

Chapter Nine

World War II and Post-War 1940-1960

Introduction

Because of the war years, the decades of the forties and fifties are combined into one chapter. Domestic water carriers were brought under ICC jurisdiction in 1940 by legislation which also included a written declaration of national transportation policy. In the late 1940s and mid-1950s, previous regulations on railroads were eased or eliminated in recognition of the growing intensity of intermodal competition.

The entrance of America into World War II focused attention on logistical problems unprecedented in transportation history as the nation mobilized to fight on two fronts, thousands of miles from the mainland. Rationing of fuel and supplies curtailed domestic operations of motor, water and air carriers except for defense purposes while the burdens of supplying military and civilian requirements strained the capabilities of the railroads and also provided record earnings. However, even though granted a long series of rate increases, the railroads could not maintain wartime revenues in a peacetime economy as more normal traffic patterns returned.

Federal aid was expanded to improve and restructure the nation's highways which had deteriorated during the war years and were unable to meet the needs of postwar motor vehicle traffic. Multi-lane interstate and toll highways challenged planning and funding on both federal and state levels. Liquid pipelines spread to meet the demand for fuel for home heating and transportation facility usage. Expansion of waterway commerce resulted in rebuilding and replacing locks and dams on the Mississippi and initiation of the Pick-Sloan project on the Missouri River. Air commerce legislation of the 1920s and 1930s was cancelled by the Federal Aviation Act of 1958, creating the Federal Aviation Agency. State aeronautical commissions were established and federal assistance became available for airport construction.

Federal Transportation Legislation The Transportation Act of 1940

The Transportation Act of 1940 was a further attempt to aid the railroad industry and to reflect the changes in the nature and structure of transportation since

1920. Highway, water and pipeline traffic had intensified intermodal competition, and problems had emerged concerning relations between them as well as their respective places in the transportation system. The 1940 legislation put all domestic water carriers under regulation as Part III of the Interstate Commerce Act, with certain exemptions pertaining to bulk and liquid carriage. The effect was to eliminate about 90 percent of the carriers from economic regulation. Following enactment, all five major modes were under federal regulation, although by no means could it be said that the regulations fell with equal force on the carriers as to purpose, enforcement and assistance. Three of the modes operated under exemptions, a fact that the railroads never allowed Congress to forget. Pipelines in the early 1940s were under a consent decree which limited the percentage of dividends that they could pay to a parent company. In order to forestall a congressional investigation, the pipelines agreed to the decree.

In the 1940 Act, the first written declaration of a national transportation policy was expressed. Previously the federal government had relied upon a series of uncoordinated legislative actions that evolved from protecting the public against railroad abuses in 1887, to eventually encompassing other modes with somewhat different regulatory treatment or restraints. The declaration of policy left much to be desired in what it contained as well as omitted and was generally considered to be highly ambiguous. It was geared to the preservation of the "inherent advantages" of the several modes rather than promoting competition to protect the interests of shippers and travelers. As such, it became nothing more than support for the "status quo."

The railroad consolidation efforts of 1920 were dropped, but consolidations still had to have ICC approval. Land grant railroads were released from obligations to transport mail and government traffic at reduced rates, an obligation that dated back to the land grant era between 1850 and 1870. It is interesting to note that the military personnel obligation was not discontinued until October, 1945, following the war's end. Commenting on the legislation, the *Traffic World* stated: "Both motor and water transportation will now be under regulation by the same body as are the railroads with which they compete. That is as it should be. But the rails pay for their own right-of-way as do the motor vehicles, though there is some dispute as to whether the latter pay in full measure . . . But waterway operators . . . still are permitted to use free waterways deepened and maintained for them at

public expense, even when, as the users are fond of saying, the waterways originally were provided by God. God does not, however, keep the channels deepened and clear, nor does He dig canals. Until this situation is taken care of, our transportation situation will still be lopsided in its regulatory aspects." On the land grant repeal, the publication further stated: "The saving to the railroads in actual money will be material not including the hire of clerks who figure these rates as well as the relief from wear and tear on their brains. Computing rates on government traffic is one of the most complicated and detested routine duties of railroading."¹

Other Railroad-Related Legislation

The Reed-Bulwinkle Bill of 1948 legalized rate bureaus, exempting from anti-trust laws ICC approved agreements between or among two or more carriers relating to rates, fares, classifications, divisions, allowances or charges and procedures for joint consideration, etc. The Smathers-Harris Act, officially known as the Transportation Act of 1958, was designed to keep pace with changing economic and technical conditions. It authorized the ICC to guarantee up to \$500 million in loans for maintenance or purchase of capital equipment, clarified the motor carrier agricultural exemption, and gave the commission greater authority over intrastate rates. It also repealed the three percent wartime tax on freight.

Wartime Transportation Arrangements— The Railroads

Unlike conditions existing during World War I when railroads were taken over and operated by the federal government, there was no attempt in 1941 to duplicate the procedure. Instead, the Office of Defense Transportation (ODT) was created. Its authority extended to all modes including private passenger cars and trucks, and its orders were not subject to judicial review. Under Section I of the act, the ICC already had broad powers over rail services during emergencies, and certain additional powers were granted over motor carriers in the Second War Powers Act of 1941.

The ICC and ODT sought cooperation between shippers and carriers to meet the war emergency. Attempts were made to promote pooling of railroad freight and passenger cars, interchange of locomotives, elimination of round-about routing of trains, substitution of trucks or buses on short distance routes, coordination of traffic toward ports

to meet ship and convoy departures, higher minimum carloads, diversion of certain types of traffic to water carriers, discontinuance of lightly used trains and branch lines, discouragement of pleasure travel, improved maintenance of motor vehicles and reductions in their speeds. The efforts resulted in the movement of war and domestic traffic without serious congestion and to the general satisfaction of all interests involved—a sharp contrast to the experiences of 1917-1920.

Motor Carriers and Highways

The entry of the United States into the war brought German submarines to the Eastern seaboard and Gulf coastal waters, and by May 1942 they were sinking oil tankers at a rate high enough to result in fuel shortages in the East. ODT shifted railroad tank cars from inland points to the East Coast, assuming that the trucking industry would fill the gaps. But the plan ran into the historical obstacle of state size and weight laws, and the result was not only diversity but also chaos.² Manufacture of automobiles was prohibited as plants converted to production of tanks, aircraft engines and ordinance. New car production fell from 3.5 million units in 1941 to 610 in 1944. Tires were rationed and recapped to conserve the dwindling supply, and the states were requested to reduce highway speeds to 35 miles per hour to save rubber, fuel and engine wear.

By April 1942, severe shortages forced gasoline rationing in the East, and by November they extended

¹ *Traffic World*, Editorial, September 10, 1940.

² U.S. Department of Transportation, Federal Highway Administration, *America's Highways, 1776-1976*, Washington, D.C.: U.S. Government Printing Office, 1976, p. 145. In 1941, five states still limited wheel loads according to the width of a tire, a holdover from the days of solid rubber tires, long since disappeared from usage. Limits on payloads were as low as 7,000 pounds; limits on gross loads ranged from 18,000 to 36,000 pounds for four-wheeled vehicles. Permissible gross loads on one axle varied from 12,000 to 24,640 pounds. In January 1942, Congress gave the ICC the power to set uniform truck weights and sizes as a war measure. A provisional code was drawn up by the Public Roads Administration and AASHO, permitting axle loads of 18,000 pounds and gross loads of 30,000 pounds for four-wheeled vehicles and up to 40,000 pounds on vehicles with three or more axles. The code was effective in all states in May 1942.

to the entire nation. Four gallons per week were allowed for ordinary travel with exceptions for defense industry workers and farmers. To alleviate the hazards facing coastwise tankers, two crude oil pipelines were built by the federal government. The longest was the "Big Inch" from Longview, Texas to the New York-Philadelphia refining area. The line was 1,340 miles long, cost approximately \$78 million and operated between 1943 and 1945. The "Little Big Inch" pipeline ran 154 miles from Corpus Christi to Houston, Texas and cost \$6.1 million. The "Big Inch" was sold to the Texas Eastern Transmission Company in 1947 and converted into a natural gas pipeline.

Wartime mobilization emphasized the dependence of the nation on highways. Studies in Michigan indicated that 13 percent of the defense plants received all of their materials by truck, and in most of the remaining plants at least half of inbound and outbound traffic came by truck. In February 1942, Thomas MacDonald announced that only a fraction of the 10 million defense employees could be accommodated by rail and bus facilities; the remainder would have to depend upon private automobiles. Rationing not only reduced non-essential travel but highway revenues as well. The first to feel the pinch were the Eastern states, and in Iowa revenues dropped 33 percent in June 1942 compared to the same month in 1941. The Public Roads Administration reported that nationwide gasoline rationing resulted in a decline of 35-40 percent in highway traffic in 1942 below the corresponding levels in 1941. States that had laws preventing the diversion of highway funds handled the restrictions without serious difficulty; those which allowed diversion suffered severe problems. But there were bright spots amidst the gloom of war, restrictions and shortages, for motor vehicle accidents dropped drastically in 1942, both in number and in the rate per 100 million miles of travel.³

Wartime Earnings for the Western Railroads

For the railroads operating in the Western District (west of the Mississippi River) between 1940 and 1944, operating revenues almost tripled, average revenue per mile increased two and one-half times, and the operating ratio fell from 73.70 to 63.07. Iowa railroads shared in the prosperity as the state harnessed its people and resources to meet demands for increased agricultural and industrial output. Mechanization of farm machinery and a new hybrid corn assisted in reaching record production levels of farm products. Cash value of crops used or sold

amounted to \$12.2 billion in 1945 compared with approximately \$452 million in 1940. The number of industrial establishments, ranging from small town manufacturers to giant firms in the large cities, rose from 2,540 to 2,965 between 1939 and 1947, doubling the number of employees and increasing values added from \$243 to \$671 million during the period.

Operating over 8,900 miles of track, Iowa railroads increased net earnings from \$21.2 million in 1940 to \$63.3 million in 1944, and net earnings per mile of road rose from \$2,274 to \$7,357 in the years 1940-1943. Rising operating costs resulted in petitions for increases of 10 percent in passenger fares, six percent on freight and three percent on agricultural products and edible livestock and animal products, effective in March 1942. The requests were approved by the ICC until May 1943 when they were suspended as no longer necessary or justified—the suspension to remain until six months after legal termination of the war. Revenue traffic within the state showed substantial growth in all categories except for forest products, as indicated in Table 9-1. At the close of the 1940s, revenue traffic continued at relatively high levels except for animals and products, a classification more vulnerable to truck competition (Table 9-2).

The CMStP&P benefited from cancellation of commercial shipments through the Panama Canal. Heavy wartime traffic on the CNW offered optimism for the future, and indeed their operating revenues for 1947 were the highest in the history of the company. But operating revenues are not net profits. Rowland "Bud" Williams, who had become chief executive officer in 1939 and president in 1944, saw the war years as well as those following as an era of spiraling costs of materials, supplies and labor. Taxes also were siphoning large amounts of earnings into state and federal treasuries. Believing that any hope of a profitable future would lie in reduction of fixed and operating expenses, he began a "housecleaning program" by abandoning 266 miles of branch lines, 566 miles of side tracks and closing hundreds of stations and other buildings by 1943. Williams pointed out the differences in the operation of the railroads in two World Wars, stressing that federal

³ National Safety Council, *Accident Facts 1973*, Chicago: National Safety Council, 1973, p. 59.

operations had cost the taxpayers \$2 million per day in World War I, whereas the railroads paid more than \$3 million per day in taxes during the second World War.

The CB&Q, following similar strategy, abandoned a system-wide total of 383 miles of branch lines during the war years. One was the lightly used 22-mile line from Mount Ayr to Grant City, Missouri in 1944, which led to what became known as the "Burlington Formula." Employees who found their positions worsened through abandonments were protected by a displacement allowance. If the employee lost his job, he was to receive compensation for the next four years. The formula was used by the ICC in comparable abandonment cases through the 1960s.

John D. Farrington headed the CRI&P since 1936 when the railroad was struggling through reorganization, but not until 1947, after 15 years and six months in the federal courts, was the road returned to its owners. In 12 years Farrington abandoned 650 miles of branch lines and, no longer

content with a "Granger Road" label, induced 2,084 industries to locate on the system, producing \$22.8 million annually in freight revenues. In the eight years from 1936 to 1944 the company spent \$70 million on improvements, of which \$19 million went into deferred maintenance and \$51 million was charged to the capital account. Later, expenditures on road and equipment brought the total to \$130 million. Estimated savings by 1944 were approximately \$7 million per year, and in September 1944, Farrington proudly announced that the road had \$100 million in cash and government securities. At the close of the 100th anniversary year (1952), the CRI&P reached a new all-time record for gross income—\$213.9 million—and a net income of over \$22.6 million. Common stock earned \$13.57, and preferred, \$32.43 per share. From the early 1930s, when the railroad had been frequently described as a case of total bankruptcy—financial, physical and managerial—the accomplishments of the Farrington regime were nothing short of miraculous, and in 1952 his railroad was rated as second to none in the United States.

Table 9-1
Revenue Freight Carried by Railroads Operating Within Iowa, 1940-1945

Classification	1940 (Millions of tons)	1945	% Increase
Products of Agriculture	13.44 ¹	25.93 ¹	92.9
Animals & Products	4.99	7.00	40.3
Products of Mines	11.14	16.93	51.9
Products of Forests	3.41	3.61	05.8
Man. & Miscellaneous	19.61	38.03	93.9
Less-Than-Carload	1.06	1.57	48.1
Totals	53.65	93.07	73.5

(Source: Iowa Commerce Commission, *Annual Reports*, 1941 and 1946.)

¹ Figures rounded to the nearest unit.

Table 9-2
Revenue Freight Carried by Railroads Operating Within Iowa, 1940-1949

Classification	1940 (Millions of tons)	1949	% Increase
Products of Agriculture	13.44 ¹	19.80 ¹	47.3
Animals & Products	4.99	5.43	08.8
Products of Mines	11.14	16.61	49.1
Products of Forests	3.41	5.79	69.9
Man. & Miscellaneous	19.61	32.84	67.4
Less-Than-Carload	1.06	1.72 ²	62.2
Totals	53.65	82.19	53.2

(Source: Iowa Commerce Commission, *Annual Reports*, 1941 and 1950.)

¹ Figures rounded to the nearest unit.

² Includes forwarder traffic.

Highway Construction Curtailed, 1942-1945

Until 1941 approximately half of the funds available for primary road construction had been provided by the federal government. In November, President Roosevelt ordered that any funds used on highway work be confined to those projects essential to national defense. By April 1942 the War Production Board stopped all highway construction except that which had begun on or before that date, and no new projects in excess of \$5,000 could be started unless certified as essential to the war effort. Highway facilities to provide access to war-related installations were funded by the Defense Highway Act of 1941 in the amount of \$151 million to cover the full cost. Allotments to states were not based on fixed formulae but rather on the requirements of specific projects. In Iowa there were five installations that could qualify: the Iowa Ordnance Plant near Burlington, the Des Moines Ordnance Plant near Ankeny, the Sioux City Air Base, the Federal hospital near Clinton and the Naval Training Base near Ottumwa. By 1943 all projects had been approved or completed. From August 1941 to March 1945 the volume of traffic on the Iowa primary road system steadily declined, resulting in falling revenues in the fund from state sources (Tables 9-3 and 9-4).

It was in the latter years of the war that the trend toward "tandem axle" semi-trailers became apparent. These vehicles weighed between 51,000 and 56,000

pounds gross and carried a payload of up to 34,000 pounds. A few combinations used tandem axles under both tractor truck and trailer, raising the gross weight to about 59,000 pounds with a payload of 36,000 pounds. Tire and loading economies made the larger vehicles attractive to operators, but the state warned that the pounding of heavy vehicles would "definitely hasten the day when the cross-state pavements would have to be replaced."⁴

Throughout the war years, regular or ordinary highway work slowed perceptibly. About 298 miles were paved, 151 miles graveled, 277 miles graded and 81 miles bituminous surfaced, and on June 30, 1945, no uncompleted primary work was under contract. Construction expenditures paid from the primary road fund fell from \$6.8 million in 1941 to \$551 thousand in 1945, the lowest for any year since 1919. Secondary road expenditures declined from \$105 thousand to \$198 in 1945, and funds spent on urban streets dropped from \$1.1 million to \$18 thousand. Primary road maintenance varied between \$4.0 and \$4.9 million during the five-year period.

⁴ Iowa State Highway Commission, *Report of the State Highway Commission for the Period July 1, 1944 to June 30, 1945*, Des Moines: State of Iowa, 1945, p. 19.

Table 9-3
Average Daily Traffic on Primary Roads,
1941-1945

Average Daily Traffic by Month					
Month	1941	1942	1943	1944	1945
January	1,098	1,094	679	796	710
February	1,268	1,120	844	790	755
March	1,361	1,192	883	764	865
April	1,528	1,275	959	836	887
May	1,713	1,354	1,011	889	930
June	1,832	1,418	1,044	926	1,017
July	1,918	1,417	1,040	966	---
August	2,094	1,473	1,050	972	---
September	1,809	1,371	955	957	---
October	1,674	1,222	887	938	---
November	1,536	1,154	824	839	---
December	1,394	691	826	747	---
Average Annual Daily	1,598	1,232	917	868	

(Source: Iowa Highway Commission, *Annual Report*, 1945.)

Table 9-4
Primary Road Income, 1940-1945

For Year Ending June 30	Primary Road Fund— State Sources (In thousands)
1940	\$19,298
1941	20,799
1942	21,311
1943	18,346
1944	17,517
1945	17,855

(Source: Iowa Highway Commission, *Annual Report*, 1945.)

The PostWar Years

Railroad Problems

As measured by freight ton-miles and passenger-miles, 1944 represented a peak in railroad movements. The 747 million ton-miles (68.6 percent of the total)

were the highest reported until the 1970s, and the 98 million passenger-miles were double that of 1920. For four years passenger service was profitable, but by 1949 the deficit reached \$650 million and continued at a somewhat lesser amount through 1970. Termination of European hostilities in April and the Pacific War in August 1945 resulted in a decline in every item of railroad performance in 1945, compared to 1944. Revenue ton-miles fell nearly 26 percent and the average length of haul over six percent. It took more than 85 cents of each revenue dollar to cover operating expenses for the first five months of 1946 as against slightly over 67 cents in 1945. For the 12 months ending in March 31, 1946, the rate of return on property investment averaged 2.56 percent, compared to 3.91 percent for a similar period in 1945. Fifty-nine Class I railroads failed to earn interest and rentals during the first quarter of 1946, of which 23 were in the Western District.

Alarmed by an inflated wage and price level and the prospect of replacing heavy retirements of worn out or obsolete equipment and motive power, the Class I Carriers on April 15, 1946, requested permission to raise freight rates by 25 percent, with exceptions, effective May 15, on one day's notice. On April 26, the ICC opened hearings on that part of the request concerning short notice and simultaneously reopened the 1942 case, then in a state of suspension.⁵ Supplemental petitions for similar increases were filed at the same time by domestic water carriers and freight forwarders. Petitions for intervention, but not rate increases, were filed by motor carrier bureaus representing approximately 1,000 trucking firms operating throughout the Western District.

The suspended increases were restored on June 30, 1946, amounting to six percent on general traffic and three percent on agricultural products, animals and products and products of mines. The short notice petition in the new case was denied pending public hearings which were held throughout the nation during the next five months, and on December 6,

⁵ *Increased Rates, Fares and Charges*, 264 ICC 695 (1946). The objective of the carriers was to secure rate increases which, if approved, would add approximately one billion dollars to their operating revenues, the largest single rate increase since 1920.

1946, rail and water common carriers were authorized an increase of 17.7 percent effective January 1, 1947. Further increases were granted in 1947 and 1948.

In June 1950 the United States, together with its allies in the United Nations, began efforts to repel the North Koreans from overrunning South Korea. Before the transition to a peacetime economy could be satisfactorily accomplished, additional burdens of rearmament were thrust upon the nation. The problems were not eased by widespread railroad labor disputes which resulted in federal possession, control and operation of Class I railroads under Presidential directive as of August 27; nor the replacement of equipment retired in the early postwar period. Freight car shortages developed due to the needs of the military and the higher levels of demand from agricultural, industrial and commercial transportation.

The inflationary trends resulting from the Korean War and the yet unfilled requirements of the economy translated into proposals by railroads and other common carriers for additional rate increases and curtailment or elimination of unprofitable services. Higher wages, materials costs, taxes, and diversion of traffic to motor and water carriers prompted requests which came almost annually during the 1950s. The ICC's Bureau of Economics and Statistics estimated that the cumulative increases authorized from 1946 to 1960, including the exemptions, averaged 115.2

percent. However, the higher rate levels did not forestall the declining trend in the rate of return on property investment, which dropped from 6.58 percent in 1942 to 2.86 in 1959 (Table 9-5).

Table 9-5
United States Railroad Rate of Return on Property Investment, 1940-1959

Year	Rate of Return (%)	Year	Rate of Return (%)
1940	3.02	1950	4.34
1941	4.41	1951	4.16
1942	6.58	1952	4.54
1943	6.03	1953	4.55
1944	4.87	1954	3.51
1945	3.90	1955	4.54
1946	2.82	1956	4.27
1947	3.53	1957	3.62
1948	4.36	1958	2.91
1949	2.91	1959	2.86

(Source: From 1940 to 1950, ICC *Transportation Statistics in the United States*. From 1950, ICC *Annual Reports*.)

Table 9-6
Revenue Carload Freight of Railroads Operating in Iowa, 1949-1959

Classification	1949 (Millions of Tons)	1959	Percentage Change
Products of Agriculture	19.80	18.50	-06.5
Animals & Products	5.43	4.30	-20.8
Products of Mines	16.61	16.67	---
Products of Forests	5.79	8.34	30.6
Man. & Miscellaneous	32.84	35.76	8.1
Less-Than-Carload	1.72 ¹	1.51 ¹	-12.2
Totals	82.19	85.08	3.4

(Source: Iowa Commerce Commission, *Annual Reports*, 1950 and 1960.)

¹ Includes forwarder traffic.

Operations in Iowa

In 1950, 12 Class I railroads operating in Iowa reported earnings of \$51.7 million or \$6,933 per mile of road; and in December 1955, net earnings averaged \$53.6 million or \$6,275 per mile. The Korean War armistice, declining traffic in farm products and the intensive competition of other modes, reduced earnings drastically during the second half of the decade. Net earnings averaged \$25.1 million or \$2,604 per mile of road, dropping by 1960 to \$13.8 million and \$1,655. On November 1, 1960, the M&StL was acquired by the CNW, reducing the number of Class I roads to 11. Trends in revenue freight showed an overall increase of less than four percent during the 1950s as losses occurred in products of agriculture, animals and products and less-than-carload freight. Virtually no changes were observed in the movement of mine products. Increases were recorded in manufactured and forest products (Table 9-6).

Meanwhile, motor freight operations within and throughout Iowa showed substantial gains over the 1940-1950 period. From three million tons carried in 1940, the volume rose to slightly under 10 million tons by 1959, and by the same year, an additional five million tons were handled by liquid motor carriers.

Trends in Railroad Passenger Service

The cyclical passenger decline in volume was reversed during the war years but fell back into prewar patterns afterward. Regulation hampered wholesale curtailment of service, normally a standard practice in unregulated industries when demand falls over long periods. Restrictions had been built into statutes regulating railroads, and state commissions ruled on abandonments with little or no consistency. The Transportation Act of 1958 gave the ICC authority over discontinuance of inter- and intrastate passenger service and could overrule states when national policy judgments indicated that the service should be terminated. The policy was supported by the railroads in the belief that more conformity in abandonment cases would result. In the same year (1958) commercial airlines introduced jet service, adding a new dimension of speed to their schedules, and another negative factor came in 1967 when first-class mail was shifted from railroad passenger trains to airlines. By 1970, 24 railroads operated 547 passenger trains, down from approximately 20,000 in 1920.

Realignment of the Service in Iowa

Although trends were unfavorable, relatively widespread service was available in Iowa in the 1950's but deteriorated in various stages soon thereafter. An Iowa State University research project analyzing the influence of small cities' intercity transportation on regional urban goals noted that of 54 study region counties, only Decatur County was not covered by a passenger route in 1950, and only eight study county seats were not directly served by scheduled routes. Nelson observed that "1960 appeared to be the turning point," and except for routes connecting major cities, almost all service vanished by that year. Ten years later, there was practically no passenger service available.⁶

By 1955 the CNW had reduced passenger service to five transcontinental trains in each direction. Disagreement between the road and the UP over service and division of revenues resulted in the October 30 decision to transfer the trains between Council Bluffs and Chicago to the CMStP&P, a bitter blow to residents using the former schedules. Henceforth, the familiar yellow streamliners would be routed through Manilla, Perry and Marion, to the delight of those cities. To counter the change, the CNW substituted three new trains in Illinois and Iowa. The *Corn King* was an overnight train with coaches, pullmans and a diner, and the daytime *Omahan* provided coach, parlor car and dining service. The third, appropriately named the *Kate Shelley*, ran from Chicago to Boone. But the bloom was off the CNW's passenger business for the trains were not profitable. Eventually, the *Kate Shelley* was cut back to Marshalltown, then to Clinton, and on May 15, 1960, passenger trains between Council Bluffs and Clinton made their final runs and passed into history. Not one train on the CNW's lines remained in service in Iowa, which meant that the state also lost some mail and express service over these routes.

⁶ R. L. Carstens, Project Director, *Integrated Analysis of Small Cities Intercity-Transportation to Facilitate the Achievement of Regional Urban Goals*, U.S. Department of Transportation Report No. DOT-TST-75-13, Washington, D.C.: U. S. Government Printing Office, June 1974, p. 122; Paul C. Nelson, "Rise and Decline of the Rock Island Passenger Train in the 20th Century," *Annals of Iowa* 41 No. 2 Part II (Fall 1971): p. 760.

By the sixties, the CB&Q's *Zephyrs* were running deficits. Gradually their streamliners in Iowa were terminated, and in 1968, the *California Zephyr* was recommended for abandonment but given an additional year of life by the ICC. Shuffled also were the transcontinental schedules of the CMStP&P, reducing the five crack streamliners to two daily and dropping the *Mid-West Hiawatha* which had begun operations in 1940. In June 1954 a Talgo-type lightweight streamliner named the *Jet Rocket* was ordered by the CRI&P and made its first appearance in Des Moines in 1956. It cost \$788,000, consisted of 10 coaches, featured a low center of gravity and weighed about half as much as the conventional trains of the same length. Built by General Motors, the design allowed the train to take curves at high speed through the addition of wheels in the center of the cars. Initially it ran between Chicago and Peoria, but operational problems forced the train off the main line and into suburban service where it remained until 1965. By 1967 most of the CRI&P mainline trains had been discontinued except for those operating between Chicago, Peoria and Des Moines.



The Chicago, Rock Island & Pacific *Jet Rocket* in Des Moines.
(Courtesy: Author)



The Chicago, Rock Island & Pacific *Jet Rocket* in Des Moines.
(Courtesy: Author)

Electric Interurbans

There were eight electric interurbans operating in Iowa in 1950. One, the Tama and Toledo, was abandoned in 1953 and four, the Cedar Rapids and Iowa City; Des Moines and Central; Fort Dodge, Des Moines and Southern; and the Waterloo Railways, were reclassified as Class II railroads in 1954. These four operated 260 miles of tracks and had \$186 thousand in net railroad operating income in 1950. The remaining three were the Charles City Western, Mason City and Clear Lake and Southern Iowa Railways, with only 60 miles of track and a net income of \$24,543. The Waterloo Railway was formed by the CRI&P and IC in 1958 to acquire the Waterloo, Cedar Rapids and Northern and was integrated into the IC in 1970. The Des Moines Central and Fort Dodge, Des Moines and Southern became part of the CNW in 1968 (Fig. 9-1, p. 214).

Federal Aid to Highways

Huge wartime savings created an insatiable demand for consumer and industrial products including automobiles and trucks. Nationwide, registrations grew by 22 and 35 percent, whereas in Iowa, the growth was 36 and 55 percent. The end of rationing and emergency speed controls resulted in an increase in highway travel of approximately six percent nationally and was to continue at a high level for decades. But the highways were in poor condition to receive the accelerated traffic since wartime restrictions prevented maintenance, and structurally the roads were in worse shape after than before the war.

The Federal Aid Act of 1944 authorized \$500 million annually for the first three postwar years, divided into \$225 million for the federal-aid primary system (A system), \$150 million for principal secondary and feeder roads (B system), and \$125 million for improvement of urban extensions into and through cities with populations of 5,000 or more (C system). In the same act, Congress established a National System of Interstate Highways, requiring the states to select roads located so as to connect by direct routes the principal metropolitan areas. The total system was not to exceed 40,000 miles. By the legislation, state highway departments were brought actively into city and regional planning.

On June 29, 1956, President Eisenhower signed the Federal Highway Act of 1956. Twenty-four billion dollars were authorized for the Interstate System for 13 years, with the states' contribution to be about \$2.5

billion. It was expected to provide for traffic needs anticipated in 1975. Subsequently, the system was formally designated as the "National System of Interstate and Defense Highways," and expanded to 42,500 miles. In 1978, the FHWA estimated that the system would cost 104.3 billion. It was 92 percent completed by January 1979. Prior to 1954, federal appropriations were made through the U. S. Treasury from funds collected on fuel and excise taxes on motor vehicles. Afterward, federal taxation and highway funding for interstate construction were linked together by a highway trust fund from which federal funds would be paid. The program was self-financed in that payments could not exceed the balance in the fund except through accumulation of surpluses. It was a pay-as-you-go system, or as some people complained, "pay-before-you-go."

Standards governing physical dimensions, control of access, and other design features had to be approved by the Secretary of Commerce (after 1967 by the Secretary of Transportation). Maximum weight and width limits were prescribed for motor trucks operating on the Interstate System. Funds could be denied any state permitting operation of vehicles heavier or wider than specified after July 1956, or those which on that date could be lawfully operated in the state, whichever was greater. Weights were "frozen" at 18,000 pounds on a single axle or 32,000 pounds on a tandem axle, gross weights at 73,280 pounds and width at 96 inches. About half of the states permitted weights greater than those specified at that time. The federal government appropriated 90 percent and the states 10 percent of the funding for Interstate construction, but the ABC program remained at a 50-50 percent matching basis until 1973 when the federal share was increased to 70 percent.⁷

In 1959 a number of changes were made in order to provide for increased funding. The federal motor fuel tax was raised from three to four cents per gallon for the period October 1, 1959 to June 10, 1961. After that date, the one-cent fuel increase was to be replaced by one-half of the 10 percent excise tax on new automobiles and five-eighths of the eight percent tax on motor vehicle parts and accessories, to be effective from 1961 to 1964. None of the revenues from the two excise taxes had been previously dedicated to the fund.

Highway Issues in Iowa

After 1945 it appeared that changes would have to be made in Iowa road financing. Matching funds from

state sources for secondary roads were ample, but it was difficult to continue primary road improvements under limits placed on expenditures from the primary road fund. In 1947 the General Assembly created a Highway Investigation Committee to study highway problems and report to the next session. The committee was chaired by Senator J. T. Dykhouse of Rock Rapids and included three senators, four representatives and four private citizens. Clyde Coykendall of Ames was the Administrative Assistant. The report of November 1948 recommended a pay-as-you-go system covering 20 years, costing an estimated \$943 million on the basis of 1948 prices. From this amount, \$428 million would be required to pave 2,200 miles of graveled or unsurfaced primary roads and the remainder to "provide every reasonably located farmhouse a surfaced road outlet."⁸

To raise the additional \$14.2 million annually to finance the program, it was recommended that motor vehicle registration fees would be increased, including a \$10 fee on farm tractors driven on the highways. Use and sales taxes collected on new motor vehicles

⁷ Charles A. Taff, "Commercial Motor Transportation," *Transport Topics* (January 9, 1978): p. 22. Since the Highway Act of 1916, apportionment of federal funds among the states for primary roads was based on a formula consisting of three criteria, each having equal weight: (1) the area of the state relative to the total area of the nation; (2) the population of the state relative to population of the nation; and (3) the rural road mileage relative to the total mail mileage of the nation. For secondary roads, the formula remained the same except that rural population was substituted for general population and for urban areas was based on the ratio of population in municipalities over 5,000 to populations in other urban centers in all states as shown in the Federal Census. For the Interstate program, the funds were divided by two-thirds in the population ratios, one-sixth by total areas and one-sixth by rural mail delivery and star routes.

⁸ *Report of the Highway Investigation Committee Created by Chapter 351 Laws of the Fifty-second General Assembly, November 15, 1948*. Des Moines: State of Iowa, 1948. The committee found much to commend and little to criticize with respect to Iowa's highway progress. They stated that the road laws were fundamentally sound and that the highway program "had been kept reasonably free from graft or scandal." Tenure of highway engineers in both state and county organizations had been little influenced by changing political administrations. Essential features of the proposed program were summarized in the *Des Moines Register*, December 31, 1948; Iowa State Highway Commission, *Report of the State Highway Commission for the Period July 1, 1947 to June 30, 1948*, Des Moines: State of Iowa, 1948, p. 8.

and parts, tires and accessories but not used for highway purposes would be added to highway revenues. All road taxes would be placed into a single state fund and divided as follows: 48.5 percent for primary roads, 45 percent for secondary and farm-to-market roads and 6.5 percent for municipal roads and streets. No increases were proposed in the gasoline tax which had been raised to four cents per gallon in 1945. The program was supported by Governor Beardsley and the newly organized Good Roads Association and an amended version was adopted by the General Assembly in 1949.

The ceiling of \$17 million in the primary road fund was removed, as was diversion of the excess amount above this limit to the farm-to-market fund. A Road Use Tax Fund was created, and distribution to the various systems was changed to allow 42 percent to primary roads, 50 percent to secondary roads and eight percent for city streets. The new formula increased the primary road fund to \$27.4 million for the fiscal year ending June 30, 1950, or \$10.5 million over the previous limit. An additional one cent gasoline tax was authorized in 1953 to be used exclusively for paving of graded primary roads.

There were few objections to the new road plan, and progress on secondary road work proceeded between 1948 and 1953 at a rate that would provide the all-weather surfaced highways to rural homesteads earlier than scheduled. Nearly three-fourths of the system was surfaced by 1954. Primary road construction, however, did not meet expectations. By 1954, \$130 million had been spent with over \$750 million still needed to complete the program. One of the major problems was heavy traffic, projected to increase 33 percent by 1960 but already up 38 percent from 1949 to 1954. Earl Hall, editor of the *Mason City Gazette*, commented early in 1955 "that the task of estimating future road needs calls for an imagination that just doesn't seem to be present in the human animal." Road problems like those found generally in transportation never end. Planning, whether for five, ten or twenty years, unfortunately at times implies that problems are solved when the programs are completed. Accurate forecasts are difficult when economic and social conditions change, weather cannot be controlled and heavy traffic wears out the pavements. Fred White clearly stated the frustration of road builders in 1920. "By the time we get the roads paved, the first of them will be worn out and we will be ready to start again. So let's go forward into it with our eyes wide open that we are starting something that we shall never finish."⁹ The problems

faced by highway officials in the intervening years certainly supported the wisdom of these words.

The legislature had provided for a farm-to-market road system of some 10,000 miles (not exceeding 10 percent of the highway mileage of the county), but federal-aid secondary funds matched with state funds were available for expenditure on a larger approved federal system, encompassing 33,000 miles. Upon recommendation of the highway commission, the General Assembly passed a Farm-to-Market Road Act in 1947 authorizing a farm-to-market system of not more than 35,000 miles of secondary roads and directing the commission to "equitably divide the mileage of the state among all of the counties."¹⁰ The act also provided that a portion of the farm-to-market road fund should be allotted among counties in such a manner as to equalize, insofar as possible, the condition of construction or reconstruction in all sections of the state. This fund officially became known as the Farm-to-Market Equalization Fund.

From 1913 through 1949, highway research by the commission was conducted on an informal basis, specifically geared to individual projects with few publications summarizing the results. In 1950, a Highway Research Board was created whose members included the deans of engineering at the State University (University of Iowa) and the Iowa State College, six county engineers and three commissioners. Mark Morris, formerly the commission's traffic officer, was appointed director. In 1960 the position of director was abolished, and a Highway Research Department administered by a research engineer was established to coordinate programs with other departments and administrators.

Man-made and natural forces combined to make 1951 a difficult year for road building and maintenance. Steel and cement shortages resulted from the Korean War, and national rearmament prevented initiation of paving and bridge projects and completion of others. Nature caused more problems. Snowstorms in March exceeded any previously recorded during that month, and the spring breakup was the most destructive of

⁹ George S. May, "Post War Road Problems," *Palimpsest* 46 No. 2 (February 1965): pp. 116-128.

¹⁰ *Laws of the General Assembly*, Chapter 162 (1947).

road surfaces since the advent of modern highway construction. Floods in the spring halted highway and bridge work, and crews were idled for weeks. The situation did not improve materially until 1953, the most productive year since the end of World War II. The black-painted centerline was discontinued in 1954 and replaced with a dash-reflectorized white centerline and yellow no-passing lines on all heavily traveled roads. During the fiscal year ending June 30, 1956, all paved roads were marked, and an additional 1,033 miles of bituminous surfaced highways were scheduled for painting before the spring of 1957. When completed, all primary roads except those surfaced with gravel or crushed rock would show the new lines.

Administrative Changes in the Fifties

Fred White, Chief Engineer for the highway commission for 33 years, retired in 1952 and was appointed Consulting Engineer until 1954. He was succeeded by Edward F. Koch who resigned after two years to enter private industry. His replacement was John G. Butter, Administrative Engineer since 1948, and a long time employee of the commission who served until 1960, when L. M. Clauson was appointed to the position. In the first 39 years of commission history, only two chief engineers had directed the highway programs; Thomas MacDonald from 1913-1919 and Fred White from 1919-1952. The record of their accomplishments on both state and national levels is well-documented in the highway progress made under their supervision.

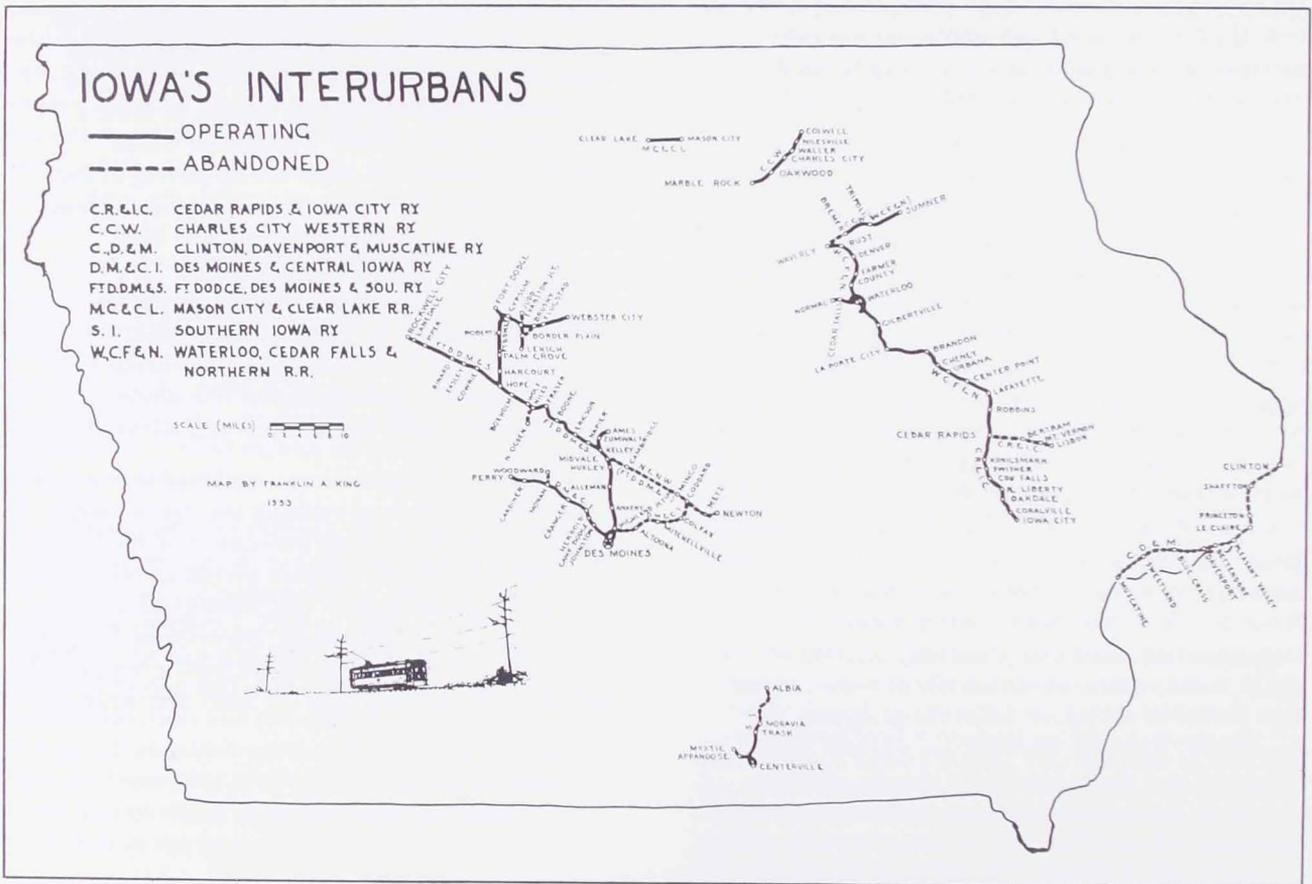


Figure 9-1
 Map of Iowa's Interurbans by Franklin A. King - 1953.
 (Courtesy: The Palimpsest Publication Vol. XXXV No. 5 - May 1954, Author: Frank P. Donovan, Jr.)



Figure 9-2

Proposed location of east-west Iowa toll road, 1954.

(Courtesy: The Initial Feasibility Report on The Proposed Iowa Turnpike - July 20, 1954, Coverdale & Colpitts, Consulting Engineers.)

The Toll Road Proposal

Historically, three general sources of funds have been used for highway improvements. Property taxes were an important revenue base prior to 1920 and continued to provide revenues for counties and municipalities. A second source consisted of vehicle registration and title fees, operator licenses, gasoline taxes, taxes on tires and accessories, use tax on the purchase of vehicles and special taxes on for-hire carriers or larger trucks. A third source was tolls collected directly from road users. In the early postwar years when highways were in poor condition through wartime neglect, toll roads became popular. They had the advantage of improving highway travel quickly without obligating state funds and were financed by the sale of revenue bonds to be repaid from the toll charges.

By the early 1950s the toll road bandwagon was rolling. Pennsylvania started the trend in the 1930s, building a four-lane superhighway between Pittsburgh and Harrisburg, and toll road authorities had been

created in 15 states including Indiana, Illinois and Kansas. By 1954 there were 1,382 miles of toll roads under construction at costs estimated at \$2.5 billion and plans made for an additional 3,314 miles estimated to cost \$3.75 billion. If and when these highways were built in the states east of Iowa, it was visualized that a tremendous increase in traffic would be fed into Iowa's already overburdened roads. This prospect led the General Assembly to authorize the highway commission to study the feasibility of building and operating an east-west toll road to be a modern, four-lane, limited-access highway of approximately 300 miles.

A report was prepared for the commission on July 20, 1954 and delivered to Governor Beardsley on August 4. The principal conclusion was "that construction and operation of an east-west toll road across Iowa, including a new bridge over the Mississippi River from a new river crossing (Illinois State Road No. 20) near Davenport to a connection with Primary Road U.S. 275 near Council Bluffs by way of Iowa City,

Newton, Des Moines and Atlantic, appears to be economically feasible in 1959 if bonds can be issued and sold bearing an annual rate of 3.5 percent interest."¹¹ The road was estimated to cost \$180 million, financed by bonds which could be retired in 21 years from receipt of tolls (Fig. 9-2).

In 1955, an Iowa Toll Road Authority was created entirely separate from the highway commission to construct and operate the road. The agency came into existence and was working with consulting engineers on road design at the same time that the national interstate program (which would not include toll

roads) was being formulated by the federal government. Iowa's portion of the interstate plan was somewhat over 700 miles, running east to west in the general vicinity of the proposed toll road and north to south in two segments, one in the vicinity of U.S. 65 and 69 and the other along a road bordering the Missouri River between Hamburg and Sioux City. This program delayed work on the toll road, and in 1957 the Authority was abolished. Federal funds for the interstate system became available in 1957, and Iowa quickly took advantage, contracting for \$13 million of construction in the same year (Fig. 9-3).



Figure 9-3

The Iowa portion of the original 41,000 mile National System of Interstate and Defense Highways totaled 711 miles.
(Courtesy: Iowa Highway Needs Study 1960-1980)

¹¹ Iowa State Highway Commission, *Report of the State Highway Commission for the Period July 1, 1954 to June 30, 1955*. Des Moines: State of Iowa, 1955, p. 6.



Inadequate roads and bridges typical of the state primary road system in the 1950s.
(Courtesy: Iowa Highway Needs Study 1960-1980)

Highway Improvements and a New Study Committee

At the close of fiscal 1955, over half of Iowa's paved roads were 25 years old or older, 3,272 miles having been built before December 1, 1931. Payment of principal and interest on county bonds, diversion of primary road funds, and the necessary construction of almost 5,000 miles of additional primary roads made impossible the modernization of 25-year-old, 18-foot pavements as fast as traffic warranted. There were three major criticisms of Iowa's roads: (1) narrowness of pavements, (2) narrowness of bridges and (3) lip curbs. Pavement widening started in the fall of 1953 on U.S. 30 between Ames and Nevada where three

feet of concrete were added to each side of the road and in 1954, U.S. 65 was widened between Mason City and Manley. A 22-foot pavement with four-foot shoulders for roads carrying fewer than 400 vehicles per day and special four-lane highways for daily traffic of 4,000 vehicles were the commission's standards for construction in 1954. At that time, approximately 3,300 miles of pavement were still in the 18-foot vintage of the 1920s and only 150 miles were wider than 22 feet. By 1959, 2,256 miles of 18-foot pavement on the primary system needed further attention.

The experiment of widening pavements met

immediate approval of the public. Governor Hoegh announced a program for widening 6,000 miles during 1955 and 1956 to be funded by an additional one cent gasoline tax. The tax was raised to six cents per gallon effective July 1, 1955. Bridges were modernized and widened, using all of the substructure and as much of the superstructure as possible. This was a pioneering activity—a challenge to the bridge design department to make new bridges from old ones. By May, 1955, 11 bridges had been placed under contract for widening the roadway from 20 to 30 feet and by December 31, 60 bridge-widening contracts were in effect. Remodeling rather than rebuilding at the original sites saved the state over \$214,000.

Motor vehicle registrations continued to climb rapidly. One hundred thousand additional automobiles and 23,000 trucks were registered between 1955 and 1960. Changing economic and demographic patterns put new strains on primary highways and urban streets, and secondary road problems remained to be solved in certain areas of the state. The number of farms had declined from 19,500 in 1955 to 18,400 in 1960, dropping the farm population from 772,000 to 755,000, but the average size of farms increased by 10 acres during the period. The impact resulted in consolidation of facilities in rural communities, including school reorganizations requiring expanded bus transportation; and the population movement to urban centers forced new programs for additional expenditures on highways and streets. The adjustments indicated a growing transition from a predominantly rural to a more urban society. Higher levels of traffic on major primary roads and mounting traffic control problems in the cities brought renewed demands for another study of the state's highway needs.

A Road Study Committee of 11 members was organized in 1958 with Senator D.C. Nolan of Iowa City as chairman. Commission engineers and specialists participated along with engineering advisory committees representing primary roads, county roads and city streets. Technical consultants included the Automotive Safety Foundation of Washington, D.C. for engineering and the Public Administrative Service of Chicago for fiscal studies. Following two years of work, the committee reported to the General Assembly in 1961.

Trends from 1960 to 1980 were projected, predicting a population gain of 400,000, all in cities, for a total of 3.1 million residents. Anticipated was a 40 percent

rise in the number of motor vehicles to 1.8 million and a 70 percent increase in travel to reach 20 billion vehicle miles annually. About 61 percent of all traffic was found to be on rural and urban primary roads, 19 percent on other urban streets and 18 percent on secondary roads. Important provisions of the report were as follows:

1. The proposed State Primary Road System would be limited by legislation to 8,400 miles, rural and urban. Within the primary road system, the highway commission should establish a rural and urban freeway system not to exceed 2,000 miles, including the Interstate System (Fig. 9-4).
2. The commission should be given administrative and fiscal responsibility for all proposed primary roads inside municipalities similar to its responsibility in rural areas, thus changing the present permissive authority to mandatory responsibility.
3. The 1,900 miles of existing state primary roads that provide mainly local, not statewide, service should be transferred to counties and municipalities. If retained as a state responsibility, they should be treated like county roads or city streets and financed separately, with no other roads or streets added.
4. Reduce the existing 34,000 miles of the Farm-to-Market System to 32,000 miles by eliminating routes not included in the Federal-Aid Secondary System. Establish 12,000 miles of the more heavily traveled Farm-to-Market System as a County Trunk System; the remainder to be termed "county feeder roads."
5. Legislation should require that the 12,000 miles of municipal streets be classified into state primary, city arterial and access streets. The commission should select primary routes totaling about 860 miles and assist and approve municipal selection of arterial streets totaling about 2,300 miles. Combined primaries and arterials should be limited to 30 percent of the total street mileage of any municipality.
6. Local governments should establish with the commission approved minimum design standards for improvement of each class of roads and streets other than local secondary roads and access streets. Other recommended legislation included repeal of laws prohibiting diagonal roads; authority for the commission to

transfer to any other jurisdiction without arbitrary restrictions, any primary road whose function has been superceded by new locations; and clarification of responsibility for state park and institutional roads.¹²

The estimated average annual cost for the 20-year "catch up" program was \$278 million; the total was about \$5.6 billion at 1959 prices. This amount would cover the construction or reconstruction of 5,600 miles of two-lane rural primary roads and about 1,500 miles of multi-lane highways as well as the paving of all county trunk roads and arterial streets. It would also provide for a dustless surface on all but 500 miles of access streets. Maintenance over the period would range from 11 percent on the primary routes to 45 percent on county local roads. Acting on the recommendations, the General Assembly made permanent previous temporary gasoline taxes and placed the receipts in the road use tax fund rather than the primary road fund. After allocating \$2.5 million as matching aid for the interstate system, \$500,000 for operation of the Secondary and Urban Departments of the commission, and \$125,000 for grade crossing work, the remainder of the funds were distributed as follows: 45 percent to the primary system, 30 percent to the secondary roads, 10 percent to the farm-to-market system and 11 percent to municipal streets.

A Brief Review of Commission Activities

The 69 percent increase in average daily traffic per mile of primary road between 1941 and 1959 was a concern to the state. Another concern related to safety and potential road damage from violations of laws on size and weight of trucks and for improper registration for loads carried. The commission had this responsibility since 1941, and in the 20-year period it had collected \$3.7 million in fines at a cost of \$2.5 million. Few of the summonses served by traffic officers were challenged by vehicle operators. Public demand for improvements was met by expenditures of \$650 million between 1946 and 1960, which on an annual basis increased from \$11 to \$120 million. Improvements on the primary road system are found in Table 9-7.

Expansion of highway work required additional departments, boards and subdivisions in the commission's organizational structure. In addition to the Office of Chief Engineer, seven departments functioned with 623 full-time employees in 1940. By 1959 there were 13 departments employing 1,826 full-

time workers. Added over the period were the Administrative, Bituminous, Right-of-Way, Secondary Road, Research and Urban Departments. A computing center was established in 1958 and a Reciprocity Board in 1959. The Board consisted of the Commissioner of Public Safety and representatives of the state highway and commerce commissions. Its purpose was to make agreements with other states or with trucking firms engaged in interstate transportation on reciprocity for motor vehicle registrations.

There was considerable progress on the elimination of dangerous railroad crossings during 1940-1960. In 1919 the primary road system of 6,400 miles had 1,063 grade crossings or an average of one for every six miles of road. In 1940 the system, including extensions within cities and towns, had 789 crossings or an average of one for each 12.1 miles, and 287 were protected by gates, watchmen or mechanical guards. A reduction of 69 occurred by 1959, leaving 720 crossings on 8,626 miles, 515 of them protected by automatic signals and reflectorized warning signs.

Table 9-7
The Primary Road System, 1940 and 1959

Type of Surface	1940 (Miles)	1959 (Miles)
Concrete and Asphalt Paving	5,208	6,258
Bituminous and Asphalt	671	1,647
Gravel and Crushed Rock	2,592	720
Built to Grade - Not Surfaced	22	---
Not Built to Grade	62	---
Totals	8,555	8,625

(Source: Iowa Highway Commission, *Annual Reports*, 1940 and 1959)

¹² Automotive Safety Foundation with cooperation of the Iowa State Highway Commission and Iowa Counties and Municipalities, *Iowa Highway Needs 1960-1980, A Plan to Pace Highway Development with Economic Growth*, A Report by the Automotive Safety Foundation to the Highway Study Committee, Washington, D.C.: Automotive Safety Foundation, November 1, 1960, pp. 6-8.

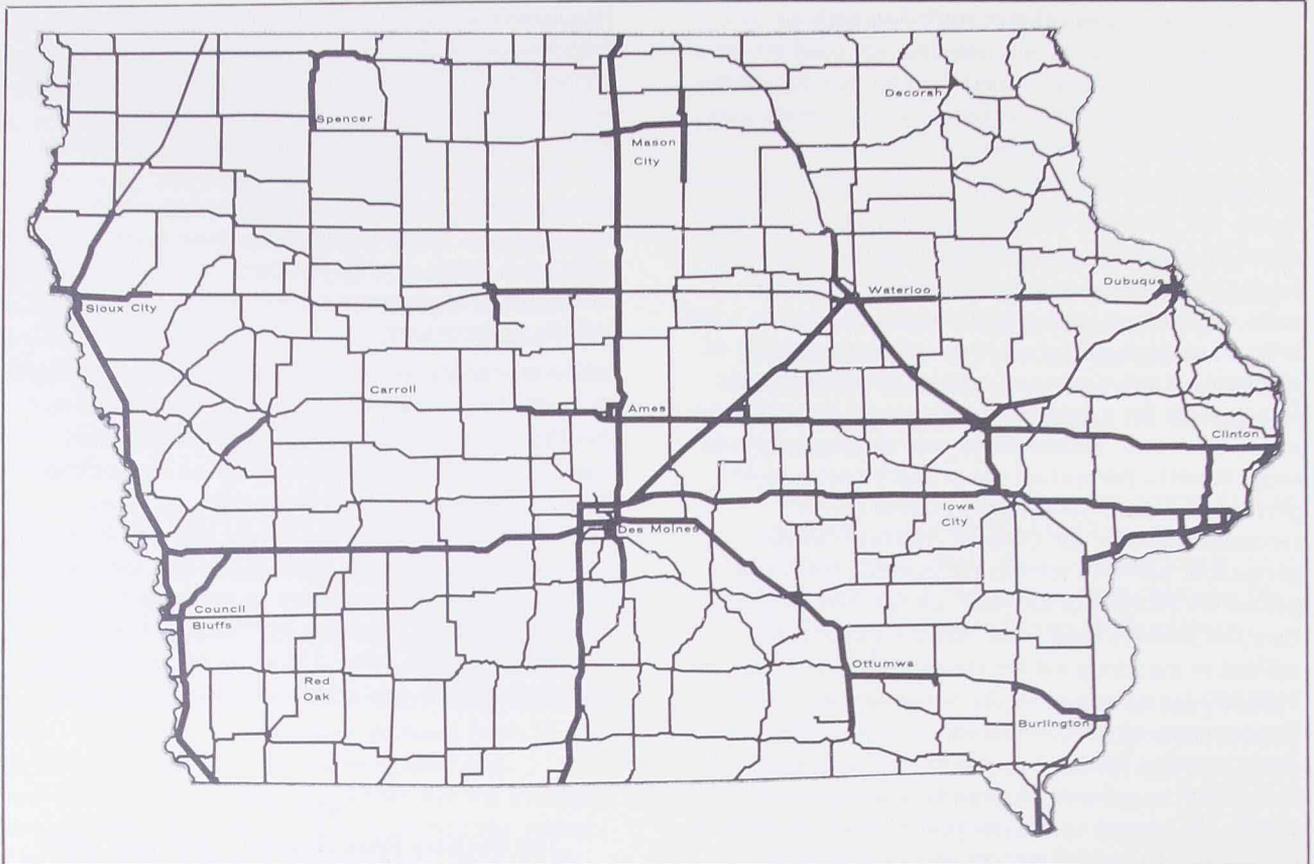


Figure 9-4
1,500 miles of multi-lane rural highways needed by 1980.
(Courtesy: Iowa Highway Needs Study 1960-1980)

The Liquid Pipeline Network

Crude oil and gasoline pipeline mileage more than doubled in the postwar years, increasing from 916 to 2,178 miles. The largest gains were in 12-inch pipes which expanded from 56 to 761 miles and eight-inch from 246 to 528 miles. Demand for the products resulted in additional lines built by the Great Lakes system. From 1946 to 1948, another line was constructed from Kansas City to Omaha and continued to new terminals at Sioux City, Sioux Falls and other northern points. Twelve-inch lines were built paralleling the original lines from Kansas City to Des Moines and Minneapolis in 1950 and in 1954. Twelve-inch and eight-inch lines were laid from Des Moines to the Mississippi River. A 12-inch line was built from Des Moines to Coralville in 1955 and extended to Middlebury, Illinois in 1959. New terminals were constructed at Bettendorf in 1957, and

an eight-inch line was extended from Grinnell to Waterloo to serve a new terminal in 1960. Mobil Pipeline facilities in Iowa were originally built in 1941 and later purchased by Mobil Oil in 1959. The products line ran through Sioux, Plymouth and Woodbury counties with pump stations at Onawa and Hawarden. At Hawarden, the line connected with the Kanek Pipeline for delivery to other locations.

Fees to the state were collected on the basis of 50 cents per diameter inch of construction and at the rate of 25 cents per diameter mile, payable in advance as an inspection fee. During 1959, a number of pipelines were subject to renewal fees of 50 cents per inch regardless of size, plus an application fee of \$25.00. The permits originally issued had been in effect for a period of 25 years, the maximum permitted under state law.

River Navigation

Mississippi River Improvements

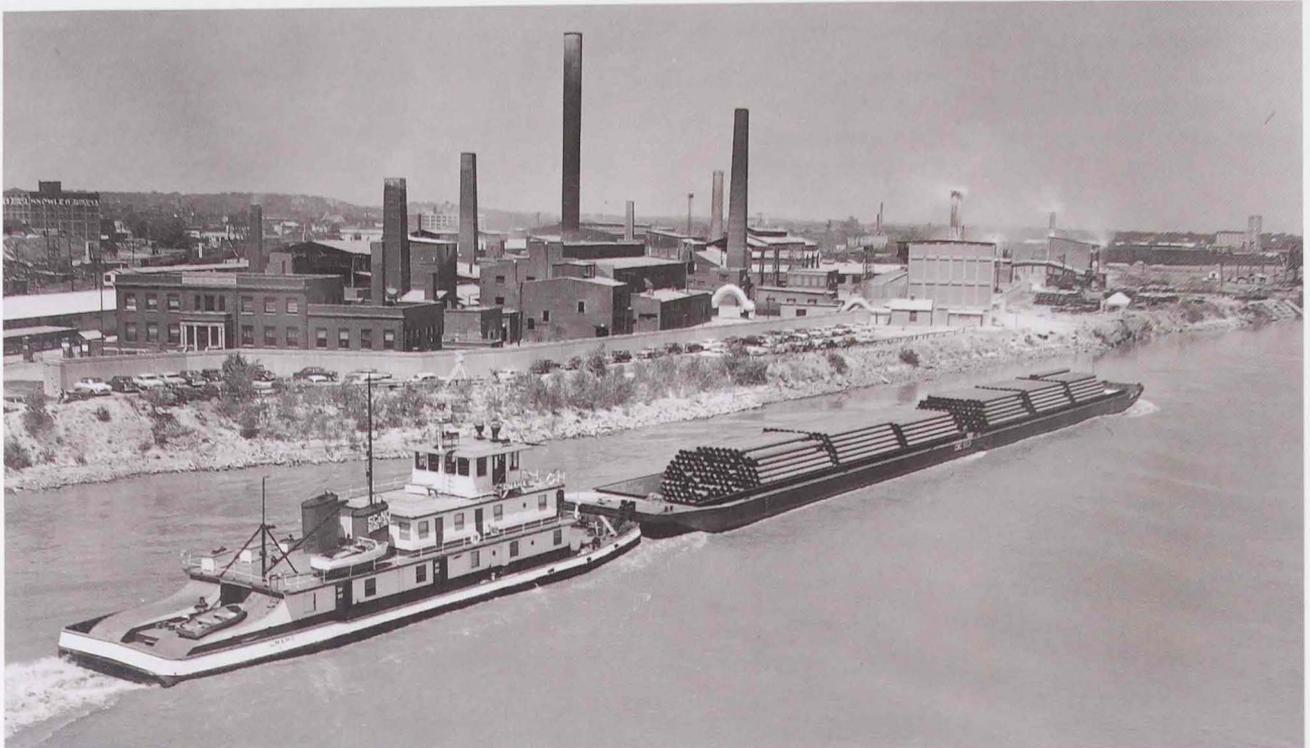
Following World War II, river commerce reached levels sufficiently high enough to get the Inland Waterways Corporation out of the transportation business. North of St. Louis, traffic passed 10 million tons by 1950, 30 million tons in 1962, and 50 million tons by 1970. More powerful and sophisticated towboats with a range of 2,000 to 9,000 horsepower pushed specialized barges in tows which could carry cargoes equivalent to those in 25-35 railroad cars.

Dams were upgraded at Minneapolis and Hastings and the lock replaced at Keokuk. The Keokuk project for a 110 x 600 foot lock was planned in the 1930s but delayed by the war. Completion of the nine-foot channel had created a bottleneck at Lock No. 19, requiring double locking of tows after long hours of

waiting. Also the drop in the river at Keokuk was 38.2 feet, the sharpest then in the channel, and for these reasons Congress authorized a 1,200 foot lock in 1945. Work was postponed by the Korean conflict and the lock was not opened until 1957. Between St. Louis and the mouth of the Missouri, a seven-mile stretch of ragged rock ledges known as Chain of Rocks impeded navigation in low water. A canal and locks were authorized for the area to be located one mile from the lower canal entrance. Because of difficulty maintaining the nine-foot channel depth below Lock No. 26 at Alton, a low-water, fixed-crest dam was built at Granite City, Illinois (No. 27), the first complete barrier across the Mississippi. The Chain of Rocks locks were opened in 1963. No further serious trouble was encountered until Lock and Dam No. 26 became a problem.



The *Lachland Macleay*, the most powerful towboat on the Upper Mississippi River, 1955.
(Courtesy: U.S. Army Corps of Engineers, Rock Island District)



Towboat *Omaha* on Missouri River, 1954.
 (Courtesy: U.S. Army Corps of Engineers, Omaha District)

The Pick-Sloan Plan on the Missouri

The flood control plan regarded as the most comprehensive made for the Missouri was proposed by Colonel Lewis A. Pick, Division Engineer. It called for a series of levees between Sioux City and the mouth, five multi-purpose dams on the main river and six on the tributaries. A study directed by William G. Sloan of the Bureau of Reclamation recommended 90 multi-purpose reservoirs and 16 hydroelectric plants. The Army Engineers filed a separate plan for a nine-foot channel from St. Louis to Sioux City. Pick's plan emphasized flood control, endorsed navigation programs and was supported by downstream interests. Upper Valley groups preferred the irrigation approach.

The conflicts in these plans were resolved through agreement by the Engineers and the Bureau in 1944 and were further supported by the President who suggested that the plans could be administered by a

Missouri Valley Authority (MVA). The project was passed by Congress in the Flood Control Act of 1944 which omitted the nine-foot channel and the MVA, preferring instead that the Corps and Bureau develop the river on a piecemeal basis. But as the debate grew over creation of an MVA, Congress authorized the nine-foot navigation channel from Sioux City to the mouth of the Missouri in the Rivers and Harbors Act of 1945. However, there was a general consensus that some coordinating agency should be established to organize and coordinate the federal and state agencies involved in river development. The result was the Missouri River Interagency Committee whose members were drawn from federal agencies and representatives of the governors of five states.

With the death of the MVA, appropriations were made on a year-by-year schedule. By 1951, \$125 million had been spent on flood control, the nine-foot channel between St. Louis and Kansas City and on

irrigation facilities. Six main river dams and eight on the tributaries had been completed by 1967, but progress on the navigational channel was slow. Severe flooding in 1951 destroyed pilings and revetments, the worse occurring between Sioux City and Omaha. It was the navigation improvements that were expected to stimulate industrial development and transportation savings, but disagreements between the Corps and Missouri Basin Survey Commission on estimates of increased traffic in 1952-1953 resulted in Congressional debates over further funding. Commercial traffic grew from 52,285 tons in 1952 to 287,000 tons in 1954. By 1962, the estimated tonnage was 2.25 million tons, most of which was on the river below Omaha since the channel above that city was only four feet deep. By 1976 an eight and one-half foot channel depth between Sioux City and the mouth increased traffic to over 3 million tons.

Benefits to Iowa from the Missouri River Basin project were expected to come from flood control, navigation, power development, improvement of municipal water supplies and sewage disposal, and incidental recreation benefits. These would apply only to the western section of the state. There were approximately 700,000 acres of bottom land in Iowa subject to flooding of which 247,000 acres were frequently flooded. The possible damage, assuming a \$30 value per acre, would amount to about \$6.5 million for each occurrence.

Improvement of navigation could affect an area along the river extending about 100 miles into Iowa, approximately one-third of the state. About 50 percent of the commercial corn and 68 percent of the commercial oats would be available for movement to markets during the navigation season. Power development would be expected to attract industries to the region, and a more even flow of water throughout the year could assist cities on the Missouri to eliminate some of their water supply and sewage disposal problems.

Iowa Officially Enters the Air Age

The third permanent regulatory agency—The Iowa Aeronautics Commission—was created in 1945. Five members were appointed, one from each of five districts into which the state was divided for the purpose of regional representation. The commissioners were Guy Richardson, chairman, from Jefferson; H. Lisk, Independence; F. C. Eighmey, Mason City; J. C. "Cy" Rapp, Shenandoah; and R. G. Starret, Spencer. Lester G. Olcutt was Director.

They served without salary and were paid \$9.00 per diem to a maximum of \$450 per year. The legislature gave the commission the responsibility of promoting aviation in Iowa by making rules and regulations if necessary. To this end a seven-fold program was instituted to include: (1) registration of certificated air agencies and airmen in the state; (2) promotion and enforcement of safety regulations initiated by the CAA; (3) promotion of aviation and air safety education; (4) assistance for communities to establish, develop and operate airports; (5) sponsorship of an air marking program; (6) annual sponsorship of the Iowa Air Tour; and (7) in conjunction with the Iowa State College, sponsorship of the Aviation Clinic.

To perform these services and provide for additional functions, registration fees were assessed on airmen, planes and air schools. The annual fee for airmen was \$1.00, for air schools \$20 for the first registration and \$10 for annual renewals, and for planes 1.5 percent of the list price on the first and second registration, following which fees were progressively reduced to the fifth where the fee was 25 percent of the original amount. Similar adjustments were made for used aircraft registered in Iowa for the first time. The fees represented the primary sources of income for the commission, except for a \$50,000 appropriation in 1945, as a support fund for the biennium ending on June 30, 1947. However, in 1949 legislation was passed which provided that all unfunded gasoline taxes be transferred into an Aeronautics Trust Fund, an action recommended by the commission in 1945. The commission was headquartered in the poultry building at the fairgrounds in Des Moines until 1949, when they moved to 6003 Fleur Drive, across from the Municipal Airport.

As of July 1, 1945, there was little or no information available concerning the number, size, location and ownership of airports in the state. The data were gathered through personal contacts, letters of inquiry and various questionnaires, and in 90 days the commission had enough information to start registration of airports, air schools and airmen. An Airport Directory issued in October, 1946 listed 185 landing areas of which 47 were municipal airports. By 1947 there were about 200, mostly unpretentious. Sioux City's army-developed field was the largest, and other major airports were at Burlington, Cedar Rapids, Des Moines, Dubuque, Iowa City, Mason City, Ottumwa and Waterloo. Generally, the airports were located two to three miles from the community served, encompassed 150 acres and had an assortment of small buildings and hangars. Only seven had

concrete runways, seven more some additional surfacing and for the remainder, pilots landed on turf. Seven CAA communication stations made twice-hourly weather broadcasts; 17 other aircraft radio stations operated in the state¹³ (Table 9-8).

The Federal Airport Act

Federal aid for airport construction became a reality in 1946, when Congress passed the Federal Airport Act. To communities willing to support airport projects, the federal government would pay half the cost with certain restrictions. No federal funds could be used for hangar construction or living quarters or to pay more than one-quarter of the purchase price of land. By the fall of 1947, 22 Iowa airports had been allocated \$806,502 of federal funds to match \$952,511 of local investment. Because local conditions varied, it was difficult to estimate the cost of a new airport

which the CAA stated could range from a minimum Class 1 for \$35,000 to a good Class 2 field for \$400,000. If surfacing materials were nearby and the chosen site required a minimum of grading and draining, many Iowa cities were expected to invest less than these amounts.

Airplanes in Use

In 1947 there was an airplane for every 1,471 persons in Iowa as contrasted to a national average of one for nearly 1,600 people. Plane registrations totaled 1,760—691 in commercial service and over 1,000 used for personal and private business flying. There were 8,950 pilot's licenses held by Iowans and one in 2,500 had a private plane at his service. By contrast, in 1938 there were 384 pilots and 184 planes which landed on 35 airfields and airports in the state (Table 9-9).

Table 9-8
Iowa Airport Facilities, 1947

Service or Facility	Number of Airports
Concrete Runways	7
Other Surfaces	7
Turf	181
Hangar Space for Transient Aircraft	94
Minor Repair	77
Major or Minor Repair	45
Restaurant	19
Rest Rooms	49
Transportation to Town	156
80 Octane Gasoline	154
91 Octane Gasoline	13

(Source: John Isham Matill, *Report From the Survey for the Development of Aviation in the State of Iowa*, M.A. Thesis (unpub.) State University of Iowa, Jan., 1948: Table IV, p. 38.)

¹³ *Iowans Flying: A Survey for the Development of Aviation in the State of Iowa*, prepared under the direction of the Department of Mechanical Engineering, State University of Iowa, Iowa City, published by the Iowa Aeronautical Commission, Des Moines, 1948: pp. 17-19. The report was discussed as a project in "Technical Journalism" by John Isham Matill, M.A. thesis, State University of Iowa, January 1948.

Table 9-9
Pilots and Aircraft in Iowa, 1938-1946
(As of December 31 of each year)

Year	Number of Pilots	Number of Civil Aircraft	Pilots per Plane
1938	384	184	2.1
1939	598	245	2.4
1940	1,261	381	3.3
1941	2,299	549	4.2
1942	3,730	572	6.5
1943	3,870	644	6.0
1944	4,100	677	6.0
1945	6,640	802	8.2
1946	8,950	1,734	5.2

(Source: ¹ Figures for 1938-1941 from *Aircraft Yearbook for 1942*. Aeronautical Chamber of Commerce, Inc., 1942: 666.

² Figures for 1942-1946 from Office of Aviation Information, Civil Aeronautics Administration.)

Fully one-third of the airplanes in use in 1956 were flown for business purposes. Two hundred Flying Farmers used planes for cattle buying, transportation of machinery and parts, or pleasure trips. Sixty-six fixed-base operators had about 250 planes for flight training, charter services, sales demonstrations, aerial photography, aircraft rental and other services. The 31 aerial spray firms used 50 planes for crop dusting, spraying, seeding and fertilizing and could cover 40 acres of cropland per hour. The state ranked ninth in the nation in the number of privately-owned business and personal airplanes and second in the number of Flying Farmers. In 1959, 78 airports had permanent runway lighting installations placing Iowa as one of the five leading states in this category.

Air Marking

Air marking was one of the earliest priorities of the commission. An air marker was the name of the town painted on top of the roof of a local building in ten-foot letters so that the name was clearly legible from an altitude of at least 3,000 feet. These air markers were highway signs in the sky and were a valuable aid to the private pilot. They contributed greatly to safety in planning flights since pilots could identify towns on routes without flying at low altitudes to read names on water towers or railroad stations. Each state, through its aeronautics department or commission, conducted a program of air marking to provide an

uninterrupted chain of "sky signposts" from state to state. At the close of 1959, 446 air markers had been placed in Iowa with an additional 151 contracted for painting.

Expansion at the Des Moines Airport

A new and complete lighting system installed in 1940 resulted in a Class 4 rating for the Des Moines Airport, the first in the nation and the highest ranking given by the federal government. During the war years, the first control tower was constructed: an observation deck with a light beam gun on top of the United Airlines hangar. Shortly after the war, with assistance of federal funds, a new northwest-southwest runway measuring 5,700 x 150 feet was built. A concrete landing ramp with a circular taxi strip was also built to serve the proposed terminal building completed in 1950. Previously, airlines and federal agencies operated out of five buildings; after, they were combined into one structure. Further improvements were made in 1950 when an addition was built and the open concourse enclosed to shelter passengers in inclement weather.

Airline Service

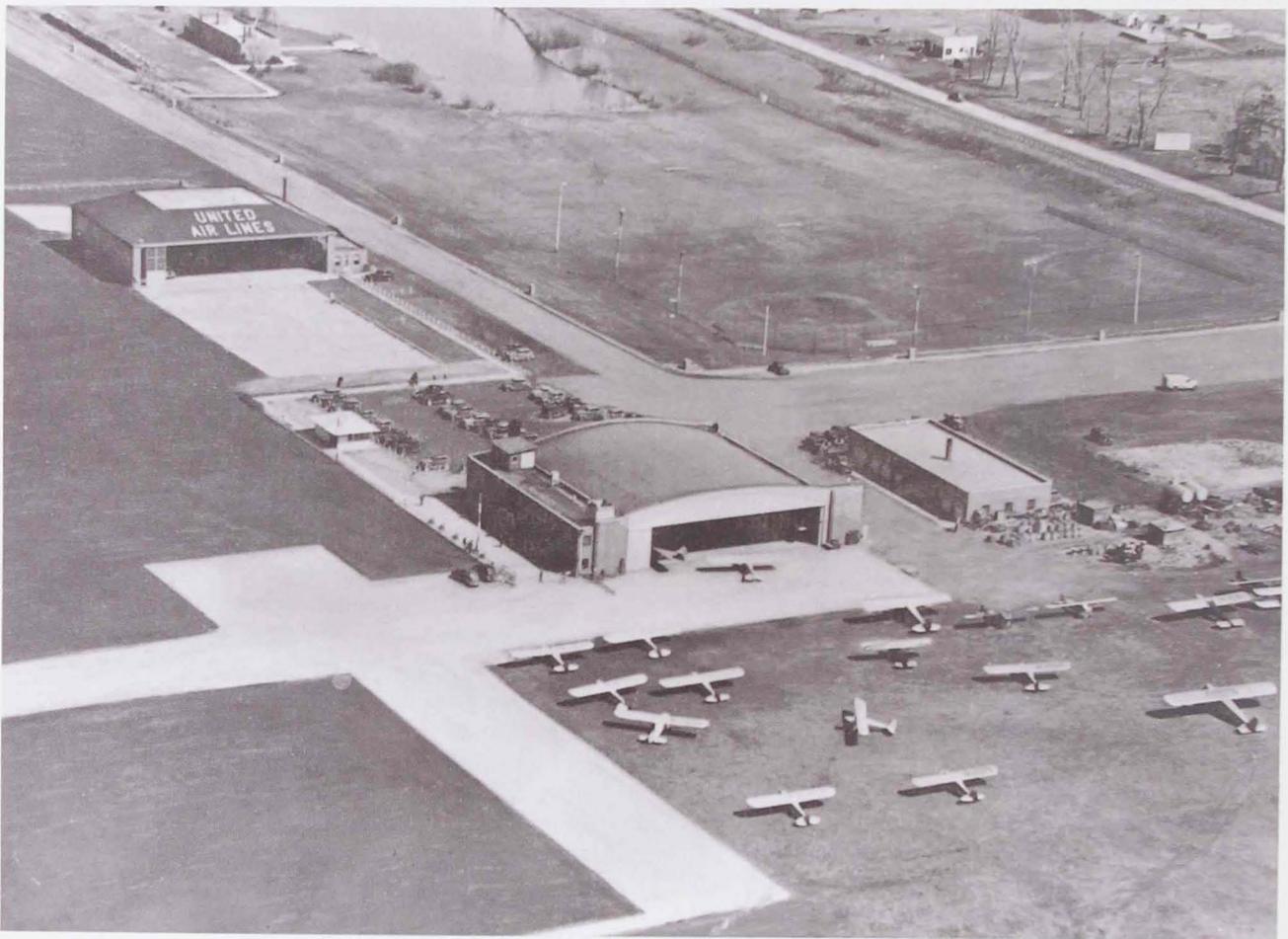
By 1960, four major and regional airlines provided service to 13 communities. United flew from Des Moines, Cedar Rapids, the Quad Cities and Omaha-Council Bluffs. Braniff Airways, which had acquired Mid-Continent and Midwest Airlines (a fixed-base operator) in 1952, served Des Moines, Waterloo and Sioux City. Ozark Airlines, organized in 1943, started service to Burlington in 1950 and expanded its routes to include Des Moines, Fort Dodge, Sioux City, Mason City, the Quad Cities, Ottumwa and Clinton. North Central was organized in 1946 and served Iowa through Sioux City. Parks Airline of St. Louis and Iowa Airplane Company of Des Moines were certified for feeder service in 1947. The former would serve eastern and central Iowa cities on two separate routes from Chicago terminating in Des Moines, and in northern Iowa on routes from Chicago terminating at Sioux City. The latter would serve western and central Iowa on routes from Council Bluffs to Minneapolis.

Ozark and North Central were also classified as "local service or feeder airlines," flying passengers into and out of "hub" airports served by the trunk carriers. An important difference between local service airlines and other commercial carriers was that most received federal subsidies for a portion of their operating costs

considered necessary to pay for the service to small communities which did not generate large passenger volumes. The aircraft were primarily DC-3s, excellent for short haul traffic with stops 50 to 100 miles apart.

Later, these airlines flew larger equipment not suitable for short hops, broadened their markets and terminated with some success the service at smaller communities. Their managements convinced the CAB that the service had to be reconstructed and proposed that regional airports be constructed between existing major airports. They also requested longer routes into major city-pairs even though these routes competed with those of the trunk lines. These actions

were being considered in the 1960s when trunk airlines were highly profitable and when longer hauls by the local service airlines might make possible a discontinuance of their subsidies. Charter flights had been made since the early days of aviation development. Initially, anyone with an airplane could fly it "for hire." However, in later years, federal regulations prescribed standards and operations for charter services. The objective was to make these flights as safe as those of scheduled airlines. Included also were regulations governing "light aircraft" (less than 12,500 pounds) which offered commuter services.



Aerial view of United Airlines hangar and municipal hangar, 1940.
(Courtesy: Des Moines Municipal Airport)



United Airlines hangar, Des Moines Municipal Airport, 1937-1950.
(Courtesy: Des Moines Municipal Airport)



Enclosed concourse, Des Moines Municipal Airport, 1959.
(Courtesy: Des Moines Municipal Airport)



The Des Moines Municipal Airport, 1947.
(Courtesy: Des Moines Municipal Airport)

The Federal Aviation Agency

In 1957 the Airways Modernization Act established the Airways Modernization Board (AMB). Although short-lived, the AMB started control of the nation's airspace by identifying separate zones for civil and military aircraft and created three 40-mile wide transcontinental airways at between 17,000 and 22,000 feet altitude. In 1958 the Federal Aviation Act went into effect, creating the Federal Aviation Agency (FAA) and cancelling the Air Commerce Act of 1926, the Civil Aeronautics Act of 1958 and the Airways Modernization Act of 1957 in one step. In January, 1959, the FAA absorbed the functions and personnel of the CAA and AMB and some of the duties of the CAB. The CAB, however, remained an independent agency responsible for the economic regulation of airlines as well as determining probable cause of aircraft accidents. The FAA was involved in matters of air safety, aircraft certification, pilot licensing, air navigation and air traffic control. Coincidental with the creation of the FAA was the entrance of the nation into the jet aircraft age, and with the guidance of the new chairman, General E. R. "Pete" Quesada, the airline industry stood poised for a new revolution "against which the transition from twin-engine to four engine aircraft seemed trivial by comparison."¹⁴

Summary

Railroads serving Iowa shared the wartime prosperity of the industry and generally maintained relatively high levels of traffic during the early postwar years. In the 1950s, however, the rate of increase in revenue traffic slowed considerably. Few electric interurbans survived as such. The majority were reclassified as Class II railways, integrated into Class I railroad systems or ceased operations. In contrast, motor carriers showed substantial gains in revenue traffic between 1940 and 1959 and began to take a prominent position in the movement of freight and liquid products. Work on the state's highways during the war period was virtually at a standstill with little construction and maintenance reduced to minimum levels.

The rising trends in motor vehicle operations, coupled with the inability of highways to handle increased traffic, led to the creation of two highway study

¹⁴ R.E.G. Davies, *Airlines of the United States Since 1914*, London: Putnam, 1972, p. 357.

committees for evaluation and projection of the state's highway needs and necessary financing. Recommendations of both committees received widespread support of the public and the legislature who cooperated by raising gasoline taxes and making appropriations to match federal-aid funds. Toll road possibilities were examined but abandoned when the national system of interstate highways was formulated by the federal government. The increasing demand for petroleum products for highway and home heating usage more than doubled the liquid pipeline mileage, most of which was built by the Great Lakes Pipeline System.

Following the war, commercial traffic on the Mississippi and Missouri Rivers expanded rapidly through introduction of more powerful towboats and specialized barges. Dams at Minneapolis and Hastings were upgraded and a new lock built at Keokuk. The Pick-Sloan project on the Missouri resulted in deeper channels, irrigation facilities and flood control measures expected to benefit the western one-third of the state.

The "air age" officially arrived in Iowa with the formation of a full-time State Aeronautical Commission in 1945, charged by law to encourage, foster and assist in the general development of aviation. Widespread use of airplanes for private and business purposes, by Flying Farmers and fixed-base operators, placed the state high in national rankings. Four trunk and regional carriers served 13 cities and towns, three of which had flights into Des Moines, requiring expansion of its airport. Two additional feeder airlines were scheduled to begin service in the 1950s.

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