

CHAPTER 2

THE ROARING TWENTIES

By 1919, motor vehicle registrations in Nebraska had reached 211,750 and the increased automobile use throughout the state supported the demand for continued highway expenditures. Further, the proliferation of automobiles themselves created new problems of safety that the State Board of Irrigation, Highways, and Drainage would have to address. Initially, motor vehicle registration fees were increased to a minimum of \$10 to provide additional funds for highway maintenance.

It was apparent to State Engineer George E. Johnson and others that the problems of automobiles and highways were consuming more and more resources and manpower. Administratively, the obvious answer seemed to be either the reorganization of the State Board of Irrigation, Highways, and Drainage or the creation of a new department to deal exclusively with highways. An 1875 Nebraska law, which forbade the creation of any new executive office, precluded the latter course of action. Governor Samuel R. McKelvie addressed this problem in his 1919 inaugural message when he described the current law as one which fostered "a system of government that reeks with divided responsibility, loose ends, and overlapping function."

The 1919 Legislature took up the issue and after a long struggle, passed the Civil Administrative Code Bill, an extensive reorganization of Nebraska state government. This bill provided a cabinet form of government for the state and eliminated seven boards/commissions and ten related subdivisions. At the same time, the bill created six new departments, one of which was the Department of Public Works. This department assumed the responsibilities formerly carried out by the State Board of Irrigation, Highways, and Drainage. The Secretary of the Department of Public Works was given the additional title of State Engineer and was charged with supervising the construction of highways and bridges, as well as irrigation, drainage, and water rights. The department had two bureaus:

the Bureau of Roads and Bridges and the Bureau of Irrigation, Water Power, and Drainage. The Bureau of Roads and Bridges was composed of the Divisions of Maps and Plans, Road Construction, and Road Equipment. In addition, the Division of Motor Vehicle Registration was moved from the Secretary of State's office to the Department of Public Works. The bill also provided that each county should maintain all mileage of the state highway system within the county, the cost of such maintenance to be paid out of the state highway fund. In 1920, the Bureau of Roads and Bridges had five field divisions and the state highway system totaled 4,770 miles.

The first major Portland cement concrete paving project on the state highway system was FAP (Federal-Aid Project) 81, Fremont to Ames, a part of the Lincoln Memorial Highway. Construction began in August 1919 and consisted of 5.943 miles of grading, culverts, 7.33"x18' of concrete pavement, and one bridge. The project was completed in 1920 at a cost of \$199,440.34 (\$60,221.17 federal, \$60,221.17 state, and \$78,998.00 county), or about \$33,559 per mile. The 1919-20 Biennial Report tells the following story:

"This concrete surfaced road lies between Fremont and Ames on the Lincoln Highway. The soil, being composed of humus and sand, made travel difficult unless weather conditions were ideal. Thus, the Dodge County Board formed a paving district and the completed road is said to be the best concrete paving in the state. The entire work was handled by men, machinery, and a few teams, the latter being employed for grading only. The coarse aggregate for the concrete was pumped from the pits south of the project, screened, loaded into Fords equipped with Lee dump bodies, and hauled with the proper portion of tested cement to the mixer. Tamping and finishing were done entirely by machinery and, as a result, a concrete was obtained which passed a higher crushing strength than the Potomac gravel concrete, the government's standard. The work was carried on in a scientific and economical manner. Traffic has increased more than 100 percent due to the hard surface."

As highway construction increased, the testing of road materials became more important and in about 1920, the department established a cooperative agreement with the University of Nebraska for the accomplishment of tests and analyses. During the 1919-20 biennium, 1,208 individual tests were accomplished. In addition to maintaining quality and

standards for materials, the department hoped to develop a new surfacing material made of oils or asphalts that would withstand the increased traffic, yet have a lower initial cost than concrete pavement.

The 1921 Legislature reduced the minimum length for state-aid bridges from 175 to 100 feet so that more counties could avail themselves of this aid.

In 1922, each of Nebraska's 93 counties was assigned a prefix number (1 thru 93) for purposes of licensing motor vehicles. The numbers were determined by the total motor vehicle registrations in each county. Douglas County received the prefix "1" because it had the most registrations, while Hooker County received "93" because it had the fewest. These same county prefix numbers are still in use today.

In 1923, the Ford Model T reached a peak annual production of 2,011,125, a record not to be exceeded by a single company until 1955.

With the Department of Public Works, Nebraska now had an administrative structure through which it could more directly and efficiently address the specifics of highway construction and maintenance. In December 1924, the department moved into the new State Capitol, which was still under construction. According to Stephen R. Gilbert, a 1924 graduate of the University of Nebraska College of Engineering who was hired by the department as an engineer in 1925, this arrangement was not without its challenges:

"We were officed in the south part of the new capitol and... only the north and south parts were completed. The old capitol was still located in the middle. To go to the governor's office, we had to go through a canvas and jump across the tracks (for hauling materials) to get to the other side." (Stephen R. Gilbert, 1985 Interview)

For the nation as a whole, the decade of the twenties was one of great productivity and prosperity. Capital invested in manufactured goods was at record highs through most of the period. Automobiles became consumer goods

in much the same way as electric refrigerators and radios. By 1929, there were over 23 million registered passenger vehicles in the United States. Automobile production had increased from 2.2 million in 1920 to 5.5 million in 1929. Nebraska reflected this national trend with motor vehicle registrations nearly doubling from 223,000 in 1920 to 419,198 in 1929.

In 1927, after 15,456,868 Model T's had been built, Ford discontinued the Model T in favor of the Model A.

The prosperity of the nation and the increase in automobiles were also reflected in highway construction. Over \$10 billion were invested in highway construction nationally during the twenties, resulting in 275,000 miles of asphalt and concrete highways built by 1929. For most states, this was accomplished through a considerable increase in public taxation and investment. Between 1913 and 1930, expenditures on rural highways accounted for 17.5 percent of the increase in all taxes and 25 percent of the increase in state and local taxes. For most states, the balance of highway financing came from bond issues and other forms of public indebtedness. It was estimated that by 1929, almost half of all state indebtedness in the nation represented outlays for highways.

While recognizing these national trends and needs, Nebraska was neither willing to go into debt nor significantly increase taxation to finance highway construction. In fact, Nebraska and Florida were the only two states during this decade that incurred no public indebtedness for highway construction. This conservative fiscal policy challenged the Bureau of Roads and Bridges to meet the highway demands of Nebraska as economically as possible or fall behind the rest of the nation. A great deal of effort was expended in constructing highways to provide a smooth, dirt surfacing. In fact, Nebraska became a national leader in the design and development of dirt highways, prompting numerous officials from other states to visit and examine this method of construction. The impression was invariably positive as evidenced by a 1921 article in a Kansas newspaper. The author had attended the 1921 AASHO Annual Meeting in Omaha

and was impressed with the construction and maintenance of Nebraska's dirt highways:

"Oh, the Nebraska roads! These roads are not graded up to a sharp point that makes your car run sideways instead of straight ahead. They are level. Then a sharp ditch is cut on each side for the water to drain off. They are perfect as any pavement in the world, except, of course, when it rains you stay at home. Over such roads as these, it is a simple matter for a Ford car to travel 115 miles in four hours and twenty minutes (26.5 miles per hour)."

Progress in this era was not limited only to land transportation. On May 20-21, 1927, Charles A. Lindbergh (1902-1974), the "Lone Eagle," made the first solo nonstop flight across the Atlantic Ocean. Flying a specially built aircraft named the "Spirit of St. Louis," he departed Roosevelt Field near New York City on May 20 and landed at Le Bourget Field near Paris on May 21 after 33.5 hours of flying. For this, he received worldwide fame. Mr. Lindbergh learned to fly in the early 1920's at a flying school near 20th and Lake Streets in Lincoln, Nebraska.

State Engineer Robert L. "Roy" Cochran had long been an advocate of gravel for highway surfacing. A 1910 graduate of the University of Nebraska College of Engineering, Mr. Cochran served as the State Engineer from 1923 to 1934, Governor from 1935 to 1941, and State Engineer again in 1959. While pavement might be necessary in many states, he contended, Nebraska was blessed with significantly less rainfall and a light, sandy loam which dried out quickly. Gravel was an excellent and economical medium to use under these conditions. And, as Stephen R. Gilbert notes, Mr. Cochran was determined to get as many highways graveled as possible:

"All of the highways, except for a very few, were either dirt or gravel. Mr. Cochran's idea was to get them all graveled as soon as possible. Of course, they had to be graded and the culverts built before the gravel was applied." (Stephen R. Gilbert, 1985 Interview)

By 1929, Nebraska ranked fourteenth in the nation in state highway mileage, graveled or better. According to Oliver W. Johnson, who was hired by the department as a chainman in 1927 and appointed as the Construction

Division Engineer in 1967 and Deputy State Engineer in 1968, the only paving was around the larger population areas:

"Most of the paving was in Omaha and a little bit in Grand Island and Lincoln. All the rest of the state highways were either gravel or dirt. Even Highway 30, the Lincoln Highway, wasn't graveled. Most of the highways in those days were new projects. There hadn't been anything done on them before. The work consisted of grading, culverts, and gravel surfacing. That was the standard improvement in 1927." (Oliver W. Johnson, 1985 Interview)

The end of World War I brought unexpected benefits for the states after Congress passed legislation in 1918 allowing for the transfer of surplus equipment, material, and supplies from the War Department to the state highway departments. Nebraska received many hundreds of pieces of miscellaneous equipment, tons and tons of material and supplies, 407 trucks, and 74 touring cars. The first shipment arrived in June 1919. The state, in turn, sold 251 of the trucks and numerous materials/supplies to county road departments for use in road construction and maintenance. Arthur B. Chaplin, who worked with county road construction and maintenance in the early 1920's, was hired by the department in 1925 and became a principal assistant in the Division of Road Construction and Maintenance in 1927. He recalls moving some of this surplus equipment from Webster County north to a highway project near Scotia:

"I had an elevator grader and 14 little red dump wagons strung out and pulled them with that old tractor. It took me two days to get started." (Arthur B. Chaplin, 1985 Interview)

This additional equipment lessened some of the costs of highway work. To manage the equipment, the department created a Division of Equipment in 1919 and located it at 6th and South Streets in Lincoln. While technology would bring vast improvements in motorized equipment over the next decade, this surplus equipment remained in service until parts were no longer available. Mr. Chaplin talks about the problems of initially modifying the equipment and maintaining it:

"It was all armor plated. I took a lot of that armor plate off and got it dressed down so it wasn't such an obstacle to use. We were still using that surplus equipment in the early thirties and it got so you couldn't get parts. We used what we could off of it while it was being junked and saved everything we might need to keep another piece like it in service." (Arthur B. Chaplin, 1985 Interview)

In addition, the end of World War I led to a favorable labor market for employers. A high unemployment rate caused by the return of soldiers and the demobilization of wartime industries meant that labor costs declined immediately following the war. Highway construction, however, was one area in which there was a growing demand for labor and many states found themselves in the fortunate position of being able to expand their highway departments with more highly trained employees at reasonable costs. In Nebraska, this resulted in an increase from 54 department employees in 1917 to 273 in 1920.

In the 1880's, a strong man with a shovel could load 12.5 cubic yards of dirt per day. In 1885 at Fresno, California, a blacksmith invented the "Fresno Scraper," a device that when drawn by mules, could move up to 100 cubic yards of dirt per day (at a cost, in 1927, of about 50 cents per cubic yard). In the 1920's, Fresnos were commonly pulled by tractors, which substantially increased their efficiency.

Throughout the decade of the twenties, highway construction continued to demand more and more manpower because most of the actual work was accomplished by hand:

"The grading was done by hand-labor and horses. The grading contractor had 20 to 25 men and each drove a four-horse team. They pulled small scrapers called Fresnos. They would scoop up a load of soil and then the horses would pull the load up on the grade where it would be dumped and spread out. That's how they graded the road. The culvert work was also all handwork." (Oliver W. Johnson, 1985 Interview)

And as in any era, the department had its share of "characters," according to Oliver W. Johnson, who always enjoyed telling the following true story:

"The first day that I worked for the department in 1927, my boss was a guy named Walt. He never said much. I'd come to work in the morning and he might not say anything for an hour or two. Anyway, we were working out of Sidney and it was my first day. We loaded the equipment into his Model T...not a word was spoken...and headed for a grading project located between Gurley and Dalton, about 12 miles away. When we arrived...he still hadn't spoken...we drove down through the project where the men were operating scrapers pulled by horses. As we passed each rig, the teamster would wave and say: 'Hi, Walt'. Walt waved back but remained silent. We passed quite a number of these individual teamsters and each waved and said: 'Hi, Walt'. He still hadn't said anything to me. As we passed the last rig, it was the same thing...a wave and 'Hi, Walt'...and Walt waved back. He then turned to me and said: 'I always wave at the sonsabitches, it makes-em feel good'." (Oliver W. Johnson, 1985 Interview)

Highway construction and maintenance became more centralized at the state and federal levels during the twenties. In 1921, Congress passed another Federal-Aid Highway Act. The difficulties of moving troops and war supplies across the country during World War I demonstrated the inadequacies of America's transportation network. The railroads, previously under the control of the U.S. government from December 1917 to March 1920, were running at capacity. Attempts to transport goods via the nation's highways to supplement rail transportation proved nearly impossible because of the inconsistent and often poor condition of these highways. Congress was convinced that the nation needed an adequate interstate system of highways, if only for national security.

The 1921 Act required that each state select its most important existing highways, not to exceed seven percent of the total road mileage in the state as certified under the 1916 Act. These were the only roads on which federal money could be expended and were known as the Seven Percent System. Eventually these roads, which comprised over 200,000 miles nationwide, would become official federal-aid highways with the state responsible for their maintenance in perpetuity. If the federal government determined that any highway in this system was inadequately maintained, it would take over the maintenance and charge the state accordingly.

Under the 1921 Act, 5,619 miles of highways in Nebraska were eligible for federal funds, the latter to be matched by state funds on a 50-50

basis. Distribution to the states was based upon the ratio that the state bore to the total of all states in population, land area, and miles of postal routes. In this manner, the eastern states which contributed heavily in federal taxes did not receive a proportionately heavy return for highways while the western states profited accordingly. Nebraska received \$4.15 for each dollar of federal taxes which it paid for highways. Even with this favorable return, however, it was a constant struggle throughout the twenties to raise the amount of state matching funds necessary to receive Nebraska's full share of federal money. Nebraska's State-Aid Road Fund was financed by direct property taxes and, politically, property tax relief often had a higher priority than roads. The 1922 Legislature, acting in special session, passed a resolution against the continuance of federal-aid because the property tax was too high. Also, four Nebraska congressmen, up for re-election that year, voted against a bill to continue the federal-state cost sharing of road projects. According to historian Dr. Addison E. Sheldon:

"They were following the expressed desires of the State Legislature. Nebraska wished to be the judge of its own needs and its own methods of road building."

Nebraska did not pull out completely from this federal-state cooperation but appropriated only \$1.5 million in 1923, \$2 million short of the federal allocation available for Nebraska. The 1925 Legislature addressed the property tax problem by providing Nebraska's first gasoline tax, two cents per gallon, for the construction and maintenance of state highways. This new tax became effective on March 31, 1925 and it was estimated that it would raise \$3 million annually, of which \$2 million could be used to meet the federal-aid matching requirement, and the remaining \$1 million could be used for highway maintenance. In 1929, the gasoline tax was increased to four cents per gallon. The latter became effective on March 29, 1929.

While accepting the responsibility for maintaining its federal-aid system as specified by the Federal-Aid Highway Act, Nebraska continued to assign state highway maintenance to the counties until 1926. The state

reimbursed the counties for such work. This proved ineffective and State Engineer Robert L. Cochran pointed repeatedly to inconsistencies and neglect on the part of various counties. As a result, the 1925 Legislature passed a statute requiring the Department of Public Works to maintain the state highway system, effective on January 1, 1926, except for those portions located within the corporate limits of municipalities having a population over 1,400. On that date, the state system totaled 5,330 miles, of which 726 miles were graveled, 127 miles were paved, and 4,477 miles had dirt surfacing. The trend toward centralization of functions was also evidenced by legislation which specified that contracts for highway construction and maintenance could henceforth be awarded only by the Department of Public Works, thereby eliminating the role of counties in contract lettings. In addition, legislation in 1927 empowered the Department of Public Works to acquire rights-of-way directly.

While many aspects of highway construction changed with the times, there were few advances made to lessen the hardships of survey work. George J. Welty, who was hired by the department as a chainman in 1929, describes an early surveying experience:

"Three of us drove to Ord in a Ford roadster. The surveyor's equipment was on the running board and someone had to carry the instrument on his lap. We made drainage area surveys in the prairie grass hills west of Ord. We drove up and over the steep hills and around grazing cattle. Some of the hills were eroded in steps which we drove over going down with hope that we could find a way out. It would have been impossible to return the same way we came."

(George J. Welty, 1985 Interview)

As the sale of motor vehicles increased through the 1920's, new problems emerged and the functions of the Bureau of Roads and Bridges expanded to address them, leading the Department of Public Works to move into the new State Capitol in 1924. By 1926, the number of department employees had increased to about 600.

Because it was determined that many traffic accidents were caused by the glare of headlights, the 1921 Legislature passed a lens law which required the Department of Public Works to approve the specifications of

every headlamp lens sold within the state. The increase in traffic accidents also led the State Engineer to recommend the issuance of driver's licenses as early as 1922. This remained a concern of the department until the appropriate legislation was finally passed in 1929 providing for the issuance of driver's licenses at a fee of 75 cents each. Further concern for safety led to a \$30,000 appropriation in 1929 for the enforcement of motor vehicle laws. To accomplish this, three patrol officers were hired, each equipped with a car and a set of scales for weighing trucks. While these officers were expected to cite motorists for all traffic violations, it was obvious that a small force of three men was insufficient to cope with the problem statewide. For that reason, particular attention was given to violations of the license and truck weight laws. A fourth officer was added in 1934.

Increased traffic produced other new problems in the mid-twenties. With two exceptions, the Lincoln Highway and the Omaha-Lincoln-Denver (O.L.D.) Highway, routes were generally not marked in Nebraska. Neither were hazards such as sharp curves or narrow bridges. What little that had been done was mostly accomplished by private groups:

"In 1927, Highway 30 was known as the Lincoln Highway and had previously been marked with signs put up by the Automobile Association of California. They apparently had lots of money and as one of their projects, they marked the Lincoln Highway clear across the United States. They were red, white, and blue enameled steel signs."
(Oliver W. Johnson, 1985 Interview)

Another example of these private efforts was the marking of the O.L.D. Highway (US-6/34) in Nebraska:

"A group from Lincoln went out and put stencils on telephone poles at corners where the O.L.D. Highway would turn. The stencil said O.L.D. They put the stencil on the post and gobbled paint on it...between Lincoln and Hastings or maybe as far as McCook. There was no system of route-marking highways. Those things came later." (Oliver W. Johnson, 1985 Interview)

In 1924, AASHO began working on a uniform system for highway signing, which it adopted in 1925. In Nebraska, the Bureau of Roads and Bridges

erected the first official state and U.S. highway markers (signs) in a ceremony on June 5, 1926. Among those attending were Adam McMullen, Governor; Frank C. Zehrung, Mayor of Lincoln; Robert L. Cochran, State Engineer; Charles H. Roper, President of the D.L.D. Highway Association; Burt A. George, Legislative Representative of the Nebraska Good Roads Association; and A. A. Jones, Manager of the Outdoor Advertising Company.

State Engineer Cochran personally designed the "covered wagon" state highway markers which Nebraska has used since 1926. He had hoped to use a buffalo (bison) in the logo, but found that Manitoba, Canada had chosen it first.

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