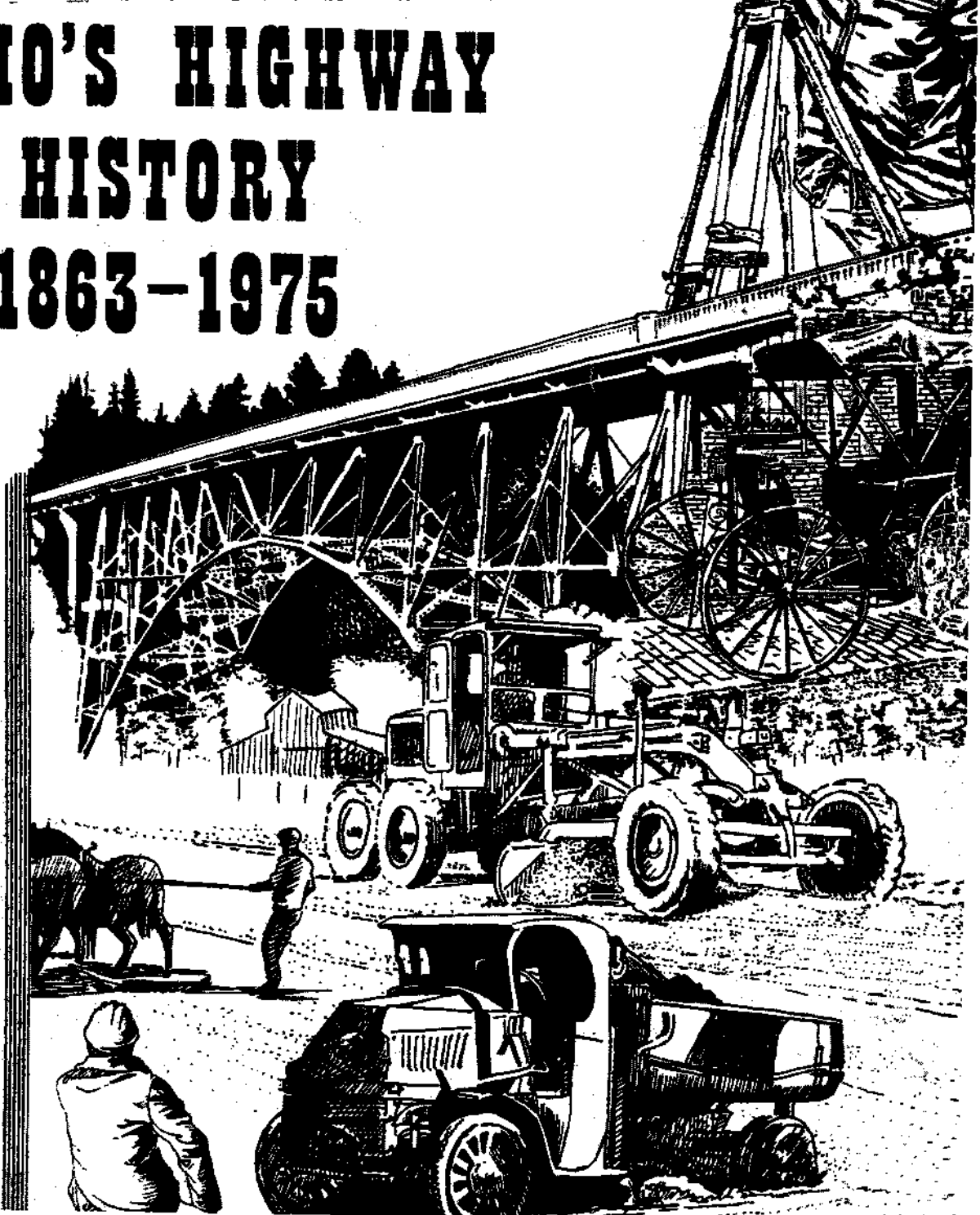


IDAHO'S HIGHWAY HISTORY 1863-1975



**IDAHO'S HIGHWAY
HISTORY
1863 - 1975**



**PUBLISHED JANUARY 1985
IDAHO TRANSPORTATION DEPARTMENT
3311 WEST STATE STREET
P.O. BOX 7129
BOISE, IDAHO 83707**

FOREWORD

This history of the Idaho Department of Highways -- and its predecessors, the Department of Public Works, Bureau of Highways and the original State Highway Commission as well as any preceding boards created to construct specific roads and bridges -- was conceived by G. Bryce Bennett, State Highway Engineer from 1956 to 1964.

Most of the information, aside from annual and biennial reports to the Legislature, was obtained from Highway Department files, newspaper clippings, and reviews of histories of Idaho. Newspaper clippings provided information on public reactions to policies and also stories on construction such as the Lewiston Hill and White Bird Hill roads constructed in 1916-1919. Stories of the grand jury investigation of 1937 and 1938 were also obtained from newspapers.

At all times during the history of the road agencies, a struggle to meet highway financial needs has existed. The Legislatures have struggled with the problem continuously. This situation is magnified by the fact that Idaho is a small state in population (721,519 in 1975) and a large state in land area (83,557 square miles). The fact that the state highway system is only slightly over 5,000 miles long does not minimize the problem; counties, highway districts and cities also have systems to support from highway users' funds. Altogether there exist over 50,000 miles of roadway in Idaho or one mile for each 14 people. Mountainous terrain and long distances between centers of population aggravate the problem and increase the costs per mile of road.

The accomplishments during the last 75 years would not have been possible without Federal-Aid from the Federal government under the Post Roads Act and the Federal-Aid Highway Act. Idaho has utilized every dollar made available by these acts and, in addition, has been able to construct many miles of roads using only state monies. During the early years, highway districts bonded themselves to construct roads. This indebtedness is being reduced, however, and a better system of roadways has evolved to serve the people of Idaho.

The Board of Highway Directors, created in 1951, established several goals strengthening the Department and creating greater efficiencies. Among these were personnel administration through a merit system, long-range planning for construction, and modernized engineering for location, design and construction of highway projects. As a result, Idahoans can be proud that their Department is as modern as any of similar size in the United States.

Contractors within the State were also keeping their operations as efficient as any other with the encouragement of the Department of Highways. Any new equipment or procedures for construction were analyzed and adopted by changes in the specifications in an endeavor to keep the bidding process competitive and costs as reasonable as possible.

Highways are the lifelines for a state such as Idaho. Railroads and wagon freight served all of Idaho prior to about 1910. However, with the construction of all-weather roads after World War I, Idaho began to grow economically and to find a place in the market for her products and minerals. Since then highways and truck traffic have reduced the extent to which rail shipments have served all of Idaho although rail still serves the State well. Air transport is moving forward but probably will mainly serve as a means of moving people statewide for many years to come. Highways must be the backbone of any system for moving minerals, logs, and farm products to market along with serving as much of the land area as possible.

The late W. P. (Purdy) Eaton, formerly a Resident Engineer, began work on this history about 1964 gathering reports, photographs, news clippings and letters from former employees and others to provide information. After his retirement, the history awaited the retirement of Edward Equals, Planning Survey Manager, to move ahead. He completed a draft copy based on the available information. This copy was then edited and enlarged by the addition of construction and maintenance information by L. F. Erickson, retired Materials and Research Engineer, with the help of Ellis L. Mathes, retired State Highway Engineer.

It would not be possible to complete the history without the willing and dedicated support of many former and present day employees of the Department. Their dedication to the Department and to the State of Idaho is really wonderful to behold. This publication was an in-house "extra effort" Transportation Department project.

Leif F. Erickson, P.E.
Boise, Idaho 1976

A special reader's note: In order to maintain a consistent time-frame and respect the efforts of the original contributors to this manuscript, the present editors have made no reference to any Department activity past the year 1975, e.g., route number changes, new technology, etc.

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INTRODUCTION

Indian Trails 1863 - Freeways 1963

Macauley in his "History of England" makes the striking statement, "Of all inventions, the alphabet and printing press excepted, those inventions which abridge distance have done the most for civilization."

The broad truth of this statement made in 1881 is substantiated daily by the completion and improvement of added miles of highways. A nation or state without adequate transportation or communication is not a nation or state in a true sense, as these terms imply unity and common interest. To have these attributes, those who form the unit must mingle in social life, commerce and administration. They cannot live in far spread communities, understanding only the local affairs, and have a state and national conscience. The wider spread the communities, the greater is the necessity for suitable transportation and the more difficult is its accomplishment. With adequate transportation, a state assumes its proper character as a unit of understanding with common aims and interests. Toward this end Idaho has been striving, with increasing diligence and success, to build its State Highway System.

Idaho has a land area of 83,557 square miles, 12th largest of the contiguous 48 states and in 1890 had a population of only 88,548. The population in 1920 was 431,866 and in 1975, 721,519 with most of it concentrated either within irrigated regions, mining districts or lumber processing centers. To connect these areas with a unified highway system is a financial strain far beyond that of more populous states. It is evident that the territorial government and all subsequent Legislatures have had a difficult task in providing monies necessary to construct an adequate highway system with a small tax base and a small population. It is no wonder that financing roads often became a controversial issue and still is today.

The history of the Idaho Highway System and of the Idaho Department of Highways parallels the broad impulses of general State development. It is a recitation of highways developed through the forces of economic pressure. The progression of this development is here described by a discussion of the conditions existing and practices followed during successive years.

PRE-TERRITORIAL IDAHO

The Oregon Country

The area comprising Idaho was originally a part of the so-called "Oregon Country" which extended the present Dakotas west from the continental divide to the Pacific Ocean. Exploitation of this region stemmed from many sources and for varied reasons. The Spanish came from the south in quest of gold. The French from the north in quest of souls and furs. Varied operations of the Russians and English were centered along the Pacific Coast though the latter occupied the entire northwest through trading posts of the Hudson Bay Company.

Following the purchase of the Louisiana Territory from France in 1803, the leaders of the United States realized the danger of loss of the western region to other nations. To forestall this danger it was determined that the area should be explored and mapped. Consequently, the Lewis and Clark expedition was authorized by Presidential order dated June 20, 1803 and financed by a Congressional appropriation of \$2,500.00. The expedition was started in 1804 and required two and one-half years to complete.

Formal notification of the exploratory trip was given to France, Spain and England. French and British passports were issued which entitled the expedition to friendly aid from subjects of those nations.

The expedition crossed the Continental Divide into Idaho at the present Lemhi Pass. It followed the Lemhi River and the North Fork of the Salmon River and thence into the Bitterroot Valley of Montana via Lost Trail Pass.

From this area, the expedition again crossed into Idaho at Lolo Pass,

now traversed by U.S. Highway 12. This part of their route was later traveled in the reverse direction by Chief Joseph of the Nez Perce Indian Tribe during his action with U.S. troops in 1877.

Rights of Spain in the Oregon Country were ceded to the United States in 1819. Russia followed by relinquishing its claim in 1824. A treaty of joint occupation with England was signed in 1818 pending determination of the northern American boundary. This treaty was extended in 1827 and in 1846 England relinquished claims to territories south of the 49th parallel except Vancouver Island and holdings of the Hudson Bay Company and the Puget Sound Agricultural Company. These private claims were subsequently purchased by the United States in 1863 for \$650,000 in gold coin. This was 60 years after President Jefferson authorized the Lewis and Clark expedition to determine, among other things, "The practicability of construction of a roadway across the mountains, and the possibilities of the country for agriculture and settlement."

American settlement of the Oregon Country came from both east and west. Explorers came for territorial expansion, the trappers for furs, the miners for gold and others came for the land and the opportunity that the east could no longer offer.

Transportation of the times was by way of ancient trails worn by the Indians and by the animals which had long inhabited the area. Led by their appetites and guided by the least amount of physical effort in transporting themselves, man and animals unerringly laid their trails along the most gradual approaches to the lowest mountain passes. In seeking water and subsistence they reached the

richest lands by the most direct routes that the topography of the country permitted. Waterways consisted of swift streams and were used but little for transportation.

Pioneer men found these ancient migratory trails, followed them, and wore them wider. The trappers, miners and land seekers in turn, seeing wealth within their grasp, did not seek better routes. They widened these primitive paths to horse trails and then to wagon trails. Thus the outline of what was to become the original State Highway System was made by nature, the animal, Indian, explorer, trapper, miner, soldier and land seeker.

Oregon Trail

Of the early main routes to the northwest country, the Oregon Trail was the chief artery of transportation. The absence of mountains and timber in the arid lands it traversed minimized obstacles to primitive travel and encouraged use of this route.

Having the characteristics of a trunk line, the Oregon Trail connected with all major trails in the northwest, including branch trails to gold strikes and arable lands south of the Salmon River Canyon. A prominent contribution to the development of both north and south Idaho was made by these connections. Access to north Idaho was extremely difficult within Idaho itself, but the connection via Walla Walla through eastern Oregon and Washington to the north Idaho region provided relatively easy travel.

The Fort Hall route to Fort Missoula (Pocatello-Missoula) connected with the Oregon Trail giving travelers ready access to north Idaho by way of St. Regis Pass near where Interstate Highway 90 now crosses the Bitterroot Range of mountains.

During the Indian wars, the Oregon Trail tied together scattered forts and provided the means by which

supplies were moved and communications could be achieved. The old trail served the pivotal points of Fort Hall, Fort Boise and Fort Walla Walla. Segments of U.S. Route 30 and Interstate Highway Routes 86, 15 and 84 now follow much the same corridor as the original Oregon Trail.

Mullan Military Road (Yellowstone Trail)

Second in importance among the early roads in Idaho was the Mullan Military Road which was to connect Fort Benton on the Missouri River with Fort Walla Walla on the Columbia River. Much of this road followed quite closely the location of existing U.S. Highway 10 and Interstate Route 90.

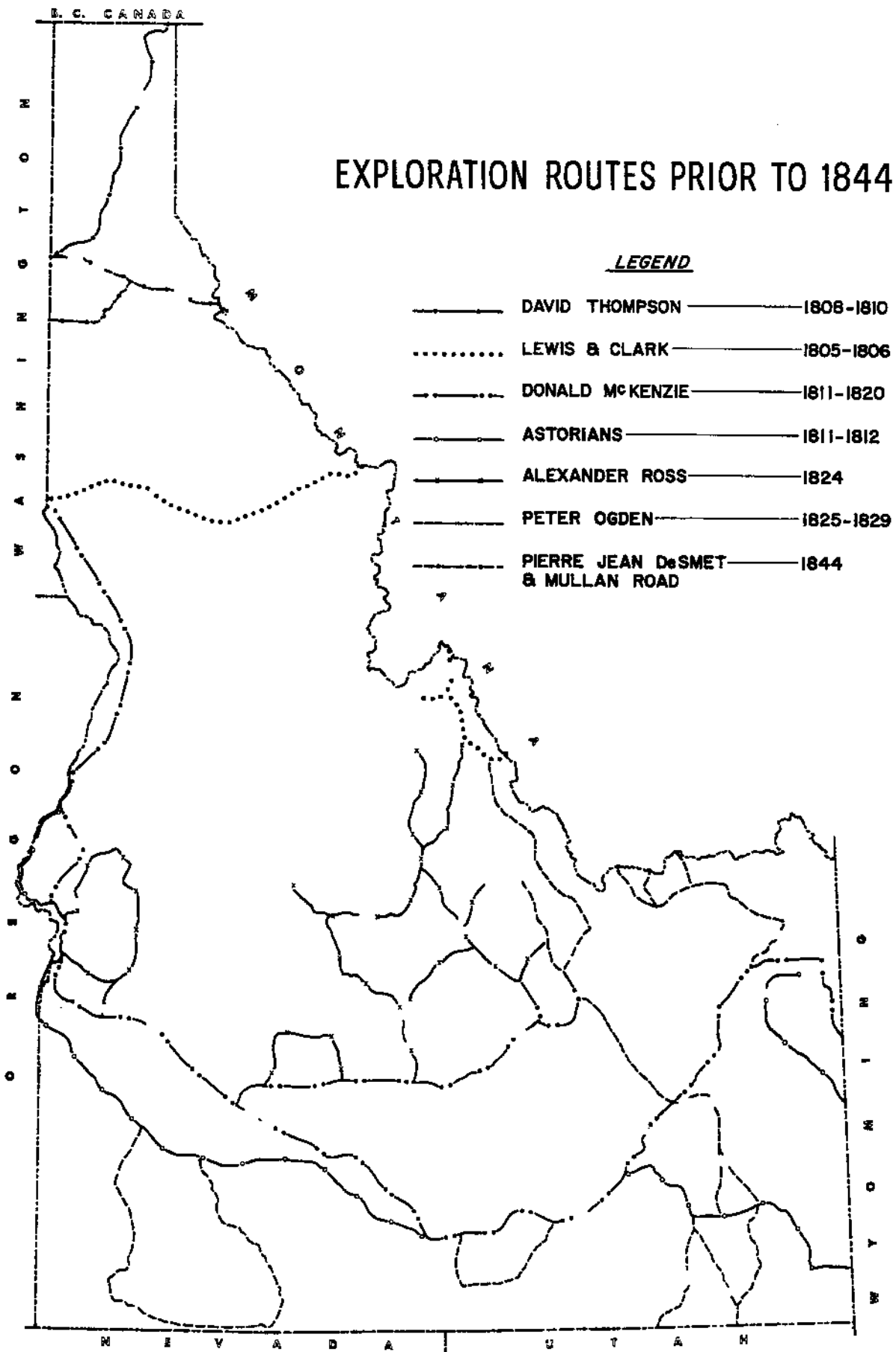
Construction of this road was authorized on February 5, 1855 following surveys conducted in 1853 and 1854. The officer in charge was Captain John Mullan. Due to Indian trouble, actual construction was not begun until July 16, 1859.

The original alignment was to follow up the Palouse River and then around the south end of Coeur d'Alene Lake. The easterly end of this location was subsequently abandoned because of difficulty in crossing the St. Joe River during the spring runoff. This section was rerouted around the northern end of the Lake.

The road was completed in 1862 at a cost of \$230,000. It was 624 miles long. Design width was 25 feet though this was narrowed to 15 feet in the more severe canyon sections. Timber was not completely removed but was cut to leave stumps at a height sufficient to clear a wagon axle. The trip from Fort Benton to Fort Walla Walla required 57 days.

Among early day users of the trail were Jesuit Priests who had established the "Old Mission" in 1853 which is still in use near Cataldo.

The importance of this primitive road was later diminished by the Walla



Walla connection from the Oregon Trail to north Idaho. Also, a large immigration along southern trails in 1842, and the gold rush of 1862 in areas to the south, diverted potential traffic from this northern route.

Effect of Early Trails

Unguided by science or technical forethought, these original main trails were developed to cope with the survival demands of the times. Though apparently located in a haphazard manner, these crude beginnings of our modern highways appropriately facilitated travel and provided transportation and communications between pioneer communities.

The influence of these trails is present today in highways which follow remarkably similar locations and meet today's needs not unlike those of the early trail blazers. As the pressure for change and development has increased, nature's tendencies have been heeded less and human tendencies more. However, the imprint of the early trails still remains.

The First Wagon

Through the early days of exploration, trapping and pathfinding, no wheels rolled into the area that was to be Idaho. In 1836, however, the Reverend and Mrs. Henry Spalding accompanied by Dr. and Mrs. Marcus Whitman arrived at the Green River Crossing in Wyoming. Undeterred by the fact that the road had come to an end, and that ahead lay the trail to Oregon on which pack animals were the established means of transportation, they proceeded west with their wagon. They brought the wagon nearly to Fort Hall in southern Idaho. When the trail became seemingly impassable, they removed two of the wheels from the wagon, making it into a cart, and succeeded in getting this as far as old Fort Boise. This party of four ultimately traveled 750 miles across desert, mountains and fords to finally establish

headquarters at Walla Walla. This settlement later proved to be the strategic hub of development for eastern Washington and northern Idaho.

Early Settlers

The distinction of being the first of the permanent settlers in Idaho belongs to the Spalding family who established a Mission at Lapwai late in 1836. In the early 1840's a man named William Craig also settled in this locality.

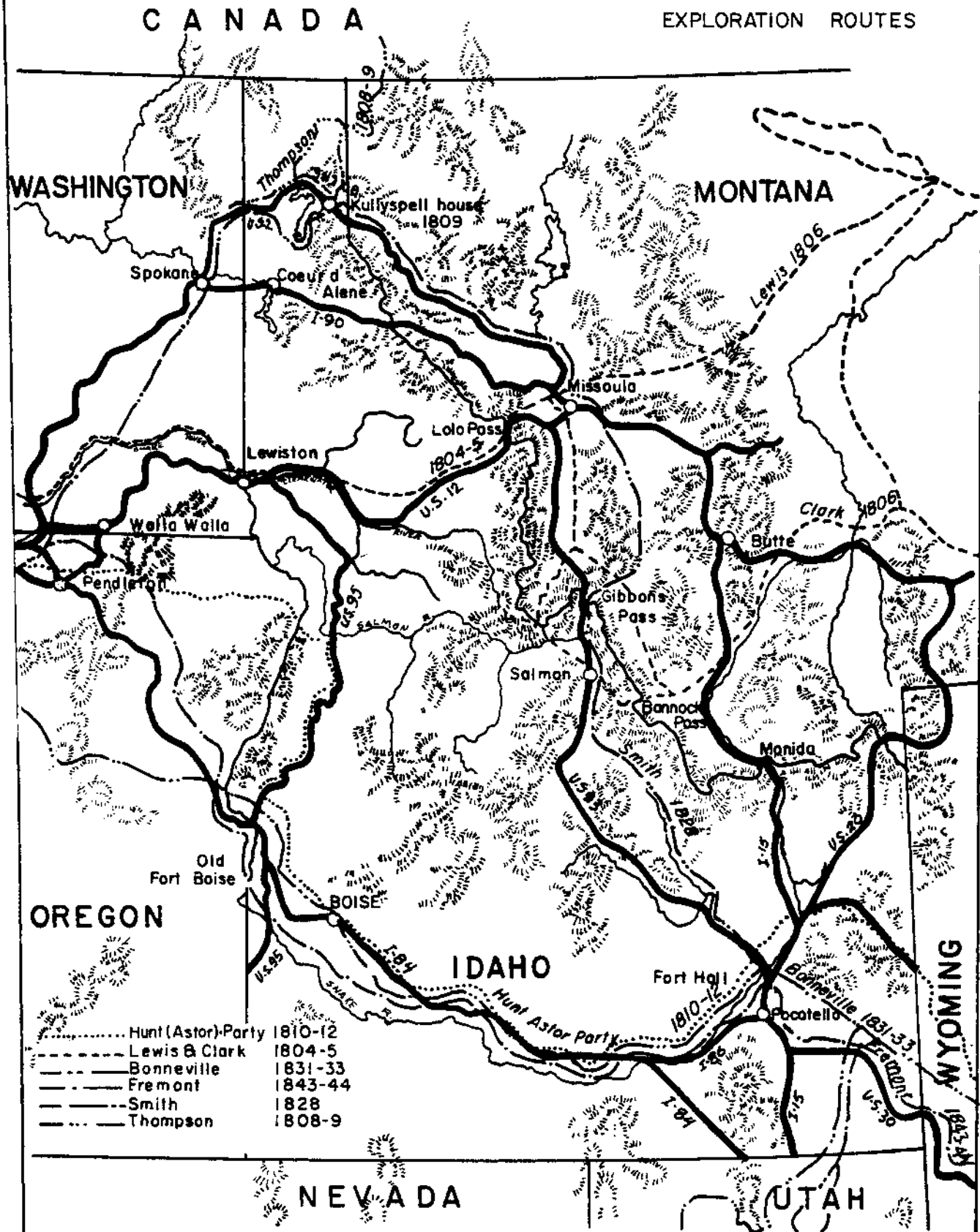
Although there were temporary settlements in Idaho prior to the Spalding family at Lapwai, none of the people involved were engaged in activities associated with permanent settlement.

The first trading post in Idaho was established on Lake Pend Oreille by David Thompson of the British Northwest Fur Company in 1809. In the following year a second trading post and the first by an American, Andrew Henry, was established near St. Anthony. These establishments were followed by construction of first Fort Hall and then Fort Boise in 1834. The former was established by the British Hudson Bay Company and the latter by an American, Nathaniel Wyeth. Most of these people, however, moved on after their initial objectives were accomplished.

In the early 1840's, Jesuit Fathers settled in northern Idaho at Cataldo and began missionary work. A colony of Mormons settled in the Lemhi Valley near the present site of Salmon City, and in 1855 were successfully farming and raising livestock. Three years later, however, they returned to Utah because of Indian trouble.

Other activities which enhanced settlement included construction of a military post at Lapwai in 1860 and the development of Lewiston as a water port of entry from Astoria and Portland, Oregon. On the third of May, 1861, the steam boat "Colonel Wright" ascended the Snake and Clearwater

PRESENT HIGHWAY SYSTEM
COMPARED TO PRINCIPAL
EXPLORATION ROUTES



Rivers to Lapwai Creek (Spalding) to initiate steam powered navigation from the Pacific Ocean.

Settlers and Gold

The gold strikes of 1861 and 1862 caused an influx of prospectors and settlers. In 1861, gold was found in the areas of Orofino, Pierce, Elk City and Florence. In August 1862, rich strikes were made in the Boise Basin and on Grimes Creek. Gold was also discovered in the Warren area of the Salmon River drainage.

Those who took up farm land at the time of the various gold rushes found ready markets for their products. Hay and swamp grass were baled and sold in the towns at prices varying between 25 and 40 cents per pound at the destination. It is recorded that a stock tender at a feed yard in Idaho City required a packer to pay \$13.60 for feeding two mules 34 pounds of hay.

In March 1863, great numbers of people from California and Oregon followed roads and trails leading to the mining areas in Idaho. Their search for gold created a need for better trails and roads. In the absence of any organized local government, the improvement of trails into roads was the direct responsibility of travelers, freighters and stage operators. Some facilities were developed by business enterprises for the purpose of charging tolls for profit. Early examples include two toll trails which were opened in northern Idaho in the spring of 1862. The use fee for these trails was one dollar for each pack animal.

Territorial Organization

Oregon organized a provisional government May 20, 1843 at a point near where Salem now stands. This government consisted of a three man executive board, a judge, a sheriff and a legislature. In this legislature there was a man who had a copy of the laws of Iowa. The legislature passed an act adopting all of these laws that might be applicable to their provisional government.

In 1846, the year that the boundary dispute with England was settled, it was decided to abolish the executive committee and elect a governor for Oregon.

The necessity for military protection of the people of the northwest, which could not be afforded by the Government until a territorial government had been organized, caused President Polk to send a special message to both houses of Congress. On August 14, 1848 an Act was passed creating and organizing the Territory of Oregon, which included all territory west of the Rocky Mountains to the Pacific Ocean, north to the forty-ninth parallel and south to the forty-second parallel, or to the California Line. On March 3, 1849 Governor Land of Oregon territory issued his proclamation declaring the territory organized and under the control of the United States. Thus, as a part of the Oregon Territory, Idaho came under formal United States control.

Northern Idaho was subsequently detached from Oregon Territory and became a part of Washington Territory on March 3, 1853.

IDAHO TERRITORIAL GOVERNMENT

1863 - 1890

Idaho Territory was created March 4, 1863. The Organic Act passed by Congress created and organized the Territory of Idaho to include all of the Washington Territory west of the Rocky Mountains except that portion which constitutes the present State of Washington. It also took in a large area east of the Rocky Mountains which was later to become Montana and almost all of Wyoming.

Upon passage by Congress of the Organic Act creating Idaho Territory, the President appointed executive officers to administer territorial affairs.

Montana Territory was organized in 1864 and took from Idaho all that area east of the Bitterroot and Rocky Mountain Ranges placing the common boundary along the crest of the Bitterroot Range.

Wyoming Territory was organized in 1868 and took another area from southeastern Idaho leaving Idaho Territory 45 miles wide at the northern end, 350 miles wide at the southern end and 500 miles long, resembling a pork chop in outline with a land area of 83,557 square miles. Thus, Idaho became the 12th largest State of the adjoining 48 states in land area, being approximately twice the size of Pennsylvania or Ohio and 1.7 times larger than New York. The population in 1890 was 88,548 and 713,000 in 1970.

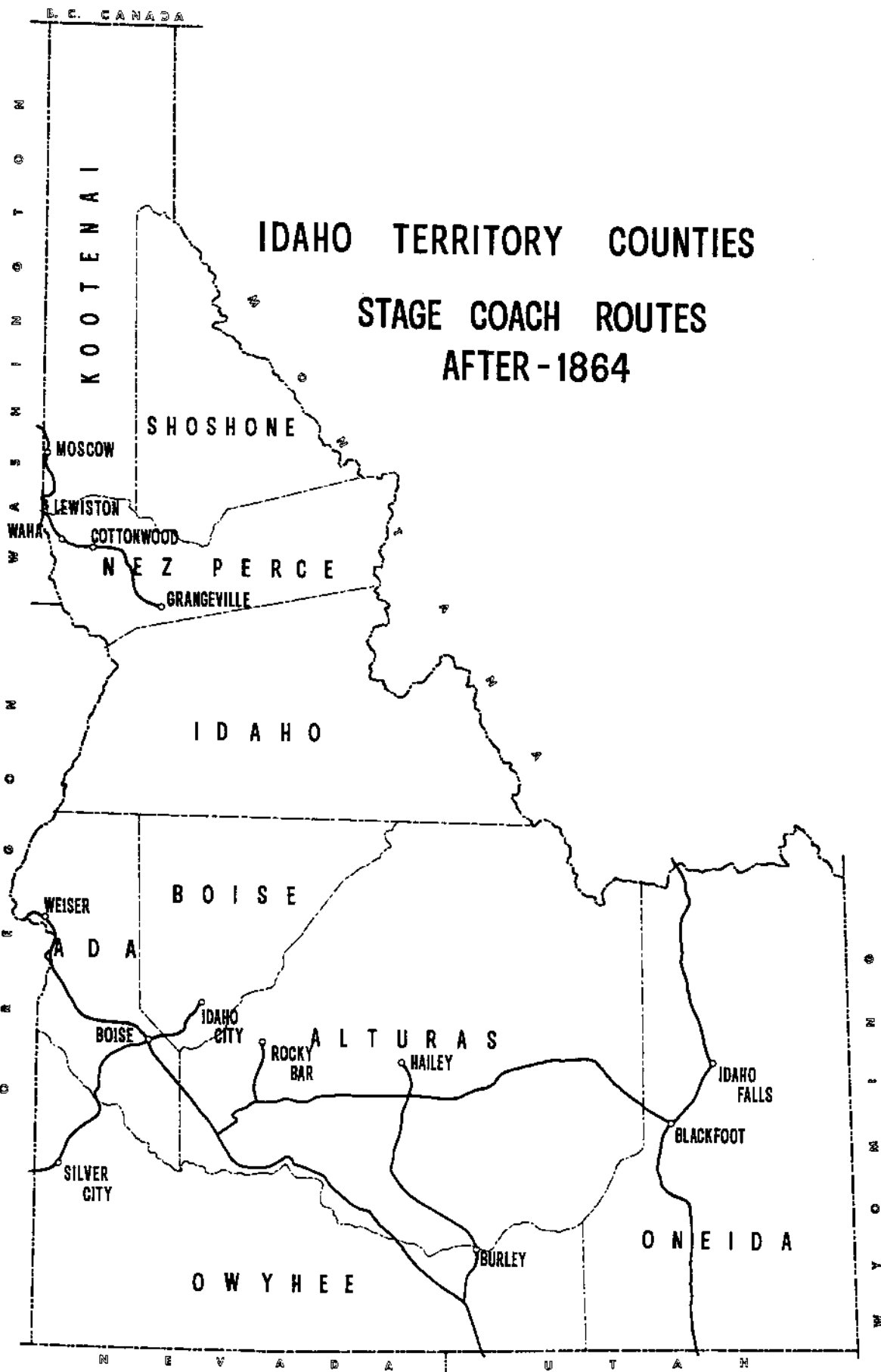
Territorial boundaries, originally fixed to include the active mining districts of the Intermountain region and later modified by political or administrative expediency, were drawn with little regard for natural barriers or thoroughfares. This results in the territory, and subsequently the State, having its irregular shape and some

inconvenient features, especially with respect to ground transportation. Idaho is characterized by very broken topography and by a wide variation in soil, geological structure and climatic conditions. It is bordered by six other states and British Columbia. It had 43 interstate and international border connections on the State Highway System in 1974. These circumstances have had a lasting effect on highway development and have added to the normal problems of a comparatively young and sparsely settled state.

Thus, in the midst of the Civil War and the gold stampede, Idaho became a territory. While the Oregon settlers of 1842 were attracted by the availability of western land, this interest was later diverted to minerals which promised more rapid wealth than did agriculture. The exploitation of natural resources for a wide variety of economic activities soon demonstrated that transportation in any form was second in importance only to the development of the natural wealth. The Indians had been subdued. With a limited road system and the protection of military posts, the settlers were able to maintain their lines of communication and supply. It was now possible to turn from exploration and conflict to a more stable development with placer gold affording the economic, functional base.

Executive Power

Chief executive officer of Idaho Territory was the Governor who also acted as Commander-in-Chief of the militia and as Superintendent of Indian Affairs. The appointment was for two years at a salary of \$2,500 per year.



He was required to live within the Territory.

Other appointive officials were a secretary, a chief justice, two associate justices, an attorney and a marshal. Salaries of all officials and of members of the legislative assembly were paid by the United States government.

Legislative Power

The legislative assembly consisted of a council with seven members and a house of representatives with 13 members. Provision was made to increase council membership to 13 and house membership to 26 as territorial population increased. The salary of legislators was \$4 per day with an allowance of \$4 for each 20 miles of travel in going to and from sessions.

A census of qualified voters was taken prior to the first assembly election. Representation was then apportioned among the counties as nearly as possible in proportion to population. The first election for territorial legislators and a delegate to Congress was held on October 31, 1863.

Counties

Four counties were created in Idaho prior to March 4, 1863 while it was a part of the Washington Territory. Three of these, Nez Perce, Idaho and Shoshone, had organized and were in operation when Idaho became a separate Territory. The Washington Legislature created Shoshone County for the benefit of the miners January 9, 1861.

The first Idaho Territorial Legislature in 1863 affirmed the four counties already established and created three more, Alturas, Oneida and Owyhee. Ada County was created from the western portion of Boise County by the second legislative session on December 22, 1864. This process of subdividing was to continue until Idaho had its present total of 44 counties.

Road Status - First Legislature

Though travel of a sort on wheel-ed vehicles was evidently an accomplished fact in 1863, no record states how the members from what is now Wyoming and Montana traveled to Lewiston, Idaho for the first legislative session held in December 1863.

The existence of a pioneer road is indicated by the inauguration of stage service March 15, 1864 from the head of Columbia River navigation to the foot of the Blue Mountains. The first stage for Boise left Walla Walla on March 10, 1864 and the first stage from Boise arrived in Walla Walla on March 25, 1864. Stages ran between Umatilla, Oregon and Boise in September, 1864.

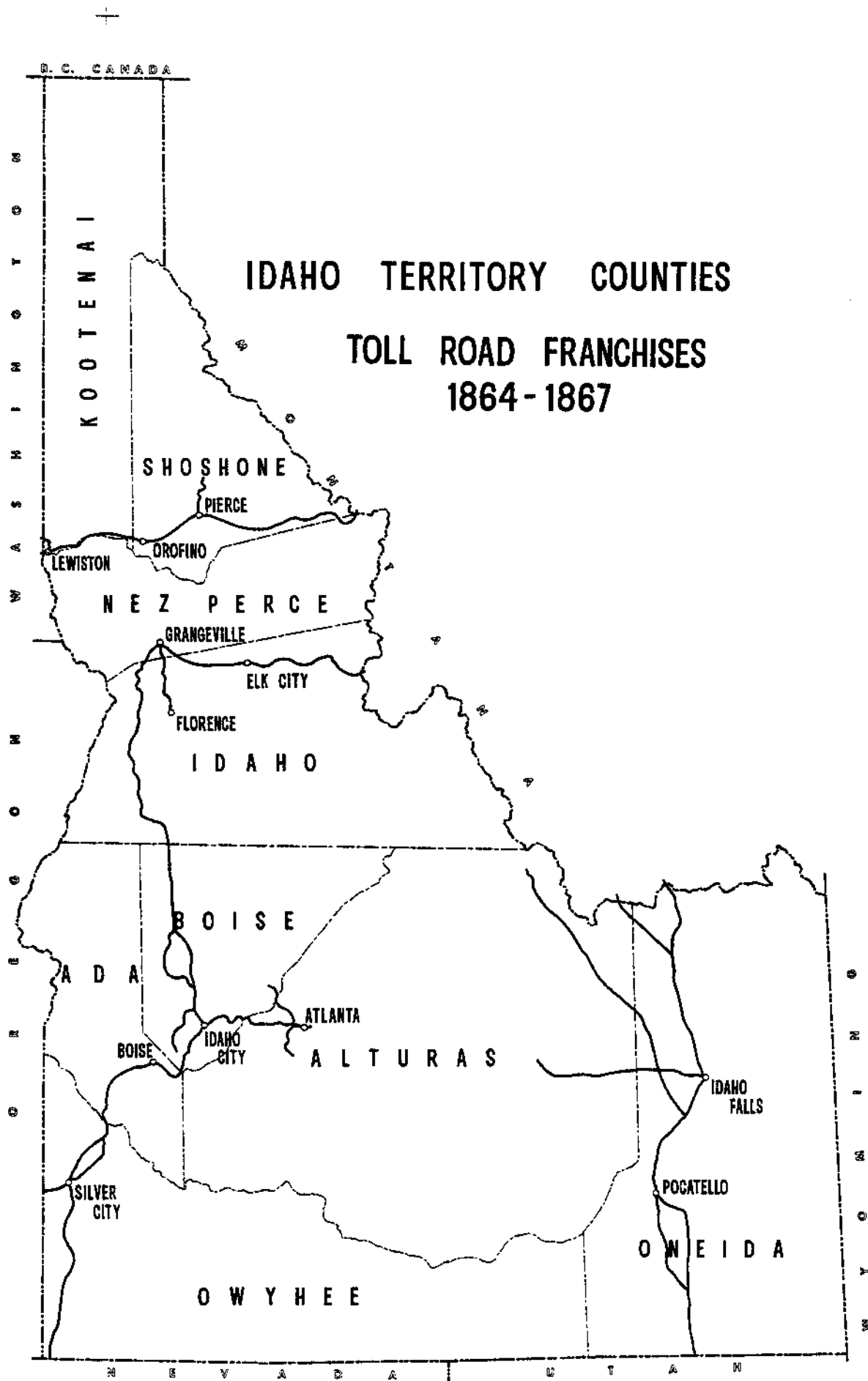
Mail express lines were started in the fall of 1862, and a mail contract between Salt Lake City, Boise, Walla Walla and The Dalles, Oregon began August 8, 1864. Early history makes frequent reference to high tolls on roads and ferries.

One can readily visualize the discomfort, risk and time involved in this early use of primitive roads with the pony express; slow, cumbersome freight wagons with trailers and running wildeyed cayuses lined out ahead of rocking, jouncing stages. One can also imagine the narrow, winding, rockstrewn way, desert heat or cold, steep hills and fords, primitive bridges and ferries, toll and stage stations and the travelers concern about marauders.

First Legislative Session

The first session of the legislative assembly convened at Lewiston, Idaho, December 7, 1863.

On December 9, 1863, Governor William B. Daniels gave his first message. While it is comparable to many such addresses of the future, an excerpt reveals the progress that has been made during the 100-plus years since Idaho's first territorial governor



so aptly and truthfully prophesied the development of the commonwealth. He stated:

Sixty years ago when Mr. Jefferson sent Lewis and Clark to explore this country it was almost as unknown as the deserts of Africa. Little did he dream of what it would be today, and much less did he dream of what it will be 60 years hence (1923). The child is born who shall see railroads and telegraphs connecting our great centers of trade with the Atlantic and the Pacific Oceans; who shall not only see the inexhaustible mineral wealth of this country developed, but shall see the trade of Asia turned from its ancient channels and the road across this continent become the great highway of the world. We shall see the states of the Pacific rival those of the Atlantic seaboard in population and wealth; shall see a city located on the western side of the continent, by the Pacific Ocean, surpassing in trade and magnificence ancient Tyre when she sat as a queen and her merchants were princes, and cities in the interior surpassing Palmyra and Persopolis in the days of their glory splendid, not with heathen temples and places decorated with barbaric pomp and pride, but with churches dedicated to the worship of God, and institutions of learning devoted to the education of our youth in arts and science, morals and religion. He shall see the capital of the nation removed to the valley of the Mississippi, not four days journey from either ocean, far from the reach of any invading foe and easily accessible to all our countrymen. Then

shall the population of the mountain states be counted by tens of millions and Idaho, one of the last territories to be organized, shall be one of the first of the states.

While Governor Daniels visualized the future development and recognized the possibility of highways spanning the state and continent, there is nothing in his message especially enjoining the assembly to make any provision for highway revenue and construction. However, the initial step in this direction was provided by Councilman Waterbury, who introduced Council Bill No. 7, concerning roads, highways, thoroughfares and trails. This was the first act referring to roads and was passed December 31, 1863.

Council Bill No. 7 consisted of 14 sections and is here quoted in large part, since it was a far sighted document for the day of toll roads and its imprint still shows in Idaho's local road administrative practices.

Section 1 - All roads and trails, streets and thoroughfares shall be considered as public highways, which are or have been used as such at any time within two years prior to the passage of this act, or which may hereafter be declared as such by the Board of County Commissioners within their respective counties; provided, that in case any such public highway is now closed, the same shall not be opened without an order of the Board of County Commissioners.

Section 2 - It shall be lawful whenever the public interests require it for the Board of County Commissioners of each county to divide the said county into a suitable number of road districts, and there shall be elected at each election a road super-

visor for each district. Right-of-way to be 80 feet wide.

Section 3 - The County Clerk of each county shall notify all persons who have been elected road supervisors within ten days after such election has been held, informing them of such election and describing the boundaries of their respective districts.

Section 4 - The road supervisors shall cause all highways within their respective districts to be kept clear of obstructions and in good repair, causing banks to be graded, bridges and causeways to be made, to keep them in good repair and rebuild them when destroyed.

Section 5 - The road supervisor shall have power to make use of any gravel or dirt for improving the roads which may be absolutely necessary from any adjacent lands, and the Board of County Commissioners may allow such damages, if there be any, to the owners of such lands; provided, that said commissioners may be liable to pay damages to the county, at the suit of any citizen, if it should be proved that they have allowed extraordinary and extravagant damages.

Section 6 - If in the opinion of a majority of the Board of County Commissioners of any county in this territory, the public road policy of that county so demand, there shall be levied and collected on all able-bodied men in each district a road tax of three dollars, to be collected by the road supervisor, and the auditor of the county

shall furnish him with blank receipts for the same, and the road supervisor shall spend the money collected by him in the improvement of highways, and shall take receipts for all monies expended by him and settle with the auditor quarterly and make lawful exhibit of his expenditures. In payment of the road tax, one full day's work may be given in satisfaction of the three-dollar tax.

Section 7 - Whenever any contract for the improvement of roads, trails, streets, or thoroughfares is to be made, advertisement thereof shall be given by the supervisor of the district in which such improvement is to be made, by posting written notices in two of the most public places of his district and by advertisement in one newspaper of the county, or if none be published in the county, by notice posted on the courthouse door at least two days prior to the letting of such contracts, and all contracts shall be awarded to the lowest responsible bidder subject to the approval of the Board of County Commissioners; provided that the supervisor shall have power to make contracts for the improvement of roads, which shall not exceed the sum of \$50.00 at their option, such contracts to be approved by the Board of County Commissioners.

Section 8 - The Board of Commissioners of each county, on presentation of petitions praying for a county road, trail, thoroughfare, or highway to be laid out from the dwelling or plantation of any person to any public road or from one public road

to another and designating the points therein shall cause notice to be given to the parties owning the lands over which such road is to be located, and if any objection by one or more of the owners shall be made, the Board of County Commissioners shall consider and determine the same at their next regular meeting and if they shall be of the opinion that such road, trail, street, or thoroughfare is necessary, they shall appoint two persons as viewers who shall view out and locate such road, trail, street, or thoroughfare, and upon a return of the certificate of the viewers shall declare the same to be a public highway. When absolutely necessary the County Surveyor may be called upon to assist said location.

Section 9 - Each road supervisor shall report to the Board of County Commissioners quarterly the amount of money paid out and collected by him, and to whom and for what paid, the number of days he has been in actual service, and also a list of the delinquents; and said supervisor shall make an affidavit before a justice of the peace, or some other officer qualified to administer oaths, that the said report and delinquent list are correct to the best of his knowledge and belief, and any person neglecting or refusing to pay the road tax required by this act, to the supervisor, within three days after the same shall be considered a delinquent, and the supervisor shall proceed to levy and sell at public venue (public auction) to the highest bidder, after giving public notice as required by law on sales under execu-

tion, the property of such delinquents, or so much thereof as shall be necessary to satisfy such delinquents' road tax and cost of making such sales.

Section 10 - The road supervisors shall each receive for their services while in actual employment such compensation as shall be allowed by the Board of Commissioners, not to exceed six dollars per day.

Section 11 - If any person shall obstruct any public road, trail, street, or thoroughfare by falling any trees across the same, or by placing any other obstruction therein, or damaging or digging or deepening a creek or river or its banks so as to destroy a ford or crossing, he shall be liable to prosecution before any justice of the peace or any commissioners of the county or supervisor of the road district, on behalf of the county, and on conviction thereof shall be fined a sum not exceeding fifty dollars and shall forfeit five dollars for every succeeding day he shall suffer such obstruction to remain after he shall have been ordered to remove the same by the supervisors. The road supervisor shall cause to be erected and kept in repair posts and guide boards with inscriptions thereon, in letters and figures, giving the direction and distance to the most noted places to which such roadway leads.

Section 12 - If any person shall willfully destroy or injure any bridge or causeway, or remove or cause to be removed any of the timber or plank therefrom, or cut down or injure any tree

planted, or growing as a shade tree, in any public highway, street, or thoroughfare, by digging in it, he shall be liable to be prosecuted before any justice of the peace, by any commissioners of the county, in behalf of the county and on conviction thereof, shall be fined in the sum not to exceed one hundred dollars.

Section 13 - All fines collected under the provisions of this act shall be paid into the county treasury for the use of the road district in which the same was collected.

Section 14 - This act is to take effect and be in force after its approval by the Governor.

Approved, January 30, 1864.

County Surveyor

The 1863 Act establishing counties and providing officers also refers to a County Surveyor. Council Bill No. 7 refers indirectly to the services of a County Surveyor. This official may be considered to be the first technical officer whose duties included a semblance of engineering service in connection with public roads.

This act put road matters in the hands of the counties, and for the first time there appeared in an Idaho law such terms as road district, road supervisor, contract, road tax, route designation, penalty for damage to roads and road signs; all terms which are familiar today in the statutes. The chief weakness of the act was there were no funds provided specifically for the improvement of roads. This may have occurred through opposition by the toll road interests. In any case, even though this act set the stage for road construction in a reasonable manner, the curtain failed to

rise. From January 30, 1864, the date of its approval, until 1870, there was very little effort made by the territory or the counties toward any kind of road construction.

As indicated above, Council Bill No. 7 provided for county road construction and maintenance but did not include either adequate financing or provision for skilled personnel to administer the program. The effectiveness of the legislation was further reduced by the subsequent granting of additional toll road franchises. This was indicative of the attitude towards roads that continued almost throughout the entire period of territorial government. The Territory continually avoided effective financing and responsibility for roads.

Toll Franchises

The operation and maintenance of all main traveled roads during this era were in the hands of private owners operating toll roads, ferries and bridges. The Toll Road Map on page 10 shows the system which was in service during this period.

Since toll roads existed when Idaho Territory was formed, it would appear that some toll franchises were granted during the time Idaho was a part of the Oregon and Washington Territories. Evidence of this practice is contained in the remarks of Editor Frank Kenyon of the Golden Age, Lewiston's first newspaper which was established August 2, 1862. In writing of the 1863 Washington Territorial legislative session, Kenyon commented:

A good deal of business has been done in the way of ferries and franchises. Every member has voted himself or his friends a franchise of some kind.

This practice was continued by the Idaho Territorial Legislature which granted 42 franchises for toll roads or ferries between 1864 and 1867. Other

toll facilities were authorized by individual counties. In all, franchises were granted for 26 ferries, 13 bridges, and 43 toll roads or a total of 82 facilities during this period.

A majority of these roads served mining areas in the Owyhee, Elk City and Boise Basin Districts. Toll rates were relatively high with \$2.50 for a wagon and single span of horses, mules or oxen being common.

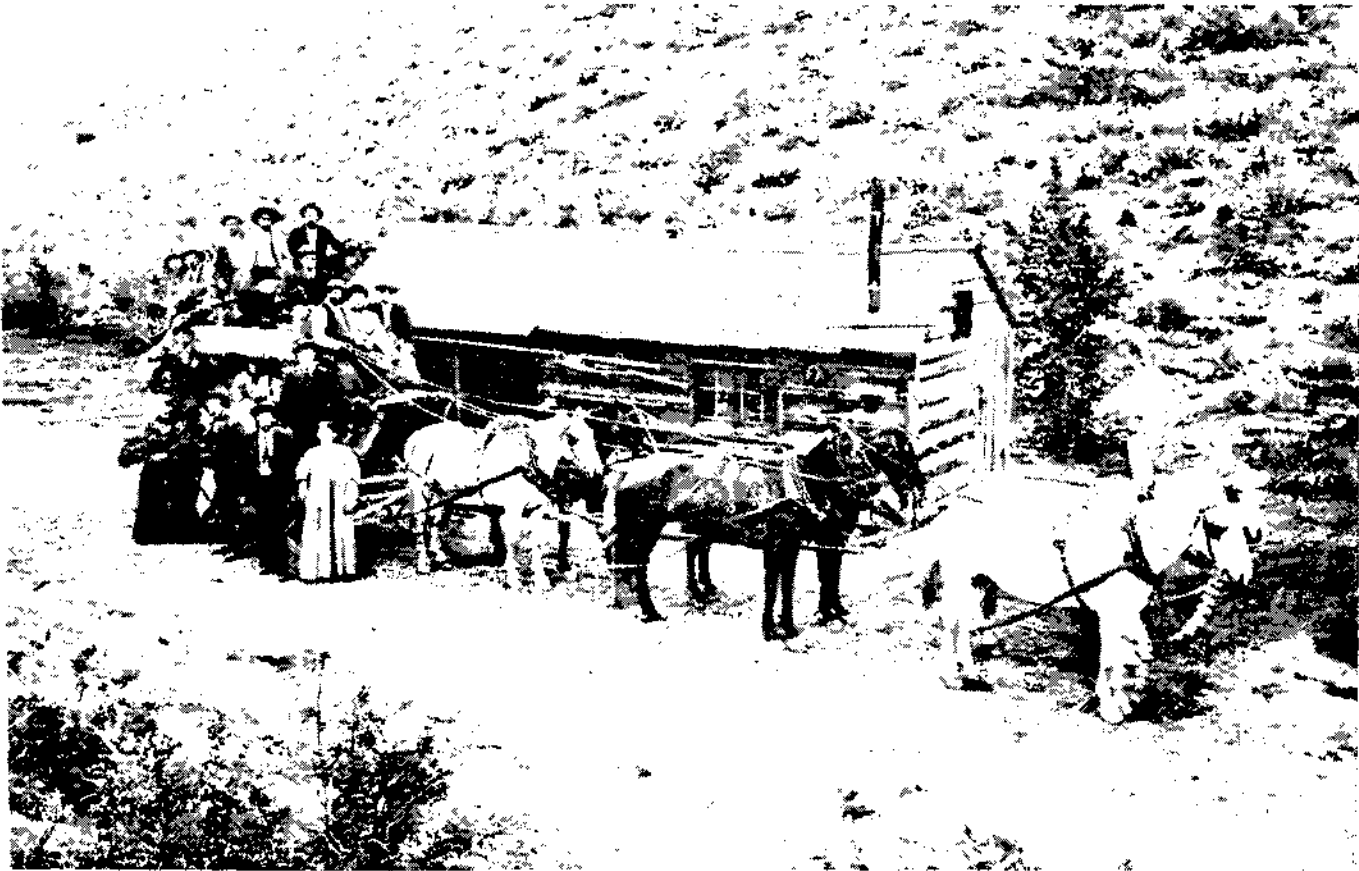
An examination of enabling legislation reveals only one instance where any sort of roadway or design standard was specified. In granting an eight-year toll road franchise from Ruthburg to Brownlee Ferry, the Ada County Commissioners required that the grade not exceed 30 inches to the rod (about 15 percent). In some cases the time of the franchise was limited, annual franchise fees were charged and performance bonds required.

The Lewiston-Clarkston Ferry crossed the Snake River near the present-day Interstate bridge crossing.

RATES OF FERRIAGE	
FOR EACH WAGON & PAIR HORSES	
MULES & OXEN	3.00
WAGON LOADED WITH 4000 LBS & OVER	4.00
ADDITIONAL PAIR OF ANIMALS	1.00
PACK ANIMALS	.50
MAN & HORSE	1.00
LOOSE HORSE & STOCK	.25
DO SHEEP & HOGS	.10
FOOTMAN	.50
ONE HORSE VEHICLE	2.50
DOUBLE RATES AT NIGHT	

Lewiston-Clarkston ferry boat rates posted in 1867 by James Silcott, D. M. White and E. C. Pearcy.





"Halfway" station between Silver City and Walters Ferry over the Snake River in Owyhee County.

the close of the Civil War in 1864 is recorded as \$3,697,304.49.

Second Legislative Session

The second legislature of 1864 added 403 printed pages of laws to the 610 pages of the preceding session. It should be noted that 300 pages of the second session laws were amendments to statutes enacted during the first session.

The Governor in his opening address expressed his disapproval of the authorization of additional toll facilities, stating that a public system of highways was preferable. The legislature, however, granted numerous additional franchises for toll roads and bridges. Road construction and maintenance continued to be franchised and supported by tolls by both territory and counties.

There is no question but that the limited tax base caused this action. Assessed valuation of the territory at

The capital of the territory was transferred by the Second Legislature from Lewiston to Boise City.

Subsequent Territorial Legislation

The Third and Fourth Legislatures gave no effective consideration to public roads. Road matters were left entirely to the counties and the toll road operators. However, the necessity for better communication between north and south Idaho was beginning to be felt as development increased.

First County Bridge Approval

An Act of December 30, 1870 authorized Ada County to construct a bridge over Dry Creek between Boise City and Middleton. Construction was

to be paid for from the Current Expense and Redemption funds of the county. This is the first reference in the session laws to a mutual interest by territory and county in road construction. The reasons the Legislature found it necessary to authorize a county to spend its own money are not evident. The counties had been given authority over the roads in Council Bill No. 7 of December 31, 1863.

Council Memorial No. 3

No document has been found in the records of early Idaho history which more effectively indicates the relationship between highways and State development than Council Memorial No. 3 of the Idaho Territorial Legislature, passed December 23, 1872, and memorializing Congress for a military road approximately on the location of present U.S. Highway 95. It is simple and sincere and draws a picture of distance, danger, hardship and need.

Your Memorialists, the Legislative Assembly of the Territory of Idaho, would respectfully represent that the distance from Fort Boise, in Ada County, to Fort Lapwai, in Nez Perce County, on the Indian Reservation, is 194 miles on the meridian line, and the direction nearly north, and that from Fort Lapwai to the Spokane River, by the usually traveled route, is a distance of 120 miles, north of Fort Lapwai; that through the country lying between Fort Boise and the Spokane River, there are numerous settlements of farmers, stock-raisers and miners of the precious metals; that over the entire route there are wandering bands of renegade Indians from the tribes of Bannocks, Shoshones, Nez Perce, Palouse, Coeur d'Alene and Spokane who annoy and frequently commit depredations upon the

property of the settlers and travelers, and often threaten to make a general massacre of the whites, and destruction of property; that over the greater part of said route a first-class military road can be made at a very moderate cost, and only a small portion of said route would be of any considerable outlay or expense in construction; that from Fort Boise to Fort Lapwai there is not any wagon road by which man or munitions could be transported, except by a circuitous route. Your Memorialists further represent that the people, inhabitants of the counties of Idaho, Nez Perce, and Shoshone, constituting Northern Idaho, labor under very great inconvenience in obtaining access to the seat of government of the Territory; that while by the proposed route the distance from some of the northern counties would not exceed 200 miles, by the present route of travel the same inhabitants must travel 150 miles north, being directly in the opposite direction to the seat of government, then 100 miles westwardly, through Washington Territory, and then about 300 miles southerly through the State of Oregon to Boise City, a total distance of about 550 miles, a burden almost intolerable at the inclement season of the year when these long journeys are necessarily taken, adding not only to the distance, but at least trebling the expense. The direct route from Boise City to Fort Lapwai is only possible on horseback or with pack trains; that from Fort Lapwai to the Spokane River, enroute to Fort Colville, is 87 miles by an air line, and 120 by the usually

traveled route, and there is a wagon road which can be made a first-class military road at a moderate expense; that the settlements of the proposed route between Forts Boise and Lapwai are Indian and Weiser valleys, the valley of the Little Salmon River, main Salmon River valley, Camas Prairie, and others of smaller note; from Fort Boise to the main Salmon River, being 140 miles by meridian line, and thence to Lapwai, 48 miles on the meridian; from Fort Lapwai to the Spokane River are several young, but thriving and rapidly improving settlements; that by the construction of a military road over said route, the government would not only be enabled to give the settlers sufficient protection along the route from Indian depredations, and transport men, supplies, and munitions from and to said military posts at moderate expense; nor is it only a military point of view that the proposed road is important, but would greatly facilitate the development of the natural resources of that portion of the Idaho Territory, rich in wealth, both of the precious metals and for agricultural and stockraising purposes, and is settling as rapidly as can be expected under the adverse circumstances and difficulties of locomotion; and such road will amply repay the United States for the moderate outlay for which your Memorialists ask. Your Memorialists would therefore earnestly pray that your Honorable Body make an appropriation of the amount necessary for the construction of said road.

And your Memorialists will ever pray.

The Secretary of the Territory is requested to forward a copy of this Memorial to the Secretary of the Interior of the United States, and another copy to our Delegate in Congress.

Passed the Council on the 18th day of December, A.D. 1872.

I. N. Coston, President

Passed the House of Representatives on the 23rd day of December, A.D. 1872.

S. S. Fenn, Speaker

Records indicate that Congress took no action on this request. A second and similar petition was submitted by the Territorial Legislature of 1877. As a result, Congress authorized a survey of the route in 1878. This survey was directed by Lt. John L. Sehon, Army Corps of Engineers, who estimated that construction would cost \$80,000. No construction funds were authorized.

Highway Legislation 1863-1881

There was no other significant Territory-wide road legislation during the period 1863 to 1881. Primary transportation interest during the period appears to have been concentrated on the location of railroads.

Special legislation was enacted to authorize road or bridge construction by individual counties, including Ada, Boise, Oneida, and Idaho. Authorization to the latter included a wagon road from White Bird to John Day and Slate Creek along the Salmon River.

During the same period, Boise and Idaho Counties were authorized to let contracts for road maintenance. Contracts were awarded on the basis of sealed bids with performance bond required.

Also, in 1881 the Territorial Legislature authorized construction of

bridges across the Boise, Payette and Bear Rivers. This is the first recognition of any Territorial responsibility for highways. The project was directed by a five-member bridge Commission.

County Road Act of 1881

An Act approved February 1, 1881 provided that any road, highway, street or thoroughfare used as such prior to January 12, 1875 should be considered a county road.

This act included many of the provisions of Council Bill No. 7 enacted in 1863 but also added some new material.

Applications for laying out, altering or locating a county road required the signatures of twelve householders residing on or in the vicinity of the proposed road. If the application received approval of the Board of County Commissioners, each petitioning householder was required to contribute two days' labor or the cash equivalent thereof on the county road system.

In the event any person owning lands traversed by the road claimed his property would be damaged by construction, the extent of such damage was evaluated by a committee appointed by the Board of County Commissioners. In the event such damages exceeded the benefits of the road as determined by the Commissioners, they were required to disapprove the road unless such damages were paid by petitioners. (Basically, this might be considered a first application of a Benefit-Cost ratio concept which was to appear years later as a requirement for many public works projects.)

This Act also contains the first requirements that the roadway alignment be recorded. If the road was bordered by trees, the line of the road was to be recorded thereon. Otherwise, the line was to be recorded on posts placed not more than one-half mile apart. In addition, road district supervisors were required to erect

signs at each fork or crossing of country roads, giving the direction and distance to the next town or public place. These were the first legal provisions in regard to route marking and signing.

Minimum right-of-way width was specified as 60 feet, except in Idaho County, where the width was to be 80 feet.

Every male resident from 21 to 50 years of age, except the infirm and persons who were public charges, were required to perform two days' work per year on county roads. In addition, one day of work was required per \$1,000 assessed value of real property owned.

In lieu of labor, a cash payment at the rate of two dollars per day could be made.

This Act of 1881 signaled the end of the Legislature granting toll road franchises. In it was the germ of the idea that free use of roads was essential to State development. Again, as in Council Bill No. 7 of 1863, all roads were a county responsibility and the Territory again did not follow through on this responsibility.

Although the Act of 1881 provided a basis for a system of free roads and bridges, it did not actually solve the dilemma of the times. Toll roads were inadequate to meet the needs of the growing communities. County resources were not sufficient to provide the roads for travel necessary to intercommunication, the development of required resources and the realization of the agricultural potential.

Partial recognition of these problems is contained in amendments to the 1881 Act signed into law on February 6, 1883.

The amendments provided that where a county road was so located that there was little or no labor available adjacent to it, the county could lease that road under bids. The lessee was required to clear the roadway

of timber and to provide bridges or ferries as needed. Tolls could be charged for use of the facility. Exemptions from tolls were provided for foot-travel, travel from one part of a farm to another, or travel to church to attend a funeral, or to elections. A cleared width of 30 feet was required. Travel width minimum was 16 feet except in cuts of six feet or more, where a width of 10 feet was allowed. Turn-outs 16 feet in width were required every one-fourth mile in narrow sections.

Other legislation enacted in 1883 authorized bridge construction by Ada and Owyhee Counties. The Ada County construction involved a structure over the Payette River. This Act required the county to establish the location and to prepare plans, specifications and cost estimates. This is the first legislative requirement of record in regard to such documents.

Highway Legislation 1885

Actions of the 1885 session of the Territorial Legislature indicate a growing awareness that some degree of expertise was required for even the primitive roads of the day.

Authorization for three bridges to be constructed or repaired by Ada County included provisions for plans, surveys and cost estimates. These structures crossed the Payette River near Payette and the Boise River at Boise and Caldwell. Other legislation authorized a structure to be built by Oneida County over Bear River east of Weston.

Of more significance were provisions permitting Boards of County Commissioners to direct the County Surveyor to lay out roads. This legislation was permissive in the case of existing roads and mandatory for all new roads. New locations were to be marked conspicuously on trees, stones or posts, noting angles and distances at one mile intervals.

Other legislation authorized Ada County to build a road from Boise to Atlanta. The work was to be done under contract with the Board of Trade of Boise City, according to a survey of P. J. Kinney, Engineer. This is the first record of a survey by a professional engineer.

Concern over lack of north-south communication was evident by legislative actions of earlier years. Council Joint Memorial No. 2 of the 1885 Territorial Legislature clearly demonstrates the degree of this concern. Apparently the Territory felt that a north-south wagon road was beyond the limits of territorial resources and that no financing was forthcoming from Congress.

The Memorial cites the lack of communication except by pack trails which were blocked by snow for six months of the year, and requested that the counties of Idaho, Nez Perce, Shoshone and Kootenai be annexed to the State of Washington. The frustration of the Legislature is eloquently expressed in the following quotation from the Memorial:

The regions are united politically, but socially, commercially, and geographically, they never can be.

Mount Idaho - Little Salmon Meadows Wagon Road

Demands for some sort of north-south road finally stirred the Territorial Legislature to take positive action during its final session in 1889.

The basic problem was a matter of financing. Payment of cost of the road from current revenues was beyond the limits of feasible taxing capacity. Bonding ability of the Territory was fixed at \$210,000, or one percent of total assessed valuation which amounted to \$21,000,000 in 1889. Existing debt amounted to \$160,000, leaving only \$50,000 of bonding capacity available to finance the proposed road.

Construction of a wagon road was authorized from Mount Idaho to Little Salmon Meadows. Financing was through a bond issue of \$50,000 with debt service provided through a Territorial tax levy of two cents per \$100 assessed valuation.

The enabling legislation was approved on February 5, 1889, but required concurrence of Congress because of the bond financing. This approval was obtained on May 19, 1890.

Location and construction of the road was directed by a three-member Commission to be appointed by Governor Shoup. Appointments were made on May 24, 1890 and confirmed the following:

N. B. Willey, Warren, Chairman

C. B. Wood, Grangeville

Frank Smith, Weiser.

There was considerable controversy as to whether the road should be located north along the Little Salmon and Salmon Rivers or be on a more interior location north from Payette Lake. The Commission selected the latter.

The actual location began at the north end of an existing wagon road at Wagon Bay on Payette Lake. From this point it extended north along the west side of Payette Lake and Payette River via Secesh Summit and Burgdorf to the Salmon River at the mouth of French Creek. The river was crossed at this point. The road then ascended to Florence and thence to Mt. Idaho via the general route of the Mose Milner Trail.

The entire route included 101 miles and was divided by the Commission into four sections for bidding purposes. Bids for construction were opened during the first week in September 1890, and actual work began during the following week. Except for the Salmon River Bridge, all contracts were completed by September 1891.

Total contract cost was \$32,240, excluding the bridge.

The Salmon River bridge proved to be the major problem on the entire route. Steel for the structure was ordered in accordance with a survey conducted by the supplier. Delivery was to Weiser and was so late that freighters refused to move it for fear of being snowed in enroute. When delivery was made the following spring, steel members were found to be too short to span the river. After considerable negotiation, it was decided to abandon the proposed steel structure and substitute a suspension bridge. The structure as built did not have sufficient capacity to support heavy wagon loads and severely hampered through use of the road.

Described by the press as a real achievement when the road was started, it was just as roundly criticized by some sources after it was placed in service. The following is a quotation from the Idaho Daily Statesman of June 21, 1890:

The construction of this road will meet an immediate and pressing want, as the necessity for a better means of communication between the northern and southern sections of the Territory is becoming of greater importance each year.

In its edition of September 23, 1892, the Idaho Free Press of Grangeville criticized the road in the following quotation:

We do not believe that there is a rod of the road which honestly fulfills the requirements called for in these specifications and we do not see how any member of the State Wagon Road Commission would have accepted the work as an honest fulfillment of the conditions of the contract. But accepted it has been, and paid for, and the people of

the state can now foot the bills with the assurance that they have not got value received for the amount expended.

N. B. Willey of the Wagon Road Commission replied to this charge in a letter of October 14, 1892, as follows:

I have personally inspected and measured the entire road and determined that it meets or exceeds specifications.

Total expenditure for the road amounted to \$47,000, which included engineering, cost of construction, and expenses of the Wagon Road Commission. The balance of \$3,000 in the Wagon Road Fund was apportioned by the First Session of the State Legislature to build a road from Price Valley to Council Valley and another extending south from the head of Payette Lakes toward Boise.

Territorial Government Summary

The period of Territorial Government, which began March 4, 1863, neared its close with the 15th and last Session, which adjourned February 7, 1889.

The provision for roads and trails during 27 years as Idaho Territory was largely a matter of individual initiative and county responsibility. The valuation of the State was low, permitting only a small income from taxes. Bond issues required federal authorization and were backed by small and uncertain security from the Territory. Under these conditions, toll roads afforded a compromise and relieved the Territory of road responsibility.

The first Territorial Legislature in enacting Council Bill No. 7, which

carried several features still in effect today, indicated that the desirability of public roads was fully appreciated as a principle. However, as the poll tax was entirely inadequate to provide the necessary funds, the Act had little effect until seven years after its passage. The Act of 1881 designated all roads as county roads (free roads). This was the beginning of the end of toll road franchises.

The first reference to an engineer in State or county service was the County Surveyor, whose office was created with the designation of counties in 1863.

The first reference to an engineer on roads is in the Act of February 3, 1885, where the use of a certain engineer's survey was required. This engineer, however, was not regularly in State or county service.

The only road bonds issued by the Territorial Government were those totaling \$50,000 for the Grangeville-New Meadows Road, of which all but \$11,000 was expended up to the end of Territorial Government.

Organized highway administration essentially played no part in the territorial development of Idaho. The vast area, combined with lack of public funds and the franchise scramble for individual profit, prevented effective highway organization for many years. However, with the gradual increase in valuation, the increase in agriculture and the development of natural resources, came recognition of a State that must be united through adequate transportation facilities. Statehood was seen as a more effective means to achieve orderly progress.

On July 3, 1890, Idaho became a State without a State road of its own.

On July 3, 1890, Idaho, to which the mapmakers have allocated little flat land but more than amply endowed with mountains and difficult routes of Transportation, became a State without a State road of its own.



EARLY STATEHOOD

1890 - 1913

Idaho became a State with a population of 88,548 and an area of 83,557 square miles. There were no State roads and no State organization to administer roads - and toll roads, bridges and ferries were prevalent. All roads had been defined as county roads since 1875. The Union Pacific railway had been built across the State six years previously and the Great Northern railway was beginning to build across the northern Panhandle. Irrigated farming and timber were beginning to offset the decline in placer gold production, while silver and lead production was increasing in the north.

First State Roads System

The First Session of the State Legislature in 1891 authorized a survey of a system of roads beginning at Banner and extending north via Deadwood, Bear Valley, Alton and Warren to Warm Springs (Burgdorf), with a branch to the head of North Fork Salmon River via Yankee Fork and the Salmon River. It also included a road from Clearwater northward to the forks of the Saint Maries River with a branch from Clearwater to Elk City.

The survey was supervised by a three-man Commission which was to personally examine various locations and mark the one deemed to be most practical. Estimates of cost were to be prepared for route sections not to exceed 10 miles in length for each alternate with varying grades and widths.

The survey was financed through a general fund appropriation of \$3,000. A maximum of 14 months was allowed for completion of the survey. E. T. Perkins, Jr. was the supervising engineer.

Actual construction of a modified system of roads was authorized by the Legislature in 1893 by an act to "provide for internal improvement of the State by constructing a system of wagon roads in Boise, Custer, Lemhi, Idaho, Shoshone, Kootenai, Latah and Nez Perce Counties."

The authorized system included roads as follows:

- (1) Beginning at Banner and extending via the mouth of Yankee Fork and Salmon River to the head of the Salmon River at the Idaho-Montana line.
- (2) Beginning at the falls of Little Salmon River at the Washington-Idaho County line, then down the Little Salmon to the main Salmon River to an existing wagon road at John Doumecq's place about four miles above the mouth of White Bird Creek, then via the existing wagon road to Mt. Idaho, extending thereon north through Nez Perce and Latah Counties by way of the mouth of Saint Maries River to Wallace, with a branch from Lewiston to Elk City.

Road location and construction was supervised by a Commission consisting of one representative from each county involved and selected by the Boards of County Commissioners.

The Road Commission was required to select persons to survey and locate the roads, one of whom was to be a "competent civil engineer of recognized

standing and practical skill". His salary was not to exceed \$150 per month plus expenses. The engineer was also to supervise and administer construction. The total engineering cost was not to exceed \$12,000.

These roads were to be divided into sections with contracts awarded on the basis of bids which were to be received as soon as practicable in 1893. Work was to be distributed along the line of the roads and not confined to any particular section or county road. Grades could not exceed 10 percent. No single contract could exceed \$115,000. Administrative costs of the Commission were limited to \$6,000.

The cost of the road system was financed through a bond issue of \$135,000. Debt service retirement was provided through a State ad valorem levy of three cents per \$100 assessed valuation.

The entire proposal almost failed because the initial legislation was faulty as the bond issue authorized was for only \$135.00. An amendment to increase the bond issue to the required amount of \$135,000 was passed only after a bitter legislative battle.

Governor W. J. McConnell signed the bill with considerable reluctance, saying:

The wisdom of constructing a portion of this wagon road cannot be doubted. That division down the Salmon River and the division to Elk City together with the division through Boise County and eastward fully justify the expense to the State involved in their construction. While I think some other divisions of the road will prove of little value, as I doubt whether the Counties in which they are constructed can afford to maintain them after they are built.

I am impelled to sign this bill in consideration of the land

interests of the State, and by that consideration alone. I believe that \$50,000 of the amount carried by this bill has been appropriated for the construction of roads that will be of little value. In the congressional act providing for the admission of the State of Idaho; we received the very liberal donation of 590,000 acres of land in addition to the land heretofore granted to the territory which, at the price fixed by Congress - \$10 per acre - will amount to \$5,900,000. But little of this land has been selected by the State in consequence of the failure on the part of Congress to appropriate money for surveys. The last session, however, made a liberal appropriation, and contracts are let for surveying large tracts of land in the mountain and timber districts. All or nearly all, the valley and open lands of any value have already been selected by private citizens under the various acts of Congress, and there is but little left for the State from which to make its selections, other than the lands chiefly valuable for their timber which are in the interior and mountainous districts of the State.

By the building of this system of wagon roads, these lands may be made available; consequently, while I think the bill has been carelessly considered, and is unwise in some of its provisions, I am also satisfied that further appropriations will be asked of future legislatures to complete the work - notably that division down the Salmon River - I believe that as the timber lands are being rapidly taken up, that it would

be dangerous to delay another two years, and that in the interest of our land grant the State would be justified in expending this money. I have for the reasons stated signed this bill.

Very respectfully,
W. J. McConnell,
Governor

The Wagon Road Commission was organized early in 1893 and the required engineering personnel hired.

Commission members were as follows:

Craddock	Sharp
Telcher	Clough
Ireton	MacNab
Sanburn	Bell

The Commission was confronted with many problems, mostly fiscal. During the conduct of the surveys one

General Roberts' boiler at (old) Meadows Racing Park in transit from Weiser to Warren.

of the engineers, George Trask, was sharply criticized because he expended \$2,111, or about \$80 per mile, for a survey of a part of the Kootenai County section.

Necessary surveys were finally completed permitting the Commission to authorize advertising for bids for construction of these Wagon roads at its meeting of July 27, 1893.

The sale of bonds was advertised and the award made to Stanton, Coffin and Company at a premium of 11 percent. The first installment of bonds was sold in the principal amount of \$20,000. On August 5, 1893 the purchaser advised the Commission that it would buy no more bonds because of the tight money market. At this time it appeared that construction might be postponed indefinitely.

The Commission authorized resale of the remainder of the bond issue and also continued negotiations with the original buyer. These negotiations finally resulted in an agreement by the buyer to handle the bonds with payment of the premium to be deferred until April 1, 1894.



With full proceeds of the bond issue assured, the Commission authorized readvertising for construction of the Wagon roads on November 15, 1893. Bids were opened and contracts awarded to successful persons or firms on December 29, 1893. Awards by road section were as follows:

Banner-Bear Valley	
Stanley & Allen	
\$11,000	
Custer & Lemhi Co. Sections	
Winters, Parsons & Boone	
\$39,800	
Falls of Little Salmon to	
John Doumecq's	
Mile 3, 4, 5	
Peter Smith	
\$1,500	
Mile 9, 10, 11, 12, 13, 14	
A. H. Ingram	
\$7,500	
Mile 1, 2, 6, 7, 8	
Thos. Mathewson	
\$4,500	
Mile 15, 16, 17, 18, 19, 20	
Frank Shissler	
\$6,500	
32.5 Miles	
Cameron & Lynch	
\$53,000	
Elk City Branch, Mt. Idaho	
Cameron & Lynch	
\$18,000	
St. Maries R.	
Cameron & Lynch	
\$11,830	
St. Maries R., Wallace	
Wm. H. Payne	
\$16,850	
TOTAL	\$170,480

Bids on the Salmon River and Elk City sections exceeded the amounts authorized by the Legislature and were approved for award with the contin-

gency that Idaho County provide approximately \$55,000 from local sources. This the County refused to do. The Commission then refused to sign contracts on these sections. This refusal was based on provisions of the authorizing legislation which were interpreted by legal counsel of the Commission to require that the entire route must be constructed within limits of authorized funds rather than build as far as those funds would allow.

Also, as a result of a court decision, the Commission was enjoined from awarding a contract on the Kootenai County division because the projects were advertised prior to completion of the survey. Bids were subsequently readvertised on May 24, 1894.

A. H. Ingram, bidder on the Salmon River section, brought suit to force the Commission to sign contracts on the basis of bids received. A writ of mandate was issued by the Idaho State Supreme Court in April of 1894 directing the Commission to honor contracts within the limit of the funds authorized.

This meant that only a little more than half of the Salmon River section and less than half of the Elk City section could be built. Thus, once again efforts to provide some sort of north-south transportation in Idaho were frustrated. In this connection, the Idaho Statesman in its issue of January 17, 1894 commented:

The contracts for the extreme northern division of the road have been let and they will be constructed but, without the Salmon River branch, there will be no connecting line and the other sections will be of no value so far as adjoining the northern and the southern portions of the State is concerned.

Work on all contracts was started and proceeded rapidly. Some problems were created by unusually high water

in the early summer of 1894. Principal damage occurred on the Lemhi section where 1500 feet of grade together with three bridges were lost. There were labor problems on this section and also on the St. Maries-Wallace section.

The labor dispute on the Lemhi County section was blamed on labor recruited from followers of Jacob S. Coxey who organized a march on Washington, D.C. by unemployed persons. The particular individuals involved had been arrested enroute by U.S. marshals and detained in a camp established in the Parma area. Their specific complaint was that they were provided with short-handled instead of long-handled shovels.

The labor problem on the St. Maries-Wallace section was considerably more serious. The work crew complained that they had not been paid for three months, seized a foreman as hostage, and threatened to burn a completed bridge over the St. Maries River.

All problems were settled within a very short time and most contracts were nearing completion by July, 1894. Exercising powers conferred upon him by enabling legislation, Governor W. J. McConnell appointed some groups to inspect construction. Each group consisted of three "viewers", most of whom were reported to be qualified engineers.

Review boards reported back to the Governor in August 1894. They advised that they had found that the work failed to meet prescribed specifications. Major deficiencies were alleged to be as follows:

1. Construction on some portions did not follow the surveyed lines.
2. Excessive curvature was introduced into the alignment in order to reduce clearing operations.
3. Drainage was inadequate.

4. Stumps left in the roadway were covered by only two or three inches of soil.
5. Turn-outs for passing were not at proper intervals.
6. Wet spots in the grade were not adequately corduroyed.

As a result of these findings, the Attorney General directed the State Auditor not to honor claims for final payment for work on the contract, despite the fact that the Wagon Road Commission had accepted this work. Two test suits were brought by contractors before the Supreme Court of Idaho in early 1895 to compel payment. Decisions against the contractors were handed down in both cases.

In the meantime, private interests pushed through a trail along the Little Salmon River to connect Meadows with the Wagon Road construction near the mouth of Rapid River. This trail was on the line of the State Wagon Road Survey and permitted the establishment of mail service from Meadows to Grangeville.

Litigation over road contracts continued for several years. No record can be found as to whether alleged deficiencies were ever corrected.

Thus ended the first primary effort to build a road system which was to penetrate some of the most difficult terrain in Idaho. The system involved about 600 miles of road to be built at a cost of \$135,000, including administration, engineering and construction.

The enabling legislation had provided that the system was to be maintained by the counties traversed. There is evidence that at least some counties refused to accept this responsibility and the road sections involved deteriorated rapidly.

During this period no progress was made in breaking away from the local Commission form of highway administration and to organize a State



Highway Department. This may be explained to some extent by a remark of Governor William J. McConnell in his message to the Second State Legislature on January 5, 1893. He assured that body that the public was condemning the creation of new departments, and he advised that it would be better to make more comprehensive and efficient those departments already in existence than to create new ones.

Creation of State Engineer's Office

An Act approved March 9, 1895 provided for the appointment by the Governor of a State Engineer. The term of office was four years at a salary of \$2,000 per year, plus necessary expenses not to exceed \$500 annually.

This Act further stated that:

"He shall carefully measure the flow in cubic feet of the streams of the State, collect facts and make surveys for suitable locations for reservoirs, familiarize himself with waterways and

A 20 mule team freight outfit in eastern Idaho. Lemhi Valley mines.

irrigable land and needs of the State as to irrigation matters."

The office of State Engineer was later transferred to the Reclamation Department.

This is the first provision for an engineer within the State organization. His duties insofar as they applied to highways were covered by these words of the Act: "shall perform such other professional duties as may be required of him by the Governor." This engineer was to provide primarily for irrigation work. His title appears later from time to time as a member of various temporary road commissions and in connection with bridges.

On March 11, 1903, an act provided for a wagon bridge across the Snake River at American Falls. The State Engineer was instructed to furnish to the county commission suitable

plans, specifications and estimates. The bridge was to be paid for with "money in the State Treasury not otherwise appropriated".

In 1903, the State Engineer also appears as a member of a commission to supervise construction of a bridge over the Snake River at Weiser.

During this period the State Legislature continued the practice of authorizing individual and generally isolated projects, each supervised by a special commission. The aggregate amount authorized between 1905 and 1913 was \$547,500. Details of individual issues are listed in the Appendix, (1905-1930) Fig. 1.

Most of the authorizations from a financing standpoint were for bridges. Apparently these structures were beyond the fiscal capacity of the counties involved. The most significant authorizations were the Intermountain Wagon Road issue of 1905 for \$50,000 and the First State Highway issue of 1913 for \$200,000.

The Intermountain Wagon Road Commission consisted of the Governor and two additional members appointed by the Governor. Its responsibility was to lay out and build a system of wagon roads and trails to serve mining interests. Funds to be available consisted of revenue from the sale of revenue bonds in the amount of \$50,000.

At its first meeting in April 1905, the Commission received requests for roads with an estimated total cost of \$221,500, or nearly four and one-half times the available funds. Due to this wide difference between funding and requests, the Commission determined that any allocation of State funds to a specific project would be contingent on an equal amount to be provided by the road sponsors. Major fund allocations were:

Warren's - Big Creek	\$15,000
Atlanta Road	\$14,135
Wagontown - Seafoam	\$ 2,000

An additional \$5,000 bond issue was authorized by the Legislative Session of 1907 to complete the Atlanta Road. Allocation of funds was contingent on \$5,000 in matching funds to be provided by local interests. In lieu of a cash contribution, approximately 10 miles of the road were built by Atlanta mining interests.

First State Highway Commission

The first step toward the creation of a permanent State Highway organization came with the creation of a State Highway Commission in 1907. This Commission was composed of the Governor, State Engineer and State Mining Inspector.

This Commission was given supervision over all roads constructed in whole or in part with State funds so that they would be kept in proper repair. It was authorized to receive complaints about road conditions and if it found such sections involved were in serious need of repair, issue an order to the county involved to perform the needed work. If the county failed to comply with such order, the sole recourse of the Commission was to lease the road as a toll facility. The enabling legislation provided an appropriation of \$1,500 to cover expenses of the Commission for two years beginning on April 1, 1907.

There is no record to indicate that this Commission ever actually functioned within its limited powers. Records of the office of the State Auditor show no expenditure from the authorized appropriation.

First Hard-Surfaced Road

The following quotation was taken from the "Report of the State Engineer A. E. Robinson of Idaho for 1911 and 1912."

The sum of \$20,000 was appropriated by the 11th Legislative Assembly to provide

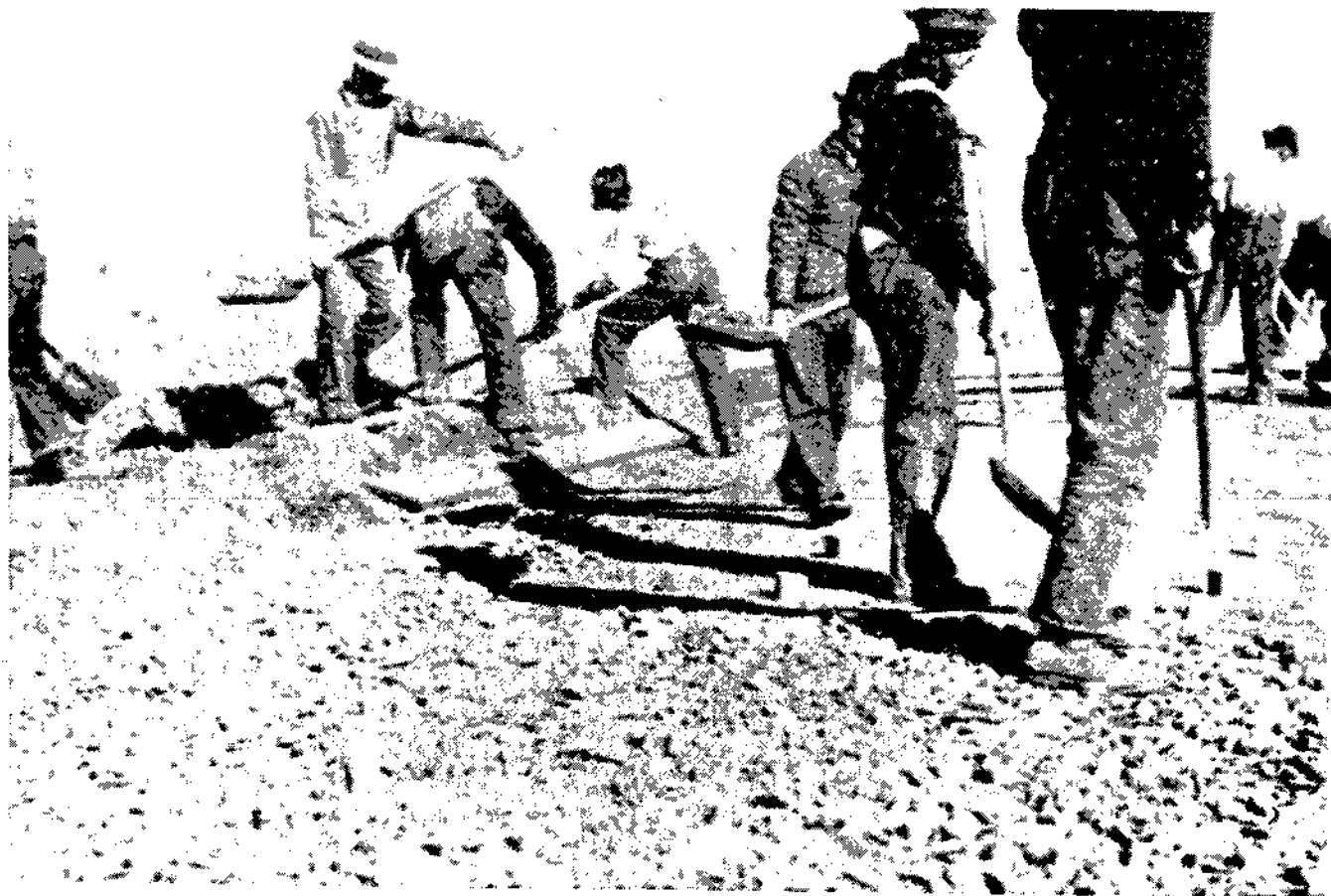
for the macadamizing of about five miles of the public highway adjoining the right-of-way of the Oregon Short Line Railroad Company at Ross Fork (Fort Hall) in Bingham County and extending to Gibson. This stretch of road is a section of the main-traveled highway between Pocatello and Blackfoot and is on the route followed by traffic leading from Pocatello to any of the eastern part of the State, to Yellowstone National Park and to Montana.

So difficult was this stretch of road for teams and automobiles that it was marked as especially bad on automobile maps. It fully deserved this reputation, for during the greater portion of the year it was almost, if not

wholly, impassable to automobiles, and it was impassable for any but the lightest loads over it with a team. The material over which this road passed was sand having a depth of from two to eight feet. In places the sand was very sharp, but generally the particles composing it were rounded - in other words, quicksand.

This is the first hard-surfaced road built in the State, and this particular piece of road was by all means the most fitting on which to start permanent improvement in the State. The construction of this piece of road has resulted beneficially in other ways than the mere

Placing crushed rock surfacing in sand area north of Fort Hall, 1912.



improvement of a difficult stretch of highway. It has done a great deal towards awakening the interest of residents of the southeastern part of the State in road improvement, and has demonstrated by a concrete example the many advantages of having modern improved roads.

It was ascertained by making estimates that the amount of money appropriated would not be sufficient to construct the road in its entirety. It was decided then by the road commissioners, composed of Mr. J. P. Congdon of Pocatello, Mr. T. R. Jones of Blackfoot, and the State Engineer, to proceed with the construction of the road and to continue the work as long as funds would permit, hoping that the benefit to be derived from macadamizing this stretch of road would be so pronounced that additional funds would be raised for completion of the work. In the fall of 1911 it became apparent that only about one-half of the road could be constructed with the funds provided. A number of public-spirited citizens of the southeastern part of the State, headed by Mr. Theodore Turner, a good roads enthusiast of Pocatello, and assisted by automobile clubs and others, raised by subscription about \$15,000 for the completion of the road. The work was continued under the supervision of a road commission until its completion in the spring of 1912.

The rock used on this project was limestone hauled on the railroad from Portneuf to Fort Hall, where it was crushed.

Local Roads 1890-1913

Considerable legislation concerning local roads was enacted during this period. Much of it involved minor changes in local organization and tax levies. The two most significant actions were legislation in 1905 to authorize creation of good roads districts and in 1909 to permit organization of highway districts.

The Good Roads District Act provided for creation of such districts by the Boards of County Commissioners upon petition from residents of the proposed District. Their sole function was to improve or build roads within the District. There was no provision for subsequent maintenance. Their only source of income was through issuance of bonds of the respective districts. Debt service was provided through ad valorem tax levies. Most of the interest in this legislation was generated in the northern part of the State. Two of these good roads districts were still in existence in 1975 - one in Idaho County and one in Jerome County.

The 1909 highway district law provided that these units be created by election as county sub-divisions.

Highway districts were directed by boards of three elected Commissioners and were authorized to manage, maintain, operate and build transportation facilities. This legislation included both highways and railroads. If the latter were electric lines, the authorization also included construction of power generators and distribution systems where required.

Highway districts levied taxes and issued bonds, subject to the approval of the electorate. Taxes were assessed on the basis of benefit; required approval of the electorate; and, were subject to review by the District Court.

In 1909, counties were authorized to adopt county road systems subject to electorate approval of such action.

These systems, once established, were to be under the direction of a road district supervisor who was to be "skilled in road matters and, preferably, a civil engineer".

Sixty-two highway districts, together with 34 county highway systems, were still operating in 1975 throughout Idaho.

Local road legislation was recodified in 1911 permitting good roads districts to reorganize as highway districts. It is of interest that language similar to the following is included in the preamble of both the county and highway district recodification:

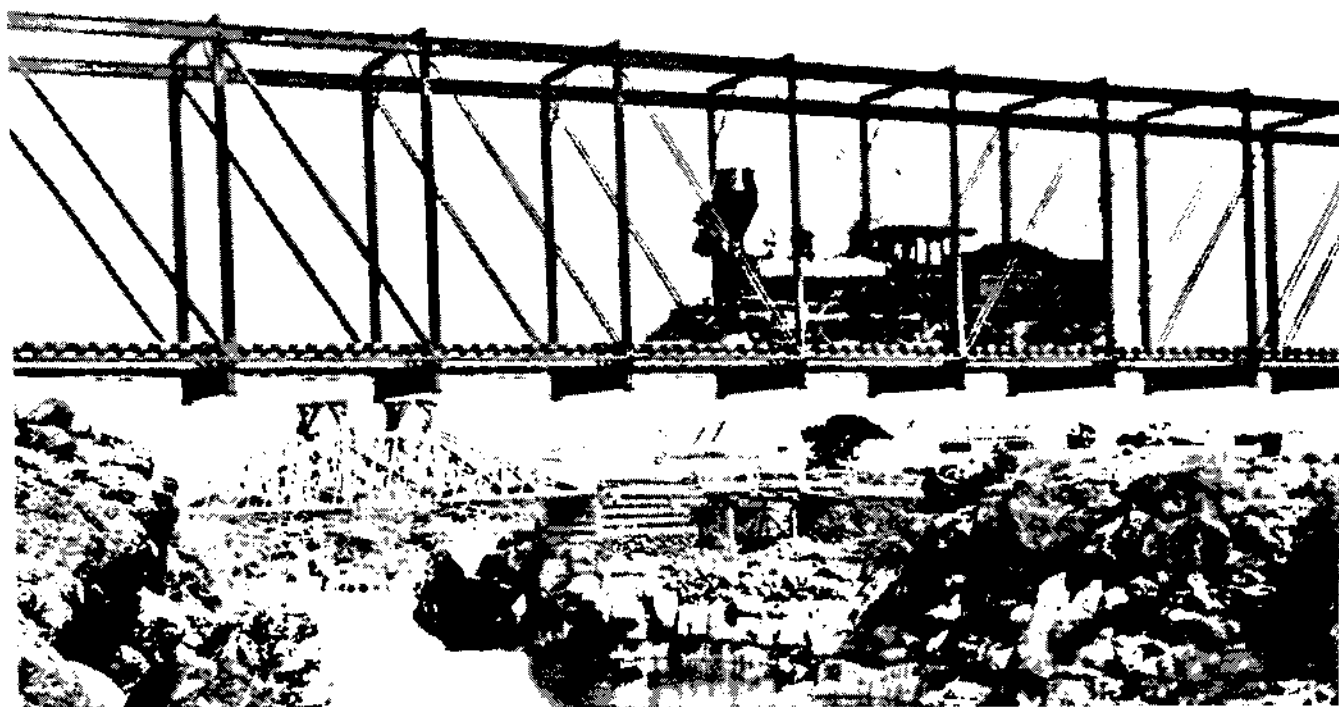
The improvement of highways is hereby declared to be the established and permanent policy of the State of Idaho and the duty is hereby imposed on the Boards of County Commissioners in their respective counties of improving and maintaining the public highways within their jurisdiction and of securing as rapidly as the

public revenues will permit and of maintaining permanent good roads of hard surface and properly graded and available for convenient travel thereon throughout the year.

Early Statehood Summary

From achievement of statehood in 1890 through 1912 there was no permanent State highway system in Idaho. Fifteen separate commissions were created to supervise individual construction projects, including nine involving bridges. Each Commission expired upon completion of the project for which it was responsible. The counties had made determined efforts, but the State seemed to consider roads a local matter and not an objective in State policy. As a matter of fact, most efforts in the early part of Statehood were directed toward railroads rather than highways.

Utah-Northern Railroad bridge with wagon bridge in background at Eagle Rock (now Idaho Falls) in 1880's.



During the period from 1874, when the Utah Northern Railroad first reached Franklin and by 1880 had reached the Montana border, until 1910 a total of 20 railroads had constructed railway lines within the State. The Oregon Short Line crossed from Wyoming to Oregon during 1881-1884. A total of 13 railroad companies constructed short rail lines of from a few miles to perhaps over a hundred in southern Idaho by 1910. Beginning in 1882 with the Northern Pacific Railroad, the Great Northern in 1892, and other small lines - a total of seven railway lines were constructed in northern Idaho during this period. These lines handled the bulk of transportation from the State to the midwest and west coast and provided for the growth of Idaho during this period.

A shift in interest to roads was stimulated by a series of good roads meetings held throughout the State in 1905. These meetings were sponsored by the National Good Roads Association. C. H. Moore, President of the Association, led a group of experts who discussed the benefits of good roads and actually demonstrated construction methods. These meetings aroused much interest and business houses closed in some cities to allow employees to attend.

This new concern regarding roads seems to have stimulated activity within the State and led to creation of another State Highway Commission in 1909. Although not particularly effective, this was an important step toward creation of a centralized State highway authority. In his message to the Legislature in 1909, Governor James H. Brady recommended that powers of this commission be extended. The text of his message noted:

The building of new roads where needed and the repair of existing roads is a duty that the State owes its citizens. At the 9th Legislative Session the State Highway Commission was created. Under this law the Commis-

sion had conferred on it certain powers relative to roads that have been constructed in whole or in part by the State and then turned over to the counties in which the roads are located. The powers of this Highway Commission should be enlarged, giving it supervisory control of the county roads so that it may initiate investigation as well as receive complaints and compel remedial action without unnecessary delay. The Wagon roads of the State are the main arteries of trade. In communities of farms prosperity is practically impossible with poor and neglected roads. The same applies to mining districts. The subject seems to me of so much importance as to deserve the painstaking attention of the Legislature to the end that the roads of our state may be properly improved.

There is no record to indicate that legislative actions to implement these recommendations were taken.

Governor James H. Hawley was the first Chief Executive to spell out in specific terms the road problems confronting the State. In his legislative message of 1911, the Governor is quoted as follows:

Our public roads are, outside of a few peculiarly favored sections, a disgrace to the State, and to the counties wherein situated. Our present road law is antiquated and ineffective. Nothing appeals to the intended resident so forceably as good roads in the locality wherein he proposes to make his future home. There is no good reason why Idaho should be behind the rest of the country in this regard. The greatest benefit of a

good road system insures to the farmer, but all other classes are assisted by it. The subject has attracted the attention of many of our people and good roads association have been organized in several of our counties. Proposed statutes on this subject have been prepared by interested citizens and will undoubtedly be submitted to you. Hoping you will be able to devise a proper

system that will cure this evil and put us in line with the other advanced States of the Union, I assure you of my hearty cooperation in the matter.

Although there was no immediate and specific action to either of these gubernatorial recommendations, it appears that both influenced the legislative session of 1913 which created the first permanent State Highway Commission.

CHAPTER IV

STATE HIGHWAY COMMISSION

1913 - 1919

On March 13, 1913, the State Legislature created a five-member State Highway Commission consisting of the Secretary of State, who was ex-officio secretary of the Commission, the State Engineer and three other members appointed by the Governor. It was further provided that one of the appointed members should be the head of the Department of Civil Engineering at the University of Idaho. Members received no pay but were allowed necessary traveling expenses. This was an effective administrative agency because it was granted adequate powers and was provided with some funds to carry out its responsibilities.

The powers of this Commission were to lay out, build and maintain new State highways anywhere within the State; to alter, improve or discontinue any State highway; to purchase, condemn or otherwise obtain necessary right-of-way; to have general supervision of all highways within the State; to expend the fund created for the construction, maintenance and improvement of the State highways; to make and enforce rules; to employ a Chief Engineer and assistants; to supervise registration of vehicles, and to keep a complete record.

The Commission was directed to provide a system of trunk highways connecting the larger centers of population and providing access to those larger centers from the more remote and inaccessible parts of the State which the Commission felt had a potential for considerable development. The system as adopted by the Commission was to be reported annually to the Legislature through the office of the Governor. The Legislature was empowered to add to, amend, or modify the proposed system.

The Commissioners were also given the responsibility for registration and licensing of motor vehicles. This was the first provision for motor vehicle registration in Idaho. Registration fees were based on vehicle horsepower and ranged from \$15.00 to \$40.00 annually. Motorcycle fees were a flat \$5.00. License fees were accumulated in a State Highway Fund created by the statute. The other major source of revenue was to be a bond issue for \$200,000, also authorized in 1913.

The statute also specified that all motor vehicles must be equipped with good brakes, a horn, two headlights and two taillights, one of which was to be red. All vehicles were required to be operated in a safe and prudent manner. Anyone driving a vehicle for a distance exceeding one-quarter mile at a speed of over 30 miles per hour was presumed to be violating the safe and prudent rule.

Registration fee revenue was shared with those counties which had outstanding road bonds. These counties were to be allocated sufficient revenue to pay interest on road bonds up to 70 percent of the registration fees collected in that county.

Counties were required to contribute to the cost of State highway construction within their respective boundaries. In counties having an assessed valuation of \$5 million or less, the local contribution was 50 percent. Those counties having assessed valuation of over \$5 million were required to contribute 2/3 of the cost.

The first State Highway Commission was appointed by Governor Haines on April 5, 1913 and included as statutory members:

Secretary of State, Wilford
L. Gifford
State Engineer, Frank P. King
University of Idaho Civil Engi-
neering Dept. Head,
Charles L. Little

Appointed members were:

Theodore Turner, of Pocatello
Miles Cannon, of Weiser

The first meeting of the Commission was held in Boise May 12, 1913. Theodore Turner was elected Chairman and Miles Cannon, Vice Chairman and, by statute, Wilford L. Gifford was named Commission Secretary. Regular meetings were to be held quarterly on the last Monday of March, June, September and December. Special meetings could be called by the Chairman or by three members.

The Commission was immediately confronted with a financial problem as no bids had been received for the offer of the \$200,000 bond issue on May 1, 1913. Financial institutions were not interested in purchasing these and other bonds because of the interest rate set by statute at four percent and the further statutory requirement that no bonds could be sold for less than par value.

Despite these problems the Commission moved ahead selecting personnel and with the designation of a State Highway System. Edward S. Smith was appointed the first State Highway Engineer on September 29, 1913 and assumed office on October 1, 1913.

A tentative State highway system was adopted on September 30, 1913. This system consisted of six routes with a total length of about 1,300 miles. On December 29 of that year the Chairman and the State Highway Engineer were directed to prepare a list of names for highways thus far sponsored.

This Committee reported back to the Commission on March 9, 1914 and a

group of six highways was officially designated as follows:

Route No. 1 .. Idaho Pacific Highway, 800 miles, Idaho - Utah line near Fishhaven via Paris, Montpelier, Soda Springs, McCammon, Pocatello, American Falls, Burley, Twin Falls, Buhl, Hagerman, Bliss, Glenns Ferry, Mountain Home, Boise, Meridian, Nampa, Caldwell, New Plymouth, Weiser, New Meadows, White Bird, Grangeville, Lewiston, Moscow, and Coeur d'Alene to Sandpoint.

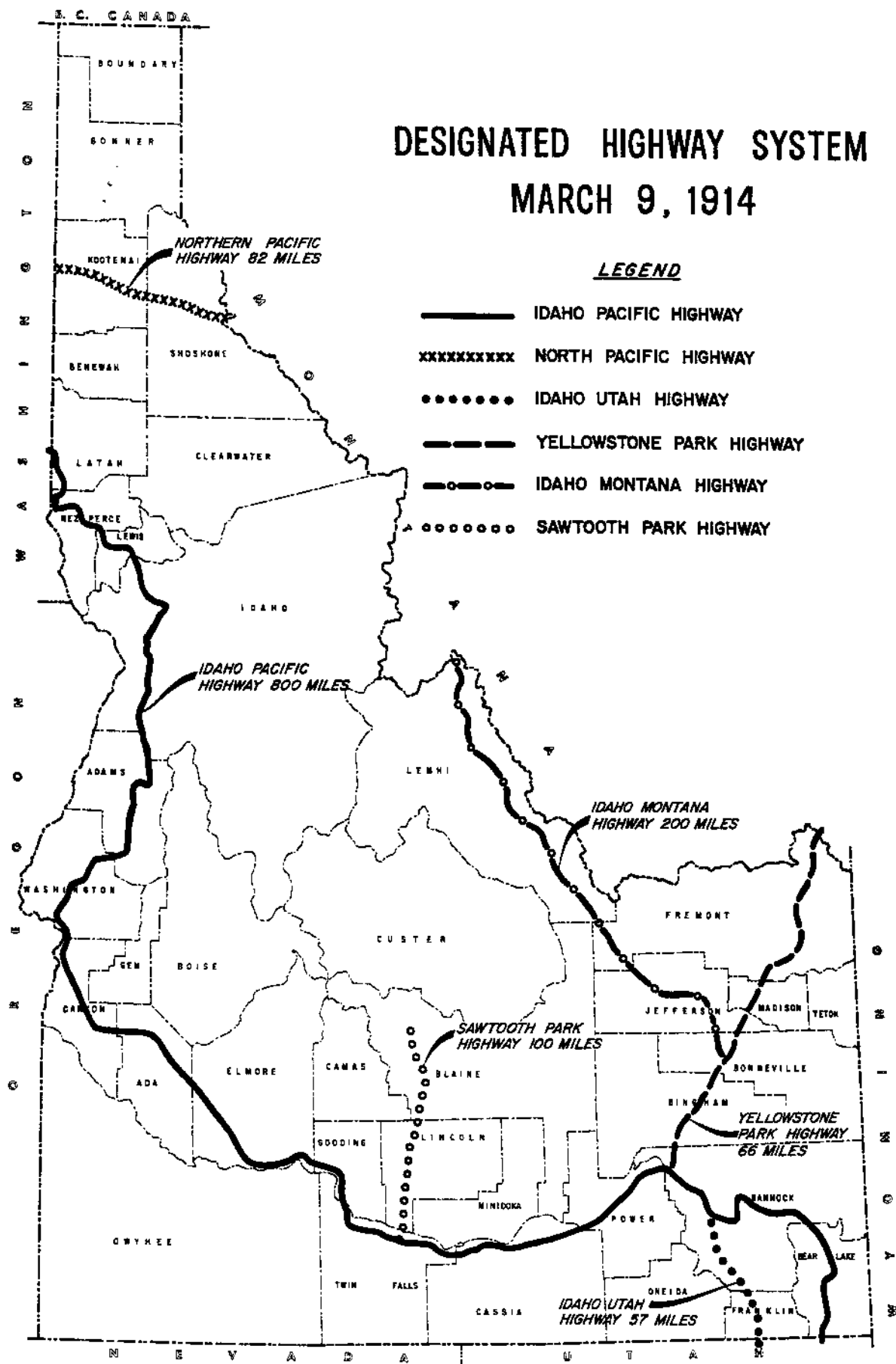
Route No. 2 .. North Pacific Highway, 82 miles, Idaho-Washington State line via Post Falls, Coeur d'Alene, Fourth of July Canyon, Old Mission, Kellogg, Wallace, and Mullan to a point on the Idaho-Montana State line near St. Regis Pass.

Route No. 3 .. Idaho-Utah Highway, 57 miles, from a junction with the Idaho-Pacific Highway near McCammon via Arimo, Downey, Oxford, Clifton, Dayton and Preston to a point on the Idaho-Utah line near Preston with a branch from Downey to Malad.

Route No. 4 .. Yellowstone Park Highway, 66 miles, extending from a junction with the Idaho-Pacific Highway at Pocatello via Blackfoot, Idaho Falls, Rigby, Rexburg, St. Anthony and Ashton to Yellowstone Station on the west boundary of Yellowstone National Park.

Route No. 5 .. Idaho-Montana Highway, 200 miles, extending from a junction with the Yellowstone Park Highway at Idaho Falls by way of a northerly or northwesterly route via Leadore to a point to be determined on the Idaho-Montana State line.

Route No. 6 .. Sawtooth Park Highway, 100 miles, extending from a junction with the Idaho-Pacific Highway at Twin Falls via Shoshone Falls, Jerome, Shoshone, Richfield, and Bellevue to Hailey.



Commission Policies

The biennial report of the Commission for 1913-1914 contains the following statement in regard to construction policy:

The development of a system of highways within and for the benefit of the State was entered upon by this Commission with the fact fully before it that the funds available for such purpose are very limited as compared with the magnitude of the work to be accomplished.

It was the aim of the Commission to first develop good earth roads, gravel-surfaced where the soil conditions made it necessary, which might be improved as time passed. The economic elements of highway location, grading and bridges are presented in 1914 in the following words of the Commission:

Location: "The location of the highway has a bearing, not only upon every successive step in construction but also upon annual maintenance cost after completion. As blood is to the animal, so is location to a highway. No quantity of food and amount of care will make a thoroughbred out of a cayuse..and no exercise of engineering skill and ability and expenditure of money will develop a good road upon a poor location."

Grade: "A good location is made available and valuable only when properly graded. Here again the likeness of the process of road building to animal husbandry appears. Good blood in the animal avails nothing without proper care and sustenance."

Bridges: "It is absolutely necessary to build suitable and permanent bridge structures at the very outset, because a bridge, unlike other portions of the road, cannot be developed little by little."

At this time Idaho had a population of only 375,000. The population and resources were not uniform in distribution. It was estimated that there were 8,000 miles of main traveled roads and, of this total, 1400 miles were included in the proposed State Highway System.

The economic problem of the time was not so much one of production as one of distribution. The Commission felt that no matter what the ultimate destination of a farm product might be, its first movement would be by road. Where bad roads existed farmers would be forced to move their crops when travel conditions were favorable instead of when the market was best.

Other indications of policy and problems confronting the Commission are revealed in the following quotations from comments of State Highway Engineer Smith in the 1914 report to the Commission:

The greatest value to the people of a State Highway Department, I believe, is going to be found in the maintenance of roads under State supervision, thereby insuring it being done under some proper system. It would obviously be a waste of money to build a system of first class highways either by the State or by the counties and provide no means of keeping them first class. No matter how well the road may be constructed or what particular care may have been taken to make it a finished and perfect piece of highway, the day it is turned over for acceptance and opened for traffic, that day maintenance begins and continues as long as the good continues. This can only be accomplished under an organized system whose business is this object. As not only the first cost of con-

struction but the economical maintenance of a highway depends largely upon its proper location, it is true economy to determine at the onset this very important feature. The location, at least, should be permanent.

The estimates on a thousand miles of highway were desired by the Highway commission within the shortest possible time so that no time was spent on refinement of location, this being left to be worked out at the time of staking out the work for the contractor, but it was considered worthwhile, and in many cases absolutely necessary to spend a little time in trying out comparative routes when there was a strong question of the desirability of one route over another or where the need of one would warrant its increased cost over another.

In general, the object was to determine the best route both from the standpoint of initial cost and future maintenance and of directness, consistent with its general utility, to the greatest number of people. To determine this, it was often necessary to investigate several proposed routes and decide which best fulfilled these conditions, as often the shortest and cheapest road to build did not traverse the most thickly settled localities and, while preferable as a route for through traffic, it would not serve the general community and would, therefore, be unpopular with the people of that section.

Inasmuch as the counties must bear two-thirds of the

cost of construction, considerable weight must necessarily be given this feature for the reason that an unpopular location of a proposed road, even though a State road, will often defeat a local bond issue usually necessary to make possible its construction.

Too often local considerations are allowed to exert an improper influence against the right location of an important road and it is sometimes built not where it should be, but where conditions force it to be. The engineer is not always to blame for going over a hill instead of around it or for turning sharp angles instead of avoiding them, because it was probably a case of condemning right of-way or otherwise incurring extra costs. The fallacy of adhering to section lines is often apparent where two railroad crossings could have been avoided altogether by staying on one side of the track and in such a case, a reasonable extra expense is always justifiable.

Despite the time necessarily devoted to organization and fiscal problems due to inability to sell highway bonds promptly, the Commission was able to initiate a reasonable construction program during 1913-1914.

The first construction contract by the Commission was awarded on December 2, 1913. It involved a section of the Idaho-Pacific Highway, presently Interstate 15 (also U.S. Highways 30 and 91) between Pocatello and Portneuf. The section was 5.5 miles long. The contractor was S. W. Gleim. The project was completed May 1, 1914. The contract cost is not available but on the basis of other similar work performed in the same area by the same

contractor it is estimated to have been approximately \$1,600.

During the period of December 1, 1913 to December 1, 1914, the Commission awarded 27 roadway and a substantial number of bridge contracts with a total value of \$301,632. Bridges constituted about one-third of the total cost. The contracts involved a total of 293 miles of roadway averaging about \$1000 per mile.

Typical roadway cross-sections adopted by the Commission provided for a 16 to 22-foot travelway in flat terrain. An additional four feet on a 3:1 slope were provided to the ditch line. In excavation or embankment, the standard graded width was 16 feet with an additional four feet to the ditch line, also on a 3:1 slope. Where a gravel surface was provided, the surfaced width was 16 feet with earthen shoulders three feet wide. Travelway surface depths were 6 to 8 inches on centerline tapering to 4 inches at the shoulder. The width of structures between curbs was 16 feet.

In addition to construction contracted in 1914, surveys were completed on 1105 miles of the 1150 miles where such work was authorized by the Commission. Cost of these surveys was \$26,160.58.

Actual expenditures of the Commission from October 1, 1913 to December 1, 1914 were \$99,092.59 divided as follows:

Office of the State	
Highway Engineer. . .	\$7,732.36
Surveys	26,160.58
Construction-	
Engineering	7,962.98
Construction	57,236.67

Surveys and construction supervision were carried out through four division offices with headquarters at Pocatello, Rexburg, Shoshone and Boise. Each division office was directed by a division engineer and with a complement of one engineering crew as follows:

<u>Title</u>	<u>Monthly Salary</u>
Transitman	
(head of party).	\$ 125.00
Head Chainman	60.00
Crew Chainman	45.00
Levelman	75.00
Rodman	50.00
Teamster-Stakeman	75.00

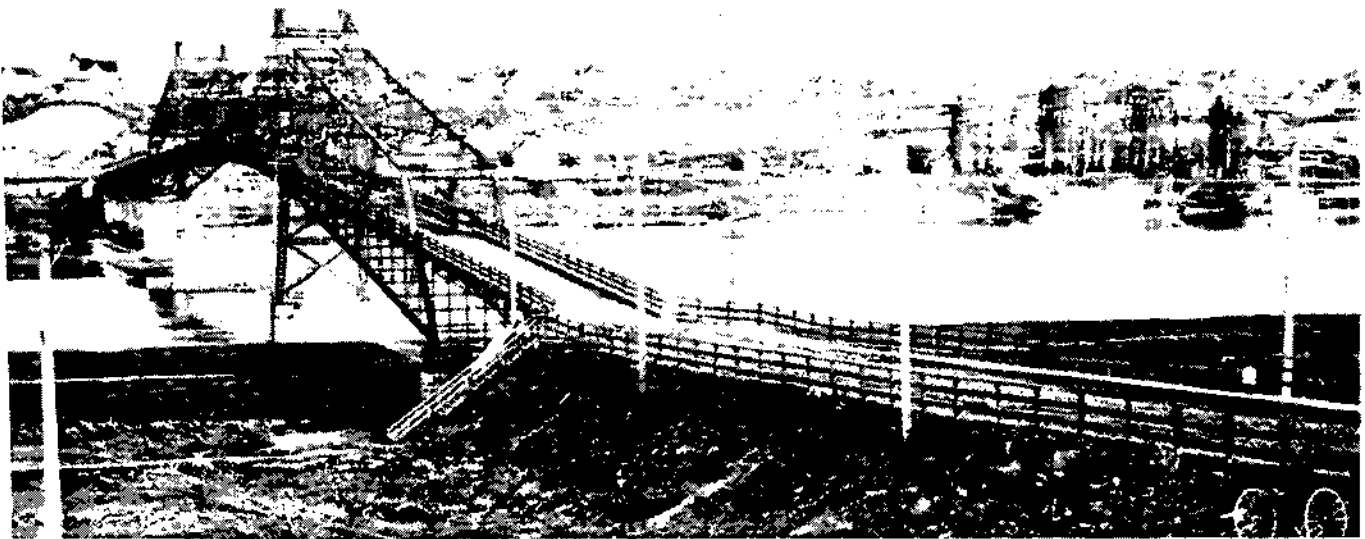
In addition to the work accomplished under direction of the Commission, the Legislature also appropriated \$40,000 from the general treasury to pay Idaho's share of acquiring a privately-owned toll bridge between Lewiston, Idaho and Clarkston, Washington. (Chapter 179, Page 558, Session Laws, 1913).

It will be noted from the detail of fiscal operations of the Commission listed previously that no funds were spent for maintenance. It seems probable that this was due in part to the limited mileage actually opened to traffic during this period and also to the policy of the Commission as reported in the Idaho Statesman September 30, 1913:

No portion of the proposed highway system is to be accepted as a part of the State highway system until it has been improved at least to the extent of being placed on grade and culverts constructed. The State assumes no responsibility for the cost of maintenance until it has been improved as set forth above.

State Highway Commission 1915-1919

On March 12, 1915 the State Legislature reduced the State Highway Commission from five to three members. Positions eliminated were the State Engineer and the head of the Department of Civil Engineering of the University of Idaho. In March 1915, Governor



The first Lewiston-Clarkston bridge constructed in 1899 as a toll bridge. Purchased by the states of Washington and Idaho in 1913, removing the toll.

Moses Alexander appointed two new Commission members. The Commission was organized March 29, 1915 with W. A. Brodhead, Chairman - Rexburg, E. A. Van Sicklin, Vice Chairman - Weiser, George R. Barker, Secretary of State, Secretary - Sandpoint. The State Highway Engineer was E. M. Booth.

The Legislature retained Commission powers essentially as provided in the 1913 statute. In addition, the Commission was authorized to use convict labor in highway construction. The office of State Highway Engineer was required to be filled by a qualified engineer of standing, familiar with road work. He could be removed from office only for cause, including dereliction of duty or incompetence.

The statute provided that the State should be wholly responsible for maintenance of State highways except that cities were required to maintain sections within their corporate limits.

Legislation also increased the county share of registration fees from 70 percent to 75 percent, leaving 25 percent available to the State.

Other legislation was enacted to re-authorize the \$500,000 state highway bond issue originally authorized in 1913 but not yet sold. The requirement that bonds be sold at par was also eliminated to facilitate sale of the bonds.

During 1915-1916, the Commission designated six new State highways:

- Idaho Central Highway from Mountain Home to Hailey
- Boise-Arrowrock Highway from Boise to Arrowrock Dam
- Lemhi Highway from Gilmore to Salmon
- Panhandle Highway from Post Falls to Eastport
- Lewis and Clark Highway from Kooskia to Lolo Pass (Idaho-Montana State Line)
- Idaho-Oregon Highway - Caldwell to the Idaho-Oregon Line

Three other highways were redesignated or extended. These were:

Idaho-Pacific Highway: That portion from Weiser to Coeur d'Alene was redesignated as the North and South Highway.

Idaho-Montana Highway was redesignated from Blackfoot via Arco, Mackay, Challis and Salmon to the Idaho-Montana State Line.

Sawtooth Park Highway extended from Hailey over Galena Summit, and through Stanley Basin to a junction with the Idaho-Montana Highway near Challis. The map on page 43 shows the revised State Highway System as of November, 1916.

Revenues available to the Commission during 1915-1916 increased substantially over income for the previous biennium. Much of this increase was

Convict labor constructing roadway south of White Bird toward Salmon River.

due to sale of the First Highway Bond Issue for \$200,000. Income from motor vehicle registrations also showed a substantial growth with funds from this source amounting to \$215,450 in 1916 compared with \$37,213 in 1913. County contributions to construction costs also rose substantially.

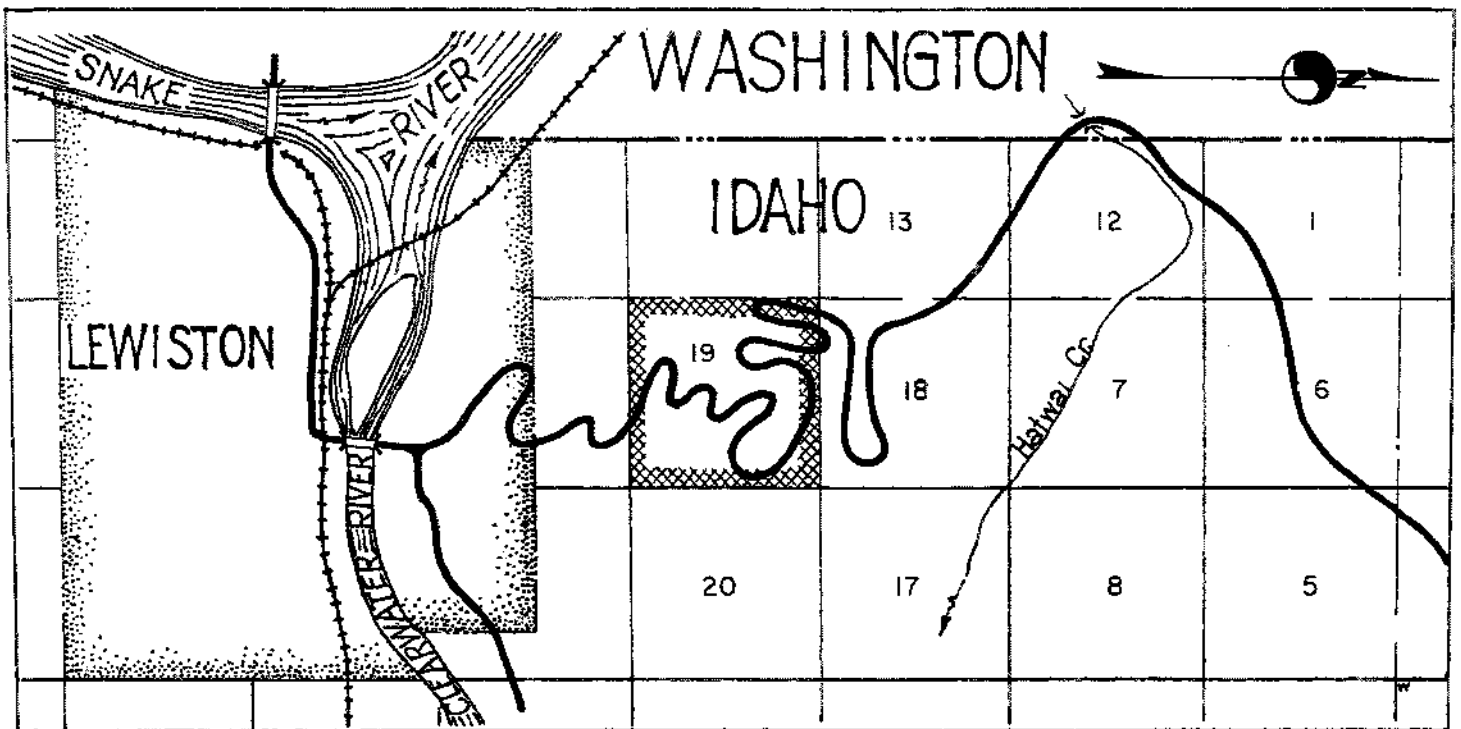
Construction expenditures during the 1915-1916 biennium were about \$812,000. Projects let to contract during the previous biennium represented a large part of this total.

The Lewiston Hill Section

A major Idaho project undertaken during the 1915-1916 biennium was the construction of the Lewiston Hill section of the North and South Highway (Now U.S. Highway 95).

In January 1914, a delegation of citizens from Lewiston had traveled to





Boise to confer with state authorities about a "decent" highway over the hill north of the city. In April of the same year the Board of Commissioners of Nez Perce County directed then County Surveyor E. M. Booth to make a survey of a road up the hill. Actual survey work was done by J. J. McCreedy, who was employed by Booth at the time.

The Lewiston Highway District was also organized in 1915 for the purpose of financing roads in the area, including providing two-thirds of the cost of the Lewiston Hill project.

As previously noted Booth had been appointed State Highway Engineer in 1915 by Governor Moses Alexander. A contract for construction of the Lewiston Hill road was awarded in 1916. According to the late Eugene A. Cox, a pioneer Lewiston attorney:

Booth spent so heavily on the Lewiston Hill that the State found itself committed to finishing it. South Idaho screamed but it was too late and Booth escaped into the Army. (Mr. Booth resigned on November 1, 1917).

The above sketch map gives an interesting picture of the engineering problems encountered in the location and construction of Idaho's renowned Lewiston Hill highway. In order to negotiate section 19, almost the entire section is covered by the constantly curving roadway.

The local attitude toward the project is indicated by the following quote from the September 27, 1916 edition of the Lewiston Morning Tribune:

Within just two and six-tenths miles of the goal - which is the summit of Lewiston Hill - the big Marion caterpillar steam shovel is still trembling with willing energy, still digging, still climbing, still creeping out of the valley over its own triumphant trail - a trail destined in time to become one of the noted scenic highways of the west.

Yesterday the shovel was working its way along a hillside so steep that a jackrabbit would never attempt it without first bidding his



Marion Steam shovel excavating roadway around the first curve on the lower end of the Lewiston Hill, 1917.

loved ones good-bye. The marvelous creation of mechanism, from its perch was not only gaining, securely gaining, foot by foot against this great wall of nature, but had time to swing about occasionally with a toss of its dipper as carelessly as the elephant would handle his wieldy snoot and deposit yards of dirt with such rapidity that four teams were kept busy hauling it away to complete the fill the big machine had left behind it. The shovel is now leaving the big ravine, just a few hundred feet from the houses of the Rolfe homestead, and is working in heavy rock, which has been loosened by blasts of giant powder. In the valley she had started at an altitude of 725 feet. She is now

perched 2,019 feet in the air and her destination is 2,750 feet where she will be welcomed by a completed roadway 7,000 feet in length leading to the Washington line. The total distance of the Lewiston Hill highway from the Clearwater bridge to the Washington line will be nine and nine-tenths miles, so the task allotted the shovel was to negotiate eight miles and 3,032 feet of this distance - all climb - with no portion of the path to be made to be less than sixteen feet wide, with the range up to twenty feet. The shovel entered upon the task last May and unless the unexpected happens, she will complete the responsibility by the latter part of November.

C. C. Van Arsdol, in charge of this important highway construction for the State and the district,

is one of the noted engineers of the country. He has directed the expenditure of millions. Commenting on the shovel yesterday, he said: 'Given advantage to exercise fully its powers, I do not believe I have ever seen a more effective piece of mechanism. Much of the work on fills the machine had to handle, where if the labor situation had been such as to allow for adequate crews, this work could have been done by wagon fills, whereas the shovel has been utilized at periods on this type of work. The shovel has demonstrated ability to handle 500 to 1,000 yards the shift, despite awkward conditions. She has moved over two miles during the past thirty days, working day and night shifts. The entire situation has been one that surely has given a test to the shovel, and it has made good.'

The general grading contract on the Lewiston Hill work is being handled by the General Construction Company of Spokane and the first step taken by General Manager D. G. Munro after securing the contract was to telegraph an order for a Marion shovel of the No. 36 model, manufactured by the Marion Steam Shovel Company, of Marion, Ohio. When this shovel reached here, it was taken from the cars in North Lewiston, a half mile distant from the point where the work was to be inaugurated. This point could be reached only over a narrow country roadway, so the engineer in charge, Carl Wells, who, by the way, is still on the job, decided to build his own

road. This he accomplished in a day and a half - right at the outset proving the type of the equipment and leaving no doubt that the shovel would achieve its unique 2,000 foot climb. The capacity of its dipper is one and one-half yards, and whether sand, gravel or just cold rock, it takes a full mouthful. The shoes on which it travels have a width of seventeen inches, and yet the mysteries of the mechanism are such that it moves with apparent safety over ground that would puzzle a wheelbarrow.

'I contemplate,' commented a member of the engineering crew yesterday, 'that if we didn't have this steam shovel, it would take about seven years to build such a highway with the old pick-and-shovel method.'

The General Construction Company forces on the work now number seventy men. The powder crews have managed to keep ahead of the shovel up to this time, and if successful in the future, Engineer Van Arsdol feels that the grading can be completed during late November. The work has now reached most interesting phases as the summit is being approached, because here the canyon walls are deeper and more abrupt, and to the visitor the achievements of engineering science come forcibly. Just at the point of the present work, from a distance of a quarter of a mile one would judge the highway would enter a tunnel to extricate itself, but closer approach reveals the boulevard still leading securely upward. Another mile and one-half

will bring the road to one of the great eminences, just where it skirts the rimrock before reaching the Palouse plateau, and if this eminence was up in the Spokane country they would exultingly term it a great mountain, perhaps fastening the city's name to it. But here it is one of the half a hundred dignified heights of Lewiston Hill, introducing to the traveler with a marvelous sweep of vision 'The City of the Rivers,' nestling 2,000 feet below.

Engineer Van Arsdol estimates that seventy-five percent of the grading work has been completed, while the great bulk of the drainage system has been installed. The general grading contract was awarded for approximately \$63,000; and the culvert and drainage system will cost about \$10,000. All phases of the work now have been advanced to such a point as to assure that the total cost for the highway, independent of the permanent surfacing, will come well within Engineer Van Arsdol's estimate of \$100,000. On October 1 bids are to be received for the sixteen miles of barbed wire fencing and the two miles of guard rail fencing that will enclose the highway, the barbed wire to prevent stock trespass, and the guard rails as a measure against accident. These guard rails will be installed at all deep fills and at curves which might prove dangerous where loss of control of an auto or team occurs. The guard rails will be sustained by posts eight feet apart, set three feet in the ground.

The height of the posts above the ground will be five feet and three cross rails will be installed, the lower one bolted and projecting six inches out from the fence line. This lower rail will be at a sufficient height to allow a fender of an automobile to clear in case of contact, the wheel thus first striking and allowing the machine if beyond control to swing back into the roadway. These rails will be painted white and the entire construction will be one of the most substantial character.

'These guard rails,' said Engineer Van Arsdol, 'will be located at points where in the absence of such a guard, a bad accident might result when a machine or vehicle goes beyond control. I believe also they will have the effect of making the driver feel more secure. I have in mind, for instance, that it is probable that the ordinary driver upon reaching the top of the grade from the Palouse plateau will gain a sense of feeling that the roadway is narrow after he has just left the openness of the road behind him. Before him he will see for the instant only that impressive drop of 2,000 feet. The situation would be inclined to make one nervous. But when he notes the guard rail, the feeling of security will return; he will note the roadway is wide and safe and then he can enjoy the ever changing panorama as the descent is made. In other words, I believe the presence of guard rails at such points will prevent accidents, if they remain there for years without a machine

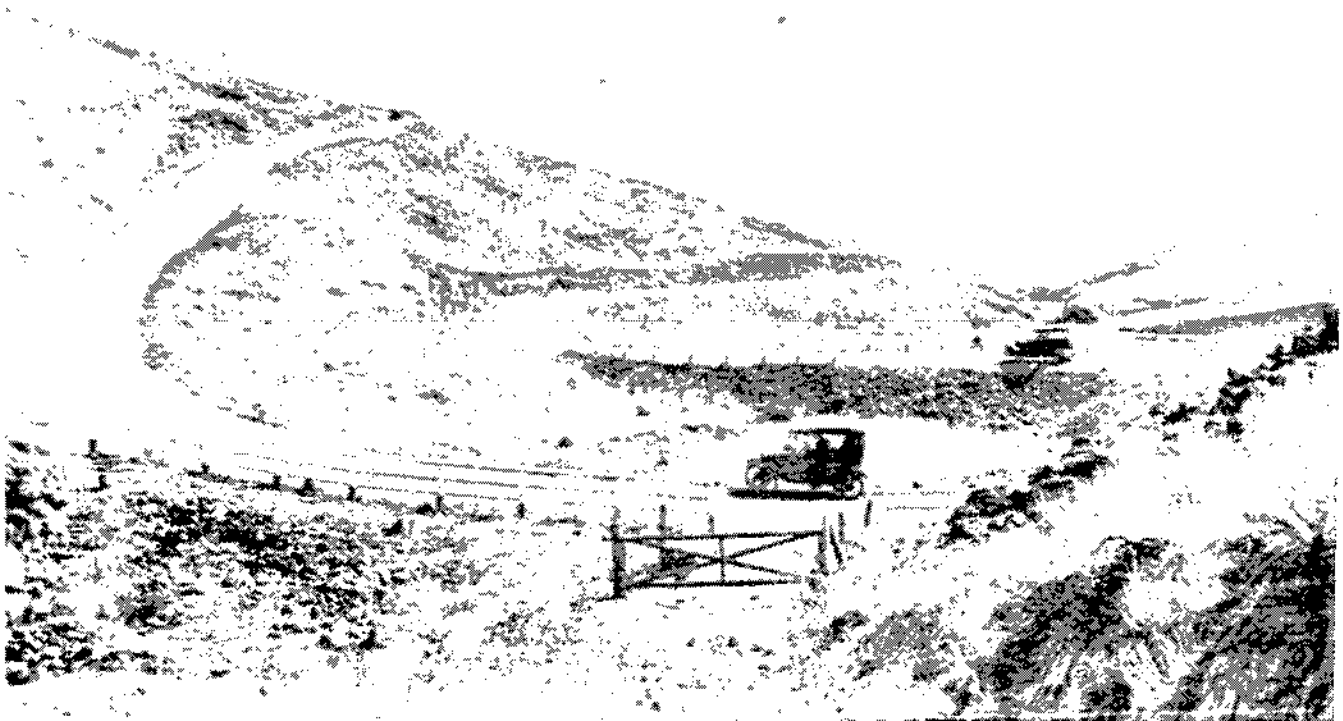
ever coming in contact with them, because drivers will feel secure. Anyhow, that in a way is one of the theories guiding the placing of the guard rails and we want not only to make the highway safe but make the people feel safe when they are traversing it.'

Engineer Van Arsdol holds the view that about half the failures in road construction are due to inattention to the matter of drainage. Aside from four concrete culverts, over six feet in diameter, and one of which is 115 feet long, more than 3,000 feet of drainage pipe is being used, this pipe ranging in diameter from the twelve-inch to the thirty-inch type. The system of drainage provides for picking up the waters at short distance and carrying it from the roadway

instead of allowing heavy accumulations to be cared for through some larger concentrated plan of handling. The concrete culvert work, all of which has been completed, was handled by the Security Bridge Company, of which F. W. Straw is the Lewiston manager.

Although the roadway at its narrowest point - and this applying to cuts - is 16 feet wide, while on the curves it reaches 20, its location at points on the sides of the deep canyons gives the impression that some of the turns are abrupt. Yet the fact is the sharpest curve has a 95 foot radius, or double the radius of some of Lewiston's famous thoroughfares, while there is

A completed section of the Lewiston Hill on the North and South Highway showing a typical alignment, 1916.



not a single stretch of the roadway but that would laugh at Lewiston's best Normal Hill grade if the latter attempted to even look to the former's society. There is not a foot of the great highway that exceeds five percent grade - Fifth Street gulch, the main entrance to Normal Hill from the heart of Lewiston's business district is 11 percent and made in a single jump. The run to the steam shovel on Lewiston Hill can now be made over the unfinished highway in a Ford on 'high'. Estimate is made that when the highway is completed the run from the base to the summit can be conveniently made in 20 to 25 minutes. This fact illustrates what engineering skill, some money and a Marion steam shovel can accomplish in making a mountain a boulevard.

The fact that the grading of the highway will be completed perhaps during the month of November does not mean that it will be formally opened at that time. The dressing up of the graded thoroughfare must first occur, and then this fact leads to the subject of permanent surfacing. This latter matter is not to be hastily decided upon - it must stand the crucible of Engineer Van Arsdol's judgment and also the caution that the highway commissioners have exercised in all phases of the work up to this time. Perhaps stretches of it will be given hard surface - perhaps not. Perhaps macadam will be used - perhaps not, and perhaps a combination of sand, selected gravel and clay will be used. Engineer Van Arsdol will state with

positiveness now only that this is no time for hard-surfacing. The roadbed should be allowed to settle - perhaps a year, two or three years. Then a good foundation would be available for a hard surface and it would last double the time that one installed at this time would. He does not hesitate to express that opinion now. It is also apparent that he believes in experimenting a little - not expensive experimenting - but experimenting that would utilize material right at hand. Even yesterday he was examining a decomposed stone and clay deposit on the hill. He apparently would like to test this out. He believes any work of this kind would not be lost but would instead give all the firmer and better foundation for a hard surface if the latter must follow. Up there on Lewiston Hill the climate is not the same as in the valley. Frequently snow lies for weeks there, when geraniums are doing nicely in the yards down here. There is more frost there and sometimes frost makes pavements dangerous. A talk with Engineer Van Arsdol along this line would quite convince one that at least along the upper portions this highway will never see pavement, but instead some form of smooth-surface that will at the same time give safe footing to horses and protection to the auto from skidding. But all those matters are yet to be worked out - they are receiving now only such attention as the limited time available, with other pressing work in hand, allows.

It has been stated that a five percent grade has been

maintained in negotiating the great canyons and that a broad and safe highway has been gained. But those preeminent elements have not alone been the engineering achievement. Those results were secured in obedience to still another factor - to gain the best possible results in affording views of the great areas stretching away from the base of the hill with Lewiston and Clarkston in the foreground. From the road at the rimrock the range of vision is 150 miles to the Seven Devils mountains; 250 miles to the higher ranges of the Bitter Roots, while the Craig mountain and Blue mountain ranges seem on a clear day but a mile or so away. The course of the highway as one descends affords constantly changing and distinct pictures. For instance, one is confined to the east Lewiston district; another to the stretch of the Clearwater, while a surprising result is that while a seven-mile sweep of the Snake River to the south is available from one point, it is entirely obscured from another, to be replaced by a stretch of the same river flowing to the west. The rivers at the junction seem like two white ribbons, whiter even than the Normal Hill pavements leading to Lewiston orchards. Who down here knows the Lindsay Creek district to be a pretty valley? Yet see it from the Lewiston Hill highway and it is. It is one of the pictures, exclusive to itself, that a turn in the road gives. Another turn gives its attention to Clarkston, another almost exclusively to the Lewiston Orchards 'bed of green'. But perhaps a minute would not pass until

again and again the full picture of the twin cities, the rivers, the entire valley and all the towering mountain ranges come into view.

The Lewiston Hill highway will measure up to the highest expectations. It is a good investment. It will do its part in an impressive way in serving and advertising 'The City of the Rivers'.

Maintenance costs for the 1915-1916 biennium were \$36,455, the first time this item appears in the records of the Commission. Not all the needed maintenance work was performed during the biennium due to a lack of necessary funds.

The Commission exhausted all available funds during 1916 and was confronted with the necessity of stopping all construction work on a number of projects. To avoid this, several counties and highway districts advanced the State one-third share of costs in order to finance a number of the most critically needed projects. It was understood that the State would reimburse the counties and highway districts for one-third of the cost.

In addition to construction projects financed with direct revenues, the Commission also took advantage of its authority to use convict labor for construction work. This type of labor was used on three projects: the Shoshone Falls Grade, White Bird Hill, and unidentified sections of the North and South Highway in Adams County.

In 1916, Congress provided Federal-aid funding for highway construction with passage of the Post Roads Act. This represents the first time "Federal-aid" appears as an item in financing for highways in the States of the Nation. No revenue was actually received but plans were made for use of these funds in subsequent years. The policy of the Commission was to use these funds in the more sparsely

populated areas of the State where it would otherwise create a substantial hardship should the counties involved be required to contribute their normal 2/3 share of construction costs.

The Federal Post Road Act of 1916 provided two categories of Federal Construction Aid: Roads used for free rural mail delivery and roads in or adjacent to National Forests. Idaho's share of these funds for the 1917-1918 biennium were \$272,000 and \$216,000 respectively. Both categories of funds required 50 percent State or local matching.

In accordance with the Commission policy stated above, it was proposed that these funds be allocated to the following projects:

<u>Project</u>	New Meadows- White Bird	
<u>Post Road Funds</u>		\$100,000
<u>Forest Funds</u>		-0-

<u>Project</u>	Clayton- North Fork	
<u>Post Road Funds</u>		\$125,000
<u>Forest Funds</u>		-0-

<u>Project</u>	Fourth of July Canyon	
<u>Post Road Funds</u>		-0-
<u>Forest Funds</u>		\$ 50,000

<u>Project</u>	Lewis and Clark Highway	
<u>Post Road Funds</u>		-0-
<u>Forest Funds</u>		\$ 25,000

<u>Project</u>	Ashton- Yellowstone Park	
<u>Post Road Funds</u>		-0-
<u>Forest Funds</u>		\$ 30,000

<u>Project</u>	Noble- Montana Line	
<u>Post Road Funds</u>		-0-
<u>Forest Funds</u>		\$ 30,000

<u>Project</u>	Ketchum- Clayton	
<u>Post Road Funds</u>		-0-
<u>Forest Funds</u>		\$ 50,000

Unallocated Balance	
<u>Post Road Funds</u>	\$ 47,000
<u>Forest Funds</u>	\$ 31,000

Total	
<u>Post Road Funds</u>	\$272,000
<u>Forest Funds</u>	\$216,000

During 1916 the Commission prepared estimates of the cost to complete the then-designated State highway system of 1580 miles. The estimated total cost of \$6,125,160 and value of work completed, \$889,976 left an estimated cost to complete the system of \$5,235,184.

Sources of financing the system were estimated as:

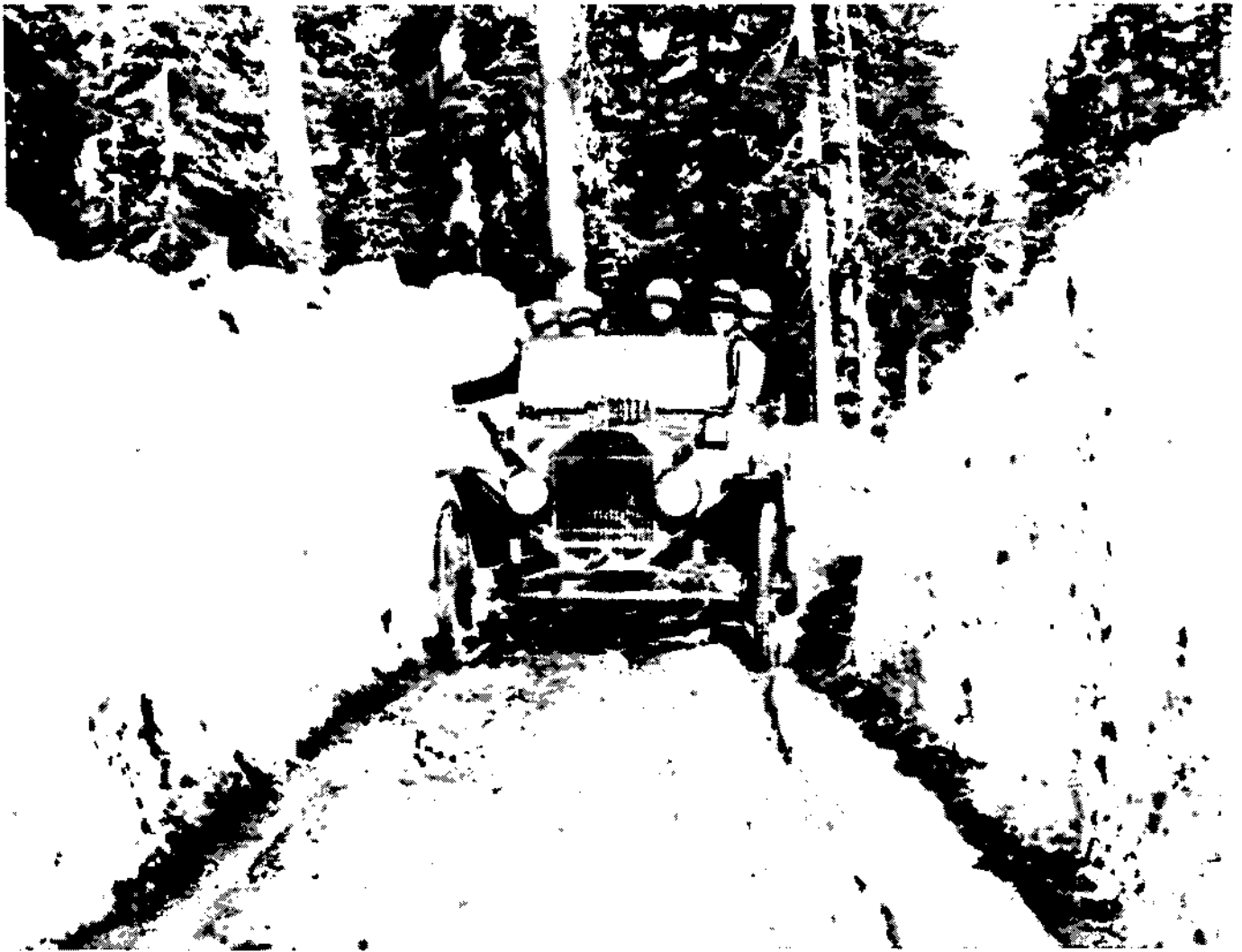
State funds	\$2,129,395
Local funds	2,220,789
Forest funds	660,000
Post Road funds	225,000
Total	\$5,235,184

Department organization was also revised and expanded during the 1915-1916 biennium with the creation of a new division comprised of those counties north of the Salmon River, including Idaho County. The headquarter's office, located at Lewiston was also provided with the services of an accountant.

Highway Commission 1917-1918

The State Highway Commission was again reorganized in 1917. W. A. Brodhead was retained as Chairman and, by virtue of his office as Secretary of State, W. T. Dougherty of Richfield became Commission secretary. The new appointive member was R. Hodgins, Moscow. State Highway Engineer E. M. Booth resigned November 1, 1917, and Mr. H. C. Allen was appointed by the Commission to replace him.

The new Commission made only nominal additions to the State Highway System. The Idaho-Montana designation was transferred to a new route beginning at Idaho Falls and extending



Early day auto travel was difficult and even hazardous.

via Roberts to the Idaho-Montana State line. The section of the former Idaho-Montana highway between Blackfoot and Challis was redesignated as the Lost River highway and the section from Challis to the Montana State line was transferred to the Sawtooth Park highway.

Another action was to extend the Downey-Malad branch of the Idaho-Pacific highway to the Utah State line and redesignate the route as the Malad Valley highway.

The Commission also designated two entirely new routes. The first was the Bliss-Shoshone highway connecting those two towns. The other was the Cassia highway which extended from a junction with the Idaho-Pacific highway near Burley to Albion.

Highway construction was at a virtual standstill at the beginning of 1917. State revenues were exhausted and the Commission was deeply in debt. Most of this indebtedness was to counties and highway districts for monies advanced to the State for construction. Current revenues were inadequate to maintain the 411 miles of highways under State maintenance as of January 1, 1917. The only substantial source of operating revenue was from motor vehicle registration fees. The State share of these revenues amounted to \$103,252 in 1917 and \$144,196 in 1918. Ten percent of these amounts was committed to bond interest and retirement under terms of the First State Highway bond issue.

In recognition of critical construction needs, the 1917 State Legislative session authorized a bond issue of \$1 million to be repaid through an ad valorem tax levy of one mill per dollar of assessed valuation. This Legislative session also apportioned \$15,000 from the general treasury to cover costs associated with the use of convict labor on highway construction and \$50,000 as the State share of the cost for construction of five bridges over the Snake River.

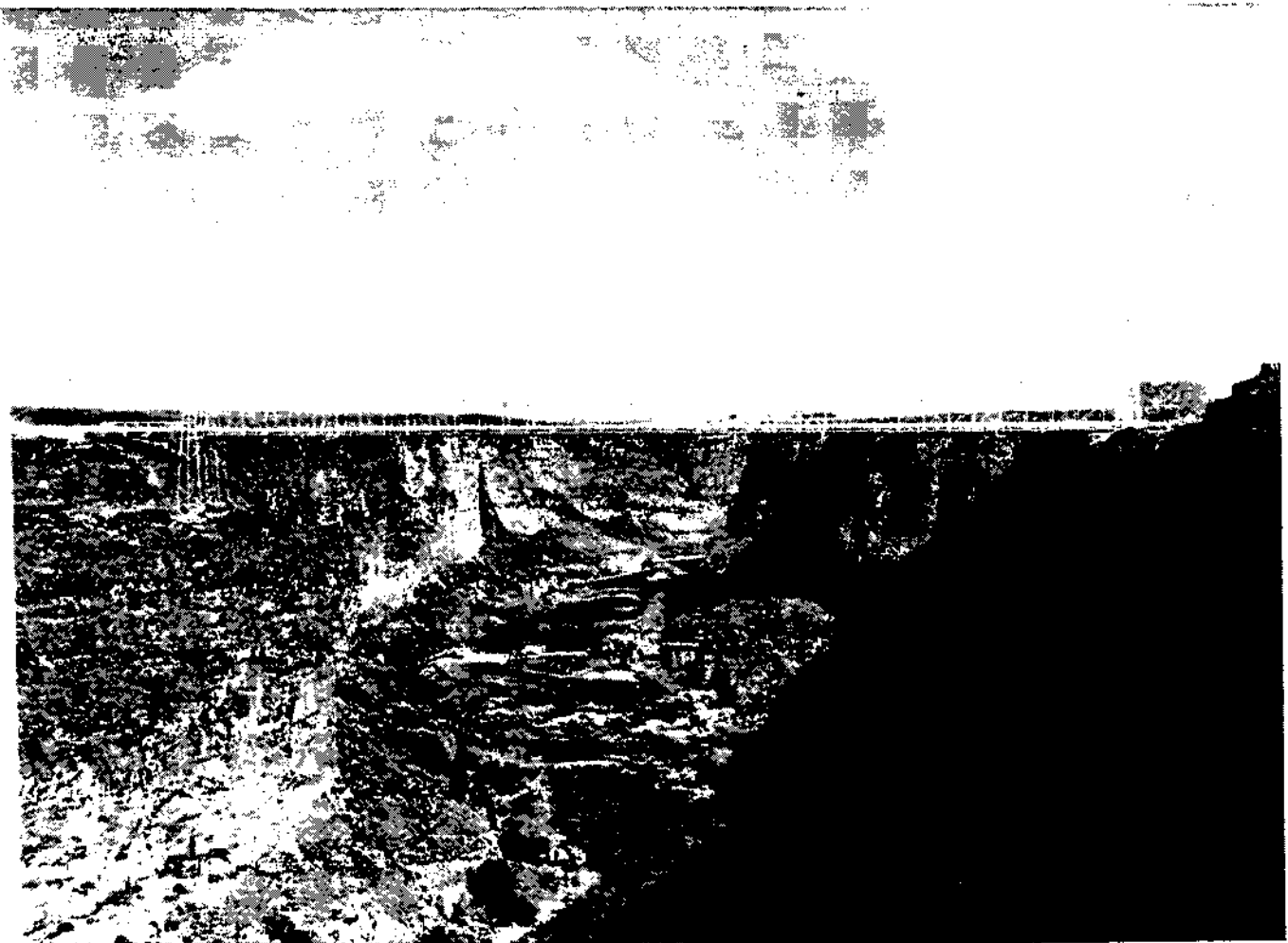
This latter appropriation was contingent on \$100,000 in additional funds from other sources. Bridges authorized over the Snake River were located at Homedale, Frohman Ferry,

Hansen suspension bridge constructed in 1918 by the State, Twin Falls County and Hillsdale Highway District.

Walters Ferry, Grandview Ferry and McKeeth Ferry.

In authorizing the highway bond issue the Legislature committed almost three-fourths of the funds to specific highways. It also provided for reimbursement to the counties that had advanced funds to the State. It is estimated this amounted to about \$76,000. About one-half of the remaining committed funds were assigned to construction on the North and South highway.

This Legislature also changed the basis of motor vehicle registration from horsepower to vehicle weight, including standard equipment. Fees ranged from \$15.00 for a vehicle weighing 2000 pounds or less to \$40.00 for vehicles weighing over 4,000 pounds. After a vehicle was five years old the fees



were two-thirds of the regular schedule.

The 1917 Legislature also subscribed or consented to provisions of the Federal Post Roads Act of 1916.

The final highway-related action of the 1917 Legislature was to appropriate \$20,000 from the general treasury as the State share of building a bridge across the Snake River near Hansen. An additional \$60,000 was to be provided by Twin Falls County and the Hillsdale Highway District in Minidoka County. The project was to be supervised by a Commission comprised of County and Highway District Commissioners.

Federal-Aid Funds: With new revenue available under the \$1,000,000 bond issue the Commission was able to utilize Post Road construction funds on the following projects:

<u>Projects</u>	<u>Location</u>	<u>Amount</u>
3,4,7	Mackay-Challis	\$ 50,000
5	Salmon-	
	Pahsimeroi River	135,000
6	Grangeville-	
	White Bird	86,000
Unobligated-		
balance		<u>91,000</u>
Total		\$362,000

Forest Highway funds available under Section 8 of the Act were also obligated as follows:

<u>Location</u>	Warm River-Yellowstone
<u>Miles</u>	47.3
<u>Purpose</u>	Survey & Const.
<u>Amount</u>	\$ 30,000

<u>Location</u>	Noble-Montana Line
<u>Miles</u>	23.0
<u>Purpose</u>	Survey
<u>Amount</u>	\$ 1,075

<u>Location</u>	Galena Summit
<u>Miles</u>	10.2
<u>Purpose</u>	Survey & Const.
<u>Amount</u>	\$ 19,385

<u>Location</u>	Fourth of July Canyon
<u>Miles</u>	12.0
<u>Purpose</u>	Survey & Const.
<u>Amount</u>	\$ 50,000

<u>Location</u>	Kooskia-Lowell
<u>Miles</u>	23.0
<u>Purpose</u>	Survey & Const.
<u>Amount</u>	\$ 58,650

Uncommitted balance 160,000

Total \$319,110

The State was unable to utilize the uncommitted balance of both Federal allocations because of lack of necessary matching funds.

The First Federal-Aid Projects

The first Federal-Aid project contract in Idaho was awarded on October 11, 1917 by the Highway Commission to the Missouri Bridge and Iron Company. The work consisted of constructing three steel bridges and 43 concrete bridges and culverts in Custer and Lemhi Counties on what is now U.S. Highway 93. Bids were advertised for constructing three roadway sections of the same highway at that time but there were no bids submitted.

Four Federal-Aid projects for roadway construction were put under contract on July 11, 1918. Three of these projects were on the Lost River Highway between Mackay and Challis in Custer County on present day U.S. Highway 93. The fourth project was on the Sawtooth Park Highway between Salmon and the Pahsimeroi River in Lemhi County.

In addition to these Federal Aid projects, the Commission undertook construction on the Boise-Arrowrock highway, utilizing convict labor. Surveys were also completed on the White Bird-New Meadows and White Bird-Grangeville section of the North and South highway. The latter is described in the Lewiston Tribune of November 22, 1918 as follows:

HOW CLIMB IS MADE FROM SALMON
RIVER - WONDERFUL SCENIC
FEATURES ARE AFFORDED

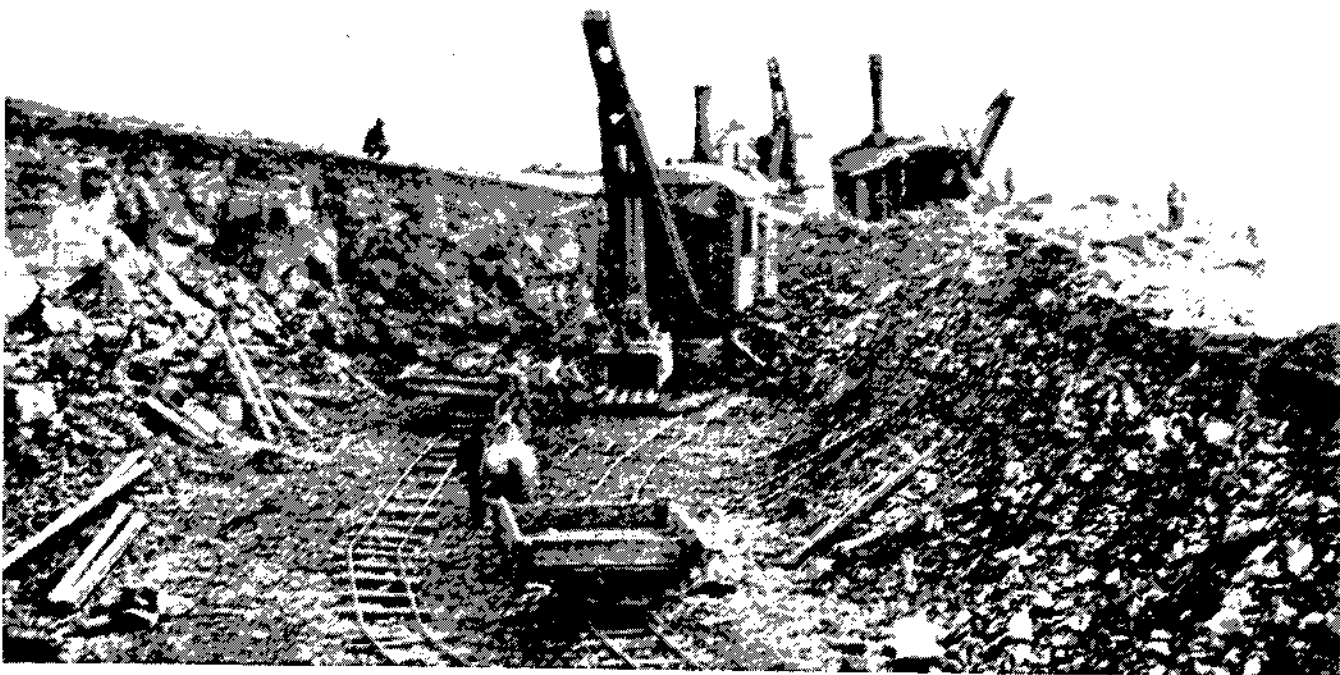
North Idaho is soon to have another highway which will rival the now famous Lewiston Hill highway as a engineering feature and scenic route. This will be the Salmon River - Grangeville link of the north and south highway.

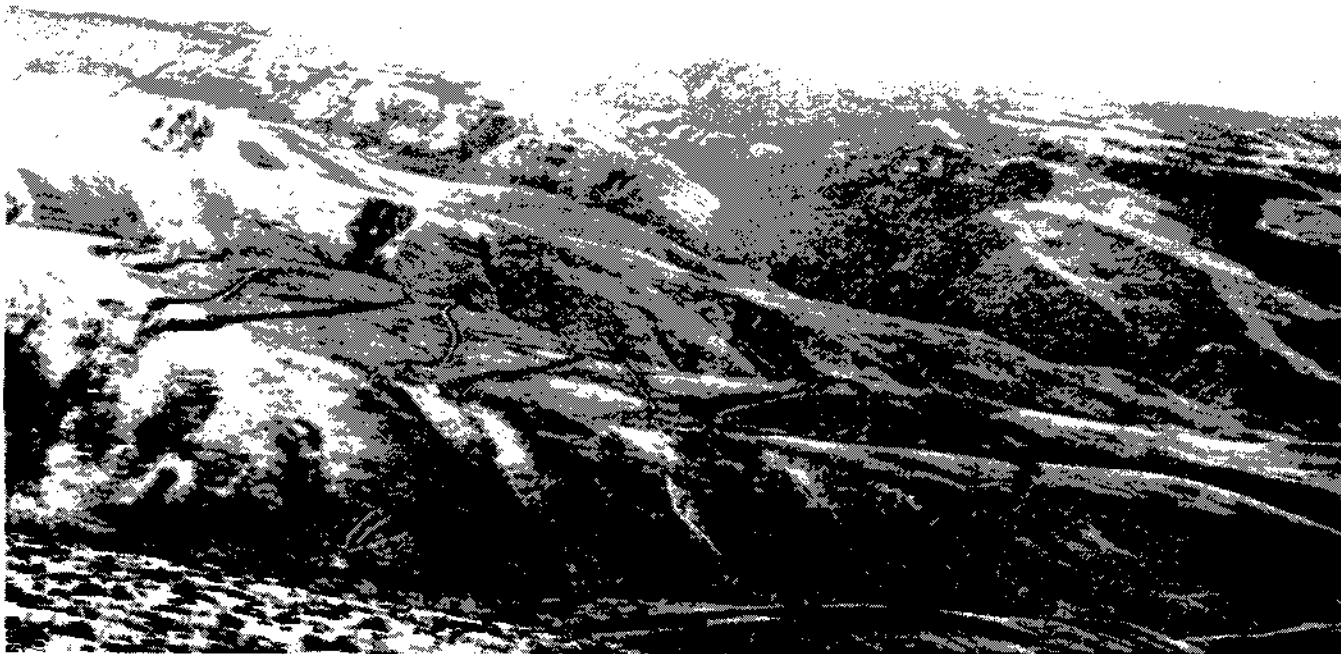
The project is 22 miles in length, extending from the Salmon River at the mouth of White Bird Creek to the City of Grangeville. The only means of travel between these two points at the present time is over a narrow, precipitous mountain road of heavy grades - some pitches as steep as 25

percent - and sharp, dangerous turns. Though it is a very important mail route, supplying all the Salmon River country for a distance of 90 miles to New Meadows, it is practically no more than a poor trail and almost impossible to auto traffic except under the most favorable weather conditions. The section which this new highway will eliminate is the worst of the whole route from Lewiston to Boise because of its very heavy grades and sharp, dangerous turns.

Leaving the Salmon River at the mouth of White Bird Creek the new highway will follow up White Bird Creek one mile to the town of White Bird, then take a southeasterly course along the west slope of White Bird Creek with a maximum grade of five percent and

Steam Shovel and rail car excavating rock cut on White Bird Hill in 1917.





easy, graceful curves to what will undoubtedly be known as 'the foot of the ladder' seven miles out from the Salmon River. Here the greater part of the development work to make the necessary climb of 3,000 feet to the summit is worked out. For the next three miles the road swings back and forth across a gently sloping ridge eight consecutive times. At the last round of the ladder, or ten miles from the Salmon River, a vast panorama is unfolded.

From the last round of the ladder the route skirts the breaks of Chapman Creek for another three miles to the summit where an elevation of 4,393 feet is reached, 3,000 feet above the starting point. Then down from the summit on the Grangeville side the route passes through a timbered hillside of stately yellow pine and

A view of the ladder section of White Bird Hill. This highway climbs 3000 feet between the Salmon River and the Summit in 13 miles.

spruce for a distance of three miles.

To construct this highway requires the excavating and moving of about 220,000 cubic yards of material, 26 percent of which will be solid rock; the placing of approximately 400 cubic yards of concrete in culverts nearly a mile of culvert pipe; the construction of one 60-foot span bridge across White Bird Creek; and, about four miles of guard fence. The cost will be approximately \$260,000, of which sum the Federal-Aid Department of Public Roads, the State of Idaho, and the two highway districts at Grangeville and White Bird pay one-third share each.

A summary of State highway expenditures for construction and maintenance in the period January 1, 1917 to November 1, 1918 includes:

Grading	\$ 419,966.00
Surfacing	287,568.00
Bridges & Culverts	337,379.00
Miscellaneous	41,666.00
Engineering	186,442.00
Subtotal for	
Construction	1,273,021.00
Maintenance	<u>188,888.00</u>
Total	\$1,461,909.00

Operations of the Commission were hampered not only by a lack of adequate funding but also, toward the end of this period, by materials shortages created by demands of World War I. Problems associated with obtaining material are typified by extracts from the following letter from A. L. Kahl,

The Malad River bridge causing war-time headaches in 1918.

Bridge Engineer, as reported April 10, 1918 in Commission proceedings:

Work started on this bridge the middle of June, 1917. The foreman arrived on the work with very little equipment, consequently he had to borrow whatever tools, etc. he could find in the vicinity in order to get the work started. He stated that he had some equipment on the way but at no time during the construction of the bridge did the company have adequate equipment on the job.

The abutments and piers were all completed before the steel arrived for the superstructure. This was due to the fact that the steel was delivered from four to eight months late. I understand the Midland Bridge Company purchased the steel from a St. Louis



fabricating shop and I do not know whether it was the fault of the Midland Bridge Company or the St. Louis Company that the delivery of the metal was delayed so long. I do know that the steel market has been in bad condition for the past 20 months or more.

In the matter of State Highway location through the Mesa Orchard Tract in Adams County...

Some months ago it was currently reported that unless the road was built along certain lines, through the tract, no assistance would be given in securing right-of-way by the Manager, Mr. Gray. The particular point desired by Mr. Gray to be reached was a summit or knoll where his store stands, said to be the

highest point in the tract. No right-of-way was secured although it was known that we desired the same. It was also known that our final location did not go over this knoll in question.

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None of this survey has been followed in the final location made in 1917 because a decidedly more practical location is available lower down through a pass, or saddle, some one-eighth of a mile eastward from the store, following a direct and practical grade contour over the hill, shortening the distance a quarter of a mile.

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Impassable roads during spring thaw. Warren (Doc) Wheeler, Resident Engineer, FAP 27-U.S. 30, west of New Plymouth, 1920.



The difference in construction cost (not including right-of-way) would be approximately \$4,000 in favor of our located line.

There are a number of vital reasons why the State Highway should be built as located. I consider that a main trunk highway such as this North and South Highway will be, should be built for the State at large. Our principal aim is to build for economy in first cost, economy in maintenance and economy in operation of traffic and service to the State. In view of snow troubles, cuts are avoided as much as possible, particularly on Summits.

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I am satisfied we have the right and proper location for the highway, and my recommendation now is and always has been, that it be used, and I am unalterably opposed to the route by way of the store.

After discussing the Mesa Hill Road, the Highway Commission unanimously agreed that:

WHEREAS, It was of particular interest and benefit to the people of Adams county, the State Highway Engineer is hereby instructed to build said road through the Mesa Orchard Tract over the hill near a point occupied by the store owned by Mr. Gray.

Summary of Accomplishments of the State Highway Commission 1913-1919

These three State Highway Commissions were the first State-wide highway authority in Idaho. Although

they lasted a total of only six years, they were successful in selecting the basis for the State Highway System as it exists today. It is significant to note that much of today's system follows very closely the lines laid out between 1913 and 1919. This was accomplished despite the financial hardships which existed throughout this period.

The State's share of the cost of construction activities was financed entirely from the proceeds of bond issues. Total construction expenditures amounted to about \$2,170,000. Bond proceeds provided \$1,200,000 with the balance composed of local matching funds and a small amount of Federal-aid funds.

Maintenance costs during this period totalled slightly more than \$225,000, all financed from registration fees on motor vehicles. State revenue from this source ranged from about \$10,000 in 1913 to \$144,196 in 1918. It is estimated that out of a total designated State Highway System of almost 2,150 miles, only about 600 miles had been constructed to a standard requiring it to be placed under State maintenance by the end of 1918.

The State Highway Commission reported that the greatest problem confronting the State in establishing and operating a comprehensive system of highways was financing. A vast sum of money by the standards of that period was needed and it was their worry that precarious methods of financing might be adopted. They recognized that the economic development of the State required putting into operation a highway system within a few years. The small population in scattered well-developed sections made the problems difficult in the undeveloped areas. Federal Post Road legislation helped the Commission to fund projects in these areas but financing continued to be a major problem at all times. In fact, in 1917, the Counties and Highway Districts had to advance monies to the Commission to complete construction already underway.

The Commission received revenue from the Motor Vehicle Registration Act; however, total collections ranged from \$37,000 in 1913, \$121,900 in 1915 to about \$500,000 in 1918. These amounts included maintenance costs mentioned previously.

Bonds were the major source of funds for construction. A constitu-

tional limit on State indebtedness created problems requiring electorate approval. Other sources of funding considered were a highway tax of 1½ mills; taxes on trucks; and the licensing of auto stages. At this time, however, the State Highway Commission was to be replaced by a Department of Public Works encompassing a number of agencies, including a Bureau of Highways.

CHAPTER V

DEPARTMENT OF PUBLIC WORKS BUREAU OF HIGHWAYS

1919 - 1930

During the period 1890 to 1919 the State government of Idaho had evolved into a system of bureaus and commissions superimposed over the governmental functions and services as provided by the original constitution. Recognizing the politics of this situation the Legislative Session of 1919 determined that a reorganization of State government should be made on the basis of the constitutional offices and system of departments.

Enactment of this legislation was urged by Governor D. W. Davis in his message to the 1919 legislative session. Highlights of his comments in this regard were as follows:

In the State of Idaho, where the Governor is elected every two years, he is responsible directly to the public. There is no reason why, when the public has reposed sufficient confidence in him to hold him to the position of manager of state affairs, he should not be entrusted with those powers which will enable him to carry out the responsibility which it is obviously the intention of the electors of the state to fasten upon him.

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Today the Governor is the direct representative of the people and should be the direct executor of their public affairs. He should be given the power not only to formulate plans for the better welfare of the people,

but he should be given the power, when those plans have received general approval, to carry them into execution.

Governor Davis, in the same message, had this to say about highways:

Nothing will be so beneficial to this State as the continued construction and proper maintenance of good roads. Whatever providing of appropriations the Legislature may find necessary to make, I am satisfied the people of the State do not desire any retrenchment in the good roads building program.

The reorganization became effective April 1, 1919. Under its provisions the State Highway Commission was abolished and its functions were transferred to a Bureau of Highways within the Department of Public Works. The office of State Highway Engineer was also abolished and the Bureau of Highways was headed by a Director who served under the Commissioner of Public Works. Other agencies included within the Department of Public Works were:

Capitol Building Construction
and Maintenance
Heyburn State Park
State Purchasing Agent

Both the Commissioner of Public Works and the Director of Highways were appointed by the Governor and served at his pleasure.

Motor vehicle registration, formerly a responsibility of the State

Highway Commission, was transferred to a newly-created Department of Law Enforcement.

In order to finance State Highway operations the 1919 Legislature enacted a property tax of 0.2 mill per dollar of assessed valuation. This tax was estimated to yield \$2,000,000 in revenue during the 1919-1920 biennium. This legislation also specified the amount to be available for expenditure within each county and on each highway.

It further provided that State Highways be designated in Teton, Minidoka, Gem, Fremont and Madison Counties although specific routes were not identified. A total of \$70,000 was allocated to construction of these highways.

An additional \$90,000 was earmarked to reimburse counties and highway districts which had advanced funds to the State for highway construction in 1916.

In order to expedite availability of the revenues from the ad valorem levy, the Legislature authorized an issue of treasury notes for \$1,800,000. These notes and interest were to be repaid from the highway tax levy.

This Legislature also authorized a State Highway bond issue of \$2,000,000 to locate, survey and build a State Highway system. Debt service was to be met through a property tax of 0.4 mill per dollar of assessed valuation. Due to the fact that prior bond issues were at or near the \$2,000,000 constitutional bonding limit, this new authorization was subject to electorate approval at the 1920 general election.

The 1921 Legislature enacted the first statute regulating vehicle loads. The gross load was limited to the manufacturer's rated load capacity plus 50 percent. The individual wheel loads were limited to 500 pounds of tire width when the width exceeded two inches. If tire width was two inches or less the limit was 350 pounds per inch. The tire width was defined as

the distance between rim flanges. Provision was made for special overload permits.

The various legislatures during the early-1920's era struggled with financing. Federal-Aid funds were made available for highway construction when matched with State funds. Forest Highway funds for roads in national forests were also available with no matching requirement.

Highway-related legislation was limited during the 1923 legislative session. Conversely, however, that which was enacted was most significant in its effect on future highway programs. This Legislature provided a tax of two cents per gallon on motor fuels to become effective April 1, 1923. Provision was made for refunds of tax paid on fuels used for non-highway purposes. Refunds were paid directly from the State Highway Fund. The tax was collected by the State Department of Law Enforcement. The net funds could be used for any State highway purpose.

The 1925-1926 Legislature enacted legislation to require that the State maintain sections of State highways within cities of 2,500 population or less. This Legislature also increased the State motor fuels tax from two to three cents per gallon. It was estimated that this increase would provide about \$1.0 million additional revenue to the State Highway Fund during the 1925-1926 biennium.

The increase was offset substantially by a provision of the same bill which obligated \$226,578 from fuels tax proceeds to reimburse counties and highway districts for earlier advances to the State for highway construction.

Further reduction of State highway revenue was created by reducing motor vehicle registration fees by about one-third and also the State's share of those revenues was reduced from 25 percent to 10 percent. A fee schedule for truck registrations was also imposed by this legislation. Fees

were based on the vehicle rated capacity and ranged from \$17.50 to \$110.00. Additional fees were established for trailers and semi-trailers.

The 1927 Legislature again provided an increase in the gasoline tax from three cents to four cents per gallon. This Legislature also passed a uniform act regulating the operation of motor vehicles on all public roads. The legislation also specified speed limits in various areas classified according to the type of development with a maximum speed limit of 35 miles per hour. Careless driving was defined and penalties provided for driving while intoxicated or under the influence of narcotics. Maximum vehicle dimensions for trucks and other units were also established at:

Outside width - 8 feet except for farm tractors which were allowed 9 feet and also no limit for farm equipment moved temporarily on the highways.
Height - 14 feet 6 inches
Single unit length - 33 feet
Combination length - 85 feet

Over-dimension permits could be issued by the Department of Public Works.

Other 1927 Actions

The office of the State Purchasing Agent was removed from the Department of Public Works and established as an independent agency.

During this period a survey of local roads and their financial status was made. The counties and local highway districts constructed 467 miles of new roads and reconstructed 675 miles of existing highways. The survey showed counties had jurisdiction of 19,927 miles of road while highway districts had 13,203 miles; a total of 33,130 miles. The State Highway System had 4,259 miles as of December, 1928. The local units of government

received \$6.9 million in revenues during 1927 and expended \$5 million for construction, maintenance, debt service, equipment and other uses. These local units of government also had a bonded indebtedness of \$17,887,600 of which about \$11.1 million was for local cooperation in the construction of State Highways.

The 1929 Legislature increased the motor fuels tax from four to five cents and authorized issuance of treasury notes for \$1 million committing 20 percent of the motor fuels tax to repay this bonding. A motor vehicle fund was also created to cover operations of the State Department of Law Enforcement reducing the highway share of these fees by three percent.

This Legislature also provided a vehicle weight statute with the following limitations:

Axle loads

Single axle	16,000 lbs.
Two axles	24,000 lbs.
Three axles	40,000 lbs.

Tire limits

<u>Tire width</u>	<u>Load</u>
Over 5 inches	800 lbs.
3 to 5 inches	600 lbs.
3 inches or less	400 lbs.

Speed of vehicles with gross weights of 10,000 lbs. or more was limited to 30 miles per hour.

The Commissioner of Public Works was authorized to negotiate with railroads for the elimination of grade crossings by means of separation structures or by relocation of either the highway or the railroad. He was also authorized to negotiate the sharing of costs of such projects with the railroads.

The 1929 legislative session also repealed legislation which authorized franchises for toll roads and which permitted leasing of public roads to

private interests for operation as toll facilities.

Another statute provided for the designation of certain roads as through highways with traffic on intersecting roads required to stop before entering.

The Commissioner of Public Works was further authorized to enter into agreements for maintenance of State highways within cities having a population of more than 2,500 but less than 6,000. The State share of such costs was not to exceed 50 percent.

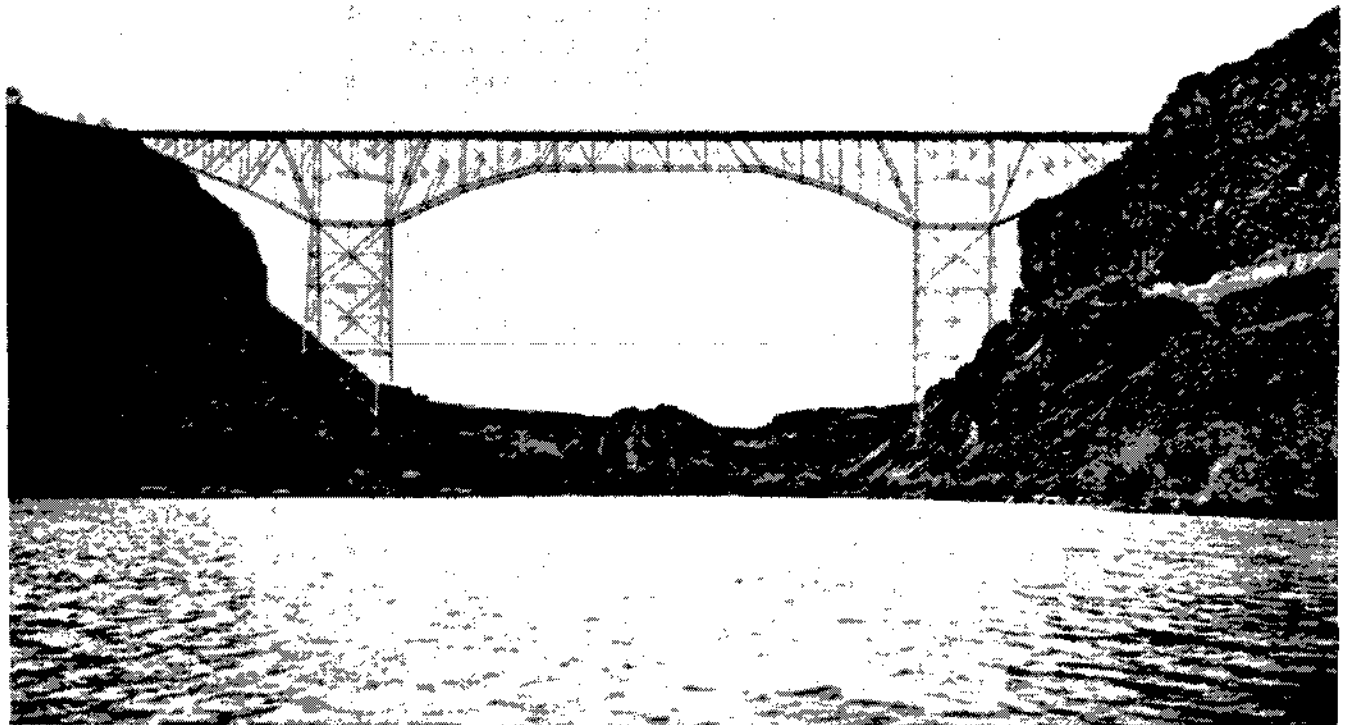
Although no public funds were involved, another important highway transportation link was provided in 1927-1928 by construction of the Twin Falls-Jerome toll bridge. This structure was built by the Twin Falls-Jerome Intercounty Bridge Company under a franchise granted by Twin Falls and Jerome counties. It was a high-level bridge over the Snake River on the Sawtooth Park Highway (U.S.

Highway 93). The bridge was of the cantilever type, 1400 feet in length and 476 feet above the low-water elevation of the river. The roadway width was 27 feet and it was designed for a concentrated live load of two 25 ton trucks. The bridge company also built 3.74 miles of road to connect with the existing highway on the north side of the river. The State required this roadway to be regraded and resurfaced prior to accepting it for State maintenance. The terms of the franchise provided a maximum of 50 years after which all rights, including collection of tolls would terminate.

Federal-Aid and Revenues

During the 1919-1920 biennium, \$3.4 million in Federal-Aid funds were provided. This money when combined with State and local funds provided for about \$9.1 million in construction. This actually amounted to about 88 percent

Twin Falls-Jerome Toll Bridge.



of all construction monies available from 1913 to 1920.

As previously stated, the 1919 Legislature authorized a bond issue of \$2 million that had to be approved by the electorate in 1920 since the bonded indebtedness allowed by the Constitution would be exceeded. The Legislature further stated that the first obligation for these funds would be repayment of monies loaned the State by counties and highway districts in 1916 amounting to \$823,000. The remainder was to be available for construction.

The Weiser-White Bird section of highway was allocated \$250,000 of State funds since local population was too sparse and the tax base too limited to finance with local funds. Normally the counties provided two-thirds of the cost of State highway construction during this period. This section of highway was considered to be of great importance in tying the northern and southern sections of the State together.

Fig. 1 in the Appendix shows the distribution of revenues for highways for the period 1905-1930.

Federal-Aid funds available to the State for highway construction were scheduled to expire on June 30, 1921 with the termination of the Post Roads Act of 1916. Consideration of alternatives to the Post Roads Act had, however, been underway in Congress since early in 1920. It was evident that the legislation provided by the Post Roads Act could never assure an integrated highway system since it could be expected that almost every rural road would ultimately be used for mail delivery. That Act also encouraged widely dispersed projects, frequently isolating one from others.

A number of alternate proposals was offered ranging from a continuation of the Post Roads Act to plans for a national system of highways under Federal control. The final outcome was the Federal-Aid Highway Act of 1921 which, though extensively amended

over the years, is still the basic Federal-Aid highway legislation.

Under this Act each State was required to make an inventory of its public road system. It was then permitted to designate 3 percent primary or interstate routes and 4 percent secondary or intercounty routes. Thus, 7 percent of the total public road system was to be eligible for Federal-Aid participation in the cost of construction. In addition, this was to be an integrated system composed of the most important interstate and intrastate highways.

The inventory in Idaho determined there were 40,200 miles of public roads and the 7 percent Federal-Aid highway system was thus established at 2,814 miles. During 1921 the U.S. Secretary of Agriculture approved a system comprising 2,772.1 miles. The remaining 41.9 miles of the eligible system was reserved to provide for possible adjustments of alignment, relocation of existing highways and additional designations.

The selected Federal-Aid system comprised about 74 percent of the total designated State highway system of 3,800 miles. The Federal-Aid system included 1,213 miles of interstate or primary routes and 1,560 miles of inter-county or secondary routes.

The Federal-Aid Highway Act provided that Federal-Aid funds could be used to pay up to 50 percent of the construction cost. However, in states containing areas of public lands, this matching ratio was to be revised increasing the ratio in accordance with a factor based upon federal land areas. Under this provision the Federal matching share in Idaho was established at 58 percent of cost, provided that the Federal share did not exceed \$17,404.00 per mile. Within Indian reservations, Federal-Aid funds could be used to pay the entire construction costs.

The Federal-Aid highway program was initially rural in character. Funds

could be used only on rural roads, although towns of 2,500 population or less were defined as rural.

This legislation continued authorizations for Forest Highways to be constructed under the supervision of the U.S. Bureau of Public Roads. A Forest Highway system of 1,105 miles was proposed in 1921, but had not been fully approved by the Secretary of Agriculture by the end of 1922.

Organization

It was concluded that the highway organization inherited from the State Highway Commission in 1919 would need some revision to meet the requirements of an extensive construction program planned for the 1919-1920 biennium. Accordingly, steps were immediately made to effect this reorganization. The objective was to divide the work load, delegate responsibility accompanied by adequate authority, and yet maintain overall control by the Commissioner of Public Works and the Director of Highways.

William J. Hall assumed the position of Commissioner of Public Works on April 1, 1919. H. C. Allen, former State Highway Engineer, was appointed Director of Highways on a temporary basis. He resigned on May 10, 1919 and was succeeded by Lt. Col. D. P. Olson.

The Boise headquarters office was divided into sections on a functional basis thusly:

Road Engineer
Bridge Engineer
Office Engineer
Construction and Maintenance Engineer
Motor Transport Engineer
Chief Draftsman
Research Engineer
Accountant
Testing Engineer

The section heads acted as advisors to the Director of Highways and

to the District Engineers in addition to supervising their sections.

The former highway divisions were redesignated as districts and the number was increased to seven during 1919-1920 with area headquarters located at:

<u>District Number</u>	<u>Headquarters</u>
1	Pocatello
2	Idaho Falls
3	Shoshone
4	Boise
5	Mackay
6	Lewiston
7	Coeur d'Alene

The functions of the District Engineer were varied and widespread and could have been considered as those of a Deputy Director. He was, and still is, a most important link between the Main Headquarters Office, the actual work in the field, and the general public insofar as they are affected by highway operations.

A Motor Transport Section was created to administer the rapidly growing fleet of highway equipment.

On August 1, 1919, there were 27 pieces of equipment, 16 of which were passenger cars together with 7 light trucks and 3 heavy trucks. War surplus equipment distributed by the War Department soon expanded this fleet to 60 passenger cars, 19 light trucks and 77 heavy trucks for a total of 158 units.

The War Department allocated surplus equipment and spare parts at the conclusion of World War I with a total value of \$1,233,064. The cost to the State involved delivery charges only in the amount of \$97,597. A total of 326 units were received during the biennium with the Bureau of Highways retaining only 100. The remainder were distributed to counties and highway districts except for two allocated to other State agencies.



Fleet of World War I trucks used by Bureau of Highways from 1919 to about 1939.

Due to a reduction in State highway revenues because of the revised tax structure and the economic reverses of the early 1920's, it became necessary to curtail some highway functions. Accordingly, the Bureau of Highways was again reorganized. The number of districts was reduced from seven to four leaving district offices at Pocatello, Shoshone, Lewiston and Boise. This latter action was taken to effect some reduction in overhead costs.

Five District Maintenance Supervisors were appointed, one to each district and an additional one with headquarters in Coeur d'Alene.

In the Headquarters office the positions of Chief Clerk, Road Engineer, Maintenance Engineer, and head of the Motor Transport Section were eliminated.

A new system was installed in order to simplify and improve the accounting procedures.

The District office at Coeur d'Alene was reactivated in the 1925-1926 biennium. The Commissioner of

Public Works also assumed the duties of the Director of Highways leaving the Director position vacant. Other changes in organization at this time converted the Motor Transport Section into an Equipment Division responsible for purchasing, distribution, maintenance and repair of all highway equipment. Accounting activities for all components of the Department of Public Works were assigned to one section responsible to the Commissioner.

The Bureau of Highways made several organizational changes during the last two years of this decade combining the Equipment and Maintenance divisions, establishing a Location and Construction Division separate from the Bituminous Treatment Division and providing for a new Right-of-Way Division.

The creation of a Location and Construction Division was necessitated by the greatly expanded construction program. The function of the Division was to direct and coordinate all location and construction activities, other than those related to bituminous treatment.

The expanded construction program and higher standards also generated a need for more and wider rights-

of-way. Counties and highway districts, which were charged by statute with acquiring the needed land, were sometimes reluctant to comply with these increased demands. There were also delays in some projects by failure to obtain title to lands at the proper time.

A Right-of-Way Division was therefore created in an attempt to alleviate these problems. It investigated title to lands, prepared deeds, and cooperated with local officials in all right-of-way activities. It sometimes assisted in the purchase of land to avoid delays. In other instances it assumed responsibility for the entire process of right-of-way acquisition.

Construction

Prior to creation of the Bureau of Highways in 1919, project statements had been filed for about 100 miles of Federal-Aid highways. Of this total, 38 miles on the Lost River Highway (U.S. Highway 93) between Mackay

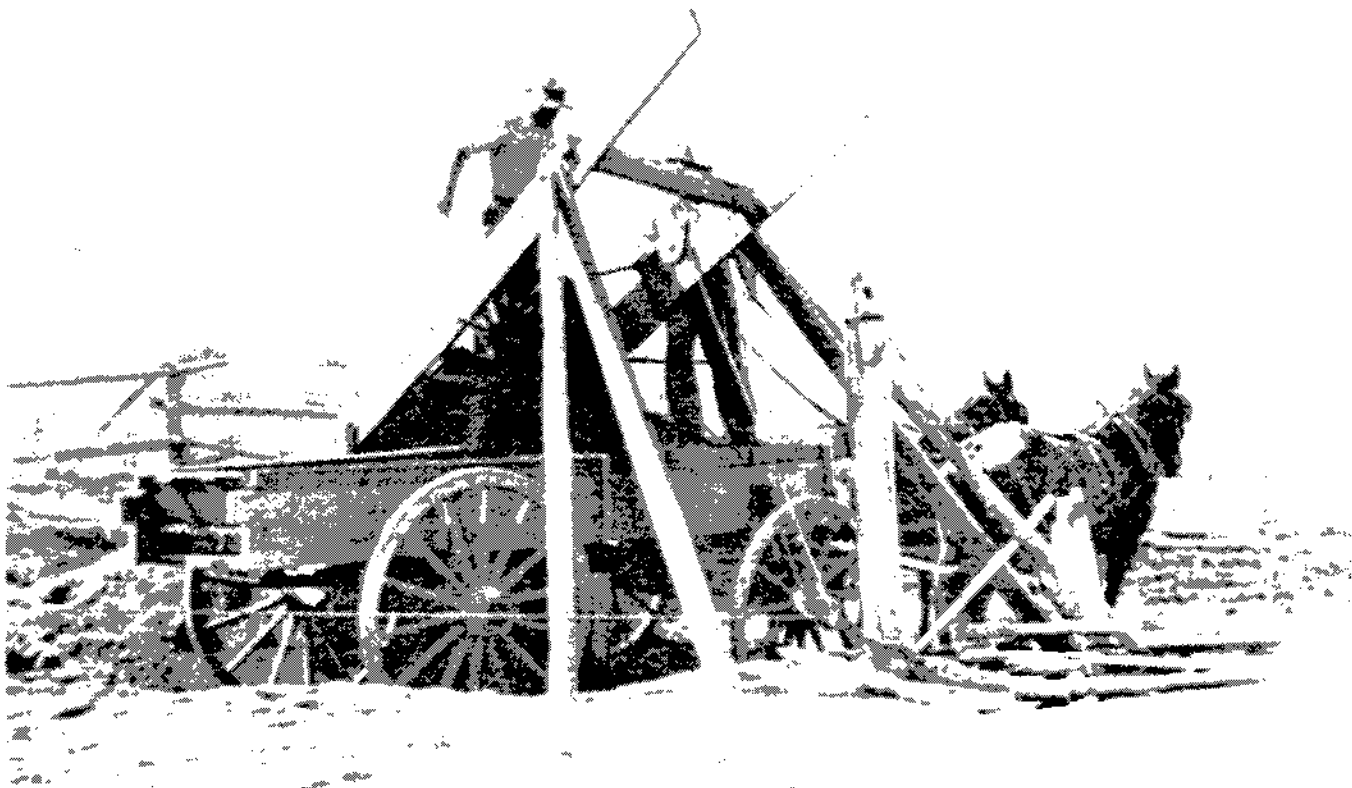
and Challis, were under construction. Project statements were filed on an additional 300 miles of Federal-Aid roads during 1919-1920. These projects utilized all Federal-Aid funds available under the Post Roads Act of 1916 and practically all of this mileage was completed or under construction by the end of 1920.

Contract awards under Federal-Aid projects amounted to \$6.7 million during the 1919-1920 biennium. This covered 39 road projects and 2 major bridge projects with an aggregate length of 440.65 miles. This road mileage was classified by surface type as follows:

<u>Surface Type</u>	<u>Miles</u>
Earth	150.53
Gravel or crushed rock	255.03
Bituminous paving	26.55
Portland cement concrete	8.54
Total	440.65

Horses and manpower moved earth in the early 1920's.





Gravel loading and hauling operation
in early 1920's.

Telford Base - construction such as
this tried in late 1910's and early
1920's. Large rock later covered
with fine sand and gravel.





Completed Telford Base road in early 1920's.

Additional contracts financed with State and local funds were awarded for \$1.4 million for construction work on State highways. These projects were on roads not eligible for the use of Federal-Aid funds or where these funds were not available. Projects with a total value of \$1.0 million and utilizing Forest Highway funds were also underway during the biennium.

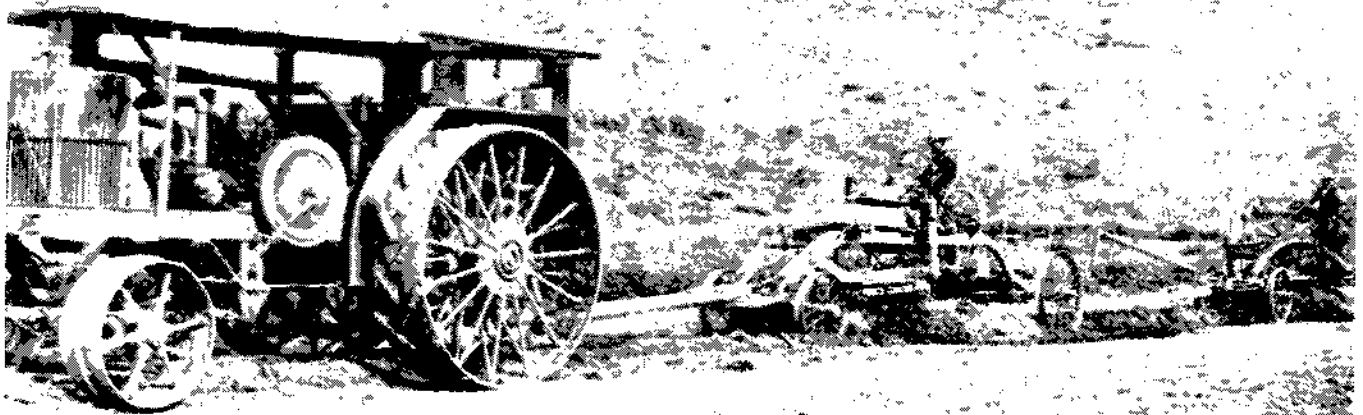
A small mileage of paving was completed during 1919-1920. This is the first record of paving on State highways in Idaho.

The first bituminous surface was on 5.75 miles between Idaho Falls and the Bingham County line. The first Portland cement concrete pavement was a 7.0 mile project near Filer.

Construction equipment and techniques were either dependent on manual labor and horse drawn equipment or steam power shovels from railroad construction. Paving equipment did not exist. Crushed rock and paving mixes were placed and then spread and raked manually between wooden forms to the paving section desired. Heavy

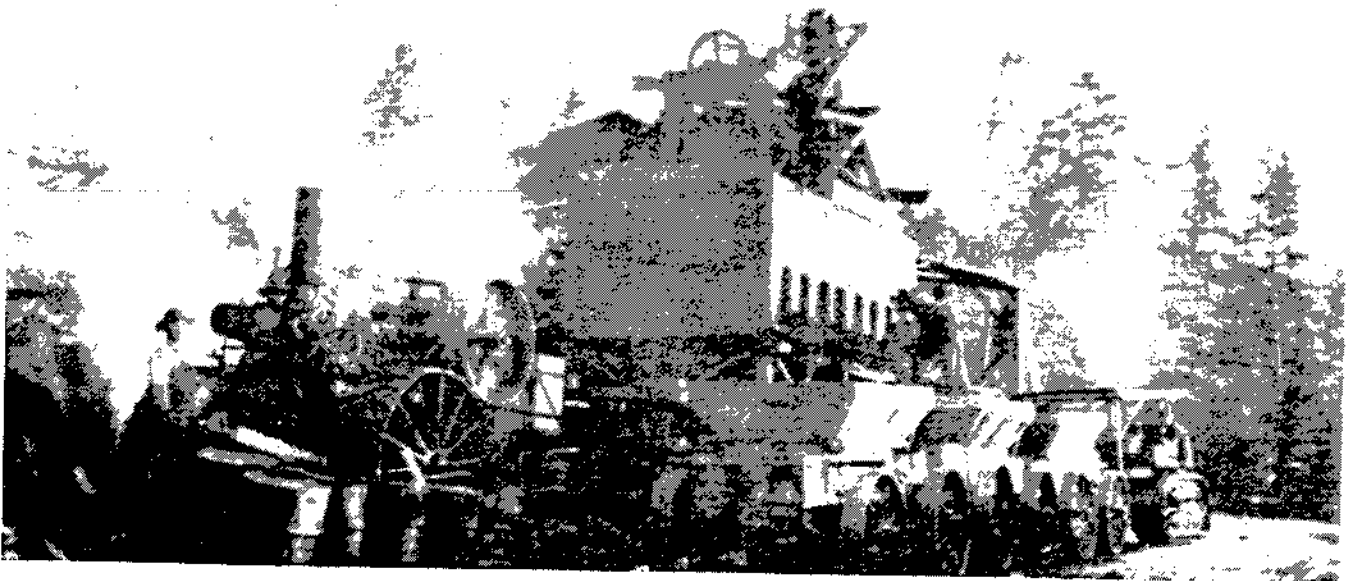
steam powered rollers were used to compact crushed rock and bituminous surfacing. Portland cement concrete was mixed at the job site in small mixers feeding the sand, gravel, cement, and water into the mixer manually and placing the concrete into forms by wheelbarrow.

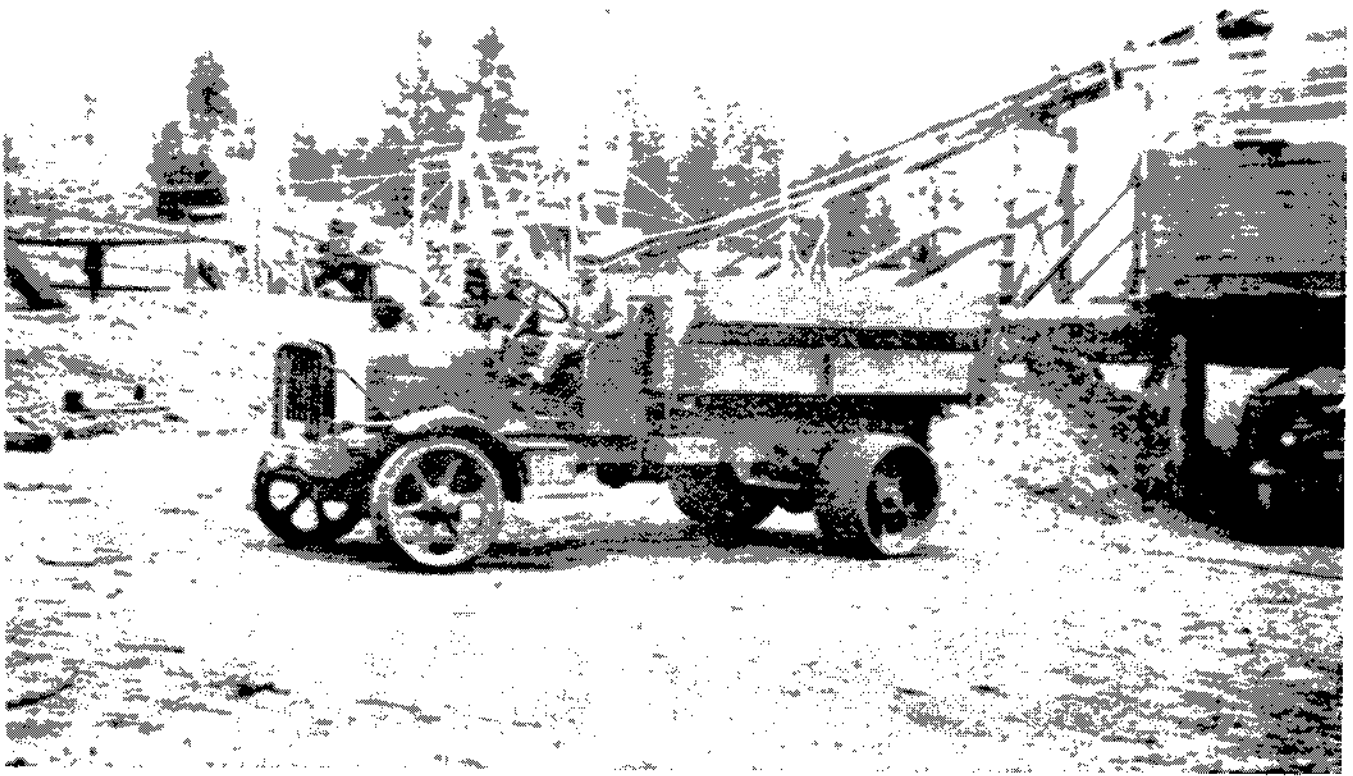
Published histories indicate some trucks were available to haul stone and bituminous surfacing although dumping, spreading and raking was still done by hand labor. Production rates were small with only 10 to 15 tons per hour of bituminous surfacing produced. Crushing plants could produce more but were not portable. Each plant had to be literally constructed in place for each construction job. Under these conditions roads were constructed with the least possible movement of earth, rock or surfacing and roadway widths were kept to a minimum. Highway locations were made following the contour of the hillside so that earth could be cast across the roadway minimizing haul along the roadway.



A pair of graders towed by an early model gasoline powered tractor.

A large rock crusher on Greer Hill in 1922. Note steel wheel dump wagons drawn by tractor to haul rock to the road.





A heavy duty dump truck hauling rock from a rock crusher in the early 1920's.

Construction expenditures during the 1923-1924 biennium were about \$5.9 million, or approximately \$1.3 million less than the average contracted during each of the preceding two bienniums. This was principally due to the decline in State-raised revenue. The State ad valorem highway levy had provided about \$1 million annually in 1921-1922. This levy was replaced by the motor fuels tax in 1923 but revenue from this source was slightly less than \$500,000 per year.

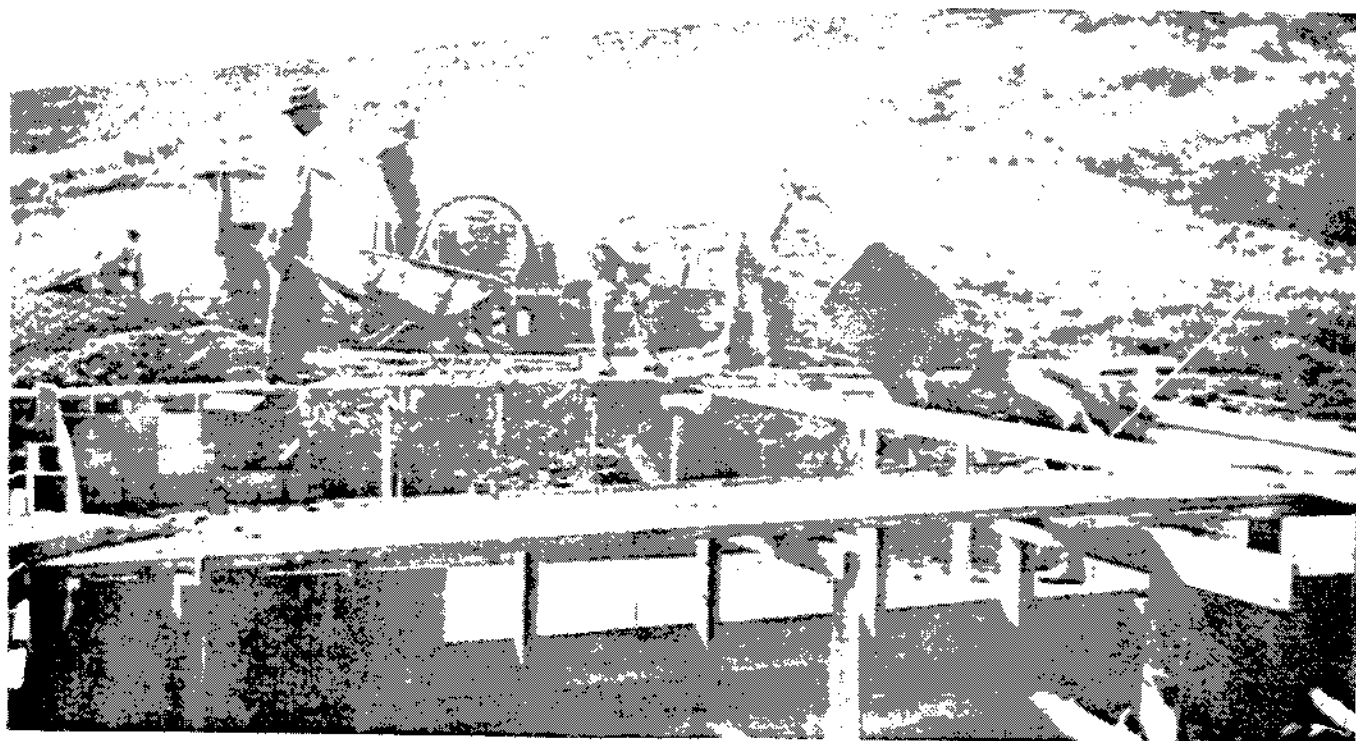
The North and South Highway (U.S. Highway 95) was opened to traffic during the 1923-1924 biennium although not fully meeting the standards of that day. This route was now open from Weiser to the Canadian border. Prior to this time the only practicable route between north and south Idaho was by way of highways in Washington and Oregon.

Testing of materials used in construction and maintenance operations was first introduced into highway operations on September 1, 1919. This was a cooperative effort and agreement entered into between the

Bureau of Highways and the College of Engineering, University of Idaho at Moscow on July 3, 1919. Reimbursement to the University was a flat fee of \$100 per month. Only two materials samples were submitted for testing in 1919 but 211 samples were processed in 1920.

A lack of adequate materials testing resulted in more and more delay in obtaining payment of the Federal-Aid share of construction costs. Also, a number of final payment orders were held up because materials tests had not been made. Payment was eventually made rather reluctantly. Subsequently, the unsatisfactory condition of several bridge projects and one bituminous concrete paving project led the U.S. Bureau of Public Roads to demand better supervision and control of materials and their use.

Early in 1926, the Bureau of Highways was informed that unless



Concrete for bridges was handled by hand labor.

An early day wooden bridge probably built before World War I.



better inspection and material supervision on bituminous paving work was assured, future projects would not be approved for construction. This placed the State in an embarrassing position as the proposed construction program involved four bituminous and two concrete paving projects along with 10 major structures.

On June 1, 1926, a materials testing laboratory was established at Boise to serve southern Idaho. The University of Idaho laboratory handled the northern part of Idaho and conducted most testing requiring expensive, specialized equipment not yet available at the Boise facilities, especially for concrete, bituminous mixtures and for bridge projects.

At the same time, the number of inspectors assigned to construction was increased. These changes provided an immediate improvement in the quality of finished paving projects.

The Bureau of Highways, in its 1925-1926 biennial report, pointed up the need to complete the State Highway System under a connected, orderly and

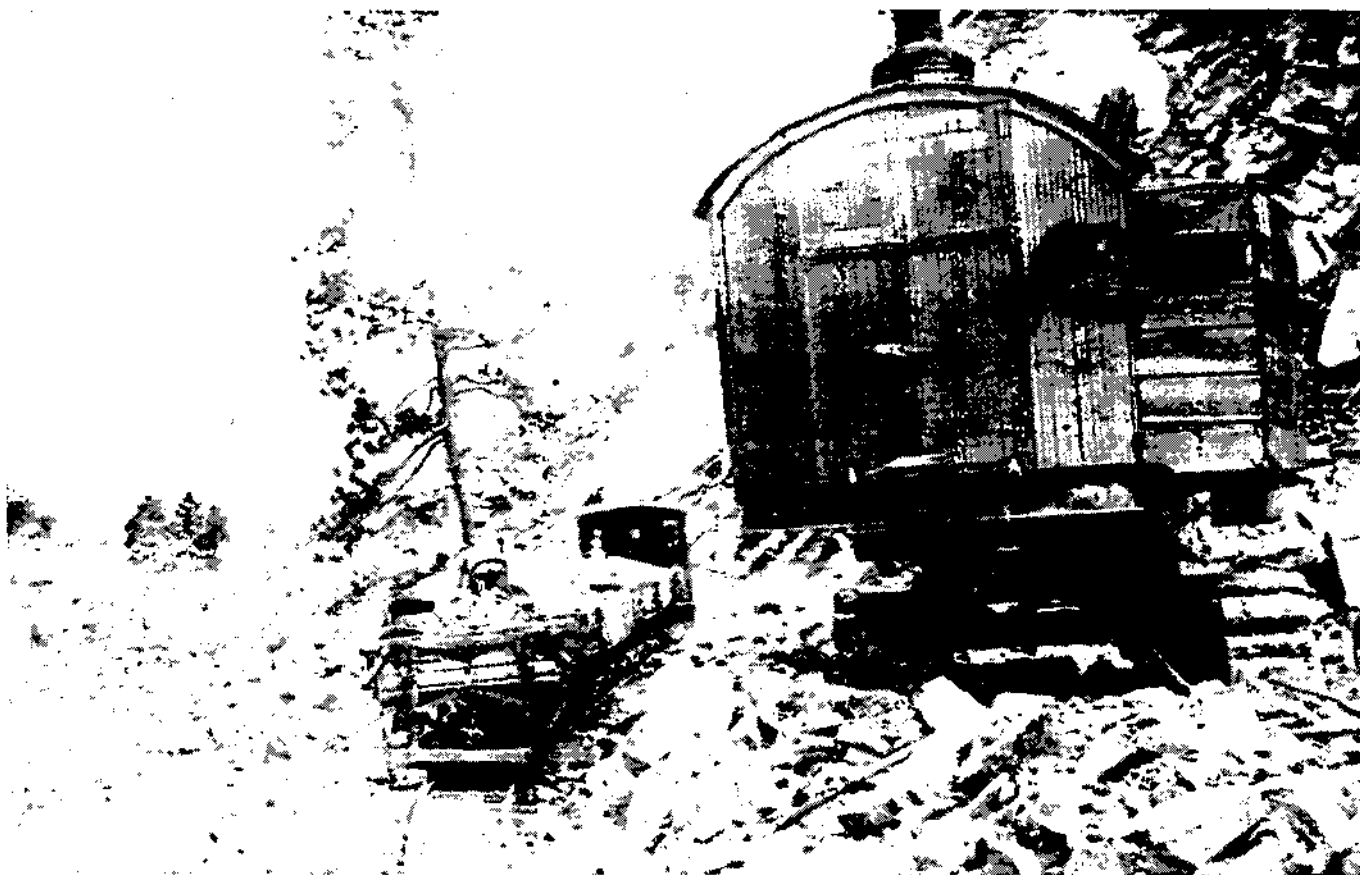
continuous program of improvement as the following report notes:

The Bureau of Highways cannot formulate a well-defined program of construction as long as it is dependent upon the counties for matching Federal-means of determining their financial capacity at any given time. Engineering costs would be considerably reduced if it were possible to lay out a program of construction on a five year basis, and construction costs could be lessened if contractors could figure out a well defined program of considerable duration and plan their bidding in accordance.

Length of projects could be increased, thereby reducing construction, engineering

Using pack horses to move construction machinery to inaccessible locations along the South Fork of the Clearwater River.





Large steam shovels loaded small rail dump cars to haul rock to fills in the early 1920's.

and estimate work. The average engineering party on construction can handle a fifteen mile project as economically and as thoroughly as one of five miles or less, which is about the average length of present projects. These reductions in costs would be reflected in the increased mileage which it would be possible to produce with the savings that might be made with longer projects.

Each user of the highways pays a highway tax in some some form, whether we have good roads or poor roads. One must pay a good road tax in the form of license fees, gas tax, or direct tax, if the highways are to be

improved. And if unimproved, one pays the poor roads tax in the form of broken springs, excess operating costs and upkeep of motor vehicles, or smaller loads for horse drawn vehicles, all of which results in a much higher transportation cost. In every instance, the tax is greater if the roads of the State are in poor condition, than if they were adequately improved.

In its earliest years, the state highway agency was forced to concentrate primarily on graded and drained earth roads because of the necessity of providing a basic transportation system with the limited finances available.

Later, more attention was given to gravel surfacing as traffic increased. The biennial report of 1925-1926 recognized a need for still more

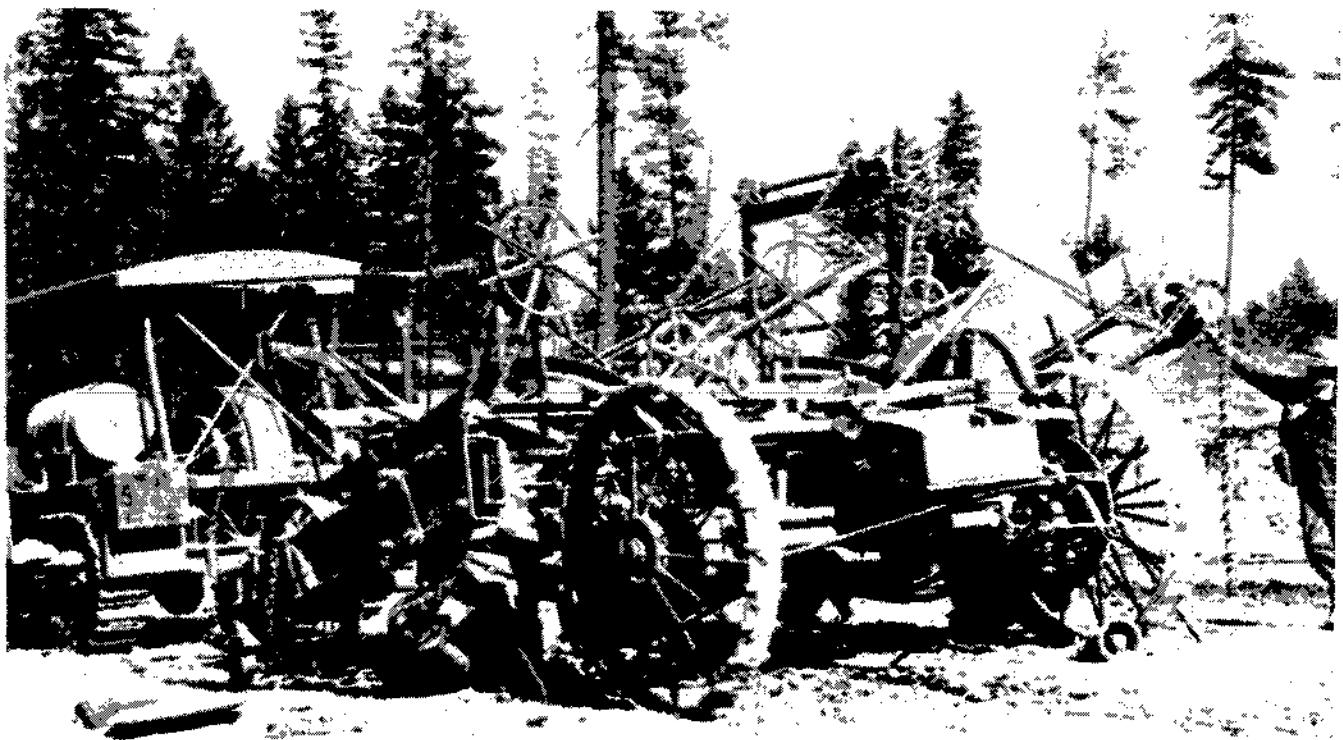
permanent types of highway surfacing, citing further growth in traffic as the reason. Specific comments include:

During the first biennium we have seen the motor vehicle registrations of the State increase nearly 33 percent, and the out-of-state or tourist traffic has increased tremendously. Traffic census counts have been taken on certain of our main arteries of travel and it has been found that traffic, both intra-state and out-of-state, has increased over 200 percent in several sections of the State. As a consequence, graveled surfaces have been unable to withstand this enormous traffic, especially since the peak load occurs at the season of the year when there is no moisture to provide normal bond in the surfacing material.

The average wastage of surfacing materials on the highways amounts to approximately 200 cubic yards per mile per year, which means at an average cost of \$2 per cubic yard, a loss of \$400 per year in surfacing rock. To continue this wastage would bankrupt the State, and at the same time the replacement of this material will mean the gradual depletion of the entire local supplies that at some future date will be needed for the construction of the higher types of hard surface pavements.

Unless it is possible to finance paving, the only solution is the treating of gravel surfaces with an asphaltic oil or tar to form a

Early model loading grader used to load wagons during the mid 1920's and later. A forerunner of really efficient earth moving equipment.



Spring conditions on U.S. Highway 95
near Cambridge were muddy in the
1920's.



compact bond and prevent abrasion by traffic of the loose particles of rock, with the consequent losses due to wind erosion. Several experimental sections have been constructed during the past season with gratifying results, which indicate that surface treatment should be resorted to immediately to insure the preservation of the present surfacing.

Surface Treatment Experimentation

Six experimental projects involving bituminous surface treatments were undertaken during 1926. Two of these projects were located in Ada County and the other four were in Kootenai and Shoshone Counties. Five involved use of Federal-Aid funds and one was financed entirely from State funds.

The first step in all projects was to prepare the subgrade by scarifying and blading to obtain a smooth base. A penetrating coat of asphaltic material was then applied and allowed to dry. Another coating of oil was then applied and covered by crushed gravel or rock chips with a maximum size of 3/4 inch. In most cases this material was spread mechanically but on one section it was drifted on by hand.

Asphaltic oils varied in grade on the various sections. On some sections the "oil" was applied cold and on other sections it was heated prior to distribution. Both gravity and pressure distributors were used. This material was always rolled after being bladed to assure that aggregate was thoroughly bedded into the "oil."

On some sections "bleeding" was serious during hot weather and additional screenings were applied as a blotter.

Cost of the four sections for which data was provided ranged from \$962 to \$1900 per mile. The average

cost was \$1,750 per mile. It was estimated that surface treatment could be applied on 995.5 miles of the State highway system at a cost of slightly more than \$1.7 million. This mileage was comprised of those roads where treatment could be accomplished without extensive reconstruction or resurfacing.

Road Equipment Development

The development of equipment for road construction really began to become effective about the mid-twenties. Motor patrols with sufficient power to grade the highway and to spread materials replaced pull-graders drawn by crawler tractors. Trucks were becoming commonplace replacing horse drawn wagons. Earth moving was still primarily dependent on graders and shovels since the tractor-drawn scraper had only been invented about 1923 and its general use began somewhat later. This equipment permitted roadwork to progress much more rapidly and economically.

Portable plants for bituminous mixing were also becoming available. These plants were capable of mixing as much as 50-60 tons per hours. Larger and faster trucks placed productivity on a par with the ability of motor patrols to spread the material. The important developments of the twenties all revolved round the general improvement of road building equipment.

The experimental surface treatment program, having been deemed successful, resulted in adoption of a "road-oiling" program under the primary responsibility of the Construction Engineer.

The designated State Highway System had reached 4,117 miles in early 1927 with 1,746 miles having at least a gravel surface. An evaluation made in the 1927-1928 biennial report stated:

Many topographic barriers to highway transportation had

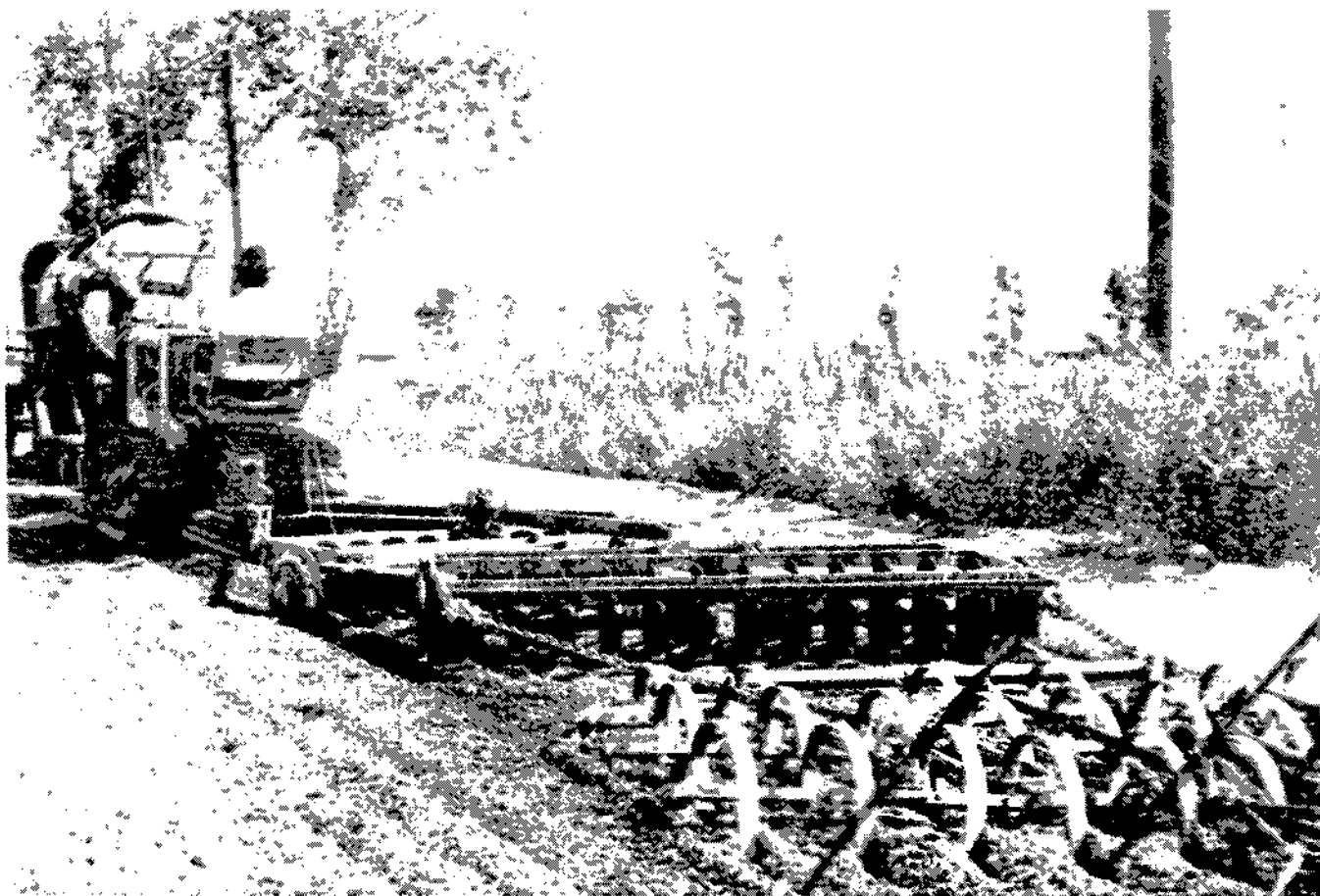
been overcome; yet many difficult and expensive sections remained to be constructed. Many community centers are connected by this system and isolated sections are rapidly being opened by improved highway facilities.

It might be said that highway development in Idaho has reached a peak of construction and that a reconstruction and maintenance period is at hand. It is obvious that highway construction in Idaho, together with road development throughout the United

States, has in effect started automotive traffic at an ever-increasing rate on both State and local roadways. Travel has increased on many sections several hundred percent in the last few years. Records of gasoline consumption for 1928 will show an increase of 18 percent over the previous year. Motor vehicle registration gives Idaho a gain of six percent over 1927. Idaho has also experienced an influx of tourist traffic. This increased traffic has proven that many miles of construction need reconstruction and betterments, particularly resurfacing, widening of roadbed and structures, and relocation to shorter routes.

Spreading "Hotmix" by hand labor in
1926 - Meridian to Nampa.





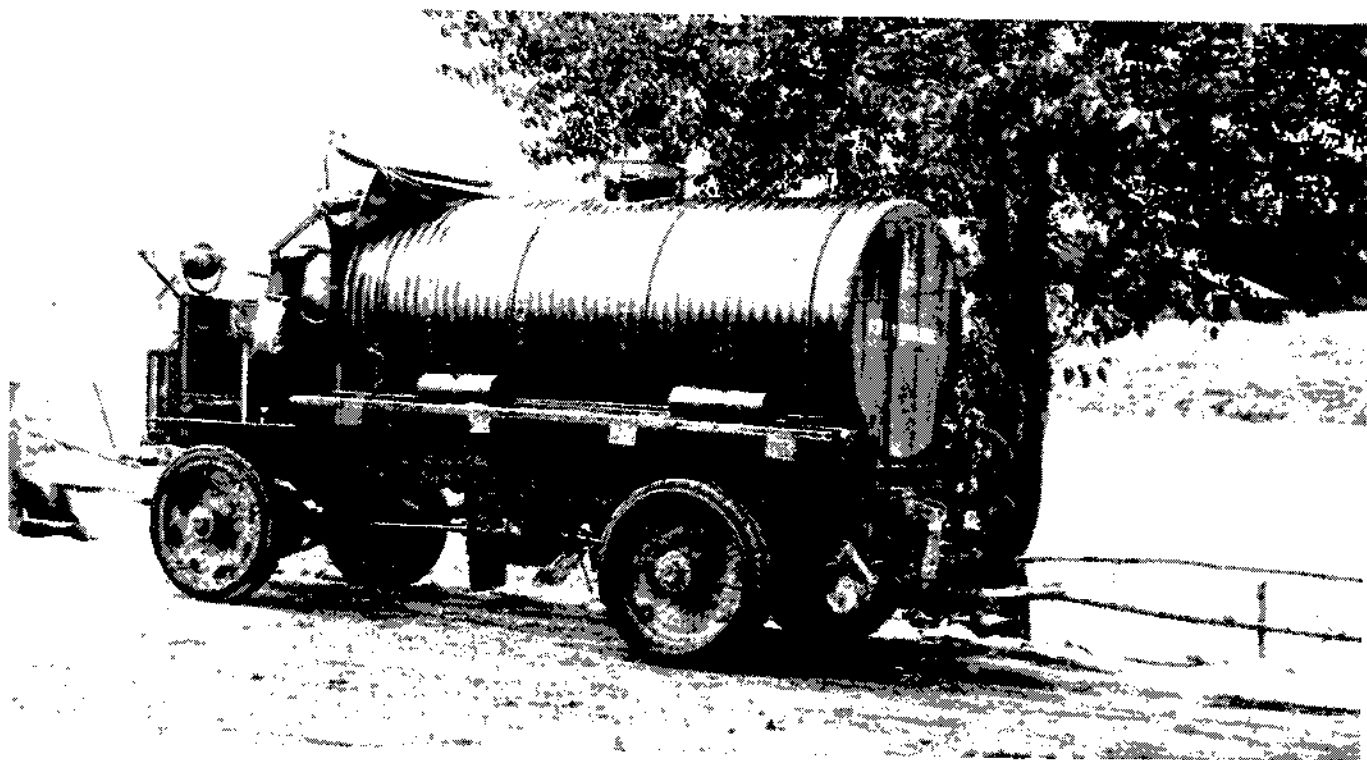
During the present biennium several hundred miles of highways have been reconstructed where a few years ago these same roads were considered adequate. An intensive reconstruction program must be continued if our investment of approximately \$35,000,000 is to be preserved. The maintenance and reconstruction problems will grow as the system nears completion and automotive traffic increases.

Results of the 1926 experimental "road-oiling" program were far from uniform but were successful enough to the point that a vastly expanded program was scheduled for 1927-1928. The objective was to provide a surface treatment which would accommodate 500 to 2,000 vehicles per day without excessive loss of material.

Farm discs and harrows used to help mix bituminous material into surfacing.

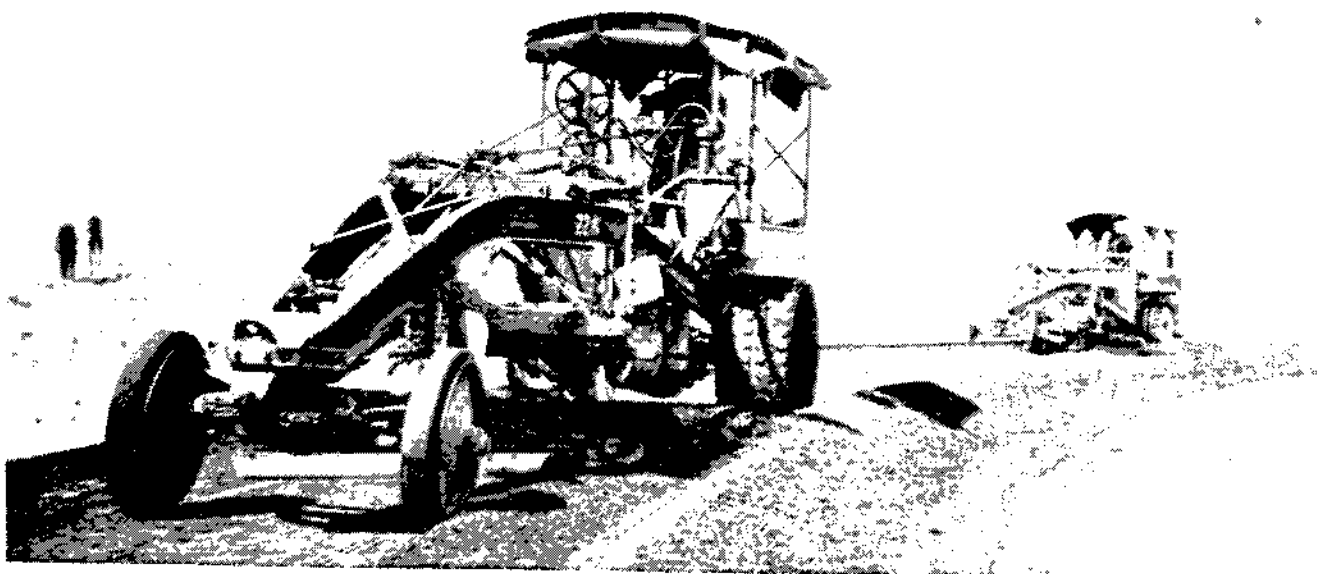
Accordingly, about 300 miles of highways were scheduled during the biennium for application of an asphaltic-bound surface to a depth of two to three inches. It was estimated this improvement would save \$450,000 annually in motor vehicle operating costs for the 300 miles of highways involved. Surfacing costs were estimated to be \$1,550 per mile, or \$465,000 for the total program.

The construction method used was based on experiments conducted by the State of California. The road bed was first scarified and new material added as required. Best results were obtained from aggregate containing a large proportion of crushed material. Oil was heated prior to application and sprayed on the aggregate under pressure.



A home built asphalt pressure distributor on old World War I truck. A case of ingenuity and make do.

Motor patrols mixing bituminous material into surfacing in the 1926-30 era. These machines displaced pull graders making it possible to oil hundreds of miles of road annually.



The aggregate and oil were mixed by disc and spring-toothed harrow and final-blading with motor patrols was done to coat the aggregate uniformly. After spreading to final grade, the "mix" was compacted by traffic.

The cost per mile for this surface treatment ranged from \$1,325 to \$1,900. The loss of surfacing material on untreated roads was eliminated. This was estimated to produce a savings.

The 1927-1928 construction program included the award of 133 contracts of which all but 12 were completed prior to the end of the biennium. This work covered a total of 1,398 miles at a cost of \$6,911,510. New construction represented almost two-thirds of the total cost and 30 percent of the total mileage.

Notable projects completed during the biennium included the last unimproved section of the Old Oregon Trail (U.S. Highway 30N) extending 8.4

miles westerly from the Wyoming State line. Another achievement included placement of a Portland cement concrete pavement on the section of road involved in the first construction project awarded by the first State Highway Commission (in 1913) south of Pocatello, a distance of 4.91 miles.

The development of bituminous treatment and the probability that this type of construction would, in many cases, serve as a base for future paving had a marked effect on roadway width. The necessity for foundation strength under the edge of treated surfaces led to the adoption of a 20-foot base course even where the wearing course was to be only 18 feet wide. Subgrade and base widths were increased to compensate for reduced shoulder width when the grade would

An early portable crushing and screening plant. However, it still took horsepower to move gravel into the crusher near Bliss in 1928.





Excavating a cut with a gasoline powered shovel and light dump truck east of Mountain Home in early 1920's.

be raised by future paving. As a result, practically all new construction and roadway widening on important routes was designed for a 20-foot paving standard and subgrade widths of 26 to 30 feet superseding the former 24-foot standard section. Shoulder widths were normally three feet on each side with additional width provided where possible. Shoulder slopes were 3:1 or 4:1 in order to eliminate deep ditches.

Right-of-Way and Contractor Problems

Problems were being encountered due to inadequate right-of-way width. Under State statutes, counties and highway districts were required to provide the State with highway right-of-way. In many cases this was limited to the width acquired by prescription

and rarely exceeded 50 feet. This width was inadequate for the new standards and it was necessary to assure future widths of 80 to 100 feet.

There were also numerous problems with contractors during this biennium. Most of these related to overruns in contract time. In some cases the delays were due to increased quantities or other unavoidable causes. A few were ascribed to failure of the contractor to start work on time or to provide adequate personnel and equipment. Many of the problems were due to an augmented program which was out of proportion to the resources of the contracting industry.

Sixteen contractors completed more than one contract during 1928 and seven had from three to nine jobs, some of them concurrently. Despite this situation, contract prices were decidedly advantageous to the State.

As of 1928 the estimated construction needs for State Highways was

\$35,871,500 or just slightly less than had been expended from 1913 including the 1928 program. Of this amount 46.69 percent was Federal-Aid funds, 31.60 percent local cooperative funds and 21.72 percent State funds.

Bituminous surface treatment was given a thorough testing during the previous biennium with very satisfactory results although some problems occurred due to moisture penetration. The program was expanded to cover an additional 450 miles during the biennium. This more than doubled the mileage of this type of surface on the State Highway System.

Standards for surface treatment were again raised. A higher proportion of mileage involved a surface

depth of three inches. Pavement edges were strengthened by an additional inch of thickness over a width of 18 inches. With the increasing heavy motor vehicle units traveling at higher rates of speed, the edges of the surface treatment showed a tendency to ravel. Thickening at the edges was done in an attempt to overcome this problem.

An increase in Federal-Aid appropriations was largely responsible for a substantial growth in the construction program during 1929-1930. Additional State matching funds were provided through the issue of \$1 million in tax

Early spring road conditions were often impossible during the early 1920's.



anticipation notes secured by the increase of one cent per gallon in the State gasoline tax. These notes were to be retired over a period of five years.

The total program of new construction, reconstruction and betterments during the biennium involved a cost of \$8.4 million and 2,002 miles, including 804 miles of new construction, 342.5 miles of reconstruction and 856 miles of betterment.

Legal Factors During The 1929-1930 Biennium

Two legal decisions had a far-reaching effect in establishing and clarifying the powers of the Department of Public Works ... or Bureau of Highways with regard to highway location. A decision of the Idaho Supreme Court in one case stated:

Removal of slide material using hand labor during the early 1920's.

The Legislature, in the absence of Constitutional restrictions, has the power to designate an agent to make the selection of necessary lands and to provide that such selection shall be prima facie evidence of its necessity. Only in the face of convincing evidence that these officials have abused their discretion or are guilty of actual fraud should we intervene.

Another suit was filed to prevent, by injunction, construction of a State highway. In this suit an attempt was made to show, among other things, that alternate routes were superior to the one selected; that the proposed route would not properly serve the area through which it passed, and that certain taxpayers had a vested interest in the existing highway location and a right to prevent its abandonment.



The District Court upheld the proposed location on much the same grounds as the Supreme Court decision quoted previously. It said, in effect, that location of the highway by authorized officials of the State should not be interfered with in the absence of evidence that there had been abuse of discretion, or fraud, or that the officials had acted capriciously.

Maintenance of roads was primitive in the early 1920's. The major effort was in drainage and smoothing gravel surfaces since paved surfaces were practically non-existent. Horse- or truck-drawn graders were used for ditching and the surface was frequently smoothed by using a timber drag designed to move material into depressions. Snow removal was first attempted on the Willow Creek Summit between Mackay and Challis (U.S. Highway 93).

No acceptable system of maintenance had been developed. The first night patrol system of maintenance had proven unsatisfactory. A truck-gang system was attempted in 1919-1920 and worked well in some areas and failed in others. Each District Engineer was responsible for the maintenance of all State highways in his District.

A patrol system of maintenance was finally determined to best meet operational requirements of that time. Maintenance sections varied from 10 to 17 miles in length. One man was assigned to each section. His duties were to drag the section after a rain, to mow weeds, to clean drains and to make minor repairs. He was equipped with a team of horses, truck or tractor, a grader, a drag, a plow and the necessary small tools. In the event of an emergency, he could call on the District Engineer for help. In most districts a large force of men was also needed to shape and prepare highways in the spring before the necessary moisture went out of the road bed. If the road bed was too wet, the equipment would mire down in ruts and mud...if too dry, it could get dusty and difficult to work.

The State highway maintenance program was plagued by a lack of adequate funds. The Legislature of 1921 did alleviate the situation to a degree by appropriating \$165,000 to supplement funds derived from motor vehicle registration fees used for maintenance. Allocations for maintenance were made semi-annually on a mileage basis and Districts were not allowed to exceed these appropriations. Maintenance expenditures for 1921-1922 were \$408,287.

Highway mileage maintained as of January 1 for 1921, 1922 and 1923 was:

<u>Year</u>	<u>Earthen</u>	<u>Graveled</u>	<u>Paved</u>	<u>Total</u>
1921	506.80	497.24	6.50	1,010.54
1922	419.04	764.71	38.64	1,222.39
1923	553.49	1,074.28	66.23	1,694.00

State highway mileage maintained as of 1923 consisted of 477 miles of graded earth, 794 miles of road surfaced with gravel or rock and 51 miles of paved highway for a total of 1,322 miles out of the 3,994 miles designated State Highway System. It was then estimated that 2,000 miles of roadway would be maintained by 1925.

Horse drawn timber drag used to smooth earth and gravel roads.





Small horse drawn grader used in maintaining roads and ditches.

At this point, reconstruction of highways was beginning to be a problem as indicated in the 1925-1926 biennial report:

Considerable mileage of the State highways was constructed from eight to ten years ago, when traffic demands were not so great as at present. These sections now require realignment, and the widening of both roadway and structures. Furthermore, the old gravel surfacing was mostly pit run

material which contained a great deal of oversize. Today, it can be classed as only a base course on which to place a good wearing surface. It has served its purpose by furnishing a passable road and by keeping traffic out of the mud, but present day conditions demand an improvement. This type of reconstruction will require more attention each year, though the original investment is not lost since traffic has been accommodated for a number of years, and there is still an excellent foundation left to build upon.

Although financing remained a problem in 1925-1926, the gap between the cost of what was considered an adequate program and funds actually available was substantially reduced during this biennium because of the increase in the gasoline tax and increased fuel consumption accompanying higher traffic volumes. The Bureau of Highways was confronted with the necessity of initiating a more costly program of equipment acquisition, however, due to a sharp decrease in the flow of war surplus material.

The Maintenance Engineer was given responsibility for all maintenance activities and the position of District Maintenance Engineer was abolished. District Engineers assumed more direct control over maintenance through the State Maintenance Engineer. Several Resident Engineers were assigned maintenance responsibilities in order to train personnel in both construction and maintenance operations.

The total designated State Highway System as of December 31, 1926 was 4,116.7 miles, of which 2,133.6 miles were under State maintenance.

Maintenance expenditures during the 1925-1926 biennium were \$953,531.

Highway Numbering

The U.S. numbered highway system, constituting a connected system of roads throughout the country, was selected by the American Association of State Highway Officials (AASHO) and approved by the U.S. Bureau of Public Roads in 1926. Even numbers were assigned to east-west roads and odd numbers to north-south roads. Routes designated in Idaho at that time formed the basis of the system as it exists today and included:

U.S. 2	U.S. 91 (I-15)
U.S. 10 (I-90)	U.S. 191 (U.S. 20)
U.S. 30 (I-84)	U.S. 93
U.S. 30N (I-86)	U.S. 95
U.S. 30S (S.H. 81)	U.S. 95A (S.H. 97)

Maintenance operations during 1927-1928 were carried out in a manner very much like that used in prior years. The unit for routine maintenance was the patrol section, usually 15 to 25 miles in length. Each section was under the direct supervision of a Maintenance Foreman or patrolman. He was equipped with one or more graders, trucks and other miscellaneous equipment as necessary. Special maintenance, such as removal of large slides, resurfacing, or other work beyond the capabilities of the ordinary crews was handled by an extra gang with special equipment.

Maintenance supervision was modified by using Resident Engineers as overseers. Maintenance Supervisors were employed only in Districts One and Two where additional supervision was necessary because of the large mileage under maintenance.

Budgeting for maintenance operations was placed under a new system involving a reclassification of regular expenditures to reflect severity of field conditions and traffic volumes. Special allotments were made for stock-piles, reconstruction, betterments and other work outside the scope of routine maintenance.

The total State highway system as of December 31, 1928 included 4,258.61 miles. Mileage under State maintenance in 1927 and 1928 was:

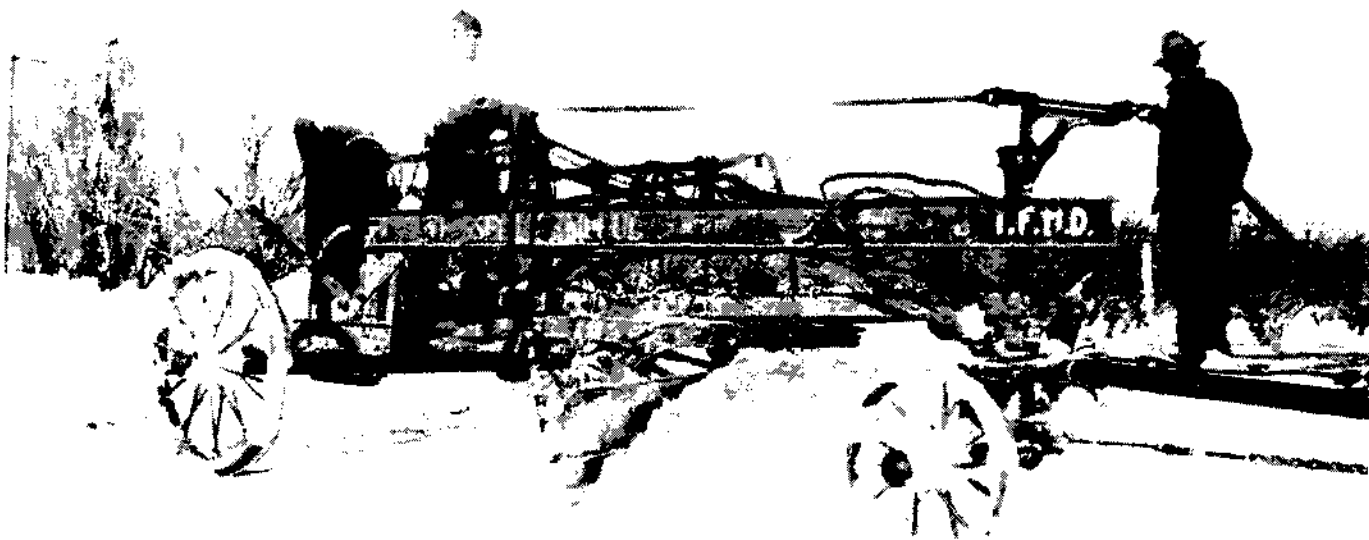
Surface Type	1927 Mileage	1928 Mileage
Graded earth	371.71	388.15
Gravel & crushed rock	1,589.87	1,792.83
Bituminous treatment	24.99	89.22
Paved	<u>115.06</u>	<u>136.80</u>
Total	2,101.63	2,407.00

Snow removal was a fast growing part of State maintenance operations beginning in 1927. It was becoming clear that vehicle owners wished to use their vehicles all year and not store them during winter months as had often been the case in prior years. Improved roadway surfaces were largely responsible for the year-round use.

The Bureau of Highways had previously encountered difficulties in keeping some of the main highways open due to inadequate equipment and lack of snow fence. Purchase of two car loads of snow fence and new snow plows coupled with an unusually mild winter made it possible to keep a substantial mileage open during 1927-1928 and to open other roads earlier than usual in the spring. As a result, winter maintenance for snow removal was planned for the 1928 season on the following routes:

U. S. 30 - Montpelier - Oregon State
Line
U. S. 89 - Montpelier - Utah State
Line
U. S. 93 - Twin Falls - Shoshone
S. H. 23 - Carey - Hailey
U. S. 95 - Caldwell - Moscow
U. S. 10 - Mullan - Washington State
Line
U. S. 95 - Coeur d'Alene - Copeland
Junction
S. H. 8 - Moscow - East and West
U. S. 2 - Bonners Ferry - Montana
State Line

A traffic count was conducted in 1928 at several of the more important



Early highway district attempts at snow removal using a pull grader - 1928.

sections at various times. This was the first recorded traffic study made in Idaho and it showed that through traffic was about equally divided between foreign cars and Idaho cars, during the summer months on U. S. Highway 30, except near centers of population.

Maintenance operations continued in essentially the same manner in 1929-1930. The new system of allotting maintenance funds according to field conditions was proving to be satisfactory. Large expenditures were made to prepare roads for bituminous surfacing and on sections worn to the point of needing immediate repair. Snow removal operations were expanded to include additional highway sections. There were 2,674 miles of the 4,559 mile State Highway System under State maintenance as of December 31, 1930.

The Maintenance Division was also responsible for a traffic census sponsored jointly by the Department of

Public Works and the U. S. Bureau of Public Roads. This survey lasted for a period of one year beginning in September 1929. Counts were obtained at 55 locations on the State Highway System with seasonal factors for distribution determined. Data were obtained in regard to the composition of traffic, origin and destination of vehicles, whether those vehicles were owned by rural or city dwellers, purpose and frequency of trips and a variety of other information.

The survey showed traffic volumes on 2,750 miles of main highways distributed as follows:

<u>Average Daily Traffic (ADT)</u>	<u>Miles</u>
0-299	1,578
300-699	770
700-1399	283
1400-3499	113
3500 or more	6
Total	2,750

It was estimated that these highways carried a total of 1.1 million vehicle miles of travel during the average

day. Out-of-state vehicles comprised 27 percent of the total traffic load.

Summary 1919-1930

The era of the twenties showed a far greater development toward an integrated system of highways than earlier proponents of good roads could have hoped for. The rapid development of mechanical equipment, trucks, patrols and portable crushing plants, bituminous plants and the development of surface treatments did wonders in providing all-weather roads. Comparing horse-drawn equipment of the early

twenties with its motorized successors of the late twenties is as great a contrast in the construction field as comparing the stage coach with the railroad Pullman car. At the beginning of the thirties decade it was possible to provide many miles of new road annually with dust-free bituminous surfaces and to keep most roads open all winter except during the most severe storms. Although later decades would provide larger, faster and more efficient equipment together with lower unit construction and maintenance costs...the overall changes occurring in the decade of the twenties were at least as remarkable as any to come.

CHAPTER VI

THE GREAT DEPRESSION ERA

1931 - 1940

The stock market crash of October 1929 and the resulting mass unemployment brought forth Federal and State legislation directed toward minimizing the economic ravages of the Depression. Much of this legislation was pointed toward employing as many people as possible through public works programs.

Several programs were initiated by the Federal government providing funds toward goals of developing a unified National highway system and providing safer highways. These programs established detailed procedures governing hours worked, wages to be paid, selection of workers, all intended to distribute the work among local people as much as possible.

These public works programs during the mid-thirties comprised nearly one-third of the total construction in the United States. Improvement of highways became one of the most important elements of the total public works program. Increased employment was a dominant note of the highway program during this period. All Federal appropriations carried labor provisions on all contracted work financed in part with Federal funds. The State utilized similar provisions for wholly State funded work. Generally these provisions specified a maximum use of hand labor and a requirement that this labor come from listings of the Employment Service. All of these measures had a major impact on highway development.

In addition to the emergency highway funds provided by the Federal government, the State obtained funds from the usual statutory sources. Fig. 2 in the Appendix shows the source and amount of funds

used during this economically depressed era. Matching of Federal funds was difficult at times. Also, because of the Depression, there was considerable agitation to reduce automobile license costs to a flat \$5.00 and to reduce fees on pickups and farm trucks. This finally resulted in legislation to lower these license fees during the late thirties.

Revenues from highway user taxes in Idaho have been traditionally shared between the State and local units of government. Historical evidence also indicates long-standing competition in dividing these revenues. As a result, the State's share of the motor vehicle licence fees has slowly but consistently been reduced over the years. Local pressures for a larger share became especially heavy in 1931 and the years immediately following.

This situation was partially due to the characteristics of the State. In 1931, Idaho was the 12th State in land area, 41st in valuation, 43rd in population and 35th in completed highway mileage on the Federal-Aid System. With a land area of 83,354 square miles, 76 percent was held as U.S. Forest reserves, Parks, State or other public lands leaving only 24 percent on the tax rolls. Farm land made up only 17.5 percent of the total land area and of this, about one-half was actually low value pasture land. Thus, a picture of a vast area, sparsely populated, and mile upon mile of highways carrying little traffic is presented. Most of the population was concentrated in widely dispersed communities needing interconnecting highways to move farm products, timber or mine products to the centers of population or rail connections.

The financial plight of all governmental units was a great factor in the competition for available funds. Forty-four counties and 126 highway districts were each responsible for operating local highway systems aside from the State Highway System. These units of local government had bonded themselves heavily, not only for their own road systems, but to assist in the development of the State Highway System. Counties and highway districts had loaned monies to the State and, although repaid, it limited funds available to the State.

During this era, the Legislature required cooperation of the counties and highway districts by specifying that these units furnish right-of-way for the highway system within whose jurisdiction construction occurred. In the early thirties the expansion of the highway program found many local units without available funds to furnish the right-of-way necessitating the Department of Public Works, Bureau of Highways, to purchase the needed land. Because of the depressed economic condition, tax revenues were declining as unemployment was rising. It is understandable, therefore, why competition by local units of government for an ever-increasing share of State-raised revenue existed.

The 1931 Legislature resisted pressures to increase the local units share of State-raised revenue, reasoning that funds under State control were expended in one county or another in any case and the real question was one of who should control these expenditures. The Legislature's position was that with the State handling these funds a more equitable distribution could be made by affording a higher proportionate share to those counties with smaller resources and holding down the distribution to the more aggressive counties having greater local resources.

State revenues during the 1933-1934 period were slightly less than in the previous biennium and local cooperative funds declined by over

\$900,000, or about 90 percent. State revenues did increase slightly in each biennium thereafter until 1937-1938. Motor fuel taxes were then up from the 1931 level by 15 percent and registration fees had risen 20 percent. Legislation enacted by the 1938 Session of the Legislature, however, resulted in a very severe reduction, \$1.5 million, to the Bureau of Highways. This legislation reduced the annual license fee for automobiles to a flat \$5.00 and also decreased fees for pickups and farm trucks.

Twenty percent of the proceeds from registration, but not less than \$1 million of these funds, were allocated to the counties and highway districts to make up any loss to these local jurisdictions from the reduced fees. Revenues were never adequate during this era, as in prior years, and competition for available funds continued. Had it not been for the Federal-Aid Program, continued by the Congress during this period, for funding a major portion of the construction for trunk highways, together with Forest Highway funds, Federal Land funds and Emergency Relief funds, very little construction would have been possible.

Federal Legislation

The 71st Congress substantially increased authorization of Federal-Aid funds for highway construction for the fiscal years 1930 and 1931 and continued authorizations at the higher level for the 1932 and 1933 fiscal years.

As a result of this action, regular Federal-Aid available to Idaho for fiscal year 1931 was increased by \$933,902 to a new level of \$1,558,492. The State also received an allocation of \$1,554,594 for fiscal year 1931. The authorization for Forest highways was also increased and provided \$545,534 in additional revenues available to Idaho.

Responsibility of the Federal Government for construction of trunk



Mandatory hand labor used on highway construction in the early 1930's.

highways across public lands was also acknowledged by passage of the Oddie-Colton amendment to the Federal-Aid Highway Act. The Idaho share of these funds was first available in the 1931 fiscal year in the amount of \$175,199.

As an emergency step toward unemployment relief, Congress further authorized \$80 million for advances to the States which could be used for the State's share of matching funds for highway construction. Idaho received \$1,008,035 from this apportionment to be repaid to the Federal government by deductions from future apportionments over a period of five years beginning with the 1933 fiscal year.

The Federal-Aid Highway Act was further amended in 1933 to provide that highway mileage in National forests and other Federal reservations be excluded in computing mileage eligible for inclusion in the Federal-Aid highway system under the seven percent

limitation. As a result, seven new routes with an aggregate length of 429.5 miles were added to the Federal-Aid highway system. The total system length then became 3,115.9 miles of which 468.4 were within Federal reservations.

Regular Federal-Aid construction funds apportioned to Idaho for the fiscal years 1931 and 1932 amounted to approximately \$1,530,000 per year. The amount varied slightly from year to year because of changes in the value of the factors included in the distribution formula involving land area, population and post road mileage. In addition to this regular apportionment, Idaho also received emergency funds of \$1,008,035 in 1931 and \$1,505,912 in 1932. Although these emergency funds resulted in an immediate increase in the Federal-Aid construction program, there was no long-range effect since the funds involved were to be returned to the Federal government through deductions from future apportionments over a period of 10 years commencing with fiscal year 1938.

Regular Federal-Aid apportionments were discontinued from July 1, 1932 to June 30, 1935 and replaced by special funds that did not require matching or repayment. These funds approximated those available to the State under the prior program. The funds were to be spent on projects within specified geographical locations for labor and conforming to unemployment relief regulations.

This legislation, referred to as the National Industrial Recovery Act (NIRA) of June 16, 1933 provided for construction of highways as a means of furnishing employment during fiscal 1934. NIRA funds amounted to \$4,486,289, through the Public Works Administration, for use on Federal-Aid roads and extensions through cities as well as secondary and feeder roads. An additional amount of \$265,590 was provided for public lands roads. While none of these funds required matching, no assurance was given for a contin-

uing program such as regular Federal-Aid which had permitted the design and execution of a continuing program.

On June 18, 1934, the Congress appropriated \$2,277,486 in a direct grant for the fiscal year ending June 30, 1935 and re-established regular Federal-Aid apportionments for 1936 and 1937 with \$1,500,000 to Idaho for each year. This legislation also repealed provisions limiting total cost to \$30,000 per mile and the limitation that no funds could be used within towns over 2500 population. The \$6,606,234 of Federal funds available represented 56.7 percent of the total monies spent for construction on the State Highway System during this three year period. The average for the 15 years ending in 1932 had been 31 percent of the total.

Depression-era moving day saw all modes of vehicles on the roads.



The Hayden-Cartwright Act was also enacted into law on June 18, 1934. It authorized an appropriation to provide for emergency construction of public highways and amended the Federal-Aid Road Act of 1916. This Act authorized a grant of Federal funds under NIRA in addition to any other funds allocated under NIRA. These funds were to remain available until expended. The Hayden-Cartwright Act also established a provision that regular Federal-Aid for 1936 and 1937 could be used by the states to make plans for cooperative work using Federal-Aid. This legislation gave Idaho an additional \$2,277,486 for 1935 which did not require State matching funds. The regular Federal-Aid funds for 1936 and 1937 did require State matching. This Act required 25 percent of the \$2,277,486 appropriation to be used on secondary and feeder roads amplified to include "market roads, rural free delivery mail roads, and public school bus routes."

The Hayden-Cartwright Act and regulations of July 7, 1934 specified a reduction in Federal funds by one-third to any state if the Secretary of Agriculture found that the state was applying for highway purposes, less than the amount collected from State motor vehicle license fees, gasoline tax, or any other special taxes on motor vehicle owners and operators. The maximum loss to Idaho could have been \$500,000 per year if this penalty had ever been invoked.

In summary...the total Federal-Aid funds available from these sources were:

1932-1933 Emergency Funds	\$ 1,505,912
1932-1933 Regular Federal-Aid	1,330,448
1932-1933 Public Domain Funds	103,580
1933-1934 National Recovery Adm.	4,486,249
1933-1934 Public Domain Funds	265,590

1933-1934 NRA Emergency	<u>201,606</u>
Total	\$ 7,893,386

In addition to the above amounts, \$3.3 million was made available to the U.S. Bureau of Public Roads each year for expenditure on Forest highways within Idaho.

Although there was at this time no tie between Federal excise taxes paid by highway users and Federal-Aid funds, studies by the U.S. Bureau of Public Roads indicated that the basic Federal-Aid program was more than supported by highway user taxes. As of March 1, 1934, highway users had paid \$1.5 billion in Federal automotive taxes. Federal-Aid for highways spent during this same period amounted to \$1.47 billion.

As of July 2, 1935, the mileage of Federal-Aid Primary highways in Idaho was as follows:

Allowable mileage outside Federal reservations	2,814.0
Designated mileage outside Federal reservations	2,806.5
Undesignated mileage	7.5
Mileage within Federal reservations	589.2
Total designated Federal-Aid System	3,395.7

Federal-Aid receipts during the 1935-1936 biennium amounted to \$6,771,106 derived from the following:

Regular Federal-Aid	\$ 1,082,020
Public Domain Funds	341,101
Works Program-Highways	1,629,150
Works Program-Railroad Crossings	666,772
National Recovery Administration	<u>3,052,063</u>
Total	\$ 6,771,106

State matching funds were required only for regular Federal-Aid funds with the matching ratio established at 59.84 percent. Earlier Federal-Aid legislation was amended relieving the states of the necessity to refund advances against future allocations as had been provided in the 1931 and 1932 Federal-Aid Highway Acts. Thus, these advances now actually became additions to the construction program.

In addition to the Federal-Aid reported above, there were 23 Forest Highway projects completed by the U.S. Bureau of Public Roads at a cost of \$2.1 million. These projects were built without State matching funds except for providing some rights-of-way where private land was involved. The State spent only \$12,732 for this purpose during the biennium. In addition, local units of government supplied \$14,657 during this period.

The Federal-Aid highway program again underwent substantial changes in 1937-1938. Although Idaho received approximately \$1.0 million in Federal emergency funds during the biennium,

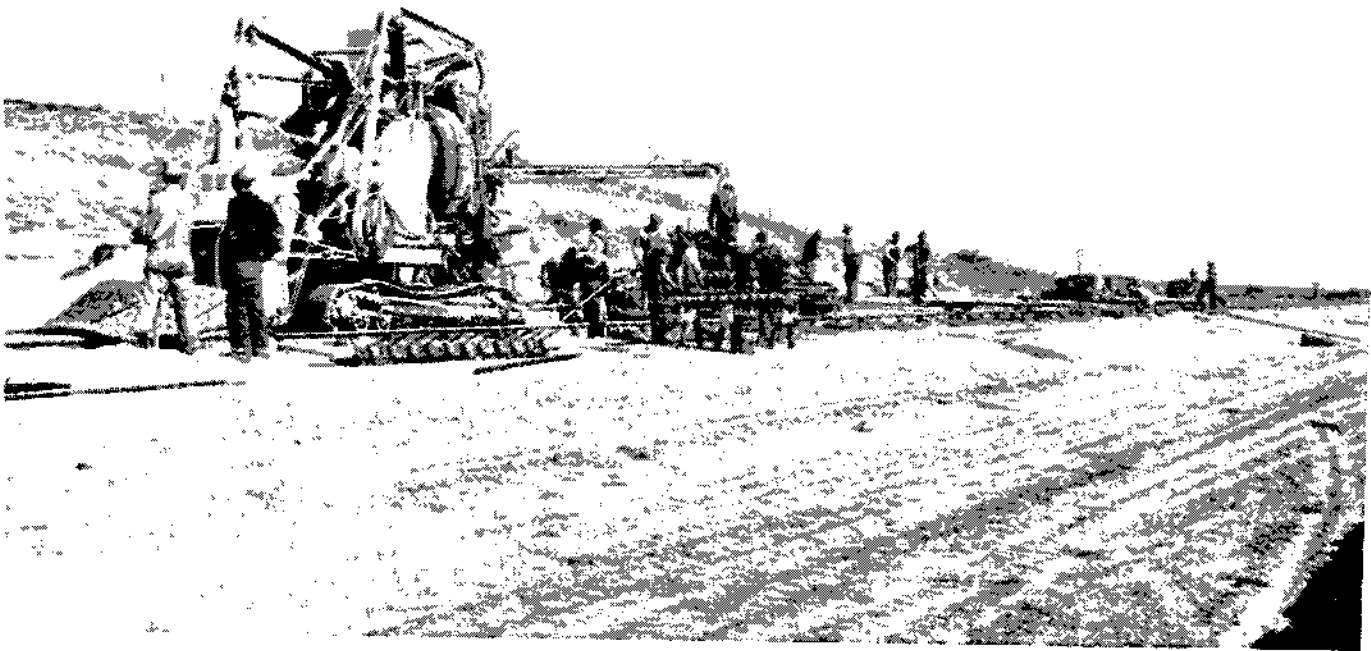
the major part of the Federal-Aid construction program was regulated by provisions of the Federal-Aid Highway Act of 1934. With this return to normal financing ratios, State funds were again required to match all Federal-Aid except Forest Highway and Public Lands funds.

The Federal-Aid Highway Act of 1934 had also made other changes in highway programs. One of these was to provide Federal-Aid for construction of secondary or farm-to-market roads. These roads were not a part of the Federal-Aid primary system and could be under either State or local jurisdiction. There were similar provisions under the Federal emergency program but these involved scattered projects with no system characteristics.

Total income to Idaho under the several available Federal-Aid authorizations during 1937-1938 was \$4.3 million.

Concrete arch bridge over Payette River north of Smiths Ferry completed in 1933. (State Highway 15 now State Highway 55.)





Concrete paving McCammon-Inkom in 1930's.

Federal-Aid for the 1939-1940 biennium was only \$3.6 million, some \$700,000 less than during the preceding two years. Some of this decrease was due to the phasing-out of projects financed under Federal emergency relief employment programs. There was also a reduction of about \$400,000 in the amount apportioned to Idaho under the regular Federal-Aid program.

State Legislation

The Idaho Legislature, during the 1931-1940 era, enacted several statutes affecting the operation of the Department of Public Works - Bureau of Highways in addition to their fiscal considerations.

The 1931 Legislative Session authorized acquisition of State highway right-of-way by either the State or local units of government or by the two as a cooperative effort. Prior to this time such acquisitions were the sole responsibility of local units of government. The 1933 Legislature extended this authority to acquire right-of-way

for snow fences under power of eminent domain.

The 1931 Session also provided for a motor fuels refund for gasoline tax on fuels used for non-highway purposes. The fund was financed by an allocation of 10 percent of the proceeds collected from the gasoline tax. Refunds were to be administered by the State Department of Law Enforcement.

Other important legislation enacted by the 1931 Session provided procedures for consolidating highway districts on a voluntary basis. Because of further concern about the multiplicity of local units involved in highways, the 1933 Legislature enacted legislation to prohibit forming any additional highway districts.

The gasoline tax statute was recodified by the 1931 Legislature and provision also made that any remaining funds in excess of \$15,000 in the Motor Vehicle Fund as of December 31 of any year be transferred to the State Highway Fund.

There was considerable pressure on the 1933-1934 Legislature to reduce

Concrete paving McCammon-Inkom in
1930 - one half width at a time.



passenger car registration fees to a flat \$5.00 per unit regardless of vehicle size or weight. The Legislature compromised by reducing these fees an average of 14.5 percent. This action cut revenues to counties and highway districts by almost \$208,000 in 1933. State highway income was reduced by slightly over \$30,000 for the same year.

During the 1937 legislative session, a determined effort was again made to reduce passenger car license fees to \$5.00 per vehicle. Two bills to effect this were introduced and both were defeated. This legislation would also have allocated proceeds from 20 percent of the State motor fuels tax to local units to offset their loss in revenue under the license fee reduction.

The Department opposed this legislation since it would have further depleted State highway funds which were already inadequate in relation to needs. News media attitude in regard to this opposition is summarized. By the following quotation from an editorial appearing in the Idaho Statesman of February 8, 1937:

It is dishonest of the State to keep on collecting that extra one cent (gasoline tax) from the motorist unless it is applied to relieving part of the tax burden he is now carrying. This is true because the one cent was levied to finance an emergency highway construction program. It has been more than 18 months since those bonds were retired.

An attempt was subsequently made to enact the \$5.00 license fee through an initiative but it failed for lack of signatures. The 1939 Legislature, however, enacted a \$5.00 registration for automobiles and farm pickups and introduced a reduced fee schedule for other farm trucks. The fee basis was also changed from vehicle rated capacity to declared gross vehicle weight.

Companion legislation enacted by the 1939 Legislature provided that 20 percent of revenues from the State motor fuels tax but not less than \$1 million annually be allocated to counties and highway districts to offset the loss in revenue to local units from the reduced vehicle license fees. Distribution to the individual local units was to be prorated to the local units by the amount of revenue collected by motor vehicle registration fees in the preceeding year.

The 1933 Legislature had enacted a formula to determine maximum allowable vehicle weights. This formula, $W=600(L+40)$, was nationally recognized and can be expressed as the maximum allowable weight is equal to 600 times the actual vehicle length in feet plus 40.

The 1937 Legislature revised this formula for allowable vehicle loads. Maximum axle load was increased from 16,000 to 18,000 pounds. Maximum gross load was increased from 50,000 to 68,000 pounds. Maximum loads for various axle spacings were specified in lieu of the formula $W=600(L+40)$. The basis for permissible loads per inch of tire was changed from the width between tire flanges to the manufacturer's specified width. This made enforcement a simpler matter since flange widths were difficult to determine.

Another action taken by the 1937 Legislature increased maximum speed limits for vehicles weighing 10,000 pounds or more, whether loaded or empty, from 30 to 45 miles per hour.

Legislation was also enacted to require licensing of any individual or firm prior to entering into any public works contract exceeding \$5,000. The initial license fee was \$100 with the cost of renewal \$50 per year. License revenues were paid into a Contractors License Fund to pay the cost of administering the Act by the Commissioner of Public Works.

The 1933 Legislature also enacted House concurrent Resolution No. 6 which directed surveys as follows:

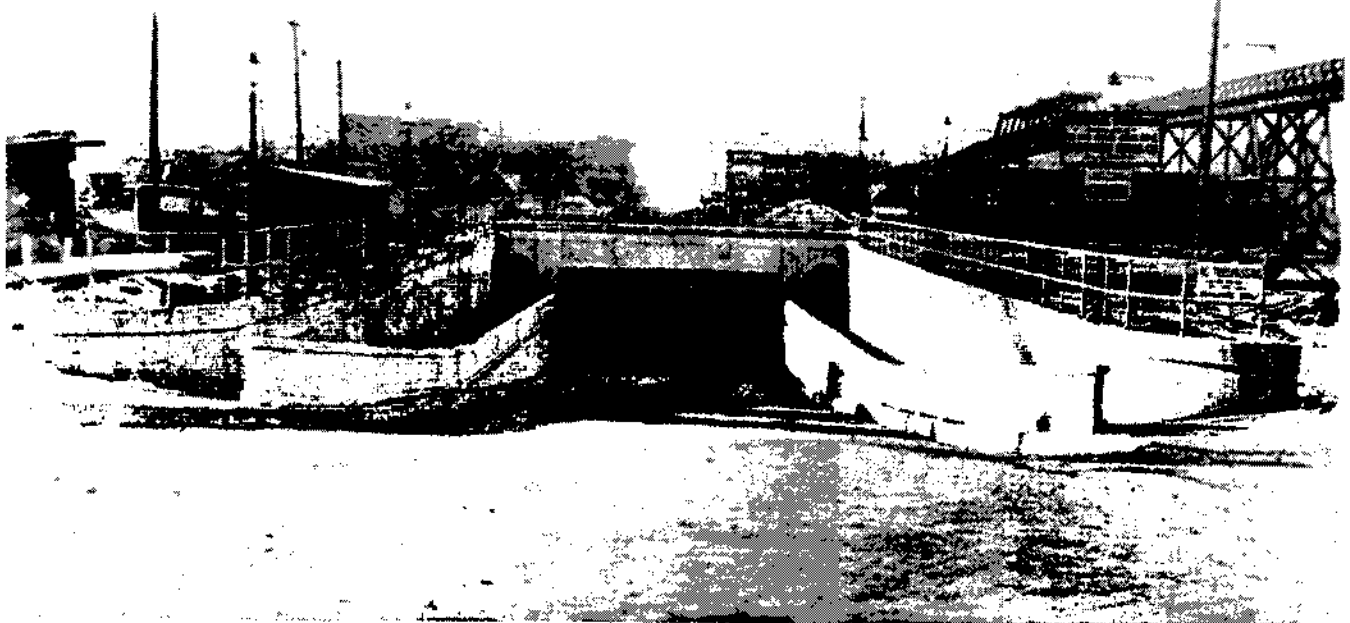
Whereas, in the said state there are many evasions of gasoline tax: Now Therefore, Be it Resolved, by the House of Representatives, the Senate concurring, that the Bureau of Highways of the Department of Public Works is hereby authorized and directed to undertake and make a study looking forward to the possibility of the State of Idaho taking over the control and maintenance of the County road systems, the rate to be charged for such control and maintenance, and the financial set up thereof; that the said Bureau of Highways conduct an investigation and inquire into the possibility of having

the ten Northwestern States adopt and enact uniform gas tax, traffic laws and export laws, and obtain such information as would be necessary to bring about such results, said Bureau is also directed to study the matter pertaining to rates for hauling to be charged by trucking companies for information only. It is hereby recommended that said Bureau study the North Carolina plan and its adaptability to Idaho's highway problems.

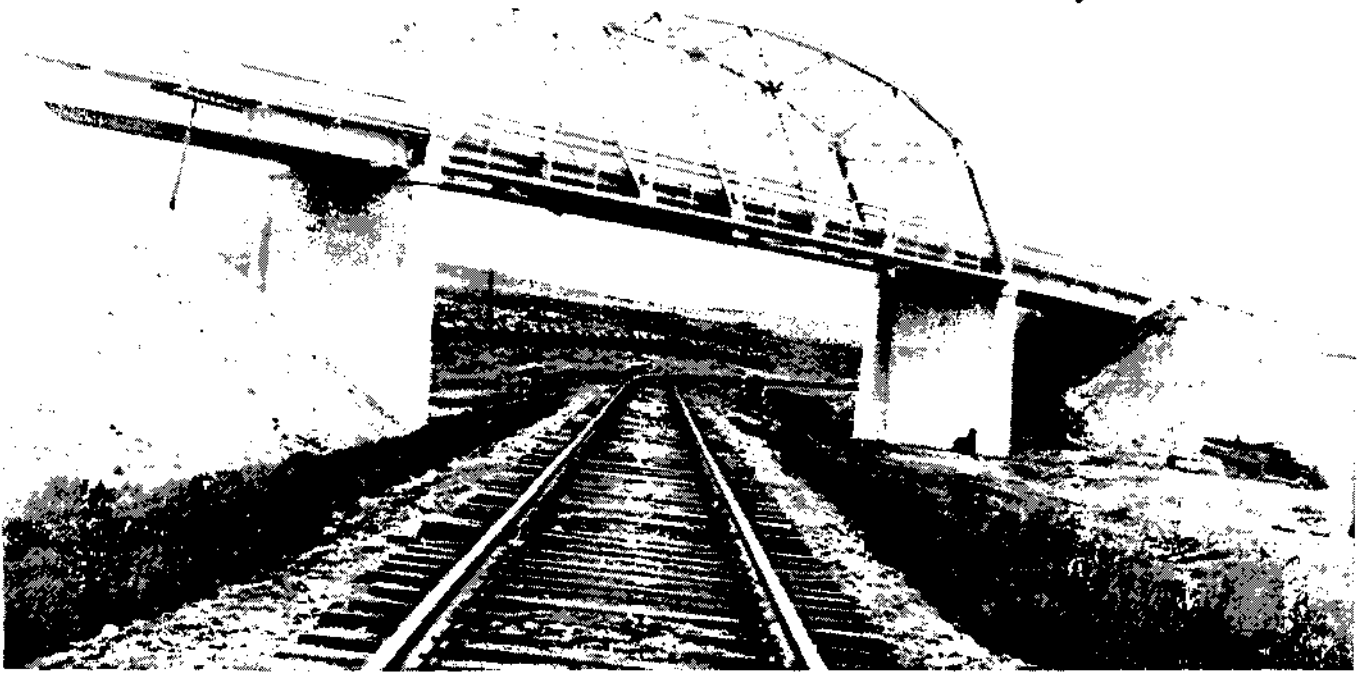
A study report and recommendations were required to be submitted to the Governor prior to the 1935 legislative session.

The 1933 Legislature had also provided a minimum right-of-way

Pocatello Subway - completed 1935-36.



Idaho-Montana Highway
Monida Overhead
1936.



Typical rail overcrossing. Many similar structures were built in the mid 1930's.

width of 50 feet for new highways. Greater widths could be provided as required for proper construction and/or maintenance.

No significant legislation relating to highways was enacted during the regular Legislative Session of 1935. There were, however, a number of changes during a special session convened on July 8, 1935 because of litigation.

Early in 1935 the Bureau of Highways scheduled construction of a railroad underpass on the Old Oregon Trail in Nampa (Eleventh Avenue). L. B. Powell brought suit to enjoin building the structure on the grounds that existing statutes gave cities of more than 6,000 population exclusive jurisdiction over sections of State highways within their corporate limits. The District Court upheld this contention, thus blocking the project.

Governor C. Ben Ross convened a special legislative session to address this situation. One result was passage of a statute which modified the definition of "State highway" to include sections within all cities.

Another action gave to the Department of Public Works exclusive supervision and control over designation, location, maintenance, repair and reconstruction of all State highways. The Department was also authorized to receive and expend Federal-Aid funds for construction off the State highway system.

The laws of the special session also provided that the Department had control of State highways within counties and highway districts. In addition, the Legislature ratified prior contracts awarded for projects within cities.

The case of Powell, et al versus McKelvey and Stemmer was appealed to the Idaho Supreme Court which upheld all the special legislation discussed

above. The court also denied damages to owners of abutting property by reason of the construction.

That special legislative session also imposed a tax of \$5.00 per unit on all vehicles driven or towed into or across the State intended for sale. This caravan fee was allocated to the Motor Vehicle Caravan fund in the State Department of Law Enforcement to be used for administration and enforcement of the Act and to cover any added expense of policing highways. Any funds in excess of the amount required for the purposes specified were to be transferred to the State Highway Fund.

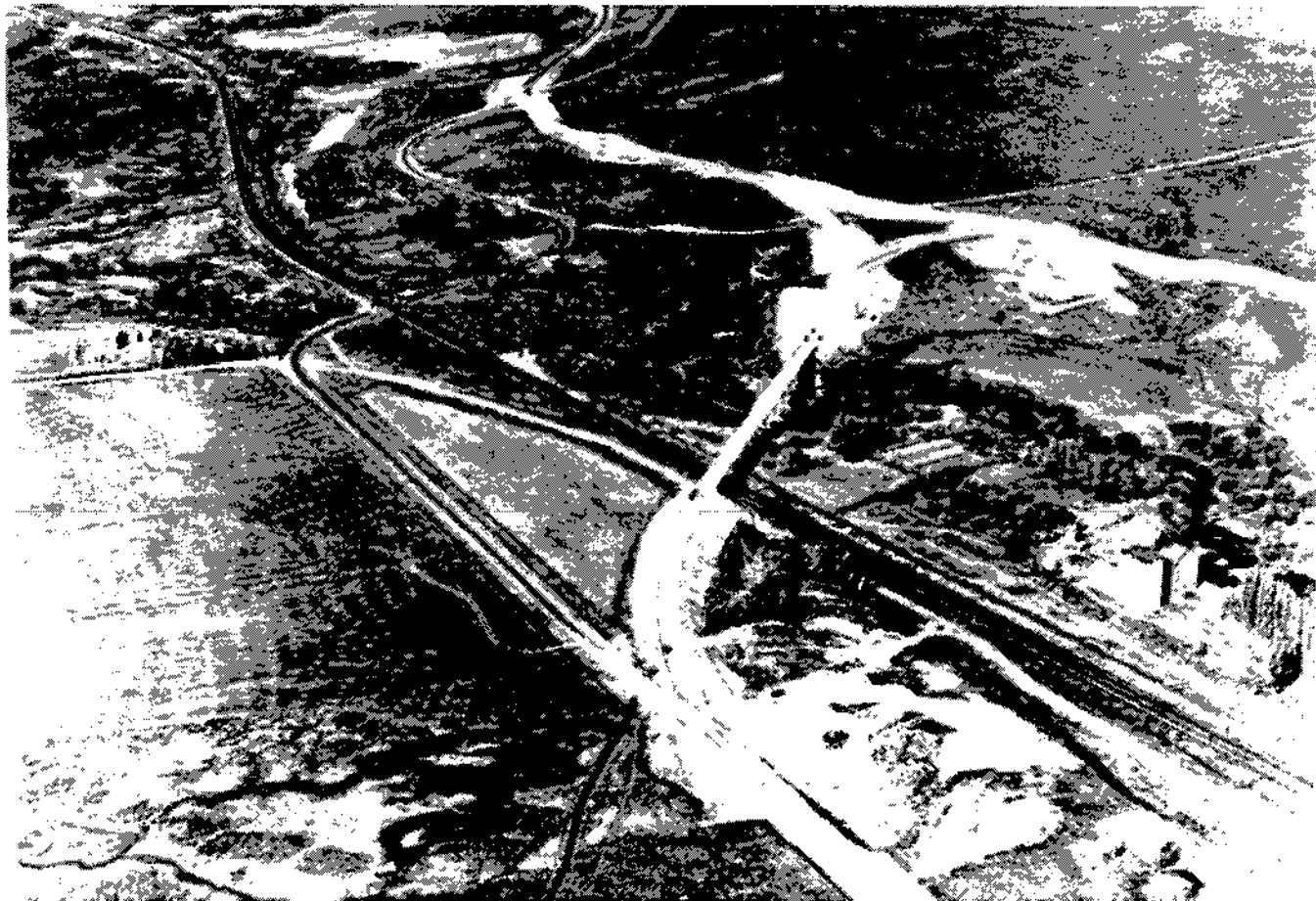
The 1937 Session Laws provided that all monies in the State Highway Fund be continually appropriated to the Department of Public Works for highway purposes. The same legislation authorized the Department to co-

operate with the Federal government and local units of government in the construction, improvement and maintenance of roads not on the State highway system.

There had been, during this period, considerable agitation in the Twin Falls area to remove toll charges on the Twin Falls - Jerome bridge, a privately-built structure over the Snake River. This pressure was generated by the feeling in Twin Falls that traffic was bypassing the area because of the bridge tolls.

The 1937 Legislature, therefore, authorized the Department of Public Works to acquire toll bridges by negotiation or condemnation. However, no

Railroad overcrossing and river bridge, Junction U.S. Highway 30N and U.S. Highway 91 North McCammon in 1936. Note old highway crossing under railroad.



funds were provided for any such purchases. The Bridge Company charter provided for purchase proceedings after five years of operation. Accordingly, on March 31, 1937 steps were initiated by the Department of Public Works to purchase this structure.

Condemnation proceedings were subsequently instituted in the District Court at Twin Falls. The case was delayed due to other court proceedings which involved reorganization of the toll bridge company. Because of this delay, the State Board of Examiners, on May 1, 1938, directed the Department to obtain or prepare information regarding the condition and value of the structure.

Three estimates were prepared. The first was made by J. J. Byer, Bridge Engineer for the Bureau of Highways, based upon original costs, less depreciation. Mr. Byer established the original cost at \$508,399 and the depreciated value at \$408,407.

A second estimate of original cost was submitted by Mr. Bruce G. Short, president of the Bridge Company. The company's estimate amounted to \$714,100 with no allowance for depreciation.

Quantities of material were the same in both estimates. The primary difference was the cost per pound for structural steel estimated at eight cents per pound by the State and 10.2 cents per pound by the Bridge Company.

A third estimate was prepared for the Twin Falls Chamber of Commerce by General Construction Company of Seattle. Their estimate showed an original cost of \$662,406 and a depreciated value of \$633,518.

Several hearings were held, with the Bridge Company offering to sell the structure to the State for \$647,500. The proposed purchase agreement provided for an immediate initial payment of \$100,000 with the balance due in one year. This offer was declined.

An initial payment of \$100,000 would have seriously depleted the available cash in the State Highway Fund. Additionally, if the next Legislature failed to appropriate funds to pay for the bridge and/or the next administration adopted the position that it was not obligated under the agreement, the Bridge Company would again assume control of the structure and begin collecting tolls. Under these conditions, the Department determined it was not advisable to pay out \$100,000 in public funds to provide only one year of assured toll free operation of the structure.

Action taken by the 1939 Legislature authorized the Department of Public Works to acquire the Twin Falls-Jerome toll bridge at a cost not to exceed \$500,000. This measure also authorized an issue of treasury notes in this same amount and provided a special motor fuels tax of one mill per gallon to repay the notes and pay interest on them.

Three years of negotiation and controversy came to an end on April 30, 1940 when the structure was purchased and made toll free. The purchase price was negotiated on the basis of an appraisal by Burton F. Dinsmore. The current replacement cost was set at \$628,813.81 and the depreciated value at \$471,757.17. The agreed purchase price was \$482,000.

Funding was provided by an issue of treasury notes to be repaid through a special motor fuels tax of one mill per gallon.

The final important piece of 1937 legislation relating to highways was a requirement that an audit be made of the Department of Public Works operations for the period January 1, 1933 to December 31, 1936. The Legislature appropriated \$25,000 from the State Highway Fund to finance the audit.

As this audit began, a series of events occurred which brought morale among employees of the Bureau of Highways to probably its lowest ebb.

Contributing factors were wide-spread criticism of the Bureau by the public, the press and members of the Legislature; indecision on the part of the Governor; harassment of personnel by the office of the Attorney-General; disruption of operations due to the audit directed by the Legislature, and a grand jury investigation.

It is very difficult to tie down precise reasons for the criticism of the Bureau of Highways and its operations. A number of comments were made during legislative debate on highway-related legislation. Some of these comments were based on lack of knowledge, others were apparently due to partisan politics. In some cases they were generated by efforts of the Department to preserve already inadequate highway revenues by opposing a reduction in license fees and diversion of gasoline tax revenue to local units.

J. H. Stemmer was appointed as Director of Highways by Governor C. Ben Ross, a Democrat. When Barzilla Clark, also a Democrat, succeeded Ross as Governor there was, according to political commentators, an effort to eliminate all Ross appointees. An article in the Idaho Statesman, May 22, 1937, indicated that some politicians felt that Ross still controlled the Bureau of Highways through Stemmer. The attitude of some politicians in regard to political patronage is evidenced by the comments of one legislator that:

I am frank to say that if we Republicans win two years from now I shall recommend that every damned Democrat in the Department of Public Works should be fired.

Attorney-General J. W. Taylor appeared to be mounting a one-man crusade against various State departments with special attention to the Department of Public Works. Commenting on an apparent lack of harmony among various elective officials, the Idaho Statesman of April 3, 1937 stated:

The Governor looks askance at the Attorney-General, the Secretary of State regards the Attorney-General as slightly balmy, and the Auditor questions his legal ability.

Whatever the reason, the Attorney-General filed numerous suits against various Department employees. The first was against Commissioner McKelvey and Director of Highways Stemmer. Prior to 1937, the Bureau of Highways had acquired equipment under lease agreements with various firms. These agreements provided that once the payments under the lease had accumulated to equal the purchase price, title to such equipment would pass to the State. The Attorney-General charged that these agreements violated the State Purchasing Act and sought recovery of sums paid.

In other actions, the Attorney-General sought to have McKelvey and Stemmer removed from office because they were carryovers from the prior administration and had not been reappointed by Governor Clark. This suit resulted in pay being stopped for both officials.

Taylor also ordered that pay checks of 25 employees be held back because they were classified as "Engineers" and were not so licensed under laws of the State. Similar action was taken against W. A. Brodhead, Department Attorney, on the grounds that only the Attorney-General's office could serve the State in a legal capacity. In the case of the "Engineers", the situation was resolved by designating them as "Assistants". Mr. Brodhead's case was handled by making him a right-of-way agent. As a note of interest, Mr. Brodhead had served as Chairman of the State Highway Commission from 1916-1919.

Mr. McKelvey resigned as Commissioner of Public Works on March 15, 1937. His right to serve in the office was subsequently upheld by Judge Charles F. Koelsch of the District

Court of Ada County who ruled that McKelvey was entitled to hold his position until such time as a successor was appointed. This decision was handed down on May 24, 1937. Ira J. Taylor was appointed to succeed McKelvey as Commissioner.

A similar decision by Judge Koelsch handed down on August 22, 1937 upheld the right of J. H. Stemmer to hold the position of Director of Highways.

On August 10, 1937, Attorney-General Taylor requested convening of a grand jury to probe the Bureau of Highways. In his request he alleged that the Bureau had paid out huge sums for services and materials not delivered and is further quoted as saying:

The State cannot afford to disregard triumphant contempt for the people who pay the bills.

(Idaho Statesman 8/11/37)

In commenting with regards to the grand jury, Stemmer was quoted in the Statesman on August 12, 1937:

The grand jury probe is welcome. Charges against the Bureau of Highways are the result of a personal feud against me by the Attorney-General. Mistakes may have been made but I must depend on some 200 or more subordinates, a good many of whom I have nothing to do with, but who are hired and fired at the direction of petty peanut manipulators and political shell game operators.

A grand jury was ordered convened in Ada County for December 7, 1937 but the call was cancelled due to lack of adequate space for their meetings. The session was finally scheduled for January 31, 1938. Ernest G. Day was elected foreman.

After hearing numerous witnesses and reviewing findings of the audit of the Department of Public Works, the grand jury returned a series of indictments against various employees of the Department. Several highway contractors were also indicted. Charges included signing false certificates on vouchers and perjury. Ira Taylor was also indicted for failure to turn over State funds while serving as Warden of the State Penitentiary.

The grand jury recessed subject to call by the foreman on June 6, 1938.

Judges Koelsch and Winstead of the Ada County District Court disqualified themselves to sit on proceedings under indictments after the Attorney-General objected to both. Cases were heard by Judges Miles B. Johnson of Lewiston and Isaac McDougall of Pocatello.

The first decision was related to a civil suit filed by the Attorney-General against McKelvey and Stemmer. Both had been found liable for improper purchase of equipment in a case heard by Judge Koelsch. This decision was reversed by the Idaho Supreme Court on March 11, 1938 on the grounds that neither Stemmer nor McKelvey had profited by this action and no liability existed.

On April 16, 1938, Ira Taylor was convicted of not handing over State funds while serving as Prison Warden and was fined \$1,000. This case had no relation to the Bureau of Highways but ultimately led to his resignation as Commissioner of Public Works on April 29. He was criticized in a statement by the grand jury on April 26 for not having resigned. Taylor was replaced on May 1, 1938 by Allen C. Merritt.

Judge Miles Johnson dismissed charges of perjury against G. E. McKelvey on April 20. The ruling was that under circumstances as outlined in the indictment, no perjury existed.

The first case to actually go to trial and involving a highway employee concerned charges against T. F. Edwards, Resident Engineer, Orofino. These charges related to a contract awarded to Triangle Construction Company for construction of a section of highway between Weippe and Pierce. The major allegations were: payment for materials in excess of quantities actually moved, changes in materials specifications, and faulty bridge construction. Edwards was acquitted of all charges by jury verdict on June 10, 1938. Hearings for related charges against other employees were indefinitely postponed.

Indictments involving Director of Highways Stemmer, District Engineer Johnston, Frayne MacAtee, and contractor Max J. Kuney were dismissed on October 8, 1938. Thorough investigations revealed that charges of payment for material not delivered were without foundation.

The only other indictment to come to trial was heard in December 1938. Charges involved were against Stemmer and District Engineer Richard Pearson for salary payments to J. J. McCreedy during a three-month period when it was alleged he did not work due to an injury. A verdict of not guilty was handed down on December 30, 1938.

Several indictments relating to cases decided by jury earlier were dismissed during January and February 1938. One civil case filed by Attorney-General Taylor concerning lease-sale of equipment was decided in favor of the defendant. On February 9, 1939, the Idaho Supreme Court reversed the conviction of Ira J. Taylor arising from operations at the penitentiary. On March 9, 1939, Attorney-General Taylor withdrew from participation in remaining criminal indictments. On March 14, 1939, the four District Judges involved granted a request of Prosecuting Attorney Kenneth O'Leary that all remaining grand jury indictments be dismissed.

In asking for the dismissal, O'Leary stated:

A conviction in these matters probably could not be obtained and no useful purpose would be served by a trial of these cases.

The final chapter in this matter was provided on March 22, 1939 when Attorney-General Taylor dropped all remaining civil suits against McKelvey and Stemmer. Both men received salary withheld during the legal proceedings a period of 20 months.

Thus, the episode came to an end. Few of the charges against highway employees ever came to trial and not one was substantiated. The entire procedure took on the characteristics of a politically inspired witch-hunt.

The audit of the Department of Public Works was conducted under the direction of James Monro of Boise.

It was completed late in 1938 but the report was not released until after the Ada County Grand Jury adjourned August 23, 1939. Major items in the final audit report were:

(1) It charged that penalties for contract time overruns were not properly enforced and that there was favoritism granted some contractors.

In reaching this conclusion the auditors gave little or no consideration to reasonable time extensions due to unusual weather conditions, contract changes for work to be done, and other comparable factors beyond the control of the contractors.

(2) It further charged that the Bureau of Highways had purchased substantial amounts of equipment without calling for bids.

All equipment purchases were made under requisitions to the State Purchasing Agent and purchases were made by that office according to Director of Highways J. H. Stemmer. Equipment prices were fixed under provisions of the National Recovery

Act. The alleged activities were not a responsibility of the Bureau of Highways.

(3) State highway funds were expended on roads not on the State highway system.

Such projects were undertaken by direct order from Governor C. Ben Ross over objections of Bureau of Highways personnel. They were undertaken as unemployment relief projects which were authorized under Section 65-2101, Idaho Code.

(4) Excessive and illegal use was made of stipulated contracts awarded at a fixed price without bids.

Stemmer said that this type of contract was used only when an emergency existed or special equipment was required. In practically every case the cost was less than it would have been under normal bidding procedures.

The most significant action by the 1939 Legislature was the passage of House Joint Resolution No. 3 which proposed a constitutional amendment to provide that proceeds of any tax on motor fuels or from any tax or fee for registration of motor vehicles, in excess of cost of administration and collection and payment of refunds or credits authorized by law, were to be used exclusively for the construction, repair, maintenance and traffic supervision of public highways of the State and for debt service on obligations issued for those purposes. This amendment was approved by the electorate at the general election on November 5, 1940. This amendment has been vital to funding State Highway System construction, maintenance and operations since its enactment.

The 1939 Session Laws also established a State Board of Engineering Examiners to administer procedures for licensing professional engineers which had previously been the responsibility of the Bureau of Occupational Licenses of the Department of Law Enforcement.

Highway Organization

Several internal organizational changes were made during the 1930-1940 era. These were caused primarily by adjusting to work load caused by financing projects for construction.

The position of Director of Highways was reactivated in 1931 and filled by the appointment of J. H. Stemmer who served until January 1, 1939. Alven Harbour replaced J. D. Wood as Commissioner of Public Works January 11, 1931. Mr. Harbour was subsequently replaced by G. E. McKelvey on November 28, 1931. McKelvey served until April 15, 1937. Ira J. Taylor was Commissioner from April 16, 1937 to April 29, 1938. Allen G. Merritt became Commissioner on May 1, 1938 and served until January 2, 1939 when Governor C. H. Bottolfsen took office. J. H. Stemmer, Director of Highways, also left office January 2, 1939. During the 1939-1931 biennium, H. R. Flint was acting Commissioner from January 3, 1939 to December 31, 1939...E. W. Sinclair from January 1, 1940 to July 23, 1940, and J. O. Newcomb July 24, 1940 to January 2, 1941. H. R. Flint was also Director of Highways from January 3, 1939 to April 30, 1940 when he resigned. C. P. Humphrey succeeded him serving to January 2, 1941.

State Government during the period 1931 to 1939 was under a Democratic administration and with the advent of a Republican administration on January 2, 1939, many position changes were made throughout the Department of Public Works ranging from Commissioner to night watchman.

Supervision of the Materials Section was combined with a bituminous surfacing program and the Location and Construction Division office was abolished in 1931 due to the reduction in financing. The position of Equipment Supervisor was reactivated in 1933 and that of Construction and Maintenance Engineer in 1936. Reactivation of this latter position was necessary to provide adequate supervision of



Planning Survey crew checking wheel loading on a truck and trailer.

a growing construction program. An attorney was also added to the staff at this time to handle the growing legal load due to the increased number of condemnation cases for rights-of-way.

Two new sections were created at Headquarters in 1935-1936. The first was designated as the Highway Planning Survey and the second was a Statistical Section which compiled labor statistics and enforced labor provisions. Both were initiated as a result of discussions with the U. S. Bureau of Public Roads relating to Federal-Aid requirements.

The Highway Planning Survey was a cooperative project of the U.S. Bureau of Public Roads and the Bureau of Highways and was authorized by the Federal-Aid Highway Act of 1934. Federal-Aid funding was provided for fiscal years 1935 to 1937 inclusive. Federal-Aid Highway Acts extended this funding through the 1938 and 1939 fiscal years.

The Idaho Bureau of Highways and highway organizations in 35 other States entered into planning survey agreements with the U.S. Bureau of

Public Roads. The effective date of the Idaho agreement was March 1, 1936.

Under the Act, State Highway Departments were authorized to use "not to exceed 1½ percent of all Federal-Aid highway authorizations for the specified years for the purpose of making surveys, plans, and engineering investigations of projects for future improvements on the Federal-Aid highway systems." Studies were required as set forth in the Planning Survey agreement as follows:

The Highway Department, under the advice and direction of the U.S. Bureau of Public Roads, shall conduct statewide investigations, and shall make surveys, propose plans and assemble engineering, economic, and other data deemed necessary for the general planning of a complete highway system and program of highway improvement in the state,

which shall include the following:

- (a) A road and bridge inventory of the State which shall show the status of improvement, the condition and location of public highways and of other related transportation facilities, the probable average life of surfaces, including the preparation of maps and tables classifying the data.
- (b) Collection of information showing the actual and potential sources and objectives of highway traffic, as indicated by the distribution of motor vehicle ownership, rural population, land use, and other incidental and related facts.
- (c) Traffic surveys covering all the public road mileage of the State, or as much thereof as may be necessary to furnish positive and quantitative information relating to highway use and to the distribution of traffic with relation to time, place, and character on the public roads.
- (d) Tax studies and analysis to develop information concerning the direct

and indirect receipts and disbursements of revenues of the State and its subdivisions in relation to highways.

- (e) Investigation to determine the volume and character of highway transport within the State.

The first three years of operation were devoted primarily to organization, training, and collection of a vast amount of data. By 1939, much of this information had been analyzed so that it could be utilized for application purposes.

One of the immediate tangible results was a series of State and county maps which were the end result of an inventory of all public roads of the State. These county maps provided the first state-wide coverage of this type.

A comprehensive traffic volume analysis was also completed and supplemented by installation of five permanent automatic traffic recorders to provide an indication of seasonal traffic variations and long-range trends. Results of this survey showed that the State highway system comprising 13.5 percent of the total road mileage carried 70 percent of the total traffic.

Maximum traffic volume encountered was 5,000 vehicles per average day. Twenty five percent of the State highway system, including designated primitive and unimproved mileage, carried less than 100 vehicles per average day. On the local road system, 96 percent of the mileage carried under 100 vehicles per day.

Other studies provided data in regard to vehicle weights, origin and destination of traffic, and the extent to which various highway systems were used by rural and city residents and by various types of vehicles.

The aggregate of these studies provided essential data in regard to highway location and design as well as the relative financial responsibility of various classes of highway user.

Another study of the life of various types of highway surface provided a basis for extending the rate at which existing highways would require replacement.

A survey of rail-highway grade crossings revealed that there were 2,357 such facilities in the State. A method was developed to compute a numerical index which reflected the relative hazard at each crossing. This provided a basis for establishing a listing of those crossings where a detailed study of possible separation or protection might be justified.

The highway planning was serious research into State and local highways and into transportation, both public and private. Studies had been made earlier, but none was so all-inclusive as this, bringing together all of the essential facts and factors which relate to the economics of highways and the traffic they carry. Previous studies fell short because they covered only a single aspect of the total situation.

The second new section was a statistical unit created in July, 1935 primarily for the purpose of compiling labor statistics and enforcing contract labor provisions required under the Emergency Relief appropriations for highway construction. This represented, in a sense, the real beginning of Federal Government regulation and control of State activities which was to continue to expand into almost all other areas of highway work in future years.

These funds were allocated to provide employment through the undertaking of desirable improvements in areas where high unemployment existed. Use of these funds required adherence to Federal regulations concerning employment in positions other than administrative, supervisory and those requiring a high degree of skill. The

general requirement for positions covered was that only persons certified for assignment to the work by the U.S. Employment Service could be employed. Preference for certification in the employment of labor was given to qualified persons from the public relief rolls.

The State was required to provide 1,905,212 man hours of employment to persons referred by the U.S. Employment Service. This obligation could be met through employment provided under both regular and emergency construction programs as well as under the State maintenance program.

These labor requirements necessitated contract provisions as to maximum hours, minimum wage rates, occupational classification, transportation, payrolls, and the selection of labor. The requirements resulted in voluminous rulings from State and Federal agencies involved.

The Statistical Section was also required to process an increasing number of requests for information originating from publications as well as governmental and other agencies.

The position of Staff Engineer was created in 1937 to supervise this Section which was given the responsibility for publication, collection and dissemination of statistical data relating to highways, establishment and interpretation of labor and related contract provision, and for handling all matters relating to personnel administration. J. H. Clabby was appointed Section Head.

A system for handling personnel matters was established on June 3, 1938. One of the first steps was to require that personnel be recruited through facilities of the Idaho State Employment Service except for engineering, supervisory, office and clerical positions.

A personnel records system was also established to provide information

on each employee concerning age, residence, qualifications, length of service, veteran status, length of Idaho residence, marital status, prior service, and other personal data. Procedures were also adopted for periodic efficiency ratings by the employee's immediate supervisor.

Although no changes in the organizational structure of the Bureau of Highways were made in 1939 or 1940, there were probably more actual changes in personnel than in any like period since organization of the Department of Public Works in 1919.

The cabinet form of government instituted by Governor D. W. Davis in 1919 had made all State Departments directly responsible to his office and this introduced centralized patronage.

Governor C. A. Bottolfsen, a Republican, succeeded Barzilla Clark, a Democrat, as Governor in January 1939. Wholesale dismissal of Bureau of Highways personnel began within a matter of days. It was to be expected that policy-making positions such as Commissioner of Public Works and Director of Highways might be subject to change but dismissals, as reported in the newspapers, reached down to such remotely subordinate positions as night watchman.

The Department of Public Works had been recommending adoption of a long-range plan of highway improvements. This badly needed step could not be accomplished, however, without reasonable continuity of key personnel and operational procedures which became almost impossible to achieve at this point in time.

A new accounting system for the Bureau of Highways was a forward step initiated early in 1939. A committee of the American Association of State Highway Officials had begun work in 1929 on the development of a uniform accounting system suitable for all State highway organizations. This work was completed and submitted for consideration by the States in December 1936.

This system was adopted by Idaho and it provided a uniform classification of accounts which allowed identification of costs on specific highway sections.

Construction

Despite the early "Depression Lag", and a 90 percent decline in local cooperative funds, construction during the 1931-1940 era expanded, having been made possible by advances in Federal-Aid funds and emergency funds. Actual expenditures on construction projects ranged from \$7.8 to \$11.3 million each biennium comprising a total in excess of \$47 million for the 1931-1940 period. In addition, the U.S. Bureau of Public Roads expended on Forest Highways from \$1.7 million to over \$5 million each biennium for a total exceeding \$17 million. By comparison, total expenditures from 1913-1931 were \$40,795,000 by the State and \$9,120,000 on Forest Highways.

The Depression, brought on by the Stock Market Crash of October, 1929, had caused great unemployment and several emergency measures to increase employment were made. As previously noted, advances in Federal-Aid construction funds were made in 1931 but were to be repaid out of future allocations. This requirement was dropped in 1935, however, thereby increasing construction revenues.

It is of interest to note the mileage of improved roads at the end of World War I, December 31, 1930, and again December 31, 1940.

Highway System Mileage by Type of Surface

	<u>Dec. 31, 1918</u>
Paved or Oiled	5
Crushed Rock or Gravel	108
Graded Earth	528
Unimproved	1614
Total	2235

	<u>Dec. 31, 1930</u>
Paved or Oiled	1640
Crushed Rock or Gravel	1690
Graded Earth	481
Unimproved	996
Total	<u>4807</u>

	<u>Dec. 31, 1940</u>
Paved or Oiled	2844
Crushed Rock or Gravel	1154
Graded Earth	429
Unimproved	333
Total	<u>4758</u>

The standards to which State highways were constructed were continually upgraded so that highways built during the 1931-1940 era were to a much better standard than those previously constructed. This improved standard came about in response to requests from the traveling public and the greatly increased use of the automobile and trucks for transportation. The total registration of automobiles and trucks in 1921 was 51,264; in 1930 it was 117,579; and in 1940 had risen to 156,444.

The following chart showing the comparative status of improvement from 1918 to 1940 is of interest. Considering that most of the graded roads, as well as roads having only gravel or rock surfaces, required reconstruction and strengthening prior to paving the progress made was noteworthy.

Paving with light liquid asphalt mixed into surfacing on the road bed, commonly called road mixing or oiling, made up most of the mileage paved. The betterment program included a very large percentage of road oiling. The biennial report of the Department for 1932 contains the following comments in regard to the program:

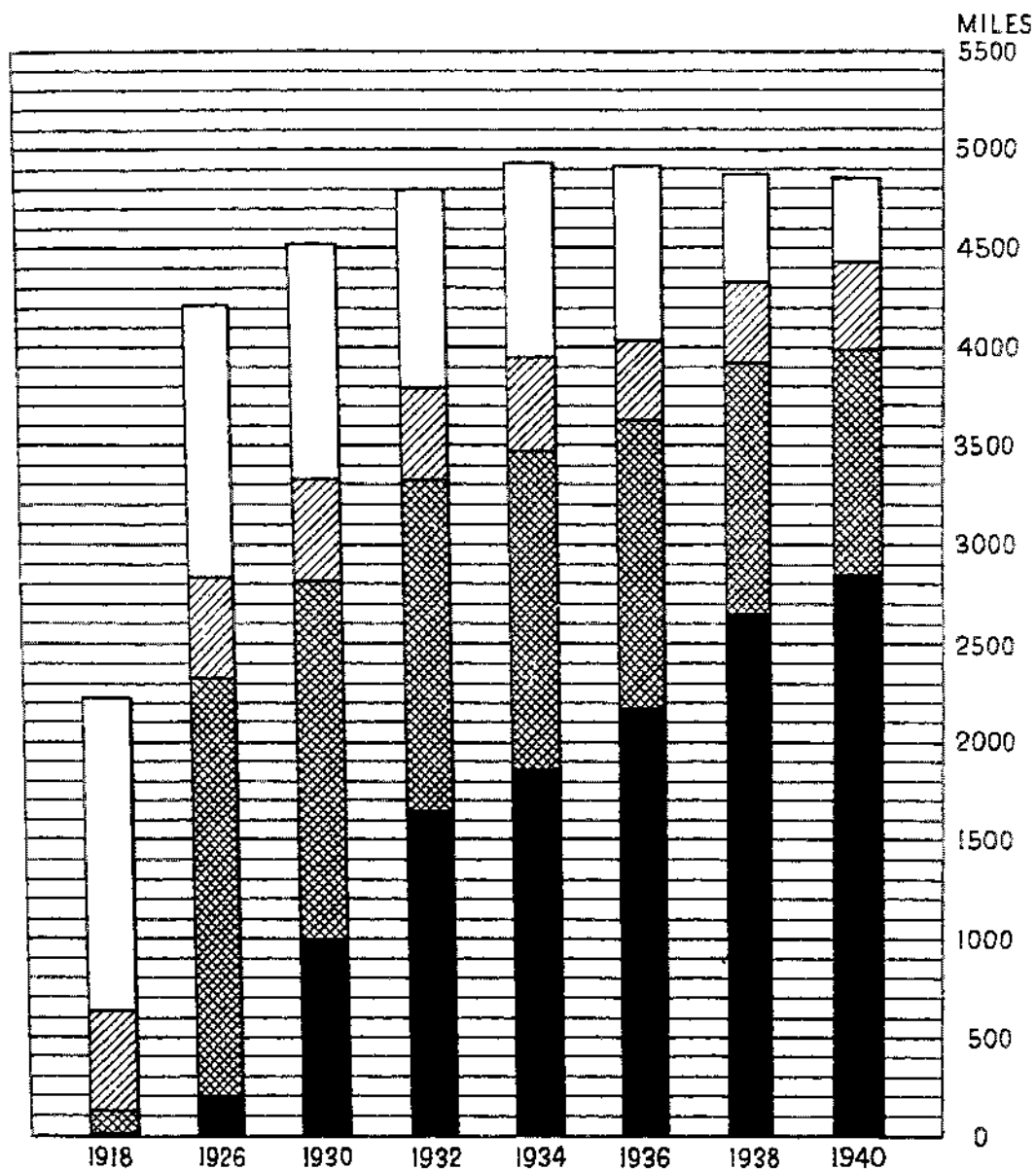
It must not be thought that road oiling can be successfully accomplished by merely placing material upon the road and applying oil, for it has been learned by experience that all highways must be brought to a high state of excellence prior to oil

Bridge construction near Blackfoot in mid-1930's.



CHART SHOWING COMPARATIVE STATUS OF IMPROVEMENT STATE HIGHWAY SYSTEM

1918 TO 1940
As OF Oct. 31.



LEGEND

PAVED OR OILED.....
 CRUSHED ROCK OR GRAVEL.....
 GRADED.....
 UNIMPROVED.....

treatment if the results and benefits are to be permanent.

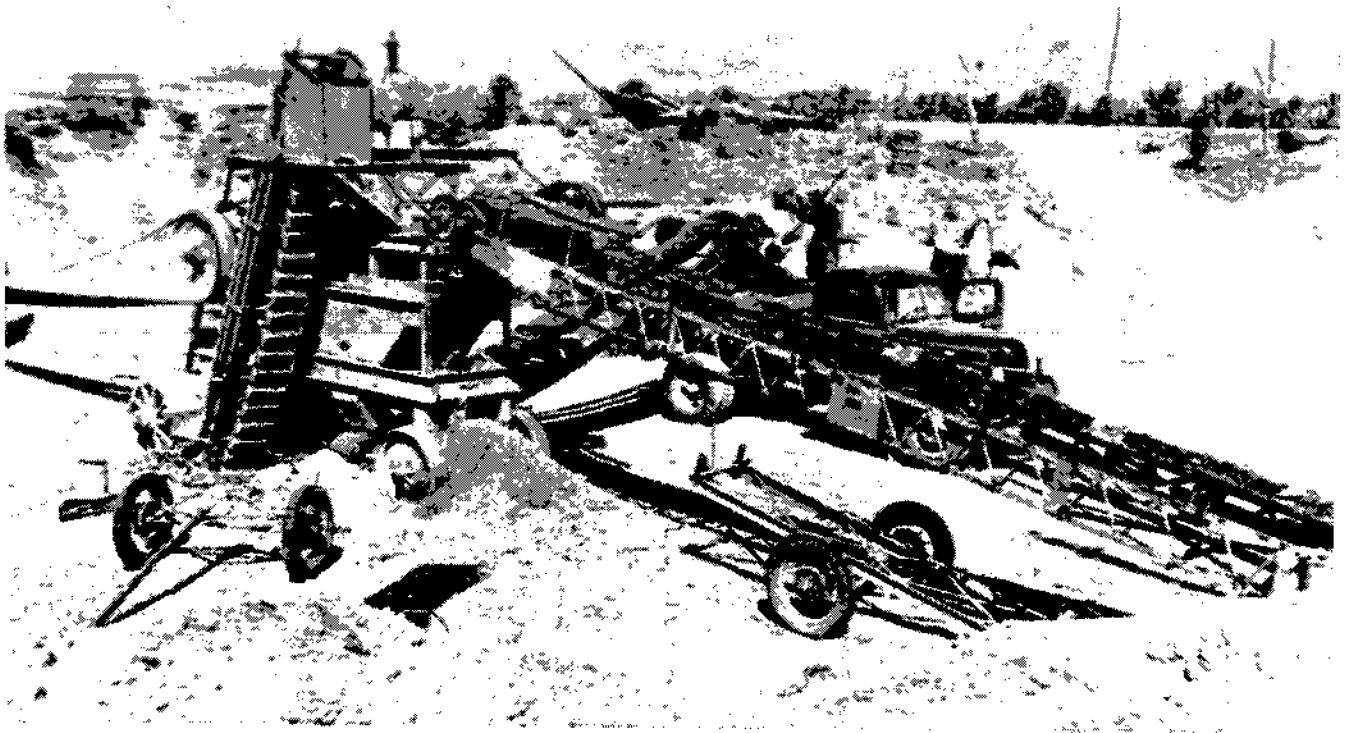
There is abundant proof of this throughout the State and as a consequence it has been the policy of the Department during the past two years to adequately reinforce all highways with additional gravel or crushed rock surfacing to bring them up to the desired standard before oiling. This is a sound and meritorious principle. Loads are increasing and speed is the constant aim of transients and those routing freight over the highways. What may appear adequate this year may be obsolete five years hence and it must be borne in mind that the uses to which highways can be put can be altered all out of proportion to the changing over of the highways themselves. Oil treatments are but non-rigid types of surfacing and are

largely incapable of supporting weight and resisting impact unless the supporting bases upon which they are placed are constructed to meet such factors. As a consequence it can be truthfully said that oiled roads are only as good as the bases they are built upon.

There was increased use of plant mix bituminous surfacing during 1931-1932. This involved mixing of oil with heated and dried aggregate in a pug-mill prior to placement on the road. Results were more satisfactory because of better control of materials.

Cut-back asphalt was also used as a binder on test projects. Under this process, the asphalt was thinned by the addition of a volatile solvent such as kerosene or naphtha prior to mixing. After placing the mixture on the road the solvent evaporated, leaving a tougher and more durable binder than

Gravel crushing and screening operation during 1930's.



under other methods. It also had the advantage of being mixed with aggregate at lower temperatures.

Bituminous surfacing was applied to an additional 657 miles, bringing the total of this type of highway surfacing

up to 1,415 miles as of December 31, 1932.

Forest highway projects built by the U.S. Bureau of Public Roads also involved a number of important highway links. This program involved 36 projects with a total length of 263 miles. Total cost of the program was \$2.9 million.

During this biennium, restoration and bituminous surfacing was completed on approximately 50 miles of roadway between Burley and American Falls making it possible to travel on bituminous surfaced or paved roads from the Oregon State line to the Utah State line or the Wyoming State line. Bituminous surfacing was also completed from Grangeville to Potlatch, from Coeur d'Alene to Bonners Ferry, and from Sandpoint to the Washington State line. In addition to these main routes,

Aeronautics has played a major role in the development of Idaho's 5,000-mile state highway system. In 1930, this historic photo shows the crew posing before taking off on the very first highway location aerial survey. This was the Lolo Trail which is now U.S. Highway 12, Kooskia to Missoula, Montana. Pictured in the photo are: (left to right) Bob Johnson, Johnson Flying Service, Missoula, Montana - Art Blomgren, Aeronautics Engineer - J.J. McCreedy, Division of Highways District Engineer, Lewiston - J.A. Chamberlin, Highway Location Engineer and M.S. Wright, Aerial Photographer.



considerable work of this type was also completed on local service roads.

One of the most significant developments of this period was the completion of negotiations in connection with construction of the Lewis and Clark Highway (U.S. Highway 12). This route had been designated as a part of the State Highway System in 1916 and sporadic efforts were subsequently devoted to actual construction of a pioneer type road. Construction of an adequate road on the most suitable location was blocked by the existence of Federal power reservations along the Lochsa River. Construction on the canyon slopes above the power sites would greatly increase costs and would also destroy the attractive alignment and grades afforded by a location closer to the river. Construction through the power sites without prior approval would necessitate relocation of the highway entirely at State expense should any of those sites be ultimately developed.

The State requested withdrawal of the power sites and conducted negotiations to that end with the Federal Power Commission over an extended period. The proposed highway location was developed in 1931 from an aerial survey of the area. Finally, in 1932, the Federal Power Commission granted permission for construction on this proposed location. Power sites were not withdrawn but the construction permit was interpreted by the Department to provide that, in the event any sites are ultimately developed, costs of required highway relocation would be borne by those undertaking the development.

The route was also approved in 1932 as a part of the Federal-Aid Primary system and a program of orderly improvement was developed...subject, of course, to obtaining financing.

Despite the serious decline in State-raised highway funds, due to the continuing economic depression, an increased construction program was carried on during 1933-1934 utilizing

the substantial increase in Federal-aid funds. Local cooperation for State highway construction declined from almost \$800,000 in 1932 to slightly less than \$75,000 in 1933.

During this period there was also an increasing recognition within the Department of the need for long-range highway planning. The problem had been expressed earlier by Thomas H. MacDonald, Chief, U.S. Bureau of Public Roads in the following comments:

Unless definite plans for financing and construction are provided by the highway departments, there is a tendency for political forces to distribute the use of gas tax for extraneous purposes. Without such a plan, it is easy to build a large mileage of cheap roads up to a point where all available funds will be absorbed by maintenance.

The solution to the problem may be found in a ten-year program based on transport service and a definite tying up of funds to this program. By that time the secondary road program will be taken care of.

While the hope was expressed by the Department that the State Planning Board might be a means of developing such a long range program, later developments would show that this program would actually require many years before achievement.

The program of bituminous treatment surfacing was substantial during 1933-1934 although somewhat smaller than in the previous biennium. A total of 277 miles of this type of work was accomplished, including 43 miles of reconstruction of prior projects. The result was a net increase of 224 miles with a total of 1625 miles of this type of surface in place at the end of 1934. Additional attention was also given to proper preparation of existing road

beds prior to application of a bituminous surface.

Due to the relatively moderate initial cost of construction of road and plant mix types, there had been a nationwide effort to construct these

low cost treatments wherever roads existed. Without doubt, considerable money was spent uselessly in trying to raise surfaces to a bituminous treated standard when impractical due to the structural capability of the existing road bed. Numerous examples were noted in Idaho as well as in other States.

Typical State highway during mid 1930's.





**Loaded truck breaks through pavement
at a frost boil in the mid thirties.**

It was evident that the road or highway to be treated must be properly drained and have sufficient surfacing or failure would certainly occur. Road mix continued to be the dominant type of surfacing up to the beginning of World War II.

The 1933-1934 construction program also introduced roadside improvements to Idaho's State Highway System for the first time. An allocation of \$22,431 of Federal-Aid funds for this purpose was used on several projects.

There had been a long-time concern within the Department in regard to advertising signs along highways and to the need for roadside beautification, but lack of funding had prevented any substantial action. In some instances, stands of virgin timber adjacent to forested sections of high-

way had been preserved by cooperative action between the Department and logging interests. Signs were kept away from highway junctions and at other points where they constituted safety hazards.

Under the new program three projects were scheduled in areas where it was felt that a definite demonstration of benefits would result including:

1. Fairview Avenue near the Boise River bridge in Boise; general cleanup and landscaping.
2. Lewis and Clark Highway; seeding, planting of trees and shrubs and cleanup with

general landscape improvement of 3.5 miles west of Orofino.

3. Heyburn State Park; pruning and cleaning, construction of campsites, road approaches, parking, together with the seeding of cutbanks on 6.3 miles between St. Maries and Plummer.

Construction was started during the 1933-1934 biennium on the Idaho-Oregon-Nevada cutoff (U.S. Highway 95) between Marsing and the Oregon State line. Idaho and Nevada interests had advocated building of this route

for many years but the State of Oregon was reluctant to allocate funds required for its section because it had no connection to the Oregon State Highway System and because of its remote location in a very sparsely populated area. These objections were finally overcome and work was begun.

One project was placed under contract and another scheduled on the Idaho section. These projects covered 19.5 miles beginning at the Oregon line and extending northerly. Cost of the project under contract was \$211,000 financed by 100 percent Federal funds for construction through public lands.

During the 1933-1934 period, increased emphasis on eliminating rail-highway grade crossings resulted in

Motor patrol grading a gravel surfaced highway.



construction of eight projects. A total of 25 more were constructed during 1935-1936, 10 during 1937-1938 and only 3 during the 1939-1940 period.

A program to replace obsolete structures was also begun at this time. Many of these bridges were hazardous and not capable of carrying modern loads. Most of these structures were replaced with concrete and steel, but in some instances, timber structures, treated to prevent decay, were used.

There was a substantial increase in total State highway construction during the 1935-1936 biennium as compared with the previous two years. Estimated construction awarded to contract or completed amounted to approximately \$11.3 million. This increase was made possible by the continuation of Federal emergency grants in 1935, the reinstatement of the regular Federal-Aid highway program in 1936, and an increase in State-raised revenue.

Projects completed or placed under contract included 735 miles of roads. Approximately one-half of the total involved placement of oiled surfacing.

The public demand for bituminous treated surfacing was growing so rapidly that, if met, threatened to become a serious drain on available financial resources. In order to meet this demand, consideration was given to the use of an even more economical oil treatment as a temporary measure until the highways involved could be reconstructed to a standard suitable for a more permanent surface.

This temporary surface involved two applications of material. The first consisted of a prime coat of light oil which would penetrate into the surface material. This coat was then followed by an application of heavy cut-back asphalt followed by a covering of either coarse sand or rock chips. This type of surfacing had proved to be generally satisfactory as a temporary improvement.

Despite the problems which confronted the Department, an extensive construction program was implemented during 1937-1938 with contracts completed or awarded involving a total of almost 1,150 miles. Part of this was stage construction and net mileage accomplished was a lesser figure. Road mix continued to be the dominant surface type but there was increased application of plant mix. There was a net increase of 494 miles of oil-surfaced roads from 1936 to 1938 and an additional 85 miles were reconstructed.

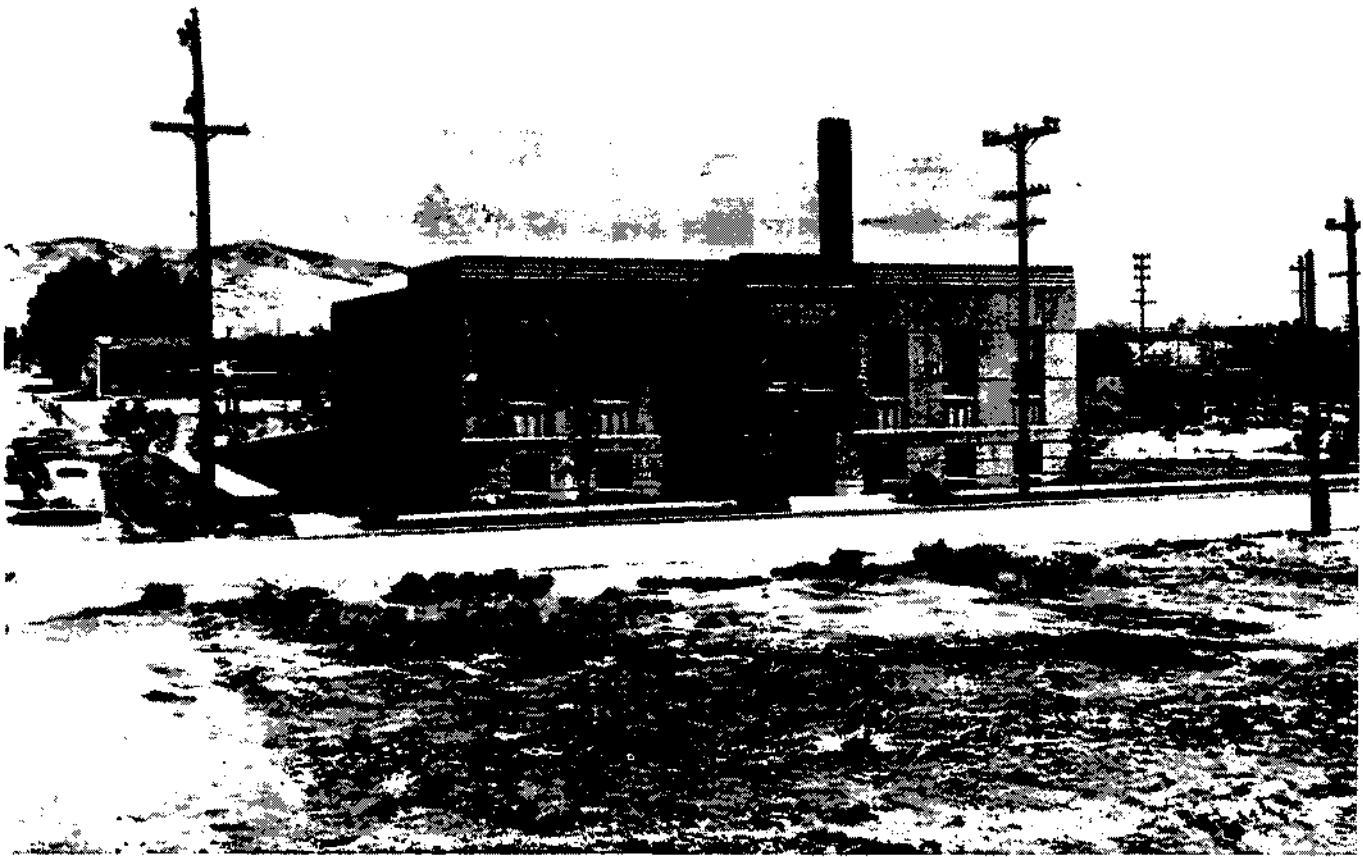
The program also included 10 railroad separation structures and 43 bridges. Expenditures for contracts completed or in progress during the period amounted to \$10.2 million. This was about \$800,000 less than during the previous two years.

Construction expenditures during 1939-1940 were slightly over \$7.8 million, down about \$2.8 million or approximately 30 percent lower when compared with the previous biennium. Three factors contributed to this reduction: a decline in State revenues due to allocation of a part of the fuels tax to local units of government; a decline in Federal-aid funds; and, a continued decline in local cooperative funds.

Volume of State highway construction had been tied directly to the amount of Federal-Aid highway funds available. This continues to be true today as it has since World War I. The current status of improvements to the State Highway System without Federal-Aid would have been impossible.

Fluctuations in the amount of available Federal-Aid funds have a corresponding effect on total State construction. Also, use of Federal-Aid funds is predicated on compliance with Federal regulations sometimes causing expensive and time consuming problems.

Contract awards during 1939-1940 covered 89 roadway projects with a



State highway materials laboratory completed in 1939.

total length of 622.2 miles. This was 29 fewer projects with 262.9 less miles than during the previous biennium. A total of 65 major structures were also placed under contract. One major structure was the Lewiston-Clarkston Interstate bridge. This was a four-lane structure, 1,424 feet in length. Due to the navigational requirements, the structure included a 200 foot lift span which provided a 56-foot vertical clearance above normal high water. The States of Washington and Idaho shared equally in the cost.

The construction program carried on by the U.S. Bureau of Public Roads using Forest highway funds included 143.1 miles of primarily betterment projects at a cost of \$1.7 million.

Major projects were on the Lewis and Clark Highway, the Payette High-

way between Horseshoe Bend and Banks, the Idaho City-Stanley Highway between Idaho City and Lowman, the Galena Summit section and a bridge between Swan Valley and Victor.

The increased construction program of this period placed additional emphasis on the inspection and testing of materials including investigation of new processes such as the surface treatment program. This required additional laboratory space to avoid working two shifts in the laboratory. The University of Idaho materials testing laboratory was working at capacity as well. A new laboratory was therefore constructed at Boise using a Public Works Administration grant to pay 45 percent of the \$55,000 cost. The building was completed in the late fall of 1939 and occupied in 1940. New equipment was obtained not previously available in the Boise laboratory. Items included a 300,000 pound universal testing machine, a 90,000 pound com-

pression machine, chemistry lab equipment, soils testing components and many other items making the Department's Boise laboratory well equipped compared with other State facilities.

Other innovations in the rapidly developing technology of this period included soils testing and a requirement for the compaction of all earthwork to specified densities. Design of the pavement structure based upon analysis of soil test information and soil surveys of each project became standard procedure during 1939-1940.

To keep pace with the need for more rigid inspection and materials work in the Districts, a District Materials Engineer was appointed in each District. Appointees were selected on the basis of special qualifications and their familiarity with laboratory work, field investigations, and soils work as well as construction and inspection procedures.

World War II began in Europe in September 1939 and caused grave concern nationally. Military maneuvers proved that peacetime designed highways were inadequate to meet military requirements not only in capacity but in moving traffic and permissible loads.

In order to designate routes most essential for military use, the U.S. Bureau of Public Roads, and the U.S. War Department selected a Strategic Highway System and specified the required standards for construction. Included were 683 miles of first priority and 504 miles of second priority roads in Idaho. It was estimated that \$9.5 million would be required to construct the first priority and \$11.8 million would be needed for the second priority system. The first priority system would have required all of Idaho's construction funds for 2.6 years and the second priority system for an additional three years. This indicates the crisis facing the Department as the 1941-1950 period began.

Many of the more experienced engineers had left the State during the

turmoil of the Grand Jury investigation. So, with the demand for engineers by industry, the War Department and others, it was feared that construction as well as design would decline, thus allowing any increase in Federal-Aid monies to lie idle due to completed construction plans failing to reach contract authority.

Construction Equipment and Related Developments 1931 - 1940

Mechanical equipment, such as laydown equipment or pavers, were in their infancy during the early part of the decade. Mixing plants for bituminous surfacing were available but their capacity was small although compared to 10 years earlier several times larger. During the decade two types of asphalt paving were recognized. High-type or hot-mixed asphalt surface laid with a paver, and a low-type, cold, mixed-in-place pavement, laid by motor patrols.

Capacities of hot plants were approaching 100 tons per hour and had pugmills as large as 4000 pound capacity. Driers had markedly increased in size permitting the increased output.

Screening plants with vibrating screens rather than trommel or rolling screens were used almost exclusively and their capacities were up to about 120 tons per hour.

Recording pyrometers to control mix temperatures and springless dial scales to batch aggregates were used to control batch quantities presaging the age of the fully automated plant.

Portability of plants had improved dramatically so that they no longer had to be literally built in place for each project. Since most projects in Idaho were far-removed from railroads, a variety of stacked-up components, readily hauled by pneumatic tired trailers and trucks, came into existence, thus permitting rapid moves

from one construction project to another and, in fact, to more than one plant site on long projects.

A traveling mixing-plant was introduced in 1936. This plant, on crawler tracks, used a bucket conveyor to pick up windrowed aggregate, dumping it into a pugmill which, after cold mixing with asphalt, was discharged onto the road bed. Motor patrols followed, completing the mixing process and aerating volatile liquids from the asphalt. A transport tanker loaded with asphalt followed alongside the traveling plant furnishing asphalt to the pugmill.

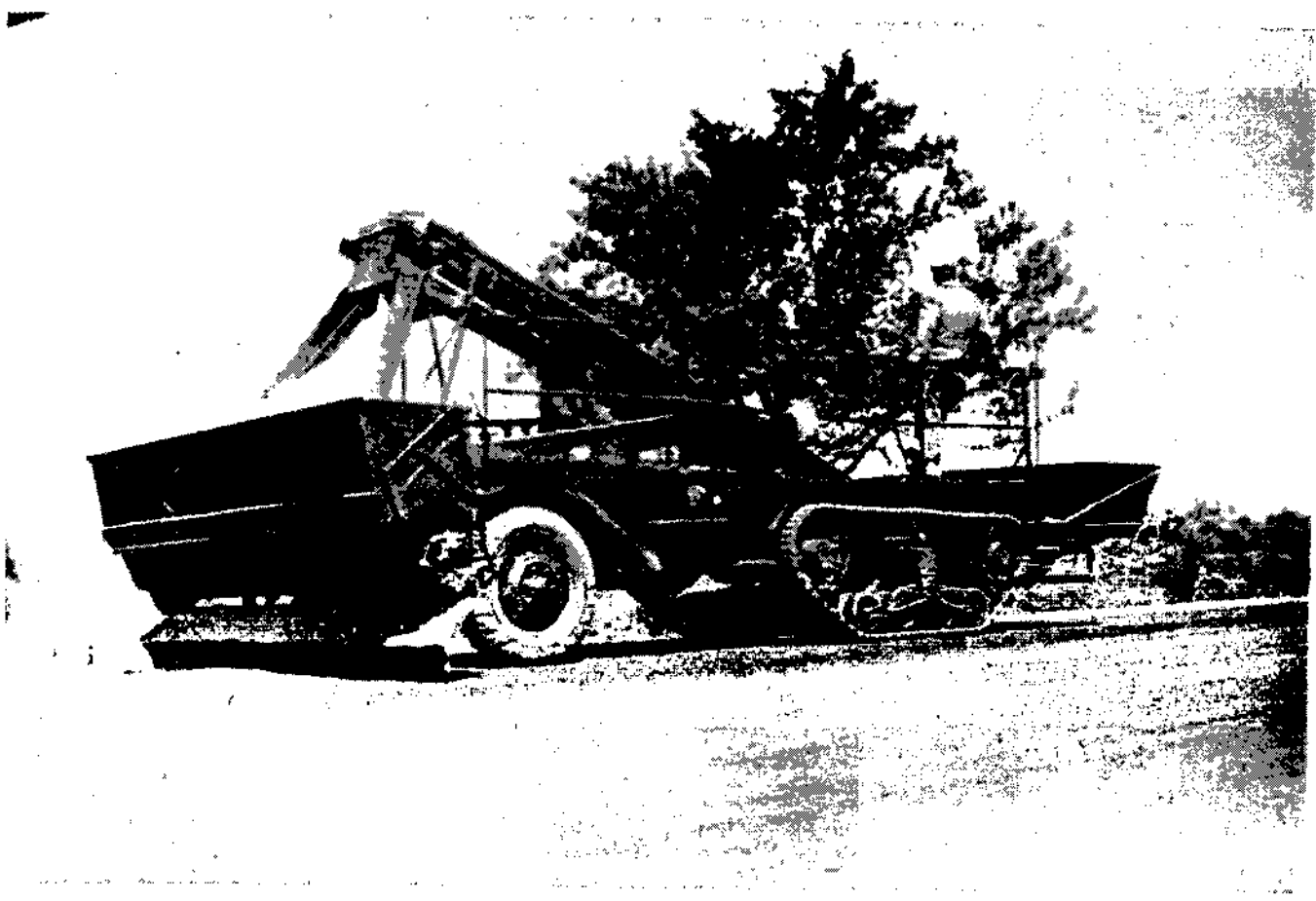
By the end of that era, a self-contained type plant had been developed wherein aggregate was metered continuously from aggregate bins, onto

a belt discharging into the drier and then over screens to assure accurate proportions and discharging into one end of a pugmill, where asphalt was added. The mixture flowed continuously through the pugmill discharging into trucks or a hopper. Continuous flow of the mixture was dependent on a fleet of trucks to take away all mixture or a plant shutdown was inevitable.

Dump trucks had increased in size so that 6-to-10 ton capacities were available. They could operate at speeds of 35-to-40 miles per hour and were very reliable with mechanical breakdowns seldom occurring. Concurrently, motor patrols, pavers, rollers and other equipment were also becoming much more reliable.

Earthwork equipment was developing rapidly. The scraper drawn by a crawler tractor became the standard earth moving unit. These scrapers could be drawn over the earth surface

Original "Homebuilt" model of chip spreader constructed by H. Kniple-Western Construction Co. - Idaho contractor.



picking up a capacity load of 7-to-8 cubic yards. The material was then hauled to its point of discharge where the scraper also discharged the material into a layer a few inches thick. "Sheepsfoot" rollers -- drums with protruding prongs -- were used to compact the earth to specified densities. This reduced the unit cost of earthwork very materially over that of the Fresno slip, horses and wagon hauls of earlier years.

Concrete pavers had been developed to work from side forms compacting and smoothing the concrete. Joints were placed every 16 feet and expansion joints every 40 feet. Large crews of men were still required, however, to finish the concrete, install joints, remove and replace the forming, place burlap over the concrete and maintain moisture over the surface for proper curing. A concrete mixer capable of mixing a cubic yard at a time traveling on the subgrade, loading from a hopper, and mixing and discharging on the subgrade was the standard type.

A few plants for manufacturing concrete at a stationary location and carrying two-to-three cubic yard batches to the construction site were coming into use. Nearly all bridge projects, however, had concrete mixed at the site, although placement was by means of a one-quarter to one-yard bucket swung over the discharge point by a crane.

Developments indicated that mechanical devices and machines were going to take over. Operations requiring a score of men would soon be done by a few and production rates of the future would be multiplied several times.

Maintenance also benefited from developments in construction equipment. Motor patrols and trucks made handling of larger quantities easier and also less expensive. Needed stone and gravel became less costly. Also, as the trucks became larger they became capable of handling larger snowplows making snow removal an easier operation during winter months. The

reliability of equipment and tires had improved remarkably so that breakdown on the road rarely occurred. These improvements meant better maintained roads.

Maintenance

Maintenance is responsible for keeping highways in an "as constructed" condition by replacing, repairing or reconstructing as necessary. In addition, during the period after World War I increasing traffic placed heavier and heavier demands on maintenance by the public's desire for snow-free surfaces, center-line striping and, of course, chuck-hole-free surfaces. At the end of 1932, 3240 miles of roads were under maintenance out of a designated system of 4,787 miles in Idaho. The cost in 1931 was \$1,037,078 or 37 percent of the total State raised revenue for highways.

Snow removal was extended to the entire State-maintained system in 1931-32, except for certain lightly traveled roads and some of those at higher elevations. Both winter seasons of that biennium were periods of unusually heavy snow. Due to this factor and because of the increased mileage, snow-removal costs soared.

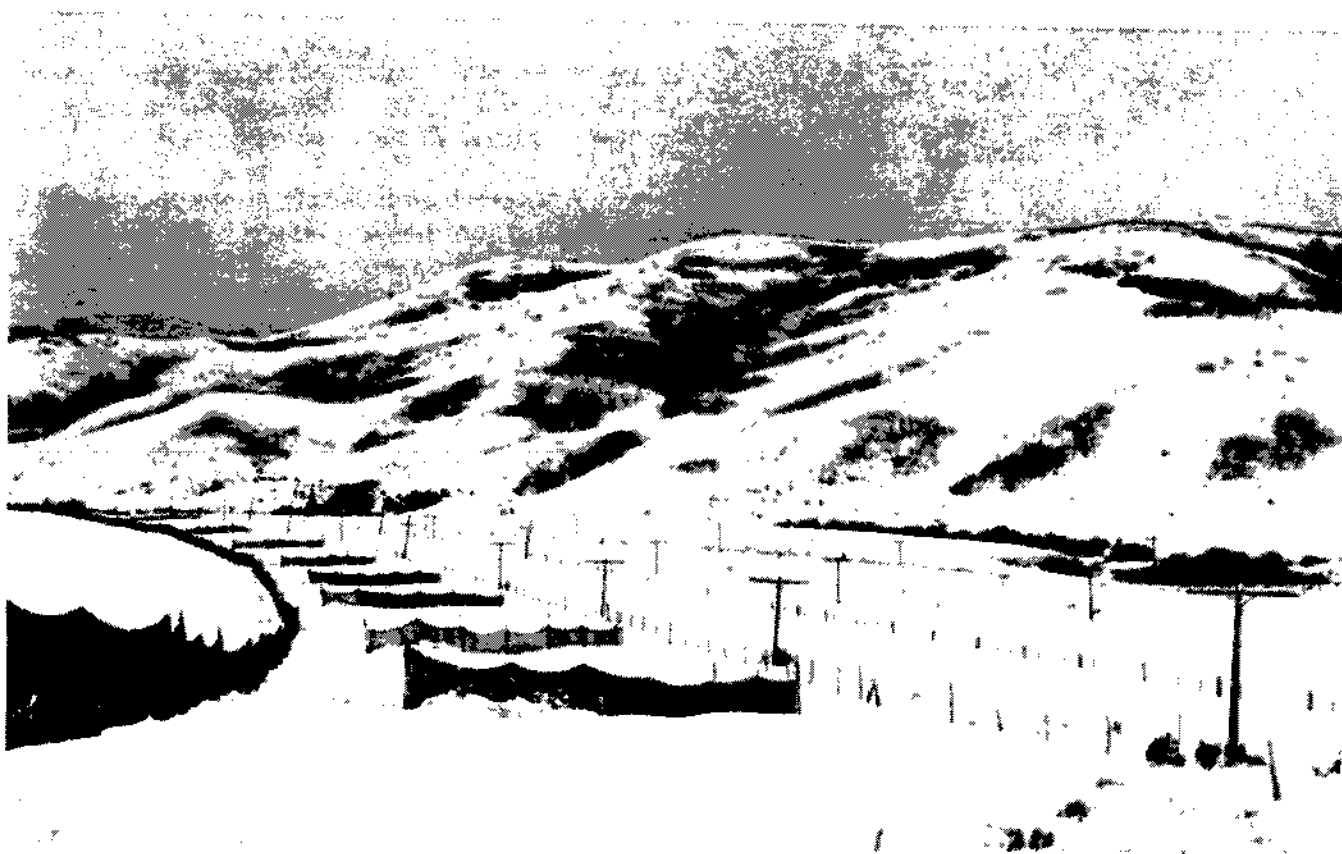
Snow-removal costs varied yearly depending on the severity of the winter. The following tabulation gives an idea as to the variation in snow-removal costs compared with total maintenance costs:

	<u>Miles</u> <u>Maintained</u>	<u>Cost of</u> <u>Snow Removal</u> (add 000)	<u>Total</u> <u>Maint. Cost</u> (add 000)
1931	3091	\$ 123	\$ 1,045
1932	3240	269	1,460
1933	3283	241	820
1934	3433	80	929
1935	3507	169	1,278
1936	3711	273	1,564
1937	3957	357	1,625
1938	3978	231	1,620
1939	4319	188	1,495
1940	4319	149	1,277



Snow fence transported to various snow problem areas.

Snow fencing used to keep snow from drifting over road in 1930's.





Rotary snow plow blowing snow out of
cut in late 1930's.

Flood waters west of Pocatello on
U.S. Highway 30N in 1933.



With a relatively restricted maintenance budget, a really severe winter can dramatically reduce the following summer's betterment program.

Another unpredictable element is exceptional flooding and the worst floods seemingly come during periods other than the normal spring runoff. Such floods are often caused by heavy midwinter rains, melting snow, or cloud bursts or similar storms.

Exceptional flooding struck northern Idaho in December 1933 and January 1934, causing extreme damage in Shoshone, Benewah, Bonner and Clearwater counties. Water levels exceeded those of 1894, which were the highest previously recorded. Flood damage to highways in the Wallace area of Shoshone County was estimated at \$200,000. Expenditures to replace these damaged sections decreased available revenue for betterment or routine maintenance work.

Because of the growth in bituminous-treated surface mileage, the

Spring flooding in early 1930's on a State highway.

Department in 1931 organized six special oiling crews which operated throughout the State to maintain those roads which required more than the normal patching performed as a part of routine maintenance.

These crews were equipped to tear up and re-pave deteriorated surfaces, adding new material as required. In some cases the defects were corrected by adding a new surface or "lift" over the old. When not occupied in this maintenance operation, these crews also applied surface treatments on short, unsurfaced gaps in the highway system which were not large enough for construction by contract.

This expanded maintenance program and the associated increase in equipment necessitated construction of additional facilities for protecting and servicing the equipment. Starting with a single storage shed at Boise, the program of building and acquiring additional facilities resulted in a total of 41 at the end of 1932. Sites had also been purchased for four additional sheds. Investment in buildings and sites as of October 31, 1932 amounted to \$182,617.





Although other buildings were constructed during this period, biennial reports from the time fail to indicate their type, number or cost.

Obsolete equipment was one of the major problems in maintenance operations. For example, a number of Department-owned road graders were 12 to 20 years old. They were towed by trucks and manually controlled. Their operation required two men and their average rate of progress was three miles an hour. By contrast, a diesel-powered patrol, with power-operated controls, required only one man and could cover 6-to-12 miles per hour with a consequent saving of about 65 percent in operating costs.

Center-line striping was established as a standard traffic feature in 1935. The prescribed yellow center-line marking was applied on about 1,200 miles of hard-surfaced highways during the biennium. Mileage so marked represented about 50 percent of the hard-surfaced State highways as of October 31, 1936. Lane-marking was extended during 1937-1938 and, in some areas, a double line was provided

Landslide north of McCammon U.S. Highway 30N in early 1930's. Slides such as this are a maintenance headache.

on sections with limited passing-sight-distance.

During 1937-1938, these pavement markings were placed by two crews operating statewide. They applied 2,100 miles of center line marking and 170 miles of barrier line to denote areas with restricted sight distance and/or hazardous passing conditions. Glass reflector buttons encased in metal were applied on some test sections but did not prove satisfactory because of cost and interference with snow plowing. This work was done with equipment developed in State shops and permitted striping from 10 to 15 miles per day. Total cost for this service was \$57,130.

Additional informational and safety signing was also installed during 1937-1938. Sign vandalism was a major problem. J. H. Stemmer, Director of Highways, reported that out of all signs on a 54 mile section of highway, only two



Farm disc used to break up oil mat
for remixing and relaying for
smoothing pavement in 1930's.

were undamaged three months after installation. One sign at the top of Timmerman Hill north of Shoshone (U.S. Highway 93) had been hit 22 times by rifle bullets and once by a shotgun charge. Cost of replacement, Stemmer said, was \$5.00 per sign.

Maintenance funds have always been in short supply, because as much State revenue as required has been used to match Federal-Aid and to do necessary engineering and planning. Maintenance required what appears to be a large percentage of State-derived revenue but regardless of this fact, sufficient funds to maintain the system adequately have continued to be a matter of great concern.

The advent of World War II and the increased volume of heavy hauling due to military operations, strategic minerals requirements and timber demands brought unprecedented pressure on maintenance forces in the war years.

Local Roads

The reported system of local roads under the jurisdiction of the highway districts and counties included 31,800 miles on December 31, 1931. About 60 percent of the mileage was graded and drained and some had an all-weather type surface. About 4,950 miles had gravel or rock surfaces and 105 miles had some type of pavement by the end of 1932. On December 31, 1939, the counties and highway districts listed 23,771.5 miles of road of which 7,600 miles had gravel or rock surfaces and 333 miles some type of all-weather pavement.

Revenues for these roads now included a share of the gasoline tax and registration fees as well as direct property tax levies. Historically, property taxes and bonds had been the major source of revenue. However, requirements that the local units of government provide rights-of-way and cooperate with the State caused

extreme problems during the depression era. In fact, very little money was provided cooperatively with the State in 1932 and such cooperative projects further declined in the following years of this period. During the entire era, struggles for a greater share of revenues continued.

About \$8,000,000 in bonds had been issued by the counties and \$12,000,000 by highway districts prior to December 31, 1931. Bonds redeemed and interest paid by these units of government was \$1,495,470 in 1932 and \$1,399,259 in 1933. Maintenance and reconstruction costs exceeded \$1,000,000 in 1932 and \$790,000 in 1933. Actual revenues available for construction were less than \$200,000 each year. During the period 1932-1939, the counties increased the proportion going into construction. There was little change in construction outlays in the highway districts, however.

Reported mileage of roads under control of counties and highway districts declined from 30,844 miles in 1937 to 23,772 miles in 1939. This dramatic change was due to inventory operations conducted by the Highway Planning Survey. Prior to this inventory, mileage as reported had been based largely on estimates by local officials.

The inventory also produced some downgrading in surface-type classification. In 1937, 65 percent of local road mileage was classified as improved. As a result of the inventory only 50 percent was actually in this status as of 1939.

The financial position of counties and highway districts remained about the same as in previous bienniums since the allocation of \$1,000,000 in gas tax revenue was slightly more than the loss of revenue from motor vehicle license fees.

Local units also benefited from projects financed under the Federal-aid Secondary program. Many of these

were to provide warning signals at railroad-grade-crossings. Three road construction projects with a total length of 12.3 miles and an estimated cost of \$103,540 were also financed with Federal-aid Secondary funds.

The State continued its program of providing assistance to local units in construction and betterment work on local roads. Most or all of this work was done under specific instruction from the office of the Governor.

THE WORLD WAR II ERA

1941 - 1950

The war in Europe created major concern regarding highways as the Federal government was organizing men, equipment and munitions to meet this military crisis. The highway system designed for peacetime use was found to be inadequate for wartime needs.

The U.S. Bureau of Public Roads and U.S. War Department together designated a Strategic Highway System with standardization of design and construction to be required. Priorities were established and it was self-evident that speed of construction was imperative. The cost of the 683-mile, first-priority system in Idaho was estimated to be \$9,143,700, and for the second priority system of 503.6 miles to be \$11,772,400, or a total of \$21,186,100. These sums were more than Idaho's net construction revenues for more than five years.

Due to the war, many minerals were classified as critical by the War Production Board. Idaho possessed deposits of tungsten, molybdenum, cobalt, antimony, mercury, copper, zinc, phosphates, vanadium and lead needed to supply a large part of the nation's requirements. Governor Chase A. Clark in August 1941 directed the Department to lend every assistance to those engaged in or contemplating production of these strategic materials. The Commissioner of Public Works met with Committees of Congress and helped to secure Federal funds for access roads to these deposits.

Idaho had become recognized as a great new storehouse of war minerals. It was estimated that these minerals would offset the loss of foreign supplies such as antimony, previously obtained from China, Mexico and Peru.

Phosphate rock contained vanadium and while this mineral had not been recoverable from fertilizer production prior to 1939, new processes now permitted its extraction.

The loss of 385,000 pounds of vanadium in 1939, through lack of suitable processing methods, was estimated to be 23 percent of the total imported that year.

With Federal-aid funds made available, the State undertook an expanded program of highway construction on secondary and feeder roads. The Defense Highway Act of November 1941 authorized appropriations for immediate construction of access roads and for strategic network construction.

The Japanese attacked Pearl Harbor on December 7, 1941, and on December 8, the United States declared war. Defense measures went into effect immediately and a wartime economy became a reality. On December 29, 1941, all Federal-aid funds were limited to defense projects and all previous construction programs were cancelled. The year ended with concerted efforts by everyone to conclude operations not essential to a nation at war. On January 31, 1942, production of automobiles was stopped and a rubber conservation program began.

On April 9, 1942, a further conservation order stopped all non-essential construction and on May 8, 1942 authorization of construction on essential public roads was given providing that no steel was used. On October 5, 1942, the Petroleum Coordinator began controlling use of all asphalt and tar products. Many other such orders followed in close sequence.

Automobile transportation was disrupted, gasoline rationing was to soon become effective, and tires became difficult to purchase. Restricted speed limits were also imposed. Anyone having any distance to travel went by train or bus.

It appeared from the experiences of states already under rationing programs that Idaho could expect a reduction in motor fuel revenues of 35 to 40 percent. With \$1,000,000 committed annually to the counties and highway districts, the State would have only \$2,000,000 of State-raised revenue to cover maintenance and other operating costs. As construction and reconstruc-

tion funds declined, maintenance costs could be expected to rise, and could eventually require selective operations to assure proper maintenance of the roads essential to the prosecution of the war and which would serve the bulk of all traffic.

It was evident that economic considerations would become secondary to strategic and military considerations since these values were much higher in priority.

Manpower was confined to projects directly or immediately essential to the war effort. Many employees departed for the Armed Forces (137 by 1944) and others for defense jobs in the ship yards, airport construction, military base construction, the Alaska

Little Salmon River cut through U.S. Highway 95 in 1948.





Highway, etc. The net result was a shortage of manpower, and on June 30, 1944 personnel were 52 percent fewer than on the same date in 1942.

Postwar rehabilitation of the State Highway System was needed due to deterioration during the war. The effect of a virtual cessation of construction was also of concern at this time. It was estimated that a considerably larger program would be needed following the war than during normal prewar years. The State had prepared plans for about \$4,000,000 in new construction by 1944 and was continuing work toward further projects.

The war ended with capitulation by Germany on May 8, 1945 and Japan ceased hostilities August 14, 1945. This resulted in the virtual ending of military production and in the conversion to post-war civil life. Construction was again authorized by lifting of the War Production Board Order on October 15, 1945. Truck rationing ended December 1, 1945.

More damage caused by the Little Salmon River cutting through U.S. Highway 95 in 1948.

The Federal-Aid Highway Act of 1944 became law December 20, 1944. This Act required State highway departments to cooperate with adjoining states in the designation of a system of Interstate Highways not to exceed 40,000 miles. Federal apportionments by the usual formula applied, but also included right-of-way costs. This Act provided the necessary funding to commence reconstruction of the State Highway System after the war. During the war, it had not been possible to maintain the system in an "as built" condition and many sections of highway needed complete reconstruction to establish a reasonably sound system.

Post-war efforts for several years were directed toward reconstruction of worn out and obsolete highways. In some cases alignment and grades were improved. However, a Betterment

Program, consisting primarily of tearing up existing oiled surfaces and re-inforcing the base with additional gravel or rock and often widening the roadway 2 to 4 feet, made up the major effort for at least two years.

Shortages of personnel, especially of qualified engineers and other technically trained people, continued to be a problem.

During the period from October 1947 to July 1948, the western and northern parts of the State were plagued by floods. Areas of the Salmon River and Little Salmon had flood waters higher than the known record high of 1894 and roads suffered severe damage. All districts in the State suffered flood and water damage.

Heavy rains began in October of 1947 and continued into the summer of 1948. U.S. Highway 95 between New Meadows and Pollock was severed in 18 separate locations with one section of 1.31 miles partially washed out. Fortunately no major bridges were lost but extensive damage was done to approaches.

Legislation

Only three pieces of highway-oriented legislation were enacted by the 1941 State Legislature. The first provided specific authority to the Department of Public Works to participate in the cost of constructing Interstate or International bridges.

The second statute removed the administration of the licensing of public works contractors from the Department of Public Works and placed it under control of a Contractor's License Board.

A final action authorized highway districts to levy a property tax in the maximum amount of 50 cents per \$100 of assessed valuation. These funds could be used by the districts to build trunk highways either within their own district or in cooperation with State and Federal agencies.

The limited amount of highway legislation passed by this session clearly highlighted the transition then underway from a peacetime to a war-time economy.

No significant legislation relating to highways was enacted by the 1943 legislative session.

The 1945 Session Laws provided for an increase of one cent in the State motor fuels tax bringing the total to six cents per-gallon. This increase was earmarked to provide matching funds for post-war Federal-aid construction. The increase was to be effective for the period July 1, 1945 to June 30, 1947.

The special one-mill per-gallon fuels tax levied in 1939 to purchase the Twin Falls-Jerome toll bridge had provided sufficient revenue to retire the tax anticipation notes issued and the levy was repealed in 1945.

During the previous biennium (1943-1944) the distribution of fuels tax proceeds to the refund fund was insufficient to pay actual claims due primarily to wartime restrictions on travel and gasoline rationing. The 1945 Session Laws increased this ratio from 10-percent to 15-percent of revenues collected. The same statute limited refunds to purchases of 50 gallons or more instead of all purchases for non-highway use.

Other legislation authorized the Commissioner of Public Works to sell surplus land originally acquired for highway purposes but no longer needed for that purpose.

In a special session held in 1946, the State Legislature authorized sale of \$500,000 in tax anticipation notes to expedite post-war highway construction. Notes were to be retired and interest paid through an authorization of \$12,500 monthly from proceeds of the State motor fuels tax.

Probably the most significant action of the 1947 State Legislature was

the passage of a law extending the effective date of the six-cents per-gallon State gasoline tax to March 1, 1949. One cent of this six-cent tax had been scheduled to expire on June 30, 1947. Use of the additional cent was still limited to matching Federal-aid for highway purposes.

The same Legislative Session also enacted the first State tax on motor vehicle fuels used in other than highway vehicles, e.g., motor boats and airplanes.

New legislation was also passed concerning vehicle loads and dimensions. Highway authorities were authorized to designate those highways over which loads of logs, poles, piling and unprocessed materials from mines in excess of specified legal limits could be hauled.

Another statute specified maximum legal height limits to be 14 feet. Length limits were established as:

Single-unit vehicle	35 feet
Tractor, semi-trailer	60 feet
Truck-trailer combinations	65 feet

Other actions added to the State highway system those roads within educational institutions under control of the State Board of Education and also certain State parks and roadside picnic areas.

Two other actions of the 1947 Legislature affected local roads. The first repealed legislation authorizing

Sheep drive along a State highway in southern Idaho.



highway districts to assess a special levy for trunk highway construction. The second eliminated the requirement that the special post-war levy of highway districts be used exclusively to match Federal-aid highway funds thereby permitting these monies to be used for any post-war construction. It also specified that cities receive 25 percent of highway district levies collected within their corporate limits.

The regular session of the 1949 State Legislature made permanent the temporary motor fuels tax of six cents per gallon enacted during previous sessions. A separate action transferred responsibility for collection of

the tax from the Commissioner of Law Enforcement to the State Tax Collector.

The 1949 Session Laws also established gross vehicle weights according to axle spacing. The maximum legal weight was set at 72,000 pounds. Trucks with a distance of 22 feet to and including 30 feet between first and last axles were permitted to carry loads 10 percent in excess of specified limits. This provision was designed to cover vehicles commonly used to haul short logs. The maximum legal loads for vehicles within this group was 56,000 pounds for units having four axles and 60,000 pounds for those with five axles.

The most significant highway legislation enacted by the 1949 Legis-

Over-height vehicle loads continually damage truss-type structures.



lative Session created an "Idaho Highway Study Committee". This committee consisted of two Representatives and two Senators, one from each political party. The Governor was committee chairman.

This committee was directed to study the Bureau of Highways and all local units having road responsibilities, including cities. They were also directed to employ a firm or individual from outside the State to make the study.

The study was to include highway finance, overall and long-range planning, standardization of highways, taxation, revenue, administration, organization and management, cooperative arrangements between governmental units, highway needs, the ability of the State to maintain a public roads system and to make recommendations concerning all of these factors.

The committee report was to be completed on or before December 31, 1949. The work was financed by an appropriation of \$50,000 from the General Fund.

Committee members were:

Governor C. A. Robins, Chairman
Senator L. C. Lowry, Benewah County
Senator Clyde Starr, Lemhi County
Representative Ernest Blaser, Madison County
Representative Elvin Hampton, Latah County

The firm of Public Administration Service, with offices in Chicago, San Francisco and Washington, was engaged to conduct the study.

The study report, published in December 1949, included a brief history of highway development in Idaho, a discussion of the several highway systems, and an outline of the existing highway organizations for the State, counties and highway districts. Also included was an analysis of the existing revenue structure and distribution of the income obtained therefrom.

Part II of the report dealt with local government highway administration. This section pointed out that the counties and highway districts were responsible for 64 percent of the rural road mileage in the State. The report also dealt with the higher standards necessitated by the automobile, the higher skills required in personnel, and the fact that the roads had become a matter of general public interest rather than almost exclusively a concern of abutting property.

A hypothetical highway district budget was developed indicating that the existence of this type organization could be justified only if the available resources of the individual unit exceeded at least \$30,000 annually. The report pointed out that 76 of the existing 92 highway districts in 1948 failed to meet this criterion. For this and other reasons it was recommended that all highway districts be abolished and their responsibilities assigned to other agencies, primarily to the counties.

As for counties, it was recommended that the Boards of County Commissioners be policy-making agencies with actual highway administration delegated to a county road superintendent and his staff. The superintendent would classify county roads, develop annual budgets and long-range programs for review and approval of the county commissioners.

The report also recommended the creation of a State Department of Highways as a separate agency from the Department of Public Works. The chief administrative officer would be a Commissioner of Highways appointed by and serving at the pleasure of the Governor. To provide for needed continuity of policies and programs, it was recommended that a six-member Highway Advisory Board be created with Members appointed by the Governor for six-year staggered terms.

The functions of the Board would be to review and analyze long and short range programs, and to hearing

and appraising proposals and suggestions made by various interested individuals or groups. The Board's advice would be submitted to the Commissioner of Highways as a recommendation which he might or might not adopt. The Board would meet at least quarterly, serving without compensation other than necessary expenses, and would receive \$25.00 per day while in session.

It was recommended that the Headquarter's staff be organized into six Divisions under the following heads:

- Chief Administrative Officer
- Chief Planning Officer
- Chief Maintenance Engineer
 - District Maintenance Engineer
- Chief Technical Engineer
 - Bridge Engineer
 - Design Engineer
 - Construction Engineer
 - Materials Engineer

These changes were designed to correct existing deficiencies which were identified as:

1. A minimum of 16 organizational units were responsible to the Director of Highways.
2. A lack of clearly defined lines of authority.
3. District Engineers were supervised to some degree by eight of the Headquarter's staff.
4. There was a lack of integration of planning functions with other departmental divisions.
5. An excessive turnover in personnel due to politics which reduced productivity, resulted in discharge of competent personnel, and the retention of incompetent employees beyond the time necessary to establish their inability to perform assigned tasks.

The report also recommended establishment of a merit system for Department employees with recruitment,

retention, and promotion of personnel on the basis of qualifications and ability.

Part IV of the report recommended a basis of delineating highway responsibility and the distribution of State highway user revenues. Each level of government would be exclusively responsible for those roads under its jurisdiction. One level could cooperate with another but only on the basis of reimbursement for services rendered.

The consultant concluded that although the total distribution of highway user revenue between the State and local units was equitable, the distribution of the local share to individual units was not. The basis for this conclusion appeared to be a desire to retain the status quo with regard to the total distribution of revenues. This conclusion is based on the following quotation from the report:

These apportionments have been established over a period of years as a result of concepts, pressures, and considered legislative judgment of the relative needs of the road systems.

Research revealed that during recent years the counties and highway districts had received 30 percent of State highway user revenue with the remaining 70 percent going to the State Highway Fund. It concluded that the existing basis of allocating revenue to individual local units was discriminatory since the smaller, more densely populated counties received more than their equitable share and that cities were omitted entirely.

A new distribution formula was proposed. The basic distribution of State highway user revenue would be established at 30 percent to local units and 70 percent to the State Highway Department. Instead of being distributed at the source, all user revenues would be paid into a State Highway User Fund and allocated quarterly.

The local share of 30 percent would be allocated as follows:

Four percent to cities having a population of 2,500 or more with allocation to individual cities on the basis of population and 96 percent to counties and highway districts on the basis of the following formula:

- 10% distributed equally
- 45% on the basis of improved road mileage
- 45% on the basis of revenue from motor vehicle registrations

The above factors were selected on the basis of readily available necessary data and also because they could not be manipulated at their source. The city share was established on the basis of city street mileage comprising four percent of total road and street mileage under control of the State and all its political subdivisions.

The net result would be a slight increase in the local share of user revenues. Allocations to nine of the more populous counties would be decreased with the other 35 counties receiving more user revenue.

The consultant also prepared a draft of legislation to accomplish the proposed change in organization, jurisdiction and revenue distribution.

The final section of the report paper included an analysis of State highway needs and revenue. The report recommended a 12 year construction program of \$150 million. It concluded that the annual highway program, including construction and operating costs, would exceed available revenues by approximately \$2 million. It proposed that this deficit be made up by an increase in motor vehicle registration fees for cars and trucks. It established that fees existing in Idaho were substantially lower than those of most other states.

This report was reviewed by a special session of the State Legislature convened during the first part of 1950.

Extraordinary Session Laws of 1950 enacted into law most of the provisions recommended by the Study Report. These chapters included the provisions of model legislation prepared by the consultant except:

1. Appointment of a county road superintendent was made optional instead of mandatory.
2. Revenue allocations were made directly from the State Highway Fund instead of a highway-user fund.
3. Highway districts were retained.

Revenue and Federal-Aid

Utilization of Federal-Aid construction funds continued on an essentially normal basis until December 2, 1941. On that date further obligation of Federal-Aid funds was stopped. An order of December 29, 1941 restricted the use of Federal-Aid funds to projects certified as essential to the National defense.

This was followed in 1942 by orders restricting use of steel, wood, and asphalt or tar products. Passenger car production was stopped on January 31, 1942. These actions inhibited construction either directly or by reducing highway revenues.

Federal-Aid income to the Bureau of Highways during 1941 was \$2.1 million and dropped to a little less than \$1.0 million in 1942. Construction on the Strategic Network involved approximately 45 miles and an expenditure of \$1.1 million during 1941-1942.

Several projects were built during the biennium to provide access to military installations or to deposits of critical minerals. These projects were financed with special Federal defense access funds or through use of regular Federal-aid highway funds.

Although construction work was curtailed, completion of surveys and

the preparation of plans for post-war projects was emphasized. This work was eligible for Federal participation under the advance engineering and public works reserve programs.

The year 1941 reflected the boom times which existed despite the threat of war, and highway revenues reflected those conditions. Revenue in 1942, however, with wartime restrictions in effect, showed a downward trend which was to continue for the next several years. Motor fuels taxes dropped from \$5,245,000 in 1941 to \$4,723,047 in 1942; Federal-aid from \$2,081,142 to \$926,625 and overall revenues to the State from \$8,164,522 to \$6,631,460. The low point in motor fuels taxes occurred in 1943 with only \$3,962,397 collected and the low point in Federal-aid funds in 1945 of \$227,866.00.

Several access roads were constructed during the war years to mili-

tary installations and to mineral deposits. Included were:

Military Installations

Gowen Field to U.S. Highway 30, 2.33 miles
Gowen Field to Boise, 2.568 miles
U.S. Naval Training Station, Bayview, 4.45 miles
Mountain Home Airbase, 10.2 miles
Boise to Rifle Range, 3.55 miles
Garwood-Athol (Existing road) 8.1 miles

Mineral Area Roads

Cascade-Stibnite, 68 miles
McCall-Stibnite, Survey
South Mountain-Mine, 19 miles
Mores Creek-Atlanta, 66 miles
Triumph Mine, 6 miles
Dickey-Ima Mine, 2.2 miles
Green Creek-Stites, 6.7 miles

There were no regular Federal-aid apportionments made during this 1943-1944 period. However, Idaho received slightly more than \$3.1 million in Fed-

Moving camp in 1942 - McCall-Stibnite mineral access road.



eral funds. For the most part this represented the Federal share of the cost of projects built on the Strategic Highway Network. It also included \$736,563 in highway defense funds which represented 100 percent of the cost of access roads essential to the war effort. Funds derived from regular Federal-aid were from apportionments for 1942 and earlier fiscal years.

There was a revision in the eligible Federal share of cost for construction of projects awarded during this period. Federal funds authorized under the Defense Act of 1941 could be used to finance the total project cost, including purchase of rights-of-way. Federal participation for projects on the strategic network was 80.95 percent of cost instead of the normal Federal-aid ratio of 61.83 percent.

In recognition of the need for an early start on developing a post-war highway program, the Defense Act of 1941 provided a nationwide authorization of \$10 million to finance engineering for future construction. The Idaho share of these funds was \$123,800.

These funds were for preparation of plans in such detail and completeness as would permit construction with a minimum of delay when the war ended.

Eligibility of right-of-way costs for Federal funds was established initially January 13, 1942 and was applicable to the Strategic Network. These provisions were extended by a series of memoranda during 1943 and 1944.

Studies made in connection with the development of the Strategic Network revealed serious deficiencies in the capacity of the Nation's highways to serve either normal civil or war-time traffic. This led to authorization by the Congress of additional studies leading to a possible ultimate designation of a National System of Interregional Highways. The Interregional Highway Committee conducting these studies recommended a national system of 33,920 miles. These studies provid-

ed the data for the ultimate designation of the National Interstate and Defense Highway System.

Emphasis at this time was placed on the development of the Strategic Network with bypasses around and extensions into cities and metropolitan areas. Studies of ten cities and six rural areas were undertaken in Idaho. Completion of these projects was hampered by manpower shortages.

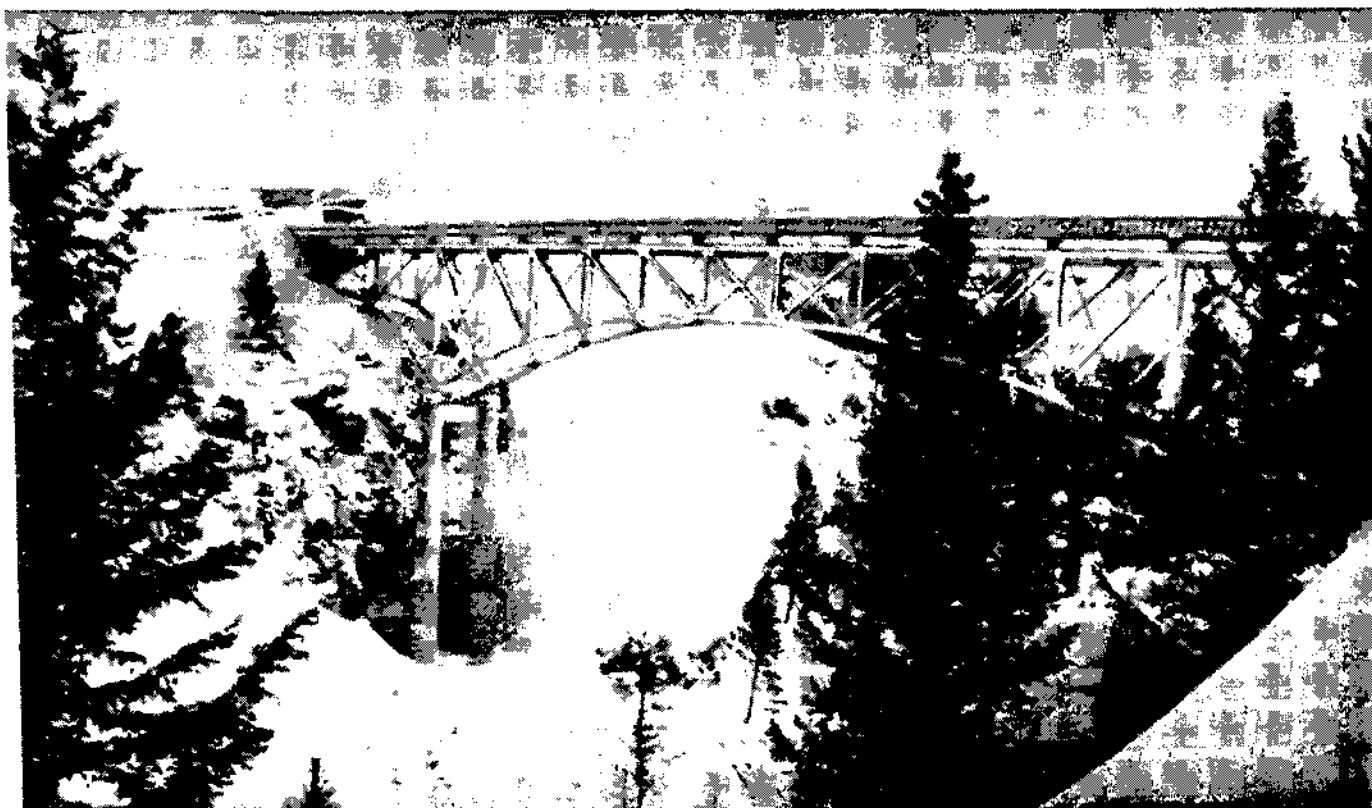
War-time restrictions on travel continued to have an adverse effect on State-raised revenues. Income from the State motor fuels tax was down 15 percent in 1943-1944. Federal-aid funds were reduced in 1944 and overall revenues to the State were down by well over \$1 million.

Provisions of the Federal-aid Highway Act of 1944 came into effect with the official termination of the war on October 2, 1945. This Act brought substantial changes in the Federal-aid construction program. Federal-aid funds were authorized for three different highway systems: Primary, Secondary and Urban. The Urban System comprised extensions of the Primary and Secondary Systems into urban areas of 5,000 or more population.

The Act further provided that the States cooperate in recommending a system of Interstate highways with an aggregate length not to exceed 40,000 miles. These highways were to be built to accommodate long-distance, high speed travel. Any highway mileage selected as a part of this system and not already on the approved Federal-aid Primary system was added to that system automatically.

Construction projects on the Interstate System were to be financed under the Primary program or with Urban funds if located in an urban area.

Since 1935, Idaho had been allocated Federal-aid funds for feeder or farm-to-market roads. A system of



Clearing snow from bridge north of Spencer, U.S. Highway 91.

such roads had been selected, consisting of both State highways and local roads. However, authorizations for funds were small and local units were slow to take advantage of the program. Thus, most of the actual construction accomplished was on the State highway system. This program had been almost wholly suspended during World War II.

The Act of 1944 provided greatly increased fund authorizations for Secondary roads. The system was visualized as the more important Secondary or feeder roads supplementing the Federal-aid Primary system making the two systems an integrated highway transportation network.

Secondary roads were required to connect at each end either with a Primary road or another Secondary. Dead-end roads were discouraged but occasionally allowed where the transportation system had "herring-bone" rather than section-line characteristics.

Routes could be either State highways or local roads but in either case must be selected cooperatively by State and local officials.

A series of meetings was held with county and highway district officials in January-April, 1945. These conferences led to the selection of a Secondary Highway System with a total length of 3,082.6 miles which was submitted for review and concurrence of the U.S. Public Roads Administration. The system finally approved on February 8, 1946 comprised 2,786.7 miles of which 947.5 miles were State highways and 1,839.2 miles were county or highway district roads.

A Secondary road construction plan was then developed in cooperation with local officials. It was agreed that the State would provide one-half of the necessary matching funds or 18.64 percent of the total cost of local road Federal-aid projects. A like amount would be provided by the local units, with the remaining 62.72 percent being Federal-Aid funds.

Local projects were slow in developing and most early Federal-aid funds were used on the State portion of the system to prevent lapsing of Federal-aid. On State projects, the State provided all matching funds.

Other new provisions in the 1944 Federal-aid Act included making cost of rights-of-way eligible for Federal participation and a requirement that railroads contribute up to 10 percent of the cost of eliminating grade crossings where benefit accrued to the rail operation.

A separate formula for the distribution of Federal-aid funds to individual states was provided for each class of Federal-aid funds. For the Primary System, the old formula of 1/3 population, 1/3 land area, and 1/3 post-road mileage was retained. For the Secondary System, rural population, including population of cities of less than 2,500, was substituted for total population. Funding for the Urban System was made on the basis of population in urban places of 5,000 or more. Apportionments to Idaho for the 1946 fiscal year were as follows:

<u>System</u>	<u>Amount</u>
Federal-aid Primary	\$ 2,785,964
Federal-aid Secondary	1,948,442
Federal-aid Urban	211,799
Total	\$ 4,946,205

By contrast, actual Federal-aid funds received during the biennium July 1, 1945 - June 30, 1946 amounted to \$748,462. The reason for this is that Federal-aid highway funds are not paid to individual States at the time of authorization. Payments for all engineering, right-of-way and construction of Federal-aid projects must first be made by the State. The State then submits a claim to the Federal government and, upon claim approval, is reimbursed for the Federal-aid share of cost. This procedure means that there is always a lapse of time between payment by the State and the Federal

reimbursement. This time span could be extensive in case of controversy.

State-raised revenue during 1945-1946 increased nearly to pre-war levels even though gasoline rationing existed during 1945. This increase was partly due to a one-cent per-gallon increase in the gas tax developing a total of \$9,655,000 which gave the Department \$7,655,000. Federal-aid funds were still low since only \$748,000 was received. Counties and highway districts advanced their share of funds necessary for Secondary road construction on local highway systems making it appear in income summaries that the Department received income which in fact was only passed through. The Bureau of Highways supervised construction on all projects involving Federal-aid funds whether on the State or local systems.

Federal-aid matching funds actually collected between July 1, 1946 and June 30, 1948 amounted to slightly over \$4.6 million. These funds were derived primarily from authorizations provided by the Federal-aid Act of 1944 which apportioned as follows:

<u>Fiscal Year</u>	<u>Primary</u>	<u>Secondary</u>
1946	\$2,786,000	\$1,948,000
1947-1948	5,516,000	3,882,000

<u>Fiscal Year</u>	<u>Urban</u>	<u>Total</u>
1946	\$212,000	\$4,946,000
1947-1948	418,000	9,816,000

Total Primary	\$8,302,000
Total Secondary	\$5,830,000
Total Urban	\$630,000
TOTAL	\$14,762,000

The Federal pro-rata share for all eligible costs was 62.72 percent to March 1, 1948 and 62.58 percent thereafter.

An additional \$886,108 was received from the U.S. Bureau of Reclamation in 1948 to reimburse the State for relocation of the Payette Highway



State Highway north of Banks in 1948.

(State Highway 55) north of Cascade due to construction of Cascade Reservoir.

The Federal authorization for Forest Highway construction for the 1947 fiscal year amounted to slightly more than \$2.5 million. A similar authorization for the 1948 fiscal year was cancelled.

The Federal-aid Secondary program on county and highway district roads was substantial during the biennium although specific data are not available.

Gross State highway user revenue during the 1947-1948 biennium amounted to approximately \$19.2 million. After payment of \$2.7 million to the counties and highway districts, the remainder, or \$16.5 million, was available for State highway purposes.

Organization

The organizational structure of the Bureau of Highways at the beginning of the era prior to World War II was the same as in the late thirties. The position of Maintenance and Traffic Engineer was created in 1941 and, in addition to general supervision of maintenance operations carried out through the five District engineers, this Division was also directly responsible for highway signing, pavement marking and special traffic investigations conducted by Headquarter's personnel.

The position of Maintenance and Construction Engineer was abolished at this same time and those duties related to supervision of construction were combined with those of the Materials Engineer.

The impact of World War II was creating shortages in supply of many materials, however, and the situation became most critical with actual United States entry into the conflict in December 1941. In order to channel all available supply into areas of greatest need a system of priorities was initiated beginning January 7, 1942. A Priorities Section was created in the Bureau of Highways to handle administration of priorities at the State level.

The positions of Commissioner of Public Works and Director of Highways were combined with J. D. Wood named as Director and Acting Commissioner. The only other significant change was the temporary discontinuance of the position of Maintenance and Traffic Engineer. Maintenance and traffic functions were transferred to the Materials and Construction Engineer. This step was due to the war situation and a shortage of qualified personnel. By the end of 1944 there were 137 Department employees in the armed services.

By 1945, the productive capacity and manpower of the Nation had been almost totally diverted toward those things necessary for prosecution of the war. There was a growing hope

at this time, however, that this situation might soon change. This hope became reality with the surrender of Germany on May 8, 1945 and the subsequent capitulation of Japan on August 14, 1945.

In anticipation that the return to peace would result in a substantial increase in highway operations, organization of the Bureau of Highways was expanded in 1945-1946.

The Materials Engineer was made responsible for general supervision of State highway maintenance. Supervision of construction, formerly associated with that position, was transferred to the Director of Highways.

Duties formerly assigned to the State Office Engineer were divided and partially assigned to two new positions. Responsibility for project development was assigned to the new office of Highway Design and Plans Engineer.

Statistical duties of the former Office Engineer were assigned to a Staff Engineer and the position of State Office Engineer was abolished.

Three other new positions were created - Market Roads Engineer, Chief Locating Engineer, and Traffic Engineer.

The position of Market Roads Engineer was to provide liaison between the Department and local units of government in connection with the Federal-aid Secondary program implemented by the Federal-aid Highway Act of 1944. Segments of the Secondary system coincident with local road systems were a responsibility of local units but Federal-aid construction contracts were administered by the State.

The Chief Locating Engineer was responsible for engineering studies relating to future highway construction. Changing conditions following the war created new problems in this area. Past highway location and design problems had been concerned chiefly

with topography; now, however, soils and surfacing requirements for rural two-lane construction, the inclusion of urban areas and rapidly increasing traffic volumes introduced new complications which materially affected procedures.

Aerial photographic equipment acquired from war surplus made it possible to reduce some preliminary ground survey work that would otherwise have been necessary. These new methods speeded up preliminary engineering work and reduced costs.

Traffic engineering has been defined as "that phase of engineering which deals with the planning and geometric design of streets, highways and abutting lands and with traffic operations thereon, as their use is related to the safe, convenient and economic transportation of persons and goods."

Initial responsibilities assigned to this new Traffic section were highway signing, pavement marking, installation of traffic signals, studies of high accident locations and a review of highway design plans.

With a change of administration in 1945, T. Matt Hally became Director of Highways and Acting Commissioner of Public Works, replacing J. D. Wood.

The numerical designation of the Boise and Lewiston Districts was reversed to provide consecutive numbering east and west and south and north. The Boise District became No. 3 and the Lewiston District, No. 4.

Post-war operations got into full-swing by 1947 and the State highway organization expanded accordingly. The position of Construction Engineer was reinstated and a separate Maintenance Division was also established. Maintenance had formerly been a part of the Materials Division.

The positions of Commissioner of Public Works and Director of Highways were again separated. E. W.

Sinclair was appointed Commissioner and James Reid, Director of Highways. T. Matt Hally had held both positions under the previous administration.

The organization of the Bureau of Highways in 1949-1950 remained essentially the same as in the previous biennium except for creation of the position of Secondary Roads Engineer in the Headquarters office. With this action, the position of Market Roads Engineer was abolished. Duties of this new position were to provide the liaison between the Bureau of Highways and local units in connection with the local Federal-aid Secondary system.

The only other personnel change was the appointment of J. R. McKinney as Commissioner of Public Works to replace E. W. Sinclair.

Construction

The realization that a peace time highway system lacked the capacity and strength to carry military loads caused the emphasis to change to constructing strategically important roads. Additionally, the loss of minerals from foreign countries caused more attention to be placed on developing minerals within the United States. These needs were given emphasis in 1941, but with the declaration of war in December 1941, all Federal-aid apportionments for highways were stopped. They were later again made available but restricted to defense projects.

All prior construction programs were cancelled causing profound changes in the construction program for the duration of the war. Volume of work was substantially reduced and scheduled projects were on the Strategic Highway Network or for providing access to natural resources and to military installations.

The Strategic Highway System was selected by personnel of the Bureau of Highways and the U. S. Bureau of Public Roads. It consisted of 1,215 miles of State highways con-

sidered vital to the movement of troops and war materials.

Roads tapping natural resources led to reserves of critical materials such as timber, zinc, tungsten, antimony and mercury. None of these roads were a part of the State Highway System.

Expenditures for construction during the 18 month period ending June 30, 1942 were just under \$5.6 million. Contracts for State highway construction completed or awarded during 1941-1942 involved a total of 570 miles. In addition to this the State cooperated with local units of government in construction of approximately 80 miles of roads not on the State Highway System.

1943-1944 was the biennium when operations were most affected by the war. The primary objectives of the Department were directed to those activities which facilitated wartime operations and particularly highway transportation. Highway improvements in areas of heavy agricultural production as well as on access roads to military establishments, mines and timber were included. Nearly all highway construction required approval of the War Production Board. Priorities were required on equipment, steel, lumber, and other essential materials.

The number of highway personnel on June 30, 1944 was 52 percent below the corresponding date in 1942 making it extremely difficult to carry on normal highway functions, especially field surveys for new construction.

Construction operations were further limited by declining revenue accompanied by an increase in requirements for maintenance of the existing highway system. A great problem facing all highway agencies was the preparation for post-war rehabilitation of various highway systems due to the war emergency.

During this period highways were considered to be an expendable item.

The post-war period would require a program materially greater than normal, especially for rehabilitating damaged roads. Plans had been developed by the Department for such a program estimated to cost about \$4.0 million and efforts were underway to develop additional plans.

Construction expenditures during the period July 1, 1942 to June 30, 1944 were slightly over \$6.5 million. Contracts completed or awarded during the period involved 266.1 miles of access roads not on the State Highway System but which served mines, forest resources and military facilities.

Additional construction was provided through projects financed with Forest Highway funds. Work completed or underway involved 25.6 miles at an estimated cost of \$881,000, all on the State Highway System.

The lifting of wartime restrictions in 1945-1946 led to a rapid increase in traffic, thus imposing extremely heavy demands on a weakened State Highway System.

Gasoline rationing, which had been imposed December 1, 1942, was relaxed in 1944 and again in early 1945. With complete removal on August 15, 1945, it seemed that everyone took to the road to relieve pent-up restraints accumulated during the war years.

On October 2, 1945, a Congressional Concurrent Resolution was approved bringing into effect the provisions of the Federal-aid Highway Act of 1944. It was anticipated that this

Relocation north of Cascade due to U.S. Bureau of Reclamation reservoir on the Payette River.



release of funds would be converted rapidly into contracts through projects developed under the Advance Engineering Program and to provide employment for returning war veterans.

There was a shortage of manpower in the immediate post war period, and also a shortage of needed equipment and materials due largely to widespread labor disturbances in 1946. As a result, the 1945-1946 program became largely one of reconstruction.

Construction expenditures during 1945-1946 were slightly less than \$2.7 million. This was about 40 percent of the amount spent during the previous two years. Contract awards in 1945-1946 totalled only little more than \$4.0 million. The first post-war Federal-aid project was for 15.7 miles between Bliss and Wendell costing \$692,000. It was awarded May 4, 1946. Approximately 10 percent of State construction expenditures in 1945-1946 were for projects on the local road system.

As the general economy began to adjust from war-oriented to peacetime activities in 1947-1948, the construction program also returned to pre-war levels. Construction expenditures during 1947-1948 amounted to \$13.3 million compared with the \$2.7 million in the 1945-1946 period.

Rapidly rising prices led to a reduction in the number of miles of road actually constructed despite an increase in both State and Federal-aid funds. The index of construction costs rose approximately 50 percent from 1946 to 1948.

A total of 402 miles of construction utilizing Federal-aid and State matching funds was started and completed during the 1947-1948 biennium together with completion of 633 miles begun during the previous biennium. An additional 127.5 miles were placed under contract but not completed.

This program was supplemented by a substantial State financed betterment program which consisted of replacement of surfacing and some

widening where required by increased traffic volumes. Although the resulting improvements did not represent reconstruction to current standards, they did provide acceptable facilities.

A full construction program during this biennium was inhibited by two basic problems: available revenue, and the lack of manpower. Although State-raised highway user revenues increased substantially, they barely kept pace with increasing costs.

It was also impossible to recruit adequate personnel since salary scales were substantially lower than in adjacent States, Federal agencies and private industry. The lower salary schedule also made it difficult to retain personnel and even more difficult to recruit new engineering graduates.

Concrete Research - 1940's

During the late thirties it was observed that many structures constructed after about 1935 were beginning to show serious distress by cracking and disintegrating. The problem appeared to be confined to southeastern Idaho and, to the best knowledge available, was not a problem with inspection or construction practices. In December 1941, an article appeared in a technical journal describing a similar problem in parts of California and describing a test on the aggregate and Portland Cement in combination which showed the material to have an excessive growth. Idaho began testing aggregates from southeastern Idaho in combination with the several brands of cement from normal supply sources and learned that the same growth within the concrete was occurring with some brands of cement and not others.

California reported that alkali within the cement reacted with aggregates containing certain silicates similar to glass, thus forming a new compound having a volume much greater than before reacting. Pressures developed within the concrete were sufficient to



Disintegration of concrete due to reaction of chemicals in cement and aggregate. Specifying a minimum limit of chemicals responsible effected a cure.

cause cracking. Weathering or water freezing and thawing within the cracks caused further disruption until it was even possible to remove chunks of concrete by hand. Structures particularly affected were the Pocatello Subway, the Gould Street Overhead in Pocatello, and the Idaho Falls Underpass. Numerous other structures and bridges displayed distress in the curb and hand rails.

The Boise Materials Laboratory continued the investigation of aggregate statewide and found other areas were also susceptible including sources in northern Idaho. Sufficient information was accumulated and analyzed to warrant the State to adopt specifications limiting the amount of alkali in the Portland Cement. California, Washington, Alabama, Nebraska and Kansas afflicted with this problem adopted a similar course.

The first structure constructed after World War II in which low alkali cement was used was on an access road to a cheese factory and oil refinery at Pocatello. Concrete for this structure was made from the same type aggregates as used in the Pocatello Subway and Gould Street Overhead. Twenty-five years after construction there was no evidence of any distress in the curbs or any other part of the structure.

During this era the laboratory also began investigating various tests on soils and design procedures to establish a scientific basis for pavement and base thickness design. Here again, Idaho, along with a majority of other states, followed in California's footsteps. Although many problems were evident in the procedures, it was apparent that pavements were beginning to perform more satisfactorily.

Construction Equipment 1940-1950

During World War II the many airports constructed in the United States and those used overseas for military purposes required paved surfaces to carry the heavy bombers. Plant production, however, did not increase greatly during this period since existing hot plants and pavers proved to be quite adequate to meet both military and civilian requirements.

The Barber-Greene plant became the principal unit used by the military forces. Thus, many returning Army Engineer and Seabee personnel were thoroughly familiar with its operation.

After World War II, further development both in hot plant design and in paving equipment was made but capacities did not greatly increase at this time. Reliability of this equipment had improved, however, and some new innovations were being tried. Instead of stacking one unit above another, as in pre-war hot plants, a horizontal arrangement was tried. This permitted individual units, transported on trailers, to be merely backed into position,

lifted up off the pneumatic tires and they were ready to operate. Other types of plants which traveled on the road were also manufactured, thereby practically eliminating the motor patrol method of mixing used in the pre-war era.

However, many pre-war operations were still used in 1949, some with little change. In 1939, about 5,000,000 tons of asphalt were used nationally while in 1949, this figure was 7,000,000 tons. Data are not available for Idaho but it is reasonable to assume that a like increase occurred.

Concrete ready-mix plants were also becoming quite common in the larger populated centers. Yet few such plants were found in the smaller communities.

Earthwork operations were rapidly changing with the use of high-speed rubber-tired tractors to pull the scraper. These were loaded by pushing

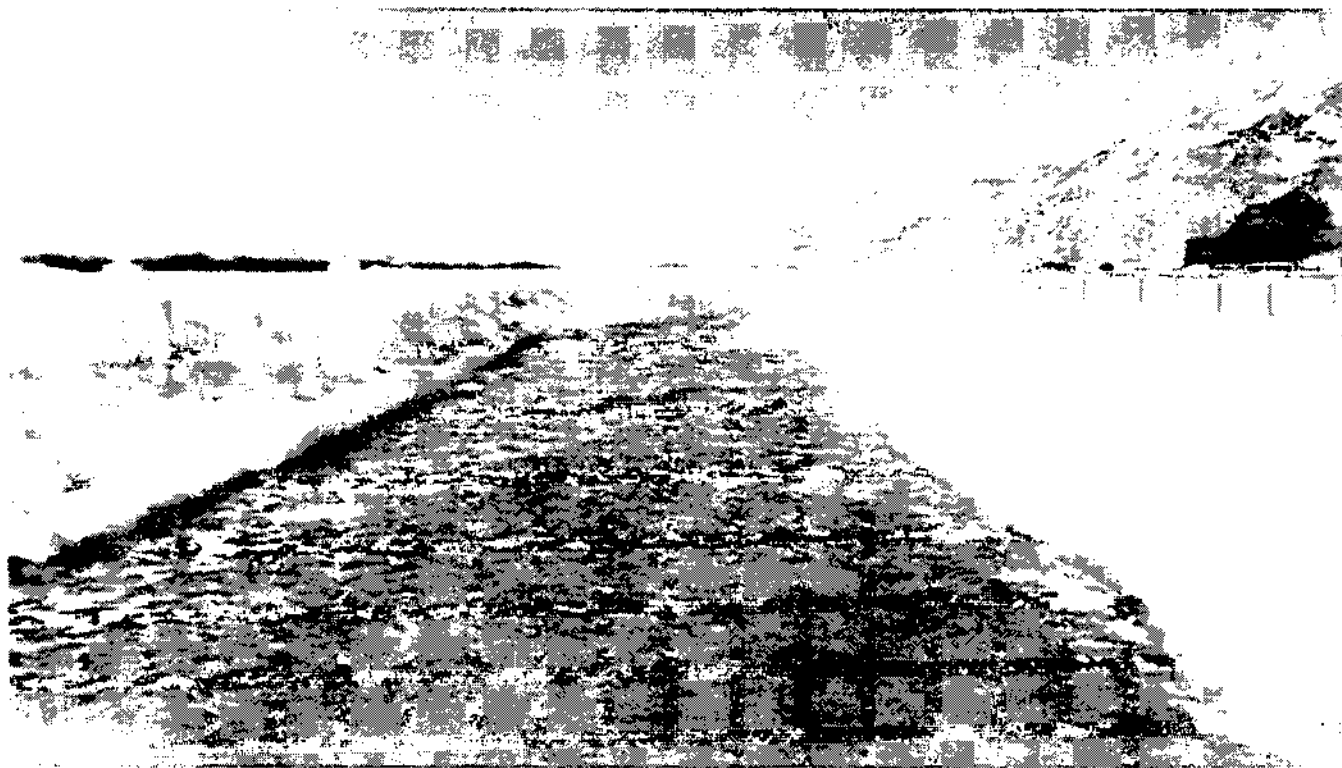
with a crawler tractor. These units could carry seven to twelve yards of earth at speeds of 25-30 miles an hour as compared to 3-4 miles an hour for a crawler tractor. The material could also be transported longer distances for less cost which permitted improved geometrics and structural design of the highway. Elimination of the short hauls of earth avoided the necessity of contour alignment. Larger and larger embankments became more common.

Maintenance

World War II created very severe problems for maintenance operations due to shortages of personnel, together with restrictions on materials and equipment. The cutoff of reconstruction for many miles of the non-strategic system placed a severe burden on maintenance trying to keep the roads adequately serviceable. Maintenance assumed greater importance than under peacetime conditions.

Many miles of roadway had been programmed for reconstruction or new

Birch Creek uses State Highway 28 as springtime channel in 1948.





Spring breakup after World War II,
State Highway 28 near Birch Creek.

surfacing in 1941-1942. As previously noted, the first bituminous surface treatments using road oil were placed in 1927. By 1940, some 2,845 miles of highway had received this treatment and were giving very satisfactory service. The resulting reduction in loss of gravel or rock surfacing, elimination of dust and an improved travelway for the public were definite assets to improved travel. About 200 miles were added to the system each year. An additional 200 miles were given an added bituminous lift and a seal coat, or both, to strengthen the pavement and maintain a smooth riding surface.

Because of material and equipment restrictions, it was determined that a program of stockpiling of material for future use should be undertaken. Aggregate for road mix and cover coat material was stockpiled in this manner. By the fall of 1942, material for some 350-400 miles had been programmed and contracts let. This material was used the following year and by the fall of 1943 practically all mileage in urgent need of treatment had been repaired.

Although snow removal activities had been expanded in response to public demand for year-around operation of motor vehicles, problems during the 1941-1942 biennium were generally not severe since most areas of the State experienced a relatively light snowfall. A total of 4,283 miles of State highways were kept clear of snow in 1941-1942. A total of 1,259,250 lineal feet of snow fence was also placed during this season in areas subject to drifting snow. Sanding was done on steep grades and short curves. No salt or calcium chloride was used, however, due to a lack of adequate storage. Spreading of sand was generally by hand although some power-operated machines were tried for the first time in one District.

By the end of 1942, the Bureau of Highways had acquired or rebuilt 85 equipment storage shelters at strategic locations on the State Highway System. Seven completely new shelters were included in this program. Many of the

older buildings had been very inadequate. This was especially true in areas where extensive snow removal operations were involved.

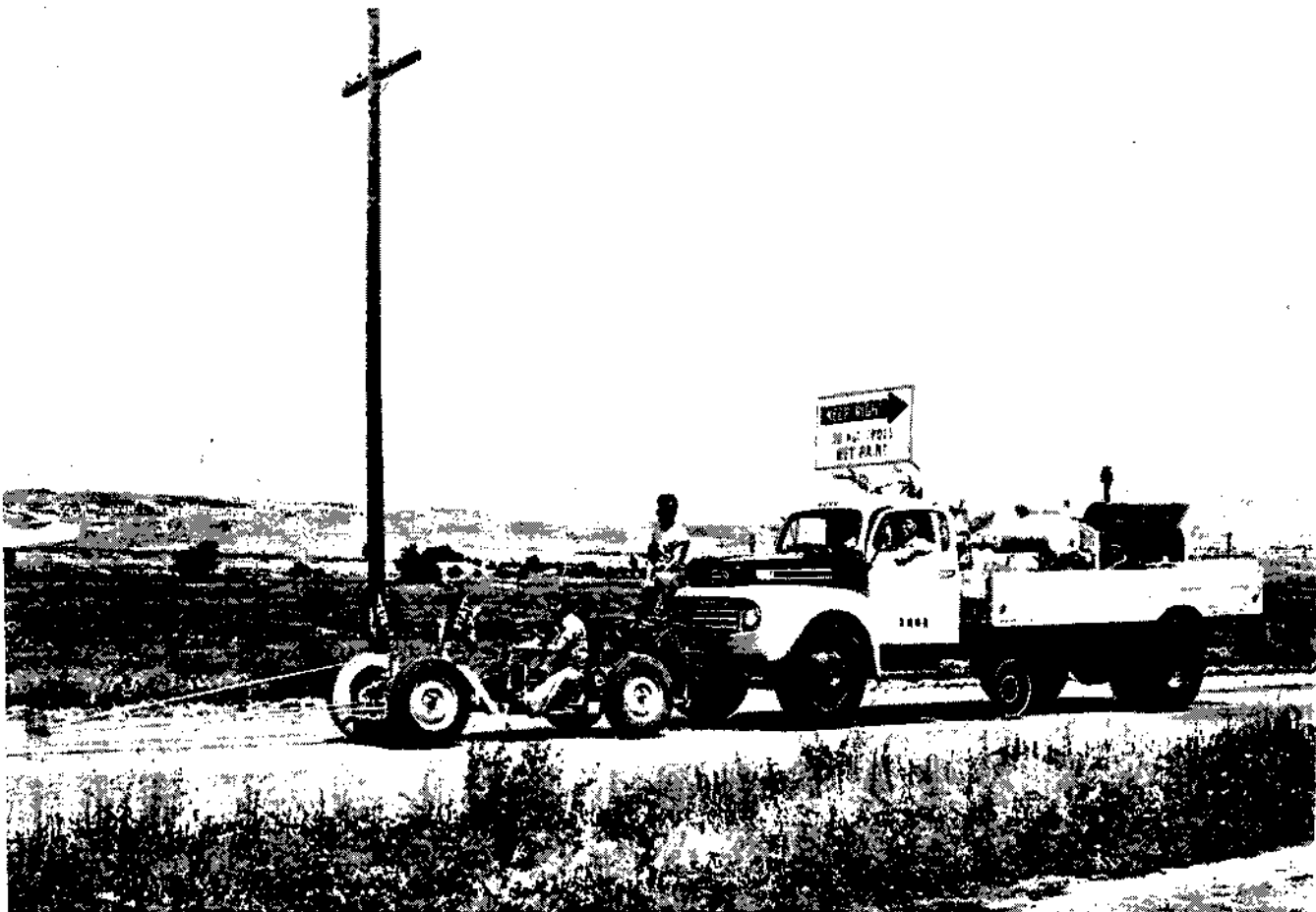
During the 18-month period ending October 31, 1942, a total of \$1.8 million was spent on maintenance on the 4,474-mile State Highway System. This represented approximately 32 percent of all State-raised highway revenue. Snow removal and ice-control cost was \$188,055.

As noted in comments made at the close of the "Depression Era" of this history, an important forward step was made in 1941 with the creation of a section specifically responsible for traffic engineering. Many of the activities of this section support and enhance the maintenance activity.

Department manufactured paint
striper of the 1930's and 1940's.

One of the essential functions of this Traffic section related to the design of traffic control devices. Signs of all kinds, pavement marking, traffic signal equipment, and the design and use of reflectorized guide posts, bridge wing posts, and culvert markers were developed and specifications for their use established. Special pavement markings and islands or other devices for channelizing traffic were an important part of this work. A State manual of uniform traffic control devices was prepared to assure that the utility of these devices would not be lessened or destroyed by lack of uniformity in design, location and use.

There were some 25,000 traffic signs of various types in place on the State Highway System at the close of 1942. Many signs required repainting each year and, in some areas with serious vandalism, repairs and repainting three or four times a year were



not uncommon. Reflectorized signs were an innovation introduced in 1941-1942. These signs provide a reflectorized background which silhouettes the symbol or message carried. Such signs also gave the same message at night as during daylight hours. They were also less costly than button or other types of reflectorized signs.

During the summer of 1941, 2,050 miles of the State Highway System received a yellow center-line marking. In addition, 160 miles of white barrier line to designate "no passing" zones were required.

Pavement marking work was performed by two crews operating out of Headquarters. These same crews also placed "School", "Stop", and/or "Pedestrian Crossing" pavement markings at 275 locations.

Here again, the shortage of materials and supplies limited pavement marking activities during 1942 to approximately 700 miles of highway where needs were most critical.

Maintenance of the roadway surface was given highest priority during 1943-1944. The objective was to conserve tires and irreplaceable motor vehicles and to reduce fuel consumption by keeping roadway surfaces in the best possible travel condition.

To this end, numerous stockpiles of crushed material were manufactured and placed at various locations so that materials would be readily available to make necessary base and surface repairs. An extensive program of seal-coating was then initiated to revitalize and preserve existing bituminous surfaces.

During 1943-1944, State forces added base and surfacing to 75 miles, reworked some 125 miles of bituminous surface, and seal-coated approximately 275 miles. In addition, contract work included 25 miles of bituminous lift and 475 miles of seal-coat.

Maintenance of shoulders, ditches, drainage and right-of-way are also

vital elements of the highway facility but were assigned a secondary priority because of shortages of essential equipment and manpower.

Snow removal operations during the winter of 1942-1943 were extremely difficult and costly due to generally heavy snowfall and the poor condition of equipment. Spring floods, due to the heavy runoff from the snow pack and frozen condition of soils in the lower valleys, also caused considerable damage to both highways and bridges. Major damage was along the Boise River and Mores Creek and in the Carey, Arco and Challis areas.

The winter of 1943-1944 was much less severe and all roads were easily kept open to traffic.

Snow removal costs for the 1943-1944 bienniums for 4,260 miles of highway was \$572,869 or 18 percent of all maintenance expenditures.

Pavement marking was minimal during this period because of a shortage of material and because of a reasonably acceptable condition of existing markings. Some 75 miles of center-line was placed where high traffic volumes existed. The program for 1944 involved 1,500 miles of the State Highway System. A "broken" or "intermittent" type marking was also adopted at this time to reduce the cost of paint materials.

During 1945-1946 general or routine maintenance problems were also compounded by the same shortages of manpower and equipment that plagued the construction program.

Labor availability had improved slightly but the quality of work accomplished was down and wages were higher. Equipment and repair parts were very difficult and sometimes impossible to obtain. Materials such as lumber, cement, steel and paint were in short supply and not readily obtainable on the open market. In the face of these problems, highway traffic during the first six months of 1946

did increase to levels substantially above those prevailing in 1941.

The stockpile program, which had become a part of construction activity, was continued in areas where a need for road surface and base repairs was anticipated. Approximately 500,000 tons of this material was contracted for and used during 1945. There was an even greater demand for such material in 1946.

In addition to routine maintenance functions, the following extraordinary type maintenance projects were accomplished in 1945 or programmed in 1946:

<u>State Forces</u>	<u>1945</u>	
Tear up and relay	36.2	
Resurface	36.2	
Seal coat	115.2	
Bituminous surface treated	1.4	
New bituminous surface	0.9	
Base added	3.1	
TOTAL	193.0	

<u>Contract</u>	<u>1945</u>	<u>1946</u>
Seal coat	326.0	475.0
Bituminous treatment	52.5	25.0
New bituminous mat	18.6	165.0
Added base and surface	12.6	30.0
TOTAL	409.7	695.0

Data concerning actual State force work are not available for 1946 but are estimated to have been more than double the volume of 1945.

It was possible to increase routine maintenance operations on shoulders, drainage and the right-of-way although a more desirable level could not be achieved due to lack of adequate equipment. Considerable attention was given to signing and to encroachments on the highway right-of-way. A new power mower was purchased for each District. A chemical soil sterilant was first used to control plant growth around guard rails, guide posts and signs.

Snow removal was also a problem because of a lack of adequate equipment and general equipment condition. Approximately 4,200 miles of highway were kept open during the biennium. The program of sanding icy surfaces was increased substantially. This was an important safety measure because of worn tires, increased traffic volumes and high speeds in the post-war period. Total cost of snow and ice control during 1945-1946 was approximately \$600,000.

The inability to obtain adequate supplies of paint and necessary equipment continued and necessitated a reduction in the program of center-line striping. Sufficient white paint was obtained to place markings on 1,200 miles of highways in 1944. The program dropped to 700 miles in 1945 while 1,500 to 1,800 miles were scheduled for 1946. A "broken" or "intermittent" line was used for most of this mileage. Top priority was again given to road markings such as "School", "School Crossing", and "Stop" indications. Approximately 300 such markings were placed each year.

Total maintenance cost for the 1945-1946 biennium was \$4.2 million, an increase of almost one-third over the previous two years. This activity also consumed more than 40 percent of State highway user revenue.

Routine maintenance operations during 1947-1948 were complicated by a number of conditions. Highways had been considered expendable during the World War II years resulting in serious deterioration which was aggravated by the increased number of trucks and heavier loads in the post-war period. Continuing shortages of manpower and some materials contributed to the problem. Also, serious flooding in some areas caused considerable highway damage in the spring of 1948.

To alleviate the load-carrying deficiencies of the State Highway System as much as possible, a special maintenance program was initiated. The objective of this program was to provide

a thicker base and surface on sections of highway having acceptable alignment and grade. The mileage involved in this special maintenance program for the two year period July 1, 1946 to June 30, 1948 included:

<u>Type of Work</u>	<u>State Forces</u>
Tear-up and relay	173
Resurface	120
Seal coat	218
Surface treatment	18
New surface added	34
TOTAL	563

<u>Type of Work</u>	<u>Contract</u>	<u>Total</u>
Tear-up and relay	30	203
Resurface	161	281
Seal coat	602	820

Surface treatment	32	50
New surface added	74	108
TOTAL	899	1462

High water and flooding during the period of October 1947 to July 1, 1948, exceeded any previously known in the history of the Bureau of Highways. Damage occurred in all five Districts but was heaviest in the Boise and Lewiston Districts.

The rainy season began in October 1947 and continued well into the summer of 1948, terminating with storms of cloudburst proportions about mid-June. The excessive moisture of winter and early spring caused the soil to become saturated and unstable, resulting in many landslides.

Highway cut opened to traffic.





Clearing snow from highway cut in 1948-49 west of American Falls. Road was closed for a week.

Most of the extensive damage occurred along U.S. Highway 95 in the Salmon and Little Salmon River area. The highway was partially or entirely destroyed at 18 separate locations within a distance of 1.31 miles. One structure was damaged beyond repair and another damaged extensively.

Cloudbursts in late spring along the Clearwater River brought thousands of yards of debris down on the Lewis and Clark Highway. Immediate repairs were undertaken by maintenance forces and application was made for an allotment of \$1.1 million of Federal disaster relief funds to help finance permanent replacement.

Snow removal caused no unusual problems during 1947-1948. In mountainous areas where removal was normally difficult, snowstorms were intermittent, permitting clearing to be accomplished between storms. Snow and ice control on 4,313.2 miles of the State Highway System was accomplished at a cost of \$361,749. All mountain passes were kept free of snow except for Galena Summit on U.S. Highway 93 (State Highway 75) and Idaho City-Lowman on State Highway 21.

A central sign shop was established late in 1947 at Boise to fabricate signs for all Districts under the direction of the Traffic Division. Production was 700 to 800 signs each month with an ultimate goal of 1,000 to 1,400 units. Increasing use of reflectorized signs continued.

The pavement-marking program was again extended with a total of 2,675 miles of broken, yellow center-line marking applied during 1947. Two crews operating from Boise Headquarters accomplished this work.

Equipment was improved during the winter of 1948 and two new trucks complete with large compressor units were purchased. A total of 2,800 miles of center-line and 200 miles of "no passing" barrier-line were applied during 1948 at a rate of 40 to 45 miles daily.

Approximately 225 pavement markings were placed at school and other high-hazard locations.

A motor vehicle accident file showing the location of accidents together with a series of accident spot maps were established January 1, 1948. These records were designed to identify high accident locations to permit intensified enforcement activities and to investigate possible corrective measures.

Total maintenance cost during the biennium was \$6.0 million or 36 percent of State highway user revenue available for Bureau of Highways purposes.

Local Roads

County and highway district operations increased considerably during 1940-1941 compared with 1939. Construction and right-of-way expenditures increased by about one-third and maintenance by nearly 13 percent. Actual revenue totaled \$3,650,000 in 1940 and \$3,623,000 in 1941, while disbursements were \$3,724,000 and \$3,803,000 respectively.

Local contributions of matching funds for construction on the State Highway System remained at a relatively low level. Also, there was a growing reluctance on the part of local units to acquire rights-of-way for State highways in accordance with past practice.

Revenue and expenditures during 1942-1943 were somewhat lower than the prior biennium, with revenue for the two years at \$6,732,000 and disbursements at \$5,907,000.

The downward trend in income from local tax levies to support local roads continued, indicating an increased reliance on State highway user revenue to finance operations. However, cash-on-hand of counties and highway districts showed a marked increase at the end of 1943 to \$2.6 million as compared to \$1.1 million at the beginning of 1940.

Construction by local units on local roads was reduced substantially during this period due to restrictions imposed by World War II. The program benefited, however, through the use of about \$600,000 per year in special State highway funds to build local roads in addition to the regular allocation of State highway user revenues.

The highway bonded indebtedness of local governmental units (excluding cities) at the end of 1943 was \$3.3 million compared with a high level of \$17.9 million at the end of 1927.

The county and highway district road systems comprised 24,111 miles with an improved road mileage of 15,351 miles or 64 percent of the total.

Income continued at a lower level in subsequent years with revenues at \$3.9 million in 1945 and \$5.5 million in 1947. Disbursements were \$3.6 million in 1945 and \$5.2 million in 1947.

Improvement in the financial picture was evident in 1947, however, when bonded indebtedness was reduced to \$1.5 million at year-end.

Summary 1919-1950

The period from March 31, 1919 -- when the highway function was assigned to the Bureau of Highways

under the Department of Public Works -- to March 9, 1950, when the Bureau became the Department of Highways was one of unprecedented growth. The State Highway System in 1919 consisted of about 2,200 miles with less than 50 miles of pavement and was expanded to 4,500 miles with 1,000 miles of pavement in 1930 and 5,128 miles with 3,600 miles paved in 1950. Fig. 3 in the Appendix shows the comparative status of the system during this period. Registrations of automobiles and trucks increased from about 51,000 in 1921 to an estimated 265,000 in 1950. (See Fig. 2 in the Appendix.)

During this period the total miles traveled per year increased and the load carried per truck also increased greatly, probably by at least three times. Speeds advanced from about 25 to 30 miles-per-hour to an average speed of over 50.

The mileage of roads in the State in 1950 included 2,744 miles on the Federal-aid Primary System, 3,109 miles on the Secondary system (both State and local) and 1,130 miles on the Forest Highway System. The counties and highway districts were responsible for 25,438 miles. National Forest Development roads consisted of 5,620 miles, and Indian Reservation roads totalled 579 miles.

Fig. 4 in the Appendix shows a summary of Federal-aid funds available for use on the State Highway System from June 1917 to June 30, 1950.

The change to a Bureau of Highways under the Department of Public Works was a part of a reorganization of State government advocated by Governor D. W. Davis in order to place all State administrative functions directly under the control of his office. He reasoned that such control was essential to carrying out responsibilities imposed on the Governor by virtue of his election.

Highway administration was carried out through a Commissioner of

Public Works and his subordinate, a Director of Highways. Both officials were appointed by and served at the pleasure of the Governor. Policies were generally established by the Governor with the degree of control varying from one incumbent to another.

Gubernatorial control of State highways ultimately led to extensive use of political patronage in the selection of a substantial portion of Bureau of Highways personnel. This was particularly true of maintenance and clerical staff although engineering and technical personnel were far from being immune.

Shortly after reorganization became effective, there was a substantial expansion in the staff which the Bureau of Highways had inherited from its predecessor, the State Highway Commission. This expansion was at least partly necessary to cope with the rapid growth in the highway program with increased State funding and full implementation of the Federal-aid highway program.

Changes were made in the organization frequently during the 31 years of the Bureau of Highways existence. At times a Director of Highways served as Acting Commissioner of Public Works and at other times the Commissioner assumed both positions. Numerous changes in the internal organization were made depending on the amount of construction under contract. The position of Construction Engineer and Maintenance Engineer were sometimes combined and at other times assigned to other staff positions as the workload fluctuated.

A Materials Engineer was assigned in 1921 with the University of Idaho performing the testing. Later a laboratory was provided at Boise and a complete facility constructed there in 1939. Requirements for testing and inspection became more and more necessary to assure an adequately designed and constructed road system.

A Planning Survey was created in 1935 to research highway needs and to provide other factual information regarding the total highway system, revenues, expenditures and accomplishments as measured by mileages of improved highways. This data provided factual guidance for the State Legislature. The survey also provided information to the Federal government for evaluation in conjunction with potential Federal legislation.

World War II brought a virtual halt to the construction of roads on the State Highway System except for the Strategic Network of about 1,100 miles and access roads to mineral deposits and military installations. Maintenance forces were unable to maintain the System at its pre-war condition and by 1945 some reconstruction of a large part of the System was necessary, thus becoming the major effort immediately following World War II.

The Great Depression, which had its beginning in 1930, created many problems in financing the State Highway System but it also gave added impetus to traffic. Demands by the traveling public called for an all-weather paved highway adequate to carry ever larger trucks at higher speeds. Federal government emergency relief funds were vital to the growth of the State Highway System during this period. State highway revenues did decrease and pressures from local units for a greater share further reduced available funds to the State.

Major construction projects were tied very closely to available Federal-

aid funds. During this period State revenues were always sufficient to match Federal-aid funds whether for the Primary, Secondary or Urban systems. Very careful planning was necessary to meet State obligations and provide the necessary funds for maintenance, snow removal and traffic operations.

Several major floods caused disruption of the system during this period. The flooding in north Idaho in 1933 and 1948 was particularly destructive. Severe winters occurred every few years, sometimes doubling snow removal costs for the winter. The Bureau of Highways managed to overcome most of these problems and keep the system open except for short delays.

The 1949 Legislature appointed a study committee to review and research highway operations and make recommendations as to financing, including the taxing structure, organization, long-range plans, and the ability of the State to maintain the State Highway System. This study resulted in legislation creating a new Department of Highways to inherit all highway functions of the Bureau of Highways in the Department of Public Works. This action became effective March 9, 1950. The Department then became functional under a Commissioner of Highways with a Chief Engineer as Deputy. The Department also had a six member advisory board to review and analyze both long-and short range programs and to hear and appraise proposals of interested groups.

This legislation provided the first specific allocation of State highway user revenue for use on city streets. Cities having a population of 2,500 or more were to receive four percent of the local share, or 1.2 percent of the total revenue. The distribution to individual cities was prorated on the basis of population.

Counties and highway districts were to receive 96 percent of the total local share of revenue, or 28.8 percent of the total revenues to the State Highway Fund.

The distribution to each county was by the following formula:

10% to be divided equally;

45% to be proportioned on the basis of mileage of improved roads on the county systems;

45% to be proportioned on the basis of revenue from total State motor vehicle registrations to revenues within each county during the preceding year.

Within a county, distribution to highway districts was to be made on the same formula basis applying to the county.

This formula was developed by the Public Administration Service, which served as consultant to the Legislative Highway Study Committee. These factors were selected because of the ready availability of data and difficulty of manipulation of those data. Weights were chosen so as to minimize differences in revenue to individual units under the new and previous distribution procedures. Some differences were inevitable. The general effect, however, was to reduce revenue to the more populous counties and to increase revenue to the larger, less densely populated areas.

Significant changes were again made by the 1951 Regular Session of the Idaho Legislature. These were accomplished through repeal of the

Highway Administration Act of 1950 and enactment of the Highway Administration Act of 1951.

The position of State Highway Commissioner was abolished, with its powers and duties transferred to a State Board of Highway Directors. This Board consisted of three members appointed by the Governor and subject to confirmation by the Idaho Senate. Members were appointed for staggered terms of six years, and no more than two members could be of the same political party. Board members could be removed only for cause after a formal hearing. The Board was required to meet at least once each month. Numerous powers and duties of the Board were set forth in the law.

This Act also created the position of State Highway Engineer. It was required that the position be filled with a registered professional engineer holding an Idaho license. That individual was required to have five years experience in modern highway engineering, with at least three years in an administrative capacity involving the direction of a substantial engineering staff.

This Act became effective July 1, 1951. The first Board members appointed were Roscoe C. Rich, who was elected Chairman; W. Fisher Ellsworth; and Leonard K. Floan. The Board appointed Earle V. Miller, a top-ranking engineer from the Arizona Highway Department, to be State Highway Engineer effective July 1, 1951.

The State Highway Engineer was also the Chief Administrative Officer of the Department of Highways, functioning within the framework of policies and procedures established by the State Board of Highway Directors.

Recognizing the great need for additional highway revenues, the 1951 Legislative Session enacted a weight-distance tax to be paid by operators of buses, trucks and trailers. The legislation established fee schedules varying by type of operation, declared

HIGHWAY DIRECTOR DISTRICTS

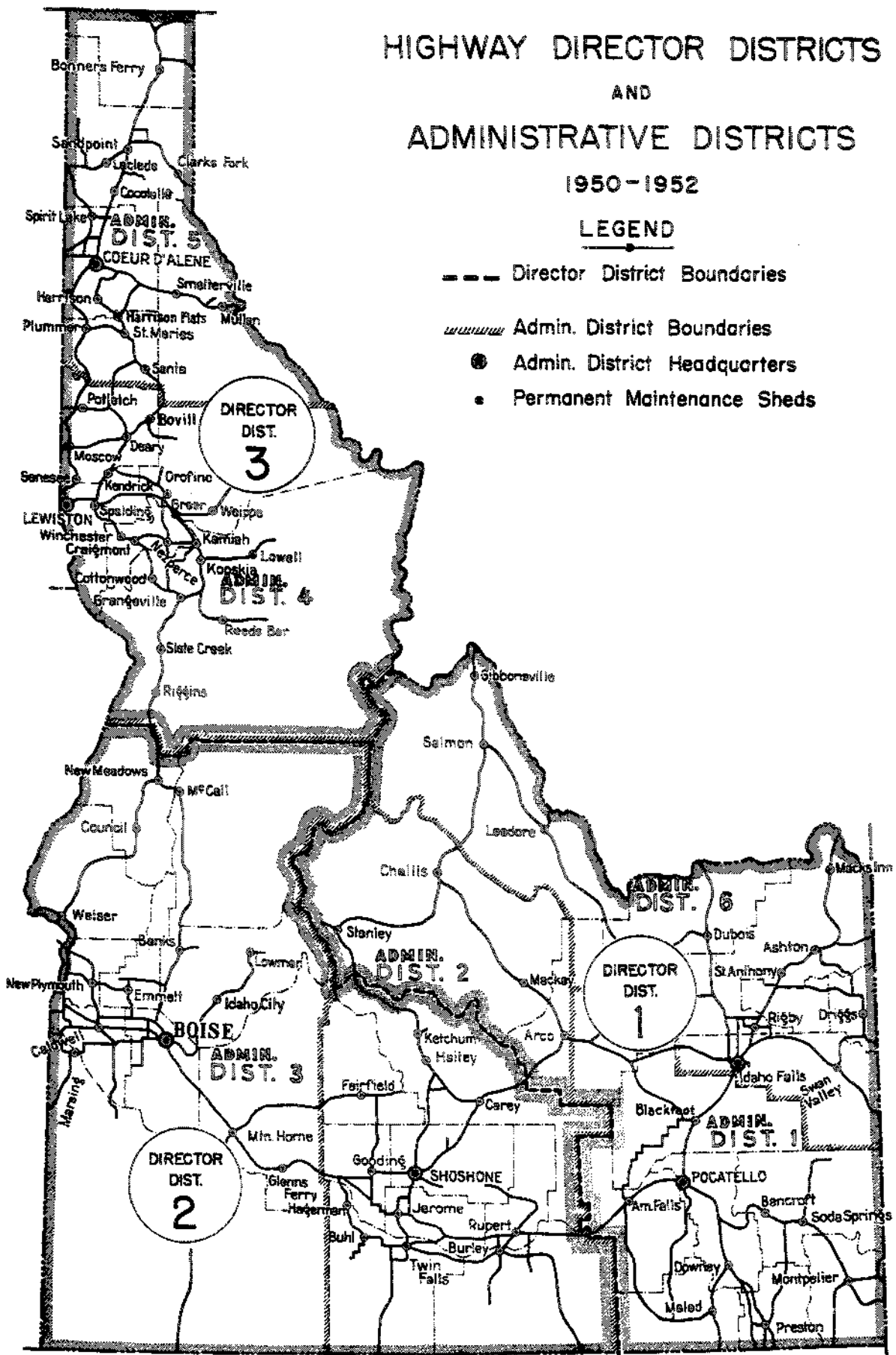
AND

ADMINISTRATIVE DISTRICTS

1950-1952

LEGEND

- Director District Boundaries
- Admin. District Boundaries
- Admin. District Headquarters
- Permanent Maintenance Sheds



vehicle gross weight, and specified a taxing schedule dependent upon the type of fuel used. This fee, multiplied by the miles traveled, was used to determine the amount of the tax.

The gross weight, according to this Act, was defined as the scale weight of the vehicle plus the maximum load to be carried, as stated by the licensee in his application.

The 1953 Session Laws imposed a tax of six cents per gallon on all special motor fuels. Special motor fuel was defined as any combustible gas or liquid suitable for propulsion of motor vehicles, except gasoline. The tax rate was the same as that previously set for gasoline.

The weight-distance tax enacted in 1951 was also amended by the 1953 Legislature in an effort to eliminate two difficulties which had developed in administration. This tax was self-assessed by the truck operator. Checking and auditing of the many reports was costly, and evasions were difficult to control. Reciprocity with adjoining states for interstate-operated vehicles was another problem. As a result, the 1953 Legislature modified the ton-mile tax to provide a system of annual fees based on gross vehicle weight, with an additional use-plate fee for those vehicles with a declared gross weight exceeding 24,000 pounds. Any such vehicles operated for more than 30,000 miles annually within Idaho were subject to a ton-mile tax on this excess travel. The Governor was also given broad powers of reciprocity with other states under the Act.

Operators of vehicles carrying products of the forest, mine or farm could pay the same plate fees as charged other operators of vehicles, or had the option of paying on a weight-distance basis. It was estimated that this revision would provide a small increase in the revenue collected.

Concern over pavement structure design and the ever increasing volume of large trucks using the highways led

the Western Association of State Highway Officials to request the Highway Research Board of the National Academy of Sciences to supervise construction and to conduct a test of various asphalt pavement designs undergoing traffic at various axle loadings. All states comprising the Western Association, except Arizona and the Territory of Hawaii, participated in this research project. The U. S. Bureau of Public Roads and members of industry, including trucking and automobile associations, truck and trailer manufacturers, petroleum companies, and the U.S. Army Ordnance Corps, were also involved. Universities and numerous individuals likewise contributed to the test. The total cost of the project was about \$900,000.

The site selected for the test was between the Utah State Line and Malad, Idaho. Construction of the test road began in November 1952. Test runs began in 1953 and continued until May of 1954.

The results of this test were most helpful to the western states and confirmed many design concepts and procedures in use. The road test also correlated the life of the pavement with deflections which varied with thickness. Cracking in the outer wheel paths had always been observed to be much more frequent than in the inner wheel paths. Paving of shoulders reduced distress in the outer wheel path to a point showing no more distress than the inner wheel path. These observations and data developed from them were used by the western states to improve pavement design procedures. For example, paved shoulders became a common practice within very few years.

Findings from the WASHO Road Test were further utilized in the design of the nationally-supported AASHO (American Association of State Highway Officials) Road Test. This test track was located in Illinois and testing was done between October 1958 and November 1960. This research project was also supervised by the



Highway Research Board and involved both asphalt and concrete pavements.

Concrete and steel bridges and truck axle loadings up to 30,000 pounds single axle and 48,000 pounds tandem axles were analyzed. Data from the AASHO test were still undergoing analysis by researchers several years after completion of the actual traffic operation.

These findings added considerable support to the design criteria in use but also established a concept of pavement serviceability and performance which provided much-needed data concerning the relationships of fatigue and deflections, climatic effects on subgrade support, variations in deflections as related to design, load, speed and temperature. The test was the largest and most expensive (\$23,000,000) ever conducted in the highway field.

Idaho participated in both of these tests and the benefits far ex-

Aerial view of the pavement test facility south of Malad in 1953 sponsored by the Western Association of State Highway Officials (WASHO).

ceeded the cost, not only to Idaho, but nationally.

Recognizing a need for factual information in regard to financial problems of all highway agencies in the State, the Department sponsored a study of highway needs in 1954. The procedures utilized were developed by the Automotive Safety Foundation (ASF), which had conducted similar studies in a number of other states. The ASF acted as a consultant in the Idaho study, although the actual work was done by the Planning Division of the Department and by local officials.

The appointment of a committee of county and highway district representatives and a committee of city representatives to develop standards to be

followed in formulating and analyzing the construction needs phase of the study was one of the first steps taken. Two sets of standards were developed: "tolerable" and "new construction." The "tolerable" standards were applied to determine those roads which, though not fully adequate, could still provide a reasonable level of traffic service. For those roads below the tolerable level, current construction standards were used in estimating "new construction" costs.

The study also included a determination of all other costs associated with highway programs, such as maintenance, equipment procurement, and administration. In addition, estimates were prepared of anticipated revenue to be available under the existing tax structure.

Results of the study are summarized by the following:

<u>Unit of Govt</u>	<u>Ten-year const. needs and revenue deficiencies (millions) 1954-1964</u>	
	<u>Revenue Needs</u>	<u>Revenue Deficiency</u>
State Highways	\$281	\$124
County Roads	50	23
Highway District Roads	37	28
City Streets	<u>22</u>	<u>17</u>
TOTAL	\$390	\$192

The above needs estimate was for construction only. The deficiency represents the amount of additional revenue required to meet those needs after an allowance for operating costs of the various levels of government.

The first objective was to develop factual information which legislative and other agencies could use in evaluations of the highway financial problems of all agencies and of the tax structure available to meet those problems. The second objective was to provide information which could be

used to analytically determine an equitable basis of distributing highway user revenues among various levels of government.

Every responsible highway authority was fully aware of the fact that his agency was in need of money--a lot of money--to construct and maintain to a reasonable level the service on those roads for which he was responsible. Human nature being what it is, each authority could conclude that his roads were worse than any other agency. When the total amount of available funds is too small, there will always be proposals to divide it differently. It would be more logical to determine the total amount required to provide reasonable amounts of revenue to all levels of government, and consequently, to develop an equitable method of distribution.

For several years there had been pressure on the State Legislature to increase the distribution of highway user revenue to the cities. The 1955 Session Laws provided for all cities and villages with a population of 300 or more to participate and receive nine-percent of the thirty-percent local share of user revenues, or 2.7-percent of the total. The distribution of this revenue among the cities of Idaho remained on the basis of population.

The 1955 Session Laws also imposed new requirements on the powers and duties of the State Board of Highway Directors to build and relocate highways serving or traversing any city or village. Prior to undertaking any such construction, the Board was required to conduct public hearings within the city or village affected. While Board policy and Highway Department procedures already provided for citizen input concerning highway location and design, this action of the Legislature formalized the procedures and made it a requirement of law. The Board was now required to consider any testimony offered at the hearing and to determine whether the proposed action would be of greater benefit to

the State of Idaho than the economic loss to the city or village. Procedures provided that an appeal to the decision of the Board could be filed with the District Court of the county involved.

As a result, the State Board of Highway Directors adopted the following policy on March 15, 1954:

It is the objective of the State Highway Board to facilitate the general road travel of the people of Idaho on all levels...City streets, County roads and State highways.

The program, as developed, is in each case based on engineering studies, supported by traffic analyses, comprising origin-and-destination data, volumes of vehicles, types of vehicles, etc. Using Idaho road user dollars and various matching funds, a program is made offering the best roadways for the circumstances prevailing.

The basic problem is to bring about the orderly movement of traffic within and across our State, the providing of adequate roads to carry traffic originating in each locality and the resulting inter-community travel from town to town and from one population center to another.

The handling of traffic into, through, or near each town or community is peculiar unto itself. The roads must offer adequate local service, together with orderly and efficient control of through travel. They must make the local communities accessible and offer the possibility of getting through traffic through or past as quickly as possible and with minimum interference with the local communities.

This policy does not contemplate the bypassing, as such, of any town nor the diversion of travel into or away from any community, but does recognize that good roads are of benefit to the people of Idaho and to attract development and travel.

Both the statute and the above policy were generated because of public concern in regard to access-control characteristics of the Interstate Highway System, created under the provisions of the Federal-aid Highway Act of 1954.

The first public hearing under the provisions of Chapter 260, 1955 Session Laws, was held in Weiser in 1955. The objective was to obtain local approval of a proposal to re-route highways within the city, including a one-way couplet. The proposal was approved.

The 1955 Session Laws also enacted enabling legislation for the construction, maintenance, repair and operation of toll roads financed with private funds. This Act was sponsored by groups in the Lewiston area which were interested in early completion of the Lewis and Clark Highway (U. S. Highway 12). No toll facilities were ever constructed under the provisions of the Act.

The 1955 Legislature also established an increased schedule of registration fees for passenger vehicles and trucks, effective January 1, 1956. This action was important to maintaining a sound financial base for road and street improvement, maintenance, and management.

The 1957 Idaho Session Laws specified a definition for the Interstate Highway System. It also broadened the powers of the State Board of Highway Directors with respect to the relocation of public utilities and permitted payment for relocation costs from the State highway fund under certain conditions.

An action of this Legislative Session also required that State highway signs be manufactured and repaired using convict labor under control of the State Board of Corrections. This work had been formerly carried on at the central sign shop of the Department of Highways.

The 1957 Session Laws also modified the ton-mile tax fee to provide a separate mileage fee schedule for vehicles operated with fuels other than gasoline, and made fees applicable to weights of combinations rather than to individual vehicles.

The 1959 Session Laws provided that annual or biennial reports of all State departments be prepared in the form, quality and number of copies prescribed by the Secretary of State. The State Legislature considered that some reports had become too elaborate and costly to prepare.

In accordance with subsequent regulations issued by the Secretary of State, the Department of Highways limited the 1959 and all subsequent fiscal year reports to a format which presented essential fiscal data and eliminated virtually all explanatory information. This apparently met the needs of the Legislature, but made it more difficult to research Department operations.

When the Department of Highways was created in 1951, the Board of Highway Directors recognized the inadequacy of its quarters in the State Capitol. Arrangements were made to rent a building formerly occupied by the Idaho Statesman newspaper in the downtown business district as a central headquarters location. Most Department subdivisions then occupying numerous rental locations throughout the city were moved into these quarters. This building subsequently proved inadequate, and within a short period of time it became necessary for some sections to again move into other rental locations.

The 1959 Legislature recognized the undesirable features of this situa-

tion and authorized an appropriation of \$2 million from the State highway fund to construct a new building to house both the Department of Highways and the Department of Law Enforcement. A site on West State Street in Boise was selected for the building and a contract for construction scheduled for award on April 28, 1959. The actual award was delayed awaiting a court decision as to the Constitutionality of the enabling legislation. Following a favorable ruling by the State Supreme Court, the award of contract was made on June 25, 1959. Completion was scheduled for October 1, 1960.

The funds required to finance the building were budgeted by reductions in the normal expenditures for other capital outlays such as purchase of equipment and construction of buildings in the six Administrative Districts.

Federal-aid and State Revenues

State-raised revenue from the motor vehicle license and gas tax during the period of January 1913 to June 30, 1950 was \$169,535,110 with \$99,358,053 going into the State highway fund; \$54,673,767 to the counties; and the remainder to other State agencies, to non-highway use, and to the Motor Vehicle Fund. Federal-aid funds to Idaho during the same period were \$83,918,752 with the major portion utilized on the State Highway System. This represents essentially all revenues for highway purposes during that period of years comprising the original Highway Commission and Department of Public Works, Bureau of Highways.

During the first decade of the Department of Highways--1950 to 1960--receipts totaled about \$117.9 million in State funds and \$113.1 million in Federal-aid funds. Thus, the Department expended approximately \$50 million more during that ten-year span than had been available for highways for the period from 1913 to 1950. In addition, appropriations to local units

of government from the State highway fund amounted to more than \$57 million.

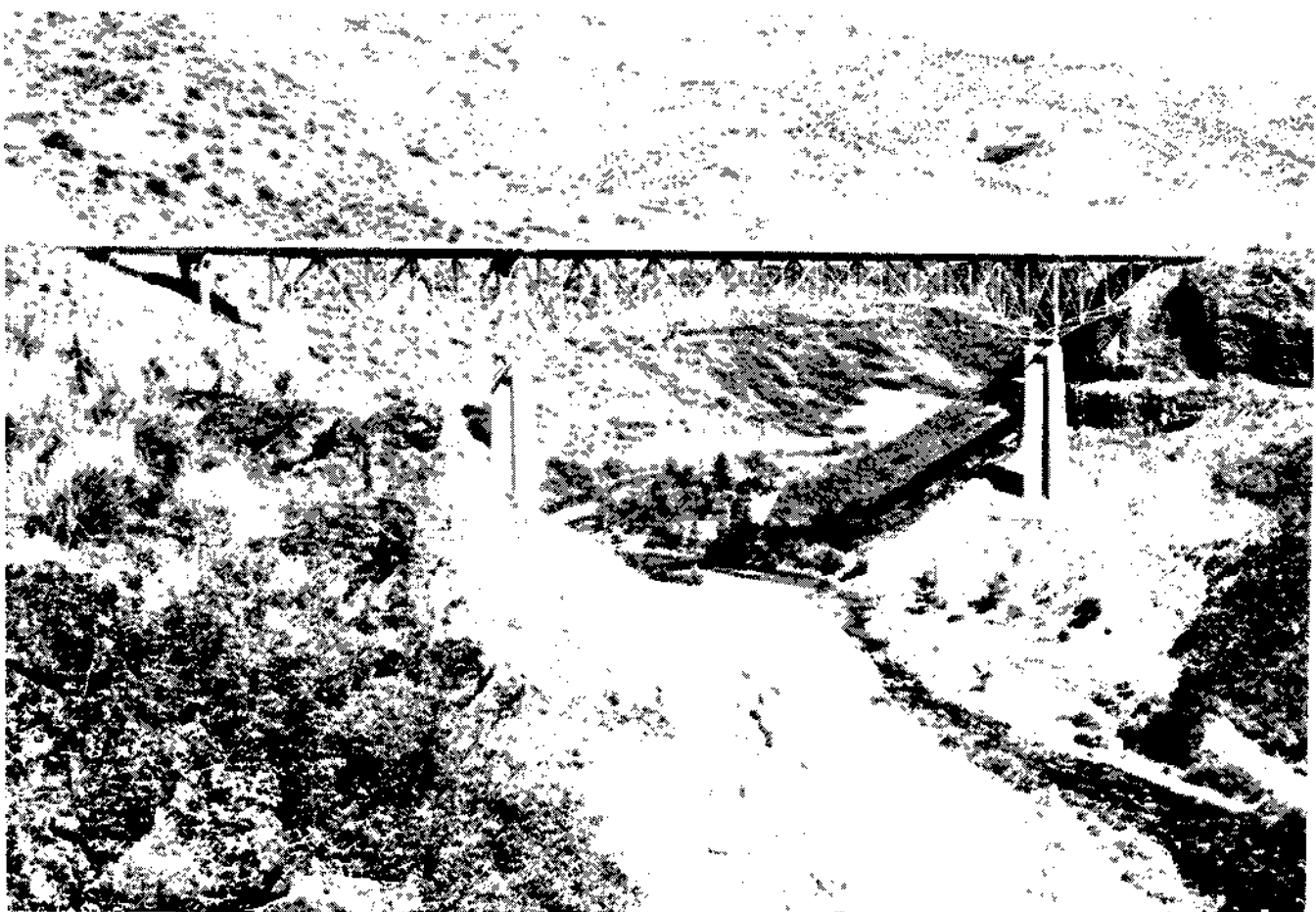
Approximately \$7 million in Federal funds were received by the Department from the U. S. Army Engineers and the U. S. Bureau of Reclamation for relocating highways around Palisades and Cascade Reservoirs. Interstate funding also increased regular Federal-aid tremendously during the later years of this decade.

During the 1951-1952 period, Federal-aid funds allocated to Idaho were not used as rapidly as they became available; but the budget was managed so as to assure that none of these funds would lapse. Substantial amounts of State funds were used on rehabilitation projects at this time. These projects were not eligible for Federal-aid support, but were important to the maintenance of the State

Highway System. In addition to regular Federal-aid, one million dollars in Federal funds was received from the U. S. Army Engineers for relocating twelve miles of State Highway 21 from below Lucky Peak Dam to a point on Mores Creek above the backwaters of the reservoir. The Atomic Energy Commission also contributed one million dollars in Federal funds to assist with the construction of approximately forty miles of access road between Arco and Idaho Falls. This road was needed to serve the atomic energy facility located west of Idaho Falls.

Right-of-way costs were increasing. Total expenditures for this purpose were over \$1 million in the 1953 fiscal year, whereas the previous year \$0.6 million had been required.

Mores Creek Bridge constructed by U.S. Army Corps of Engineers on State Highway 21 over arm of backwaters behind Lucky Peak Dam.



The Highway Board continued its policy of giving first priority on State funds to matching Federal-aid, since Federal-aid funding was available for only two years after the year for which it was apportioned. Although this was a highly desirable policy, it did result in a reduction in State-financed betterment work. A substantial program of this type is mandatory if the State Highway System is to be maintained to a reasonably adequate standard. Such work involves projects of a "stop gap" nature which permit these roads to be maintained to an "as-constructed" standard until full reconstruction to current design standards can be financed with combination Federal-aid/State funding.

Federal-aid income to Idaho in 1953 amounted to approximately \$5.4 million, representing reimbursement to the State for the Federal share of total funds expended on construction, engineering and right-of-way.

Contract awards for highway construction had increased substantially since 1950. While improved funding, both Federal-aid and State, was most significant, the increased efficiency achieved under administration of the Board of Highway Directors was also an important factor. Contract awards in the two-year period from 1951 to 1953 inclusive were \$32.6 million, as compared with \$36.5 million in the previous seven years.

Following a long series of Congressional hearings, the Federal-aid Highway Act of 1954 was approved on May 6, 1954. This Act provided Federal-aid funds for fiscal years 1955 and 1956.

Included in the Act was a requirement that each state designate a system of Interstate highways. Funds were provided for construction on this system, with the Federal-aid participation rate set at 70 percent.

The Idaho Interstate Highway System consisted basically of four routes totaling 627.4 miles. Route No.

1 began at the Idaho-Utah state line near Snowville, Utah and extended northerly to a junction with Route No. 2 southeast of Rupert. Route No. 2 began at the Idaho-Oregon state line south of Ontario, Oregon and proceeded easterly via Boise Valley, the Magic Valley and American Falls to a junction with Route No. 3 at Pocatello. Route No. 3 started at the Idaho-Utah state line south of Malad and ran north via Pocatello and Idaho Falls to the Idaho-Montana state line at Monida Pass. Route No. 4 began at the Idaho-Washington state line and extended east through Coeur d'Alene and Wallace to the Idaho-Montana state line at Lookout Pass.

The U. S. Bureau of Public Roads in a Policy and Procedures Memorandum dated August 4, 1954 set the policies for administering the Act. Location and design practices were to conform to the geometric standards adopted by the American Association of State Highway Officials in 1945 with further requirements in regard to access control. A design to provide an ultimate facility with freeway characteristics was required. Even though initial construction was not to be to a full freeway standard, access rights were to be acquired to permit future conversion to a full freeway.

For the early years of this program, Interstate funds were to be apportioned among the states as follows: one-half on the basis of the formula for allocating Federal-aid Primary funds, and one-half on the basis of population.

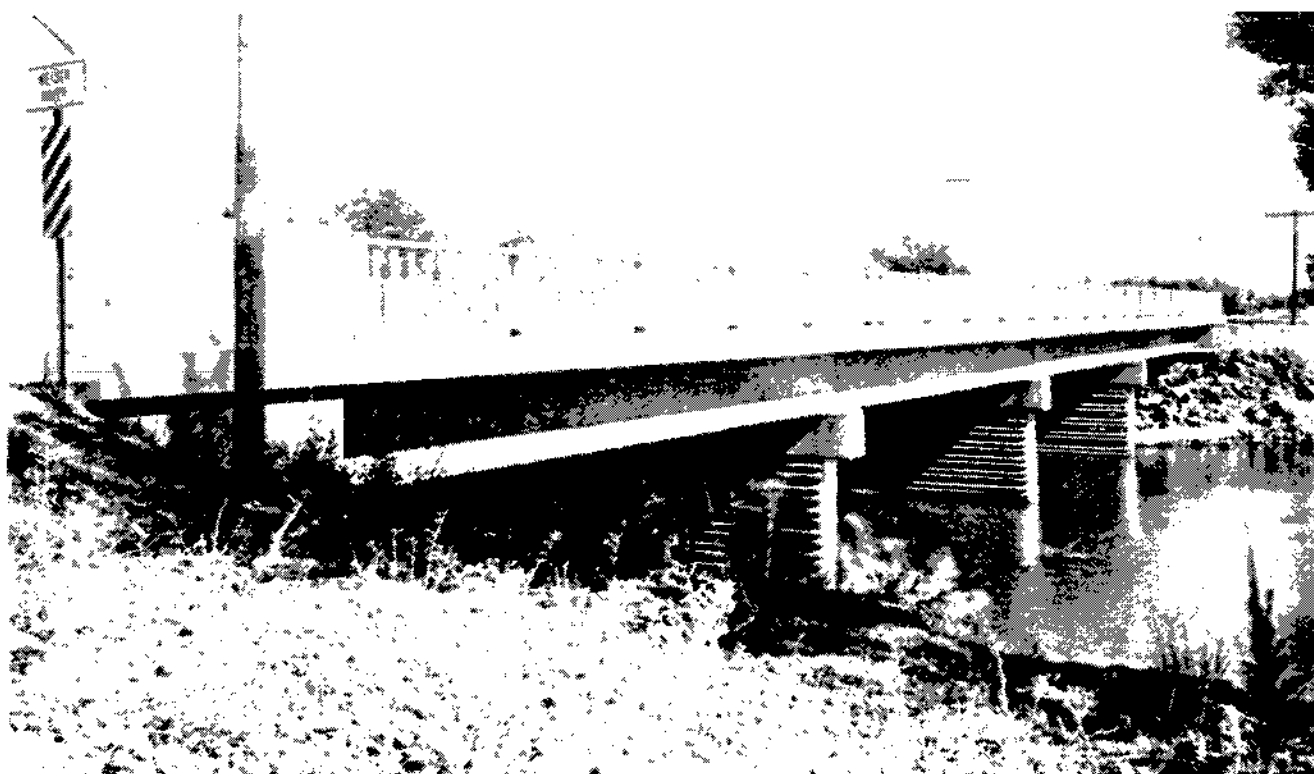
Apportionments of Federal-aid funds under the 1954 Act also increased funding to Idaho for the Primary, Secondary and Urban systems to \$5.4 million and \$6.9 million for 1955 and 1956, respectively. The Interstate apportionment to Idaho for 1955 was only \$0.3 million, but in 1956 it increased to \$1.7 million.

On July 12, 1954, Vice President Nixon, speaking on behalf of President Eisenhower, told the Conference of



Weiser River bridge at Cambridge,
U.S. Highway 95, constructed in
1918. Replaced in 1954.

1954 Weiser River bridge, U.S.
Highway 95 at Cambridge replacing
old steel 1918 bridge.



Governors meeting at Bolton Landing, New York, that the nation's highways were far from adequate and that a ten-year construction program on a scale never before proposed was imperative.

The Conference of Governors appointed a committee to investigate this problem. In September of 1954, President Eisenhower also appointed a committee for this purpose. The national committee was chaired by General Lucius D. Clay and was to complete its report to the President in January of 1955.

Net State-raised highway revenue in 1954 amounted to \$12.2 million, an

increase of approximately four percent over 1953. This represented about the normal growth-rate as represented by the economic-growth pattern. The revised truck fee schedule, in effect after January 1, 1954, had been expected to provide slightly more income, but it actually resulted in a slight decrease.

Total State expenditures for State Highway System purposes in 1954 were \$27.9 million and in 1955 were \$22.3 million, of which \$20.7 million and \$14.5 million, respectively, were for construction, with \$4.6 million and \$4.3 million, respectively, being utilized for maintenance and administration.

Passage of the Federal-aid Highway Act of June 29, 1956 greatly enlarged the dimensions of the Federal-aid highway construction program.

Structure collapse near Parma. These structures carried loads well above design loads for years even though posted for maximum load.



This Act not only provided significant increases in authorizations for the Federal-aid Primary, Secondary and Urban highway systems, but also contained specific requirements for completion of the Interstate Highway System by 1972. This was the first instance where Federal-aid funding authorizations were based on completion of a specified highway system by a specified date.

Interstate authorizations were also to be based on a total estimate of "cost to complete" the system as prepared by the states. It was necessary that these estimates be hastily made because of the limited time allowed by the Federal legislation. Also, in many instances they had to be made with very limited survey data and often without a firm location.

Interstate funds for the first two years of the program were apportioned among the states on the basis of the normal Federal-aid formula used for all Federal-aid funds. This method resulted in Idaho receiving about twice the apportionment that would have been available if distribution had been based on the estimated cost of building the system. The Act further provided that authorizations beginning with fiscal year 1960 would be made on the estimated "cost to complete the system." This was to be submitted to Congress by January 1958 and every two years thereafter.

The 1956 Act also provided that the geometric and construction standards for the Interstate system be approved by the Secretary of Commerce and be prepared in cooperation with the State Highway Departments. All Interstate highways were to be adequate to accommodate the types and volumes of traffic forecast for the year 1975. These standards were to be uniform throughout all of the states.

The State Highway Departments, acting through the American Association of State Highway Officials, agreed upon standards, and these were approved by the Secretary of Commerce

in July of 1956. Basically, these standards provided for a minimum of four travel lanes, two in each direction, with light curves, ample medians and sight distances, wide shoulders for emergency parking, and complete control of access. One exception to full freeway standards at this time was to allow for intersections at grades where traffic was very light and unlikely to increase substantially. This exception was later to be deleted.

The 1956 Act required that five major studies be undertaken:

1. To prepare an estimate of the cost to complete the Interstate Highway System for submission to Congress in January of 1958 and each two years thereafter.
2. To determine the maximum sizes and weights of vehicles to be allowed to operate on the Interstate System.
3. To obtain and analyze information to aid Congress in making a determination with respect to reimbursing the states for toll or free highways, safety, and the possible need for Federal assistance in reaching such a solution.
4. To obtain and analyze data (for use by Congress) about the benefits accruing from highways to both users and non-users and about the establishment of equitable rates of highway taxation.

The Interstate Highway System was to be located to provide good service to population centers and to facilities important to the national defense. Because of its national characteristics, the Federal-aid matching ratio was set at a basic rate of 90 percent of cost, with allowance made for ownership of public lands in each state. The Federal-aid matching rate for Idaho became 92.5 percent.

Federal-aid apportionments to Idaho for the Interstate Highway System increased from \$1.7 million in 1956 to \$11.9 million in 1957, then to \$17.2 million in 1958 and \$20.2 million in 1959. Total State Highway Department income for the eighteen months of 1956 and half of 1957 was \$36.4 million, with expenditures of \$33.2 million.

This expanded Federal-aid program necessitated some increase in Department personnel. Most of the added people were in the engineering classification assigned to preparation of preliminary surveys and supervision of construction. Some were also required for right-of-way appraisal and procurement.

Laboratory crew measuring pavement deflections as part of a research project to determine design criteria and performance characteristics - 1956.

Reimbursement to the State for the Federal-aid share of construction costs was expedited through use of a trust fund deposited with the State Treasurer by the U.S. Bureau of Public Roads. This fund, in the amount of \$1.0 million, was first established in 1955 and was increased to \$1.5 million in 1957. Payments to the State Highway Fund were made directly from this trust fund, which was then reimbursed by the amount of State claims to the Washington office of the U.S. Bureau of Public Roads. The State thus saved time in the recovery of funds spent on construction while claims were being processed.

The Federal-aid Highway Act of 1958 provided some increase in fund authorizations and also liberalized the regulations governing use of the Federal Highway Trust Fund. The Trust Fund was established through dedication of specified revenues derived from



Federal highway user taxes. Originally it was specified that apportionments were to be limited to the accumulated balance in the Trust Fund. However, the 1958 Act allowed consideration of anticipated revenues.

A revised Interstate cost estimate was prepared by the states and submitted to Congress by the U. S. Bureau of Public Roads in January 1958. This estimate was based on more refined methods and better basic data than in the original estimate. The estimated cost to complete the National Interstate System determined by the 1958 study was \$32.2 billion, a substantial increase over the original estimate.

The 1958 estimate for Idaho's portion of the Interstate Highway System was \$277.1 million, from which \$55.4 million was deducted for work accomplished to that point, leaving a remainder of \$221.7 million in additional funds required to complete the system.

As noted previously, beginning with the 1960 fiscal year, total Federal-aid Interstate authorizations were to be divided among the states on the basis of the estimated "cost to complete" the system of each state's two-year estimates. On this basis, Idaho was to receive 0.69 percent of the total for 1960 and 1961. This change provided Idaho with \$17.2 million in Interstate funds in 1960, a reduction from the \$22.3 million apportioned in 1959.

A part of the estimated increase in cost of the Interstate Highway System was due to more specific criteria imposed on route location. The adopted policies governing such locations were:

1. Routes should traverse the most populous bands of rural territory.
2. Routes should have termini in the larger cities and should, between these termini, pass through or near

to the denser clusters of small towns.

3. The routes selected should provide transportation facilities for the industries of the country.
4. The System should serve to the maximum extent possible the areas of high-per-acre volume in marketed crop production.
5. Routes should be selected to serve the high traffic movement to and from military establishments and defense industries.
6. The locations should give consideration to environmental factors and topographic features.

In addition to regular Federal-aid, the Act of 1958 provided a national total of \$400 million in emergency relief funds for use on the Primary and Secondary systems and on Urban extensions of those systems. These emergency funds were to help offset a sag in the national economy occurring at this time.

This feature of the Act provided that not only could the normal Federal-aid share of construction costs be financed with Federal-aid, but also that Federal-aid funds could be advanced to cover as much as two-thirds of the normal State or local share. These advances were to be repaid by deducting the advanced funds from the Federal-aid apportionments for the 1961 and 1962 fiscal years. Projects using emergency funds had to be under contract by December 1, 1958 and completed by December 1, 1959.

The 1958 Act also marked the first concrete effort on the part of the Federal government to effect control or prohibition of outdoor advertising signs along the Interstate Highway System. The Federal-aid share of apportionments to the states were increased one-half of one percent to

those states meeting established requirements for the control of advertising signs. Federal participation provided for the cost of acquiring, either by purchase or by condemnation, the rights to place advertising signs.

For many years there had been a substantial interest, particularly in the Lewiston area, in completing the Lewis and Clark Highway (U. S. Highway 12) between Kooskia and the Idaho-Montana state line. Funds had been allocated as available, with due consideration of the construction needs in other areas. Costs were high, however, and progress slow. The Federal-aid Highway Act of 1958 increased the annual authorization of Public Lands highway funds by \$1 million for the fiscal years 1959 and 1960. The U. S. Senate Subcommittee on Roads indicated its desire that this full increase be apportioned to Idaho for the Lewis and Clark Highway. The total income to the Department of Highways, therefore, became \$27.6 million for the 1957-1958 fiscal year, with \$28.6 million actually expended.

Probably the greatest single problem facing the Department of Highways during the 1958-1959 period was a growing uncertainty of the availability of Federal-aid funds for highway construction. It was increasingly apparent that there would not be sufficient monies in the Federal Highway Trust Fund to make all the Federal-aid apportionments authorized for the 1961 fiscal year. By 1959, it appeared that the available Federal-aid funds could be so short that the states might not receive reimbursement for the Federal share of costs of projects already underway. These factors not only limited the current construction program, but also cast uncertainty on future programs.

State-raised revenue for the 1958-1959 fiscal year provided a net total of \$15.3 million for State highway purposes, representing a slight increase over the preceding period.

The total income, including Federal-aid funds, was \$39.5 million or nearly \$12 million more than in the 1957-1958 fiscal year.

Revenue actually processed during the same year was \$37.5 million.

Federal-aid funds apportioned to Idaho for 1959 were \$35.7 million; \$26 million in 1960; and \$20.3 million in 1961. Decreases in the Interstate apportionments occurred because of changes resulting from the third Interstate estimate of the "cost to complete" the system. Some decrease in Primary and Secondary funds occurred due to repayment of the funds advanced under the Emergency Fund provisions for 1959.

Total net income to Idaho, including State revenues for 1959-1960, was \$36.1 million, with expenditures of \$36 million.

Organization

One of the first actions of the State Board of Highway Directors was to administratively reorganize the Department of Highways. All Department functions were distributed among five Divisions to increase efficiency and to reduce the number of persons reporting directly to the State Highway Engineer. The five Divisions were: Planning, Administrative, Engineering, Construction and Maintenance.

The Planning Division was placed under a Planning Officer responsible for those functions associated with the Highway Planning Survey and the Traffic Section. The Planning Survey was responsible for the collection and analysis of data relating to highway cost and finance, use, traffic volumes and characteristics, road mileage and mapping. The Traffic Section was responsible for those functions which aid in the safe, efficient and orderly movement of vehicles and pedestrians, including the installation and maintenance of all State highway signs, pavement

markings, signal control, channelization, street lighting and roadside control.

The Planning Division completed a Sufficiency Rating Study of the State Highway System in 1951. The study method involved a comparatively simple evaluation of the adequacy of sections of highway to meet anticipated traffic demand. Each highway rating section was examined and scored as to how well each element met certain standards of "Condition" (Structural Adequacy and Remaining Life); "Safety" (Shoulder Width, Surface Width, Stopping Sight Distance and Consistency); and "Service" (Alignment, Passing Opportunity, Surface Width and Rideability). The highest score possible was 100. Sections with scores above 65 were considered to be satisfactory; those with scores under 65 were considered to be in need of immediate betterment and were to be investigated with early programming of construction in mind. It was emphasized that these ratings could be used only as a guide in determining actual construction programs. Cost, route continuity, proximity to high-speed roads nearby, etc. were to be considered as current construction programs were being formulated.

The Administrative Division was directed by an Administrative Officer. Primary responsibilities of this Division were personnel administration and accounting. Another of its early activities was to study position classifications, job specifications and salary schedules within the Department of Highways. The Division formulated a comprehensive position plan which was adopted by the Board of Highway Directors in late 1951 and approved by the State Board of Examiners in January 1952.

The plan provided for all employees to be classified under one of two major groups: engineering or related positions. Within these groups there were eleven subclassifications with 22 salary ranges. Although not specifically required by statute, an

internal merit council was established, consisting of the Personnel Officer, the Construction Engineer, and the Maintenance Engineer.

This merit council reviewed the classification and salary schedules to assure equalization and uniformity in the Department salary structure. It also developed procedures for hiring personnel, assignment of position ranges, regulating sick, annual, military, court and other-leaves-of-absence.

Salary adjustments, promotions, probationary periods and rating of employees were under the purview of the Personnel Section.

In the accounting area, arrangements were made to lease computer equipment from the Remington-Rand Corporation to provide improved budgeting procedures and fiscal control. A consultant was employed to assist in developing a new accounting system compatible with this data processing equipment.

The Engineering Division under direction of the Engineering Officer was responsible for review of construction plans prepared by field offices or the Location Section. The Division prepared the final plans, incorporating structure plans from the Bridge Section and base and surfacing designs from the Materials Section; and made any changes in plans necessitated from right-of-way negotiations.

The Engineering Division was also responsible for the preparation of project specifications, cost estimates and obtaining concurrence of the U. S. Bureau of Public Roads, when required, together with advertising the projects for bidding.

The Engineering Officer was responsible for overall determination of design standards, location of any new highways, and the relocation of existing highways. The actual work was usually accomplished at the District office level, although a limited number

of survey parties functioned directly under the Engineering Division. The Engineering Officer gave general supervision to the materials testing activities of the Department at the Materials Laboratory in Boise and at a branch at the University of Idaho in Moscow.

The Materials Section activities included supervision of all testing and inspection of materials in the field, at the factory, or in the laboratories, and operated through the District offices. In the design of a project, the Materials Section was responsible for recommendations for surface thicknesses and specifications, as well as location and testing of materials sources.

A major activity of the Engineering Division, and more specifically of the Materials Section, during 1951-1952 was participation in the design and operation of the road test sponsored by the Western Association of State Highway Officials and conducted by the Highway Research Board of the National Academy of Sciences. This test road was built near Malad and was designed to study behavior of several pavement designs under controlled loading conditions.

The Materials Section investigated the foundation for a bridge crossing the Pend O'Reille River at the outlet from Lake Pend O'Reille in 1951. The foundation soils were very unstable and a special design was required to prevent collapse of the embankment.

In 1953, a geologist was added to the Materials Engineer's staff to aid in field investigations. In 1954, the Section was given responsibility for directing major material and foundation investigations in all Districts through the District Engineers. District laboratories were created in 1954 under supervision of the District Materials Engineers, enabling samples to be tested and results made known to project engineers much quicker, thus giving better quality control. This step also reduced the workload at the

Boise and Moscow laboratories, permitting more complete preliminary investigation and research on problems affecting the quality of aggregate and other materials used on construction.

Other Sections under supervision of the Engineering Officer were Secondary Roads, Right-of-Way and Bridge.

The Secondary Roads Section provided liaison between the local units of government and the Department in relation to the local portion of the Federal-aid Secondary construction program. Every effort was made to assure equitable distribution by allocating funds to local units on a formula basis. Many local units failed or were unable to use the funds apportioned, and the initial plan was abandoned. Funds thereafter were initially made available to local units on a formula basis, but if not committed to a specific project within one year, apportionments were made available to those units which could match the available Federal-aid funds.

The approved Secondary system in Idaho in 1952 comprised 3,439 miles of roads, of which 1,208 miles were on the State Highway System and 2,231 miles were local roads. By June 1952, 454.9 miles of construction had been completed on the local road systems at a cost of \$6.7 million.

Plans for local road projects were prepared by local officials or by consulting engineers. The Department of Highways awarded contracts and supervised construction whenever Federal-aid funds were used.

Department activities for acquisition of right-of-way for State highways increased dramatically in 1951-1952 when local units were completely relieved of this responsibility. The cost of rights-of-way were rising substantially due to increased land values with the growth in population and economic activity. Expenditures for rights-of-way amounted to \$1,040,000 in 1950-1952, compared with \$307,000 in 1948-1950. While this increase was partially

due to factors indicated above, greater right-of-way widths required by higher standards and construction within urban areas contributed to higher costs.

The Bridge Section was responsible for the preparation of plans for all major structures and for major bridge maintenance projects.

At the close of the 1952 construction season, there remained seventy-three inadequate major structures on the State Highway System. Forty-eight of these had a load capacity less than the legal statutory limit. The remaining twenty-five were inadequate in width. Forty-five of the total were in need of replacement at the earliest possible time.

All inadequate structures were posted to show the maximum permissible loads which could safely traverse them. Despite this precaution, these posted load limits were constantly disregarded, causing further rapid deterioration and sometimes causing the failure of some part of a structure.

The Construction Engineer was responsible for the general supervision and control of all construction projects to assure compliance with all contract requirements and for the resolution of any problems which might arise during the work. These functions were carried out in cooperation with the several District Engineers.

Maintenance is defined as "preserving roads of the State Highway System as nearly as possible in the condition to which they were originally constructed or subsequently improved." It was the responsibility of the Maintenance Engineer to determine that this function be accomplished uniformly throughout the State and in accordance with adopted policies and procedures.

Maintenance had developed well beyond the casual patching of any broken spots in the road. In some instances it involved activities of a complexity approaching construction

-- and often exceeded that in variety and difficulty. To the traveling public, the results the maintenance man achieved were often the measure of the effectiveness of the entire Department of Highways, since he was responsible for the highway transport function as well as for preserving the physical integrity of the highway.

Maintenance includes: upkeep of the wearing surface, shoulders, ditches, slopes and structures; placement of pavement stripes and markings, directional and safety signs, protective devices and guardrail; removal of debris, slide material, snow and ice; and control of radio communications and vehicle loads.

The Maintenance Engineer was also responsible for supervision of the Equipment Division, including the purchase, distribution, maintenance and disposal of all Department construction and maintenance equipment.

In addition to these changes in the organization of the Headquarters office, the Highway Board created a new District with temporary headquarters in Idaho Falls. The new District consisted of Lemhi, Clark, Fremont, Jefferson, Madison, Teton and Bonneville Counties, and approximately one-half of Butte County. This area had formerly been included within Districts 1 and 2.

A Public Information Section was created in December 1952. In establishing this section, the Board of Highway Directors recognized that the public needed to know about Department operations, procedures and plans. The Section was to provide this information to all news media and also to individuals upon request. News releases were localized as much as possible for the immediate area affected. The Section also initiated a monthly newsletter for Department employees.

A second addition in 1952 was the position of Safety Director within the Traffic Section. An employee safety

program was formulated, its purpose being to reduce both industrial and vehicular accident rates. A safety manual was completed and a series of safety meetings held at the District offices.

An Urban Engineering Section was created in October 1952 to promote better public relations and understanding between the Department and the towns and cities of the State with respect to mutual problems. The Urban Engineer also provided liaison between the Department and the U. S. Bureau of Public Roads on urban problems.

Mr. W. Fisher Ellsworth, Board Member, whose term expired Janu-

ary 31, 1953, declined reappointment and was replaced by David P. Jones of Malad.

Headquarters of District No. 6 was moved from Idaho Falls to Rigby in 1953.

During the 1953 fiscal year, the Highway Board established a policy to retire certain classes of employees at age 65. Forty-six employees were retired during the year under this policy.

An "Engineering-in-Training" program was adopted in November of 1952 to recruit and train critically needed young civil engineers. The initial group of fourteen graduates and each group subsequently hired were to



be given two years of generalized and two years of specialized training within the several areas in the Department.

As of June 30, 1953 the Department of Highways had a total of 1,238 employees, including 730 maintenance and 391 classified as engineering. On this same date there were fifty-five licensed professional engineers on the staff.

No further major revision of the Department organization occurred until April 1956, when a separate Design Section was created under the Engineering Officer. Previously the responsibility for project design had not been assigned to any single departmental group. It was customary to provide a resident engineer with a

typical roadway cross-section for rural projects as a basis for final design analysis in conjunction with the District office where the actual design was accomplished. This procedure was proving inadequate, as design problems became more complicated with increased traffic volumes and higher speeds. Greater expertise was required in the design of intersections, truck lanes, grade separations, interchanges and channelization. A larger number of individual projects required detailed analysis of intersections, medians, curbs and gutters, storm sewers, and the relocation of utilities. Many of these features were associated with the expanded Interstate Highway System.

U.S. Highway 30 west of Boise after reconstruction in 1955.



Design Sections were established in five of the six District offices, and another was being organized in the remaining District. A more sophisticated electronic computer capable of handling engineering as well as accounting procedures was installed.

A progress flow chart was developed to show the status of each design phase, thus permitting the current status of each project to be determined at any time. Provisions were also made for a design brochure for each project, establishing all phases of the design. This made it possible to obtain concurrence of all agencies involved for all elements of basic design standards at the very beginning of the design operation, minimizing later revision and delays.

In September of 1956, Earle V. Miller resigned as State Highway Engineer to enter private engineering practice; he was replaced by G. Bryce Bennett, formerly Assistant State Highway Engineer.

Because of the greatly expanded State highway program, the staff of the Department of Highways continued to increase, reaching a total of 1,734 employees on June 30, 1958. This represented an increase of thirty percent above the preceding four-year average number of employees.

Contract awards during calendar year 1958 amounted to \$35.2 million, an increase of 135 percent over the average of the four preceding calendar years. An increase of only thirty percent in personnel to prepare plans for and to supervise this volume of construction was considered exceptionally modest.

The increased activity brought about by the Interstate program and the greatly accelerated construction program resulted in a management study of the Department of Highways. Ebasco Services was retained by the Highway Board to make this study and to suggest an organizational plan suitable to manage this enlarged program properly.

Under the organizational structure as finally adopted, the Headquarters operation was split into two major subdivisions, Engineering and Operations, each under an Assistant State Highway Engineer.

The Assistant State Highway Engineer for Engineering was responsible for four Divisions: Planning and Traffic; Secondary Roads; Urban; and Surveys and Plans. These Divisions and their Sections handled all activities involved in processing construction projects to the contract stage. This included planning, preparation of long-range and short-range construction programs, conducting of public hearings, development of policies relating to the regulation and control of traffic, liaison between the Department and local roads and street agencies, materials testing and foundation investigations, bridge design, provision for assistance to the field offices in the solution of unusual and specialized engineering problems, and any other activities necessary to bring projects to the advertising-for-bid stage.

The Assistant State Highway Engineer for Operations was responsible for three Divisions: Construction, Maintenance and Administration. He was responsible for the supervision of construction projects after award of the contract, for the maintenance of State highways and for administrative functions such as personnel, administration, public information and accounting.

Both of the Assistant State Highway Engineers were directly responsible to the State Highway Engineer. This was also true for the Chief Right-of-Way Agent, Legal Counsel, and the six District Engineers.

Direct control and responsibility for the planning, design, construction of programmed projects, and maintenance of the State Highway System, together with public relations functions, was delegated by the State Highway Engineer to the six District Engineers. The Headquarters staff was to assure

that these functions were uniformly applied Statewide, to correlate all activities of the Districts, and to provide District personnel with any specialized assistance required.

The Department of Highways organization chart for the year 1958 is shown in the Appendix, Fig. 5.

A Photogrammetry Section was added to the Location Section during 1958. This allowed the use of economical and rapid aerial survey methods to expand the areas of investigation for study so that the desired high standards of construction could be realized with a minimum cost for preliminary engineering.

In the Design Section, programs were developed to permit the use of the Univac 120 computer in design computations. Earthwork quantities could be computed rapidly under this procedure, making it possible to estimate construction costs on numerous alternative locations and designs and then to select the optimum one. This had not been previously possible because of the high cost of manual computations.

Another innovation which expedited projects on the Interstate System was the adoption of a procedure whereby necessary rights-of-way could be acquired by the U. S. Bureau of Public Roads under Federal law when condemnation proceedings were required.

Under the provisions of Idaho law and an interpretation by the State Supreme Court, it was necessary to process any condemnation proceedings through the courts and pay the amount awarded before the State could enter onto the property. Federal law permitted entry as soon as a condemnation suit had been filed and a sum of money equal to the appraised value of the property had been deposited with the Federal Court.

The term of Highway Director David P. Jones expired January 31,

1959, and Wallace C. Burns of Idaho Falls was appointed to fill the vacancy.

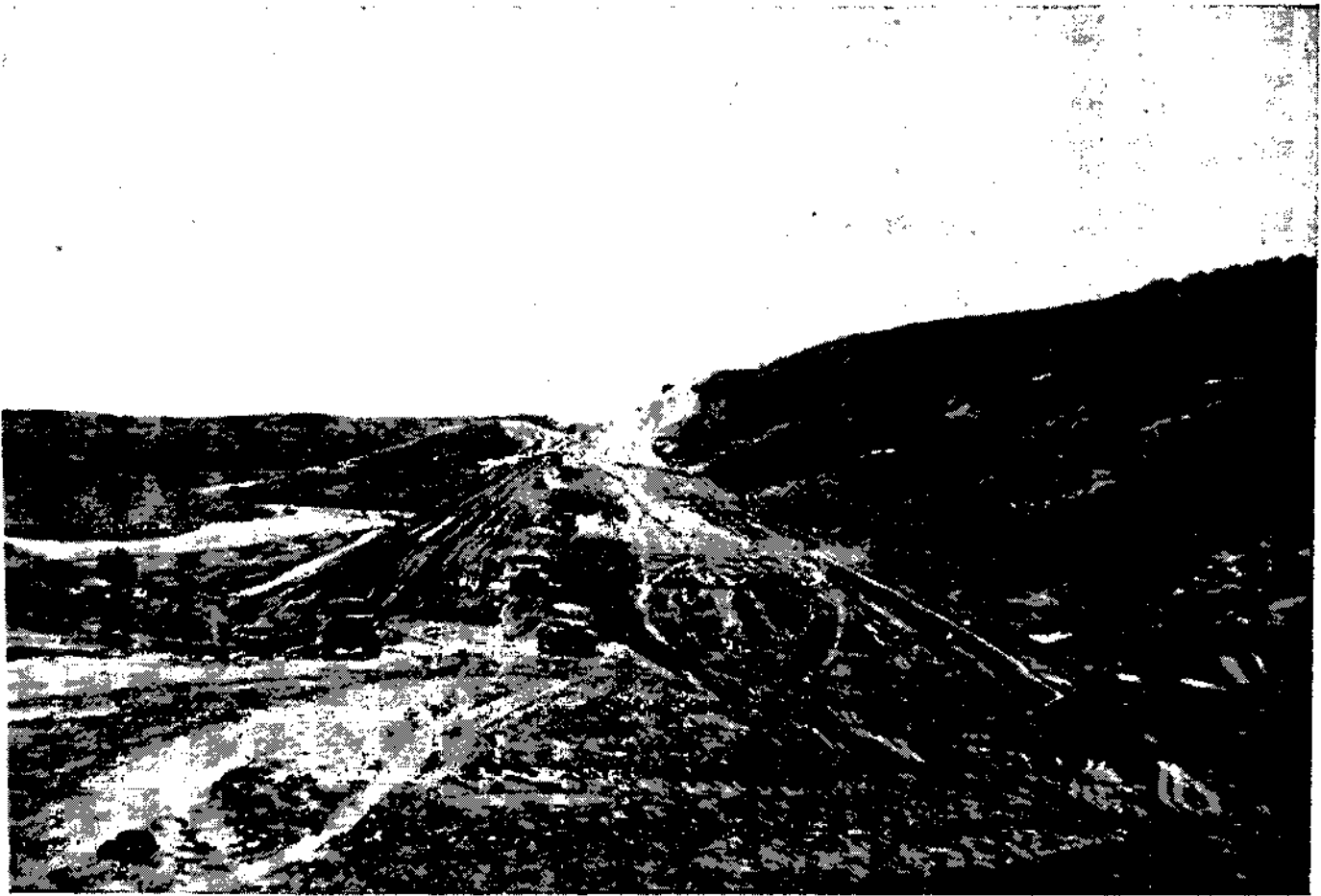
There were no other changes in the basic organizational structure for several years.

Construction

The Department entered the 1950's with many miles of State highway requiring reconstruction due to the absence of construction (and to very restricted maintenance) during World War II. Construction expenditures during 1951 started at about \$9 million and, with fluctuations, increased to over \$20 million by year's end. Increased funding for the Interstate system gave construction the greatest impetus. Paved or oiled road mileage increased by 628 miles in the ten years from 1950 to 1960, decreasing the crushed rock and gravel surfaces by 480 miles and the graded or unimproved mileage by over 360 miles. During this period, considerable reconstruction and betterment work was also accomplished.

In 1951, construction of bridges and other structures was hampered by difficulties in obtaining steel. In the Spring of 1951, however, the Federal government, through the National Production Authority, took over the control and allotment of steel and allied products. In midyear, the Authority established the Controlled Material Plan, designating the State Highway Department in each state as its agent for the statewide allocation of steel for highway and street construction purposes.

The Plan failed to function as it should have in 1951, however, and the construction of one major bridge and several smaller ones was severely delayed. The steel supply, particularly reinforcing steel, did increase after January 1951, but was again cut off by a steel workers' strike in June 1952. By late summer, steel allotments were again reasonably adequate, but the refusal of some mills to accept



Construction west of Massacre Rocks,
1953. U.S. Highway 30N.

authorizations for delivery caused additional problems.

The Weiser bridge, let to contract in November of 1950, is a good example of delays encountered. In January of 1952 the contractor was still awaiting delivery of steel, despite authorizations amounting to almost four times the 452 tons required. One mill finally accepted an authorization in January of 1952 for summer delivery, but further delays due to the strike left actual delivery indefinite.

With the increase in highway revenue, the dollar value of the 1951-1952 construction program was higher than in the previous biennium. Very little additional work was accomplished, however, because of increased construction costs due to rising prices and higher design standards.

Total construction expenditures during the biennium amounted to \$21.1 million, including locally sponsored projects. A considerable amount of work was done on the Idaho Falls-Arco highway to provide improved access to facilities of the Atomic Energy Commission. A large share of this work was financed with 100-percent Federal access funds. Additional work was also accomplished or awarded to contract on the Lewis and Clark Highway (U. S. Highway 12). Financing for these projects came from Forest Highway and Public Lands funds.

A three-year construction program was developed during 1953 to permit a more orderly scheduling of improvements and better timing of the various work phases of project development, from reconnaissance to the actual award of contracts for construction. Previously, Idaho had established its construction program on an annual

basis, which tended to scatter improvements rather than to recognize overall State highway needs.

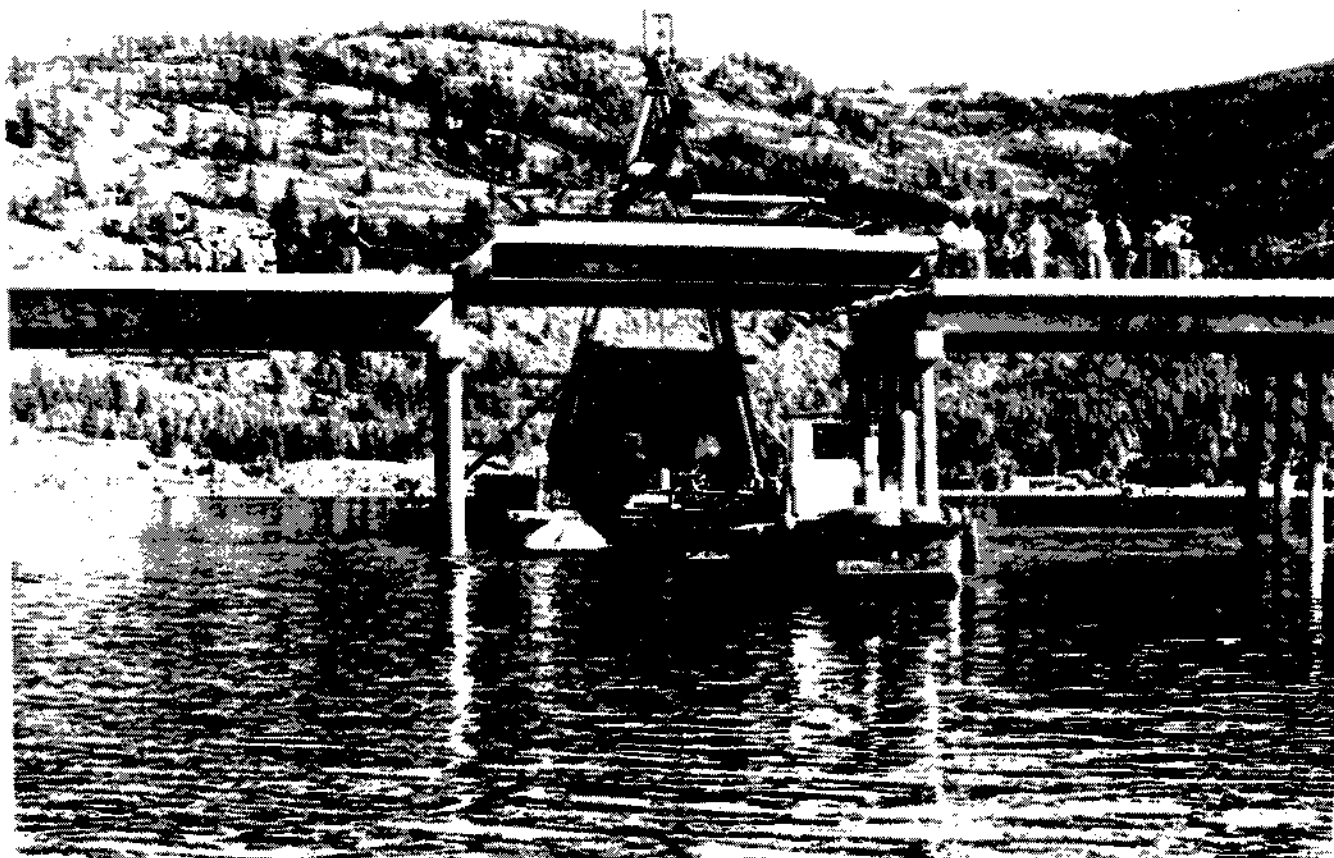
A growing shortage of readily available materials suitable for highway construction in some areas led to research in methods for upgrading low-quality aggregates. One result of this research was to specify a Portland Cement stabilized base on a project between Arimo and Downey. This was the first major use of this type of base in Idaho.

A project was built in 1954 from Smith's Ferry, south 6.64 miles. A Portland Cement stabilized base was used here also, although the material involved was a disintegrated granite sand. Cement stabilization was speci-

fied on this project to eliminate a haul of twenty-five miles for other, more suitable material. A second project, placed under contract in 1955 and comprising 6.5 miles in Round Valley south of Cascade, also used disintegrated granite sand combined with Portland Cement.

It was hoped that if these projects proved satisfactory, considerable savings could be made in construction costs by using extensive quantities of local material which would otherwise have been unacceptable. Use of such materials could eliminate the higher costs due to hauling acceptable materials over long distances.

Placing last span on pile caps
Sandpoint Bridge, 1956.



Total value of work placed under contract in 1954 amounted to \$18.1 million, almost 50 percent more than in 1953. The 1954 total included about \$3.7 million in contracts for local Federal-aid Secondary projects. These local units were beginning to recognize the value of the program and were becoming better organized to use it.

An important major project to replace the timber trestle bridge across the Pend Oreille River at Sandpoint was begun in 1954. Two unusual innovations were used in the construction of the bridge and north approach embankment of this project.

A structure 5,897 feet in length, having 168 spans, each 35 feet long and weighing 74 tons, was designed as a southerly section. Each span was cast on-shore and barged to its final location. The span was then set on bridge pier caps. Each span was constructed by placing a prefabricated nest of reinforcing steel into steel

forms, placing the concrete, finishing the deck, and then steamcuring the whole unit for twenty-four hours. At this point, the concrete had gained sufficient strength and the span was lifted from the forms, transported by barge crane and placed on the capped bents. This operation avoided the normal procedure of having to place forms for each deck over water, and thus produced a considerable savings in construction costs.

The north approach embankment was constructed by dredging sand from the lake bottom and pumping it into position for the 6,000-foot-long fill. The lake bottom was very soft to a considerable depth, requiring counterbalance berms to be placed to prevent lateral settlement of the embankment on the lake bottom. The entire width of embankment and berms at the point of connection with the structure was nearly 324 feet. Another innovation employed vertical sand drains at the bridge end of the embankment to accelerate any settlement that might occur thus preventing any harm to the structure portion. The novel con-

View of dredge placing embankment
Sandpoint Bridge, 1956.



struction procedures used both on the embankment and bridge were acknowledged by contractors and engineers throughout the Western States. In 1956, Department of Highways Designer A. J. Sachse, designer of the bridge, received the Dr. L. I. Hewes award from the Western Association of State Highway Officials.

Value of highway construction in the State in 1954 totaled \$20.7 million. This included construction, right-of-way and engineering costs.

During 1954 a small but very effective laboratory was staffed and equipped at each District headquarters. Immediate supervision was by the District Materials Engineer, with general supervision by the Headquarters Materials Engineer. The laboratories were equipped to test construction materials such as base, aggregates for concrete, soils, and plantmix or roadmix. The tests were performed on the project, but required confirmation at either the Moscow or Boise laboratories under fully controlled conditions. This pro-

cess permitted a rapid check on materials to prevent incorporation of non-specification products into a project, which would be costly to remedy. Samples shipped to Boise or Moscow often required two weeks or more before results were available.

Because of a decrease in State-raised revenue, the amount of construction placed under contract in 1955 dropped sharply. The total contract value was \$10.7 million, or about 60 percent of that awarded to contract in 1954 when contract lettings were the highest ever attained in the State's history at \$17.8 million.

Bridge construction was hampered by high prices and slow delivery of steel. To overcome or partially reduce this cost, studies were made to determine the feasibility of substituting prestressed, precast concrete girders for structural steel beams and girders in bridge spans between 50 and 120 feet in length. A bridge over Big Wood River at Stanton Crossing on State Highway 68 was selected as a test site.



Preliminary cost estimates had indicated a considerable saving might be made through the use of concrete rather than structural steel. The success experienced within this structure subsequently made it possible to construct prestressed concrete girders at central plants in Idaho Falls, Boise and Spokane and to transport the precast girders to a construction site. Costs were lowered, and actual erection time was also less whenever it was possible to use this procedure.

Problems associated with the acquisition of rights-of-way for highway construction were becoming more and more difficult. The wide rights-of-way and controlled access characteristic of the Interstate Highway System caused much of the problem. The right-of-way width for Interstate highways was set at 300 feet minimum, and entrances at-grade for local roads or farm approaches were permitted in only the most sparsely-populated areas, where little chance of increased use of the the approach was probable.

The staff of the Right-of-Way Division was expanded to provide right-of-way agents in all District offices except at Pocatello. One staff appraiser attached to the Boise office operated Statewide. Special fee appraisers were hired when their services were required.

Total expenditures in 1955 for construction, right-of-way and engineering were \$14.5 million. Of this total, \$12.1 million was on State highways and \$2.4 million on local Secondary roads.

The first contract awarded under the expanded Interstate Highway Program was between Massacre Rocks and Rockland Junction. The Federal participation rate for Idaho was 92.5 percent, and it was anticipated the entire Interstate Highway System nationwide would be completed by 1972. Contracts awarded in calendar year 1956 totaled \$14.3 million. Work was placed under contract at an even faster rate in 1957. Increased State revenue under

the revised registration and use-fee schedules, together with the substantial increase in Federal-aid authorizations, permitted this accelerated program.

Approximately one-third of the 1958 total of \$28.9 million in contract awards was on the Interstate system. Because of the higher ratio of participation on Interstate projects, the increase required in State revenues was only about 13 percent. Actual expenditures, as represented by contract claims, were \$20 million, with \$1.8 million on local Secondary projects.

It had become evident that there would be insufficient funds in the Highway Trust Fund to make all Federal-aid apportionments for the 1961 fiscal year, and by midyear it appeared that funds might not be available to reimburse the states for projects already underway. Because of this uncertain Federal-aid funding situation, the Board of Highway Directors found it necessary to suspend award of contracts from July 30 to September 17, 1959.

Idaho, with its sparse population and large land area, much of it relatively undeveloped, has always been faced with a limited amount of State-raised revenue for State highway construction and operations. Rough topography also produces high construction costs in many areas. These factors mean that Idaho's highway construction program must rely very heavily on Federal-aid funds. Any uncertainty in Federal-aid funding or in Federal regulations concerning the Federal-aid programs can, therefore, produce wide variations in Idaho's construction program.

Award of construction contracts continued at a slow pace during the last half of 1959 because of the continuing uncertainty regarding the availability of Federal-aid funds. Contract awards during the calendar year 1959 amounted to \$18.4 million, or approximately 60 percent of the 1958 level.



An improvement in the Federal-aid situation in 1960 gave Idaho an authorization for \$19.3 million. Actual expenditures for highway construction were \$26.9 million in the 1959-1960 fiscal year. This total included \$1.6 million in Federal-aid funds for local Federal-aid Secondary highways.

Total mileage of highway construction accomplished during this ten-year period exceeded any prior period, even with standards that were much higher and with material quantities very much greater. The Federal-aid funding problems experienced during the 1958-1959 fiscal year were to periodically surface in the next decade, however, and would produce wide variations in the highway construction program.

The innovations produced during construction of the Sandpoint Bridge

Blue Creek Bay Bridge under construction U.S. Highway 10 by the Federal Highway Administration in 1950 (Begun 1949 - Completed 1951). These towers were over 325 feet high penetrating into 100 feet of mud to rock foundation.

and embankment were an indication of the capability of Idaho contractors to adjust to changing conditions and to accomplish satisfactory work at reasonable cost. At the beginning of the decade, manufacturers and contractors were getting well reorganized, following the disruption of World War II. During the early 50's, a change to rubber-tired earth movers had been made and their capacity increased considerably. During the 1959-1960 period, it was common for a contractor to bring equipment costing even more than the value of his contract to a

project. Earthmovers of 25-30 cubic yard capacity capable of 30-40 miles-per-hour speeds were common. Some of the larger projects involved moving 30,000 cubic yards or more of material every day.

Similar progress was made in hotplant production of paving mixtures. Whereas 100 to 150 tons per hour were considered good production in 1950, a rate of double that was considered minimum for any new plant in 1960. Pavers were improved greatly to include floating screeds and to operate from preset grade-elevation stringlines to control smoothness. Rollers had become larger, and some rubber-tired units weighed 25,000 pounds. Paving had tripled the quantities of asphalt cement used annually between 1950 and 1960.

By 1960, structures were designed to use precast, prestressed concrete girders whenever it was possible to do so. Ready-mix concrete plants were located in nearly every town of 2,000 people, making it much easier to secure necessary concrete for any structure.

Trucks were becoming larger and faster and could haul materials from sources many miles from a project for as little as five cents a ton-mile. This made it possible to select higher quality aggregates farther from a project if necessary. The production of crushed stone and gravel had kept pace with the demand, and newer plants could produce 3,000 tons daily. Some of the larger crushers had primary jaws capable of taking stone weighing several hundred pounds, with the largest taking stone weighing nearly a half ton.

It was this tremendous improvement in construction equipment, together with improved contractor efficiency, that made possible the economical construction of the Interstate System, although inflation was slowly making inroads in the worth of money. Labor costs were rising, as were all material costs.

Maintenance

The national attitude during the World War Two years that highways were expendable caused a severe drain on Highway Department resources after the War. Heavy flood damage during the 1947-1948 winter, further aggravated by very severe winter storms during 1949-1950, also caused many problems. The winter storms drifted snow, filling cut sections, and it compacted so hard that explosives were sometimes needed to loosen it before removal. The greatly increased use of large trucks imposed wheel loads on many roads well beyond their design capacity.

With the volume of needed repairs so great and widespread, it became necessary to accomplish a large part of the work by contract. The total expenditures for 1949-1950 were \$6.9 million, with over half performed under contract. This sum represented slightly over 40 percent of the net State-raised revenue to the Department. A total of 1,364 miles of highway received major repairs.

The cost of maintenance during the 1951-1952 biennium further increased over that of the 1949-1950 period. Actual expenditures rose by \$614,000. Almost all of this increase was due to the higher cost of snow removal and sanding during the hard winter of 1951-1952.

Maintenance cost per mile was \$784 in 1950-1951, compared with \$865 in 1951-1952. Mileage under State maintenance as of June 30, 1952 was 4,650 miles.

The program of lane-striping was expanded during this biennium. A broken yellow center line marking was applied on 3,031 miles of State highways. In addition, solid white barrier lines were applied at 1,408 vertical curves, to indicate sight distance restrictions. Glass beads were added to the paint on approximately 500 miles to provide increased night visibility of lane stripes. Striping equipment was

modified to permit the application of paint and beads on one to three lines simultaneously.

Studies designed to improve maintenance procedures were initiated in 1952. This resulted in some reorganization, which became effective in early 1953. Formerly, a maintenance foreman with several crews had attempted to maintain a large mileage of roads. Under the revised organization, each operating District was divided into three to five areas, with a Resident Engineer in charge of each area. Each residency was then subdivided into two or more maintenance areas, each headed by a Maintenance Superintendent. The mileage within each maintenance area was divided into road sections ranging from fifteen to forty miles in length. Each section had a maintenance man assigned to patrol and maintain it. He was directly responsible for the condition of his section at all times. Under some special conditions, a helper might be assigned to assist him. With this new "patrol system," each section of highway was patrolled daily. Prior organization had meant that some sections of highway might go without attention for several days.

Maintenance expenditure during 1952-1953 amounted to \$4.3 million, with \$0.5 million used for snow removal and sanding. The average cost per mile in 1952-1953 was \$890, compared to \$865 in 1951-1952 and \$784 in 1950-1951.

The Department radio system was expanded during 1952-1953 to cover about 80 percent of the State Highway System. By July of 1953 there were ninety mobile units, six base stations, twelve control-repeater-fixed relay stations, and thirteen remote control units in operation.

The patrol system of maintenance initiated in 1953 continued in 1954, and experience indicated it was a success. The maintenance man was fully responsible for the section of highway assigned to him. This feeling of re-

sponsibility fostered a healthy rivalry among the maintenance men. The same factors that impelled him to do a good job on his road section also motivated him to take better care of his equipment.

Maintenance expenditures in 1954 amounted to \$4.3 million of which just under \$0.5 million, or a little over 11 percent, was spent on snow removal and sanding. Maintenance costs averaged \$904 per mile, compared with \$890 per mile during the previous year. Mileage under State maintenance was 4,725 miles.

A Transportation Officer was assigned to the Maintenance Division in 1954 to handle special permits for extra-legal loads and to act as a clearinghouse for road condition information, including Spring breakup restrictions.

Additional radio equipment was also installed during 1954, which allowed direct communications between the Boise Headquarters office and all six District offices.

Because of a reduction in State revenue in 1955, special work was curtailed as much as possible. Stockpiling of crushed material was reduced to the minimum required for current needs. Sealing of bituminous surfaces and repairs of all kinds were postponed if permanent injury to the highway or impairment of service to highway users was not imminent.

Anticipated savings resulting from these cutbacks were largely lost, to increased winter maintenance requirements and by flood damage, which was especially severe on U. S. Highway 95 north of New Meadows.

The cost of snow removal increased from \$480,000 in 1954 to \$926,000 in 1955, with the total maintenance cost in 1955 over \$4.6 million, an increase of almost \$400,000 over the previous year. Average maintenance costs were \$981 per mile, as compared with \$904 per mile in 1954. A total of

4,708 miles of highways was under State maintenance.

Unusually harsh winter conditions again occurred during 1956-1957, causing severe damage and increasing maintenance costs.

January, February and March of 1956 had extreme temperature changes, causing an unusual amount of pavement breakup. A large part of the repair work was done by contract, which made it possible to develop a project of definable limits. Department crews were severely taxed, and it was neces-

Flooding on U.S. Highway 95 near Hazard Creek north of New Meadows in December 1955 washed out nearly two miles of highway.

sary to double the size of many State crews to handle some repairs.

In addition to the Spring break-up, cloudbursts and floods caused serious damage along the Clearwater, Salmon, Lemhi, Blackfoot and Wood Rivers and Lawyers Canyon Creek. Quick action by maintenance crews kept these roads in a serviceable condition with a minimum of traffic delay.

On March 3, 1956, a severe snow avalanche occurred in Burke Canyon, (State Highway 4 northeast of Wallace) causing considerable property damage and the loss of one life. The road was closed for twenty-four hours. Seven bulldozers were required to move the snow and debris from the highway.





Maintenance expenditures during the eighteen-month period amounted to \$6.9 million of which \$1.2 million was spent on snow removal and sanding. A total of 4,687 miles of highway were under State maintenance, with the average maintenance cost at \$983 per mile per year--about the same as in 1955.

It was during 1956 also that a program was initiated to place signs at important historical sites. This work was undertaken by the Traffic Section of the Department, in cooperation with the Idaho Historical Society, which furnished the text.

Center-line markings were applied on 3,112 miles of State highways. In addition, State crews painted local roads intersecting State highways with an advance "wiggle" center line to indicate the approach to a "Stop" sign. Conversion of old yellow "Stop" signs

Rotary snow plows clearing snow from State Highway 21, Idaho City to Lowman in the 1950's. This road was closed each winter and required two-three weeks each spring to open.

to the newly adopted red sign continued.

Maintenance operations during 1957-1958 returned to a nearly normal level, but there was an increase in sealcoat and betterment work after several years of heavy snow fall, floods and excessive Spring breakup. The major winter problems were caused by drifting snow, by occasional high winds in the eastern and northeastern parts of the State, and by a particularly large landslide north of Salmon.

Maintenance costs were \$6.7 million during the year, including \$0.6 million for snow removal and sanding, for an average expenditure of \$1,442

per mile. This represented a substantial increase over the \$983 per mile of the year before.

Maintenance costs during 1958-1959 were \$5.2 million or about ten percent less than during the previous year. This was in part due to the new mileage not requiring any extensive surface repair constructed under the Interstate program. Actual savings were partially offset by higher snow removal and other costs associated with greater widths of these highways.

The cost of routine maintenance items such as patching, mowing, pavement markings, snow removal and sanding during 1959-1960 was \$5.4 million, an increase of approximately eight percent over the prior year.

Local Roads

The local rural road system of counties and highway districts totaled 25,438 miles at the end of 1949. Approximately two-thirds of this mileage was classified as improved. Revenues in 1949 were \$7.2 million. Bonded indebtedness was \$820,000. Revenues increased throughout this ten-year period, while the bonded indebtedness decreased to \$424,000. Essentially the entire reduction in bonded indebtedness was in Owyhee County, which had bonded for paving the road paralleling the Snake River from Bruneau to Marsing.

Several counties were beginning to match Federal-aid funds for Secondary highways within their respective areas. At the end of 1956, 27,345.9 miles of road were under county and highway district jurisdiction, with 2,966.1 miles on the Federal-aid Secondary system.

THE INTERSTATE ERA

1961 - 1974

The years from 1961 to 1974 were without doubt the busiest period ever for highway construction in Idaho. The State's Interstate Highway System, except for very short segments, was completely located and much of 612 miles constructed during this period. In 1960, 11 percent, or about 67 miles were complete; in 1964, 36.8 percent; at the close of 1970, 75.3 percent was completed; and in 1974, 86.6 percent, or 527 miles, were in service.

Completing the Interstate System required a maximum effort by the Department. During these years, from 50 to 75 percent of the dollar volume in work awarded to contract was for Interstate construction. However, no Primary, Urban or Secondary Federal-aid funds apportioned to Idaho were ever permitted to lapse. The Department very carefully scheduled contract awards with estimated State income, to assure that money would be available to pay contractor claims for work accomplished. Since the time period to construct many of these projects was 24 to 36 months in some instances, anticipated payout schedules established for each project had to be watched carefully and adjusted as the work progressed.

The Board of Highway Directors' policy of concentrating the Interstate effort on sections where the existing system was inadequate to carry traffic was an excellent one, and received wholehearted support from the people of Idaho. One such section of old U.S. Highway 91 from Pocatello to Idaho Falls was a narrow, two-lane facility carrying nearly 5,000 vehicles daily. The accident record here was among the highest in the State, and several fatalities occurred each year. These rates were appreciably lowered

when the Interstate was completed; the fatality ratio was reduced from 6.8 to 1.0 per one hundred million vehicle miles of travel. Work on this segment was begun in 1959, and the entire section between Pocatello and Idaho Falls was opened to traffic in November, 1961.

Other portions of the State Highway System given early attention for replacement by the Interstate Highway System were: a section from Boise to Mountain Home; from Ontario, Oregon to Caldwell; from Burley to Raft River; from Wallace to Mullan; a bypass around the City of Coeur d'Alene; from Rockland Junction to Igo; and the Fourth of July Canyon east of Coeur d'Alene. Replacement of these sections lowered accident and fatality rates, and also reduced travel time, since new facilities eliminated all conflict from intersections at-grade and permitted the free flow of traffic at speeds up to 70-miles-per-hour on all portions of the System.

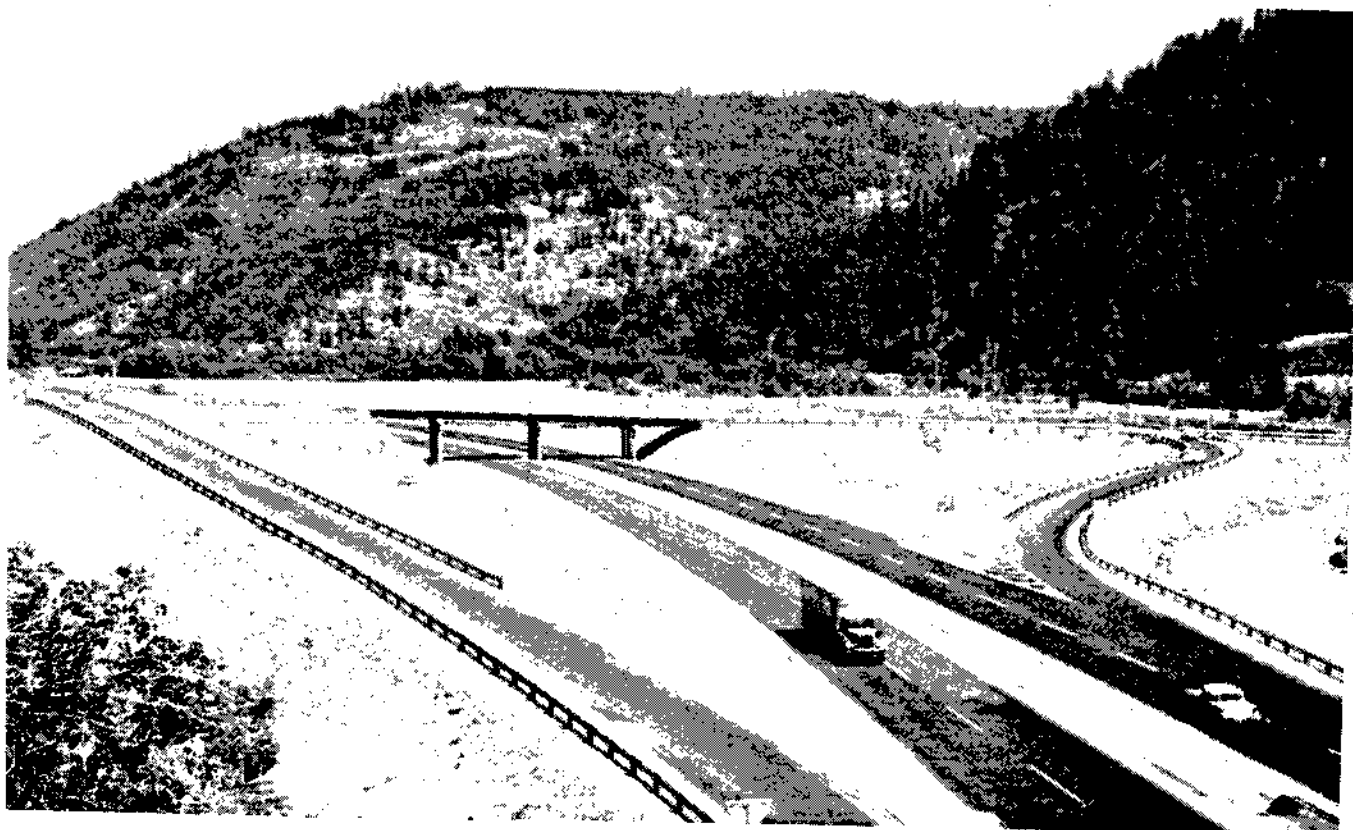
Total mileage of the State Highway System remained at approximately 5,000. The older sections of highway, replaced by the Interstate or other new construction, were either abandoned completely or arrangements were made for acceptance on local road systems. If transferred to local jurisdiction, the Department generally reconstructed the facility with a new surface or pavement adequate for the traffic expected after completion of the new route.

Old U.S. Highway 91 from Pocatello to Idaho Falls and most of old U. S. Highway 30 from Boise to Nampa and Caldwell remained on the System to give local service to the more densely populated communities in the area. U.S. Highway 30 from Malta



Junction of Interstate 15 and U.S.
Highway 20 at Idaho Falls - Broadway
Interchange in 1962.

Wolf Lodge Interchange - Junction
of Interstate 90 and Alternate U.S.
Highway 95 east of Coeur d'Alene.

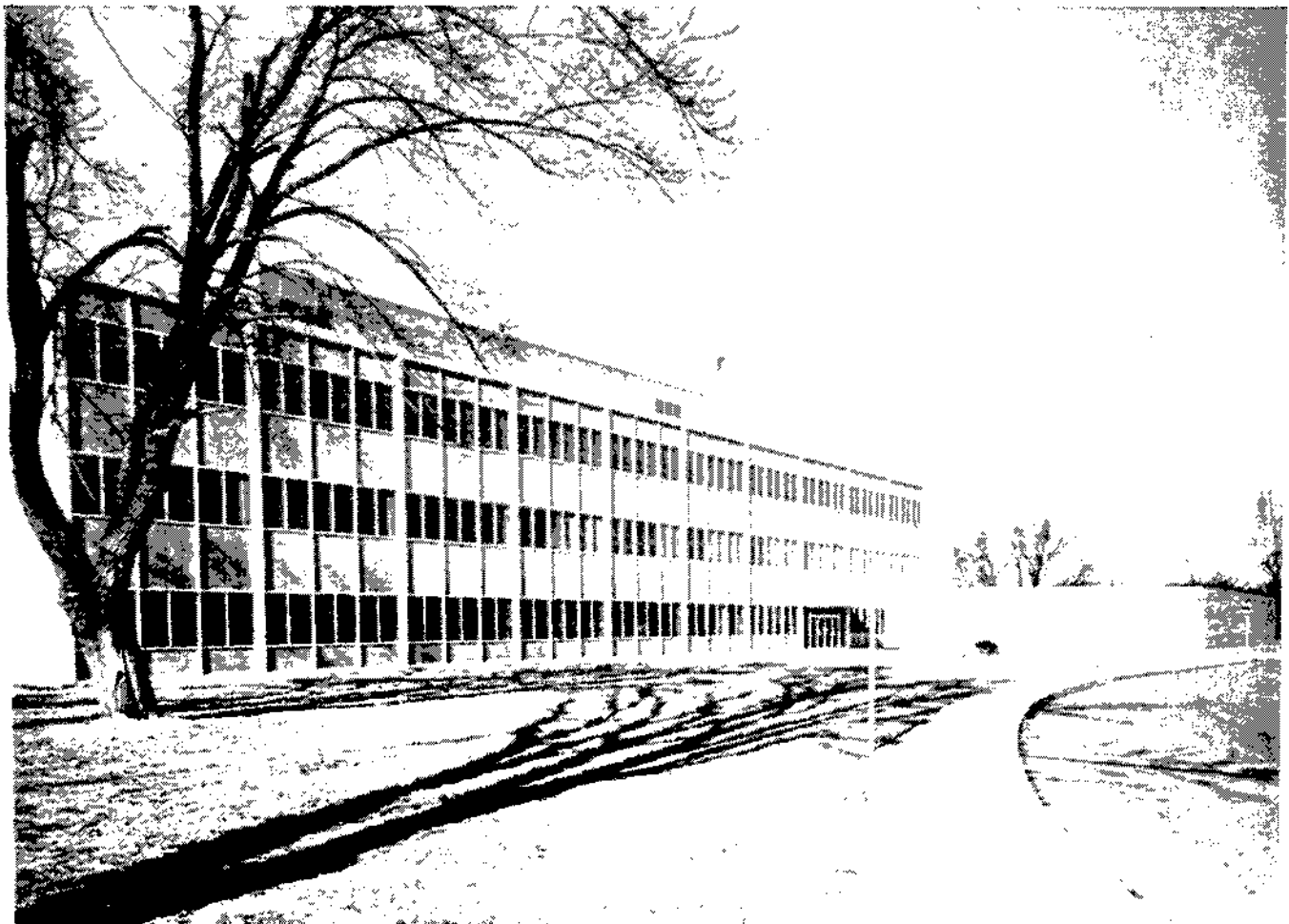


to Burley, Twin Falls, Buhl, Hagerman and Bliss remained on the State System, as did portions of State Highway 25 from Jerome to Hazelton and Rupert. Some segments were transferred, such as: old U. S. Highway 30 from Malta to Strevell; a section of U. S. 30 from a point north of Caldwell to New Plymouth; and old U. S. 91 north of Idaho Falls to the Montana state line. These sections essentially assumed the characteristics of "farm-to-market" roads when the Interstate System was opened to traffic.

These actions did increase the responsibility of the Department, however, since the newly-constructed freeway was a four-lane facility with frequent interchanges. Maintenance costs for snow and ice control, as well as surface and roadside maintenance, increased proportionately with the increase in miles of two-lane facility.

Although total State highway mileage changed little, vehicle miles of travel tripled between 1941 and 1970. The greatest increase in travel was on State highways, where, it was estimated, 65 percent of all vehicle miles of travel in the State occurred. In 1970, over 3.1 billion vehicle miles of travel were estimated on the 4,994 miles of the State Highway System. County and highway district roads and city streets, excluding portions on the State Highway System, amounted to over 51,000 miles and were estimated to have 1.6 billion annual vehicle miles of travel. Stated another way, these figures represent an average annual daily traffic value on the State Highway System of 1,700 trips, compared to 50 trips on local county

Department of Highways and Law Enforcement occupied new Headquarter's Building in 1961.



and highway district systems, and 790 trips on city street systems. The figures cited are Statewide averages. Average annual volumes vary widely on the State Highway System, e.g., over 50,000 trips on the six-lane, I-184 west connector to Boise, and as little as 160 trips on State Highway 51 near Duck Valley. City streets and local roads experience equally great variations, percentage-wise.

The Department of Highways and the Department of Law Enforcement moved to a new Headquarters office building in early 1961. This move brought together all sections of the Highway Department, with the exception of the Materials Laboratory, for the first time since before World War II. It greatly increased management

efficiency and coordination of work within the Department.

The enlarged construction program of the 1960's increased materials testing and inspection requirements. A "Record Sampling" program had been initiated, which further increased the workload. Although all District laboratories had been expanded, the Boise Central Laboratory had been operating on a two-shift basis during the summer construction season for nearly twenty years.

A completely new laboratory was constructed near the Headquarters office building in 1971. This new facility was all on one floor, with twice the work space of the old laboratory building. It was constructed at a cost of less than \$19.00 per-square-foot, whereas many office buildings at the time were costing about \$30.00 per-square-foot. The

Technician testing Portland Cement on a Spectrophotometer instrument such as this saves 80 percent of the labor in testing.





Laboratory technician extracting asphalt from hotmix to determine if specifications are met.

Materials Laboratory at District I at Pocatello.



new laboratory was planned to be as functional as possible, with the arrangement and equipment provided for each section especially oriented to its particular use.

During the period from 1958 to 1962, the Department participated with all other states and the Federal Highway Administration in conducting a National Road Test at Ottawa, Illinois. This research project was designed to test to destruction both bituminous and concrete pavements of various designs. Loads of up to 30,000 pounds on a single axle and 48,000 pounds on a tandem pair of axles were applied to test sections. Results from the project confirmed and refined design practices for pavement and provided new concepts concerning fatigue failures of pavements.

Modern grading equipment on earth moving project.

The Highway Research Board under the Academy of Sciences had served as the contract operating agency for both the Western Association of State Highway Officials' road test at Malad, Idaho and the American Association of State Highway Officials' road test in Illinois. The success achieved in both of these research efforts led the states, through the American Association of State Highway Officials and the Federal Highway Administration, to contract with the Academy for continuing research on behalf of all the states, under a National Cooperative Highway Research Program. Idaho's share of the cost of this program ranged from \$22,000 to \$28,000 per year.

Each state submitted research proposals for consideration in numerous areas of activity. Actual projects were then selected by committees appointed for the purpose. This large cooper-



ative program permitted research projects costing a \$.5 million or more to be financed. A project of such size could not normally have been undertaken by any single state.

Idaho succeeded in having about \$1 million in actual research projects accepted within the ten-year period by the NCHRP, including \$270,000 in research concerning the failure of asphalt to adhere to aggregates, causing early failure of pavements in southeastern Idaho. The University of Idaho was selected to do this work, with a completion date of about 1980.

Several actions by the U. S. Congress had a major impact on highway operations during the 1960's and early 70's. Among these were legislation requiring screening of unsightly areas from the highway; relocation assistance to persons and businesses displaced by a highway; equal employment opportunity requirements; the Occupational Safety and Health Act; and a requirement that before any highway improvement could be initiated, its impact on the social, economic and environmental factors of the community and area must be evaluated.

No one can take issue with the intent of these acts. They did, however, add substantially to the time requirements and cost of engineering, rights-of-way and construction. It was estimated that these requirements increased costs by about 35 percent. The time for preparing plans and acquiring rights-of-way, from corridor location to awarding a contract, increased from three or four years to a minimum of about seven or eight years.

Because of this longer time frame, inflation was also increasing costs of materials, labor and equipment at a rate of better than five percent annually. These seemed to be nearly insurmountable problems after 1970, since revenues were not keeping pace with the inflationary trend, and Federal-aid funds were frequently

"frozen" by the Federal Administration, thus stopping the advertising of some projects ready for construction and thereby increasing future costs. And this problem existed nationwide, not just in Idaho. Most of the requirements of these laws had been given consideration in prior studies pertaining to highway projects.

With respect to the Occupational Safety and Health Act, the Office of Safety and Health Administration was given enforcement powers previously assigned to many different agencies. OSHA offices were now given authority to enforce standards, assess citations, assign civil penalties, and hold hearings on enforcement. This created considerable concern among contractors.

Equipment noise had to be monitored and roll-over bars placed on many pieces of equipment. Testing requirements and hours-of-use records on all hoisting cables were specified. Dust pollution measurements often meant substantial changes to hot plants. These are but a few features to which new regulations were applied. In fact, so many regulations appeared that it was difficult to operate. In spite of this, however, the contracting industry made every attempt to comply, and very little action by OSHA was required.

The Equal Employment Opportunity Act also produced many problems for Idaho, which has very small minority populations. Less than four percent of Idaho's population falls in minority groups. This compares with a national ratio of from 10 to 12 percent. Most of Idaho's minority population is either Spanish-American or Indian.

Idaho's contractors and the Department began a concerted effort to hire minorities. Training was a part of the program, and with more training and better placement, some progress was made in reaching an equitable employment distribution of minority groups.



A borrow source becomes a recreation spot after filling with water.

The environmental impact of proposed highway improvements was made a project requirement, as part of the "Social, Economic and Environmental Effects" considerations set forth by Federal law. This law required an evaluation of all alternative proposals for location and design. Environmental Impact Statements were a requirement for all but the most minor of improvements. Public meetings and hearings on many such projects often gave little consideration to economic factors. A "no improvement" alternative is also a requirement of this procedure. The time element for all improvements became extremely long, and the cost factor accelerated rapidly.

A total of some thirty agencies could exercise control over some aspect of a proposed highway improvement.

These included such features as airport approach areas, archaeological or historical sites, fish and wildlife, Indian reservations, irrigation facilities, noise levels, parks and recreation areas, railroads, relocation of housing and businesses, utilities, flood management, navigable waters, water quality, and wild and scenic rivers, to name a few.

It became a major task to assure that all interested parties were informed and invited to supply input for a project. The Federal Highway Administration had the final approval, since any of the agencies or groups affected could request changes before giving approval. Disagreements on some feature or the action of some overly-enthusiastic environmentalist often produced long and costly delays. The Department was often placed in the position of arbitrator between

groups, as well as an innovator of new features requested by an agency, group or individual. Considering the overall impact of these requirements, it is not difficult to visualize an extension of project development time three to five years over that previously required; and the overall cost increased by at least 35 percent, without giving consideration to the inflation factor.

Legislation

The Legislature, during the 1961-1974 era, continued its struggle with State highway revenues and apportionments to the several levels of government responsible for roads and streets. A new concern entered into their deliberations as the U. S. Congress enacted several pieces of legislation making mandatory certain re-

quirements on the states or a penalty of as much as 20 percent of Federal-aid allocations to be imposed and funds withheld from State use. Late in the period, impoundment of Federal-aid funds by the Federal government also had serious implications for highway programs.

The 1960-1961 Legislature took action to prohibit commercial enterprises from serving motor vehicle users on property acquired for any controlled-access highway, but to permit construction of "frontage or service roads" to these facilities. Legislation was also enacted which required that, where irrigation facilities were affected by construction, the

Juniper rest area on Interstate 80N
north of the Utah State Line.



irrigation system management was to be reimbursed by a lump-sum payment amounting to the pro rata share of any indebtedness against the lands affected. This statute also required payment for any damage to facilities, including severance damages. The statute was of great importance to southern Idaho farmers, since it permitted equitable remuneration for irrigation considerations in the procurement of rights-of-way.

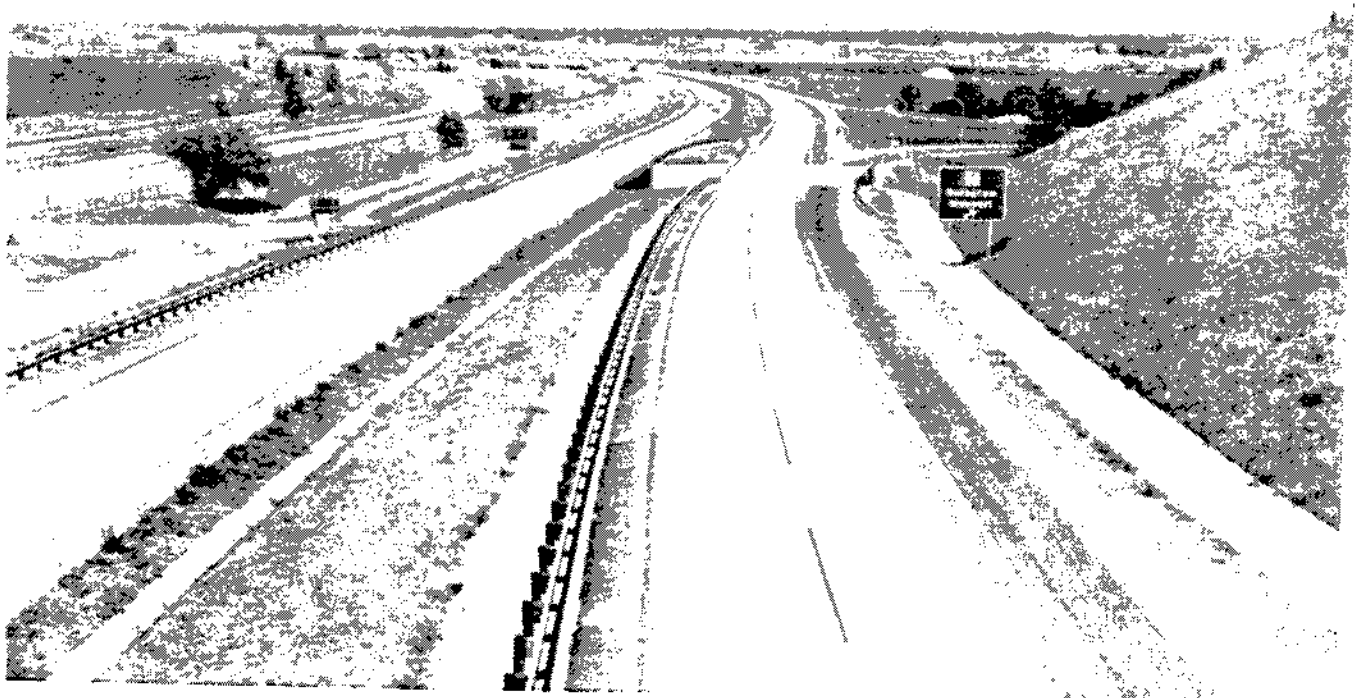
The 1963 Legislature provided for 15 percent of the local unit's share, or 4.5 percent of total State highway user revenues, to be divided among incorporated cities and villages of the State. Prior to this action, State funding allocations had been restricted to cities and villages of three hundred or more population. This legislation provided that payments were to be made to all

cities building and maintaining streets, regardless of population. This action reduced the county and highway district share of the vital user revenue from 27.3 percent to 25.5 percent. The proportion available for State highways remained at 70 percent of total revenue.

Federal-aid highway legislation set forth new requirements in 1965 with passage of the Highway Beautification Act. Congress had, for a considerable time, tried to encourage State control of roadsides, particularly with respect to outdoor advertising, by providing for modest increases in the Federal-aid matching ratios to states that would implement such programs. Few states availed themselves of this option, however, because of the long-term costs involved.

The 1965 Federal-Aid Act provided for mandatory control of outdoor

Completed Interstate 90 section west of Coeur d'Alene.



advertising and junkyards along Interstate and Primary highways. Any state failing to comply was subject to a loss of up to 20 percent of its annual apportionments for regular Federal-aid construction funds. The Act also provided fund authorizations to pay 75 percent of the cost of control programs and to pay 100 percent of the cost of projects to enhance the appearance of highway roadsides.

The Act specified that any junkyard located within 1,000 feet of the edge of the right-of-way of an Interstate or Primary highway be screened or removed, unless it was within an area zoned or used for industrial purposes.

The Act further provided for the removal of all outdoor advertising signs within 660 feet of Interstate and Primary Highways right-of-way except:

1. Directional or other official signs and notices;
2. Signs relating to sale or lease of property on which they were located; and
3. Signs relating to activities being conducted on the property on which they were located.

Outdoor advertising was also permitted in areas zoned for commercial or industrial purposes or in unzoned areas, as determined by agreement between the Secretary of Commerce (now Secretary of Transportation) and the individual states.

Interstate 15 north of Malad. The four lanes are separated and at different elevations to minimize earthwork.



Regulations were prepared by the U. S. Department of Commerce and hearings held concerning them in each state prior to publication in the Federal Register, which gave such regulations the effect of law. The regulations dealt primarily with definitions, particularly with respect to unzoned commercial and industrial areas and the spacing of signs in these areas. Despite much testimony and many suggestions offered at numerous public hearings, essentially the same regulations as those originally prepared were subsequently adopted by the Department of Commerce.

An inventory of all existing signs and junkyards was immediately necessary. This survey was eligible for Federal participation, using available beautification funds to pay 75 percent of the cost. This was the only activity undertaken in Idaho during the early phase of the program because State legislation was required prior to actual removal of signs or junkyards. The Legislature also gave the State Highway Board power to comply with the numerous Federal requirements, although a system of permits and fees was then established to aid in administering the statutes. Some legislators objected to these Federal requirements as being too restrictive.

Historic and Geologic markers inform the traveler of points of interest. These are located at safety rest areas or overlooks.

Although not exclusively applicable to the Department of Highways,



a significant action of the State Legislature of 1965 was the establishment of a three-member State Personnel Commission. This Commission was charged with the responsibility of adopting rules and regulations covering all areas of administration of State personnel. With the exception of certain specified classes, all State employees were placed under a State merit system. The Commission established rules governing employee selection, classification, salary rates, promotion, and hearing of employee grievances. Similar procedures had been established much earlier within the Department of Highways by the Highway Board, and this Act gave the system the sanction of law, but it also expanded the system to other departments within the State government.

In 1966, Congress passed the Federal Highway Safety Act requiring each state to have a highway safety program approved by the Secretary of Commerce. The objective of the program was to reduce traffic accidents and deaths, injuries and property damage. The Secretary set forth uniform standards expressed in terms of performance criteria. Standards were specified to improve driver performance (including driver education), driver testing and examinations, driver licensing and pedestrian performance. A system of accident records, emphasizing investigations of probable accident causes, injuries and deaths, investigation of vehicle registration, and vehicle inspection was to be developed. Highway design features including lighting, markings, surface treatments, and traffic control devices were also included. These factors were considered important to the surveillance of traffic for detection and correction of high-accident locations and for emergency services. Actually, almost all of these features had been considered by the State Highway Department operations for many years.

The Act required the Governor of each state to be responsible for administration of the program. It provided that local agencies should

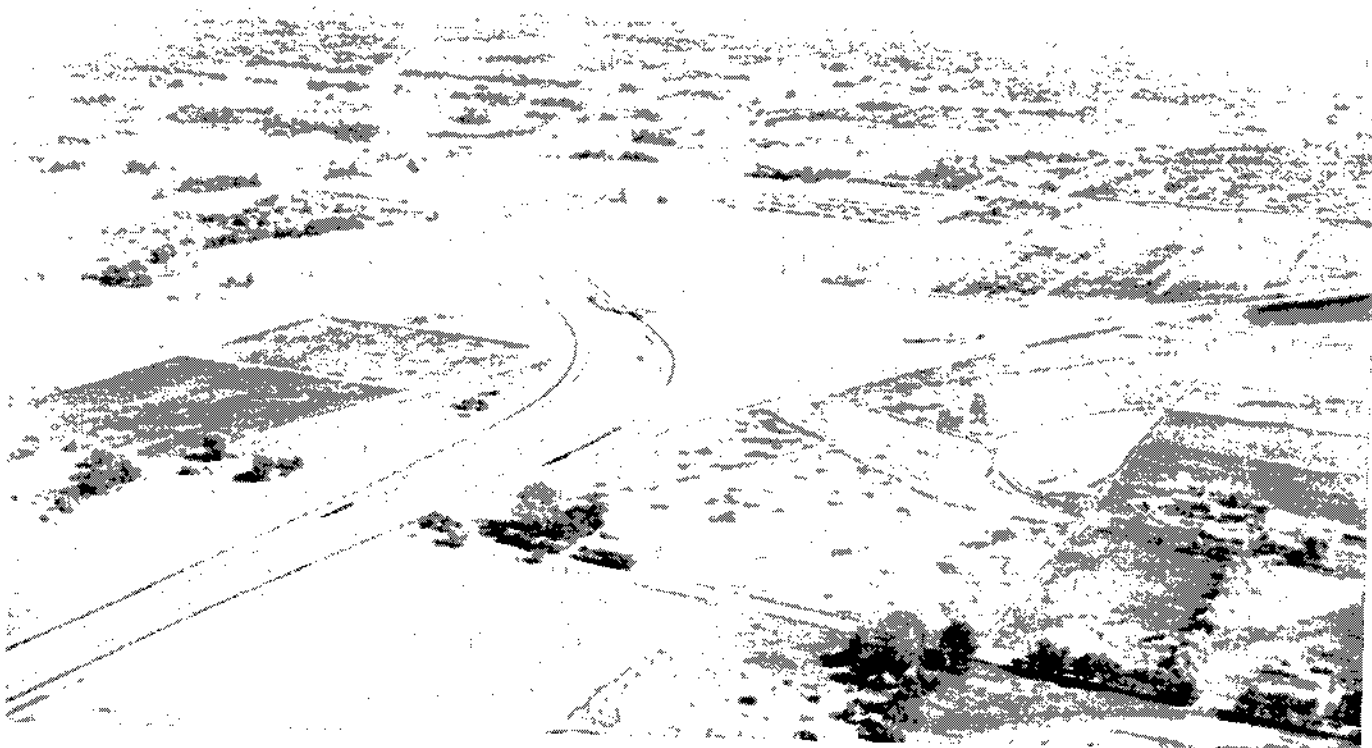
be authorized to carry out local safety programs, with not less than 40 percent of safety funds apportioned to each state made available to local units to finance local programs.

Any state failing to comply with the provisions of the Act was ineligible to receive safety funds. Additionally, the State was subject to the withholding of ten percent of its regular apportionment of Federal aid funds for highway construction.

The 1967 Legislature passed a statute requiring annual safety inspections for all motor vehicles, in order to meet Federal requirements on this matter. These inspections were to include brakes, lights, turn signals, steering mechanisms, horn, glass, mirrors, exhaust system, windshield wipers, tires and any other equipment specified by the Commissioner of Law Enforcement. Such inspections were to be made by licensed inspection stations. Any defect had to be corrected within ten days. The inspection cost was set at \$2.00, which was to be applied toward the cost of correcting any defect.

Passage of the Highway Safety Act had a substantial impact on highway operations, including the Federal-aid construction program. New Federal restrictions were imposed by this Act, and additional State and local matching funds were required to implement the program. It was also necessary to change some procedures through which high accident locations were to be identified for a determination of possible corrective action. The intent was to spread available funds as far as possible through projects having relatively low individual costs. Sites for improvement were selected through a computer program which identified locations with higher-than-average accident experience.

The 1966 Extraordinary Session of the Legislature authorized the State Board of Highway Directors to acquire, maintain and improve areas adjacent to State highways; to restore, preserve



West Connector Interchange near Boise.

and enhance the scenic beauty; to provide informational sites, and for rest and recreational areas as an accommodation to the traveling public. These sites were required to be parallel and contiguous with the highway and could not exceed a width greater than 1,000 feet from the adjacent right-of-way line. This legislation permitted the Board to comply with provisions of the Federal Highway Beautification Act of 1965, wherein Federal-aid could participate up to 75 percent of the cost of rest areas, overlooks, and similar areas. Title to the land could be acquired through gifts, purchase, exchange or eminent domain.

The 1966 Extraordinary Session amended the law to provide for collection of the State tax on motor fuels used by private contractors operating Federal facilities. This was an outgrowth of litigation with contractors at

the Atomic Energy Commission facility near Arco, and provided that a use tax equivalent to the regular motor fuels tax be assessed.

The 1967 Legislature also provided that the State Highway Board could authorize the operation of "double and triple" unit truck combinations on highways to be specified by the Board. The overall length of such combinations could not exceed 98 feet, and two of the units were to be a tractor and semi-trailer combination.

Research conducted by the Department had demonstrated that operating these combinations on freeways and multilane highways or two-lane highways of modern design without sight distance restrictions and having climbing lanes did not increase traffic hazards. All axle and wheel load and spacing restrictions applied to these longer units, but due to the increased length and number of axles, a maximum load of 105,500 pounds was permitted.

The State Highway Board presented to the 1967 Legislative Session an analysis of projected revenue and expenditures, revealing a situation whereby the State would be unable to have sufficient State funds under the existing State revenue structure to match anticipated Federal-aid highway apportionments after providing for normal operations such as maintenance. The Legislature, however, took no action on this matter.

Later in 1967, a special session of the Legislature was convened to consider a number of items, including needed additional revenue for State highways. This special session increased the State motor fuels tax from six to seven cents per gallon. It also repealed the flat license fee of \$5.00 per vehicle for passenger cars and pickups and substituted a "sliding scale" ranging from \$7.50 to \$17.50 per vehicle, depending on the vehicle's age. Fuel mileage fees of commercial vehicles using diesel fuel were also increased to the equivalent of seven cents per gallon on gasoline. These increases were to be effective from January 1, 1968 to December 31, 1969. The 1969 Legislature subsequently extended these taxes to December 31, 1971, and at the 1971 Legislative Session these taxes were made permanent.

The 1969 Legislature implemented the provisions of the Federal Relocation Assistance Act of 1968. This Act provided that any person displaced because of the acquisition of rights-of-way be given fair treatment so as not to suffer loss of a home or the displacement of a business or farm operation without appropriate compensation.

The law provided that moving expenses be paid and that safe, decent and sanitary replacement housing comparable to that previously occupied must be made available. The law provided many alternatives, depending on whether the person or family involved was an owner or tenant of the property. Maximum amounts or "ceilings"

for reimbursement were established and time limitations for use of the relocation assistance feature specified.

Owners of property could purchase new properties and be reimbursed for increased interest costs. Rent supplements were made available for a period of four years, providing that a decent, safe and sanitary unit could be obtained.

This program was essentially brought about because of right-of-way requirements for freeways through some of the larger centers of population. In some instances, however, equally serious problems involved displaced suburban and farm people.

In many instances suitable housing was not available for relocated people or, if available, it cost too much. The program did reduce litigation due to previous procedures wherein condemnation and payment for the property taken were all that was permitted under Federal law.

Federal-aid was provided for this program just as for the Beautification Act, but it required State matching and was a part of the regular Federal-aid allocations. The net effect was to increase the cost of right-of-way and construction of any highway.

For example, during the period from 1972-1974, the Department of Highways expended \$7,364,000 for rights-of-way purchase and \$456,000 for relocation assistance. This amounted to an effective increase in right-of-way costs of slightly over six percent.

The Federal-aid Highway Act of 1968 had directed that Federal and State highway agencies undertake a classification study of all roads and streets in the entire nation. Actual work did not get underway until 1969, due to a delay in the preparation of a uniform manual of instructions outlining the procedures. The entire study in Idaho was completed in approximately six months.

The objectives of the survey were to classify all roads and streets according to predominant use, to determine any existing deficiencies, and to estimate the cost of improving all facilities to an acceptable standard. Functional classifications were adopted according to the type of service and were identified as arterial, collector or local.

This classification of local road and street systems required consultation with responsible local officials. Therefore, a series of meetings was scheduled at strategic locations throughout the State. These meetings were a cooperative effort of the Planning and Traffic, Secondary Roads and Urban Divisions of the Department.

After the functional classifications were established, each group of roads and streets was further subdivided according to existing traffic volumes. Deficiencies were estimated on a sampling basis and actual field investigation then made. Mileage and cost data were summarized for inclusion in the National Report to Congress.

The year 1970 marked the beginning of annual sessions of the Idaho State Legislature. This necessitated the preparation of budgets and an annual review of necessary legislation, instead of on a biennial basis as in prior years.

The 1970 Legislature provided that in the event an investigation or judicial action determined that a physical traffic hazard had contributed to an accident resulting in death, injury or property damage in excess of \$500, the investigating or judicial office would submit a report of its findings to the Safety Officer of the Department of Highways or the Board of County Commissioners. The Department was required to submit a report within sixty days explaining the hazard, as well as a proposal for corrective measures or an explanation as to why no action would be taken.

The 1970 and subsequent Legislatures through 1973 appointed an in-

terim, bipartisan Committee to review the needs of the Department with the Board of Highway Directors. Their concerns were needed legislation, financial problems and, particularly, the widening gap between needed highway work and available revenues.

The 1971 Legislature increased the city share of State revenue from highway user taxes to one-seventh of the proceeds of the motor fuels tax. This action gave a substantial increase to the city share of revenue and a corresponding decrease in revenue to the State Department of Highways, the counties and the highway districts.

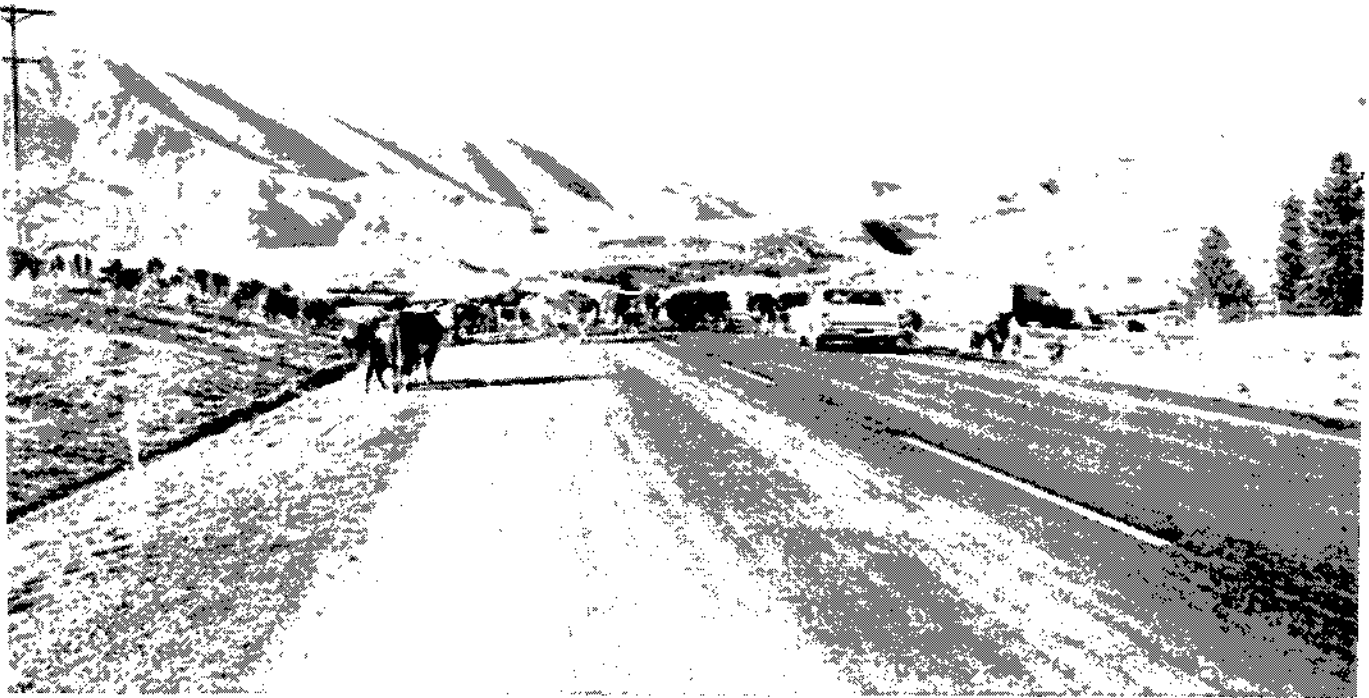
The cities had been exerting increasing pressures on the State Legislature for an increased share of highway user revenue. They were aided in their efforts by increased urban representation in the Legislature after legislative reapportionment, which had been brought about by several Court rulings.

Recognizing some inequities in the highway user revenue apportionment formula, State Highway Engineer Ellis L. Mathes had sponsored an informal committee of State, county, highway district and city representatives to study the problem during 1969, in an effort to develop a distribution formula more equitable to all parties concerned.

The city representatives displayed little interest, however, and were adamant in their position that one-seventh of the motor fuels tax represented a reasonable city share of available income, regardless of the effect on other agencies.

The 1972 Legislative Session increased the State tax on motor fuels from seven cents to eight and one-half cents per gallon, effective April 1, 1972. A corresponding increase was also made in the truck fuel use schedule.

The Legislature also amended the formula for allocating highway user revenues to the cities by providing



Moving cattle along U.S. Highway 95
along the Salmon River.

one-sixth of the proceeds derived from the tax on motor fuels. It was estimated that this would provide the cities with the same revenue they would have received under the legislation enacted in 1971.

Idaho Transportation Department

Fiscal year 1974 opened with an atmosphere of uncertainty. The energy crisis, and steps taken to reduce fuel consumption at the national and state levels, had a direct effect on the revenue available to finance highway operations. It was inevitable that as the consumption of motor fuel declined, tax revenues would also decrease.

The impending reorganization of State government in Idaho also created uncertainties as to the future State Highway Department organization.

A Constitutional Amendment had been approved by the Idaho electorate in November 1972, requiring the executive branch of state government to be

reorganized into not over twenty departments.

As a part of this reorganization, the 1974 Legislature abolished the Department of Highways and redesignated it as a Division of Highways within the Idaho Transportation Department. Other agencies included in the new Department were the Division of Aeronautics and Public Transportation, and the Traffic Safety Commission. These changes became effective July 1, 1974.

This same statute abolished the State Board of Highway Directors, establishing an Idaho Transportation Board of three members, one of whom was required to have special expertise in aeronautical transportation. The powers and duties of the Board were essentially those formerly vested in the State Board of Highway Directors.

Members of the Idaho Transportation Board appointed by Governor Andrus on July 1, 1974 were:

Carl C. Moore -- Chairman (Lewiston)
Lloyd F. Barron -- Vice Chairman
(Fairfield)
Roy I. Stroschein -- Member (Sterling)

The Transportation Department was to be headed by a Director appointed by the Board. Darrell V Manning was appointed to this position on July 1, 1974.

The Division of Highways was to be headed by an Administrator, who was required to be a registered professional engineer. V. N. Richardson, the former State Highway Engineer, was appointed to this position July 1, 1974. E. D. Tisdale succeeded Richardson on December 1, 1974.

The basic organization of the Idaho Transportation Department, as established by statute and by the Transportation Board, is shown in Fig. 6 of the Appendix.

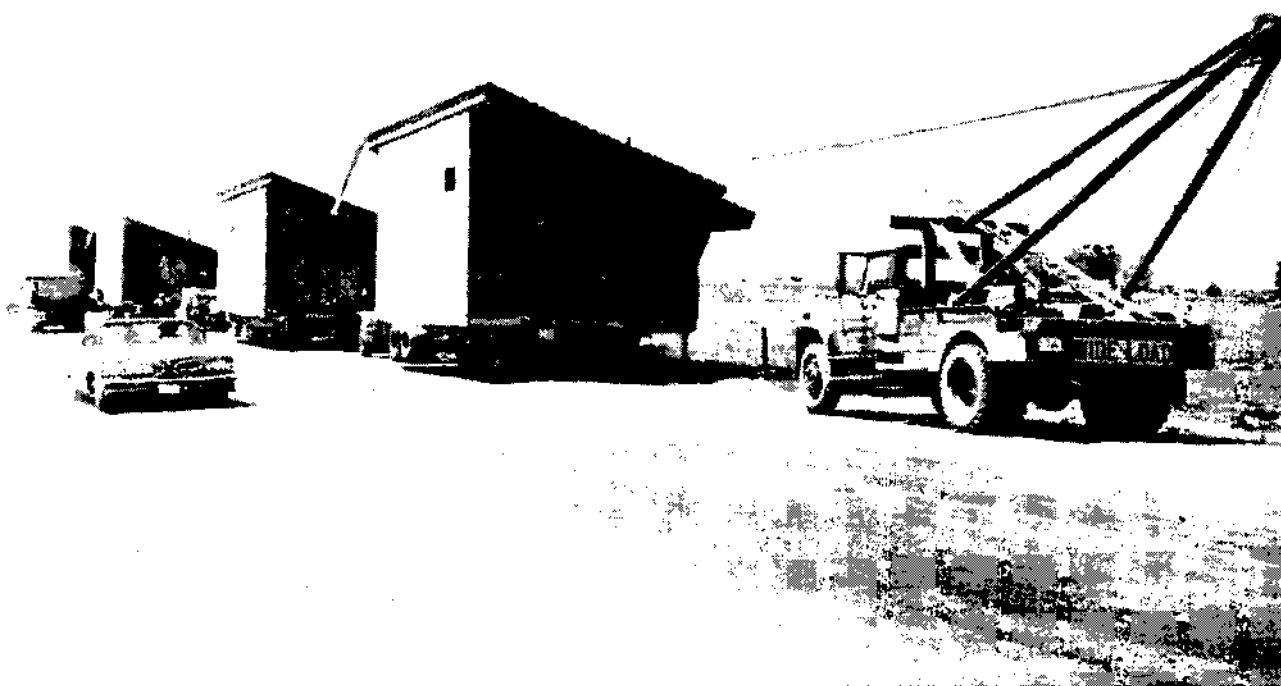
Transporting prefabricated buildings
on an Idaho state highway.

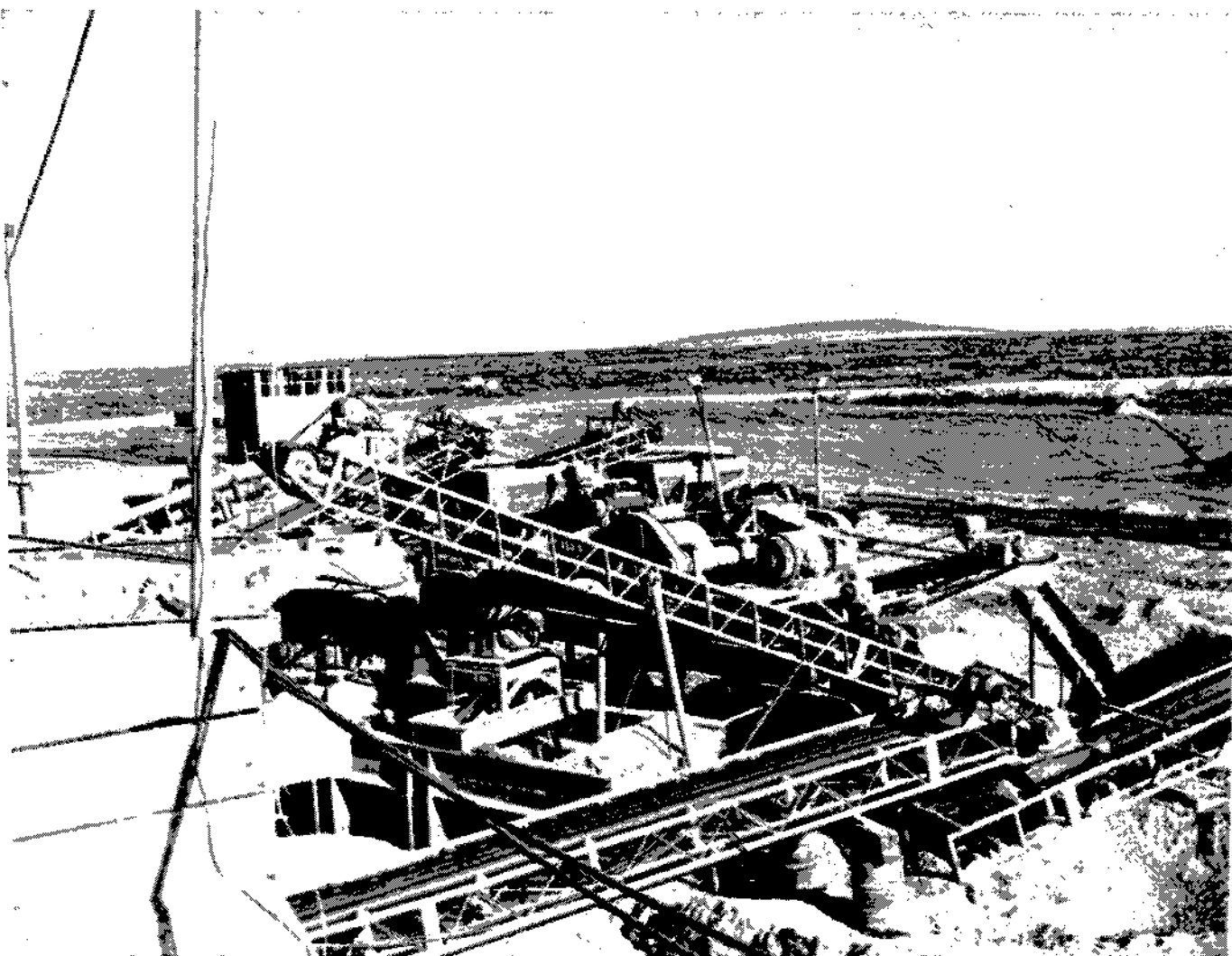
State Revenue and Federal-Aid

State-raised revenues are basically derived from the motor fuels tax, registration fees and ton-mile taxes. Taxing rates of these sources remained at a constant level from 1961 until January 1, 1968. Revenue available to the Department of Highways from these sources increased at about 3 percent per year as the number of licensed vehicles and motor vehicle use increased.

As previously noted, the Special Legislative Session in 1967 increased the gasoline tax from six to seven cents, with a corresponding increase in fuel mileage fees to vehicles using diesel fuel. An increase in registration fees on pickups and automobiles from a flat \$5.00 rate to a sliding scale of \$7.50 to \$17.50 was also enacted into law.

All of these actions became effective on January 1, 1968, but the statute was temporary in nature and for a one-year period only. Legislative





action extended this each year, however, until it was finally made permanent on January 1, 1972.

This legislation substantially increased State Highway revenue to all agencies of government, including the Department of Highways. During the period from 1960 through 1967, available funds ranged from \$17.6 to \$21 million, gradually increasing as travel increased on the highways. Beginning in 1968, the Department's share jumped about \$4 to \$5 million, ranging from \$26.0 to \$28.4 million. The legislative action of 1972 which increased the gasoline tax from seven to eight and one-half cents per gallon and truck fuel use fees a corresponding amount produced a further substantial increase in revenue to the State Highway Fund. State-raised re-

A modern crushing and screening plant capable of producing 500 tons of material hourly.

venue available to the Department of Highways rose to \$36.6 million in 1973, the first full year the statute was effective.

The energy crisis, which came as a shock to the citizens of the nation during the winter of 1973-1974, again created uncertainty as to available revenues. Reduction in speed limits and steps to encourage people to drive less did have an impact on revenues from motor fuels. Talk of possible gasoline rationing caused further uncertainty. Any forecast of available revenue during 1974 was tempered with forecasts of possible Federal actions to assure distribution of motor fuels to

those having greatest need with respect to the welfare of the country.

Federal-aid apportionments for highways on the Interstate, Primary, Secondary and Urban systems ranged from slightly less than \$20 million in 1963, increasing gradually to a high of over \$40 million for the 1970 and 1971 fiscal years. Apportionments were reduced to about \$31.2 million in 1972 and 1973.

Until fall, 1966, Idaho and other states had always been able to plan and schedule projects to make best use of Federal-aid funds, knowing that when these funds were obligated they would be available. In November of 1965, however, a new factor in planning for Federal-aid was experienced. The Federal Highway Administration imposed a regulation which had the effect of impounding funds apportioned by the Congress.

From 1967 through 1974, funds were released to the states on a three-month schedule, and a portion of the Federal-aid authorizations as made by Congress were withheld completely from state use. As a result, Idaho was not permitted to obligate some \$23.2 million in Federal-aid authorizations during this period. For example, in 1971, \$9.5 million was withheld from state use, and in 1973, \$5.1 million was impounded. State planning and scheduling of projects was most difficult, since quarterly releases varied and the State had no reliable knowledge as to what Federal-aid funds might be available; or when they might be released.

Several of the states, during this period, were unable to use Federal-aid funds which were released, for various reasons, and these were then made available to other states who were in a position to obligate them immediately. Idaho was fortunate to be in a position to take advantage of every such release, since many projects were ready for advertising, waiting only for necessary financing. All impounded funds were finally released in February

of 1975, giving a tremendous boost to construction.

Fig. 7 in the Appendix shows the Federal-aid apportionments for highways and the total value of work placed under contract with Federal-aid and State matching funds. It also lists those projects which were funded with State revenue only during the period from 1956 through 1973 for management of the State Highway System.

Organization

Very few changes were made in the basic Highway Department organization from 1961 until creation of the Idaho Transportation Department in 1974.

Mr. Roscoe C. Rich, who had provided outstanding leadership as Chairman of the State Board of Highway Directors since its inception in 1951, declined reappointment in 1962 after serving eleven years. He was replaced on January 15, 1962 by Mr. Doyle Symms. Wallace C. Burns was elected Board Chairman at that time.

A Research Division was created at Headquarters in 1962. This Division reported to the Assistant State Highway Engineer (Engineering). It was responsible for the administration and coordination of research within the Divisions of the Department of Highways and administered contract research with institutions of higher learning. The Research Engineer also provided research liaison with other government agencies, the American Association of State Highway Officials, and the Highway Research Board.

G. Bryce Bennett resigned as State Highway Engineer effective May 31, 1964 and was succeeded by E. L. Mathes, Assistant State Highway Engineer (Engineering). R. B. Christensen, Construction Engineer, was appointed to the position of Assistant State Highway Engineer (Engineering).

Wallace C. Burns left the Board on January 13, 1965 and was replaced by C. Ed Flandro of Pocatello. Mr. Doyle Symms was chosen to replace Burns as Board Chairman.

The Materials Section and Research Division were brought together, forming a new Materials and Research Division in 1966. This change was brought about to combine into one Division, under the supervision of Leif Erickson, those activities which were closely tied together.

Due to the greatly expanded operations of the Department, especially with respect to Federal-aid legislation and Federal-aid programs, it was found necessary to create the position of Deputy State Highway Engineer in 1969.

The Deputy was responsible to the State Highway Engineer for the direction and coordination of Statewide district activities, for engineering and operations, for legal, and for right-of-way functions within the Headquarters office. Appointment to the position was by the State Board of Highway Directors. The first appointee was R. B. Christensen, Assistant State Highway Engineer (Engineering). Mr. Charles A. Aldrich was then appointed to the position of Assistant State Highway Engineer (Engineering).

A number of personnel changes occurred during 1969. R. Doyle Symms retired from the Board of Highway Directors and was replaced by Lloyd F. Barron. C. Ed Flandro

Flooding of Bancroft in 1962.



succeeded Mr. Symms as Board Chairman. R. B. Christensen resigned as Deputy State Highway Engineer in July, 1970 and was succeeded by E. D. Tisdale, Planning Engineer.

The Board of Highway Directors adopted a Code of Fair Practices and an Equal Employment Policy in 1972, stating:

The recruiting, appointing, assignment and promotion of employees of the Department of Highways shall be conducted on the sole basis of

individual merit without regard for race, color, religion, national origin, sex or age...

All services of the Department shall be performed without discrimination and within Department regulations. Its facilities shall be available for use on the same basis.

To implement this policy, the Department of Highways formed a Civil Rights Assurance Committee, which required that all Department Divisions and all firms contracting or performing service for the Department would initiate plans of affirmative action consistent with Board policy and civil rights

February 1963 floods washed out 13 foot diameter pipe on U.S. Highway 30N at Rock Creek west of American Falls.



and equal employment guidelines. In addition, the Committee was to promote the Department's participation in Federal-, State- and Department-sponsored programs designed to provide training and employment opportunities for minority and disadvantaged individuals.

For the first time in several years, there were some revisions in the basic organization of the Headquarters operation during the 1973 fiscal year. Functions formerly assigned to the Urban and Secondary Roads Divisions were combined in a new Local Roads Division. Four new positions were created within the Headquarters staff: Systems and Data Processing Manager, Internal Review Manager, Equal Employment Coordinator, and Operations Analysis Engineer. A new Environmental Planning Section was also added to the organization.

There were also numerous changes in key personnel during the 1973 fiscal year.

E. L. Mathes retired as State Highway Engineer after some forty-one years of State service. Mr. Mathes was a career employee, rising through the ranks to become chief administrative officer in 1964. He was replaced by V. N. Richardson, Assistant State Highway Engineer (Operations).

D. L. Cox, Assistant State Highway Engineer (Engineering), was transferred to the Operations position and was succeeded in his former position by M. M. Laragan, former Secondary Roads Engineer. E. D. Tisdale continued in the position of Deputy State Highway Engineer.

There were also changes in the Board of Highway Directors. John G. Fanning, who died during a Board tour of the State, was replaced by Roy I. Stroschein. Howard B. Thomason, Board Chairman, was replaced by Carl C. Moore. Mr. Moore was subsequently elected Board Chairman.

The reorganization of State government into not more than twenty departments created a major reorganization, making the former Department of Highways a Division in the Idaho Transportation Department, together with a Division of Aeronautics and Public Transportation. This reorganization placed several former sections of the Department of Highways under direct supervision of the Director of the Idaho Transportation Department. These were primarily those in service categories to the Transportation Department as a whole, such as Legal Counsel, Internal Review, Programming, Planning and Budgeting, Personnel, Financial Control, Purchasing, Data Processing, Public Information, Civil Rights, and several other functions.

Construction

Construction activities during the 1961-1974 era were undoubtedly on the greatest level ever experienced for the Idaho State Highway System. The dollar volume fluctuated since available Federal-aid funding varied, and was affected by the very marked inflationary trends which appeared to be accelerating annually. In spite of this, the actual construction of the Interstate Highway System was more than 80 percent complete in 1974, and the Primary, Secondary and Urban programs had been carried ahead without any loss of funding. The State had not been able to do as much betterment or reconstruction work as was needed, but had been able to maintain the entire Highway System to a new high standard.

As previously noted, the Board of Highway Directors had established a policy to concentrate Interstate construction in areas of greatest traffic need. The section between Pocatello and Blackfoot was placed in service in November 1961, and work was underway on the route between Blackfoot and Idaho Falls. Other critical areas which received early attention were



Constructing a large fill on the Mullan-lookout Pass section of Interstate 90.

A grading operation on the Interstate. Note two bulldozers pushing the scraper to load it. They can haul 40 cubic yards of material at 30 to 40 miles an hour.



Wallace to Mullan, McCammon to Pocatello, and Caldwell to the Idaho-Oregon state line.

Progress on Interstate 80N between Burley and Jerome was delayed by Court proceedings instituted by area property owners seeking to force a change in the proposed alignment. The Department had located the Interstate along a direct east-west location to intersect U. S. Highway 93 about three miles north of the Perrine Bridge, which served Twin Falls and the south side of the Snake River. Local area residents wanted the Interstate located farther north, where, it was alleged, there was more undeveloped sagebrush land. The State Supreme Court upheld the Department's location in 1962, making it possible for the State to proceed with location and design.

Substantial progress was made on the construction of other sections of the Interstate during the early 1960's. Among these was Route No. I-15 from Arimo to the Idaho-Montana line. Most of this route was either completed or placed under contract in this period, except for small sections bypassing Pocatello or near Roberts.

The location of the route for Interstate 90 was selected between Mullan, Idaho and Saltese, Montana in 1964, after more than two years' study by the two states. Engineering work was assigned to a consulting engineering firm to expedite the design, since Idaho's staff was deeply involved in design and construction work.

The first sections of I-80N were awarded to contract in Magic Valley in 1963 after litigation on this route had been cleared. Work continued through this area and southeastward from Burley until the Interstate was completed from Wendell to the Utah line in 1969, connecting with a section in Utah. Not all of the Interstate mileage southeast of Burley had been constructed to a full four-lane freeway, but two lanes and all interchanges had been completed by 1974, and the remaining two lanes were under contract. Nearly 90



Interstate 90 belt route Coeur d'Alene.

percent of the Interstate was completed or in service by July 1, 1974.

Traffic was carried on existing highways in corridors where the Interstate System was incomplete. All that remained to be constructed were: a section south of Malad on I-15; from Wendell to Hammett and through Caldwell on I-80N; Post Falls to the Washington line on I-90; paving of Mullan to Lookout Pass on I-90; and Coeur d'Alene to Blue Creek Bay.

The Coeur d'Alene-Blue Creek Bay section was involved in study and possible litigation with respect to route location. The Highway Board had selected a location along a bench some distance from Lake Coeur d'Alene. An existing four-lane highway following the lake shore for a portion of the distance was to remain as a scenic road and to serve some homes located near

or on the lake. Hearings were held in 1964. Opposition from local groups was so strong, however, that the Department undertook further studies. This was the only remaining section of the Interstate Highway System in Idaho not having a fixed location.

One of the major accomplishments during 1961 was the opening of the Lewis and Clark Highway to traffic. Grading of the entire route had been completed and a contract awarded to finish the bituminous surfacing.

The area traversed by this highway was first explored by Meriwether Lewis and William Clark, who followed the Lolo Indian Trail on their way to the Pacific Ocean in 1805. Captain John Mullan, builder of the Mullan Road along the general line of present Interstate 90, had investigated the Lolo Trail nearly fifty years after Lewis and Clark and had said: "It is the most difficult, rugged, severe and broken of any I have seen in my explorations of the Pacific Northwest." From about 1855 to 1918 work in this area was confined to providing improved pack trails and a limited amount of road construction in connection with efforts to locate a railroad through the area.

This route had been designated as a State highway in 1916, and about \$2 million was expended during the following thirty years in sporadic efforts to improve it. Most of the work had been done by the U. S. Forest Service in connection with administrative and fire protection functions. Some work was accomplished through use of prison labor, war internees, and under a W.P.A. project. During 1931 an aerial survey was made of the area--one of the first pioneer uses of this means of highway location.

A concentrated effort to complete this route was started in 1946, which culminated with its opening in 1961. An expenditure of about \$11.0 million was involved during this fifteen-year period, with the total cost to date (1974) approximately \$13.0 million.

The distance from Kooskia to the Idaho-Montana State line is 100.6 miles. The highway was built to a surfaced width of 24 feet, and the entire route is at water grade except for about six miles of six-percent grade required to climb to Lolo Pass at an elevation of 5,233 feet at the Montana State line.

Plans were also developed for a new route over White Bird Hill on U. S. Highway 95 during this period. Improved alignment and grade for this section of highway, connecting north and south Idaho, were vitally needed.

The first construction on U. S. Highway 95 for a new route from the Salmon River to Grangeville was awarded in 1963. This section started south of White Bird summit and progressed northerly to a point within two miles of Grangeville. A large cut over 3,000 feet in length and up to 195 feet in depth through the summit was the largest ever undertaken by the Department up to that time. A series of embankments, the largest ever built in Idaho, were also constructed. One such embankment had an elevation difference of 500 feet from the toe of the slope to the roadway centerline.

Construction progressed continuously, with the last contract award for paving the hill section made in 1974. A short section along the river south of White Bird was also ready to contract; this section, when finished, would provide an all-new highway from the Goff Bridge north of Riggins to the Grangeville Golf Course. Completion of the White Bird Hill section was predicted to save a minimum of twenty minutes of driving time from the River to Grangeville. This section replaced a highway located and constructed around 1918.

The new bridge across White Bird Creek was awarded to contract in August 1972. This structure, 811 feet long and supported by two slanting legs, was the longest of its type in the western hemisphere at that time.



The old Greer Bridge which collapsed
under a loaded logging truck.

The new Greer Bridge.



Location and design were also well underway on a new section of U. S. Highway 95 north of Lewiston, replacing the old Lewiston Hill route, constructed in 1916. It was anticipated that a portion of this highway would be under contract in 1975.

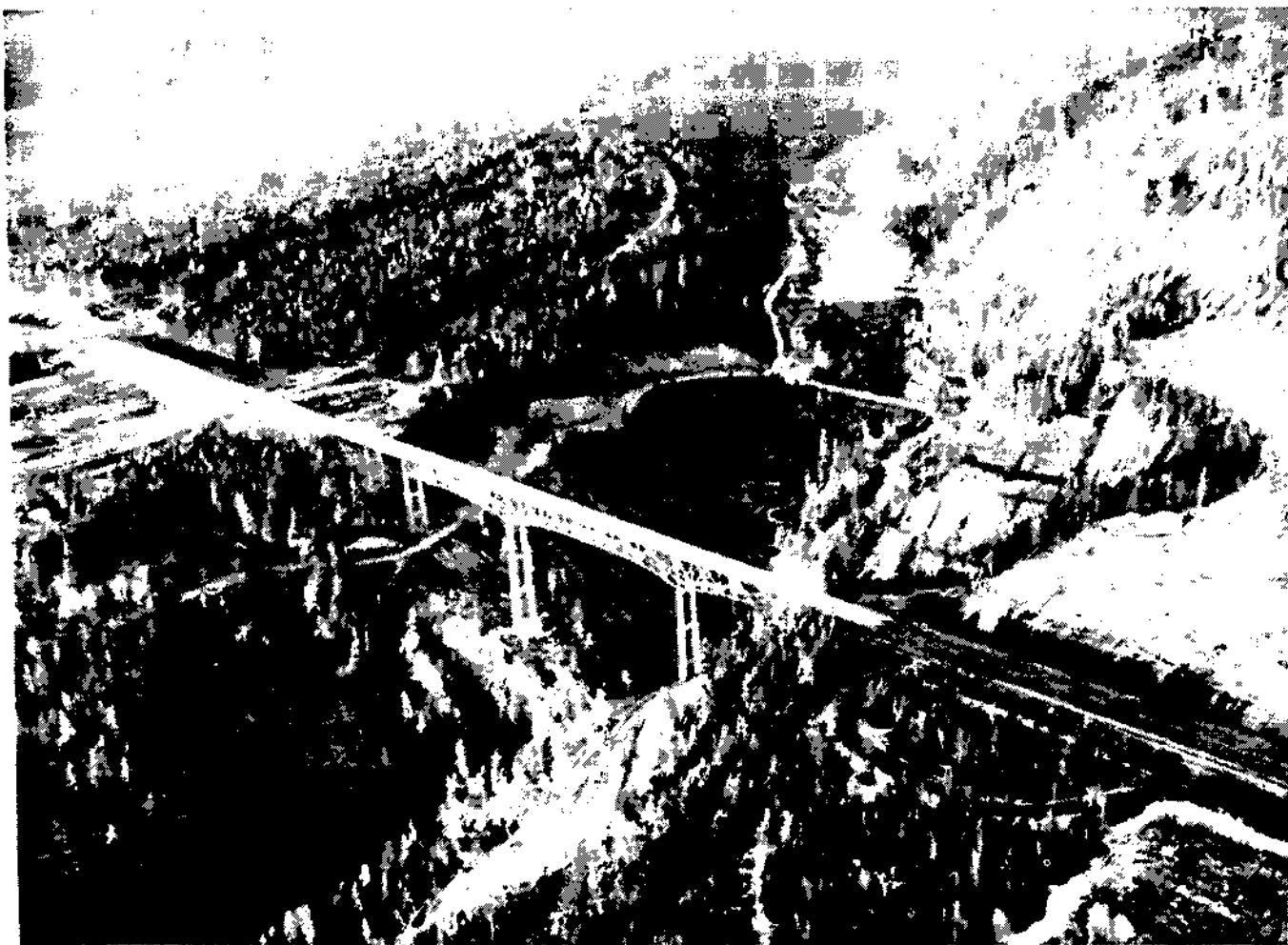
Several major structures, in addition to the White Bird Bridge, were notable construction examples during this period. The Moyie River Bridge, awarded to contract by the Federal Highway Administration on the Forest Highway System in 1963, is a 1,222-foot-long, steel cantilever bridge about 480 feet above the Moyie River. Use of this structure eliminates a tortuous

grade down each canyon wall to a short bridge over the river. This contract was for over \$1,336,000.

Another structure awarded to contract in 1965 was a steel girder bridge over the Snake River, replacing the old Hansen suspension bridge constructed by the Twin Falls Highway District and Twin Falls County in 1917-1918. This 762-foot structure, 350 feet above the river, was opened to traffic in 1966 and received an Award of Merit from the American Institute of Steel Construction as a medium-span, high-clearance structure.

Two separate structures which span the Salmon River on U. S. Highway 95, eliminating the McKenzie Creek loop, also received an Award of Merit from the American Institute of Steel

The new Moyie River Bridge. Note the old tortuous grade to the old structure at the bottom of the canyon.





Construction. One of these spans is 782 feet in length. They were opened to traffic in 1969.

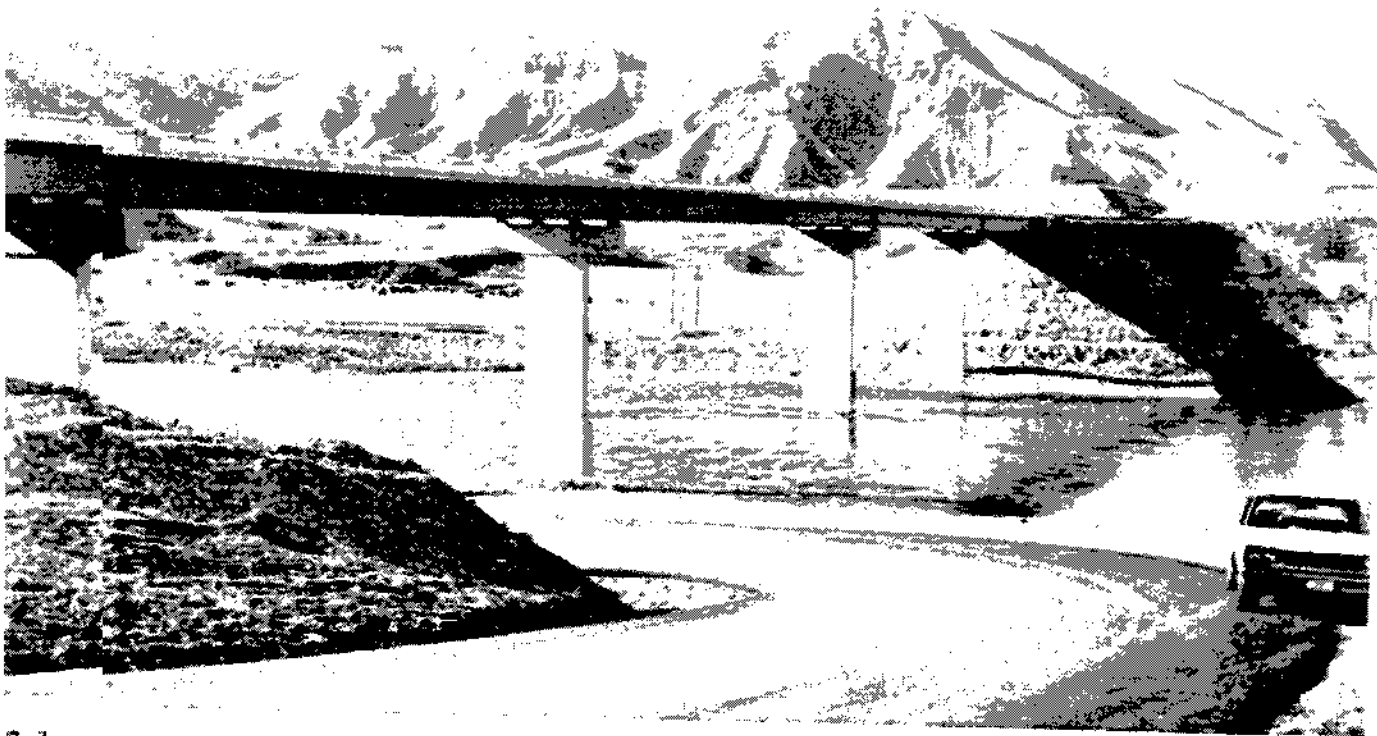
Probably the most notable structure ever constructed in the State is a new arch bridge across the Snake River near Twin Falls. It replaces a cantilever bridge constructed in 1928 by a private bridge company. The older structure was showing the effects of loadings much greater than those for which it had been designed. It had, therefore, been necessary to impose severe load restrictions for several years to prevent possible collapse.

The new structure was awarded to contract in April 1973 and is a steel structure 1,500 feet in length, with the deck 480 feet above the Snake River. This bridge, carrying four

The new Hansen Bridge near Hansen. The deck is 350 feet above the Snake River.

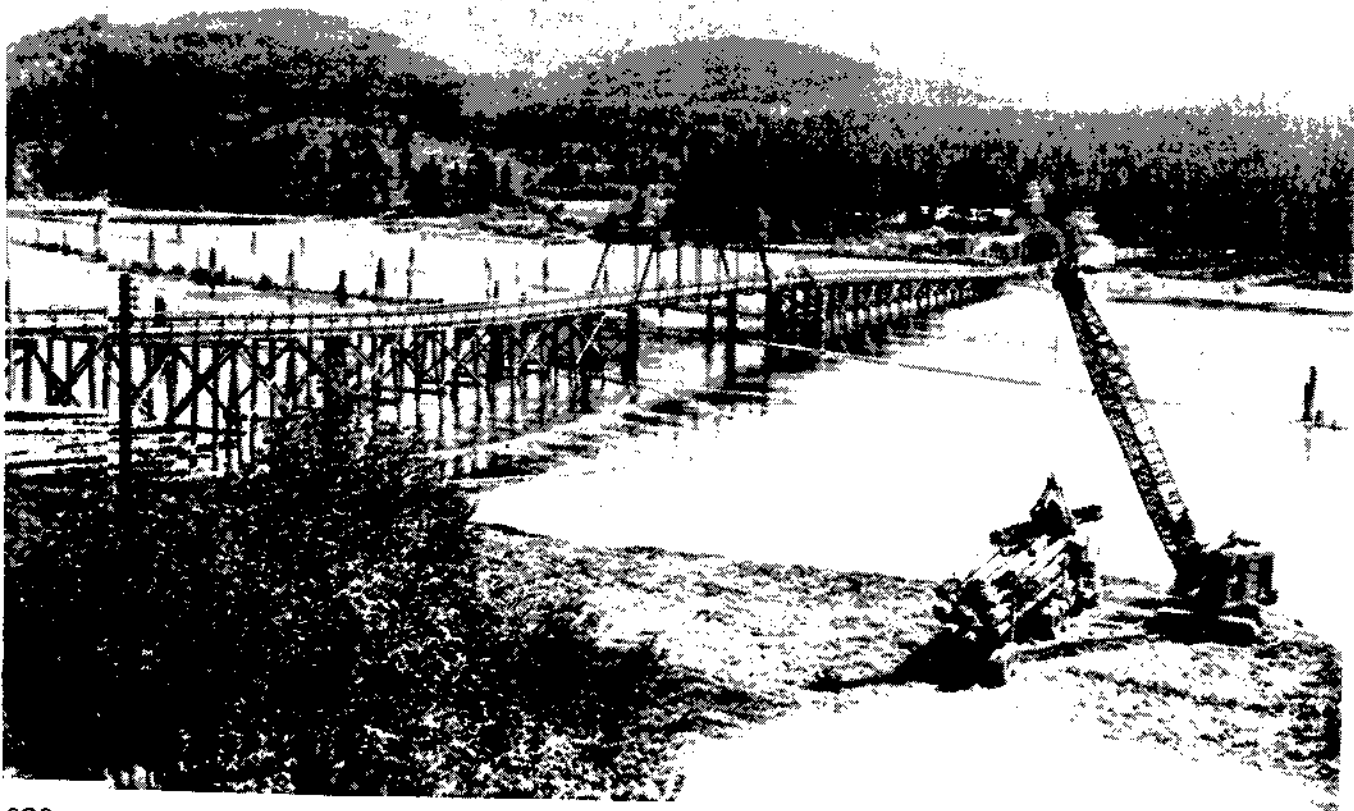
lanes of traffic, contains an arch 993 feet between supports on each canyon wall and is the most beautiful bridge constructed in Idaho for many years.

Other long structures constructed during this period and worthy of mention are the 1,018-foot Blackwell Bridge on U. S. Highway 95 at Coeur d'Alene; a 1,229-foot Clearwater Bridge at the junction of U. S. Highway 95 and U. S. Highway 12; the 1,248-foot Arrow Bridge on U. S. Highway 12; the upstream, 703-foot Salmon River Crossing near McKenzie Creek; a 685-foot Snake River Bridge at Walters Ferry; two 1,100-foot Snake River Bridges east of Glens Ferry and two 998-foot bridges west of



Salmon River crossing on U.S. Highway 95. This structure received an award from the American Institute of Steel Construction.

The Blackwell bridge over the Spokane River carrying U.S. Highway 95 traffic.





The new bridge over the Spokane River carrying U.S. Highway 95 replacing the Blackwell bridge.

Log jam against old Blackwell bridge, U.S. Highway 95 at Coeur d'Alene.



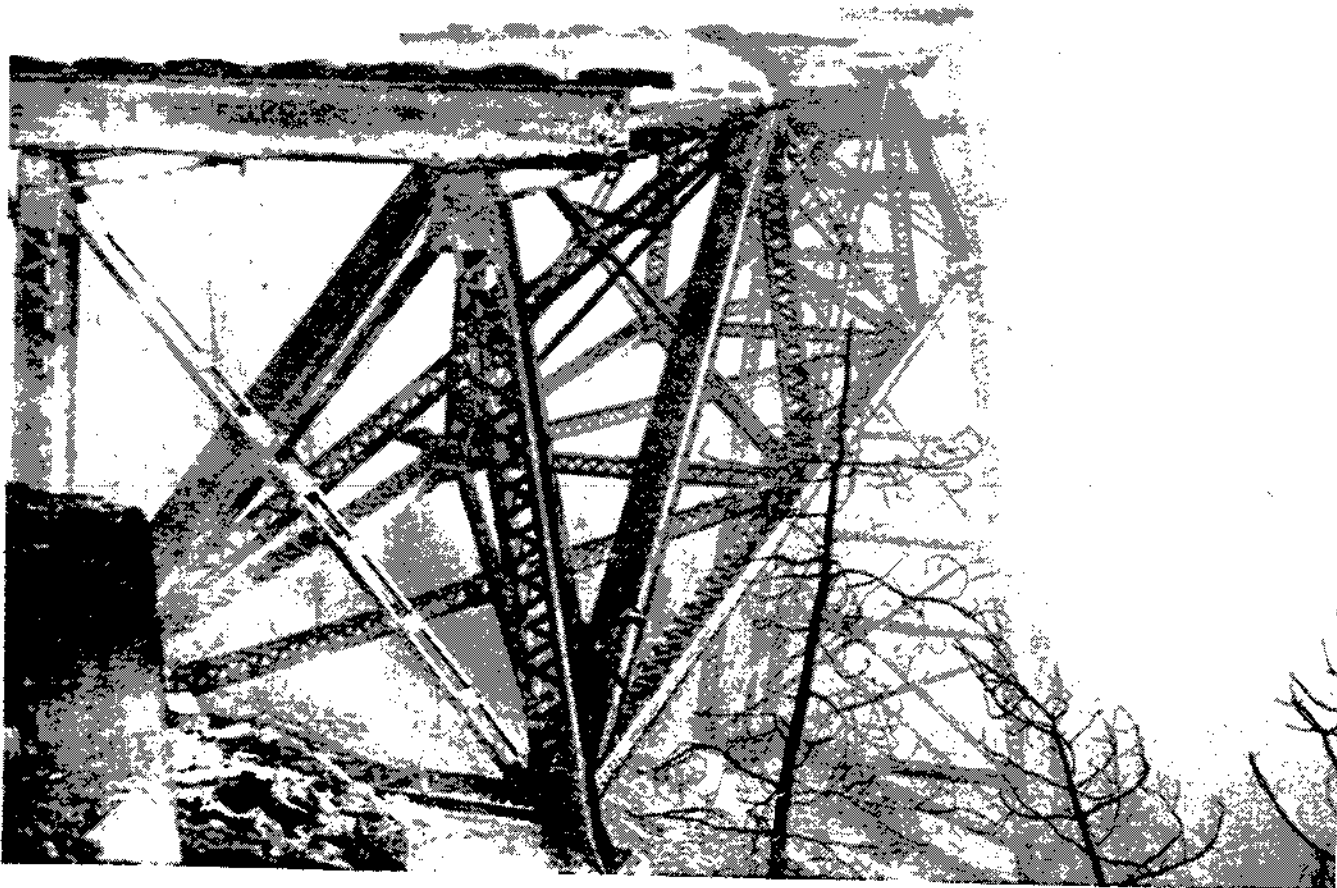
Bliss; twin Interstate bridges at Blackfoot, each 804 feet long; and the South Connection Bridge over the Snake River at Idaho Falls, 775 feet in length. The county Secondary bridge over the Spokane River at Post Falls was 900 feet long. A number of other major structures under 700 feet in length were also built at this time.

The Department endeavored to reconstruct or relocate and build to modern standards many portions of the Primary and Secondary systems which were deficient for current traffic

The Plummer bridge on State Highway 5 burned after a grass fire escaped during August 1967. Disasters such as this upset budgets and the planned order of construction.

volumes. A number of sections of U. S. Highway 95 were constructed in addition to the Culdesac Canyon and White Bird Hill improvements. Beginning at the Oregon line, several miles were relocated and built to current design standards. Other improvements on U. S. Highway 95 included: a section from Homedale to Wilder; a section south of Midvale; a section along the Little Salmon River; some eighteen miles along the Main Salmon River; a section on the Camas Prairie; and a section from Naples to Peterson Hill. On U. S. Highway 2, several miles between Thama and Priest River were completely rebuilt.

U. S. Highway 30 was reconstructed from the Wyoming line to Montpelier. A section of State High-



way 50 from Twin Falls easterly, connecting the new Hansen Bridge, was completed; and a new four-lane highway between Burley and Rupert was constructed. U. S. Highway 93 from Richfield toward Carey was also improved.

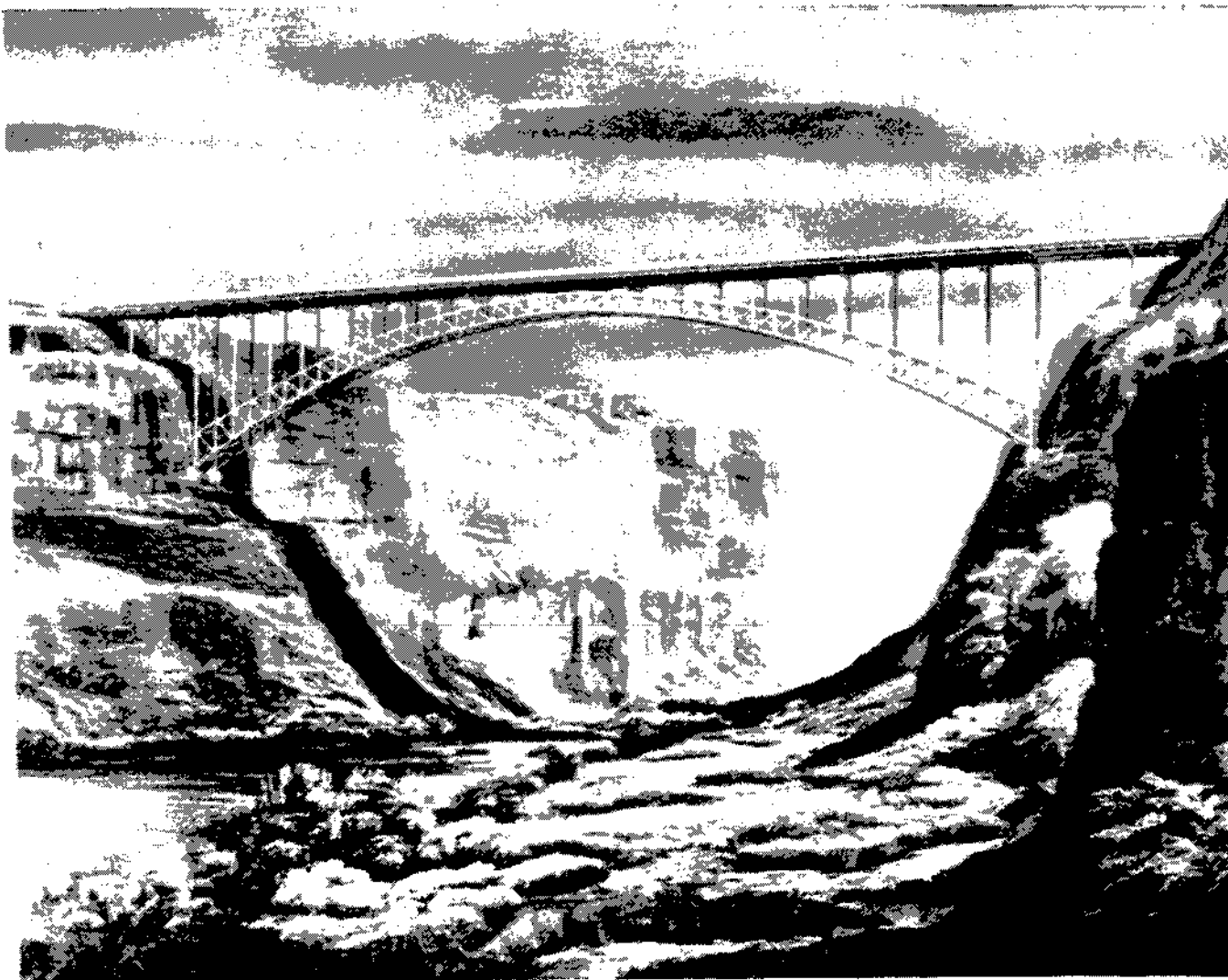
Many other sections of the State Highway System were completely rebuilt during this period. Among these were a section of U. S. Highway 30 in the Hagerman Valley; a section from Arco to Moore; U. S. Highway 20 north of Idaho Falls; part of the section between St. Anthony and Chester; portions of State Highway 51 near Grasmere; and State Highway 68 east of Mountain Home. There were many major improvements in the cities of Idaho, and the counties also improved

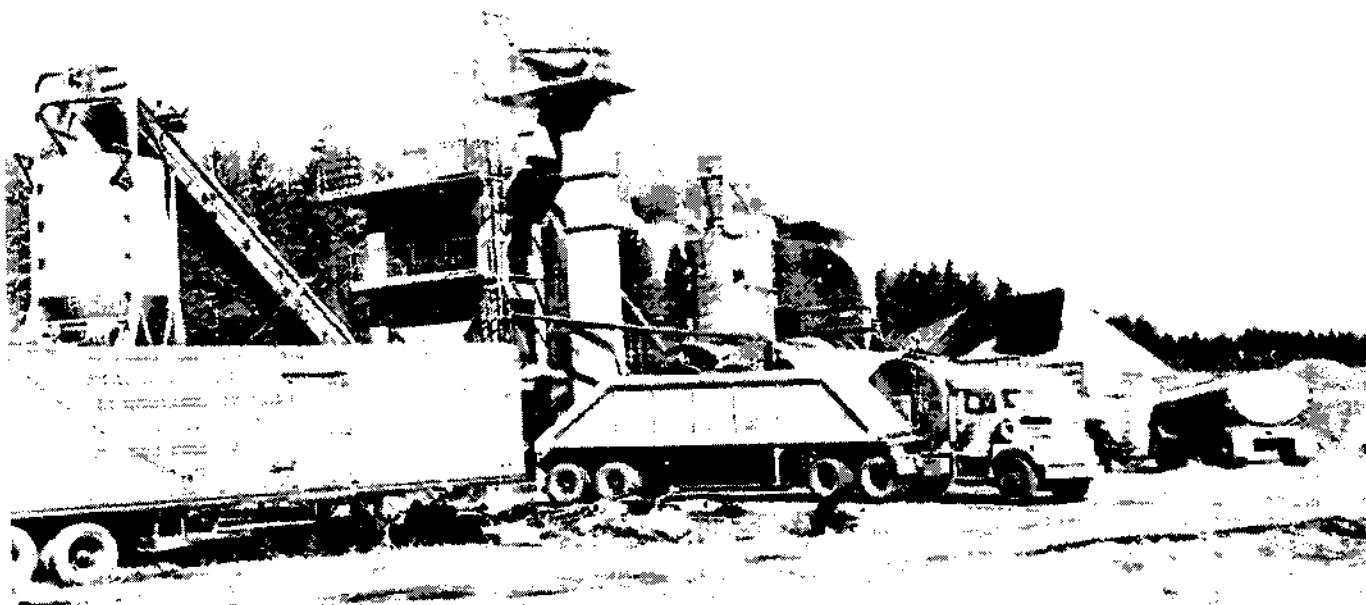
many miles of their Secondary road systems during this time.

Some of the mileage replaced by new construction was paved on existing alignments and grades established during the 1920's and then transferred under agreement to local road systems.

The accelerated construction program influenced by the Interstate Highway Program brought about increased interest by manufacturers for equipment capable of much larger production capacities utilizing less manpower. This was true for all types of

New Perrine Bridge over the Snake River near Twin Falls, U.S. Highway 93. Artist's conception.





A bituminous hotplant commonly used after World War II. These plants had to be modified to meet environmental requirements.

tons per hour, and some units claimed capacities of 700 tons per hour.

construction. Earth-moving equipment which could carry 20 to 30 cubic yards and travel at 40 miles per hour from loading to point of discharge had become common. This is quite a contrast to the horsedrawn wagon moving one to one and one-half cubic yards for just a few hundred feet during the World War I era.

These drier drum plants mixed the asphalt in the aggregate at the loading end of the drum and heated the aggregate asphalt mixture as it progressed through the drum. These mixtures could be placed at somewhat lower temperatures than if mixed in a pugmill, which accounted for some of the increased production.

Crushing plants were becoming much more efficient, and it was not uncommon to produce 4,000 tons per shift in one plant. Daily averages frequently exceeded 400 tons per hour.

The larger production rates required greater compaction efforts to keep up with the pavers. Because of this, the State adopted a density control specification leaving the technique of compacting to the contractor, to prevent specifying methods that might hinder his operation. These specifications did not solve all problems, however, as difficulties frequently occurred in attaining the required density.

Hot plants were getting larger and were becoming fully automated. The introduction of mixing in the drier drum increased production to 400-500

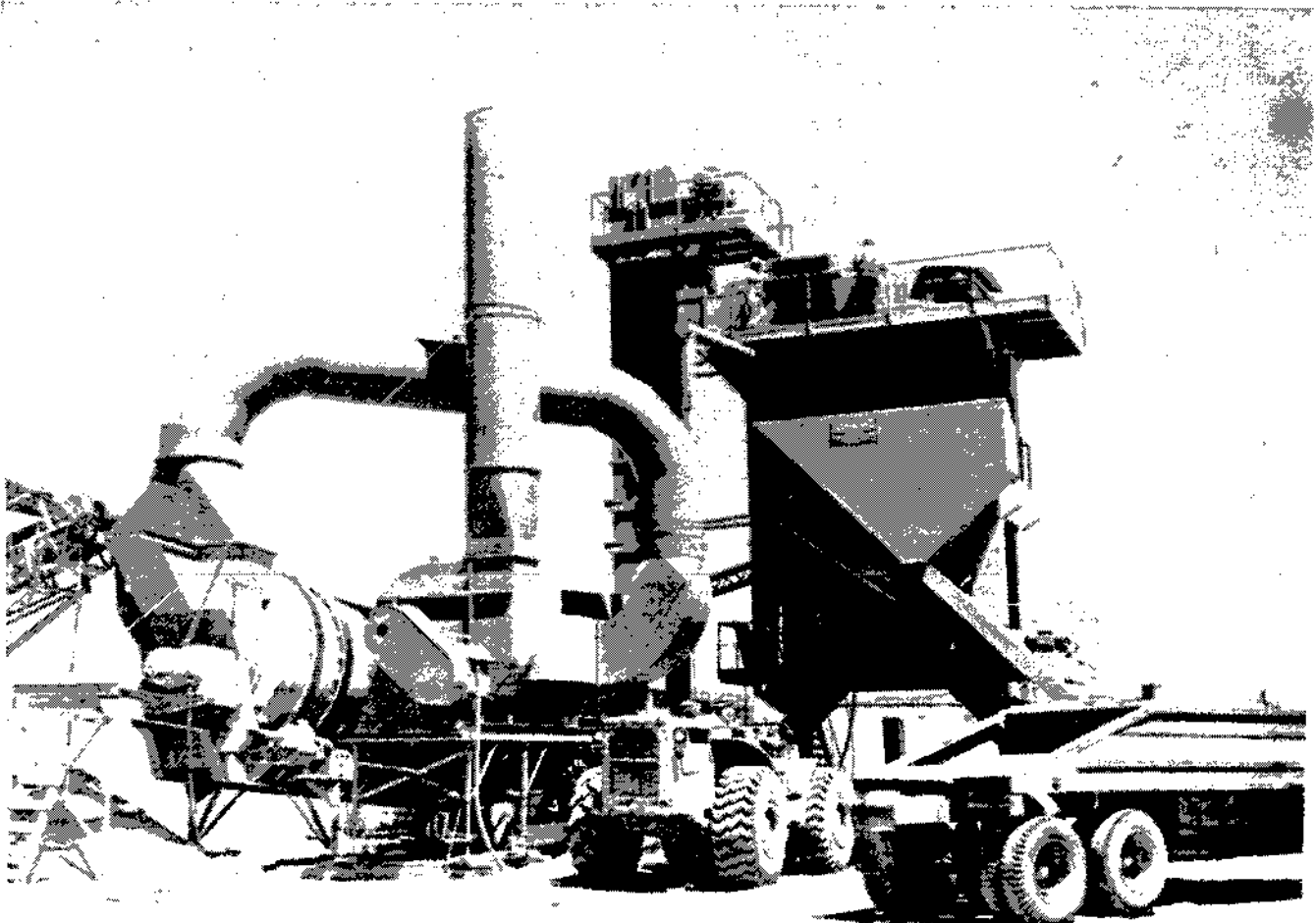
Equally great production capabilities were found in concrete paving. In fact, after asphalt prices skyrocketed after the 1973 oil embargo, it became mandatory that every project be analyzed carefully, since Portland Cement concrete pavement sometimes was the least costly. The Mountain Home-to-Hammett project on Interstate 80N, which was completed in 1973, averaged nearly two miles of full-width concrete pavement per day.

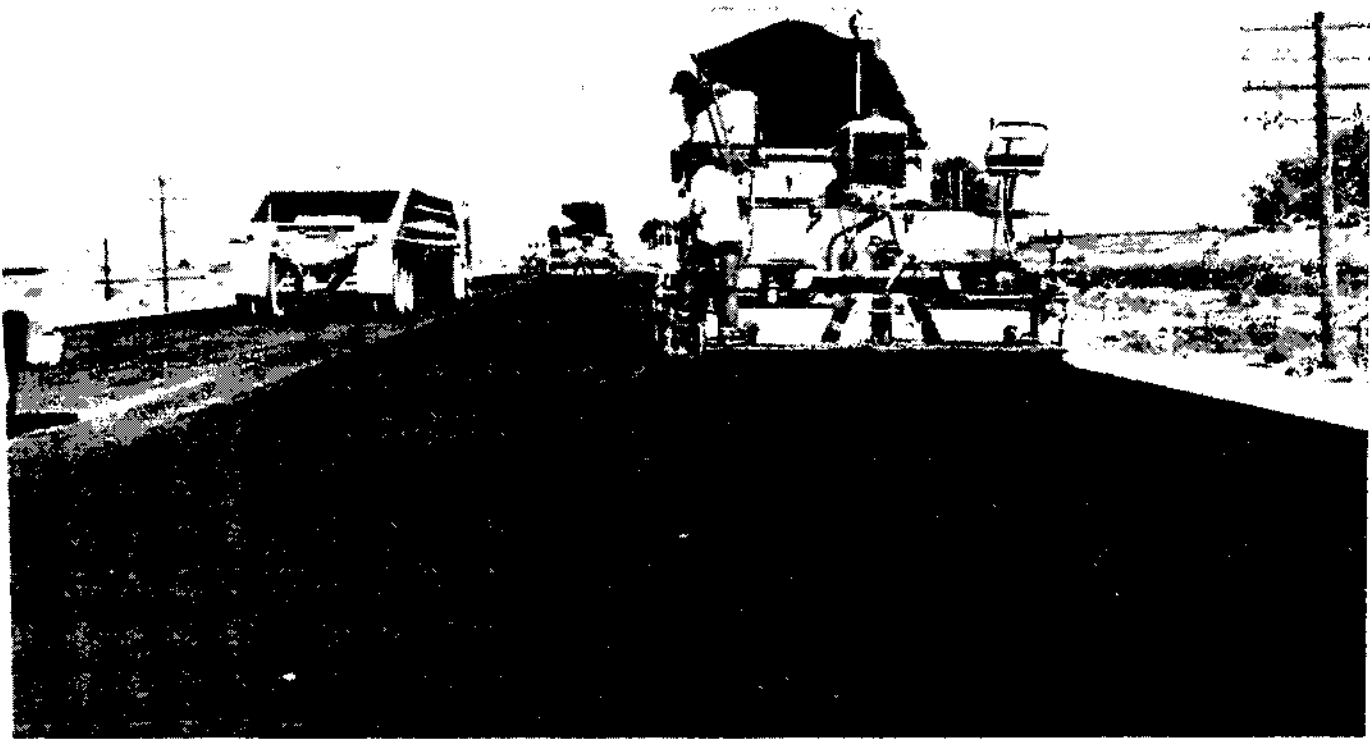
It is interesting to note the desire of the contracting profession to set records. The Owl Construction Company of California, which was placing the pavement, paved 4.71 miles of pavement twenty-four feet wide in one calendar day. The day started at 1:30 a.m. and ceased after 11:00 p.m., involving nearly three full shifts in one twenty-four hour period. This was reputed to be a world's record.

This contractor used two ten-cubic-yard concrete mixers, each discharging a full batch every minute and one-half. Concrete was carried to the grade in bottom dump gravel trucks, each carrying forty tons of concrete.

All of this equipment cost a small fortune. It was not uncommon to find that the dollar value of equipment used on a project would exceed the full contract amount. Only with the most efficient methods of operation could contractors pay rental on this equipment and make a profit. Any prolonged shutdown, for whatever cause, was very costly and could eliminate the possibility of any profit on the project.

A contractor Drum Drier bituminous plant capable of producing over 500 tons per hour of "Hotmix". These plants meet environmental requirements.





Paving U.S. Highway 20 near Parma in 1961.

In retrospect, it was an era of maximum production at very reasonable prices, especially when the inflationary factor is considered. Competition was keen. The greatly enlarged highway program, especially augmented by Interstate Highway System construction, undoubtedly fostered and maintained this great competitive spirit.

Maintenance

Approximately 4,845 miles of the designated State Highway System were under a full maintenance schedule in 1961. The remaining mileage consisted of unimproved roads on which maintenance was sporadic. The total cost for maintenance in fiscal year 1961 was \$5.4 million. Costs for maintenance were increasing annually, and by the

end of June 1974, the figures were double those of 1961. Salaries increased greatly during this period, as did costs for equipment and materials.

Wide-lane, high-speed highways require more and larger signs for regulation, guidance and warning. They must be repaired and replaced regularly. Additional pavement marking and surface repair are also associated with high-standard roadways.

The demands of the traveling public for a higher-quality facility added to the maintenance burden--especially during the winter season. Roadway conditions which had been considered acceptable in prior years were now considered intolerable. Smooth surfaces to accommodate high-speed travel were expected at all times. Complete control of snow and ice conditions through plowing, sanding and the use of costly chemicals

were routinely expected on all heavily-traveled Interstate, Primary and Urban sections. As a matter of safety and of convenience, there was a demand for rest areas with adequate facilities at spaced intervals along the State Highway System. Proper upkeep of these installations required almost continuous maintenance.

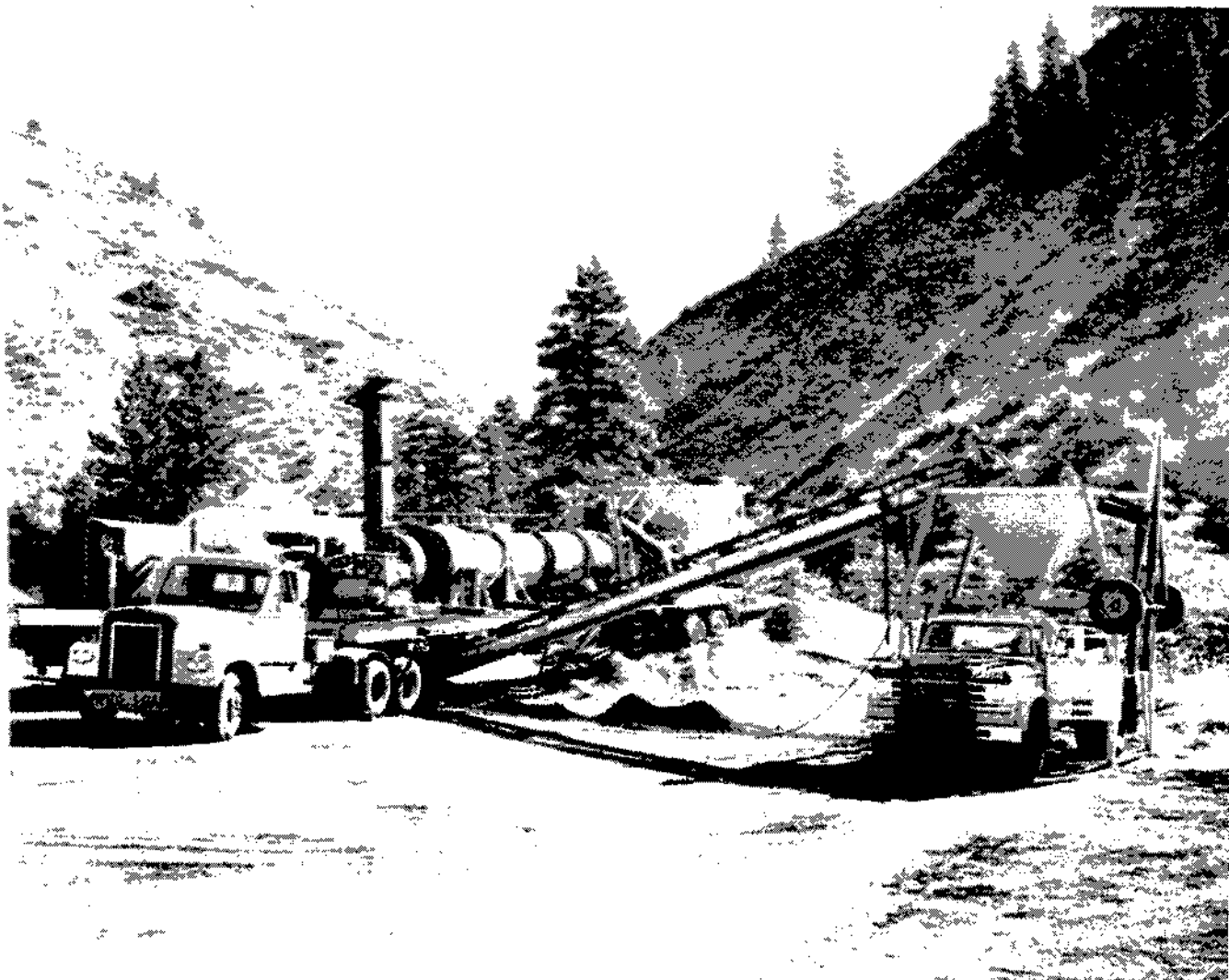
Another factor in growing maintenance costs was the highway beautification program which had become a part of Federal-aid legislation. Landscaping, screening of unsightly areas, and provision of scenic overlooks, desirable as they were, did add appreciably to maintenance costs.

Ever-increasing maintenance expenditures also affected the construc-

tion program. Since maintenance is financed entirely from State funds, any increased operational activities requiring more State dollars reduced funds available for construction programs.

The pavements on many miles of the Interstate system in southeastern Idaho, built during the late 1950's and early 1960's, which had served only a portion of their expected service life, began to show signs of distress. These

The State's portable Drum-Drier bituminous mix plant. This plant meets environmental requirements for pollution. It is used by maintenance forces in outlying areas where "Hotmix" is unavailable.



required overlaying with additional bituminous surfacing.

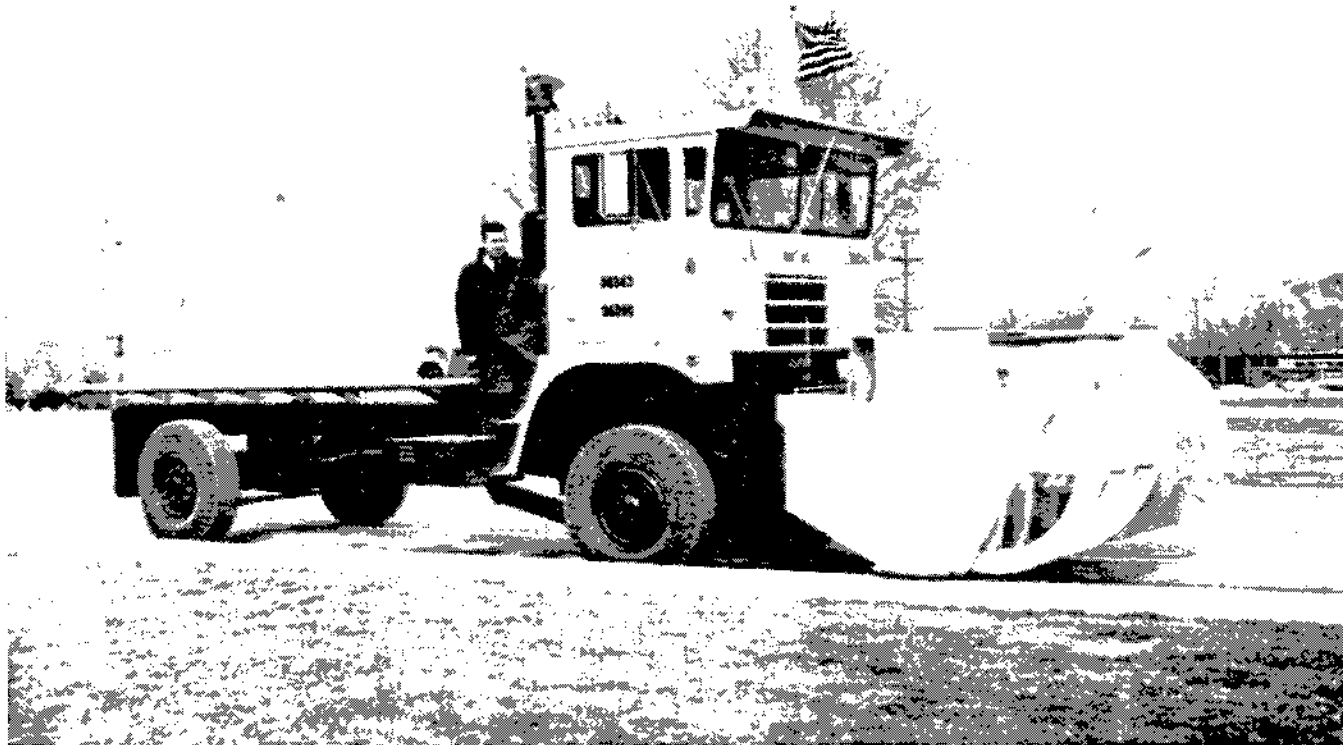
Research conducted by the Materials and Research Division and the University of Idaho indicated some problem that was associated with a loss of adhesion between the asphalt and stone components of the pavement. Severe cracking occurred on some sections due to loss of pavement strength. While design criteria had provided for the addition of 0.1 foot in pavement thickness some time after original construction, it became apparent that this would not be adequate. Accordingly, a full pavement

overlay financed with 100 percent State funds was necessary on some sections. This particular problem had rarely occurred elsewhere in Idaho, and many pavements gave as much as fifteen years of service.

A seal coat normally given to all new pavements had also been omitted from much of the early Interstate highway construction, since it had been considered unnecessary on the higher type of bituminous pavements. Because of these problems, however, it was determined that all pavements would receive a seal at or near the time of original construction. This action appeared to give improved pavement performance.

District repair shop at Shoshone.





A large snow removal unit capable of blowing 1500 tons of snow from the roadway every hour. These units cost over \$80,000 each.

Summary

The period from July 1, 1951, when the Department of Highways was created to July 1, 1974, when it became a Division of the Idaho Transportation Department, was one wherein every effort was made to provide a quality system of roads capable of serving the people of Idaho at minimum cost.

The Board of Highway Directors provided very capable leadership to the Department and imparted stability to the organization at a time when the vastly increased highway construction program could not have been accomplished otherwise. The total number of miles on the State Highway System did not increase between the years 1951 and 1974. However, improvements to the system were on a far greater scale than the increase from 3600 to 4900 miles of paved roads indicates.

Many of the 3,600 paved miles in existence in 1951 were not only structurally rebuilt, but also replaced with roads of improved grade and alignment. Many older obsolete bridges were also replaced by new modern structures having an area for disabled vehicles contiguous to the roadway shoulder.

During the period from 1956 to 1974, 537 miles, or almost 90 percent, of the Interstate system was opened to service. Most of this mileage was constructed to a four-lane freeway with access permitted at interchanges only. Although it was originally planned that the Interstate System was to be completed in 1972, a lack of Federal-aid funding prevented Idaho from accomplishing that objective.

Inflation had increased the cost at a five to six percent annual rate until the seventies, when the inflation factor suddenly rose to as much as ten to twelve percent. The original estimate of \$160 million to construct Idaho's portion of the Interstate Highway System had risen to \$474 million by 1974. While most of this increase was associated with the inflationary trend, a part was brought about by changes in Federal legislation and by subsequent design requirements. At the close of 1974, it was estimated that approximately \$137 million was yet needed to complete the remaining 71 miles. Nationally, the Interstate Highway System had been estimated to cost \$41.7 billion in 1956. By 1974 this estimate had risen to \$89.2 billion with \$22.7 billion in work remaining to be accomplished.

Idaho had concentrated most of its early Interstate construction efforts on rural sections of highway which gave greater mileages for least cost. Thus, many of the remaining sections were in or near urban areas with more structures required and higher right-of-way costs.

During this era, the Department also made every possible effort to use modern techniques and equipment for design and construction. Nearly all location work was done using aerial surveys. Electronic computers reduced manual calculations to a very small percentage of those previously

required. Thus, in spite of an increase in contract awards from about \$9 million to \$50 million the increase in Department personnel was relatively small and largely confined to the construction area. As of June 1953, the Department had a total of 1,238 employees, with 731 in maintenance and 391 classified as engineering. In June 1974, 1,489 were employed, with 678 in maintenance and 670 in engineering.

Because of the many uncertainties of Federal-aid authorizations and the impoundment of apportioned funds, financing and programming caused severe problems for the Department. Careful fiscal control of all Department activities, especially those relating to contract payout schedules, was required at all times. But the job was done--and with a considerable degree of success.

The first twenty-four-year existence of the Department of Highways was marked by stability in personnel and progress. The very high caliber of people serving on the Board of Highway Directors and their policy of directing the Department to the goal of using every dollar to its maximum benefit to the State were very important factors. Finally, the extreme dedication of all Department employees--administrative, construction, and maintenance--was the really great catalyst which led to the accomplishment of these objectives.

OTHER ACKNOWLEDGEMENTS

Ralph T. Chapman, James M. Cooney, William W. Harvey, William C. Horton, Larry R. Jones, George J. Neumayer, Dorothy J. Tinsley, Charles A. Webb, Pat H. Youngblood

The efforts of many others, too numerous to acknowledge, who generously gave their time and expertise have made the production of Idaho's Highway History possible. We are greatly appreciative and extend special thanks to each of them.

ILLUSTRATION CREDITS

Several abbreviations are used in the listing which follows:

IHS - Idaho Historical Society
 ITD - Idaho Transportation Department
 JJM - Mrs. J. J. McCreedy
 M-K - Morrison-Knudsen Company
 MSW - M. S. Wright
 WB - W. Burns

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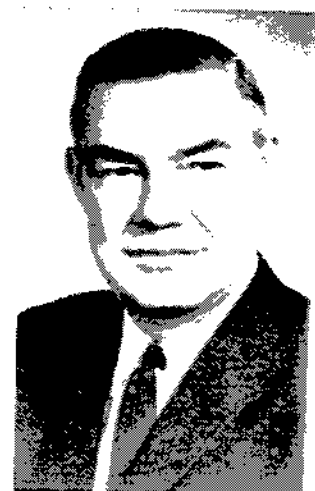
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**Governors,
Board Members, and
State Highway Engineers
1951 - 1975**



LEN B. JORDAN
Governor
1951-1955



ROBERT E. SHYLIE
Governor
1955-1967



DON SAMUELSON
Governor
1967-1971



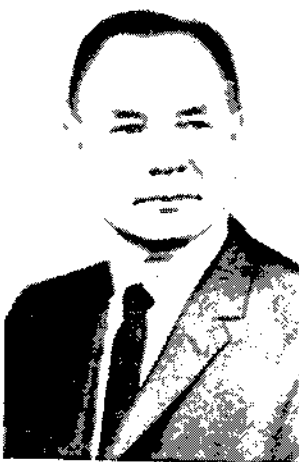
CECIL D. ANDERS
Governor
1971-



ROSCOE C. RICH
Highway Board
1951-1962



LEONARD K. FLOAN
Highway Board
1951-1960



W. FISHER ELLSWORTH
Highway Board
1951-1953



DAVID P. JONES
Highway Board
1953-1959



WALLACE C. BURNS
Highway Board
1959-1965



ERNEST F. GAFFNEY
Highway Board
1960-1967



R. DOYLE SYMMS
Highway Board
1962-1969



C. ED FLANDRO
Highway Board
1965-1971



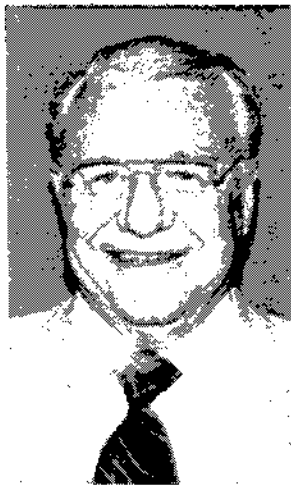
HOWARD B. THOMASON
Highway Board
1967-1973



LLOYD F. BARRON
Highway Board
1969-



JOHN G. FANNING
Highway Board
1971-1973



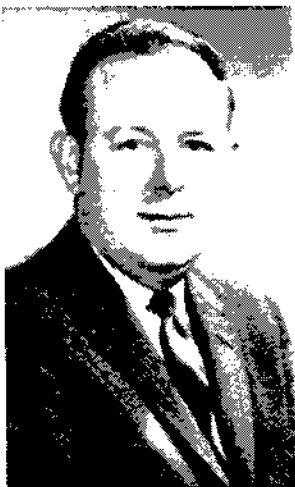
CARL C. MOORE
Highway Board
1973-



ROY I. STROSCHER
Highway Board
1973-



EARLE V. MILLER, P.E.
Highway Engineer
1951-1956



G. BRYCE BENNETT, P.E.
Highway Engineer
1956-1964



ELLIS L. MATHES, P.E.
Highway Engineer
1964-1973



VICTOR N. RICHARDSON, P.E.
Highway Engineer
1973-1974



E. DEAN TISDALE, P.E.
Highway Engineer
1974-

State Bonds for Highways and Bridges Authorized, Issued and Outstanding (1905-1930) As of October 31, 1930.

Name	Dates Authorized	Amount Issued	Interest Rate Per Cent	Nominal Dates Issued	Term Years	Date of Maturity	Kind of Bonds Issued	Total Maturity & Retired	Out-standing	Accrued Sinking Fund	Net Bonded Debt	Interest and Retirement Funds
Inter-Mt. Wagon Trails	1905	\$ 50,000.00	4%	1-1-1905	10-20	1-1-1925	Sinking Fund	\$ 50,000.00				Direct Tax Levy
Dixie Wagon Road, etc.	1907	18,000.00	4	1-1-1907	10-20	1-1-1927	"	18,000.00				" " "
Bonnere Ferry Bridge	1909	18,000.00	4	4-1-1909	10-20	4-1-1929	Serial	18,000.00				" " "
Paris-Franklin Road	1909	2,000.00	4	4-1-1909	10-20	4-1-1929	"	2,000.00				" " "
Salmon River Bridge	1909	9,000.00	4	7-1-1909	10-20	7-1-1929	"	9,000.00				" " "
Snake River Bridges	1909	10,000.00	4	4-1-1909	5-10	4-1-1919	"	10,000.00				" " "
Various Bridges	1911	8,000.00	5	5-1-1911	5-10	5-1-1921	"	8,000.00				" " "
Idaho-Oregon Bridge	1911	10,000.00	5	5-1-1911	5-10	5-1-1921	"	10,000.00				" " "
Kootenai Wagon Bridge	1911	25,000.00	5	5-1-1911	10-20	5-1-1931	"	25,000.00				" " "
Various Roads	1911	5,000.00	5	5-1-1911	10-20	5-1-1931	"	5,000.00				" " "
Canyon-Snake River Bridge	1911	25,000.00	5	5-1-1911	10-20	5-1-1931	"	25,000.00				" " "
Burley Bridge	1911	10,000.00	5	5-1-1911	10-20	5-1-1931	"	10,000.00				" " "
Salmon-Challis Bridge	1911	7,500.00	4 1/2	5-1-1911	10-20	5-1-1931	"	7,500.00				" " "
Paris-Franklin Road	1911	2,500.00	4	5-1-1911	10-20	5-1-1931	"	2,500.00				" " "
Snake River Bridge	1911	15,000.00	4	5-1-1911	10-20	5-1-1931	"	15,000.00				" " "
North & South Road	1911	20,000.00	4	5-1-1911	10-20	5-1-1931	"	20,000.00				" " "
St. Joe River Bridge	1911	9,000.00	4	5-1-1911	10-20	5-1-1931	"	9,000.00				" " "
Bonneville County Bridge	1911	5,500.00	4	5-1-1911	10-20	5-1-1931	"	5,500.00				" " "
Ross Fork Road	1911	20,000.00	4	5-1-1911	10-20	5-1-1931	"	20,000.00				" " "
Twin Falls-Lincoln Co. Bridge	1911	6,000.00	4	5-1-1911	10-20	5-1-1931	"	6,000.00				" " "
Whitebird-Doumeq	1911	4,000.00	4	5-1-1911	10-20	5-1-1931	"	4,000.00				" " "
Interstate Bldg. Snake River	1913	40,000.00	4	12-1-1913	10-20	12-1-1933	"	40,000.00				" " "
Boise-Yellowstone Park Hq.	1913	10,000.00	4	6-1-1913	10-20	6-1-1933	"	10,000.00				" " "
Ross Fork Road	1913	19,000.00	4	12-1-1913	10-20	12-1-1933	"	19,000.00				" " "
First State Highway	1915	200,000.00	4 1/2	1-1-1915	10-20	1-1-1935	Sinking Fund	200,000.00				Motor Vehicle License
Second State Highway	1917	600,000.00	4 1/2	1-1-1917	10-20	1-1-1937	"	134,000.00	366,000.00	60,165.92	305,834.08	Direct Tax Levy
		400,000.00	4 1/2	1-1-1917	10-20	1-1-1937	"	400,000.00				" " "
		100,000.00	4 1/2	1-1-1917	10-20	1-1-1937	"	100,000.00				" " "
Third State Highway	1919	500,000.00	4 1/2	1-1-1919	10-20	1-1-1939	Serial	21,000.00	179,000.00	87,775.39	91,224.61	" " "
Fourth State Highway	1920	2,000,000.00	5	1-1-1921	10-20	1-1-1941	Sinking Fund		2,000,000.00	677,557.42	1,322,442.58	" " "
Road & Bridge Refunding	1925	78,500.00	4 1/2	4-1-1925	1-20	4-1-1945	Serial	20,000.00	58,500.00		58,500.00	" " "
Road & Bridge Refunding	1925	87,000.00	4 1/2	4-1-1925	1-20	4-1-1945	"	20,000.00	67,000.00		67,000.00	" " "
		\$ 3,911,000.00						\$ 1,242,500.00	\$ 2,668,500.00	\$25,495.73	\$ 1,543,004.27	

Fig. 2

AUTOMOBILE AND TRUCK REGISTRATIONS

Years	Autos	Trucks	Total	Population
1920	46,905	4,359	51,264	431,681
1930	104,142	14,733	118,875	441,639
1940	121,484	31,103	152,587	524,963
1950	200,267	74,848	275,115	588,637
1960	240,018	91,779	331,797	667,191
1970	307,097	27,659	334,756 ^{1/}	713,015

^{1/} Monthly staggered registration schedule went into effect. Pickup trucks were now classified as automobiles decreasing the number of truck registrations.

Fig. 3

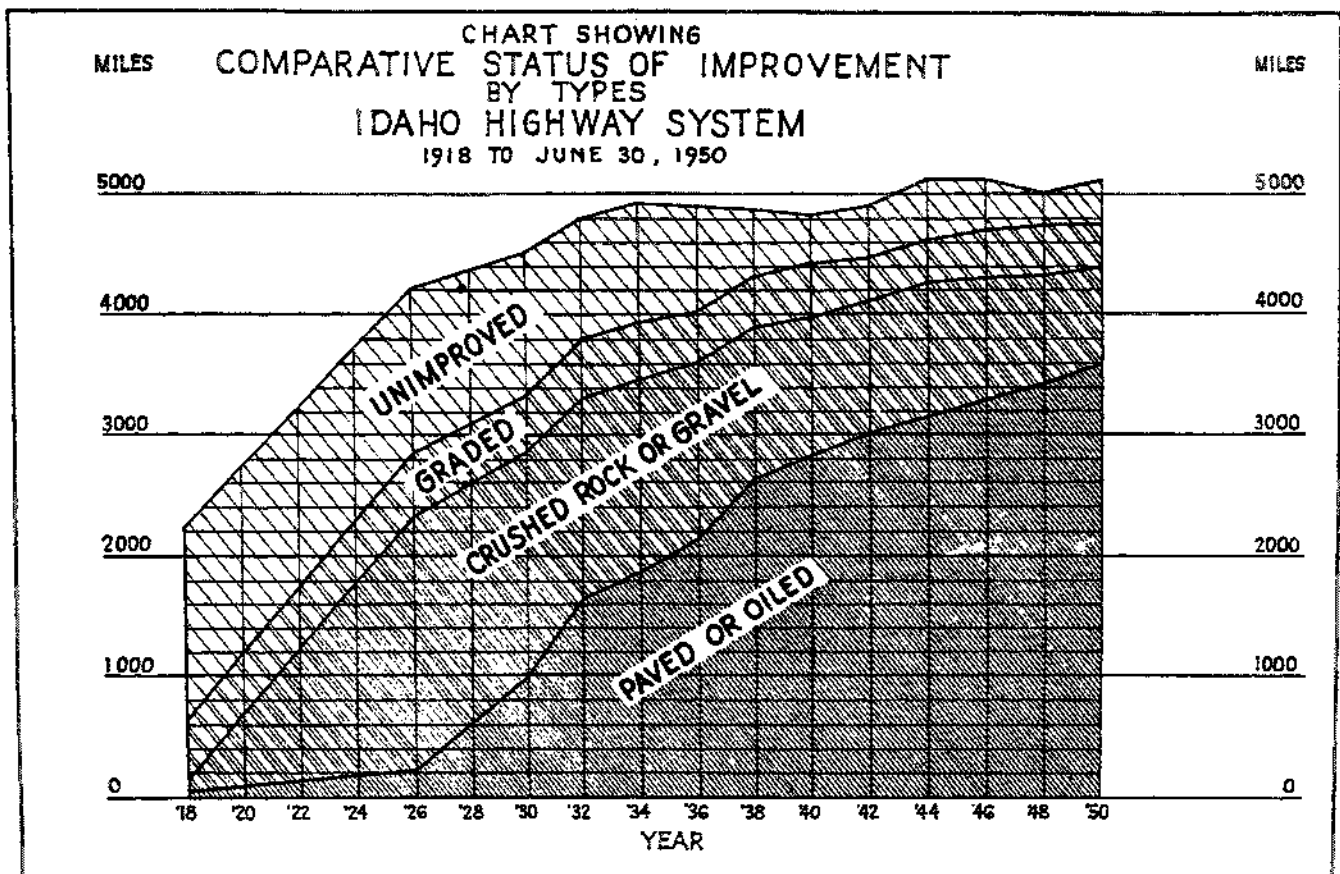


Fig. 4

Summary of Federal Funds to Idaho Road System

	FEDERAL AID TO STATE 1/	EMERGENCY FUNDS 1/	U.S. BUREAU RECLAMATION AND U.S. ARMY ENGINEERS 1/	APPORTIONED FOR PUBLIC LAND FUNDS 2/	FEDERAL FUNDS APPORTIONED FOR FOREST HIGHWAYS 2/	TOTAL FUNDS TO IDAHO
1917 - 1945	\$ 30,420,394.33	\$ 13,419,823.00	\$ ---	\$ 1,141,939.00	\$ 20,667,361.22	\$ 65,649,517.55
1946	426,181.32	---	---	---	2,533,938.00	2,960,119.32
1947	2,259,717.56	---	42,601.49	---	2,549,387.00	4,851,706.05
1948	2,381,168.19	---	825,540.31	---	---	3,206,708.50
1949	3,027,472.51	12,641.16	284,367.64	---	---	3,324,481.31
1950	2,824,053.96	68,999.75	324,636.63	---	2,036,433.00	5,254,123.34
1951	5,044,658.08	229,825.43	909,235.64	---	2,040,877.00	8,224,596.15
1952	3,645,279.76	52,056.86	978,469.52	---	2,041,361.00	6,717,167.14
1953	5,361,084.68	670.80	1,415,285.98	---	2,037,716.00	8,814,757.46
1954	7,083,038.63	---	308,783.22	---	2,291,973.00	9,683,794.85
1955	9,284,327.38	464,000.48	15,329.51	13,509.20	2,634,988.31	12,412,154.88
1956	7,445,196.91	---	3,340.66	---	2,289,653.00	9,738,192.57
1957	8,842,538.91	236,742.10	---	777,000.00	2,290,177.00	12,146,458.01
1958	11,239,072.31	134,913.80	153,159.55	---	3,054,441.00	14,581,586.66
1959	23,231,221.45	7,459.20	219,126.08	---	3,391,928.00	26,849,734.73
1960	20,149,060.52	---	6,071.49	1,000,000.00	3,359,886.00	24,515,018.01
1961	19,967,914.93	---	---	1,000,000.00	3,359,886.00	24,327,800.93
1962	26,678,933.89	---	---	1,000,000.00	3,359,886.00	31,038,819.89
1963	26,534,362.95	114,570.94	---	---	3,359,886.00	30,008,819.89
1964	23,366,936.17	286,428.02	---	---	3,359,886.00	27,013,250.19
1965	30,925,810.56	63,470.48	---	300,000.00	3,359,886.00	34,649,167.04
1966	30,347,340.25	573,365.93	---	400,000.00	3,359,886.00	34,680,592.18
1967	23,007,066.00	77,796.31	98,554.78	400,000.00	3,359,886.00	26,943,303.09
1968	28,412,708.08	86,837.48	391,074.84	400,000.00	3,232,719.00	32,523,339.40
1969	23,719,031.61	---	---	500,000.00	3,232,719.00	27,451,750.61
1970	33,438,756.94	---	---	930,000.00	3,197,083.00	37,565,839.94
1971	40,248,667.69	210,209.32	---	512,000.00	3,166,174.00	44,117,051.01
1972	27,340,601.42	18,914.49	---	1,240,000.00	3,023,993.00	31,623,508.91
1973	35,883,924.03	---	---	---	3,207,265.00	39,091,189.03
TOTAL	\$ 512,536,521.02	\$ 16,058,725.55	\$ 5,975,577.34	\$ 9,614,448.20	\$ 95,779,276.53	\$ 639,964,548.64

SOURCE: 1/ Department of Highways, Financial Statement
2/ Federal Highway Administration

Fig. 5

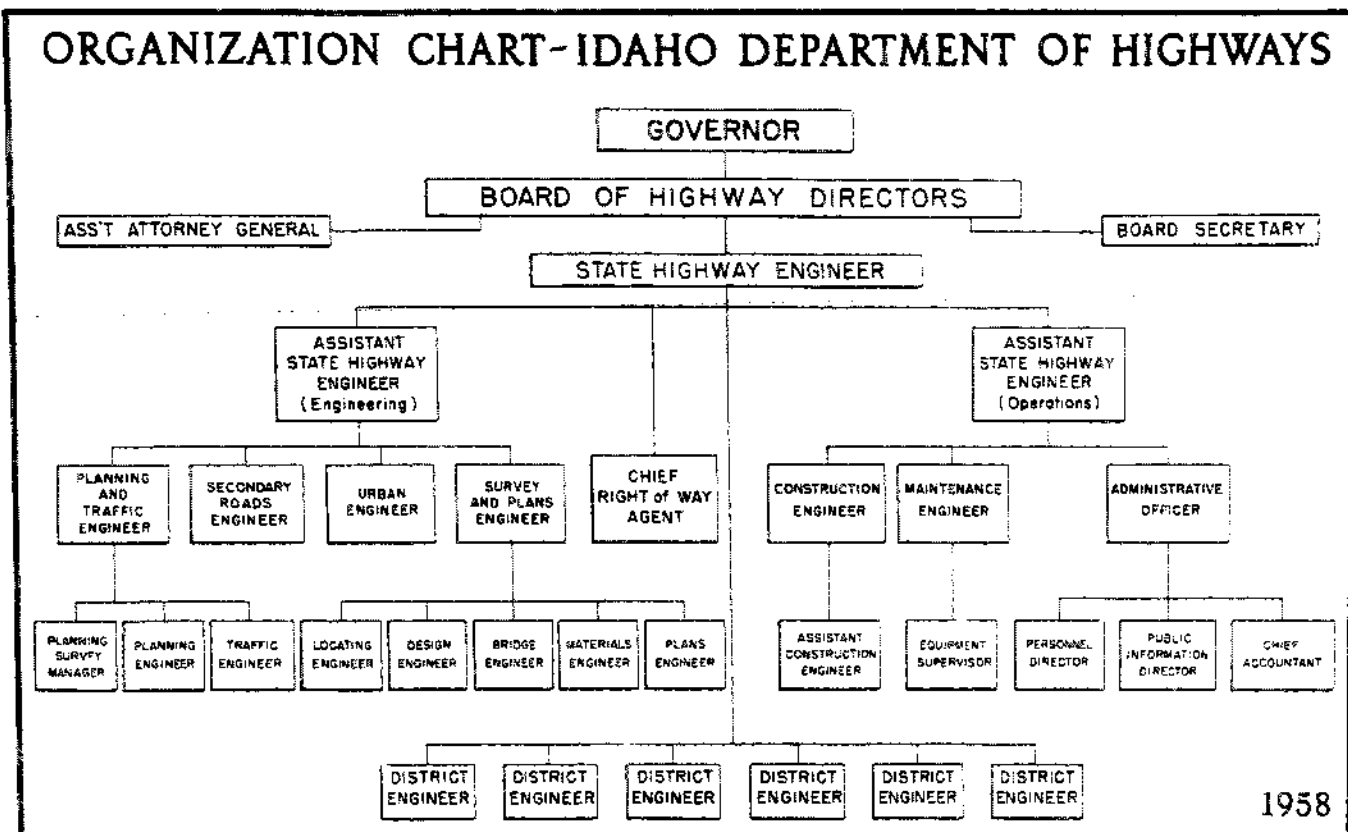


Fig. 6

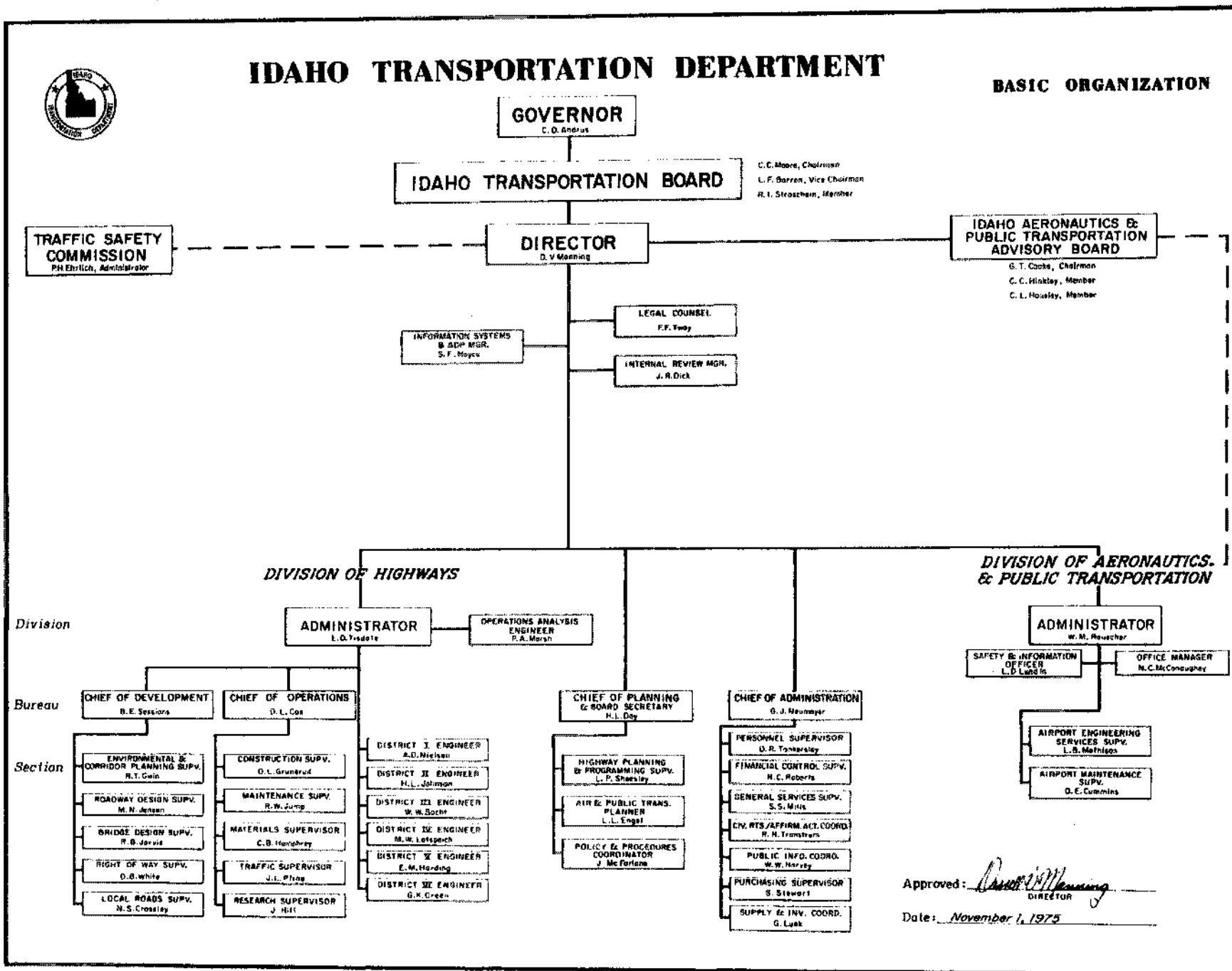


Fig. 7

