, R 66W, sec 32. Brighton Quadrangle. Three sites identified5AM466, Reasoner Farm, 5AM464 Burlington Northern RR tracks, 5AM465 Burlington ditch.

1987c	Survey Report E-470 Roadway Project I-25 North Interchange.
Project area: T 3S, R 65W, Box Elder School Quadrangle. Two sites located (1 farm complex, 1 windmill). Both determined not eligible.

1987d	Survey Report E-470 Roadway Project I-25 North Interchange.
Project area: T 6S, R 66W, sec 4, and 9. Parker Quadrangle. Identified two sites (1 farm complex, 1 possible cemetery) both determined not eligible.

1987e	Survey Report E-470 Roadway Project I-25 North Interchange.
Project area: T 6S, R 67W, sec 2, and 3. Parker Quadrangle. Identified two farm complexes. Both determined not eligible.

1988	Survey Report E-470 Roadway Project I-25 North Interchange.
Project area: T 1S, R 67W Brighton Quadrangle. Identified five sites, all determined not eligible. Revised with one additional site – a railroad right-of-way, determined eligible.

Gallavan, Patrick J.
n.d.	History of Denver Mountain Parks.
Typewritten description of parks system.

Gambrill, K.M.
1981	Site Forms and Information on the Rooney Ranch, 5JF196
Just the ranch.

Gardner, Jane
1988	"The Lariat Loop Road." Historically Jeffco. Vol. 1, No. 1: Summer.

Gilmore, Kevin P.
1990	Cultural Resource Investigations at 2 sites near Dowd Junction, Eagle County, Colorado.
Recorded only archaeological sites.

Gleyre L.A. and C.N. Alleger (comp.)
1936	History of the Civilian Conservation Corps in Colorado. Denver: Press of the Western Newspaper Union.

Goodman, Patsy D.
1978	Colorado Department of Highways Ineligible Bridge Form.
Lists the W 128th Ave. Bridge, structure No. E-16-KF, Project SOS 0012(4).

1979	Colorado Department of Highways Ineligible Bridge Form
Lists the Quincy Avenue and Piney Creek Bridges. Projects SOS 0010(1) and FC 083-1(15), respectively.

1979 Colorado Department of Highways Ineligible Bridge Form.
Lists the Big Dry Creek Bridge. Project SOS 0010(2).

Hafen, Le Roy R.
1931 "The Coming of the Automobile and Improved Roads to Colorado." Colorado Magazine. January: 1-16.

Hand, O.D.
1990 Cultural Resources Study of the Twin Tunnels-East Project and Archaeological Testing of site 5CC389.
Archeological and non-relative sites.

1996 An Intensive Cultural Resources Survey of a Landslide Locality on US 40 East of Berthoud Pass, Clear Creek County, Colorado.
Re-evaluation of three previously recorded sites. 5CC171.1 US 40. 5CC585 a historic habitation site. 5CC6600.1 Empire and Middle Park Wagon Road (both roads addressed in another report – no info here).

Height, Lewis W.
1932 "Ute Pass Project Built for Safety." Colorado Highways. April: 4-5, 14.

Held, Jonathan
2000 Empire Colorado: Drainage Improvements Project, Cultural Resource Survey.
Includes site forms for 13 resources, 2 structures (1 commercial/government, 1 school) determined eligible.

2000 First Street and US 287 in Loveland, Larimer County Colorado, Cultural Resource Survey.
None of the sites identified are applicable.

2000 US 24 Divided to Edlowe Road: Cultural Resource Survey.
Thirteen sites, nothing applicable.

Herbst, Rebecca
1983 The History of City Ditch.
An agricultural resource.

1987 Survey Report Project 85-084-2, Speer Viaduct Replacement.
Five resources, none applicable.

Herbst, Rebecca and Vicki Rottman
1990 Historic Survey Report project FC 085-2(36), Castle Rock to C-470, State Highway 85.
Fifteen sites identified. Two previously eligible, one a canal. Three eligible sites.

Hermsen Consultants
1995 Historical Resources Survey Report, Broadway Viaduct Replacement Project.
Multiple resources, most commercial.

1996 Historical Resources Survey Report, Alameda Parkway over the Hogback Alameda / C478 Interchange.
Three sites, none applicable.

1996 Historic Resources Survey Report South Colorado Boulevard and East Alameda Avenue Intersection Improvements.
No historic resources within the project area.

1998 Historic Resources Survey Report US 160 East side of Wolf Creek Pass.
The only site identified is a bridge.

1999 Southeast Corridor: I-25 from Broadway South to Lincoln Avenue.

Hermsen Consultants and FRASERdesign
1999 HAER No. CO-46, O'Brian Canal. HAER No. CO-45, Burlington Ditch. HAER No. CO-47, Brantner Ditch.
Folder includes multiple HAER Documentations. Three concern irrigation canals / ditches.

Hermsen, Gail M.
1990 Survey Report, Project Number M 1453(3), 23rd St. Viaduct Replacement.
No applicable sites identified.

Hoeft, Kathleen
1991 HAER No. CO-51, Twentieth Street Viaduct.

Holt, W. Stull
1923 The Bureau of Public Roads: Its History, Activities and Organization. Baltimore: The Johns Hopkins Press.

Jeffrey. W.M.
1922 Final Statement of Costs and Construction Report on the Completion of the Monarch Pass Highway. U.S. Bureau of Public Roads.

Jepson, Dan A.
1992 Field Investigations of Historic Stone Structure Sites in the Arkansas River Canyon, Fremont County, Colorado.
No applicable sites identified.

1994 Archaeological Investigations at the Possible Site of Fort Junction, 5WL753.
Archaeological resources only.

1994 A Cultural Resource Survey of the State Highways 6 and 119 Intersection, Clear Creek, Gilpin and Jefferson Counties.
Two sites identified. Neither applicable.

Johnson, Fred P.
1918 "Over the Hard Pan, Today and 38 Years Ago." Colorado Highways Bulletin. October: 9.

Johnson, J.W.
1922 "Bituminous Pavements laid on Old Macadam Streets in Denver." The American City. January: 20-22.

Joyner, Kathryn L.
1988 Results of a Cultural Resource Inventory for the Proposed W 104th / US 36 Interchange, Jefferson County Colorado.
Six sites, nothing applicable.

Kammer, David
1992 The Historic and Architectural Resources of Route 66 Through New Mexico. New Mexico Historic Preservation Division.
Context reviews the historical and social importance of Route 66 to New Mexico's development.

Killam, David and Marilyn Mortorano
1999 Cultural Resources Inventory of the Proposed 72nd Avenue Project for the city of Arvada.
One resource identified - a house.

Killam, David and Thomas H. Simmons
1999 Draft Cultural Resources Inventory of the Proposed Washington Street Improvement Project.
Identifies railroad resources only.

Larsen, Arthur J.
1966 The Development of the Minnesota Road System. Minnesota Historical Society.
Examination of Minnesota's road development during the 19th century.

Lennon, Thomas J.
1988 Cultural Resource Inventory of the Russellville Bridge Replacement Project.
Identifies two resources (existing bridge and previous bridge) both determined not eligible.

Leonard, Stephen and Thomas J. Noel
1990 Denver: Mining Camp to Metropolis. Boulder, CO.: University Press of Colorado.

Lewis, Tom
1997 Divided Highways: Building the Interstate Highways, Transforming American Life. New York: Viking Press.
Anecdotal review of the greatest public works project in the nation's history – the Federal Interstate System.

Litvak, Dianna
1999 Historical Resources Survey Report, Elk Creek Fire House
The firehouse is the only resource identified.

1999 Historical Resources Survey Report, Evergreen State Highway 74 and County Highway 73
Five sites identified. 5JF2112 and 5JF2193 are WPA stone walls. Site forms included. Determined eligible and not impacted by the project.

1999 Historical Resources Survey Report, Woodmen Road Interchange.
Bridges and railroads only.

1999 Level II Recordation, WPA Bridges, Las Animas County, 5LA8592, 8593, 8594.

Lomond, Carole
1996 Joytown to Starbuck to Idledale. Idledale, CO: Views Publishing Company.
Locally produced history of the town of Idledale along Bear Creek.

Long, Margaret
1953 The Smoky Hill Trail: Following the Old Historic Pioneer Trails on the Modern Highways. Denver: W.H. Kistler Company.

MacDonald, Thomas
1924 "Federal and State Policies in the Construction of the Federal Aid Highway System." Colorado Highways. April: 3-5, 18.

Maloney, James E.
1918 "Standardized Cross-Section Vital to Uniform Roads." Colorado Highways. June: 9.

1922 "Colorado Federal Aid Project No. 1." Colorado Highways. March: 8-9.

Maloney, J.E. and O.T. Reedy
1929 History of the Colorado State Highway Department.
This monograph served as the chapter on Colorado's highway history in the American Association of State Highway Officials, History of Road Building in the United States (1929).

Marriott, Paul Daniel
1998 Saving Historic Roads: Design and Policy Guidelines. New York: John Wiley & Sons.
Primary resource for historic highway preservationists.

McKibbin, Anne
1999 Northwest Parkway: Intensive Cultural Resources Inventory in Boulder and Adams Counties
Identifies multiple sites, most archeological, none applicable.

Mehls, Carol Drake, et al
1997 A Class III Cultural Resource Inventory of US 160 W of Alamosa, Alamosa and Rio Grande Counties, Colorado.
Resources identified include farmstead, ranches, irrigation canals and railroad.

Mehls, Steven F.
2000 Historical Architectural Resources Study Along US 24 from Peterson Road to the Western Edge of Calhan County, Colorado, Vol. I.
Includes site 5EP3939, "Golden Belt Route Auto Highway," multiple other non-applicable sites.

Merchant, Frank
1955 "Colorado's First Highway Commission 1910-12." Colorado Magazine. January: 74-77.

Metcalf Archaeological Consultants, Inc.
2000 Picketwire Loop Survey. Resource Number 51A9132.1.
Site survey of US 85 near the Trinidad city limits.

Metcalf, Michael D.
1995 A Reinvestigation of Historic Cultural Resources 5AH207, 5AH208, 5AH212, 5AH69 and the Early Cemetery at Parker County from the E-470 Realignment Project, Arapahoe County, Colorado.

Miller, Lyle
1999 Earliest Automobiling in Colorado: 1899-1904. Colorado Heritage. Autumn: 22-37.

Moody, Ralph
1963 The Oil Trails West. New York: Thomas Y. Crowell Co.

1967 Stagecoach West. New York: Thomas Y. Crowell Co.

Montana Department of Transportation
1992 Roads to Romance: The Origins and Development of the Road and Trail System in Montana.
Montana's highway context available from Montana Department of Highways.

1993 Monuments Above the Water: Montana's Historic Highway Bridges, 1860-1956.
Companion to Roads to Romance, published a year later.

Moss, Ann
1988 National Register of Historic Places Registration form for Corwina, O'Fallon and Pence Parks.
Project involved relocating a bridge. Impacted Corwina Park.

Mutaw, Robert J. and Cheryl D. Eckhardt
1999 Lower Colfax Bridge Replacement Cultural Resources Survey, Denver County CO
No applicable resources.

No Author
n.d. A Brief History of the Ouray Tunnel and the Million Dollar Highway

n.d. Contracting information on Project M 5310(1), Bowles Ave.
No other information.

n.d. The Charles Plumb House in Greeley.
House only.

n.d. Cultural Resource Report for Historical Resources, Project FC 287-3(22).
Four sites identified, none applicable.

n.d. Historical Preliminary Assessment for Project M8603(1).
Three sites identified, all residences.

n.d. History of Mountain Parks. Denver Mountain Parks, box 1, file folder 41. Located in Denver Public Library, Western History Department.

n.d. Information on the closing of Natural Fort Rest Area.
Nothing applicable.

n.d. Minor widening to construct shoulders on existing SH 135.
Folder includes 13 site forms, mostly ranches and residences, one smelter.

1975 Survey Report I-70 Viaduct Replacement, Washington to Brighton Boulevard.
No applicable resources.

1979 Project RS 0146(5), South of Clifton Cultural Resource Report for Historical Resources.
One house and one agricultural canal identified.

1980 Research and Site forms on Project M 1030(1).
No relevant information.

1981 Cultural Resources Report for Historical Resources, Project FC 024-1(15).
Identifies 4 resources, 1 railroad, 2 houses, 1 warehouse.

1981 Information regarding 5AH134, Doerfer House and 5AH143, Willowcroft.
No applicable information.

1981 Information regarding Federal Air Project BRS 0149(9), SH 149, Seven Mile Bridge.
Includes engineering drawings and photos.

1982 Collected research materials and Draft Report on the Shoshone Hydroelectric Power plant complex.
No other information.

1982 Preliminary Cultural Resources Survey Report, Project FC 287-3(20), US 287 Lafayette Bypass.
Mention of 'Road of Remembrance' gateway. No site form included.

1983 Cultural Resource Report for Historic Resources Project F-RF040-3 (1), Berthoud Pass.
Information on the Berthoud Pass Ditch, potentially eligible.

1984 Preliminary Survey Report for Historical Resources, Project SR 0119 (28), SH 119, Junction SH 279 to Boulder County Line.
Sixteen sites noted, among them are the Moffat Road and the Golden Gate Toll Road.

1985 Adoption and Recordation information for Four Mile Bridge.
Information on Four Mile Bridge only.

1985 HAER Recordation No. CO-30-B, State Bridge, Del Norte vicinity, Rio Grande County.
Recordation only.

1985 Preliminary Case Report, Project BRO 0012(1), Baseline Rd.-Adams/Weld County Line, Baseline Bridge.
Info on bridge and offer for adoption and relocation.

1986 HAER No. CO-30-D, Baseline Bridge, Brighton Vicinity, Adams and Weld Counties.
HAER Documentation of Baseline Bridge.

1986 HAER NO. CO-30-E, Broadway Bridge, Broadway at Speer Boulevard.
Also includes report and research materials, MOA.

1986 HAER Recordation, CO-30-F, Hortense Bridge, Chalk Creek Bridge.
Includes a short history of the Denver South Park and Pacific Railroad Route.

1986 Information on relocation of State Bridge.
No further information.

1987 Collected information on Fifth Street Bridge.
Includes research and adoption advertisement and information, HAER documentation.

1987 Collected information on Hotchkiss Bridge Adoption and Relocation.
Includes advertisement for adoption/relocation.

1987 Documentation for Finding of Adverse Effect, Project CC 01-0033-01.
No useful information.

1987 Minutes from June 19, 1987 Meeting.
No cultural resources information.

1987 Survey Report Project BRF-071-1 (10), 7.1 miles south of SH 94.
Found no resources within the project area.

1988 HAER Recordation of Black Bridge, Mesa County, Colorado.
Included only the recordation and some relevant correspondence.

1988 HAER Recordation of Four Mile Bridge, County Road 42, Routt County, No. CO-60.
This recordation satisfies mitigation requirements.

1988 HAER Recordation of Nepesta Road Bridge.
Only the HAER recordation.

1989 HAER Recordation of Delta Bridge, US Highway 50, Delta County, No. CO-62.
Also includes adoption information.

1989 HAER Recordation of Trinidad and Linden Ave/Commercial Street Bridges.
Includes HAER recordation, correspondence and newspaper clippings.

1993 Collected information on Basalt of Buttermilk, FC 082-1(14).
Includes information on houses and barns only.

1994 Adoption information on Four Mile Bridge.
No other information.

1995 Highway 82 – Entrance to Aspen Project.
Ten sites identified, none applicable.

1995 Information on Glenwood Canyon Signage.
No cultural resources information.

1995 Information on restoration of Greeley Depot renovation project, STEM570 001 10846.
Nothing applicable.

1995 Survey Report, Monaco South of 96th Realignment.
Identified the Sprat Platte Ranch

1997 HABS No. CO-192, Snow White Cleaners and Laundry, 3043 W. Alameda Avenue.
Commercial structures only.

1997 HABS No. CO-193, Safeway, 3033 W. Alameda Avenue.
Commercial structure only.

1997 Request for task proposal and cost estimate, Re: SP0501-037, Whitewater East.
No relevant information.

1998 Collected information on Project CXFC 43-0024-21 and the Ouray Inn.
No effect on this historic building.

1998 Site form and research info on the Bijou Canal.
Agricultural resource.

2000 Historical Survey and Documentation of US 50 for the Delta North Project, Delta County, Colorado.
No applicable sites or information.

Noel, Thomas J.
1987 "Paving the Way to Colorado: The Evolution of Auto Tourism in Denver." Journal of the West. July: 42-9.

Norgren, Barbara
1977 Historic Resources Survey Report: Idledale Bridge over Sawmill Gulch.
Evaluation of one bridge.

1982 Site Form 5DV696, Avoca (Molly Brown Summer Cottage).
Just the cottage.

1996 Berthoud Pass Highway Widening Project, Historical Resources Survey Report.
Eight sites, including Empire and Middle Park Wagon Road, Berthoud Pass Ditch, Berthoud Pass Road. Site forms included.

1996 Historic Resources Survey Report West 6th Ave. Viaducts Rehabilitation Project.

Painter, Mary W, et al.
1999 Cultural Resource Investigations for the Proposed Broadway / I25 / Santa Fe / Alameda Interchange
Lots of resources, mostly residences, one railroad, nothing applicable.

Pierce, George
1923 "Material Tests Protect Public." Colorado Highways. April 1923: 5-6, 18.

Pikes Peak Ocean-to-Ocean Highway website
2001 http://www.prairienet.org/us36, accessed December 2001
Website dedicated to preserving the memory of the transcontinental auto highway.

Pearce, Sally
n.d. The Story of the Lariat Loop Road.

1988 Cultural Resource Survey of State Highway 12.
Resources identified are architectural structures along the road, but a history of the road is included.

1988 Colorado Cultural Resource Survey Form, 5PA316, Santa Maria (camp).

1989 Colorado Inventory Form, Management Data Form, 5JF587 Hogback Road.
Site form for the road, but no additional information.

1989 Colorado Inventory Form for 5PA576.
Correspondence and form for a collapsed water tank associated with a railroad. Determined not eligible.

1990 Survey Report, 96th St. Interchange at US 36, Broomfield.
One resource identified – the railroad.

1990 Survey Report, CDOH Project Communications Site BRS 52-0096-12, East of State Highway 67.
Two sites identified, determined not eligible.

1991 Survey Report Project MP 43-0024-22, Bluebird Hill.
Identifies only the previously recorded Midland Railroad grade. Project has no effect on this resource.

1992 Survey Report, Project CX 11-0121-75, Wadsworth Boulevard, 58th to 64th
No applicable resources, just residences.

1993 5JF943, Avery Acres Mink Farm.
Site form for a mink farm on the El Rancho exit on I-70, proposed to use farm site as a fill area.

Pearce, Sally and Chris Whitacre
1988 Historical Resource Survey of the Proposed Access Road to the Superconductor Super Collider Facility.
Forms for ten sites included. Four were irrigation canals recommended eligible.

Philpott, William
1994 Visions of a Changing Vail: Fast Growth Fallout in a Colorado Resort Town. M.A. Thesis. University of Wisconsin-Madison.
Critical look at the changes brought to the Vail Valley by development and Interstate 70.

Portland Cement Association
1952 Concrete Highways and Public Improvements
Detailed report on the materials used in the completion of the Denver-Boulder Turnpike.

Randall, Roy F.
1922 "Drainage to Aid Better Roads." Colorado Highways. August: 1, 12.

Reef, Wallis M.
1961 "Scenic Interstate 70 Now Being Fashioned in Colorado." Rocky Mountain Construction. June 12: 16-9.

Ridgway, Arthur
1932 "The Mission of Colorado Toll Roads." Colorado Magazine. September: 161-9.

Retrospect
1999 Evaluation of Historic Buildings and Structures for the SH 24 / Pike's Peak Highway Improvement Project
Twelve sites identified, 4 eligible, none applicable.

Rocky Mountain Contractor
Regional trade publication with a strong editorial slant toward highway development in Colorado.

1937 "Engineering Section." February 24.

1937 "Maintenance of Colorado Roads." October 13: 7-8.

1938 "Monarch Pass Bids Asked." October 12: 6.

1939 "Highway Guard Rails Prevent Accidents." May 10: 11.

1940 "WPA Road and Bridge Operations in Colorado." March 27: 8.

1941 "Something Old . . . Something New – A Pictorial of Colorado Highways." January 8: 22-3.

1941 "Historic Road to Be Rebuilt." September 10: 6-7.

1941 "Travel on Colorado Highways Increases During 1941." September 10: 8.

Rocky Mountain Construction
Successor to Rocky Mountain Contractor.

1957 "$68.8 million Budget for Colorado Roads." June 15: N-2.

1959 "Colorado Road Budget." June 15: N-4-N-18.

1960 "Governor Signs $60 Million Colorado Road Budget." June 20: N-12.

1961 "Colorado Road Budget." June 12: N-4-N-16.

1961 "Contracts." September 4: 8.

1963 "Colorado Road Building Budget Signed by Governor." June 11: N-2-N-8.

1968 "The Manitou By-Pass Project on US 24." June 4: 26-27.

Rocky Mountain News
1939 Stone and Cement Set to Guard Bear Creek Road." May 28: 2.

1966 "Georgetown Fights to Get Access Road." July 16: 30.

1966 "Road Widening Termed Critical Need." October 3: 37.

1992 “12-year Traffic Jam Ends at Last.” October 15: 10.

1993 “Sign of the Times: ‘Evergreen Parkway’ Exit Signals Growth.” May 16: 34-A.

1993 “Last Stretch of Interstate 76 Opens Today.” September 15: 4-A.

Root, James E.
n.d. Staff Bridge design worksheet, Miner St. No. 1.
No cultural resource information includes engineering, photos, drawings, etc.

Rottman, Vicki
1980 No title.
Six site forms, all residences.

1982 HABS, Littleton Denver and Rio Grande Western Depot.
Nothing applicable.

Royster, David M.
1975 Historical Survey Assessment M 5302(1), (2), M 7026(1), Alameda Ave. Colorado Blvd to Havana.
Five sites, nothing applicable.

Salek, Matthew
2001 The Highways of Colorado website, http://www.mesalek.com.highways, accessed December 2001.

2001 US Interstate Highways in Colorado website, http://www.mesalek.com/colo/us-inter.html, accessed December 2001.

Seely, Bruce E.
1987 Building the American Highway System. Philadelphia: Temple University Press.
Scholarly approach to the story of the funding, construction, and federal-state partnership that built the nation’s interstate system.

Science Applications International Corporation
1999 Review of the Sugnet (1998) Technical Report: Historic Resources
11 resources identified. None applicable.

Schader, Conrad F.
1996 Glenwood Canyon: From Origin to Interstate. Golden, CO.: Regio Alta Publications.

Schweigert, Kurt P.
2002 Yellowcake Legacy: The Department of Energy Grand Junction Office in War and Peace, 1943-2001. Prepared for the U.S. Department of Energy, Grand Junction Office.
Department of Energy sponsored examination of the Grand Junction facility that played a role in developing the atomic bomb.

Scott, Glenn R.
1999 Historic Trail Map of the Denver 1° X 2° Quadrangle, Central Colorado. U.S. Department of the Interior: Denver.
One in a series of detailed USGS maps featuring Colorado's earliest trails.

Simmons, Laurie R. and Thomas H. Simmons
1998 Historical Resources Survey Interstate 25 / State Highway 85, Double County Colorado. IM 0252-317.
11 resources identified. None applicable.

Simmons, Laurie R., et. al.
1997 Historic Resources Survey, County Line Road, Arapahoe and Douglas Counties.
Identifies five resources, none applicable.

1999 Historic Resources Survey, Towner to North Avondale Junction Union Pacific / Missouri Pacific Railroad.
Railroad resources only.

Sprague, Marshall
1964 The Great Gates: The Story of the Rocky Mountain Passes. Boston: Little, Brown and Company.

Steel, Larry
n.d. Information and site form on 5WL768, POW Camp Site
Nothing applicable.

Strobridge, Truman B. (comp.)
1962 Preliminary Inventory of the Records of the Bureau of Public Roads. Washington, D.C.: National Archives and Records Service, General Services Administration.
Finding aid for Record Group in the National Archives.

Sugnet and Associates
1998 Historical Resource Survey Minor Improvements SH 34, Deerfield to Weld - Morgan County Line.
Identifies one canal and Deerfield site.

Tate, Marcia J.
1999 A Cultural Resources Inventory for the Gilman Electric Substation, Eagle County, Colorado.
Identifies one substation.

Tate, Michael L.
1999 The Frontier Army in the Settlement of the West. Norman, OK.: University of Oklahoma Press.

Taylor, Ralph C.
1923 "Pueblo County Highways." Colorado Highways. August: 8-9.

1927 "The Santa Fe Trail." Colorado Highways. March: 8-9.

1927 "Future Colorado Paving Plans." Colorado Highways. August: 4-5.

Thomas, Thomas A.
1996 Roads to a Troubled Future: Transportation and Transformation in Colorado's Interstate Highway Corridors in the Nineteenth and Twentieth Centuries. University of Colorado-Boulder: M.A. Thesis.
Unflinching examination of the politics behind building the state's highways.

Tracy, Ralph N.
1937 "Colorado First Uses Multiple Type Culverts on Mount Vernon Highway." Rocky Mountain Contractor. November 10: 10-11.

U.S. Department of the Interior
1995 National Register of Historic Places. Registration Form for Starbuck Park.

U.S. Department of Commerce
1961 Bureau of Public Roads - Intermediate Construction Inspection Report – Huerfano and Las Animas Counties. October 3. Located in Record Group 30 – Records of Bureau of Public Roads, File FV-10 Construction 5-148 (63) I-25-1 (33) 27, Box 1. National Archives – Rocky Mountain Region, Denver.
Example of the weekly progress report filed by the BPR during the construction of I-25 through southern Colorado.

U.S. Department of Transportation
1971 Federal Highway Administration, Draft Environmental State Project I-70-2 (11): 2.

University of Denver
1940 Financing Highways in Colorado. University of Denver Reports, v. 16, no.1. Business Study No. 96.
A review of the Department of Highways asphalt program of the 1930s.

Waddell, Karen
1987 I-70 Through Glenwood Canyon, Colorado: A Case Study.
Historical information on the canyon.

Watrous, Mark U.
1946 "Colorado's Highway Problems." Rocky Mountain Contractor. July: 13-4.

Whittaker, John S.
1919 "Common Drainage Problems." Colorado Highways Bulletin. February: 13, 21.

Wiley, Marion C.
1976 The High Road.
Bicentennial project of the Division of Highways, State of Colorado.

Weimer, Monica M. Bargielski
1998 Class III Cultural Resources Inventory of the Ecology Park Trail Project Area, Fremont County, Colorado.
Identifies irrigation and mining resources.

Weiser, William
1924 "Official Outlines Road Policy." Colorado Highways. April: 6-7.

Williams, W.M.
1937(a) "Construction is Being Pushed to Complete Highway Thru Southwestern Colorado." Rocky Mountain Contractor. June 9: 8-9.

1937(b) "Highway Department Makes Steady Progress on Highway Program." Rocky Mountain Contractor. July 14: 17-8.

1945 "To Chas. D. Vail, Colorado Highway Builder." Rocky Mountain Contractor. January: 29-30.

Wolfe, Mark
1999 "How the Lincoln Highway Snubbed Colorado." Colorado Heritage. Autumn: 2-21.
Article tells the little-known story of how bad roads and misunderstandings put Colorado off the Lincoln Highway.

Workers of the Writers' Program of the Works Progress Administration in the State of Colorado (comp.)
1987 *The WPA Guide to 1930s Colorado* (rev.) University Press of Kansas Lawrence, KS.
Reprint of original 1937 WPA guide to Colorado's history, economies, and tourist sites.

Zahn, J.E.
1922 "Along the Victory Highway." Colorado Highways. June: 10-1.

Zier, Christian J. et al
1993 An Archaeological and Historical Survey of the Interstate 76-120th Avenue Interchange, Adams County Colorado.
No applicable resources – mostly archaeological.

Ziemke, Laura
2000 Colorado Cultural Resource Survey Management Data Form 5DA1548.1, Arapahoe Canal.
Site forms and additional information.

2000 Cultural Resource Re-evaluation Form, 5DA600.2, Highline Canal.

APPENDIX C: COMPILED INFORMATION – COLORADO HIGHWAY SYSTEM

C1: Colorado Routes of 1919

Colorado's contemporary highway system traces its origin to May 1923, when it received approval by the Colorado Highway Advisory Board. Today's system—a holdover from that era—follows no obvious numerical paradigm. In fact, some routes on this chart include an "s" suffix, without appearing to mean "spur" or "south," or sharing any link to a "parent" route. This chart lists the Highway Commission's first attempt at road numbering from 1919.

Source: *Map of State Highways of Colorado*, issued by the State Highway Commission, printed by Clason Map Company, July 1919; held at the Western History Department, Denver Public Library.

Route	Alignment
1	Golden-Denver (via 44th Avenue?)
1s	Denver-Parker-Franktown-Jct. Route 8 north of Colorado Springs
2	Denver-Broomfield-Longmont-Fort Collins-Wellington-Wyoming
3	Denver-Littleton-Sedalia-Perry Park-Palmer Lake-Jct. Route 8
3s	Greeley-Nunn-Wyoming
4	Colorado Springs-Fountain-Pueblo
5	Cañon City-Pueblo-Vineland-Avondale-Fowler-Rocky Ford-La Junta
5s	Stratton-Yuma
6	La Junta-Lamar-Granada-Bristol-Holly-Kansas
6s	Burlington-Wray
7	Jct. Route 8 south of Longmont-Dacono-Fort Lupton-Wiggins-Brush Spur from Route 7 south of Bennett-Denver
7s	Jct. Route 8s southwest of Silver Cliff-Beulah-Pueblo
8	Colorado Springs-Palmer Lake-Castle Rock-Franktown-Kiowa; Projected from Kiowa-River Bend
8s	Silver Cliff-Wetmore-Pueblo
9	Brush-Sterling-Julesburg
9s	Projected Bristol-Sheridan Lake-Cheyenne Wells; Cheyenne Wells-Burlington
10	Glenn Springs-Wolcott-Red Cliff-Leadville
10s	Jct. Route 36-Center-Hooper-Alamosa
11	Utah-Mack-Grand Junction-up Plateau Creek-DeBeque-Rifle-Glenwood Springs
11s	Estes Park-Lyons-Boulder
12	Grand Junction-Delta-Montrose
12s	Lyons-Longmont
13	Montrose-Ouray-Silverton-Durango-New Mexico

14	Utah due east-Cortez-Durango
14s	Drake-Berthoud-Campion-Johnstown-Jct. Route 49
15	Durango-Pagosa Springs-Summitville-Estrella
15s	Jefferson-Tarryall-Lake George
16	New Mexico-Alamosa-Blanca-La Veta-Walsenburg
16s	Divide-Deckers-Sedalia
17	Dillon-Leadville-Buena Vista-Salida
17s	Jct. Route 6 west of Lamar-Eads-Kit Carson
18	Buena Vista-Hartsel-Florrisant-Colorado Springs
18s	Karval-Hugo-Genoa
19	New Mexico-San Luis-Fort Garland
19s	Flagler-Thurmann-Akron; Projected from Akron-Atwood
20	Utah-Paradox-Naturita-Montrose-Gunnison
20s	Projected from Rocky Ford-Ordway-Limon; Limon-Brush
21	Sulphur Springs-Berthoud Pass-Golden (not via Clear Creek Canyon) Spur west to Georgetown
21s	Monument-Eastonville-Peyton
22 (1)	Arboles north to Jct. Route 15
22 (2)	Salida-Cañon City-Florence-Penrose-Colorado Springs
23	Sterling then east, north, east-Fleming-Haxtun-Holyoke-Nebraska
23s	Jct. Route 27 west of Morrison-Fort Logan-Englewood
24	Loveland-Greeley-Dearfield-Goodrich-Weldona-Fort Morgan
24s	Wray-Holyoke-Julesburg
25	Glenwood Springs-Aspen-Twin Lakes
25s	Projected from Jct. Route 33s east of Two Buttes-Granada
26	Pueblo-Walsenburg-Trinidad-New Mexico
26s	Projected from Two Buttes-Carleton
27	El Rancho-Evergreen-Morrison-Denver
27s	Projected from Haswell-Boyero-Thurman
28	Gunnison-Salida
28s	Projected from Kit Carson-Seibert-Hyde; Hyde-Otis north to Jct. Route 23
29	Trinidad-La Junta
29s	Yuma-Haxtun
30	Colorado Springs-Calhan-Limon-Seibert-Burlington-Kansas
30s	Projected from Jct. Route 34-Vilas-Stonington-Jct. Route 2s

31s	Gateway-Whitewater
32	Limon-Hugo-Kit Carson-Cheyenne Wells-Kansas
32s	Projected from La Jara-La Sauses-San Luis
33	Fowler-Olney Springs-Orday-Eads-Sheridan Lake-Kansas
33s	Projected from Jct. Route 34 at the Prowers/Baca County line-Two Buttes-Jct. Route 2s
34	Oklahoma-Springfield-Lamar
35	Jct. Route 18 west of Hartsel-Fairplay-Bailey-Morrison
36	Poncha Springs-Sagauche-Monte Vista-Jct. Route 15 west of Estrella Spur from Sagauche-Parlin
37	Texas Creek-Silver Cliff-Cañon City-Cripple Creek-Divide
38	Iola-Lake City-Creede-South Fork-Del Norte-Alamosa
39	Wolcott-State Bridge-Radium-Hot Sulphur Springs
40	Steamboat Springs-Phippsburg-State Bridge Spur-Toponas-Jct. Route 47 north of Kremmling
41	Utah-Craig-Steamboat Springs
42	Dinosaur-Rangely-Meeker-Craig-Wyoming Spur south-Rifle
43	Steamboat Springs-Rabbit Ears Pass-Walden-Rand-Granby
44	Naturia-Norwood-Placerville-Telluride Spur Placerville-Ridgeway
45	Cortez-Dolores-Rico-Telluride Spur Dolores-Norwood
46 (1)	Delta-Hotchkiss-Sapinero
46 (2)	Jct. Route 15 near Summitville via Rio Conejos-Jct. Route 67 west of Conejos
47	Rabbit Ears Pass-Troublesome-Dillion-Breckenridge-Fairplay-Hartsel
48	Silverton-Jct. Route 38 southwest of Creede
49	Denver-Brighton-Greeley
50	Wyoming-Cowdrey-Walden via Red Feather Lakes-Fort Collins
51	Granby-Rocky Mountain National Park-Estes Park-Loveland
52	Steamboat Springs-Columbine-Wyoming
53	Colorado Springs-Ellicot-Rush-Kutch-Boyero
54	Idaho Springs-Central City-Nederland-Boulder
55	Beshoar Junction-Trinchera-New Mexico
58	Rollinsville-Lyeden-Arvada-Denver
59	Adams City-Hudson
60	Jct. Route 15 northeast of Pagosa Springs-South Fork
62	Central City-Blackhawk-Golden Gate-Golden-Denver via Colfax Ave.

63	Hotchkiss-Somerset-Kebler Pass-Crested Butte-Gunnison
64	Bardine (current Somerset Reservoir)-Carbondale
65	Jct. Route 46 east of Delta-Cedaredge-Collbran-Jct. Route 11
66	Fort Collins-Timnath-Eaton-Galeton-Cornish-Briggsdale-Buckingham-Sterling
67	Pagosa Springs-Chromo-New Mexico, through New Mexico-Cumbres-Jct. Route 46 east of Conejos
68	Del Norte-Jct. Route 36 south of Sagauche
69	Silver Cliff-Gardner-Walsenburg
70	Trinidad-Stonewall; Projected Stonewall-La Veta
73	Projected Evergreen-Conifer
74	Projected Virginia Dale-Livermore
76	Projected Cripple Creek-Colorado Springs
77	Projected Cripple Creek-Florence
78	Projected Cripple Creek-Florissant
79	Dolores via Dolores River-Cedar-Norwood
81	Projected Stonewall-New Mexico
82	Projected from Jct. Route 9 northeast of sterling-Nebraska
85	Projected Colorado Springs-Jct. Route 21s west of Eastonville
86	Projected Jct. Route 85 due east-Falcon
87	Littleton-Denver(via Broadway?)
88	Littleton-Jct. Route 1s (via Broadway?)
89 (1)	Projected Falcon-Jct. Route 21s west of Eastonville
89 (2)	Projected Pueblo-Baxter-Olney Springs
97	Projected Nucla-Delta

C2: Scheme for Colorado State Highways, Federal Aid System, May 14, 1923

In May 1923, the Colorado Highway Advisory Board renumbered the state's highways under Commission Resolution A-65. Subsequent changes took place on November 25, 1923, January 15, 1924 and January 1, 1937. The State Highway Department added nearly 2,700 miles to the State Highway System on April 22, 1938. In 1953 reorganization returned those miles back to the counties. In November, the Commission adopted a numbering scheme where the lowest U.S. number on the route is the State Highway number. For example, since 1968 in Department files and documents, Interstate-25 is referred to as State Highway 25. (Source: Colorado State Archives, "Transportation," Box 48036, File: Maps of Colorado, 1922-23).

No. 1 Main North and South road beginning at the Wyoming State Line, on the road between Cheyenne and Fort Collins, and extending southerly via Fort Collins, Denver, Colorado Springs, Pueblo, Trinidad, to the New Mexico State Line on the route to Santa Fe.

No. 2 Northerly route across the state beginning at the Nebraska State Line near Julesburg, extending westerly through Sterling, Fort Morgan, Greeley, Denver, Rifle Range, Vernon Canon, Idaho Springs, Berthoud Pass, Granby, Sulfur Springs, Craig, to the Utah State Line on the road to Vernal.

No. 3 Wyoming State Line on the Cheyenne Road, south to Greeley via Nunn and Eaton.

No. 4 Beginning at the Kansas State Line on the Colby road, westerly though Burlington, Limon, Colorado Springs, Lake George, Trout Creek Pass, Buena Vista, Tennessee Pass, Red Cliff, Wolcott, Glenwood Springs, Grand Junction, and westward to the Utah State Line on the Price Road.

No. 5 Beginning at Bulger on Road No. 1, extending eastward through Carr to connection with Road No. 3.

No. 6 Beginning at the Kansas State Line, east of Holly, and extending westerly through Holly, Lamar, La Junta, Pueblo, Canon City, Salida, Monarch Pass, Gunnison, Montrose, to junction with Road No. 4 at Grand Junction.

No. 7 Beginning at junction with Road No. 1, north of Lafayette, extending westerly on what is known as the Arapahoe Road to Boulder, thence northerly to Lyons, westerly to Allens Park, and northerly to Estes Park.

No. 8 Beginning at Antero Junction on Road No. 4, extending northerly through Fairplay, Jefferson, Conifer, Morrison, Denver, Bennett, Deertrail, Limon, Hugo, Kit Carson, Cheyenne wells, eastward to Kansas State Line on the Salina Road.

No. 9 Kremmling via Dillon, Breckenridge, Hoosier Pass Fairplay, to Hartsel.

No. 10	Beginning at Walsenburg, westerly via La Veta Pass, Alamosa, Del Norte, South Fork, Wolf Creek Pass, Pagosa Springs, Durango, Cortez, Dolores, and northwesterly to the Utah State Line on the Monticello Road.
No. 11	Kremmling to Wolcott via State Bridge.
No. 12	La Junta via Thatcher and Trinidad to connection with Road No. 111, at Stonewall.
No. 13	Rifle northerly via Meeker and Craig to Wyoming State Line on the Wamsutter Road.
No. 14	Nebraska State Line east of Holyoke, westerly through Haxtun, Sterling, New Raymer, Briggsdale, Fort Collins, Poudre Valley, Cameron Pass, Walden, to connection with Road No. 2, at Muddy Pass.
No. 15	Buena Vista southerly via Salida, westerly on Road No. 8 to Ponche Junction, southerly via Ponche Pass, Mineral Hot Springs, Saguache, over the Gunbarrel Road to Monte Vista, and southerly and easterly via La Jara to San Luis.
No. 16	Beginning at Granby, northerly through Grand Lake, Fall River Road through Rocky Mountain National Park, Estes Park, Loveland, to Greeley.
No. 17	Beginning at Mineral Hot Springs on Road No. 15, southerly via Hooper, Alamosa, La Jara, Antonito, Cumbres Pass, Chama, New Mexico; Chromo, to junction with Road No. 10, at Pagosa Springs.
No. 18	
No. 19	Montrose via Ouray, Silverton, Durango, to New Mexico State Line on the Gallup Road.
No. 20-49	No. 20 to No. 49 inclusive, reserved for Federal Aid Projects.
No. 50	Monument easterly via Eastonville to connection with Road No. 4 at Peyton.
No. 51	Julesburg via Holyoke, Wray, Idalia, Burlington, Cheyenne Wells, Sheridan Lake, Stonington, to Kansas State Line on the Road to Guymon.
No. 52	Beginning at New Raymer, via Fort Morgan, Wiggins, Hudson, Fort Lupton, westward to junction with Road No. 1.
No. 53	Beginning at junction with State Highway No. 51, south of Wray, via Beecher Island Battle Ground, to connection with State Highway No. 4, near Kanorado.

No. 54	Beginning at the Nebraska State Line east of Wray, extending west via Wray, Yuma, Akron to Brush.
No. 55	Near Beshoar Junction running southeasterly via Trinchera, Branson, to New Mexico State Line on the road to Clayton.
No. 56	Beginning at junction west of Berthoud, extending northwesterly via Pinewood to junction with Road No. 16 near Drake.
No. 57	From Stratton on State Highway No. 4 north to connection with No. 102.
No. 58	Denver on 44th Ave., via Golden and Guy Hill to junction with Road 110, north of Central City.
No. 59	From Colorado State Line north of Sedgwick, southerly via Haxtun, Yuma, to junction with State Highway No. 102; thence westerly coinciding with No. 102 for about six miles; thence southerly through Siebert, Kit Carson, Eads, Lamar, and Springfield, to Oklahoma State Line, on the road to Boise City.
No. 60	Platteville via Dent, Johnstown, Welty, to junction with Road No. 1, near Campion.
No. 61	Beginning at junction on Road No. 14, about 10 miles east of Sterling; thence South via Otis to junction with road No. 102, near Arickaree.
No. 62	Ridgeway to Placerville.
No. 63	Atwood on Road No. 2 southerly through Akron, Attiba, Boyero, to connection with Road No. 96, at Haswell.
No. 64	Meeker down White River via Rangeley, to Utah State Line
No. 65	From junction with Road 92, near Delta, via Cedaredge, Grand Mesa, and Collbran to junction with Road No. 4, at Mesa.
No. 66	Longmont via Lyons and North St. Vrain to Estes Park.
No. 67	Wetmore on Road No. 96, northerly via Florance, Cripple Creek, Divide, Deckers, Jarre Canon to Salida.
No. 68	Beginning at Rifle Range, on Route No. 2, via Golden and Lookout Mountain, to connection with Route No. 2, at the end of the Mount Vernon Canon Road.
No. 69	Walsenburg northwesterly via Gardner and Silver Cliff to Texas Creek, via No. 6.

No. 70	Petersburg westerly via Fort Logan and Cowan to junction with No. 8.
No. 71	Rocky Ford northerly though Ordway, Limon, to junction with Road No. 52, south of Brush.
No. 72	Denver via Arvada, Leyden and Pinecliff, to junction with Road 119, north of Rollinsville.
No. 73	Evergreen to Conifer junction.
No. 74	Morrison via Evergreen and Bergen Park to Echo Lake.
No. 75	Federal Boulevard south from Alameda Ave., to connection with No. 70.
No. 76	Pueblo via Beulah to connection with No. 96, near McKinzie Ranch.
No. 77	Lake George via Tarryall to Jefferson.
No. 78	Wheeler to Red Cliff, via Shrine Pass.
No. 79	Bennett northerly to connection with Road No. 52.
No. 80	Redvale westward via mouth of Disappointment Creek and Slick Rock Hill to connection with Road No.10, above Dove Creek.
No. 81	Sand Creek junction with Road No. 2, near Denver, northeasterly to connection with Road No. 52, near Hudson.
No. 82	Junction on Road No. 4, near Twin Lakes, via Independence Pass, Aspen, Basalt, Bryant to Glenwood Springs.
No. 83	Denver southerly via Melvin, Parker, Franktown, Cherry, to connection with Road No. 1, near Sommers.
No. 84	Toponas via Gore Range to connection with Road No. 2.
No. 85	Colorado Springs northeasterly to junction with Road No. 50.
No. 86	Castle Rock easterly via Franktown, then southerly coinciding with Road No. 83 for about three miles; thence easterly via Kiowa to junction with No. 8 at River Bend.
No. 87	Broadway at Denver city limits, south and then west to Littleton.
No. 88	Junction on No. 83, near Melvin, westerly to connection with 87, near Littleton.

No. 89 Junction on Road No. 6, near Holly, south to junction with Road No. 51, near Stonington.

No. 90 Montrose via Naturita, westward to Utah State Line on the Moab Road.

No. 91 Junction on Road No. 2, near Empire, via Georgetown, Silver Plume, Loveland Pass, Dillon, Wheeler, Fremont Pass, to Leadville.

No. 92 Sapinero over Black Mesa via Hotchkiss to Delta.

No. 93 Hog Back Road, Morrison to Golden.

No. 94 From Junction with Road No. 4, east of Colorado Springs, eastward to Boyero.

No. 95 Sheridan Boulevard beginning at 48th Ave. at junction with Road No. 58, and extending south to connection with No. 70.

No. 96 Silver Cliff over North Hardscrabble Road via Pueblo, Boone, Ordway, Eads, Sheridan Lake, to Kansas State Line.

No. 97 Delta southwesterly via Nucla to connection with Road No. 90, near Naturita.

No. 98 Evergreen to Bendemeer.

No. 99 San Acacio south via Jarosa, to New Mexico State Line on the Taos Road.

No. 100 Beginning near Trinchera (Branson) on Road No. 55; thence northerly and easterly via Kim and Springfield to junction with Road No. 51, near Stonington.

No. 101 Las Animas southerly to connection with Road No. 100, west of Springfield.

No. 102 Strasburg east via Cope and Idallia to Kansas State Line.

No. 103 Mt. Evans Road; Idaho Springs via Echo Lake and Mt. Evans to junction with Road No. 8, near Schaefers.

No. 104 Junction on Road No. 4, near Leadville, to Basalt via Ivanhoe-Busk Tunnel.

No. 105 Sedalia via Perry Park to Palmer Lake.

No. 106 Cortez southerly to Ute Indian Reservation.

No. 107 Wiggins northerly to connection with Road No. 2.

No. 108 Telluride to connection with No. 145, near Vance Junction.

No. 109	Genoa southerly through Hugo, continuing southerly to township lines between townships 15 and 16.
No. 110	Silverton over Stony Pass East to junction with Road No. 149.
No. 111	La Veta southerly via Stonewall to New Mexico State Line.
No. 112	Hooper westward via Center to connection with Road No. 10 at Del Norte.
No. 113	Beginning at junction on Road No. 2, north of Sterling, extending northerly through Windsor and Peetz to Nebraska State Line on the Sidney Road.
No. 114	Saguache to Parlin via Cochetopa Pass.
No. 115	Colorado Springs to junction with Road No. 6 near Penrose.
No. 116	Beginning at junction on Road No. 59, near Verdun; thence easterly and southerly to connection with Road No. 51, east of Two Buttes.
No. 117	Carlton southerly to connection with Road No. 51.
No. 118	From Road No. 89, at Buckeye, Baca County, east 4¾ miles to Colorado State Line, thence north 1½ miles along Colorado State Line.
No. 119	Idaho Springs via Central City, Rollinsville, Nederland, to Boulder.
No. 120	Canon City east to connection with Road No. 67.
No. 121	Wadsworth Ave. Arvada, to Broomfield.
No. 122	Cripple Creek to Colorado Springs.
No. 123	Belleview Junction on Road No. 14, northerly to Colorado State Line on the Tie Siding Road.
No. 124	
No. 125	Granby via Willow Pass and Walden to Pinkhampton.
No. 126	
No. 127	Beginning at the Wyoming State Line, near Wyocolo, via Camp and Pinkhampton; thence up the north Platte River to the Wyoming State Line on the Rawlins Road.
No. 128	

No. 129	Steamboat Springs northerly to the Wyoming State Line on the Wamsutter Road.
No. 130	
No. 131	State Bridge via Toponas to Junction with Road No. 2, near Sidney.
No. 132	
No. 133	Bardine via McClure Pass to junction with Road No. 82, near Bryant.
No. 134	
No. 135	Gunnison Via Crested Butte, Somerset, to Hotchkiss.
No. 136	
No. 137	Flagler north and west to connection with Road No. 63, near Thurmond.
No. 138	
No. 139	Fruita to Rangeley.
No. 140	
No. 141	Whitewater southwesterly via Gateway, the Dolores Basin, and the San Miguel, to connection with Road No. 90.
No. 142	
No. 143	Silver Cliff via Canon City and Cripple Creek to Florissant.

C3: U.S. Highways in Colorado

Since 1923, Colorado has had its own numbering system for auto highways. By 1927, the Bureau of Public Roads instituted a national number that has crowded Colorado road maps to this day. This list provides the US Route number, State Highways the US route shared and additional comments on the highway itself.
(Source: US, Interstate Hwys in Colorado website, http://www.mesalek.com/colo/us-inter.html).

U.S. Route	Dates Existed in Colorado	State Highways Run On	Notes
6	1932-Present	4 UT-Leadville 91 Leadville-Empire (Later 78 Vail Pass) 2 Empire-Denver 81 Denver-Wiggins 2 Wiggins-Sterling (Later 2 Denver-Sterling) 14 Sterling-NE	Extended west to Denver in 1932 as part of Roosevelt Coast-to-Coast Highway, taking over US 38. Extended west from Denver in 1937. Routed over Vail Pass 1942.
24	1936-Present	4	Extended west from Kansas to Limon over US40N, 40S Limon to Grand Jct. Truncated at I-70 1976.
34	1939-Present	16 Granby-Wiggins 2 Wiggins-Brush 54 Brush-NE	Took over former route of US 38 Greeley to Brush. Other sections were previously not a US Hwy.
36	1930-Present	66 Deer Ridge Jct.-Lyons 7 Lyons-Boulder 2 Denver-Boulder 102 Byers-KS	Extended west to Denver 1930. Up newly free Denver-Boulder Turnpike to Estes Park to Deer Ridge Jct. ca. 1978.
CO US 38	1927-1932	2 Greeley-Sterling 14 Sterling-NE	Deleted in favor of US 6.
138	1927-Present	2	Used to touch US 38 at Sterling.
40	1927-Present	2 UT-Denver 8 Denver-KS	No major changes west of Limon. Originally US 40N east of that.
CO US 40N	1927-1936	4 Limon-KS	West end Limon.
CO US 40S	1927-1936	4 Grand Jct.-Limon 8 Limon-KS	West end did not touch US 40. Renumbered as US 24.

CO US 340	Never		Originally proposed as part of 1926 system, but rejected in favor of US 40N.
46	Never		Originally proposed as part of 1926 system, but rejected in favor of US 40S.
50	1927-Present	4 UT-Grand Jct. 6 Grand Jct.-KS	No major changes, except for Pueblo Bypass
350	1927-Present	12	No major changes
CO US 450	1927-1936	10 UT-Walsenburg	Renumbered in favor of extended US 160.
550	1927-Present	19	South end originally Durango. Extended south 1935.
CO US 650	1927-1936	15 Buena Vista-Salida	Route taken over by new US 285.
160	1934-Present	10 UT-Walsenburg 55 Trinidad-Branson 100 Branson-Springfield 116/118 US 287-KS (later 100 Trinidad-KS)	Extended west from Kansas. KS-Trinidad formerly not a US Hwy. Took over US 450 Walsenburg-UT (current 666). Realigned to Four Corners over US 164 in 1970.
CO US 560	Never		Originally proposed as part of 1926 system. Rejected in favor of US 666.
164	ca. 1966-1970	40?	Deleted in favor of realigned US 160. Route was formerly not a US Hwy.
666	1927-Present	106 NM-Cortez	North end originally Cortez. Extended northwest 1970. Don't let the number frighten you.
84	1939-Present	17 NM-Pagosa Springs	Originally northward into CO on US 666, end Cortez. Routed ca. 1942.
85	1927-Present	1 NM-Denver 2 Denver-Greeley 3 Greeley-WY (later 3 Denver-WY)	No major changes, except for I-25
CO US 285	1927-1936	1 Denver-Ft. Collins 14 Ft. Collins-Ted's Place 123 Ted's Place-WY	Deleted in favor of extended US 87 and new US 287.

285	1936-Present	17 NM-Alamosa (later 163 NM-Antonito) 10 Alamosa-Del Norte 15 Del Norte-Buena Vista 8 Buena Vista-Denver	Route (except for US 650) formerly not a US Hwy. Used to take CO 17 into NM. Rerouted Salida-Buena Vista (CO 291) ca. 1952. North end used current CO 8/Alameda Ave. to downtown. Realigned to Hampden Ave. expressway in 1960s. Ended at Havana/Colfax, truncated at I-25 ca. 1977.
385	1957-Present	51 Granada-Julesburg 166 US 138-NE	North of Granada, formerly not a US Hwy.
87	1936-Present	1 NM-WY (later 185 Castle Rock-WY)	No major changes south of Denver. Used current US 287/CO 1 Denver-WY at first (taking over Old US 285 Denver-Ft. Collins), rerouted to current I-25 ca. 1942. Today, non-existent due to I-25.
CO US 187	Never		Would have used CO 13 southward from WY border. Shown on 1938 Texaco map, but nothing else.
287	1936-Present	59 OK-Kit Carson	Took over Old US 285. South end originally Fort Collins. Extended southeast to OK ca. 1938.
400	ca. 1992-Present		Congressional High Priority Corridor.

C3 (con't): Colorado Interstate Highways

Interstate Route	US Highway Alignment	Date Completed	Notes
25	85-87 NM-Castle Rock 87 Castle Rock-WV	1967 (Wellington)	Major artery of Front Range Corridor. CDOT continually playing catch-up to increasing traffic on it.
225		1974 (Parker Rd. to I-25)	Inner east Denver beltway, serves east suburbs.
70	6 UT-Denver 40-287 Denver-Limon 24 Limon-KS	1992 (Glenwood Canyon)	Originally planned to have west end in Denver. Extended west during planning in 1950s. Main route over mountains via Eisenhower Tunnel.
270		ca. 1969	Serves Stapleton Airport, industrial areas in Commerce City.
470		If built, would have been completed late 1980s to early 1990s.	Proposed late 1960s as southwest bypass, also to serve fast-growing suburban area. Removed 1976 due to air quality/land use concerns, funding transferred to other projects. CO 470 built in its place.
76	6 Denver-Wiggins 6-34 Wiggins-Brush 6 Brush-Sterling 138 Sterling-NE	1994 (Barr Lake)	First existed as I-80S. One of two 1-76s in the US Main route for transcontinental travel Chicago-Los Angeles.
80S	Same as I-76		Renumbered to I-76 in 1975, to conform to AASHTO's guidelines

C4: Colorado's Federal Aid System Estimated Budget, 1933

Franklin D. Roosevelt's New Deal ushered in the first major Federal work program in the nation's history. In the summer of 1933, Department of Highways staff prepared a list of Colorado highways in need of repair for State Highway Engineer's Charles Vail review. The list also included secondary routes to "provide work in every county in the state." (Source: Colorado State Archives, "Transportation." Box 48038. File: NRM, 1933-34).

APPROXIMATE ESTIMATE FOR BUDGET TO COMPLETE SYSTEM OF HIGHWAYS AS OUTLINED

North-South Highway US 85 and US 285		
Pueblo South-296-F (paving)	7.5 miles	180,000
Pueblo South-1 (paving)	13.9 miles	556,000
Pueblo South to Walsenburg (paving)	13.7 miles	548,000
Walsenburg South Underpass (paving)	12 miles	300,000
Walsenburg South Underpass (paving)		40,000
South of Starkville (paving)	11 miles	440,000
		$ 2,064,000.00
Ault North to State Line	30 miles	750,000
		$ 2,814,000.00
US 6 Greeley to State Line via Sterling and Holyoke		
Brush east and overhead paving	5 miles	185,000
Marine and overhead paving	5 miles	60,000
Paoli to State Line grading	26 miles	195,000
Fleming to State Line (oiling)	50 miles	275,000
		$ 715,000.00
US 138		
East Sterling paving	41 miles	1,230,000
Riverbend-Limon to 134-G	34 miles	680,000
West of Seibert (oiling)	18 miles	90,000
Overhead east of Limon		40,000
		$ 81,000.00
South 40 Kit Carson-Limon-Peyton		
Oiling	83 miles	$ 1,414,000.00
US 50 Pueblo East to State Line		
Paving	92.5 miles	$ 2,312,000.00

US 350 La Junta-Trinidad		
Base Surface	70.6 miles	700,000
Oiling	85.5 miles	1,046,000
		$ 1,746,000.00
Road 16 Greeley-Loveland		
Oiling		100,000
Loveland west (oiling)	9.5 miles	48,000
Thompson Canon (grading/oiling)	19 miles	760,000
		$ 908,000.00
US 40 Denver West		
Bergen Park-Idaho Springs-Utah Line		
Grading and Base Course		1,310,000
Oiling top course		1,150,000
		$ 2,460,000.00
Road 8 Denver-Fairplay-Antero Jct.		
Surfaced and oiled	60 miles	$ 1,020,000.00
Road 4 Colorado Springs, Antero Jct.		
Antero Jct.-Buena Vista	80 miles	1,200,000
US 50 Pueblo-Salida surface/oiling	75 miles	1,575,000
US 650 Salida-Buena Vista oiling	22 miles	110,000
US 405 Buena Vista North grading/oiling	7 miles	140,000
US 405 North of Buena Vista oiling	14 miles	70,000
US 405 South of Malta oiling	7.5 miles	150,000
US 405 South of Leadville oiling	6 miles	30,000
Leadville-Grand Jct. oiling	17 miles	$ 340,000.00
Nedcliff-Grand Jct.-State Line		
Oiling and grade separations	180 miles	1,685,000
		$ 41,000,000.00
Road 13 Rifle, Meeker-Craig-WY State Line		
Grading and base course		1,005,000
Oiling	135 miles	675,000
		$ 1,680,000.00
Road 6 Salida-Montrose		
Base Surface and grading	23.5 miles	470,000
Oiling top course	112.3 miles	551,000
		$ 1,021,000.00

Road 6 Montrose Delta		
Surface and oiling	16 miles	320,000
Delta Grand Jct. surface and oiling	21 miles	462,000
Oiling F.A. Projects on above	29 miles	145,000
		$ 927,000.00
US 160 Walsenburg-Cortez		
Base surface	78.4 miles	1,176,000
Oil processing	273 miles	1,365,000
Road 106 Cortez South oiling	29 miles	145,000
Road 19 Durango South oiling	16.5 miles	82,000
		$ 2,768,000.00
Road 15 Poncha Pass-Saguache, Monte Vista		
Base Course	64 miles	960,000
Oil processing	76 miles	380,000
		$ 1,340,000.00
Road 159 Ft. Garland-NM State Line		
Base course	19 miles	385,000
Oil processing	35 miles	175,000
		$ 560,000.00
US 550 Montrose-Ouray		
Base course	31.5 miles	$ 787,000.00
US 550 Ouray-Durango		
Base course	50.5 miles	505,000
Montrose-Durango oiling	111.8 miles	559,000
		$ 1,851,000.00
Road 11 Kremmling-Wolcott		
Grading and surfacing	41 miles	1,236,000
Oil processing	41 miles	206,000
		$ 1,442,000.00
Road 10 Cortez-Dove Creek State Line		
Grading and surfacing	57.8 miles	867,000
Oil processing	57.8 miles	289,000
		$ 1,156,000.00

Road 80 Dove Creek-Naturita		
Grading and surfacing	63 miles	945,000
Oil processing	63 miles	315,000
		$ 1,260,000.00
Road 16 Granby-Grand Lake		
Grading and surfacing	14.2 miles	142,000
Oil processing		70,000
		$ 212,000.00
Fairplay-Breckenridge Road 9		
Grading and surfacing	24 miles	240,000
Oil processing		120,000
		$ 360,000.00
Lamar-Springfield		
Grading and surfacing	47 miles	376,000
Oil processing	51 miles	255,000
		$ 631,000.00
TOTAL FOR STATE ON FEDERAL AID SYSTEM (2128 MILES)		**36,691,000**
ADDITIONAL IMPROVEMENTS NOT ON FEDERAL AID SYSTEM		
Road 54 Brush-Wray-State Line		
Grading and surfacing	75 miles	600,000
Oil processing	92 miles	460,000
		$ 1,060,000.00
Road 96 Fowler-Ordway-Eads-State Line		
Grading and surfacing	115 miles	575,000
Oiling		345,000
		$ 920,000.00
Road 125 Granby-Walden-WY State Line		
Grading and surfacing	56 miles	560,000
Oiling		224,000
		$ 784,000.00

Road 121 Broomfield, South to Road 8		
Grading and surfacing	17 miles	136,000
Oiling		85,000
Bridge		30,000
		$ 251,000.00
Road 83 Denver SE		
Grading and surfacing	11 miles	110,000
Bridges		35,000
Oiling		55,000
		$ 200,000.00
Road 83 Douglas County		
Grading and surfacing	35 miles	280,000
Oiling		140,000
3 Bridge		40,000
		$ 460,000.00
Road 82 Aspen-west		
Grading and surfacing	20 miles	260,000
Oiling	28 miles	114,000
Bridge		50,000
		$ 424,000.00
Road 69 Custer County		
Grading and surfacing	31 miles	310,000
Oiling		124,000
		$ 434,000.00
Road 119 Gilpin County		
Grading and surfacing	18 miles	216,000
Oiling		90,000
		$ 306,000.00
Road 119 Boulder County		
Grading and surfacing	18 miles	216,000
Oiling		90,000
		$ 306,000
Road 149 Hinsdale County		
Grading and surfacing	48.6 miles	243,000
Oiling		145,000
Bridges		50,000
		$ 438,000.00

• Total improvements outside federal aid system: $5,583,000
• Grand Total – Federal Aid System and other state highways: $42,274,000

C5

Expenditures for Road Construction and Maintenance in Colorado, 1915-1930				
Year	**Expending by the State (Including Federal Aid)**	**Expending by the Counties**	**Federal Aid Allotments**	**Total Expenditure**
1915	212,597	2,386,000		2,598,597
1916	623,133	2,814,000		3,437,133
1917	720,994	1,664,421	83,690	2,385,415
1918	1,174,974	2,463,232	167,380	3,638,206
1919	1,555,559	2,919,938	1,124,848	4,475,497
1920	3,896,945	4,427,609	1,648,384	8,324,554
1921	4,053,853	6,230,778	1,755,758	10,284,631
1922	6,735,882	6,108,260	1,341,175	12,884,142
1923	5,453,446	5,131,802	1,341,175	10,585,248
1924	5,664,567	5,905,217	1,183,041	11,569,784
1925	4,587,089	5,423,975	1,361,482	10,011,064
1926	4,809,052	4,847,531	1,385,547	9,656,583
1927	4,164,805	5,467,000	1,380,384	9,631,805
1928	5,916,002	5,839,162	1,376,520	11,755,164
1929	5,769,234	5,501,625	1,383,401	11,270,859
1930	6,202,202		1,388,755	

C6: Colorado Federal Aid Projects, 1916 to 1921

The years 1916 to 1921 saw the first large-scale involvement of the Federal government in nationwide road building. Colorado benefited from more than $6 million of worth of construction projects over that five-year period. The accompanying chart lists the specific details of those projects (Source: Colorado State Archives, Box 51231, File: Data – 1922).

FA#	Roadway	Total Cost	Miles	% Comp. by 12/1/20	Preliminary Survey	Construction Engineering	Character of Improvement	Contract Let	Contract Finished
1	Denver-Littleton	82,860.61	3.95	100		5,550.94	Concrete	12/22/17	12/21/18
2	Pueblo-Trinidad	699,294.22	64.12	84	7,861.19	51,666.62	Gravel Sur.	5/14/19	
3	Granite-Twin Lake	63,645.57	8.94	100	370.00	6,051.52	Gr. & Dr.	10/21/18	10/1/20
4	Rifle-Meeker	119,167.32	21	95	891.51	11,267.16	Gravel Sur.	9/30/18	
6	Lamar-Springfield	24,689.71	3.13	100	255.35	1,899.29	Gravel Sur.	8/5/18	6/20/19
7	Norwood-Paradox	32,887.24	2.1	100	2,463.92	3,628.15	Gr. & Dr.	8/15/19	5/1/20
9	Big Thompson Canon	311,636.57	19.01	100	3,355.10	18,104.26	Gr. & Dr.	9/1/19	5/31/20
10	Brighton Road	43,982.45	1.79	100	924.90	3,946.11	Concrete	8/10/19	7/31/20
11	Wray-Idalia	28,712.65	7.5	37	2,730.79	1,757.80	Gr. & Dr.	9/15/20	
12	Greeley-south	31,028.09	0.89	100	599.02	1,850.13	Concrete	8/18/19	11/26/19
13	Boulder-east	14,226.91	0.42	100	330.79	944.12	Concrete	10/8/19	6/4/20
14	Longmont-south	24,878.48	0.5	100	433.42	2,951.86	Concrete	10/1/19	5/23/20
15	Sterling-east	25,353.78	0.65	100	299.66	898.69	Concrete	5/10/20	10/13/20
16	Ft. Morgan-Brush	11,143.26	0.45	100	686.59	1,410.77	Concrete	8/4/19	11/1/19
17	Colo.Spgs.N.-Husted	57,774.27	2.34	100	699.96	4,529.49	Gr. & Dr.	10/22/19	8/14/20
18	Pueblo-east	59,580.58	1.71	100	914.87	2,674.86	Concrete	8/16/19	11/29/19
21	Rocky Ford-east	18,759.32	0.41	100	851.19	1,530.69	Concrete	3/24/20	7/21/20
22	La Junta-west	17,866.58	0.41		437.36	223.41	Concrete		
23	Delta-south	78,572.11	5.86	85	912.03	1,865.42	Gravel Sur.	5/20/20	
24	Ft. Garland-San Luis	22,421.20	5.88	100	1,901.02	1,782.32	Gravel Sur.	9/10/19	3/15/20
27	Grand Jc.-East	12,352.78	0.27	100	456.97	1,611.64	Concrete	3/15/20	7/15/20
28	Summit Co. road	44,754.76	2.09	9	1,292.66	1,603.11	Gr. & Dr.	9/1/20	

FA#	Roadway	Total Cost	Miles	% Comp. by 12/1/20	Preliminary Survey	Construction Engineering	Character of Improvement	Contract Let	Contract Finished
30	Denver-Morrison	71,143.57	0.98		2,143.58		Concrete		8/31/20
31	Denver-Hospital	44,539.26	1.16	91	935.61	3,131.04	Concrete	5/29/20	
36	Longmont-south	47,175.47	1.18		568.20		Concrete		
37	Boulder-east	47,750.97	0.81	81	326.84	2,470.64	Concrete	3/25/20	
38	Ft. Morgan-Brush	102,879.16	2.13		163.52		Concrete		
39	Akron-Brush	48,166.38	5.91		1,534.41		Gravel Sur.		
40	Wray-Shramm	31,545.73	3.5		1,654.88		Gravel Sur.		
41	Merino Bridge	87,900.04	0.31	46	130.79	2,050.78	Concrete Br.	5/1/20	
43	Burlington-north	76,851.40	18.05	100	3,724.38	9,198.01	Gr. & Dr.	3/19/20	11/5/20
47	Colo.Spgs.-Canon City	38,947.96	1.18		730.55		Gravel Sur.		
51	Cheyenne Wells-north	54,345.86	4.89		1,622.80		Gravel Sur.		
52	Victor-Cripple Creek	25,283.38	4.88		1,654.90		Gr. & Dr.		
54	Buena Vista-Divide	113,665.76	5.1		2,890.26		Gr. & Dr.		
55	Peyton-Ramah	65,679.87	6.63		1,095.93		Gravel Sur.		
57	Lamar-north	51,952.93	1.39	100	695.59	2,239.14	Concrete	10/23/19	5/22/20
58	Granada-E.&W.	52,712.48	3.13	34	3,229.84	1,908.15	Gravel Sur.	8/12/20	
59	Las Animas-east	118,783.23	9.9	12	2,537.68	2,462.93	Gravel Sur.	8/17/20	
60	La Junta-west	17,318.76	0.41		79.01	541.95	Concrete		
61	Rocky Ford-east	17,759.91	0.41	100	231.56	1,725.88	Concrete	3/24/20	7/14/20
62	Manazola-west	28,823.40	0.83	100	308.18	2,361.34	Concrete	6/21/20	10/18/20
63	Fowler-east	26,927.75	0.68	11	434.25	1,371.81	Concrete	9/27/20	
64	Ft. Garland-San Luis	28,457.16	7.83	79	362.32	4,110.36	Gravel Sur.	5/31/20	
65	Silverton-Ouray	68,636.46	1.16	31	860.57	858.4	Gr. & Dr.	5/9/20	
66	Naturita-Norwood	49,968.25	4.03		443.23		Gr. & Dr.		
68	Monte Vista-Saguache	87,368.07	11.36	51	1,033.75	3,944.56	Gravel Sur.	7/22/20	
71	Durango-Mancos	100,000.00	8		4,461.25		Gr. & Dr.		
75	Kremmling-north	34,469.19	6.85		5,182.63		Gr. & Dr.		

FA#	Roadway	Total Cost	Miles	% Comp. by 12/1/20	Preliminary Survey	Construction Engineering	Character of Improvement	Contract Let	Contract Finished
80	SteamBoat Springs N.	70,106.11	6.63	11	6,569.46	604.95	Gr. & Dr.	10/4/20	
81	Vernon Canon	35,527.07	1.72	56	1,393.77		Gr. & Dr.		
82	Denver- Morrison	83,015.49	2.02	61	360.77	2,905.78	Concrete	6/2/20	
83	Littleton-south	109,467.15	2.71		676.44	3,822.14	Concrete	6/29/20	
85	Ft. Collins-south	58,004.80	1.3	100	40.85		Concrete		
86	Loveland-south	54,477.37	1.35		383.73	2,521.92	Concrete	6/20/20	11/30/20
87	Boulder-east	58,928.52	1.33		1,007.98		Concrete		
88	Longmont-south	59,186.83	1.32		1,211.13		Concrete		
89	Brighton-N. & S.	177,633.71	4.41		1,650.21		Concrete		
91	Trinidad-Hohne	88,669.29	5.65	85	2,000.14	5,002.98	Gravel Sur.	4/2/20	
92	Huerfano Bridge	126,187.71	0.09	29	963.37	1,834.43	Concrete Br.	4/22/20	
94	Canon City-Col. Spngs	39,891.43	1.52		1,785.78		Gravel Sur.		
96	La Junta-west	78,791.60	1.51		2,515.40		Concrete		
97	Lamar-E. & W.	84,985.64	8.88		2,337.80		Gravel Sur.		
100	Del Norte-Saguache	35,985.04	3.13		937.49		Gr. & Dr.		
101	Bayfield-Dyke	53,458.39	4.09		2,611.55		Gr. & Dr.		
102	Silverton-Ouray	60,800.00	1.05		32.56		Gr. & Dr.		
103	Norwood-Placerville	29,531.30	5		468.70		Gr. & Dr.		
104	Montrose-Delta Bridge	50,000.00	0.8				Bridge		
106	Steamboat-east	30,908.21	1.36	42	2,945.28	1,520.19	Gravel Sur.	8/30/20	
107	Craig-Maybell	60,617.17	3.97		1,628.45		Gravel Sur.		
109	Gr. Junction-Fruita	69,474.62	0.96	100	1,108.15	2,531.29	Concrete	8/16/20	11/30/20
111	Limon-east	97,072.06	9.88		1,953.54		Gravel Sur.		
112	Lake George-west	28,902.29	0.91		704.45		Gravel Sur.		
113	Salida-south	69,474.62	4.5		1,685.99		Gr. & Dr.		
116	Colo. Spgs.-north	105,159.07	4.44		1,874.87		Gr. & Dr.		

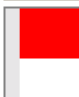
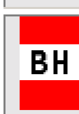
FA#	Roadway	Total Cost	Miles	% Comp. by 12/1/20	Preliminary Survey	Construction Engineering	Character of Improvement	Contract Let	Contract Finished
118	Colo. Spgs.-Broadmoor	141,208.30	2.76	49	899.88	2,826.23	Concrete	9/6/20	
119	Saguache-Chochetopa	54,770.37	8.24		2,491.55		Gr. & Dr.		
120	Berkely-Arvada	60,023.76	1.27		459.33		Concrete		
122	Julesburg-west	69,575.06	8.5		1,372.31		Gravel Sur.		
123	Glenwood Grand Canon	154,141.9	6.9	7	4,045.2	3,209.9	Gr. & D	7/14/20	
124	Alamosa River Bridge	14,856.95	0.01		129.93		Bridge		
125	Saperino-Cimmarron	90,000.00	2.82		1,622.37		Gr. & Dr.		
126	Dolores-Cortez	45,529.62	3.14		1,147.71		Gravel Sur.		
127	Limon-west	55,392.67	2.73		2,777.67		Gravel Sur.		
128	End F. A. #- north	18,796.74	1.8		1,454.24		Gravel Sur.		
	94 PROJECTS	**6,681,660.31**	**410.58**		**145,807.16**	**230,746.44**			

STATISTICS:

TOTAL PROJECTS: 94
TOTAL COST: $6,681,660.31
TOTAL MILEAGE: 410.58

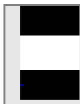
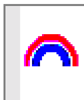
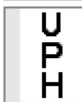
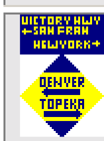
C7: Marked Motor Trails in Colorado

Before the nation's highways received their numerical designation from the Federal government, auto enthusiasts constructed and named roads with their own unique set of signage in the days before exit ramps, mile markers and rest stops. The accompanying chart lists many of the motor trails that went through Colorado. In most states, the identification markers were painted on telephone poles and fence posts by members of the individual highway association. However, on Colorado's Eastern Plains, miles without poles and posts made the drive all the more challenging. (Source: Auto Trails Map State of Colorado, Rand McNally, dist. by Continental Oil Co., 1923. Located at Western History Department, Denver Public Library, Denver; Motor Trails in Colorado web site, http://www.mesalek.com/colo/trails.html.)

Trail	Marker	Routing in Colorado	Nationally	Notes
Albert Pike Hwy.	NA	KS-Lamar-La Junta-Rocky Ford-Avondale-Pueblo-Colorado Springs-Palmer Lake-Sedalia-Littleton-Denver	Southeast to Hot Springs, AR	
Black Hills Loop Hwy.		Iliff-Peetz-NE	North to Lead, SD	
Buffalo Hwy.		NM-Trinidad-Walsenburg-Pueblo-Colorado Springs-Palmer Lake-Sedalia-Littleton-Denver-Broomfield-Longmont-Fort Collins-Wellington-WY	South to Amarillo, North to Glacier National Park	
Burlington Hwy.		Greeley-Orchard-Weldona-Fort Morgan-Brush-Akron-Wray-NE	East to Colbertson, NE	
Colorado to Gulf Hwy.		NM-Trinidad-Walsenburg-Pueblo-Colorado Springs-Palmer Lake-Sedalia-Denver	Southeast to Galveston Branch to Brownsville	

Dallas-Canadian-Denver Hwy.		OK-Stonington-Springfield-Lamar-La Junta-Pueblo-Colorado Springs-Monument-Larkspur-Castle Rock ALT via Blaine, Two Buttes	Southeast to Galveston	Canadian refers to Canadian, TX
Denver-Black Hills Hwy.		Denver-Brighton-Greeley-Purcell-Briggsdale-Hereford-WY	North to Hot Springs, SD	
Denver-Deadwood		??-WY	Unknown	In the map body it appears to start at Cheyenne
Detroit-Lincoln-Denver Hwy.		Denver-Hudson-Prospect Valley-Wiggins-Fort Morgan-Brush-Merino-Atwood-Sterling-Haxtun-Holyoke-NE	East to Detroit	
Golden Belt Route		Limon-Burlington-KS	East to St. Louis	
Gulf Plains and Canada	NA	Granada-Cheyenne Wells-Burlington-Wray-Holyoke-Julesburg-NE	Wayside, NE	
Kansas-Colorado Blvd.		Pueblo-Baxter-Ordway-Eads-Sheridan Lake-KS	East to Kansas City, KS	
Midland Trail		UT-Grand Junction-De Beque-Glenwood Springs-Wolcott-State Bridge-Kremmling-Fraser-Georgetown-Golden-Denver-Bennett-Limon-Burlington-KS	East to Norfolk, VA, west to Los Angeles, branch to San Francisco	

National Old Trails Route		NM-Trinidad-La Junta-Lamar-KS ALT via Walsenburg to Rocky Ford	East to Baltimore, west to Los Angeles	
National Park-to-Park Hwy.		NM-Durango-Pagosa Springs-Del Norte-Center-Saguache-Salida-Cañon City-Pueblo-Colorado Springs-Monument-Larkspur-Castle Rock-Denver-Lafayette-Boulder-Lyons-Allenspark-Estes Park-Drake-Masonville-Fort Collins-Wellington-WY	Loop throughout the West following a circuitous route	
National White Way		Colorado Springs-Limon-Burlington-KS	East to Chicago	
New Santa Fe Trail		NM-Trinidad-La Junta-Lamar-KS	Unknown	
Old Santa Fe Trail		NM-Trinidad-Walsenburg-Pueblo-Avondale-La Junta-Lamar-KS	Unknown	
Pikes Peak Ocean-to-Ocean Hwy. (Pershing Transport Route)		UT-Grand Junction-De Beque-Glenwood Springs-Aspen-Buena Vista-Woodland Park-Colorado Springs-Limon-Burlington-KS ALT via Wolcott, Leadville	East to New York, west to Los Angeles	
Plains Mountains Hwy.		Stonewall-Trinidad-Beshoar-Junction-Trinchera-Branson-Kim-Springfield-	Unknown	

		Two Buttes-KS		
Powder River Trail		Colorado Springs-Palmer Lake-Sedalia-Denver-Broomfield-Longmont-Fort Collins-Wellington-WY	Unknown	
Rainbow Route		Grand Junction-Delta-Montrose-Gunnison-Salida-Cañon City-Pueblo		
Rocky Mountain Hwy.		Denver-Longmont-Fort Collins-Laporte-Virginia Dale-WY-(Current SH 127)-(Current SH 125)-WY	Northwest to Yellowstone National Park	
Spanish Trail		Cortez-Durango-Pagosa Springs-Del Norte-Alamosa-Walsenburg		
Union Pacific Hwy.		Denver-Bennett-Limon-Kit Carson-Cheyenne Wells-KS	East to Kansas City, KS	
Victory Hwy.		UT-Craig-Steamboat Springs-Kremmling-Fraser-Georgetown-Golden-Denver-Bennett-Limon-Burlington-KS	East to New York, West to San Francisco	

C8: I-70 in Glenwood Canyon, Some Facts (most figures approximate)

Project Cost: $490,348,000
Funding: 90% federal, 10% state
Construction Duration: 12 years
Total Number of Workers: 1,000
Maximum Daily Workforce: 500
Construction-Related Accidental Deaths: 3
Construction Contracts: 35-40
Bridges & Viaducts: 39, total length 6.5 miles
Retaining Walls: 20 miles combined length
Concrete Used: 1.62 billion pounds
Reinforcing Steel: 30,000,000 pounds
Structural Steel: 30,000,000 pounds
Landscaping and Revegetation: 150,000 trees and shrubs

French Creek Viaduct Length: 4,000 feet
(two bridges & 330-foot section at grade)

Hanging Lake Tunnels
Length, each bore: 3,900 feet
Construction explosives used: $1,000,000 worth
Rock removed: 250,000 cubic yards
East end viaducts, number of concrete segments: 1,200

Some Key Participants
Project Manager for Colorado: Ralph Trapani
Supervising Architect: DeLeuw, Cather and Company
Designers: Edgardo Contini (east half), Joseph R. Passonneau (west half)
Management Consultant: Daniel, Mann, Johnson and Mendenhall

Special Panels
Design team comprised of subgroups for east and west halves
Technical Review Group
Citizens Advisory Committee

Principal Source: Colorado Department of Transportation
Chart by Conrad F. Schader from his book: Glenwood Canyon: From Origin to Interstate. Golden, CO.: Regio Alta Publications, 1996: 172.

C9: Glossary of Construction and Highway Terms

This a sampling of descriptive phrases and materials involved in highway construction, design, and preservation:

Aesthetic Routes – Roadways designed for a specific interaction with the natural or built environment. These routes incorporate the surrounding scenery into their design.

Alignment – The vertical and horizontal layout of a highway make up the alignment. The design of the alignment depends of the design speed selected for the highway. The least costly alignment is one that takes the form of the natural topography. It is important that both horizontal and vertical alignments be designed to complement each other.

Amiesite – A patented type of bituminous concrete requiring a fluxed bituminous binder and hydrated lime placed cold on any type of base other than concrete. The City of Denver experimented with this material on a block of Speer Boulevard in 1910.

Arterial – A road providing the principal high-volume and high-speed linkages within a community and between communities.

Bituminous Concrete – A pavement made up of aggregates, such as crushed stone, gravel, or slag, combined with a bituminous binder that is used instead of cement.

Capacity – The maximum rate of flow in vehicles per hour that can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic and control conditions, usually expressed as vehicles per hour or persons per hour.

Cement - A powder that hardens when mixed with water; an ingredient used in concrete.

Cement Mortar - A mixture of four parts sand to one part cement with enough water added to make it plastic.

Coating - A material that provides a continuous film over surface; a film formed by the material.

Concrete - A mixture of aggregate, water, and a binder—usually Portland cement—that hardens to a stone-like mass.

Context – Refers to the setting, or surrounding area, that influences a resource such as a roadway.

Crown of the Roadway - The vertical dimension describing the total amount of the surface that is convex or raised from gutter to centerline; this is sometimes termed the cross fall of the roadway.

Cultural Routes – Roads that have evolved over time. Roads for which there is no recognized date of beginning.

Curb - A short barrier paralleling the outside edge of the roadway to guide the movement of vehicle wheels and safeguard constructions and pedestrian traffic existing outside the roadway limit from collision with vehicles and their loads.

Density – The number of vehicles occupying a given length of lane or roadway averaged over time, usually expressed vehicles per mile or vehicles per mile per lane.

Design Speed – Design speed is defined as the "maximum safe speed that can be maintained over a specified section of highway when conditions are favorable such that the design features of the highway govern." Design speed depends on the type of highway, the topography of the area in which the highway is located, and the land use of the adjacent areas.

Embankment - A bank of earth constructed above the natural ground surface to carry a road or to prevent water from passing beyond desirable limits; also known as bank.

Engineered Routes – Roads designed for the movement of people and goods. Roads for which the purpose of traffic movement is the principal underlying force behind their design.

Grade – The degree of rise or descent of a sloping surface on a highway or railroad.

Guardrail - A structural element designed to redirect an errant vehicle onto the roadway (guiderail).

Hot Mix Asphalt (HMA) – Asphalt pavement is any paved road surfaced with asphalt. Hot Mix Asphalt is a combination of approximately 95 per cent stone, sand and gravel bound together by asphalt cement, a product of crude oil. There are 2.27 million miles of paved roads in the United States and 94 percent is surfaced with asphalt, including 65 percent of the Interstate system.

Johnson Wall – An angled concrete barrier that will deflect a vehicle striking it back on to the road. Also known as "Jersey Barrier".

Joint - In stone masonry, the space between individual stone; in concrete, a division in continuity of the concrete; in a truss, the point at which members of a truss frame are joined.

Macadam - Uniformly sized stones rolled to form a road. Sometimes mixed with tar before application.

Materials - The elements originally combined to make the structure.

Median – A central space, usually planted, with divided opposite travel lanes.

Overpass - A bridge structure where the major thoroughfare is the upper roadway; see *Underpass.*

Plain Concrete - Concrete with no structural reinforcement except light steel to reduce shrinkage and temperature-related cracking.

Precast Concrete - Concrete members that are cast and curled before being placed into their final position on a construction site.

Prestressed Concrete - Concrete in which cracking and tensile forces are greatly reduced by compressing it with tensioned cables or bars.

Realignment – The repositioning of a road.

Reinforced Concrete - Concrete with steel reinforcing bars bonded within it to supply increased tensile strength and durability.

Right-of-Way – Right-of-Way is the total land area acquired for construction of a transportation facility. Its width should be able to accommodate all the elements of the cross-section, any planned future expansion and planned future expansion.

Roadway - The portion of the road intended for the use of vehicular traffic.

Shoulder – A stabilized level area adjacent and parallel to the road. Shoulders provided a recovery space for an errant vehicle or a safe space for a disabled vehicle.

Standards – The legally adopted policies directing the design and construction of roads.

Superelevation – The banking or sloping of a road curve to allow vehicles to maintain a speed consistent with the overall speed of the roadway.

Terrain – Terrain is a portion of land, especially considered with regard to its topography and natural features. For transportation design, topography is generally classified into three groups: level terrain, rolling terrain and mountainous terrain:

• Level terrain is relatively flat and horizontal and vertical sight distances are generally long or can be achieved without much construction difficulty or major expense.

• Rolling terrain has natural slopes that often rise above and fall below the grade, with occasional steep slopes that restrict the normal vertical and horizontal alignments.

• Mountainous terrain has sudden changes in ground elevation in both the longitudinal and transverse directions, thereby, requiring frequent hillside excavations to achieve acceptable horizontal and vertical alignments.

Underpass - A bridge structure where the principal, or subject, transportation facility is the lower roadway; see *Overpass*.

Vertical Alignment – The vertical alignment of a highway consists of straight sections of the highway known as grades, or tangents connected by vertical curves. The topography of an area through which the road traverses has significant influence on the design of the vertical alignment.

Viaduct - A series of spans carried on piers at short intervals.

Volume – The number of persons or vehicles passing a point on lane, roadway, or other trafficway during some time interval (often one hour) expressed in vehicles.