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United States Department of the Interior
National Park Service

National Register of Historic Places Multiple Property Documentation Form

This form is for use in documenting multiple property groups relating to one or several historic contexts. See instructions in *Guidelines for Completing National Register Forms* (National Register Bulletin 16). Complete each item by marking "x" in the appropriate box or by entering the requested information. For additional space use continuation sheets (Form 10-900-a). Type all entries.

A. Name of Multiple Property Listing

The Advent and Development of Railroads in Iowa: 1855-1940

B. Associated Historic Contexts

Historical Patterns of Railroad Organization and Development in Iowa

C. Geographical Data

The State of Iowa

☐ See continuation sheet

D. Certification

As the designated authority under the National Historic Preservation Act of 1966, as amended, I hereby certify that this documentation form meets the National Register documentation standards and sets forth requirements for the listing of related properties consistent with the National Register criteria. This submission meets the procedural and professional requirements set forth in 36 CFR Part 60 and the Secretary of the Interior's Standards for Planning and Evaluation.

Signature of certifying official — Date: 7/18/90

Bureau of Historic Preservation
State or Federal agency and bureau

I, hereby, certify that this multiple property documentation form has been approved by the National Register as a basis for evaluating related properties for listing in the National Register.

Signature of the Keeper of the National Register — Date

E. Statement of Historic Contexts

Discuss each historic context listed in Section B.

See Continuation Sheets

[X] See continuation sheet

E. HISTORICAL PATTERNS OF RAILROAD ORGANIZATION AND DEVELOPMENT IN IOWA

I. PERIODS OF RAILROAD DEVELOPMENT: 1855-1940

a. Early Railroad History: 1855-c. 1889

Born in the midst of an industrial and transportation revolution, Iowa was profoundly affected by the development of the railroad. Iowa's status as a stable and prosperous agricultural state with an ethnically diverse population can be largely attributed to the growth of railroads in the Upper Mississippi River Valley. Located between two significant waterways in the nation's midsection, and blessed with a relatively smooth, rolling terrain, Iowa was well-suited to the construction of railroads.

By 1870 a network of rails funneled immigrants and other opportunists through the state to Council Bluffs and Sioux City, major gateways to the West. This network also facilitated the movement of livestock, agricultural produce, raw materials and manufactured goods to, from, and within Iowa, and secured her reputation as a successful agrarian state for the next half-century. Despite the failures and abandonments of railroads following the Great Depression and World War Two, Iowa continues to serve as a major artery for the transportation of people and freight by rail.

Between the defeat of the Sauk and Fox Indians in 1832, when the territory was opened for settlement, and the arrival of the railroad in 1855, there were two methods of travel in Iowa other than by foot. One could travel on horseback or by horsedrawn vehicle, or one could travel by boat, usually a steamboat. The first method was arduous and slow. Early roads, where they existed, were nearly impassable because of mud when wet, or cavernous holes and ruts when dry.

The second method was easier and faster, but had its own drawbacks. Steamboats were only useful in navigable waterways, and although Iowa was well-situated between two such waterways, steamboat traffic was confined to towns along the Mississippi and Missouri Rivers, and the lower Des Moines and

Cedar Rivers. Steamboat travellers also incurred a certain amount of risk, as the boats were alarmingly prone to accidents. In addition, despite the fact that steamboat operators offered lower fares and freight rates, passengers and shippers still had to allow a relatively long period of time for travel. Nevertheless, between the late-1830s and the early-1850s the steamboat was the best means of transportation to and from the new territory.

Beginning in the late-1840s, the stream of people flowing westward became a tide. Both European immigrants fleeing economic and political strife and eastern Americans searching for new opportunities left their homes in response to the news of gold in the Far West and fertile soil in the Midwest. Families seeking new homesteads continued to travel by steamboat, in spite of boiler explosions, river snags and the unsanitary conditions of life on the open deck.

Steamboats enabled farmers along the water routes to export their surplus produce. Farmers without access to these water routes could not afford to ship surpluses because hauling freight by horse and wagon was expensive and time-consuming. This, and the settlers' general desire for improved lines of communication between communities, led some Iowans to advocate the construction of plank roads. They thought roads surfaced with wood planks or timbers would alleviate the chronic problems of mud and ruts, and according to Leonard F. Ralston, plank roads actually received more attention in Iowa in the 1840s than railroads did. There was relatively little enthusiasm for railroads in Iowa compared to other states because plank roads were more feasible and practical at that time.[1] However, these roads probably failed to reduce travelling time significantly since the wood rotted and broke, and without regular maintenance the surface became rough.

Given these circumstances it is no wonder that many Iowans hailed the coming of the railroads as a cure for their transportation illnesses. As proven in the states directly east of Iowa, railroads were faster and could provide settlers with direct access to the interior of a state because they were not limited to the winding course of a river. They were also safer than steamboats. Deaths in railroad accidents in 1853 averaged less than two per accident, "while the death toll for the steamboat was nearly a dozen per accident."[2] In addition, pioneers left the civilization of the East but they had no intention of severing their ties with it. Railroads brought carloads of the prized accoutrements, such as the most advanced farm tools and machinery, of the civilization whence they came.

Eastern industrialists touted the value of the rails for similar reasons. Improved transportation continued to open eastern markets to western farmers, who began to produce surplus crops for shipment to these markets. With extra money from such sales, farm families could now afford to buy the increasing number and kinds of manufactured goods produced in the East. Through steamboats and canals, farmers were given new markets for their produce, and eastern industries were given new, internal markets for their wares. The rise of commercial agriculture in the West spurred the

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1 Ralston, Leonard F., "Railroads and the Government of Iowa, 1850-1872," (Ph.D. dissertation, Iowa State University, 1960), p. 23.

2 Stover, John F., Iron Road to the West (New York: Columbia University Press, 1978), p. 182.

development of industry and technology in the East, and vice verse.[3] Better transportation helped reduce the price of raw materials, which led to an increase in industrial production. This meant increased profit for factory owners, who could then invest or re-invest in transportation. Far-sighted businessmen of the late-1840s and early-1850s realized that the railroad would pick up where the steamboat and canal left off.

Toward a Transcontinental Railroad

The roots of the railroad industry in Iowa actually began as early as 1836, when John Plumbe, a Dubuque citizen, called for the construction of an "Oregon Railroad" from the Great Lakes to the Pacific Ocean via Dubuque.[4] Plumbe preceded Asa Whitney, a member of Congress who also proposed the idea of a transcontinental railroad, by nine years.[5] People liked the Whitney (or Plumbe) idea because it would reduce the cost of goods imported from the Orient. A series of regional conventions to debate the best location for a Pacific road occurred in the late-1840s and early-1850s, but regional rivalries made it impossible for the conventions to select one route.[6] Several routes had been proposed, but it "was not feasible to build more than one transcontinental road at this time because of the tremendous cost of construction."[7]

Between 1836 and 1850 several Iowa politicians, especially those in eastern Iowa, championed the railway cause and a few enthusiasts even chartered railroad companies. By the time Iowa City hosted a Pacific railroad convention in 1851, several eastern Iowa towns were struck with "Railroad Fever." Building a railroad however, is a capital- and labor-intensive procedure, and prior to 1850 Iowans were poor in both categories. "Enthusiasm was practically the only thing that the first western railroads obtained locally."[8] Most promoters realized that to make railroads in the state a reality government assistance of some kind was necessary.

Financial assistance from the state government was unlikely. Provisions in the State Constitution of 1846 prohibiting the state from becoming a stockholder in any corporation were designed to protect Iowa "from the financial chaos that had fallen upon other states when the clamor for internal improvements resulted in extensions of state credit beyond the economic resources of their

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3 Divine, Robert A., *et. al.*, America, Past and Present, Volume I: to 1877 (Glenview: Scott, Foresman and Co., 1984) p. 254.

4 Hofsommer, Donovan L., "A Chronology of Iowa Railroads," Railway and Locomotive Historical Society Bulletin, Spring 1975, p. 71.

5 *Ibid.*

6 Stover, Iron Road to the West, p. 107.

7 *Ibid.*, p. 109.

8 Riegel, The Story of the Western Railroads, p. 234.

populations."[9] These constitutional restraints, however, failed to deter the State Assembly from petitioning the federal government to aid railroad construction, and in 1848 "'memorials and joint resolutions were adopted praying Congress to grant lands to...railroads.'"[10] All the same, railroads in Iowa received no federal land grants until 1856. Capital and labor were more readily available in the East, and in spite of the state's wealth in land Iowans had to wait until eastern railway companies or railways financed with eastern money moved farther west. Fortunately they waited only a short time.

The evolution of Chicago into the major financial, industrial and transportation center of the Midwest directly affected the development of railroad in Iowa. At the southern end of the Great Lakes and close to the Mississippi River, "Chicago became a natural transfer point for land and lake shipping" with the ability to "capture the bulk of the trade of Illinois, eastern Iowa, and even northern Missouri."[11] Stephen A. Douglas recognized this as early as 1845 when he advised Asa Whitney that Chicago was a better eastern terminus for a Pacific road than Milwaukee, Whitney's own choice.[12] Even before rails joined Chicago to New York in 1853, the next step toward a transcontinental railroad (to link Chicago with the Mississippi River) was already in the planning phase.

In 1850 the Illinois Central Railroad received the first federal land grant, and in 1851 both the Illinois Central and the Chicago and Rock Island Railroad were chartered to lay tracks from the Mississippi to Chicago. The Rock Island won the race to the Mississippi River in early 1854 when it completed its track to Rock Island, directly across from Davenport, thereby becoming the first railroad to connect the big river to the Atlantic Ocean. The following year, the Chicago, Burlington and Quincy Railroad arrived in East Burlington, and the Illinois Central reached Dunleith, across the river from Dubuque.[13]

While these three Chicago-based railroads approached the Mississippi River, Iowans prepared to launch their own lines. Indeed, when the westward movement of the Chicago-based companies appeared imminent railroad boosterism in Iowa overtook plank road boosterism.[14] A group of businessmen in Burlington chartered the Burlington and Missouri River Railroad in 1852, and in the next year similar groups in Davenport, Clinton and Dubuque organized the Mississippi and Missouri Railroad, the Chicago, Iowa and Nebraska Railroad, and the Dubuque and Pacific Railroad respectively.

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9 Beard, Earl S., "Local Aid to Railroads in Iowa," Iowa Journal of History 50 (January 1952): 2.

10 Agnew, Dwight A., "Iowa's First Railroad," Iowa Journal of History 48 (January 1950): 2.

11 Stover, Iron Road to the West, p. 184.

12 *Ibid.*, p. 106.

13 Hofsommer, p. 71-72.

14 Ralston, "Railroads and the Government of Iowa 1850-1872," p. 23-24.

As their names indicated all four lines set courses for the Missouri River, reflecting the transition of trade routes from a river-based North-South orientation to a rail-based East-West pattern. The fledgling railroads wanted to avoid competition against established North-South steamboat traffic, and they coveted connections with Chicago-bound railroads. By the end of 1855 each of these lines had begun construction, (the MM's tracks extended all the way to Iowa City) and several shortline companies had also drawn up charters. [Note: For readers' benefit, a table of railroad acronyms appears on page 97.]

Railways and Financial Aid

How is it that these Iowa roads were able to build in 1855 yet could not afford to only a few years before? The Mississippi & Missouri was created as an affiliated or a subsidiary line by the directors of the Chicago & Rock Island, who saw the advantages of controlling the western connection to their own line. This seemed natural since several of the CRI directors were Davenport business men. The MMhad the benefit of a pre-existing corporate framework with the leadership of experienced Eastern railroad men, yet it still needed capital to lay tracks in Iowa. The Dubuque & Pacific, the Chicago Iowa & Nebraska, and the Burlington & Missouri River, on the other hand, were independent or semi-independent roads and if anything, needed more help although they were later backed by the Illinois Central, the Chicago and North Western and the Chicago Burlington & Quincy respectively.

County and municipal assistance was the answer. The MM solicited aid from the state government in Des Moines repeatedly in the early-1850s, but came away unsuccessful each time. The State might petition Congress for aid to railroads, but was reluctant to provide any itself. County governments, especially in eastern Iowa, were avid proponents of railroads, and while the Constitution prohibited the state from buying railroad stock it said nothing about local governments' right to do so.

Most counties desired rail service and wealthy residents often donated funds and/or land toward construction of a line. It was not uncommon for towns to set aside lots or blocks for railroad use, and one can still see "Railroad Addition" marked on some town maps today. To supplement private gifts towns and counties also "voted bonds bearing an attractive rate of interest and exchanged them for the capital stock of a railroad. The railroad was then expected to obtain construction funds by selling the securities to eastern investors." The bonds were usually redeemable in twenty years and carried interest of seven to ten percent.[15] In 1855 the legislature allowed local sale of bonds, but this was *ex post facto*, as local governments had been practicing it for nearly five years.[16] At the time the law was passed eastern Iowa counties had enough residents to raise the money to "get a railroad," and newly-arrived Irish, German and Scandinavian immigrants supplied the labor, but in 1856 only sixty-eight miles of track had been laid, compared with the thousands projected on paper.[17]

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15 Beard, Earl S., "Local Aid to Railroads in Iowa," Iowa Journal of History 50 (January 1952): 2-4.

16 Dey, Peter A., "Railroad Legislation in Iowa" Iowa Historical Record 9 (October 1893): 545.

17 Beard, "Local Aid to Railroads in Iowa," p. 9.

There were several reasons for the delay. One was the unavailability of materials, except for wood. The iron industry in the United States was centered in the Northeast, so rails from New England or imported from England had to be shipped to the Gulf of Mexico, and then steamed up the Mississippi River.[18] The growth of the railroad industry sparked the domestic iron (and later steel) industry, but in the mid-1850s rails were difficult to obtain and therefore expensive. A second reason for delay was sickness among the construction crews. Cholera, "fever and ague" decimated work crews along the Mississippi River valley in the mid-1850s.[19]

Sometimes corruption halted construction. The Lyons and Iowa Central Railroad failed when its chief executive, who was already wanted on criminal charges in New York, "absconded" with the company's funds, and a sub-contractor for the Northern Iowa Railroad did the same.[20] In general, the great expense of building a railroad slowed progress, despite incredible sums raised by Iowa counties and towns.

Government aid finally came in 1856 when Congress granted over two million acres of federal land to Iowa for the construction of railroads. The Assembly eagerly approved the grants, which were given to the Burlington & Missouri River, the Mississippi & Missouri, the Chicago Iowa & Nebraska (the old Lyons and Iowa Central) and the Dubuque and Pacific.[21] The Land Grant of 1856 bore a strong resemblance to the 1850 Illinois Central grant, which "provided for a 200-foot right-of-way through public lands, plus six alternate sections of land for each completed mile of the route."[22]

The grants also stipulated that where lands had already been sold by the government, other sections might be obtained within fifteen miles of the proposed line. Land unused by the railroad remaining in the six-mile area was to be sold at $2.50 per acre, double the price of other government land. Railroads receiving the grants were required to transport troops and government goods free of charge. Iowa tacked on its own provisions to the grants: 1) the companies must determine their routes and submit maps to the State within a year; 2) they must complete seventy-five miles of track by 1860 and an additional thirty miles each year for five years; and 3) the State would reclaim the lands if the entire line was not finished by 1866.[23]

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18 Riegel, Robert Edgar, The Story of the Western Railroads, From 1852-Through the Reign of the Giants, (Lincoln: University of Nebraska Press, 1964, reprint), p. 7.

19 Petersen, William J., "The Illinois Central Comes," Palimpsest 14 (October 1933): 373.

20 Beard, "Local Aid to Railroads in Iowa," p. 9.

21 Dey, p. 546.

22 Stover, p. 101.

23 Agnew, Dwight L., "Mississippi and Missouri Railroad," Iowa Journal of History 51 (April 1953): 213.

According to Earl S. Beard, railway construction failed to accelerate due to continuing financial difficulties, even after the 1856 land grants. Discontented Iowans wondered why rail companies needed so much money in bonds when they had just been given free land, and as a result communities voted fewer bonds. The townspeople did not know that although the railroads received the land on which to build a line, they still had to surmount the high construction cost itself, which required cash.

The reason the federal government gave the railways these huge tracts of land was so that they could sell the unused sections of land to obtain cash. The companies created their own Land Departments for this purpose. Even so, railroads often had difficulty selling the land because most settlers could not pay the higher prices in cash or because there were not yet enough people in the area to purchase it. The BMR had the best land sales record in the state but had to sell its land by giving credit for purchases.[24] (Sale of land by railroad companies will be further discussed later.)

Neither did Iowans know that to eastern investors their bonds were really only worth sixty percent of their face value in cash, after expenses.[25] When the Panic of 1857 struck the nation there was even less capital to be found, and in 1857 trackage in the state increased by just 7 miles, compared to the 56 miles laid in 1856.[26] Track-laying accelerated steadily in 1858, '59 and '60, but the Civil War dampened construction again.

From the 1850s through the 1870s railroads used at least three techniques to garner local financial support. Railroad representatives frequently told town councils that if they wanted to become a stop on a line, especially a major line, they must raise a certain amount of money. The figures varied, but could be as high as $250,000. Residents knew that having a depot meant increased revenues, as farmers would ship stock and produce and buy supplies from their town. Towns without rail service declined and perhaps died.[27] County seats had even more to lose without rail service. They had the "commercial advantage of serving people who went there to pay taxes or transact other official business," and county seats with no railroad were less likely to retain that privilege.[28]

Rail companies also employed a more subtle method to gain financial support by preying upon existing town rivalries. Sometimes a company's representative hinted that unless the required sum was raised the railroad would build to a neighboring community, and other times no hint was necessary. In 1855 Iowa City citizens offered the Mississippi & Missouri a $50,000 bonus if the company completed a

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24 Beard, "Local Aid to Railroads in Iowa," p.13-15.

25 *Ibid.*, p. 9-15.

26 Bryant, Ray L., "Miles of Railroad, by Year, 1850-1972," A Preliminary Guide to Iowa Railroads 1850-1972 (1984).

27 Beard, "Local Aid to Railroads in Iowa," p. 28-29.

28 *Ibid.*, p. 29.

track to their depot by January 1, 1856 (which the MM barely accomplished in time). Iowa City was afraid that the Davenport-Muscatine route would become the M & M's main line to the west.[29]

A variation on this theme was to wait "until all interested communities in the...area had...given [their] offers" before the railroad announced its route.[30] The route was determined by the towns offering the largest donations or voting the highest bonds. The Cedar Rapids and Missouri River Railroad selected Council Bluffs instead of Sioux City as its western terminus in this fashion.[31]

To insure that anticipated railroad construction actually occurred, a few towns and counties placed restrictions on the funds made available to rail companies. The Black Hawk County plan stated that the Dubuque and Pacific would build tracks and depots at certain places in the county, and the County would give the railroad "portions of a $200,000 bond issue at stated periods as work progressed. [This way] neither party was required to commit itself fully until the other had demonstrated its ability and willingness to carry out the contract."[32] Pacific City in Mills County donated 300 lots to the Council Bluffs and St. Joseph on the condition that it built no other station in the county for ten years. In the 1860s and '70s it was popular for towns to entice railroads by voting tax levies, and several towns specified that they were to be paid in installments.[33]

Panic of 1857

In 1857 when the state's total railroad mileage stood at only 130 miles, and eastern Iowans were beginning to campaign heavily for more companies and mileage, the railroad industry was dealt a setback. Following bank failures in late 1857 and early 1858, a Panic seized the country. Both the industrial Northeast and the Midwest wheat belt--of which Iowa was on the western edge--were hard hit. Richard Overton writes that due to the economic downturn "[t]raffic from the Missouri and Iowa connections melted away" and strained the Chicago Burlington and Quincy, which already had low coffers.[34] Financing for new railroads in Iowa subsequently dried up and supplies of iron rails and equipment from the East may have also dropped off. Hardtimes continued into 1859, and Overton states that it was not until 1860-61 that passenger business (on the CBQ, at least) improved.[35]

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29 Stover, p. 154.

30 Beard, "Local Aid to Railroads in Iowa," p. 29.

31 *Ibid.*

32 Beard, "Local Aid to Railroads in Iowa," p. 6.

33 *Ibid.*, p. 30

34 Overton, Richard C., Burlington Route, A History of the Burlington Lines, (New York: Alfred A. Knopf, 1965), p. 46-47.

35 *Ibid.*, p. 47.

The construction record for Iowa railroads, however, shows a confusing pattern. In all of 1857, only 7 miles were completed, but in 1858, the midst of the Panic, 97 miles were added to the State's total. In 1859 railway construction amounted to just 28 miles, while an average of 70 miles of new track was laid in 1860 and 1861. Perhaps the unusually high mileage built in 1858 was originally planned in 1857, before the brunt of the Panic was felt, but for some reason was not actually constructed until the following year. The low figure for 1859 probably illustrates the effects of the Panic. The higher numbers for 1860 and 1861 may indicate that the economy had recovered enough to justify new construction. Overall, the impact of the Panic of 1857 on Iowa railroads seems to have been relatively small, if the dearth of information on the subject is any indication.

The Civil War

When the Civil War opened in 1861, Iowa and the other states in the Upper Midwest allied themselves with Lincoln and the Union forces. This was due in part to the system of East-West railways tying the region to the Northeast, compared to the scanty rail lines between the Upper Midwest and the South. Interruption of traffic on the Mississippi and Ohio Rivers forced the states to rely almost completely on railroad transportation to and from the East.[36] Ironically, by closing the Gulf Route the Confederacy reinforced Midwestern ties to the Union, instead of loosening them.

It is widely understood that the superior communication and transportation systems of the North and its strong industrial base enabled it to overpower the South. To this end, union armies commandeered railroads (with the permission of the owners) to ship troops, weapons and foodstuffs to supply depots and the battlezone. Prior to the Civil War railroads were of any gauge from 3' to 6', and hastily built. (High construction costs had often resulted in poor construction.) So as to improve movement, the armies reconstructed seized lines; they adopted standard gauge (4' 8 1/2"), installed new bridges, and laid new rails.[37] Perhaps most importantly, they refined track construction and maintenance procedures which increased the speed and efficiency of railroad expansion westward after the war.

It is doubtful that any Iowa railroads were commandeered and reconstructed by Union armies, because that was unnecessary. Iowa was too far removed from the field of battle. According to R. E. Riegel, the State's conservative attitude regarding financial aid to railroads and Iowa's fortunate geographic features resulted in a "railroad system...that was better constructed and more efficiently operated than elsewhere," but despite this Iowa's lines were still incomplete and ineffective for army use during the war.[38]

A surprising amount of construction took place in the state during the war years. There was no actual fighting to deter construction and the Chicago-based companies were bent on reaching the Missouri

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36 Riegel, The Story of the Western Railroads, p. 66.

37 Dixon, Frank Haigh and Parmelee, Julius H., War Administration of the Railways in the United States and Great Britain (New York: Oxford University Press, 1918), p. 9.

38 Riegel, The Story of the Western Railroads, p. 27, 66.

River.[39] According to Ray L. Bryant, the rate of railroad development in Iowa approximately doubled during the four years of conflict. From the beginning of 1861 to the end of 1865 statewide trackage grew by an average of 103 miles per year, compared to the 55 miles per year laid from1855 through 1860.[40]

The most far-reaching impact of the Civil War on railroad development in the state was the resumption of the push for a transcontinental railroad. In 1862 Congress passed the Pacific Railroad Act, which created the Union Pacific Railroad and determined the path it would take. The road was slated to cut through the Rockies at South Pass, Wyoming, essentially following the Mormon Trail. Instead of deciding whether St. Louis or Chicago would become the eastern terminus, Congress planned a trunk route that would be joined in central Nebraska by five branches originating at the Missouri River. Kansas City, Leavenworth, St. Joseph and Sioux City were to host branches, as was another point on Iowa's western border that President Lincoln would select. The line to that unnamed point on the Missouri River was to be a continuation of the main line, and Iowa stood to gain greatly from the traffic that rolled out to meet the Union Pacific. (Perhaps the planning of the transcontinental route in 1862 was the reason for the laying of a phenomenal 233 miles of rail in Iowa that same year.)

In 1863, Lincoln chose the town of Omaha, Nebraska, as the Union Pacific connection. Earlier that year Lincoln called Colonel Grenville Dodge, a leading Council Bluffs citizen, to an interview before making the decision. Between 1853 and 1856 Dodge had helped survey a line from Iowa City to Council Bluffs, a bustling out-fitting center along the Mormon Trail, for the MM under the auspices of the Rock Island. After the interview he claimed to have influenced the President to select Omaha.[41] (Dodge would later achieve stature as the Union Pacific's chief engineer on its trek west.)

Late in 1863 the Union Pacific began construction at Omaha. Rail service was extended to Council Bluffs by UP-operated ferry boats.[42] The UP was impatient to connect itself to railways from the East, and it encouraged the four major lines in Iowa to "get up steam." Without a trans-Iowa connection, the UP was dependent on steamboats for carrying its building materials. The Missouri is a fickle river when it is not frozen, and the UP directorate wanted the consistent, year-round supply-lines that railroads from Chicago and St. Louis could provide.[43]

Council Bluffs' status as a major railroad gateway to the West was assured when the UP began construction at Omaha. Only one of the four major roads in Iowa, the Dubuque and Pacific, did NOT

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39 *Ibid.*, p. 68.

40 Bryant, "Iowa Rail Mileage, 1850-1972."

41 *Ibid.*, p. 70-71.

42 Hofsommer, p. 73.

43 Halma, Sidney, "Railroad Promotion and Economic Expansion at Council Bluffs, Iowa, 1857-1869," Annals of Iowa (3) 42 (January 1947): 386.

select Council Bluffs as its western terminus. The DP changed its name in the mid-1860s to the Dubuque and Sioux City. Sioux City was a more realistic goal. In 1867 the Cedar Rapids and Missouri River (successor of the Lyons and Iowa Central, and later absorbed by the Chicago and North Western) was the first to link the Mississippi and Missouri Rivers, the first to couple Chicago and Council Bluffs.

In that year Council Bluffs was also joined to St. Louis, via the Council Bluffs and St. Joseph Rail Road. Two years later (1869) the Rock Island and the CBQ each finally steamed into Council Bluffs, the same year that the transcontinental line was completed. Once the Mississippi-Missouri River leg was secured the race to the West resumed in Nebraska and Kansas, and remaining railroad development in Iowa consisted primarily of joining the east-west roads with north-south and diagonal roads, and linking the towns to the cities.

Chalking Up the Miles

Following the Civil War railway construction across the state lurched even further forward [see Table 1]. In 1866, the year in which the first locomotive steamed into Des Moines, 213 miles of rails were laid, pushing the state over the 1,000-mile mark. In the next three years miles of rail laid per year averaged 200. With the addition of an astonishing 633 miles in just 1869, over 2,000 miles of iron and steel rails traversed the state in 1870,[44] forming a network of shortlines connecting towns and feeding into the four, east-west trunk lines. The network grew denser as Iowa then entered a phase of rapid growth.

There are two basic reasons for the tremendous growth of post-Civil War railroads. First, thousands of returning soldiers eliminated the wartime shortage of labor. Depression in the industrial Northeast immediately following the war prompted many discharged soldiers to seek employment in the West. Railroads then did not compete with eastern mills and factories for labor.[45] (Labor in the East would also be replaced or displaced in the early 1870s by the next wave of European immigrants.)

Secondly, the success of railroad use by the North during the war emphasized the commercial and military advantages that railroads furnished. Investors returned their money to the railroad "cause," and the march of rails resumed. The railroads' huge demand for steel, iron, and machinery helped rekindle eastern industries, which in turn began supplying railroads (and consumers) with more and better goods.[46]

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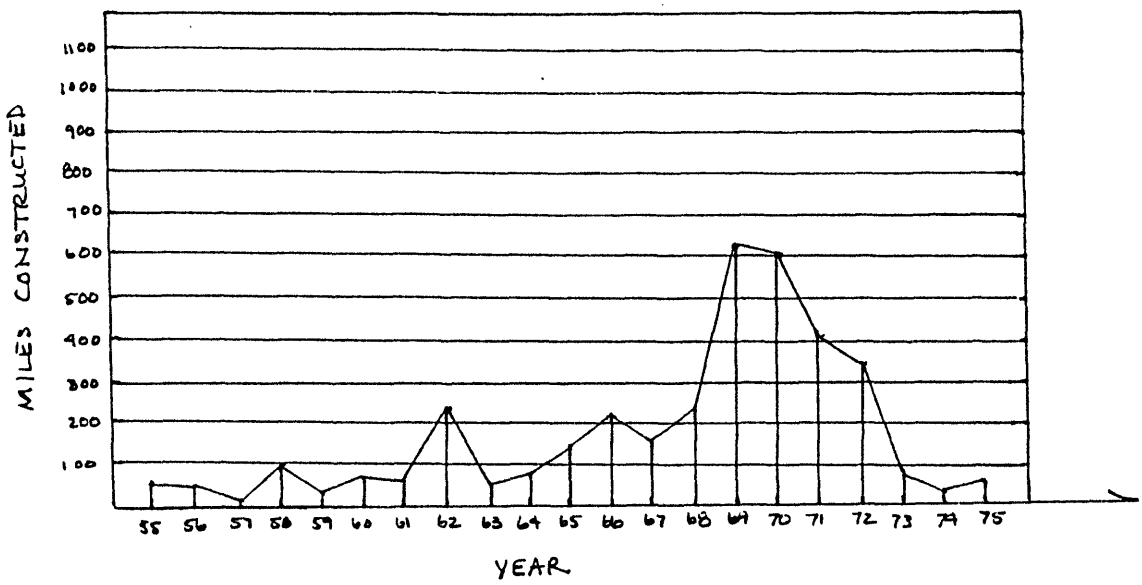
44 Bryant, "Iowa Rail Mileage, 1850-1972."

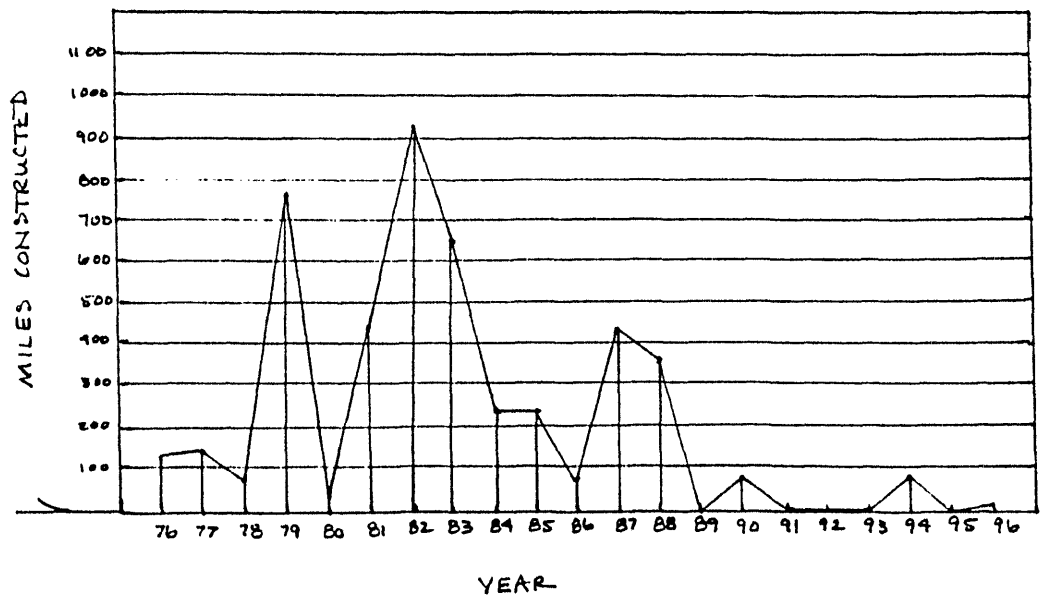
45 Riegel, The Story of the Western Railroads, p. 82.

46 *Ibid.*

Table I
Railroad Mileage Construction in Iowa Per Year 1855-1896
(Main Line Mileage for Steam Railroads)

Source: Statistical data compiled by Bryant, *A Preliminary Guide to Iowa Railroads, 1850-1972*. Chart by T.A. Cunning.





Between 1870 and 1889 railroads in Iowa increased even more substantially than in the 1860s, notwithstanding the problems of taxation, railroad liability in accidents, rate wars, corruption and growing absentee ownership. From January 1879 to January 1886, railroads expanded their trackage at a dizzying rate, adding 3,403 miles to the state's network. The two most productive years were 1879 with 778 miles of track, and 1882 with 911 miles of track built in the course of a year.[47]

One line, the Chicago, Burlington and Quincy, "more than doubled [its] overall size" between 1879 and 1881. John L. Larson, a student of the CBQ, cites the construction "war" with Jay Gould's speculative lines as the reason for its massive expansion in this period.

The construction record also clearly reveals other events in Iowa railroad history. For instance, the depressions of 1873 and 1884-1885 are marked by slowdowns or declines in the rate of mileage construction. The strikes of 1877 and 1888 were also followed by low-construction years. In fact, in five of the ten years following the Burlington Strike of 1888, total main line mileage in the state actually decreased; no new rails were laid.

These setbacks were, however, only temporary. After the first phase of railroad building in the 1860s and early 1870s established lines horizontally across the state, north-south and diagonal lines began filling in the map by the 1880s. Milwaukee, Minneapolis-St. Paul, Kansas City, St. Louis and Omaha became increasingly desirable locations for commerce and industry, and the most direct routes between these cities often traversed some part of Iowa. Since Iowa cities like Cedar Rapids, Waterloo, Des Moines, Sioux City and others were also experiencing their own business spurts, and since Iowa farmers were beginning to produce more than ever before, it made good sense to build railroads *within* the state. An increasing variety and volume of goods produced in Iowa waited to be shipped elsewhere, and a growing population waited for goods to be shipped to them.

b. The Golden Age of Steam Railroading: c. 1890-c. 1920

The golden age of steam railroading in Iowa both spurred and was itself precipitated by the development of the industries to and from which railroads transported materials and products. Agriculture, meat-packing, steel and iron works, brick manufacturing and other small- to medium-sized industries in the state experienced bursts of growth during this period. Railroads helped make draining tiles, new strains of corn and other grains, and the latest machine technology readily available to farmers, enabling them to produce more. Tall, gabled grain elevators and sturdy stock pens grew up around railroad stations all over the state as a result. Railways laid a criss-cross pattern of spurs in many of the larger towns as they tied a variety of factories and businesses into their main lines. Attracted by easy access to the railroad newer businesses often located along these spurs. Increased agricultural and industrial production, and rising population in the early 1890s encouraged railroads to take advantage of greater traffic by constructing new branch lines.

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47 Bryant, "Iowa Rail Mileage, 1850-1972."

The Depression of 1893 and the Pullman Strike of 1894, however, dampened railroad construction both directly and indirectly. Railroads that survived the downturn simply cut costs wherever possible, and that included new construction. Companies damaged or ruined by the depression were absorbed by larger railroads, and consolidation reduced "wasteful" competition and construction of parallel lines.

Wild fluctuation in the rate of construction in Iowa subsided after 1890, and with the exception of the years 1900 and 1904, total trackage in the state increased gradually.[48] Some of the new trackage included improvement of old routes, i.e., bypassing sharp curves and steep grades for more direct routes. By 1900 the state boasted 9,185 miles of track, fourth in the nation behind Texas, Illinois and Pennsylvania.

Another way to illustrate the growth of railroads during this period is through employment in the railroad industry in Iowa. As mileage increased so too did the number of employees required to manage, operate and maintain the railroad. The Iowa Census of 1895 reports that there were 8,265 steam railroad employees in that year; by 1905 the number had increased to 20,231, a jump of 11,966 employees![49] (The 1915 Census does not identify employment in specific occupations, but does report a further increase of 70,272 persons working in "Trade and Transportation."[50])

As total mileage rose, rail companies drew more revenue from the increased volume of traffic along their lines. An indication of the prosperity railroads attained in this period might be the assessed taxable value of each mile of road. In 1906, the average value in Iowa was $6,343 per mile; in 1915 the average reached $7875 per mile. Interestingly, it does not always follow that the higher the mileage of a particular company, the higher the value of that mileage. Companies such as the Des Moines Terminal, Iowa Transfer and Des Moines Union railroads operated only a few miles of track but since they were engaged primarily in switching cars for other railroads the volume of their business was large, and a proportionately higher value was affixed to their short trackage.[51]

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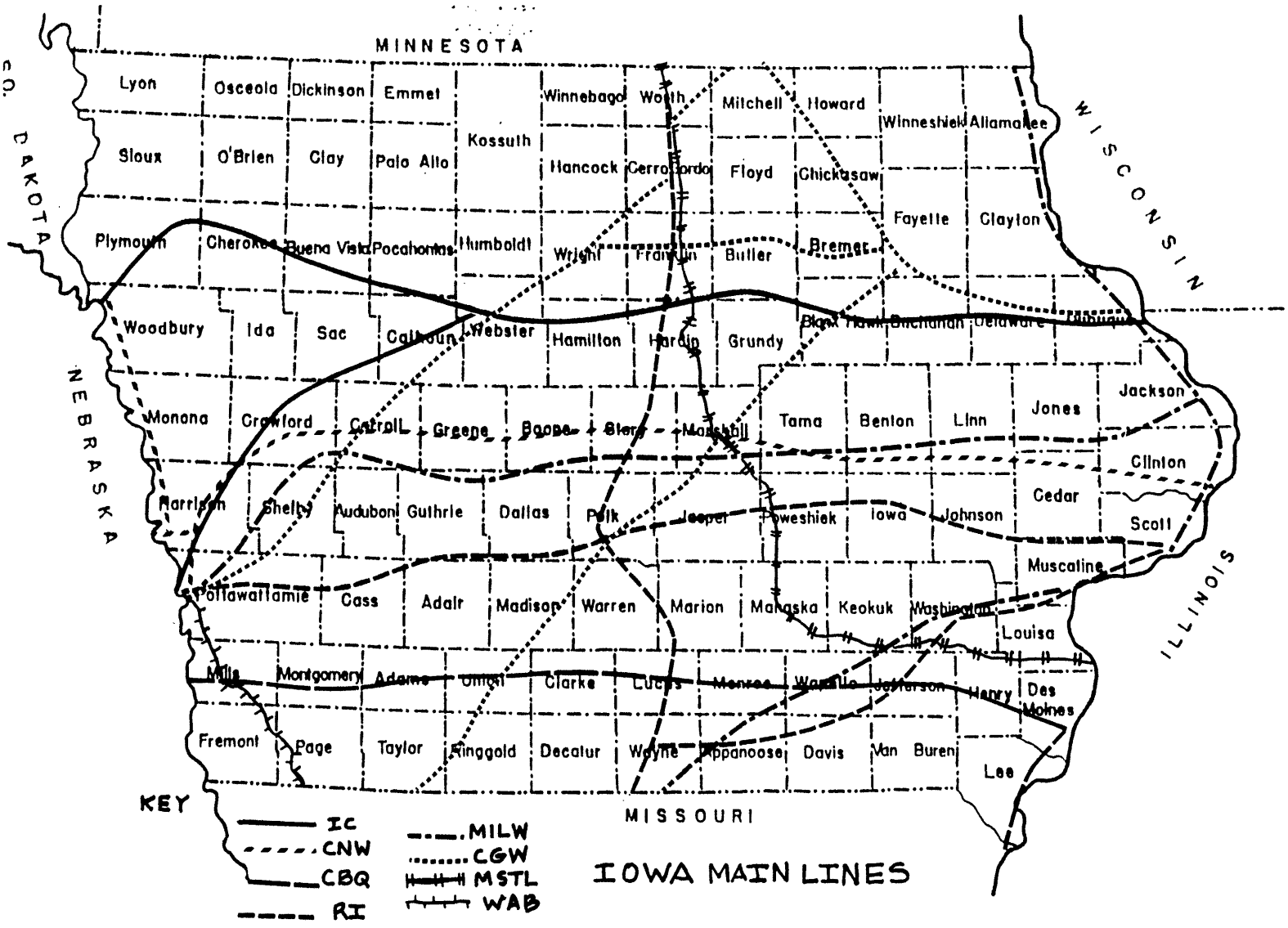
48 Bryant, Ray L., "Iowa Railroad Mileage, 1850-1972."

49 Census of Iowa for the Year 1895 (Des Moines: F.R. Conway, State Printer, 1896), p. 396-397; and Census of Iowa for the year 1905 (Des Moines: Bernard Murphy, State Printer, 1905), p. lxxx, respectively.

50 Census of Iowa for the Year 1915 (Des Moines: Robert Henderson, State Printer, 1915), p. lxxvi.

51 *Ibid.*, p. 738-739.

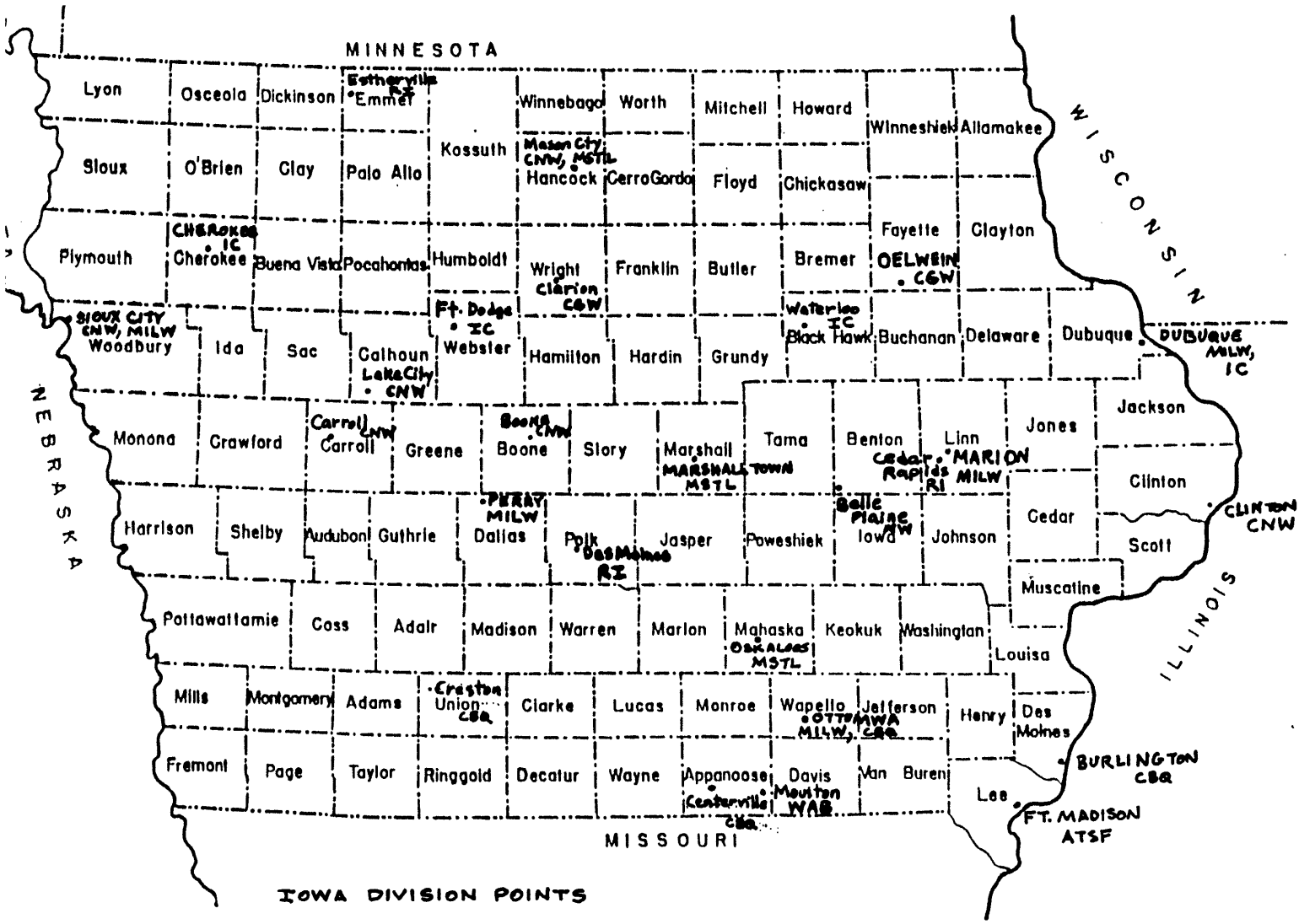
Map 1: Iowa Main Lines



Map by N. Pitch 1989

Map 2: Iowa Division Points*

* known locations of division headquarters offices identified to date



Map by N. Pitsch 1989

Iowa reached its apex in rail mileage in 1914 with 10,018 miles of main line track. In that year interurban mileage constituted an additional 427 miles; terminal and bridge railways together added 85 miles. Map 1 shows how the routes of just the major lines criss-crossed the state. Almost every city, town and hamlet could be reached by steam train or electric interurban. Numerous coal and gypsum mines, quarries, clay pits and at least one iron mine had their own rail service as well. Cities such as Burlington, Council Bluffs, Davenport, Des Moines, Dubuque, Fort Dodge, Sioux City, and Waterloo were railroad hubs in the Midwest with tracks of at least three major rail companies radiating out from them. Each of the major companies (ATSF, CBQ, CGW, CNW, IC, RI, and MILW) built roundhouses and repair shop complexes in the state; some companies operated several in various parts of the state. Burlington was even home to a locomotive manufactory. Map 2 depicts the towns and cities that served as railroad division points, where major facilities were located.

During this period of expansion, most of the larger railroad companies in Iowa embarked on a series of bridge and building improvements to handle a growing flow of traffic. Modern steel truss or girder bridges replaced wooden trestle bridges. Fashionable new depots replaced original frame depots in many Iowa towns and cities. The Illinois Central constructed new depots in Cherokee (1896), Iowa Falls (1902), Fort Dodge (1894 and 1911), Storm Lake (1915) and Marcus (1917) along its line through northern Iowa. Around 1905 the Chicago Great Western also built a grand new depot in Fort Dodge, perhaps to rival that of the Illinois Central. Neither was the Chicago Burlington and Quincy idle. It built many of its brick depots in southern Iowa county seats, including Red Oak (c. 1910) and Clarinda (c. 1910) during the Golden Age.

At the same time they improved passenger facilities, railroads also enlarged their maintenance and repair facilities. In 1915 the Illinois Central added eleven new stalls to its 1887 roundhouses/engine houses in Cherokee, Fort Dodge; a boiler washout facility was also built at Fort Dodge. In Waterloo the Illinois Central made additions to the roundhouse and erected a new car repair shop. New coal sheds and chutes, turntables and toolhouses abounded.

One characteristic of the phase of new construction was a rising number of functionally specific buildings. In towns where new passenger depots were built, the old frame combination depots were commonly moved and recycled into freight houses. New types of yard buildings such as oil houses, signal maintainer's supply sheds, carpenter shops, water treatment facilities, and hose cart houses (for storage of fire extinguishers) appeared in railroad yards.

Balancing all of the development in Iowa railroading between 1890 and 1917 was the fact that while trackage in the state increased substantially, on the eve of the Great War most of it was owned by the major railroad "systems." Many smaller, Iowan-owned companies were forced out of business because they were absorbed into major systems or could not compete against them. The revenue reaped during the period increasingly left the state for the pockets of such eastern investors as J. Pierpont Morgan, who helped refinance railroads devastated by economic turmoil in the 1890s. Following World War I, this trend toward consolidation and absentee-ownership would resume.

War Planning

American railroads first played a significant role in a military conflict during the Civil War. In 1862 Congress enacted a statute giving the Union government the power to seize railroads in times of war when public safety required it, and only as long as the conflict lasted. Companies were to be compensated for any losses due to the seizure, but most owners willingly placed their lines at the army's service.[52]

During the Spanish-American War in the late-1890s railroads were also used to ship troops and supplies, but with disastrous results. Perhaps because the safety of the general public was not threatened, or perhaps because many railroad companies were just emerging from the financial slump of the 1893 Depression and were intent on re-organizing their own affairs, there was no attempt to coordinate or centralize the railway network at either the government or corporate level. Traffic jams and mis-directed carloads of supplies were common.[53]

Given the experience of the Spanish-American War, it is no surprise that when the United States declared war on Germany in April 1917, railroad presidents convened in Washington to sign a resolution stating that in effect, they would operate their lines as a single, 'continental railway system.'[54] This proved more easily said than done, however, as they were beset with residual competition and labor unrest. In December of that year, the ICC recommended that the government assume control of the railroads to remedy a severe shortage of freight cars. President Wilson approved the recommendation a few weeks later, and appointed a Director General for the Railroad Administration, who was responsible for coordinating all rail traffic in the country.

As in the Civil War rail companies were to be compensated, and the roads would be returned soon after the armistice. Many company presidents were temporarily replaced, but the Administration itself was stocked with railroad men who understood the problems of running a railway. Smaller lines had a better chance of retaining their pre-war leadership, but were also among the last to receive monetary compensation following the war.[55]

To increase efficiency, the Administration pruned passenger traffic sharply, especially duplicate passenger service. "Trains with very few passengers were discontinued entirely," which may have signaled the end of business for lines between very small towns in Iowa. Freight was organized by priority and shipped by the most direct route whenever possible.[56] Because its shipments were not priority, small Iowa towns like Manchester, which was not on a main line, often had difficulty getting

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52 Dixon, Frank Haigh, and Parmelee, Julius H., War Administration of the Railways of the United States and Great Britain (Oxford University Press, 1918), p. 7-9.

53 *Ibid.*

54 Stover, American Railroads, p. 185.

55 Donovan, Frank P., Jr., "The Manchester and Oneida Railway," Palimpsest, September 1957

56 Stover, American Railroads, p. 190.

freight by rail. Manchester residents' freight was shunted to the Illinois Central lines rather than to the Chicago Great Western, which actually had the shortest route to the town; on a nationwide scale the IC owned the most direct lines. Rail service to and from Manchester was further compounded by the fact that the local railroad, the Manchester and Oneida, had trouble obtaining coal which curtailed its service.[57] Shortage of coal was a problem other Iowa shortlines probably also faced during this war.

c. Efficiency Improvement and Retrenchment: c. 1920-c. 1940

Government operation of the nation's railroads during World War I was a "costly venture," as illustrated by a nearly one billion dollar deficit between 1918 and 1920. Nonetheless, given the circumstances the ICC and President Wilson made the correct decision.[39] Ultimately, the experience led to increased regulation of the railroad industry and it urged the railroad companies to improve their efficiency. The Transportation Act of 1920 returned the railways to the private sector and simultaneously strengthened the 1887 Interstate Commerce Act, making it difficult for the companies to resume their pre-war discriminatory rate practices.

Faced with debt and the removal of the rebate most Iowa railroads in the next two decades were forced to refine their operations in order to remain solvent. Beginning in the 1920s and throughout the 1930s, they launched programs aimed at efficiency. The attack was two-pronged, including 1) an overhaul of equipment, facilities and track, and 2) the abandonment of unprofitable segments of their lines, usually branch lines between small towns.

The onset of the Great Depression doomed financially strained, small rail companies and stunted general railroad growth in two ways. First the Stock Market Crash of 1929 devalued rail companies' stock. Then the lingering economic malaise sickened the industries upon whose traffic railroads depended. Adverse weather and poor prices combined to lower the amount of agricultural produce being shipped in Iowa. Other industries slowed production and in the process reduced the volume of traffic on the rails. Railroads at this time also began to loose some of their business to the broadening influence of automobile, truck and airplane traffic. Confronted with such setbacks, small Iowa railroads like the Bellevue and Cascade (which happened to be a 3' narrow gauge line) had no choice but to go under in the 1930s.

Abandonments were no new phenomena to the Iowa railroad scene, a few having occurred almost yearly since 1910. The frequency of abandonments, however, accelerated during the 1930s. Between 1920 and 1940, total main line rail mileage in Iowa declined by 901 miles, with most of that (over 600 miles) occurring in the '30s.[59] The years 1934-1940 witnessed the greatest frequency of line

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57 Donovan, "The Manchester and Oneida Railway," ,

58 Stover, American Railroads, p. 193-94.

59 Bryant, Ray L., "Iowa Railroad Mileage," A Preliminary Guide to Iowa Railroads 1850-1972, Bryant, 1984.

abandonments in the period covered by this paper. In 1936 alone, discarded segments of at least ten miles each amounted to 142 miles.[60] While total main line trackage declined, other track such as sidings and yard track increased for the same period, as companies refined their freight handling procedures. This reduced congestion and helped improve speed.[61]

Since almost all of these abandonments were along lines that linked small towns and mining communities, their impact on those towns was often catastrophic. An abandonment frequently took away a town's best link with the outside world, and a good proportion of its business. For example, when the Illinois Central discontinued the southern portion of its Cherokee-Onawa branch in 1934, the small farming community of Ticonic was left without a railroad. Like many other communities, Ticonic had been platted by the railroad; the railroad was its reason for existence. Without the railroad it could not survive unless, in the intervening years, it had developed a strong local business. Ticonic either had no such business or its businesses failed in the wake of the Depression. In either case, most of the population moved on and the village is now a virtual ghost town.

Those towns not along discarded lines often experienced railroad retrenchment in other ways. Most commonly railroad companies replaced depots and other buildings in towns whose traffic no longer warranted big structures. Smaller depots required less heat and personnel. Standardized, utilitarian depots cost less to build. In centralizing their systems, railways sometimes razed larger shop facilities, leaving a few smaller buildings, such as toolhouses for storage of any maintenance equipment. Ironically, many of the state's remaining historic railroad structures are in towns abandoned by a railroad; since the company left the town, the likelihood of replacement or destruction of those structures was reduced.

While railways trimmed excess along their routes, several other improvements helped increase their efficiency. The introduction of the Diesel engine in the 1920s was a cheaper alternative to steam engines which would gain greater favor in the 1930s and 40s. Streamlined trains, increased freight car capacities and increased locomotive power all contributed to more efficient railroad operation.

When World War II approached, therefore, railroad companies were more prepared than for the previous war. The trend toward centralization and efficiency that began in the 1890s and early 1900s was reinforced by government control of railroads during World War I, and by the Great Depression. The need for uniform coordination of railroad systems during the Second World War was met without relinquishing private ownership although the First World War had demonstrated the need for a centralized, directing agency. After Pearl Harbor Roosevelt created the Office of Defense Transportation to oversee coordination of rail traffic, and the companies strove to cooperate fully with the ODT. The result was the smooth management of rail traffic throughout the conflict.

During the second war railways moved more people and freight farther and faster than in the previous conflict. From 1942 to 1945 they were responsible for 97 percent of all troop movements, and 90

60 Beitz, Ruth S., "An Era Fades Away," Iowan (Winter 1964), p. 37.

61 Stover, American Railroads, p. 199.

percent of all domestic military equipment and supply movements. Other passenger and commercial rail traffic increased significantly as well.[62] The most visible effect of World War II on American railroads was that it ended immediate economic hardtimes for the companies.

Nevertheless, in 1940 a number of indications about the dimmer future of Iowa railroads were already apparent. World War Two was to be the "swansong" of steam railroading in Iowa, as in the rest of the United States. Though it was steam that successfully propelled railroads through the war, cost-efficient Diesel engines threatened the supremacy of steam engines. Further, the supremacy of the railroad industry in transportation was soon to be revoked in favor of the automobile, truck and airplane industries.

The rise in popularity of automobile, truck and airplane travel was the single biggest reason for the decline of railroads across the country. Since the 1920s and '30s railroads had felt the loss of business to these new industries and the War merely delayed their development. In the American love affair with freedom, speed and modernity, the railroad was a great favorite, but more modern vehicles arrived with which railroads could not compete. From the 1940s on, railroad companies nationwide would continually streamline, centralize and consolidate their operations in order to survive under the pressure of competition from cars, trucks and airplanes.

Although the decline of railroads has meant the abandonment of many lines, usually entailing the removal of structures, the tracks still carry a surprising amount of traffic. Cars and trucks can take people and goods directly to their destinations, but they are unable to transport large amounts of freight as economically as the railways can. Railroads still move considerable quantities of grain and freight. Since Iowa is such a large grain-producing state, railroads are still practical here, despite significant reductions in trackage. The original transcontinental route still goes through Iowa, and Amtrak crosses the state on the old Chicago Burlington & Quincy main line (now the Burlington Northern) through the southern tiers of counties. Plans under discussion call for either adding a second Amtrak route or relocating it through the central tiers. Other major lines still connect Iowa to Kansas City, St. Louis, Minneapolis-St. Paul, Milwaukee, and of course, Chicago.

II. RAILROADS AND SETTLEMENT PATTERNS IN IOWA: c.1860-c.1890

Before railroads reached the Mississippi River, settlement in Iowa naturally followed the river bottoms. Population concentrated in the southeast corner of the state because people coming up the Mississippi on steamboats disembarked there first. Throughout the 1840s population gradually advanced up the Des Moines River and up the Mississippi and Cedar Rivers. The only real center of population in western Iowa was Pottawattamie County, where the Mormon Trail crossed the Missouri River. Settlement was limited to river valleys because they were wooded, and the rivers provided dam sites for flour mills as well as a ready means of transportation.

62 *Ibid.*, p. 203-204.

In her thesis "The Role of Railroads in the Settlement of Iowa," C. C. Cooper investigates the extent to which railroads changed this settlement pattern. Her conclusion is that the state can be divided into three regions, each representing a distinct pattern of development. The first region, east and south central Iowa, experienced relatively little population increase with the arrival of the railroad (between 1855 and the early 1870s) because it was already well settled.

The earliest railroads in eastern Iowa tended to connect existing towns, and although new towns grew up at the stops in between older towns, few new settlements arose compared to the third region. In fact, Van Buren County lost population in the decade immediately following the advent of the railroad, as did several other southeastern counties ten to twenty years later. Railroads may have actually transported people out of the region, presumably farther west.

In the second region, east north central, central and southwest Iowa, a "strong correlation" emerged between railroad construction and population increase in the 1860s. After the Cedar Rapids and Missouri River Railroad entered Marshall County in 1863, the number of residents in the county increased by nearly 12,000 in the next ten years.[63] The movement of the frontier into this region coincided with the advancement of the railroad westward, but one cannot argue irrefutably that railroads caused the region's burgeoning population in the years after rails entered it. "After the railroad" does not necessarily mean "because of the railroad" in this case.

The third region comprises west, northwest, and west north central Iowa. Here, railroads built ahead of settlement and the presence of a railroad led to the birth of many small towns from the late-1860s to the late-1880s. The main thrust of settlement in this region, however, came ten to twenty years after the arrival of the railroad, for several reasons. One is that the land was treeless prairie and settlers needed wood for fuel and building material. It was also poorly drained and subject to longer winters than southern Iowa. Settlement lagged until the widespread introduction of drainage tiles and early-maturing corn in the late 1890s and early 1900s.

Cooper's study shows that settlement occurred first in wooded, well drained areas of the state, and that rail connections added little to the population of these areas. Railroads had much greater impact on settlement in areas with "no woodland or a considerable acreage of poorly drained land, or in which a town grew rapidly after the construction of a railroad through it."[64] It must be stressed that Cooper measured the impact of railroads on settlement in terms of the "greatest increase in total population"[65] in each of Iowa's counties, and the fact that a county experienced its greatest growth in population before the railroad does not mean that the railroad brought no additional people to the county.

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63 Cooper, Clare Christine, "The Role of Railroads in the Settlement of Iowa: A Study in Historical Geography" (Masters Thesis, University of Nebraska, 1958), p. 74.

64 *Ibid.*, p. 139.

65 *Ibid.*, p. 4.

There is also some reason to suspect that the dividing line between Cooper's second and third regions is blurred, and not as distinct as she argues. It has been suggested that many of the towns along the Chicago Burlington & Quincy's main line through southwestern Iowa, in the second region, were named for railroad men, which indicates that the railroad precipitated settlement here as it did in northwestern Iowa. Field work and further research along the CBQ line in the six southwestern counties will probably help decide the matter.

Nonetheless, it is hard to overstate the influence of railroads on town location and early development in western Iowa. The Iowa Falls & Sioux City Railroad, co-owned and directed by John Blair, "made a point of establishing stations only where [the IF&SC land company] owned the surrounding land."[66] Between the two cities from which the railroad took its name, no fewer than 17 towns were platted by the IF&SC Town Lot and Land Company. Blair also insisted that all conveyances of title carry at least two restrictions: all purchasers were bound to plant shade trees along the street sides of their lots within 18 months and to forswear any use of the property which would entail the sale of intoxicating beverages (except for medicinal purposes).[67]

At this point one might ask about the impact of settlement on the development of railroads. Between 1855 and 1870 most trackage lay in the southern half of the state where, according to Cooper, it had the least impact on population growth. Why did railroads wait until the late-1860s and late-1870s to tap the fertile upper interior of the state? The most obvious reason is that three of four Chicago lines were already oriented toward the southern half of the state, and subsequently they sought the straightest route to Council Bluffs. Related to this is the fact that the Union Pacific trans-continental railroad lay directly west of Iowa, and until other transcontinental routes were built this road attracted more through traffic. Less obvious is the fact that the precedent for east-west migration across southern Iowa had been set in the 1840s by the Utah-bound Mormons. Additionally, the topography of east central and southeast Iowa was more conducive to railway construction than that of northeast Iowa, and until cities to the north and south of Iowa gained prominence, few lines would be built in those directions.

The most significant reason for the early pre-eminence of railroads in southern Iowa was that population centered there. Initially railroad companies relied heavily upon local financial support, and the most settled parts of the state were best able to lend such support. In the mid-1850s the Mississippi & Missouri had difficulty generating support for its proposed line because the counties it traversed were poor and had few residents.[68] Only when the railroads secured financial backing after the Civil War could they afford to accelerate far beyond settlement. (Even twenty years later,

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66 Richard Wattling, "The Iowa Falls and Sioux City Railroad" (Honor's Thesis, Harvard University, 1948), p. 109.

67 *Ibid.*, p. 111.

68 Agnew, "Iowa's First Railroad," p. 6-8.

however, the Chicago, Milwaukee and St. Paul had the same problem as it crossed northern Iowa on its way into Council Bluffs.)

Townsite Development and the Railroads

Railroad companies were the largest landowners in the West after the land grants of the 1850s, and as mentioned previously, the key to the continued extension of railroads west was the disposal of their unused lands for cash. To accomplish this the companies created their own land departments or indirectly employed agents through real estate companies which they dominated. They also launched intensive advertising campaigns to lure immigrants and Easterners out to the new country.[69]

Railroads needed laborers to build the roads, and they needed settlers to assure passengers and freight on their new lines. To help solve this problem the companies created Bureaus of Immigration which "employed agents in Europe, met immigrants at eastern seaports, and ran special cars for land-seekers heading West."[70] As an added inducement, the Burlington & Missouri River advertised that the cost of a "Land Exploring ticket" could be applied toward payment of land purchased ninety days from the date of the ticket; half-price fares on the land exploring cars were offered to families of those purchasing land.[71]

In the late 1850s railroad Land Departments also began to print handsome brochures praising the Midwest's opportunities to attract settlers. A Chicago Burlington & Quincy brochure "reminded women of the West's many unmarried men: 'when a daughter of the East is once beyond the Missouri she rarely recrosses it except on a bridal tour.'" To those purchasing land in Iowa or Nebraska before 1875 the Burlington & Missouri River offered: discounts for cash payment, ten years credit, six percent interest, a down payment of interest only with principal payments to commence four years from purchase, and premiums for improvements to the land.[72]

Some railroads engaged in land speculation to get rid of land and obtain cash. A real estate company affiliated with a railroad secretly purchased government land along the line (as yet unannounced) at a low price, and then sold parcels at a profit after station locations were disclosed.[73] Occasionally the railroads kept the town lots, selling them to the highest bidders at well-publicized auctions.

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69 Divine, *et. al.*, Volume II, p. 499-500.

70 *Ibid.*, p. 500.

71 Divine *et. al.*, Volume II, p. 499.

72 *Ibid.*, p. 499-500.

73 Atherton, Lewis, Main Street on the Middle Border (Bloomington: Indiana University Press, 1984), p. 5-6.

Railroad surveyors then went ahead of construction to lay out the lines and town plats. Even though trains could travel thirty to sixty miles before stopping for water and wood or coal,[74] stations were usually five to ten miles apart so that trains could take on passengers and freight more frequently. Towns created traffic for the roads, which meant money. "More money could...be made by selling town lots than by peddling larger tracts outside of urban areas."[75] (For example, the Illinois Central made over a half million dollars from the sale of town lots alone.[76]) Therefore, towns were spaced no farther than fifteen miles apart.

Most railroad companies followed the townsite model developed by the Illinois Central in the early 1850s. The IC platted towns in a square grid plan, with numbered north-south streets, and east-west streets named after trees.[77] Arthur E. Stilwell, director of the Kansas City Southern, named streets after company executives and close friends, and railways in Iowa probably also did the same. Nearly every town in the state has a "Railroad Street," "Railway Avenue," or "Depot Street." Some towns have streets named for the particular rail company whose depot was found on that street. In southwest Iowa Shenandoah has "Wabash Avenue," and Glenwood has "Burlington Street."

The first building in a railroad town was usually either the depot or a land office. In 1869 the Iowa Falls and Sioux City Land Company (subsidiary of the railroad of the same name, which was an Illinois Central affiliate) erected a 2-story, frame depot and a warehouse at a place they called Marcus, in Cherokee County. The town was platted, and lots were sold from the depot.[78] In Kossuth County, the town of Germania (renamed Lakota during World War I) was platted in 1892 by the Burlington Cedar Rapids and Northern's's land company, and the first building in the town was a tiny, wooden land office. A box car was used as a depot until the railroad built one; together the depot and a grain elevator were the first permanent structures in the town.[79] The general rule of townlot sales was that the greater the distance of a block or lot from the center of town, the lower the price of the property. Main street lots, particularly corner locations, were most expensive.[80] According to Lewis Atherton, the deadening similarity of Midwestern towns is due to this "uniform plan of buildings originally mapped out in a railroad office."[81]

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74 Stover, Iron Road to the West, p. 200.

75 H. Roger Grant, "Iowa's New Communities: Townsite Promotion along the Chicago Great Western Railway's Omaha Extension," Upper Midwest History II (1982): 53.

76 Atherton, p. 6.

77 *Ibid.*

78 The Sioux City Journal, June 4, 1950. Courtesy of James Beranek.

79 Reed, Benjamin E., "Ledyard Township," History of Kossuth County Iowa (Chicago: S. J. Clarke Publishing Co., 1913), p. 696.

80 Grant, "Iowa's New Communities...," p. 53.

81 Atherton, p. 6.

Railroad buildings were usually located in the center of the town. A. B. Stickney of the Chicago Great Western advised that the "'depot should be built as close to the business center of the city as possible....That way the public will remember you.'" Depots often had flower gardens or a lawn and bench in the "Depot Parks" around them or on one side of them. Local citizens were proud of the parks, and town women or school children kept them well-trimmed to make a good impression on travellers riding the trains. If it was impossible to locate in the middle of a town then stations and outbuildings were placed prominently at one end of Main Street or on the outskirts of town.[82] Today, one of the best indicators that a town was platted by a railroad company (or its affiliated real estate company) is a main street with a railroad yard, or evidence of one, situated at one end.

Even where railroad buildings and tracks no longer exist, the former railroad yard is still easy to identify. Coal sheds, at least one grain elevator, stock pens, creameries, chicken hatcheries, or corn cribs were always adjacent to the depot and other railroad buildings. When a railroad abandoned its line through a town most of the buildings were eventually removed, except the grain elevator. Now a grain elevator, a weed-covered depot foundation and a wide open space may be the only remains of the town's railroad yard.

Since the railroad platted the town or had been given its own addition, and owned the right-of-way through the town, the buildings along the ROW frequently have no lot or block numbers; sometimes they are not even located on a named street. The railroad company either owned the stock pens, etc., or leased the land to local businesses; the land on which the grain elevator was situated was also frequently leased to elevator owners while the railroad company retained actual ownership. Even into the 1930s "Chicago and North Western Stock Pens" or "Chicago Milwaukee St. Paul & Pacific Stock Yard" could be read on some town maps.

Once the companies published their routes, towns from which construction would begin did a brisk business as tradesmen and laborers flocked there in search of a job on the railroad. Lumber yards found it difficult to keep up with the demand for building material. Store- and hotelkeepers congregated in existing or newly-platted towns to avail themselves of any money the work crews and settlers might care to part with. With a boom in population, wives in the communities discovered opportunities to earn extra money as bakers, seamstresses and laundresses. Because of housing shortages many families rented rooms to boarders. In fact, the reason the Illinois Central, the Toledo & North Western, and the Milwaukee railroads each built two-story depots in Iowa towns was because of the housing shortage; the depot agent's family lived in the second-floor rooms.

Townspeople feverish with excitement because of the imminent prosperity that having railroad connection meant, sometimes went so far as to move their established town to the new station site. In 1869 settlers in Cherokee moved their infant community a mile or so to the Illinois Central station site to take advantage of railroad service. When a new branch of the Illinois Central from Cherokee to

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82 H. Roger Grant, "Iowa's Railroad Stations, A Pictorial Essay," Palimpsest, July/August 1973, p. 16.

Onawa was announced in 1887, residents of De Leon hastily picked up the village structures and moved them to the new townsites of Quimby and Washta, a few miles away.[83]

Railroads and Ethnic Settlement in Iowa

This topic is naturally related to the relationship between immigration and railroad development in Iowa. As discussed earlier, railroads often recruited laborers from the throngs of immigrants who disembarked in eastern seaports, and advertised their lands in European newspapers. From the 1840s until the 1890s immigrants entering Iowa were primarily German, Irish, Swedish or Norwegian. The number of foreign-born Iowans peaked between 1880 and 1900, which was also the period of greatest railroad construction in the state. Nevertheless, foreign-born residents of the state were not exclusively German, Irish, or Scandinavian. The other principal immigrant groups during this peak period included English, Canadians, Czechoslovaks, Scots and Welsh.[84]

Numerous railroad historians refer to the Irish and German immigrants comprising construction crews on Iowa's earliest railroads. Homer L. Calkin writes that "[t]raditionally, the Irish have worked on Iowa's railroads."[85] About 2,000 Irish camped near Lyons when the Lyons and Iowa Central Railroad began grading its line in the early 1850s.[86] In Monroe County, most Irish-born residents "came from Pennsylvania or St. Louis by way of Keokuk. Almost all of them worked for a time on railroad construction. Many helped to build the Keokuk-Ft. Des Moines railroad and then bought land at $1.25 per acre with their wages."[87] This was the general pattern of settlement for many immigrants in Iowa. They worked on the railroad just long enough to save money to buy a farm or business.

Germans constituted by far the largest proportion of immigrants in Iowa, but since they generally arrived with more capital, they tended to establish farms and businesses more quickly than did the Irish. Germans and Scandinavians may also have been more involved with railroad land speculation than with construction. German-born Emil Flusche came to Shelby County from Michigan to sell railroad land, probably in the 1860s. The rail company paid him $1.00 per acre for all land sold to German Catholics, "provided there were forty within eighteen months....Westphalian Germans responded to Flusche's [newspaper] ads, and there was a population of 207 [in Westphalia Township, Shelby County] within two years."[88] In 1869 Swedish Reverend Bengt Magnus Halland advertised railroad land in Montgomery and Page Counties, emphasizing that "only non-drinking, God-fearing"

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83 City of Quimby, Book Committee, Quimby Centennial History 1887-1987, 1987.

84 Calkin, Homer L., "The Coming of the Foreigners," Palimpsest, April 1962, p. 187.

85 *Ibid.*, p. 176.

86 Donovan, "The North Western in Iowa," p. 547.

87 Calkin, Homer L., "The Irish in Iowa," Palimpsest, February 1964, p. 51.

88 Calkin, "The Coming of the Foreigners," p. 156.

Swedish settlers were wanted. Between 1870 and 1873, Swedish immigrants subsequently established communities near Red Oak, Creston and Nybum, "with Stanton as the hub."[89]

Beginning in the 1890s the geographic origin of immigrants to the United States shifted to southern and eastern European nations, and likewise, Poles, Slavs, Italians, and Greeks established small neighborhoods in Iowa throughout the early 1900s. (It is interesting that, contrary to this shift southward, Danish and Dutch immigration in Iowa peaked in 1920, according to Calkin.[90]) There is little doubt that all arrived in the state via train, but they were probably not lured by railroad recruiters and advertising. By 1890 Iowa railways had ceased their extensive campaigns to attract immigrant laborers.

The railroads needed to sell their lands, but unlike some railroad companies in other states, it appears that Iowa railroad land departments and real estate companies did not "import" large populations of particular ethnic groups to their new townsites. (The Santa Fe Railroad, for instance, persuaded nearly 2,000 Russian Mennonites to settle along its Kansas lines in 1874.[91]) The railroads' role in the ethnic settlement of Iowa was probably limited to selling land to speculators, as above, who then sold property to relatives, friends, and other natives of their homelands. The flow of immigrants to Iowa had generally already been established and in this light, the railroads' greatest role was to provide immediate employment for newly-arrived European immigrants. However, the role of railroads in the ethnic settlement of Iowa remains an area requiring more investigation.

Impact of Railroads on Local and Regional Economic Development

The relationship between Iowa's railroads and local or regional economic development has been a close one. Following the Civil War, when the state began to grow in both population and railroads, a connection with a railway was synonymous with economic development for most towns. The railroad was their link with the outside world. It brought the latest technology, news, and fashions for people as well as their homes. New settlers and townspeople often arrived by train, and once here they purchased goods brought by rail in the local store.

The railroad was equally important for what it shipped out of the towns than for what it shipped in. Towns with a rail station relied upon the crops, stock, and produce that farmers in the surrounding area brought in for shipment to food processing plants. Locally owned elevators, creameries and the like purchased their produce, and then sold the products to other distributors or to processing companies. Sometimes farmers sold directly to distributors, processors or to the railroad; sometimes the local purchasers were cooperative elevators or creameries. Farmers then returned some of the money from these sales to the local economy. By giving farmers, elevators, creameries, hatcheries, etc., access to wider markets for their products, railroads helped support local economies.

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89 *Ibid.*, p. 167.

90 Calkin, "The Coming of the Foreigners," p. 187.

91 Divine et. al., America, Past and Present, Volume II, p. 500.

Railroads also supported local and regional economies by providing jobs. Men found employment as station agents, telegraphers, clerks, conductors, construction laborers, trainmen, brakemen, shop hands, firemen, and engineers, especially in towns where a railroad had a complex of repair shops and offices. Some women were also employed as station agents, telegraphers, clerks and bookkeepers on the railroads, especially during the two world wars.

The relationship between railroads and Iowa's mining industry has been extremely close. In the early 1900s Iowa was fifteenth in the nation in production of coal, a fact that was not well known because most of the coal never left the state. Railroads were the single largest consumers of Iowa coal, and many of them owned their own "captive" coal mines. The railroads of course, owned the largest mines and employed more miners than other companies. As railroads grew, so did their consumption of coal, which required more coal mines and miners. Railroad-owned mines were a major source of jobs in southern Iowa, and even though some miners lived in company towns, some of their wages were inevitably returned to the local economy.

From the 1880s to the 1920s there were also some three-hundred small mines in operation in Iowa, but most of their coal was consumed locally.[92] Railroad transportation was necessary even to coal mines not owned by rail companies since the main method of transporting the coal was to ship it by rail to local elevators, lumber yards, and stores. Later, electric interurbans were important to the state's coal industry because they carried miners to and from work each day, and gave mining families easier access to shops in Albia and Centerville.

Railroads were also instrumental in the development of an iron mine near Waukon in Allamakee County and several gypsum plants in Webster County. The Missouri Iron Company began to plan a rail spur from their iron mine to the Waukon branch of the Chicago, Milwaukee, St. Paul & Pacific in 1907. By 1912 the line was complete and the mine in operation. When World War I opened, the quality of this mine's ore could not compete with that from northern Minnesota, and the government-controlled rail system discontinued service to the mine because of its low priority. Part-time operation of the mine and its spur resumed after the war, and operations ceased in 1922.[93]

The mining of gypsum was much more lucrative, and in 1905, Iowa was third in the nation (behind Michigan and New York) in the production of gypsum.[94] All of Iowa's gypsum industry was centered in Webster County. Plaster plants around Fort Dodge were tied by spurs to the Chicago Great Western, Illinois Central, and Minneapolis & St. Louis lines. Without doubt the mutual

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92 Schwieder et. al., Buxton, Work and Racial Equality in a Coal Mining Community (Ames: Iowa State University Press, 1987), p. 4.

93 Rehder, Dennis and Cook, Cecil, Grass Between the Rails (Des Moines: Waukon and Mississippi Press, 1972), pp. 70-94.

94 Census of Iowa for the Year 1905 (Des Moines: Bernard Murphy, State Printer, 1905), p. xcvii.

interdependence of the gypsum and railroad industries in Fort Dodge contributed to that city's economic growth and stability.

In the production of clay products Iowa ranked among the top ten states nationwide. Railroads shipped drainage tiles, paving bricks, and building bricks throughout the Midwest. They even used them in constructing their own buildings, and one can still find depot platforms paved with Holman (Sioux City vicinity) pavers, for example, around the state. Limestone quarrying was also spurred by the development of railroads. The stone was used as gravel ballast and as building material in depots, bridges and culverts. As with coal mines, railroads often owned numerous quarries, especially in the eastern and northeastern parts of the state.

Dozens of other industries in Iowa depended on good rail service for their survival, in addition to the ones mentioned above. Meat-packing plants in Des Moines, Dubuque, Sioux City and Waterloo were supplied with cattle and hogs via the railroad, and shipped their meat products out on the same railroads. The same was true with iron and steel plants, flour and feed mills, and various other factories throughout Iowa.

The importance of the railroad to small industries in small towns was no less significant than its importance to larger industries in cities. Until the growth of automobile trucking in the 1930s, none of these industries had a more efficient means of transporting their materials and products. Although Iowa is primarily an agrarian state, its other industries were able to develop and diversify the state's economy primarily because of good rail connections. Perhaps the decline industries in Iowa, including agriculture, and the subsequent decay of the state's small towns is related to the loss of railroad mileage.

III. CONSOLIDATION IN THE RAILROAD INDUSTRY: 1870-1900

The period 1870-1900 was one of intense competition and subsequent consolidation in the nation's railroad industry. "By 1906 nearly two-thirds of the nation's railroad mileage [was owned or controlled] by seven groups."[95] The road to consolidation started in the 1850s and early 1860s when major lines lent monetary support to the smaller railways that planned to connect with them. In Iowa lines like the Rock Island, the CBQ, and the North Western strove to control traffic in their territories, and they essentially co-opted Iowa companies with financial backing in order to eliminate the possibility of future competition. The financial backing often took the form of subsidized construction. When companies across the country rapidly expanded after the Civil War and several roads concentrated in one area, they cooperated and formed "pools" to control the amount of competition.

One of the most long-lived pools was the Iowa Pool, also known as the Omaha Pool or the Great Pool. When the Rock Island, the Quincy and the North Western converged upon Council Bluffs in the late-1860s, disastrous rate wars ensued as each line fought for a foothold in the lucrative transcontinental

95 Stover, American Railroads, p. 135.

field. In 1870 the three banded together to curb competition for the benefit of each road. The pool was a verbal agreement between the company directors to share all traffic between Chicago and Council Bluffs, and the revenues generated by that traffic. Each company retained forty-five percent of passenger and fifty percent of freight income to cover operating expenses, "and the remainder was...divided equally among the three roads. The only enforcement [of the agreement] was the ability to view each other's books."[96]

Instead of just sharing their revenues, however, the companies gradually began to divide the traffic equally. "The eastern connections of the three lines adopted the practice of giving all the traffic for one week to one road, and then similarly to the other lines in succession." Each road was nearly as strong as the others and the mileage between Chicago and Council Bluffs was virtually the same by each route.

Despite cheating, the original agreement lasted until the early 1880s, when it was altered by the entrance of new competitors to the arena. In 1879 the Wabash Railroad completed its line to Omaha, and it contrived to join the pool by 1881. The increasing complexity of the rail network around Council Bluffs-Omaha led the pool to formalize its existence with a written agreement, and it became the Iowa Trunk Lines Association in 1882. The same year the Chicago, Milwaukee and St. Paul and the Missouri Pacific entered the pool, as did the Illinois Central one year later. Then trouble arose due to perceived unfairness in the way traffic and money were divided, and the Association folded in late 1883.[97]

For the next fifteen years, numerous new pools and associations formed and then failed. The Interstate Commerce Act of 1887 and the Sherman Anti-Trust Act of 1890 failed to eradicate pooling by Chicago-based railroads. Finally in 1892 the pool was sued for violating the afore-mentioned acts, and it lost. Five years later, "the pooling arrangements ceased to exist, at least publicly."[98]

The other, more common way of curbing competition, which ultimately led to consolidation, was to lease, merge with or buy out smaller companies. As discussed in the previous section, speculation resulted in the expansion and consolidation of some major railroad systems during the 1870s and 1880s. Subsequent dilutions of stock eroded the companies' financial bases, and hastened more widespread consolidation.

Railway companies in financial distress increasingly fell to the nation's seven largest railroad groups between 1870 and 1900, especially after the depression of 1884-1885. "Between 1880 and 1888 some 425 different corporations, or nearly a quarter of all railroad companies, by lease, purchase, or

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96 Riegel, Robert E., "The Omaha Pool," Iowa Journal of History and Politics 22 (October 1924): 569-570.

97 *Ibid.*, p. 572-573.

98 *Ibid.*, p. 582.

merger, came under the control of other lines."[99] Iowans chafed under new absentee-ownership of railroads in the state as rail income increasingly left the state for the bank accounts of eastern financiers and stockholders. During the Burlington strike of 1888, the Keokuk *Daily Gate City* echoed this sentiment when it "sympathized with the strikers, objected to the high salaries of railroad officials, and [even went so far as to suggest] government ownership of the railroads."

The Panic of 1873 Hastens Consolidation

One of the state's first victims of consolidation, the Des Moines Valley Railroad failed after the Panic of 1873, and in 1878 was leased to the Rock Island.[100] In 1880 the Missouri, Iowa and Nebraska was purchased by Jay Gould's Wabash, St. Louis and Pacific Railroad, and the company soon owned well over 500 miles of track in southern Iowa. The Wabash itself went bankrupt in 1884 and was divided among the CB & Q, the Rock Island, and the Chicago, Milwaukee and St. Paul.[101] The Dubuque and Dakota Railroad was formed with assistance from the Dubuque and Sioux City, an Illinois Central corporate affiliate, and was controlled by that company from 1878 to 1887. Although the D & D weathered the economic turbulence of the late '70s and early '80s, locals renamed it the "Damned Doubtful" because it was never financially healthy.[102]

Another consequence of financial difficulty was the abandonment of unprofitable segments of line. The first abandonments occurred in the late 1870s, usually between the smallest towns or between small towns and mines or quarries that ceased to be profitable. As larger companies swallowed up smaller roads, they often abandoned sections of rail that did not produce enough additional traffic for the larger carrier to justify their continued existence. Frequently major lines curtailed their operating costs by eliminating routes that had been built as parallel "nuisance" lines in speculative years. The CBQ organized the Moulton and Albia Railway in 1879 to protect its Des Moines traffic from the Wabash's threatening parallel line to Des Moines. The little road never generated much traffic, and when the Burlington-operated trains consistently failed to make their tri-weekly runs, dissatisfied residents nicknamed the M & A the "try weekly."[103] The Burlington finally abandoned the road in 1896.[104]

By the early 1900s the major lines through Iowa had built or acquired dense networks of feeder lines and satellite companies. Of these major lines, four were controlled by the nation's largest railroad groups. William H. Moore's group of investors controlled the Rock Island system; Edward H.

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99 Stover, American Railroads, p. 131.

100 Riegel, The Story of the Western Railroads, p. 102.

101 Donovan, Frank P., "The Wabash in Iowa," Palimpsest, (October 1964), p. 382.

102 Bryant, "Corporate Histories--Iowa Companies."

103 Wilson, Ben Hur, p. 53-54.

104 Bryant, "Corporate Histories--Iowa Companies."

Harriman's managed the Illinois Central, among others; the Vanderbilt's group controlled the Chicago and North Western; and James J. Hill's operated the Chicago Burlington & Quincy and other lines.

Much of the real power lay in the hands of Eastern bankers like J. P. Morgan. The Panic of 1893 devastated many railroad companies and in the aftermath of the initial stock market crash, Morgan and other bankers had invested heavily in them. Morgan, for instance, was banker for all of Hill's companies.[105] It was with Morgan's support that Hill prevented Harriman from gaining control of the CBQ in the first years of the new century.

Hill and Harriman waged an intense battle for the Chicago Burlington & Quincy, but eventually they joined and formed the Northern Securities Company, a holding company for the CBQ, the Northern Pacific and the Great Northern; (these companies are now part of the Burlington Northern system). The company was ordered to dissolve by the Supreme Court in 1904 because it violated the Anti-Trust Act, but "ownership of the stock of the three railroads changed very little and the Burlington remained in the hands of the Great Northern and the Northern Pacific."[106] Few small railroads could compete against such giants, and in the next three decades most would fail or be absorbed into one of the large systems traversing Iowa: the CBQ, CGW, CNW, IC, Milwaukee, or RI railroads.

Anti-Railroad Sentiment and Railroad Legislation

As Iowa towns and cities joined the ranks of those with rail service they discovered that the railroad was not quite the economic panacea they had anticipated. To be sure, farmers had access to national and foreign markets they did not have before 1855, and both farm and town families could now purchase many of the same goods available to Easterners. But the cost of transportation remained high (albeit cheaper and more convenient than river or wagon transport), and as the rails spread across the Midwest a wave of anti-railroad sentiment followed in its wake.

Leonard F. Ralston has identified three stages of sentiment through which Iowans passed as the tracks progressed across the state. The first stage was intense enthusiasm or railroad "boosterism." Rural and city residents both clamored for the railroad that would link them with the rest of the nation and they pledged their support to local rail companies. When the first trains arrived, however, eastern Iowans complained of land speculation, property destruction, lingering high transportation costs, and the problems of taxing the railroads. To remedy their ailments they called for greater government control of the companies. Eastern Iowans entered this second stage, while central Iowa citizens entered the first. As eastern Iowans began the third stage, one of reconciliation and adaptation to the railroads, western Iowans clamored for rail service and central Iowans agitated for restraint of the railroads.[107] What follows is a more detailed look at the second and third stages.

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105 Stover, American Railroads, p. 135-136.

106 *Ibid.*, p. 138.

107 Ralston, Leonard F., "Railroad Interests in Early Iowa" Annals of Iowa 41 (Winter 1973): 1130-1131.

After the railroad came to an area, farmers discovered that rates were extraordinarily high, but they had no other viable means of getting their grain and stock to market. Not only that, local elevator companies were sometimes owned by the railroad company and the elevator operator could "downgrade" a farmer's grain, hold it until prices rose slightly, and then sell the grain at a profit. High freight costs did not stop at the elevator either. Merchandise that farm families purchased at the general store was also inflated because high freight rates applied to the storekeeper as well.[108] Nor could they boycott the railroad, because to do so was pecuniary suicide for both farmers and townsfolk.

Across the nation rail costs were higher than they could have been, but in general Eastern rates and fares were lower. Between 1866 and 1870 average freight rates on the Burlington, North Western, Milwaukee, Rock Island, and Illinois Central lines ranged from 2.2 cents to 2.5 cents per ton-mile between Chicago and the Missouri River, almost double the rates east of Chicago. Rates west of the Missouri River were even higher. This rate schedule continued until the turn of the century, although the rates themselves adjusted downward. Between 1870 and 1900 "freight rates dropped nearly 70 percent," while farm product prices fell only thirty-seven percent for the same period, but Iowa farmers still found the rates high compared to the eastern rates.[109]

The burden of high transportation costs fell heavily upon Westerners (which includes Iowans) for three reasons. First, longer distances between their fields and the city processing plants meant that operating costs for the railroad were higher than for food shipped from Ohio, for example. Wages paid to labor and the consumption of coal were greater for shipments from the western United States. Second, western states were thinly populated compared to the East, which resulted in smaller passenger revenues. Third, the lack of major industrial centers in this part of the country likewise resulted in lower revenues from industrial rail traffic.[110]

Compounding the western region's rate problem were several practices endorsed by railroads nationwide. As the nation's rail network grew, competition among the carriers rose correspondingly. Roads often paralleled each other and to assure themselves of traffic, the companies offered rebates to large shippers. Once the precedent was established, large shippers threatened to transfer their business to a rival road unless the company continued to give them rebates. This practice undoubtedly forced many smaller businesses into bankruptcy.

A second practice, giving free rail passes to public officials and journalists, reduced railroad revenues in the short run but aided the company in the long run. "Railroads saved thousands of dollars in taxes

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108 Stover, John F., American Railroads (University of Chicago Press, 1961), p.122.

109 *Ibid.*, p. 99-100.

110 Stover, American Railroads, p. 120.

with passes given county assessors and auditors." Through passes they also curried favor with legislators, sheriffs, judges and the press.[111]

The third practice was simple discrimination, which can be broken into three types. In *commodity discrimination*, dry goods and merchandise cost more to ship than grain or ore because they could more easily absorb higher rates. In *place discrimination*, short hauls were more expensive than long hauls despite their overall lower operating costs. Rate wars and intense competition among carriers for transcontinental and other long distance traffic reduced fares and rates for the long hauls. The companies made up for the reduced revenue by charging "all the traffic will bear" on short hauls. *Personal discrimination* consisted of outright favoritism of one person or business over another, and secret, special rates were usually given to "those who needed them least."[112]

The fourth practice which contributed to high fares throughout the 1870s and early 1880s was railroad speculation. Men like the unscrupulous "raider" Jay Gould, of Wabash and of Union Pacific fame, built railroads just to foster competition thereby lining their own coffers. Gould bought controlling shares of various branches in Missouri and southern Iowa, and pieced together the Wabash system in the 1870s and '80s. He then "invaded" the territories of established giants like the CBQ and the Rock Island to build connecting lines for his patchwork conglomerate.

By building parallel to an existing line, Gould forced other roads to buy out his company (at a profit for Gould, of course) or suffer a loss in revenues due to decreased traffic.[113] Parallel lines were aptly termed "nuisance lines."[114] These tactics financially strained the Quincy, and others too no doubt, because in order to "contain Jay Gould's western designs" and protect its territory, it had to expand its own system of feeder lines or absorb independent feeders before Gould did. All of this required funding, and in "November 1880, the financial pressures of competitive construction and consolidation forced the Burlington to free some of its assets. The only way was to 'water the stock.'"[115]

A perfect example of Gould-induced competition is the case of the Humeston and Shenandoah Railway. Gould's Wabash Railroad acquired the Missouri, Iowa and Nebraska in 1880 and threatened to build an extension to its Council Bluffs line through the southern tier of Iowa counties, which was CBQ territory. To head the Wabash off, "Quincy" directors set up the Southern Iowa and Nebraska, and both companies began grading their parallel roads. Since it was sheer folly to operate two lines in counties which could support only one, the CBQ and the Wabash agreed to build and share one road.

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111 *Ibid.*, p. 123.

112 Stover, American Railroads, p. 124-125.

113 Riegel, The Story of the Western Railroads, p. 107.

114 Stover, American Railroads, p. 116.

115 Larson, John Lauritz, Bonds of Enterprise, John Murray Forbes and Western Development in America's Railway Age (Cambridge: Harvard University Press, 1984), p. 168.

To this end, they organized the Humeston and Shenandoah.[116] Gould scored a victory by forcing the CB & Q to help sponsor a line that it could not really afford, just to protect its territory, and he also forced the Chicago Burlington & Quincy to share the revenues from that line.

The addition of these nationwide practices to the West's peculiar rate problem produced a volatile atmosphere. Fierce competition and personal enmity led railroad men to distrust one another. In the rush to beat competitors, railroads took enormous risks, often courting financial disaster by increasing the number of shares of stock without a corresponding increase in the value of assets. Fluctuating but consistently high rates and corruption led Westerners to distrust railroad men. Farmers were especially angry because they had the greatest need for railroads and their "original expectations had been so high." In the 1850s and '60s farmers regularly mortgaged their farms in order to buy railroad stock. When some companies failed in the Panic of 1857, many farmers lost their money. By 1873, when railroads were built, farmers found themselves saddled with mortgaged land, devalued stock, high taxes (because the township had voted bonds for the road), and elevated shipping costs.[117]

The Impact of the Grange

The Panic of 1873 rang a death knell for many American railroad companies whose directors had watered stock and otherwise plundered the organizations to further their own interests. The Union Pacific's leadership was embroiled in the Credit Mobilier scandal, and the company tottered on the brink of ruin. The Northern Pacific went over the brink, as did the CBQ, the Burlington and Southwestern, and the Burlington, Cedar Rapids and Northern. When depression struck and eastern financing was jerked away, smaller companies such as the Des Moines Valley Railroad fell like dominoes. Despite the fact that more western roads failed than eastern roads, the "group of roads having their eastern termini at Chicago were the most important ones to maintain financial solvency."[118] The CBQ's main line to the West, the B & MR (Nebraska), was one to survive.

The Panic also dealt farmers a hard blow, and it became the turning point in public opinion regarding railroads. Because of their speculative practices and over-capitalization, railway companies were blamed as chief culprits of the Panic. Farm prices dropped, rates remained the same or rose, railroad stock was worthless and worst of all, many of the bonds voted to aid the development of the roads were now coming due.

In southeast Iowa alone short haul freight rates reached an all-time high. Freight shipped from Mt. Pleasant to Burlington cost 18 cents per ton-mile, while the same freight could go to Chicago for only 7 cents per ton-mile. High short haul rates squeezed town commerce as much as it did farmers. After the Des Moines Valley railroad was completed to Des Moines, Keokuk merchants watched their freight rates rise compared to those paid by merchants in the 'interior." Keokuk was known as the

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116 Corbin, Bernard G., Across Iowa on the Keokuk & Western..., p. 72-73.

117 Stover, American Railroads, p. 120-121.

118 Riegel, The Story of the Western Railroads, p. 135.

Gate City, and one resident quipped that after the railroad went through to Des Moines "the 'Gate' had been left open and business had sauntered out never to return!"[119] A Burlington resident nicknamed the CBQ the "'Cursed, Bursted, and Quarrelsome.'"[120] Enraged rural and small town Midwesterners now felt that railroads had to be restrained, and their pressure resulted in the Granger Laws of the mid-1870s, the first widespread government regulation of railroads.

Created in 1867 by a Minnesotan who sought to improve the lives of farm families, the Grange offered them social and educational programs. After the Panic of 1873, however, political and economic issues figured more prominently in local Grange meetings, until it became a kind of political bullhorn for farmers.[121] In 1871 Illinois passed the first so-called Granger Law, which established maximum passenger fares and based freight rates entirely on distance.

Frustrated Iowa farmers leapt into the Grange movement. At the time of the Illinois reform, there were only forty Grange organizations in Iowa; by 1874 the state boasted nearly two thousand. Close to one thousand farmers rallied in Des Moines at the 1873 Iowa State Grange convention, and one year later the Assembly acknowledged their demands with the state's own version of the Illinois law.[122] The 1874 Iowa Granger Law split railroads "into four classes according to their earnings, and established...maximum freight and passenger fares for each classification."[123]

Railroads responded immediately. Quickly observing that effective enforcement was impossible, the Chicago Burlington & Quincy and the Illinois Central declared they would ignore the laws. Companies in Iowa also refused to grant rebates and passes to individuals who supported Granger legislation. In Minnesota and Wisconsin they purposely slowed train service, and all over the region they lobbied legislators for repeal of the laws.[124] W. J. Young, a Clinton lumberman who lobbied politicians in Des Moines to keep the Granger law, feared that the railroads would win a repeal by handing out free passes.[125]

All the "Granger roads" (so called because they crossed states with Granger laws) eventually decided to simply raise rates on through traffic. As a result of this, yearly earnings for railways in Iowa

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119 Hussey, Tactitus, "The Des Moines Valley Railroad" Annals of Iowa 8 (July 1907): 134.

120 Larson, Bonds of Enterprise..., p. 133-134.

121 Divine *et. al.*, America Past and Present, Volume II, p. 511.

122 Larson, Bonds of Enterprise..., p. 136-138.

123 Earl S. Beard, "The Background of State Railroad Regulation in Iowa," p. 33.

124 Stover, American Railroads, p. 129.

125 Sieber, George W., "Railroads and Lumber Marketing 1858-1878: The Relationship Between an Iowa Sawmill Firm and the Chicago and North Western Railroad," Annals of Iowa 39 (Summer 1967): 41.

actually rose in 1874. Ironically, earnings of those lines defying the law decreased for the same year.[126]

Some companies sued the state governments, arguing that it was unfair to regulate railways when no other private business in the country was similarly controlled, or that such regulation constituted "deprivation of property without 'due process of law.'" Other companies refused to acknowledge the state's rate schedules because they were actually chartered in another state. The Supreme Court upheld most of the state laws, however, and in 1876 it went further, stating in both *Peik v. Chicago and North Western Railroad* and *Chicago, Burlington and Quincy Railroad v. Iowa* that "in the absence of national legislation this regulation could apply to interstate commerce." The Court's position was that government regulation was justified since the companies were semi-public not strictly private enterprises.[127]

Despite the Supreme Court's rulings, the Iowa legislature gave in to railway pressure and repealed the Granger Law in 1878. At the same time, the Assembly created the Iowa Board of Railroad Commissioners to regulate railways in the state. The commission was to investigate complaints against the roads and accidents reported by the companies, but it had no power to enforce its decisions. Gradually the Commission's enforcement powers were strengthened and its jurisdiction extended to cover other forms public transportation and public utilities. In 1937 it was transformed into the State Commerce Commission.[128]

Eight years after Iowa repealed its Granger Law, the Supreme Court reversed its 1876 decisions. Increasing interstate mileage and managerial consolidation indicated that railroads required national, not state, regulation. Consequently, Congress passed the Interstate Commerce Act of 1887, establishing the Interstate Commerce Commission. Rebates and pools were abolished, and companies were required to post their rates. In April 1888, Iowa passed its own version of the Act, stipulating that in addition to rebates and pools, other "preferences" for any person or corporation were prohibited. It also stated that railway companies must make station names conform to established town names, and lines which failed to do so would be penalized.[129]

The Sherman Anti-Trust Act of 1890 also helped curb railroad monopolies, but the railways still continued to rebate, pool, and merge. To get around the ICC act they often created substitutes for rebates. According to John F. Stover:

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126 Throne, Mildred, "The Repeal of the Iowa Granger Law, 1878," Iowa Journal of History 51 (April 1953): 104-106.

127 Stover, American Railroads, p. 130.

128 Bryant, "Iowa Board of Railroad Commissioners--Reporting Companies."

129 Dey, Peter A., "Railroad Legislation in Iowa," Iowa Historical Record 9 (October 1893): 560-563.

> [p]referred shippers received the same advantage through overbilling (the railroad's paying damages for the loss of non-existent items) or under-billing (carrying a larger shipment but paying for a smaller one). Free storage of a shipper's goods or elevator rebates and allowances were also used in lieu of the straight rebate...[as were] 'midnight tariffs,' special low rates purposely printed to favor a large shipper and then revoked once the shipment had been made. [130]

In six pieces of legislation enacted between 1903 and 1913, Congress finally gave the ICC stronger enforcement capabilities. The most famous of the new railroad regulation was the 1906 Hepburn Act which ended passes, strengthened the 1887 law against rebates, prohibited railroads from owning their own coal companies, express companies, etc., and allowed the Commission to regulate express, sleeping-car and pipeline companies and to establish rates. With the passage of the Railroad Valuation Act in 1913, the ICC was given the power to figure the railroad companies' true value, upon which fair rates would be based.

There were two prime reasons for the new legislation: 1) the freight rate increases (due to rising operating costs) after 1900 that raised the hackles of farmers and small businesses, and 2) the momentum of the Progressive Movement (of which the Grange movement was a forerunner) against the evils of big business. As John F. Stover writes, "...Americans swept up by the Progressive Movement were in no mood to have anything less than an effective and rather complete regulation of the nation's railroads.[131] Ironically, by the time effective regulation arrived just prior to the First World War, railroads were already perched on the edge of decline.

IV. THE RISE AND FALL OF THE INTERURBAN: 1886-1940

Prior to electric motive power, streetcars were pulled by horses or mules. By the 1880s, however, horsedrawn trolleys were increasingly unable to keep up with the country's thirst for speed. Horsecars were slow, subject to frequent derailments, difficult to operate in snow, and the animals labored to pull loaded cars up steep inclines. Horses were expensive to buy and keep, and after a wearing four to five years in streetcar service, had low resale values. Seeking a faster form of urban transportation, companies in several American cities experimented with steam dummy engines, battery powered cars and cable cars, but they were less reliable or less profitable than horsepower.

A new form of motive power burst into the transportation scene in 1886 when Frank J. Sprague improved upon the electrical inventions of Thomas Edison. Electric motors were first developed in the 1830s and '40s, but remained unrefined until Sprague developed a direct current motor that could convert electricity into mechanical power capable of pulling streetcars and that could withstand the constant jarring of the cars. With this Sprague helped unleash the first modern rival to the steam locomotive, then the reigning champion of transportation. Within just one year his company

130 Stover, American Railroads, p. 137.

131 *Ibid.*, p. 139-141.

electrified the Richmond, Virginia streetcar system, and cities and towns across the country scrambled to install their own electric transportation systems.[132]

The new fad spread westward with amazing speed. In 1888 companies in Davenport, Des Moines and Dubuque all electrified their horsedrawn trolleys. Ottumwa followed in 1889, and by the late '90s electric streetcars hummed along the main streets of all the state's larger cities. The Sioux City Rapid Transit Company even constructed an elevated track complete with elevated stations to solve problems presented by the swampy Floyd River valley and a tangle of railroad tracks in the area. The track, unique in Iowa, began operating in 1891 with steam engines, but was shortly switched to electricity. Operations ceased between 1901 and 1903, when conventional, ground-level track was laid downtown rendering the "El" no longer necessary.[133]

Electric streetcars provided only intown service, usually between the business district and the railroad depot. At most they transported people to and from amusement parks, fair or Chautauqua grounds, or recreation parks just beyond city limits.[134] Most carried only passengers. One, the Des Moines City Railway, handled freight until the Inter-Urban Railway began shipping freight, at which point the City company gave its freight traffic to the Inter-Urban. Some companies (the Sioux City Rapid Transit was one) employed steam- or gasoline-powered locomotives until they could replace them with electric cars.

The application of electric power to transportation was not confined to metropolitan areas, however. Beginning in 1903, electric railways linked cities in Iowa without regular steam train service between them, and were called "interurbans" for that reason. Interurban lines tended to run north-south or diagonally across the state, filling in where railroads had left gaps between population centers. Clinton, Davenport and Muscatine; Waterloo-Cedar Falls, Cedar Rapids, and Iowa City; and Fort Dodge, Ames and Des Moines were so-joined. Unlike streetcars, interurbans carried express and LCL (less than carload) freight, and sometimes carload freight in addition to passengers.

Nationwide, there were two distinct booms for interurban construction, 1901-1904 and 1905-1908. Despite electric railway mania in the 1890s, interurban promoters found it difficult to finance their lines, given the "tight" money market and depression that lasted throughout the decade. One short road in Iowa, the Mason City and Clear Lake, began operation in 1897, and was the only "interurban" existing before 1900. After the economic tide turned in 1900-1901, companies like the Des Moines and Central Iowa (formerly the Inter-Urban Railway Co.) were able to commence work.

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132 Hilton, George W. and John F. Due, The Electric Interurban Railways in America (Stanford: Stanford University Press, 1960), p. 4-7.

133 Carlson, Norman, ed., Iowa Trolleys, Bulletin 114 of the Central Electric Railfans' Association (Chicago: CERA, 1975), p. 147.

134 Grant, H. Roger, "Electric Track Promotion in the South Iowa Coalfields," Palimpsest, January/February 1977, p. 18.

The slight panic of 1903-04 interrupted interurban construction for about a year, but the pace resumed unabated until the more severe panic of 1907. Most Iowa interurbans participated in the first nationwide electric railway boom. Of the eight such roads in the state five began running cars between 1901 and 1904. Only one, the Fort Dodge Des Moines and Southern, was created during the second nationwide building boom. Yet another, the Charles City Western, was organized in 1915, well after that phase.

Interurbans were popular because they supplied fast transportation with lower fares, and produced no irritating smoke or cinders. To steal additional passengers, especially rural riders, from steam companies many interurbans initiated a stop-anywhere policy. Quite unlike railroads they stopped more frequently, at smaller stations and even between stations.[135] It was thought that farm families "would benefit because competition between steam and electric roads would lower transportation rates [in general] and facilitate marketing of vegetables, poultry, and dairy products."[136]

Interurbans presented a real threat to steam railroad supremacy in passenger traffic, and to some extent freight traffic, because they were cheaper to build and operate. They tolerated light rail, curved roadbeds and steeper grades better than steam trains, thus reducing line construction costs. The savings from construction and operation expenses could then be passed on to customers as lower fares.

As on steam roads, ties were of cedar or oak (preferably oak) but interurbans tended to use the cheaper cedar. Interurbans also used less expensive ballast, e.g. earth or sand, rather than the more expensive crushed rock that steam railroads preferred. Seventy-pound rail was standard for midwestern interurbans, but weaker lines and streetcar systems often used even lighter rail. Heavily-built lines (those shipping carload freight or interchanging with railroads) were more likely to construct their lines to steam road standards.[137] The Waterloo Cedar Falls and Northern and the FDDM were two such "heavy" interurban lines in Iowa.

Some steam railroad companies reacted to the upstart electric railways with hostility. Since steam roads gained most of their income from freight traffic one might think they would welcome a slight decline in the less-profitable passenger traffic. On the contrary, railroads seemed to resent any challenges to their dominance of the transportation business.

Railroad responses to the wave of new electric railways were varied. Some refused to permit trolleys to cross their tracks. Others watched the new companies closely to detect any violation of their charters or other wrong-doing (as if steam railroads were without blame!). Railroads even tried to defeat interurbans by cutting passenger rates and improving their own local service. In 1905 the Rock

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135 *Ibid.*

136 Atherton, Main Street on the Middle Border, p. 234.

137 Hilton and Due, p. 47-48.

Island tried this tactic to regain lost traffic between Des Moines and Indianola, and between Cedar Rapids and Iowa City, but it failed.[138]

Steam roads like the Rock Island found it unprofitable to compete for several reasons. Higher track standards meant greater maintenance costs for railroads. Trolleys used non-union and less-experienced labor, and could afford to pay lower wages than railroads. They also required only two to three operators per train compared to the minimum three or four on steam trains. In general the short-haul costs to operate railroads exceeded those to operate interurbans.

Another reason electric railways kept their costs down was that they had few depots to build and maintain. In rural areas plain, unheated shelters (like Charlie's Station on the Ft. Dodge Des Moines & Southern, near Gowrie) were very common. In small towns people bought tickets and waited in or near local stores. In some towns the interurban shared a depot with the railroad (if the railroad was agreeable). A few electric railways rented their own stores and equipped them with the necessary ticket office, waiting and baggage rooms.

Only in some communities did interurbans build their own depots. The Fort Dodge Des Moines & Southern (FDDM) station in Des Moines (on East 5th Street near Court Avenue); the Waterloo Cedar Falls, and Northern station at La Porte City (NRHP); and the WCFN station at Gilbertville are among the few substantial interurban depots built in Iowa. Because so few of these larger stations were constructed and because the more typical flag stations were so easily removed or demolished, extant interurban depots in this state are rare.

Electric railways did, however, need to erect substations, car barns and repair shops, and today more of these remain than do the structures directly associated with the passenger. Car barns and shops in Albia, Council Bluffs, Davenport, Ft. Dodge, and Muscatine are still recognizable despite years of alterations.

In addition to connecting cities and towns, interurbans gave people access to other areas to which railroads had not established service. Because of inadequate transportation between towns and coal mines in Appanoose and Monroe counties, citizens of Centerville and Albia created their own electric interurban companies around 1910. "By 1909 there were twenty mines within an eleven mile radius of [Albia]. These mines employed nearly 3600 men, most of whom needed transportation to and from work."[139] The Fort Dodge Des Moines & Southern Railway also served the towns of Lehigh, Fraser, Colfax and Newton which were all located near coal fields.

The FDDM extended service to Iowa State University in 1906, when it acquired and electrified the Ames and College Railway, which had operated a small steam train between town and campus since 1891, known as "the Dinky."[140] Similarly, the Cedar Falls and Normal Railway instituted service to

138 *Ibid.* p. 22-24.

139 Carlson, Iowa Trolleys, p. 180.

140 *Ibid.*, p. 97.

the University of Northern Iowa campus in 1897 with motor cars. The Waterloo and Cedar Falls Rapid Transit electrified the line when it bought the former company in 1898.[141] By 1910 pupils and visitors were able to ride an electric railway to the Iowa School for the Deaf, east of Council Bluffs.[142] There was no need to supply trolley service to the University of Iowa because of that school's proximity to downtown Iowa City.

Interurbans also gave Iowans easy access to less serious attractions. Resorts and amusement parks at Clear Lake and Lake Manawa could each be reached by Mason City and Council Bluffs interurbans, respectively, by 1899. A mineral spring in Colfax had been a popular health spa since 1875, and in 1903, the first real miles of interurban line in the state were completed from Des Moines to Colfax by the Des Moines and Central Iowa Railway. The railway's officers probably wanted to capitalize on the spa's popularity.[143] The Colfax Springs resort declined in the early 1900s, and the Rock Island subsequently closed the station it had operated at the resort since the 1880s. In 1907 a new owner refurbished the hotel, added a golf course, and in 1909 tied the resort to the town of Colfax by electric trolley in the hopes of generating more business.[144]

Interurbans in Iowa coordinated surprisingly well with steam railroads and streetcars. Some were built with heavy rail and to steam road standards so that they could share tracks with the bigger trains. The CGW, for instance, shared a segment of line with the Waterloo-Cedar Rapids and Northern. The Illinois Central today still runs trains over some segments of interurban track in Waterloo. Interurban companies built lines between railroad depots, facilitating the flow of passenger, and to some extent freight, traffic for the railroad companies. Sometimes the interurbans shared depots, shops, car barns and other facilities with the steam roads or street cars. The Des Moines City Railway and the Inter-Urban Railway shared tracks, shops, other facilities; the interurban even bought its power from the city company for a while. Occasionally, interurbans took over streetcar lines, as in Fort Dodge.

During the First World War, the coordination between the various forms of rail transportation gained even greater importance. In central Iowa, streetcars and interurbans moved troops between Camp Dodge and Des Moines, and the Black Officers Training School at Fort Des Moines and the city. Neither post had steam road connections, and without electric railways the movement of troops would have been undoubtedly slower.

After the Armistice was signed in 1919, however, the popularity of interurbans and street cars began to wane. The automobile now occupied the spotlight, and both steam and electric railways lost

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141 *Ibid.*, p. 191.

142 *Ibid.*, p. 131.

143 *Ibid.*, p. 77.

144 *Ibid.*, p. 93.

passengers. Electric railways were not able to withstand the losses because a greater proportion of their revenue was generated by passenger traffic. These losses were combined with higher operating costs due to post-war inflation, and according to Lewis Atherton, many companies in the Midwest folded by the mid-1920s.

Iowa seems to be an interurban anomaly in the region. Most Iowa companies did not suspend passenger service until the late 1930s and early 1940s, when they bowed to the Depression and automobile and truck competition. Passenger line abandonments ensued and freight transfer operations between the steam roads became their primary traffic, offset only by a temporary increase in passenger traffic during World War Two. Most survived until the late '40s and early-1950s, when they were either dissolved or dieselized and incorporated into one of the major steam railroad systems. Three companies -- the Albia Light and Railway, the Mason City and Clear Lake Railway, and the Charles City Western -- still ship freight today, although their lines have been cut back sharply.

Today, a growing problem of automobile pollution and congested city traffic is forcing many cities across the nation to search for new forms or patterns of transportation. Cities in Iowa too, Des Moines especially, will eventually have to examine their transportation systems. A return to electric streetcars and some interurbans may be worth investigation.

V. TECHNOLOGY AND EFFICIENCY: 1855-1940

A host of technological changes accompanied or followed the rails across the Midwest. Most of these occurred in the fifty-year period after the Civil War. Reasons for the developments are varied and somewhat interrelated. Companies wanted to improve the speed, efficiency and safety of their trains, as all of these factors affected the profitability of their lines. Conversely, companies refused to immediately embrace some of the improvements because they were initially too expensive.

Before the railroad even came to Iowa iron rails replaced wooden and iron-capped rails. Iron was much safer and more durable. A few shortlines may have used wooden tracks, but these were probably short-lived experiments. For instance, the Farmers Union Railroad near Liscomb ran on wood in the 1870s, but the company ceased operation in 1878.[145] Metal tracks simply lasted longer and required fewer repairs. T-rails, too, were the standard by the time railways built in Iowa. The rails were grasped by flanged wheels on the engine and cars behind it. Flanged wheels and T-rails were proven to reduce the likelihood of derailment.

Until the Bessemer Process was adopted by the nation's steel industry in the 1870s, most trains had iron engines, iron wheels, and ran on iron rails. In the Bessemer Process "a blast of air through molten iron burned off carbon and other impurities, resulting in a steel of a more uniform and durable

145 Ben Hur Wilson, "Abandoned Railroads of Iowa," Iowa Journal of History and Politics 26 (January 1928): 41.

quality."[146] By the 1910s almost all rails in the state were steel. At the same time, steel framing, "center sills," wheels and platforms were standard features on railroad cars.[147]

There was a constant quest for more power and more speed in engine designs. The first engines were woodburning steam engines. Fuel was burned to heat water into steam which then propelled the pistons in the cylinders of the engine. Tenders behind the locomotive held one to two thousand gallons of water for the boiler, and one to two cords of wood for the firebox, which was enough to drive the engine thirty to sixty miles depending on the terrain.[148]

By the mid-1850s forests in the East were depleted and railways began the transition to coal, which was actually a better fuel. One ton of coal roughly equaled 1 and 3/4 cords of wood and it weighed less, so the engine could haul a larger load and travel a greater distance. The first locomotives in Iowa were woodburners, but after the Civil War rail companies predominantly used coalburning locomotives. To take advantage of this new demand for coal, Iowa railroads opened mines, particularly in the southern counties.

After the switch to coal, changes to engines consisted of additional driving wheels, giving them greater motive power. As engines grew larger and longer, the smaller out-moded locomotives were sold secondhand to small local companies, or shifted to lines with lighter traffic. In northeast Iowa the smaller locomotives were actually preferred because the longer ones could not negotiate the sharp turns in the tracks dictated by the area's more hilly terrain.

As the trains grew heavier, tracks required more frequent maintenance. Derailments were common where trains ran on older, lighter rails, because the lightweight rails could not withstand the pounding passage of the new, heavier trains. (Derailments on shortlines were frequent because the the small companies could rarely afford to replace their track.) Rails in this period increased from 35 pounds to nearly 100 pounds. Railways began to ballast ties with earth and gravel from an early date, but with the weightier trains of the 1870s and '80s, they switched to creosote-injected, cinder-ballasted ties which deteriorated and shifted less easily.

Until the 1870s and 1880s railroad cars were manually joined by link and pin couplers, and halted by hand brakes on the roofs of the cars. Both coupling and braking were dangerous and slowed the movement of freight. Inventors George Westinghouse and Eli H. Janney brightened the scene when they introduced the air brake and the automatic coupler respectively in the early 1870s. But the railroad industry was skeptical at first, and few companies employed the expensive new devices.[149]

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146 Divine, *et al.*, America Past and Present, volume 2, p. 526.

147 Stover, American Railroads, p. 167.

148 Stover, Iron Road to the West, p. 200.

149 Stover, American Railroads, pp. 152-153.

An Iowa farmer, Lorenzo Coffin, was disturbed by the shocking death and injury rate among railroad workers and agitated for the acceptance of the air brake and automatic coupler. "As railroad commissioner for Iowa (1883-1888) he arranged for air-brake tests by the Burlington Railroad near Burlington, Iowa, in 1886-1887 which eventually proved [the efficiency of the Westinghouse brake]. In April 1890 Coffin's work paid off and the Iowa legislature passed a law requiring automatic couplers, power brakes and "driver brakes."[150] It was three years before Congress enacted similar safety legislation nationally.

In addition to accidents caused by inferior rails and roadbeds, and manual brakes and couplers, train wrecks occurred because of obstructed tracks, signaling conflicts, and poor bridge design and construction. In the early days of railroading livestock often blocked the tracks and caused considerable damage to trains unable to stop in time. To reduce the damage railways attached plow-like "cow-catchers" to the front of their engines, and by the time trains arrived in Iowa, this was another standard feature. Although the 1856 Land Grants had called for fencing of right-of-ways where necessary, Iowa required all railroads to erect cattle guards and fences on both sides of their lines in 1862, presumably because of the continuing problem of livestock interference.

Signaling conflicts or the lack of signals at all also caused accidents, particularly where two roads crossed or when two or more companies shared a line. Telegraph wires were frequently strung alongside the tracks, and when emergencies arose railroads could wire ahead (or behind) for help or to warn of danger. Railroads also mounted mechanical signals on posts along their routes and on stations or yard structures. The signals alerted engineers to other traffic, told them when to stop, slow, accelerate, sound their whistles, and whether or not the track ahead was clear.

As rail networks multiplied coordinated signaling became of the utmost importance. George Westinghouse and others developed mechanical and later electrical, interlocking signaling devices in the 1870s and 1880s. Railroads then built 2-story, interlocking towers--somewhat like a control tower at an airport--at major junctions. Of the nearly 100 interlocking towers once dotting Iowa's railroad map, only one remains today. Since about 1900 Mills Tower in Iowa Falls has controlled the crossing of the Illinois Central and Rock Island lines there. Railroad etiquette specified that the senior road (the first railroad at a particular location, the railroad to be crossed by another line) chose whether it wanted the junior road, the late-comer, to erect a tower or build over it.

It was not until the 1920s that automatic block signaling was perfected. Trains were separated by a "block of distance" and electric circuits controlled the switches and signals.151 By the 1930s most railroad companies had divided their lines into Divisions, in which all traffic was controlled by "an

150 Dey, "Railroad Legislation in Iowa," p. 564.

151 Stover, American Railroads, p. 159.

operator-dispatcher at a control and indicating machine [who set] switches and trackside indicators." In 1945 some 6,000 miles of rails were controlled this way.[152]

Bridges and Iowa Railroads

Iowans craved railroads because the railroad would give them access to grain and livestock markets and bring them eastern goods to improve their lifestyles. Railroads were the most efficient means of transportation. In the early 1850s, Iowans were already forming their own railway companies to "connect" with the major lines that planned to lay track to the Mississippi, but real connections required bridges. Without them, the state was essentially an island between two great waterways.

The growing significance of integrated through-lines between the industrial East and the agricultural Midwest, and the recurring transcontinental dream led the Mississippi and Missouri Railroad and the Railroad Bridge Company (of Illinois) to begin construction of a bridge from Rock Island to Davenport in 1853. The following year the Rock Island line joined them in the effort and the bridge was completed in 1856.[153] At that time it was the first bridge across the big river,[154] and one of the longest spans in the United States. It eliminated the time-consuming ferrying of freight, passengers, and railroad construction materials across the river, and probably hastened the development of railroads in this state.

Nevertheless, the bridge was not a boon to everyone in the Upper Mississippi Valley. Steamboat and ferry operators protested vigorously against the bridge project. Only a few weeks after the bridge was opened for service, the steamboat *Effie Afton* struck one of its piers, exploded, and virtually destroyed the wooden truss bridge. The incident ignited suspicions of outright sabotage on the part of the steamboat owners. The Mississippi & Missouri, the Rock Island and the Railroad Bridge Company soon rebuilt the span, but then faced a lawsuit by a group of steamboat companies, who claimed that bridges were hazardous to the safety of river traffic and unfairly restricted their business. The case went before the United States Supreme Court, where a young Abraham Lincoln successfully argued the railroad's position, and the bridge remained.[155] The decision proved to be the beginning of the end for steamboat transportation.

Bridges posed a problem for Iowa railroad companies because they tended to be expensive and difficult to build. Masonry was a preferred building material for bridges, but it was more expensive because it required skilled laborers, and where there was no native material, brick or stone had to be

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152 *Ibid.*, p. 200.

153 Bryant, "Corporate Histories: Iowa Companies, Railroad Bridge Company, 1853-1866."

154 Stover, American Railroads, p. 44

155 *Ibid.*

brought in. Wood was a cheaper material because it was plentiful in the eastern part of the state and it required fewer skilled laborers. Wood, however, was less durable than masonry.

Iron and steel were more durable than wood, but more costly.[156] Until domestic iron prices fell and quality rose in the post-Civil War industrial surge, all-iron structures probably did not span Iowa waterways until the 1870s. The most common bridges were probably composed of wood timbers with iron, and beginning in the late-1870s, steel tension members. One would expect that culverts and abutments were more often of masonry construction, particularly in eastern Iowa. Railroads may have begun installing precast concrete block culverts and abutments in the 1890s.

The earliest bridges in the state were probably also railroad companies' in-house projects. Special bridge companies built the first Mississippi River bridges (Davenport--1856, Clinton--1865, Dubuque--1868, and Keokuk--1871), but Iowa railroad companies themselves likely erected most of the bridges, trestles, and culverts they needed. One can assume that the earliest roads simply assigned the bridge building tasks to their general engineers. Beginning in the 1860s, however, railroads could "buy" designs from bridge manufacturers in the East who would then ship prefabricated metal structures for the railroads to erect on site. Presumably the major roads were most likely to "hire out" for bridge construction, especially for larger waterways, if they did not employ their own bridge experts. They could contract local, regional, or national bridge companies who did employ bridge engineers.[157]

Throughout the period covered by this study, the most common types of railroad bridges in Iowa were deck, through, or pony trusses, and most were variations of the Howe, Pratt, and Warren patented designs. They were predominantly stationary, except for those on the Mississippi River, which were frequently movable so that river traffic could pass through safely. According to David Plowden most movable bridges were built for railroads. The earliest movable structures were swing bridges, which are basically drawbridges and must open a full ninety degrees. Until the 1890s swing bridges were the only kind of movable bridges; during the '90s more powerful motors were developed, allowing the construction of vertical lift spans.[158]

The Clinton bridge was one of the first notable swing spans. Renown engineer Wendell Bollman designed the Clinton bridge, completed in 1865. The Mississippi River was soon famous for its number of swing spans. In 1926, the Santa Fe railroad erected the 525-foot Ft. Madison bridge, the longest swing bridge on the Mississippi.[159]

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156 David Plowden, Bridges: The Spans of North America (New York: W.W. Norton and Co., 1974), p. 63.

157 Donald C. Jackson, "Railroads, Truss Bridges, and the Rise of the Civil Engineer," Civil Engineering-ASCE 47 (October 1977), pp. 97-100.

158 Plowden, pp. 186-187.

159 *Ibid.*, p. 187.

Along the Iowa portion of the Missouri River there was less need for movable bridges since water traffic was lighter, but the river had no less than its share of well-known bridges. George M. Morrison, a prolific bridge engineer, designed seven Whipple-Murphy truss structures in the 1880s for railway companies crossing that river. These are notable because they were some of the earliest all-steel structures ever built.[160] The first all-steel bridge was constructed across the Mississippi River at Glasgow, Missouri, in 1879, and Morrison erected the first of his in the following year. One of Morrison's largest bridges was the 1600' Missouri River bridge (four spans of 400-feet each) which the Chicago & North Western built at Sioux City in 1888.[161]

By 1900 steel railroad structures were no longer novelties in the state, and in 1901 the CNW finished the Boone Viaduct over the Des Moines River. Still in use, today it regularly carries sightseers on the Boone Scenic Valley Railroad. Plowden has named this one of North America's greatest railroad viaducts. Another impressive viaduct was the Chicago Great Western Des Moines River Viaduct in Fort Dodge, built in 1903. After the Boone Viaduct it is the second longest bridge in the state and is also still in use.

Since bridges were so vital a link in the increasingly dense and increasingly integrated network of railroads across the country, bridge failures frequently caused great loss of life and resulted in widespread public outrage. After a particularly bad accident caused by the collapse of a poorly-designed Lake Shore and Southern Michigan bridge in 1877, a civil engineer by the name of Charles MacDonald admonished railroad companies to improve their bridges, hire full-time professional engineers, and inspect structures at least twice a year.[162] Companies could not afford to loose thousands of dollars in locomotives, rolling stock, reimbursement to injured passengers and ticket sales to future passengers. They also lost revenue by removing a portion of the line from service while the bridge was repaired or replaced, not to mention the additional cost of repairs or total replacement. Railways followed MacDonald's advice and soon incorporated bridge engineers into their operations, strove for better bridge designs and construction methods, and adopted the practice of regular inspection.

The railroads' endeavors to improve bridges, and thereby improve their speed, efficiency and safety records, had a significant impact on the construction industry in general. "[T]he single greatest factor in the development of iron and steel technology was the railroads. The building of truss and girder bridges greatly stimulated iron and steel metallurgy, fabrication and design methods," and "[h]ad it not been for the development of [these] bridges,...the birth of the iron and steel framed skyscaper

160 *Ibid.*, p. 137.

161 Jackson, "Railroads, Truss Bridges....," p. 98; Plowden, Bridges: The Spans of North America, p. 137.

162 Jackson, p. 101.

would have been greatly delayed."[163] By virtue of the many bridges that the state's high rail mileage surely included, one might say that Iowa railroads played an active part in advancing iron and steel construction in the nation.

All of the technological developments mentioned up to this point vastly reduced congestion and accidents. But there are other factors which also led to increased speed and efficiency of train service. These included the adoption of standard gauge in the 1870s on all roads with at least moderate traffic, and the introduction of standard time by railroads. Iowans revealed their feelings about traffic delays when they dubbed the Minneapolis and St. Louis Railroad (MSTL) the "Midnight and Still Later" and the "Maimed and Still Limping." In 1883 railways banded together and created standard time zones to eliminate the confusion generated by hundreds of different "times." Congress lagged behind the railroad industry, and finally nationalized standard time in 1918.[164]

As early as 1834 the United States Postal Service contracted with rail companies to transport mail via rail, and in places like Iowa, mail was transported exclusively by rail as soon as a railroad entered a town. To increase the speed of delivery mail was sorted en route in a special mail car beginning in the late 1860s.[165] Another method of speeding up the mails was to hang the mail pouch from a post outside the depot so that a mail clerk with a long hook could collect it without having to stop the train. Mail delivery by train continued well into the 1950s in Iowa.

While the speed, efficiency and safety of train travel rose, the comfort of such travel likewise improved. Kerosene lamps and then gaslight replaced candles as lighting on passenger cars in the 1860s and 1870s. Electric lights appeared in the late 1880s. Steam heat from the engine warmed the cars after 1881, replacing old stoves. Vestibules were introduced by H. H. Sessions of the Pullman Car Co. in the 1860s to allow passengers to step from car to car more safely. At first they were only as wide as the door, but by 1890s they were extended to car-width. Vestibules furnished safety advantages of two kinds: they reduced sway and prevented "telescoping" of cars during collisions.[166] They also helped prevent some loss of heat from the car during winter months. Proper ventilation remained a problem, however, as long as steam locomotives were in vogue; the smoke and soot they emitted prevented passengers from opening car windows.

Synonymous with the highest in passenger train comfort was the name of George Pullman. Pullman's Chicago-based car company began producing cars in the 1860s, and after the Civil War his company

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163 *Ibid.*

164 Stover, American Railroads, p. 158.

165 *Ibid.*, p. 174.

166 Stover, American Railroads, p. 167.

quickly dominated the field of railroad car manufacturing. He built sleeper cars, dining cars (in 1868), and parlor cars, in addition to luxurious private cars for politicians and the well-to-do.[167]

Freight car improvements consisted of a general increase in carrying capacity, and the introduction of a special stock car and the refrigerator car. Growth in the cattle industry sparked the development of stock cars, and by the 1880s they were equipped with water and feed troughs. Regular box cars packed with ice and insulated by sawdust evolved into the refrigerator car with "built-in ice compartments"[168], which was patented in 1867. The growing use of refrigerator cars in the late 19th century spurred dairy and meat packing industries in Iowa, since milk and meat products could now be shipped to big city markets. Other cars refined during this period were the tanker, coal and grain hopper, and the caboose.[169]

Perhaps the most significant technological advancement in the railroad industry was the development of the diesel-electric engine in the mid-1920s. In 1934 the Burlington railroad, trying to regain passengers lost to cars and buses, was the first to use a diesel engine in passenger service. Its aerodynamically-designed, stainless steel engine embodied all that was sleek, modern and fast. The new lines of diesel passenger trains were dubbed "streamliners," and they did help raise passenger revenues in the '30s and '40s,[170] but it was steam power that propelled railroads through World War II. Nonetheless, in the struggle against the diesel, steam engines were destined to lose. Diesel-electric locomotives were more expensive to manufacture than steam engines but since diesels were much more fuel-efficient, their long-term costs were lower, and by the late 1950s steam locomotives had all but vanished.

The big railroad companies tended to purchase their equipment from major nationwide manufacturers operating out of Pennsylvania, Ohio, and other eastern industrial areas. Sometimes the larger companies built their own equipment. Chicago, Burlington & Quincy, for example, built some of its rolling stock at the West Burlington shops. Likewise, Santa Fe built some of its equipment at its Ft. Madison facility, known as Shopton. Smaller railroad companies, such as the MSTL and Wabash often purchased locomotives secondhand from the larger lines.[171]

Nonetheless, the vast array of machinery and parts required to run a railroad spawned a host of Iowa companies which tried to compete with the large corporations. Perhaps the most well known Iowa company was the Bettendorf Car Co., which perfected a widely used freight car truck (one axle with

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167 *Ibid.*, pp. 166-167.

168 Stover, Iron Road to the West, p. 22.

169 *Ibid.*, pp. 164-165.

170 William J. Petersen., "The First Streamliner," Palimpsest (June 1951), p. 228.

171 Nicholas Pitsch to Tracy Cunning, letter dated November 25, 1989.

two wheels) known as the Bettendorf Truck. The company was purchased by J.I. Case in the late 1940s, and the trucks were manufactured into the 1950s. They can still be found in operation, primarily on non-revenue equipment. The Davenport Locomotive Works operated until the late 1950s. Pittsburg-Des Moines Steel Co. made repairs and parts for the Electromotive Division of General Motors during the 1960s. The Keokuk-Griffin Wheel Co. still manufactures railroad wheels and axles, and the D.A. Wilson Co. of Des Moines remanufactures old locomotives.[172]

VI. THE ILLINOIS CENTRAL: A LINE STUDY: 1855-1940s

So many railroads have operated in Iowa, either as major entities, predecessor lines, or independent short lines, that, on the surface, the historic organizational structure appears chaotic. For this reason, we chose to examine the development of one particular line in order to dispell some of the confusion and see what historical patterns would emerge. The Illinois Central line was chosen for two reasons. First, it was a major line and therefore we could examine the relationships of predessessor lines to the parent company. Second, we knew from preliminary reconnaissance data that more types of structures had been retained along the Illinois Central line. Thus, we had the potential to learn more about the links between extant resources and the historical development of the line.

The Main Line and Iowa's Place in the System

Chartered in 1851, the Illinois Central Railroad Company (IC) was formed for the purpose of opening up the rich lands of Illinois to settlement and agricultural development. Between 1851 and 1856, the main lines in Illinois were laid out, connecting Chicago with the mouth of the Ohio River at Cairo and with the Mississippi River at Dunleith, now East Dubuque. At the time the company was chartered, fewer than 100 miles of railroad track had been built in Illinois, and the 705 miles that the IC built in the next five years immediately made the line a major force in the Midwest transportation industry.[173]

No sooner was the main line completed than the IC began to throw out supplementary lines, eventually creating a network that linked Chicago with the Missouri River on the west and the Gulf of Mexico in the South. Although the IC line gradually expanded its operations to a total of 14 states, the company considered the Iowa line to be its most important supplementary line.[174] Map 3 depicts the evolution of the Iowa Line in relation to Illinois Central's Main Line. Table 2 illustrates the geneaology of the Iowa Line.

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172 *Ibid.*

173 C.H. Markham, "The Development, Strategy and Traffic of the Illinois Central System," Economic Geography 2 (1926):2-4.

174 *Ibid.*, p. 4.

Map 3: The Illinois Central System
Source: Markham, Economic Geography 2 (January 1926):5

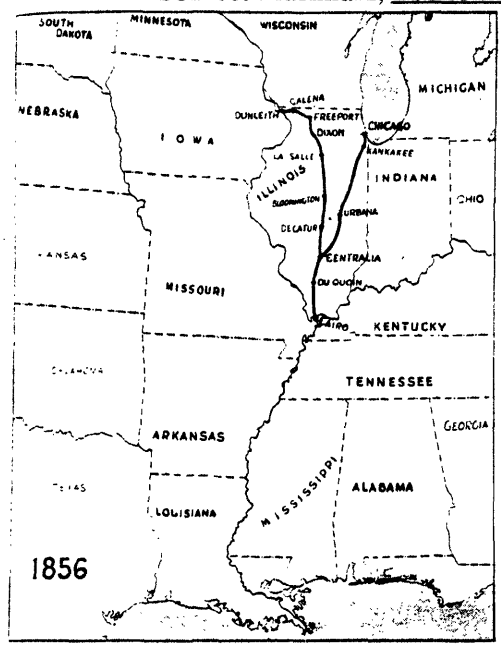


FIGURE 3.—The Illinois Central System in 1856 was a forked intra-Illinois railroad of which one branch ran from Galena in the west, and the other from Chicago in the east, to unite at Centralia and continue on to Cairo.

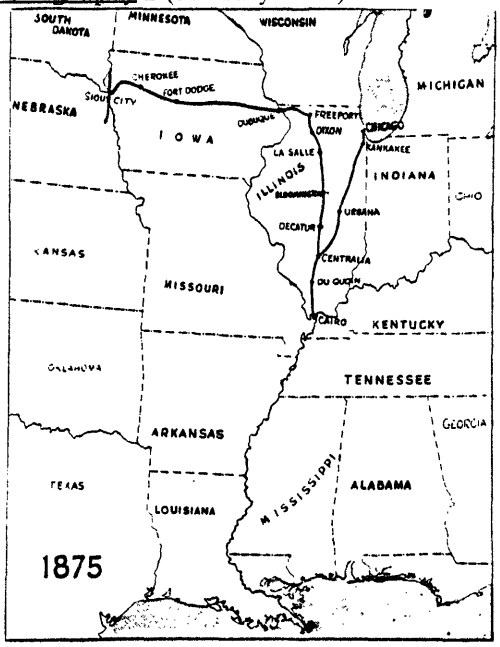


FIGURE 4.—The Illinois Central System in 1875 crossed two states, Iowa and Illinois, the two states which were to take the lead in the agricultural progress of the later nineteenth century.

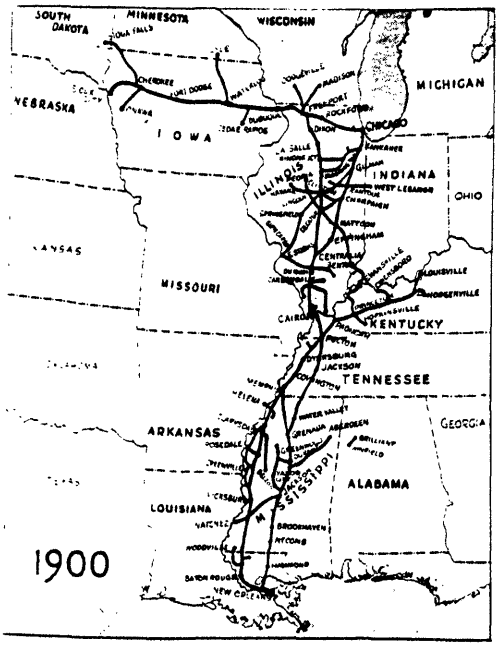


FIGURE 5.—The Illinois Central System in 1900, extending to the Gulf, had become a valley network of rails that carried a heavy tonnage of the rich products of the fertile farms, the green pastures, and the profitable plantations of "The

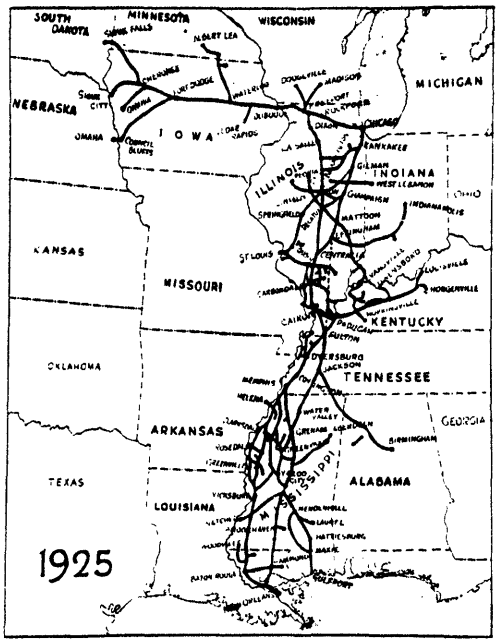
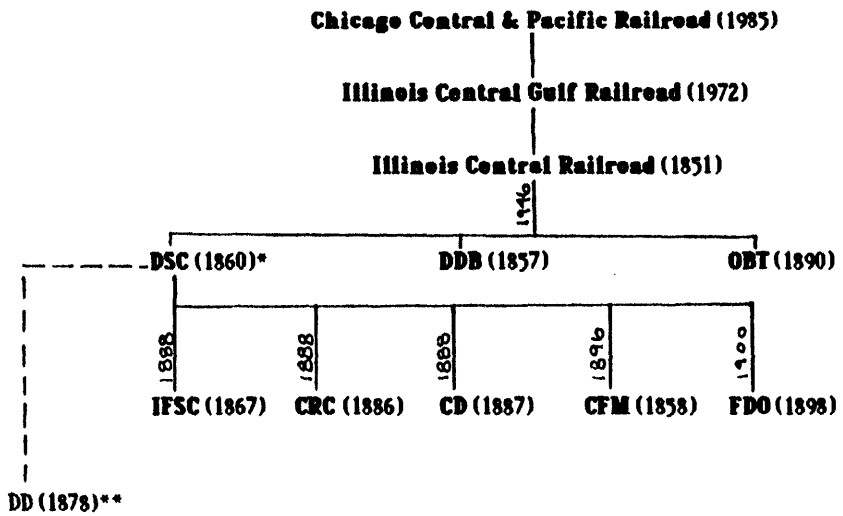


FIGURE 6.—For the first twenty-five years of the twentieth century the Illinois Central System has improved its service and consolidated its interests, for the benefit of the populous district that supports it and to the consequent profit to

Illinois Central Railroad--Iowa Lines
Family Tree



Key to Illinois Central Family Acronyms

CCP = Chicago Central & Pacific	DP = Dubuque & Pacific
CFM = Cedar Falls & Minnesota	DSC = Dubuque & Sioux City
CRC = Cedar Rapids & Chicago	FDO = Fort Dodge & Omaha
CD = Cherokee & Dakota	IC = Illinois Central
DD = Dubuque & Dakota	ICG = Illinois Central Gulf
DDB = Dunleith & Dubuque Bridge Co.	IFSC = Iowa Falls & Sioux City

OBT = Omaha Bridge & Terminal R'y Co.

Dates in parentheses to the right of each company acronym indicate the year of that company's organization. Dates along the solid lines indicate the year that the company was officially acquired by the company above it. The dashed line represents financial influence or control of a company without formal acquisition.

* The first Illinois Central-backed company in Iowa was the Dubuque & Pacific, organized in 1853. In 1860 it was clear that the road would not extend beyond Sioux City and the DP was reorganized into the Dubuque & Sioux City. The DSC subsidized each of the IC branch line companies in Iowa, and eventually absorbed them all. The DSC itself was formally acquired by the Illinois Central in 1946 (Bryant, 1984).

** The Dubuque & Dakota Railroad was organized with the support of the DSC in 1878 to acquire the property of the Iowa Pacific Railroad Company. The DSC backed the DD until 1887, but the company was never a Gibraltar of financial strength and was known as the "Damned Doubtful" (Bryant, 1984).

Map by Tracy A. Cunning, based on data compiled by Ray L. Bryant.

Built over a period of about 45 years, the Iowa line extended, when complete, from Chicago to Sioux City, to Omaha-Council Bluffs, and to Sioux Falls, South Dakota, with branches to Onawa and Cedar Rapids as well as Albert Lea, Minnesota. Major shipments on the Iowa line included livestock, packinghouse products, grain, and grain products, all of which were transported to Chicago. In addition, perishable fruits and vegetables from the Pacific Coast; livestock from Wyoming, Colorado, and Nebraska; and petroleum products from Wyoming and Kansas entered the rail system at Sioux City, Omaha, and Sioux Falls.[175] By the early 20th century, Omaha emerged as the largest center of grain business, with the Omaha Grain Exchange located in the Illinois Central building. Omaha also boasted the second largest stock yards in the country.[176] The IC was, of course, only one of the railroads contributing to Omaha's preeminence as a railroad city. Council Bluffs was equally important to the Illinois Central, providing the interchange point with the Union Pacific, Great Western, Rock Island, Burlington, Chicago and North Western, Milwaukee, and Wabash railroad lines.

Building the Iowa Line: 1855-1899

The history of building the Iowa line is reflected in the names of the predecessor lines and feeder lines which were established in order to achieve a rail system that allowed the Illinois Central to tap the most productive agricultural areas of the state [Map 4]. The first of these lines was the Dubuque and Pacific (DP), a front for the IC which was organized in 1853. Because the IC's charter did not allow it to build railroads outside of Illinois, the usual procedure was for the fronting company to build the lines, then lease them to the IC. As the name implies, DP's original goal was to extend the line all the way from Dubuque to the Pacific Ocean. Seven years into the project, however, the tracks had penetrated only 78 miles toward the intended destination, and the company was bankrupt. Under the direction of Morris K. Jesup, the DP's major financial backer, the line was reorganized in 1860 as the Dubuque and Sioux City Railroad Company (DSC), its name signifying a more reachable western terminus. Work progressed faster than it had in the 1850s, but the diversion of men and material to the Civil War nonetheless prevented sustained construction. For three years, the line was stalled at Cedar Falls, and by 1866, the line had been extended west only as far as Iowa Falls. In addition, a branch line extending from Cedar Falls had been pushed as far north as Waverly, built under the auspices of the Cedar Falls and Minnesota Railroad Company, another front for the IC.[177]

At Iowa Falls, Jesup apparently ran out of steam and was on the verge of abandoning the project. Platt Smith, the vice president of the DSC, took matters into hand by withdrawing from the company and forming a new company, known as the Iowa Falls & Sioux City Railroad Company (IFSC). The sole purpose of the IFSC was to complete the Illinois Central line to Sioux City. Smith and another

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175 *Ibid.*, pp. 12, 15-18.

176 J.D. Cameron, "Omaha Area," in Organization and Traffic of the Illinois Central System (Chicago: Illinois Central Railroad Co., 1938), pp. 498, 501.

177 Corliss, pp. 144-149; Wattling, pp. 15-16.

investor, Ft. Dodge attorney John Duncombe, convinced John Blair to join their ranks. Blair, who had previously directed construction of the Cedar Rapids and Missouri River line across Iowa (merged into the Chicago & North Western) and the Sioux City and Pacific Railroad (part of the Union Pacific line), apparently agreed to direct the IFSC effort in order to protect his SC&P line. Once in control of lands granted to the DSC, Blair hoped to divert the IFSC line to Onawa, thus leaving the SC&P in control of all the Sioux City traffic. The Iowa legislature, however, thwarted his intentions, and under Blair's direction, the line reached Sioux City in 1870.[178] Between the eastern terminus of the Iowa line at Dubuque and the western terminus at Sioux City, division stations were located at three cities: Waterloo, Ft. Dodge, and Cherokee [Map 5].

From 1875 to 1886, the Iowa line did not expand. During the 1880s, however, the IC became concerned about maintaining control of its grain and livestock traffic. Expansion was the key, and between 1886 and 1888 the company either built or acquired feeder lines in Iowa, Illinois, Wisconsin, and Indiana. The Iowa line was expanded in three places. Under the auspices of the Cedar Rapids and Chicago Railroad Company, a branch line was built from Manchester to Cedar Rapids. Under the auspices of the Cherokee and Dakota Railroad, two branch lines were constructed: one running south from Cherokee to Onawa, the other running northwest from Cherokee to Sioux Falls, South Dakota.[179]

The last expansion of the Iowa line took place in 1899, a move designed to link the line with the remaining major shipping point: Omaha-Council Bluffs. Under the auspices of the Fort Dodge and Omaha Railroad Company, the IC line was extended from Tara, just west of Ft. Dodge, to Omaha in less than a year.[180]

The actual building of the railroad took place in four major periods, although the earliest period produced little in the way of physical structures. Construction began in 1855, but between then and 1860 only 78 miles of track were laid. Under the auspices of the Dubuque and Pacific Railroad Company, the IC reached as far into Iowa as Jesup, located in western Buchanan County. The depression of 1857-59, combined with flood conditions in the summer of 1858, prevented much construction. The company was crippled before the line was long enough to generate enough revenue to sustain construction. Morris Jesup, the railroad financier for whom the town was named, took over control of the company and spearheaded the next construction phase.[181]

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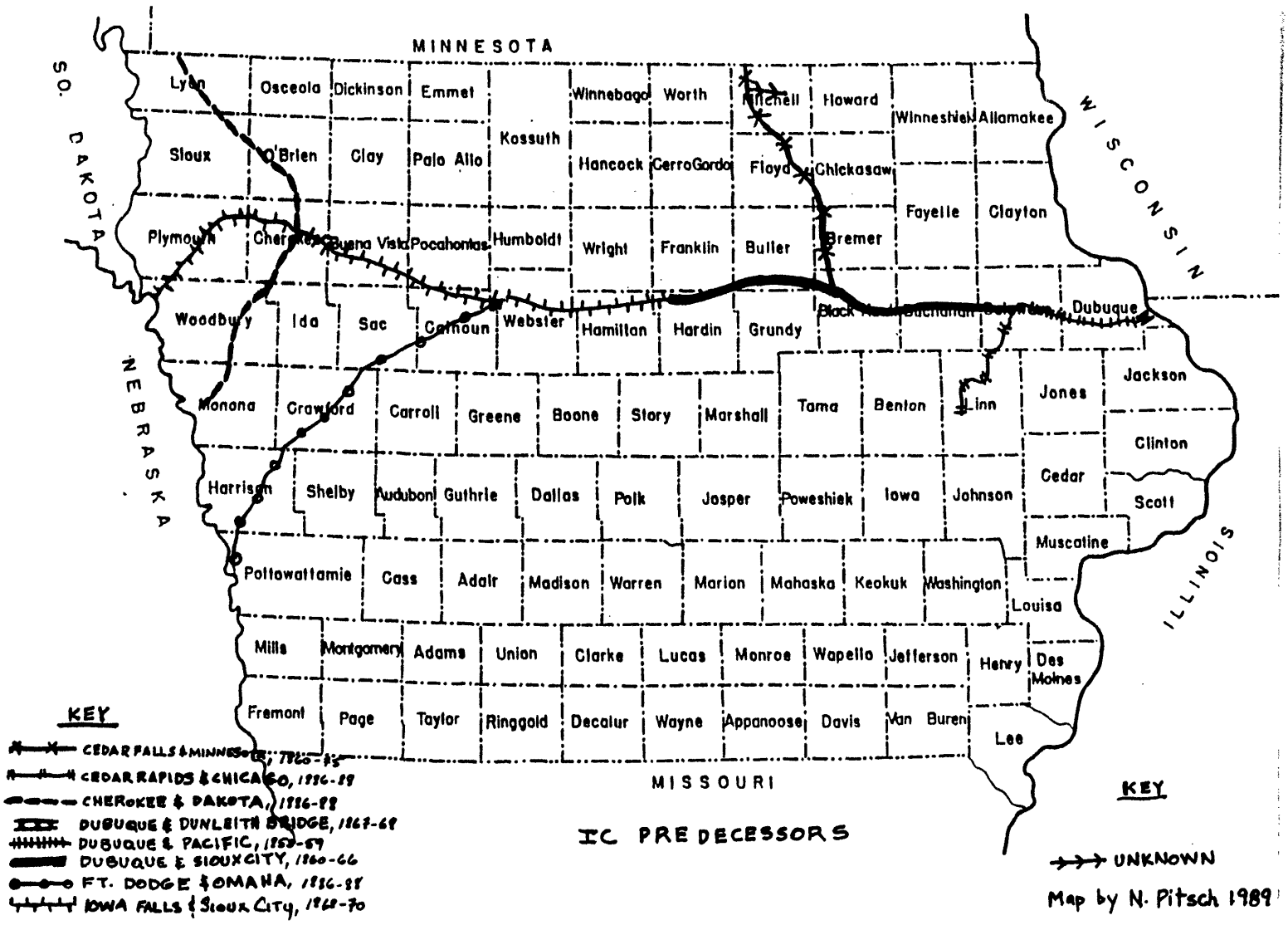
178 Corliss, pp. 149-150.

179 *Ibid.*, pp. 218-224.

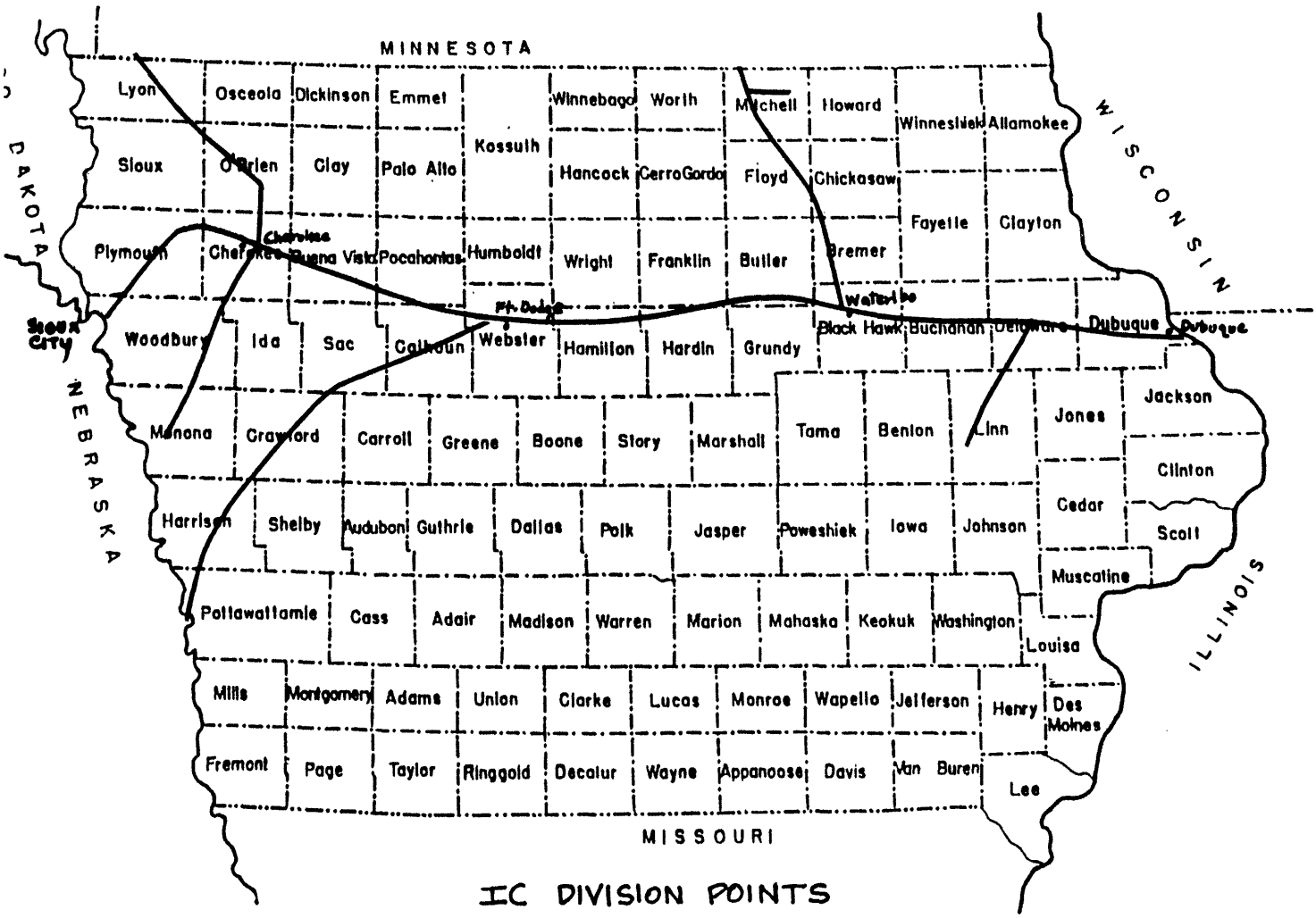
180 *Ibid.*, pp. 287-288.

181 J.F. Duncombe to Wm. R. Head, letter dated April 21, 1897 [IC Collection 2.91, Newberry Library]; Corliss, p. 147.

Map 4: Illinois Central Predecessor Lines



Map 5: Illinois Central Division Points



Map by N. Pitsch 1989

Between 1860 and 1870, 402 miles of track for the Illinois Central Railroad Company were laid across the state, connecting Sioux City on the Missouri River with Dubuque on the Mississippi River. Ft. Dodge and Cherokee were designated as division points and, as such, became important stops on the line. The Iowa line provided grain and livestock growers in Iowa with access to Chicago markets and made the Illinois Central a major Midwest shipper of agricultural products.

Under Jesup's direction, the DSC pushed westward to Waterloo and Cedar Falls 1861. Construction stopped during the Civil War, but resumed immediately thereafter. In 1866, the line reached Ackley and Iowa Falls. After a brief hiatus when Platt Smith left the DSC and organized the Iowa Falls and Sioux City Railroad, construction resumed in 1868 under the direction of John I. Blair. The line was extended as far as Webster City that year. The tracks reached Ft. Dodge in May, 1869, and by the end of the year the line reached a point west of Manson in Calhoun County.[182] During 1870, two crews of graders and tracklayers simultaneously worked west from Calhoun County and east from Sioux City, reaching a point known as "The Sag," about three miles west of Storm Lake, on July 8. Meanwhile, the Cedar Falls and Minnesota branch line inched northward. By 1875, it had reached Mona, just south of the Iowa-Minnesota border.[183]

J.F. Duncombe, a Fort Dodge attorney and one of the directors of the IFSC, supervised much of the work on Blair's behalf. According to a firsthand historical account which Duncombe penned in the form of a letter in 1897, he purchased the lands and sited nearly all of the stations on the IFSC line, the notable exceptions being Webster City, Fort Dodge, and Sioux City. Because this was country which was still sparsely settled, many of the stations -- which eventually became towns -- were named by Blair and/or Duncombe. From Fort Dodge to Sioux City, the line generally preceded settlement. Duncombe recalled that in 1857, when he escorted George W. Jones, U.S. Senator from Iowa, across country to Sioux City,

> the only inhabitants beyond five or six miles West of the Des Moines River on the Illinois Central Railroad consisted of about half a dozen families along the Little Sioux River near what is now Cherokee and a scattering settlement up the Floyd [River] about twelve miles. Further [sic] South there were a few settlers, at Sac City.... Near what is now Ida Grove, Judge Moorehead resided with his family. A few scattering houses were located at what was then called Smithland on the Little Sioux River.[184]

Although more settlers populated the country by 1868, there were still few established towns and much of the territory was more-or-less uninhabited. Thus, the history of building the IFSC line is also reflected in the names of many present-day towns. The town of Duncombe, located east of Fort Dodge, was of course named for the attorney who acted as Blair's right-hand man. The town of

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182 Duncombe Letter, 1897.

183 Corliss, pp. 153-154.

184 Duncombe letter, 1897.

Ackley, northeast of Iowa Falls in Hardin County, appears to have been named for an engineer with that surname who was principally responsible for building the Dubuque and Sioux City line. And, of course, the town of Jesup takes its name from Morris K. Jesup, the railroad financier. In a letter of 1897, J.F. Duncombe addressed the question of town naming between Fort Dodge and Sioux City. Because of its ambiguities, Duncombe's account is given in full below, exactly as written:

> West from Fort Dodge, Tara, the first station, was named by the Rock Island Railroad Company when it built into Fort Dodge across the Illinois Central on the East side of the Des Moines River. I do not known anything about why it was called Tara, certainly there were no halls there and none there even at the present time.
>
> Barnum was named after Wm. H. Barnum of Conn., a man of political renown, once chairman of the National Democratic Committee, who sold the land on which the station is now located and who owned large bodies of land at that time in that immediate vicinity. Manson was named after one of the firm of Douglas, Brown & Co. which graded the road between Fort Dodge and Sioux City. He lived at Waterloo; is now dead.
>
> Pomeroy was named after Charles Pomeroy who formerly lived at Fort Dodge and was a member of Congress from this district. Fonda was originally called Marvin after Marvin Hughitt who is now President of the Chicago & North Western Railroad Company and was at that time Superintendent of the Illinois Central. I was never informed why the change was made to Fonda.
>
> Newell was named after John Newell who for many years was President of the Illinois Central and afterwards of the Lake Shore & Michigan Southern. He is now dead. Sulphur Springs was laid out and named after the Ill. Cent. Ry. Co. came into possession of the road, from what I have always supposed to be an imaginary sulphur spring. I had nothing to do with the location of that station and therefore do not know the particulars of it. It was a later station. Mr. Blair and myself personally went upon the grounds at Storm Lake and located that prosperous and enterprising town after the name of the lake which has been called Storm Lake ever since I have had any knowledge of it. This town would have been located about half a mile further East, which I think was a better location, only the land could not be procured at reasonable rates.
>
> Alta was located and named Alta on account of its being the highest point of land between Dubuque and Sioux City. Instead of being called Alta or high it should have been named for the superlative of that word.
>
> Aurelia was named by Mr. Blair after some young lady with whom I was not acquainted, which I greatly regret.
>
> Cherokee was one of the last places where the depot was located and on account of the fact that the people there were unwilling to donate the company what Mr. Blair thought was right the location came very near being fixed upon the East side of the Little Sioux instead of the

West side and probably the town would have been located there only for the reason that the title was not satisfactory to me.

Marcus, Meriden, Remsen and Oyens were named by Mr. Blair but I do not remember the history of each particular name.

Le Mars was located on an old pre-emption claim of one Bettesworth and it was named by a party of ladies who were taken up on the train coming from Sioux City to look over the road. By taking the last letter of each lady's name and putting these letters into a word the name Le Mars was formed. The was sort of a whim that was suggested at the time and various efforts were made to get words that would sound proper and make a euphonious name for an enterprising city.

The names of Hinton, Merrill and James were named by Mr. Blair after persons of his acquaintance.[185]

Other accounts of the naming of towns along this line holds that Aurelia, in Cherokee County, was named for Blair's youngest daughter, Aurelia Ann. Marcus, also in Cherokee County, was named after Blair's son. Blair named Hazzard after a relative, though the citizens of the town later renamed it Meriden. Whiting, in Monona County, was named after Judge Charles E. Whiting, a farmer who lived in the area. Remsen, in Plymouth County, derived its name from Dr. William Remsen Smith, a pioneer physician in Sioux City who owned quite a bit of land in the area and who may have sold some of it for the station which bore his name.[186]

Over a period of about 15 years, the IFSC Town Lot and Land Company (later merged with the Iowa Railroad Land Company) sold town property to prospective settlers. In order to facilitate sales, the company established a branch office in Alta. Apparently, Blair had little interest in hawking the land to Easterners by exaggerating the prospects. Rather, he designed a town promotion program that promoted steady growth for long-range development and profit. Of the 17 towns founded by the IFSC in northwest Iowa, Le Mars and Storm Lake were the largest.[187]

The other major construction effort of the 1860s was the Dunleith-Dubuque bridge. The Effie Afton case, settled in favor of railroad interests in 1857, eliminated potential legal barriers to the Illinois Central's plans to bridge the Mississippi River at Dubuque, a project designed to replace both the ferry service which transported trains across the river during the navigation season and the temporary tracks that were laid across the ice each winter. The bridge project, however, was further delayed because of the depression of 1857-1859 and then the Civil War. Finally, in 1867, the Dunleith &

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185 *Ibid.*

186 Ruth A. Gallaher, "Namer of Towns," Palimpsest 29 (June 1948).

187 Wattling, pp. 95-114.

Dubuque Bridge Company was reincorporated, and work began. U.S. Senator William B. Allison, a resident of Dubuque, presided over the company and administered the affairs of the bridge building project. Andrew Carnegie's Keystone Bridge Company was awarded the contract. Construction costs ran more than $1 million, a magnificent sum in those days, and the project involved several engineering design solutions in order to span the Mississippi safely without impeding river traffic. Completed in late 1868, the first train crossed the bridge on January 1, 1869.[188]

During the third building phase, 1886-1888, IC trackage expanded a total of 187 miles: the 42-mile branch from Manchester to Cedar Rapids, the 96-mile branch from Cherokee to Sioux Falls, and the 59-mile branch from Cherokee to Onawa. By now, western Iowa was fairly well settled, but the railroad still provided the nucleus for a few new towns. Between Cherokee and Onawa, for instance, at least three new stations were established: Ticonic, Quimby, and Washta. Quimby was named after an Illinois Central official. Ticonic and Washta existed as villages prior to the railroad, but the denizens of each did not hesitate to pick up and move their respective towns to the new stations.[189]

The 1899 expansion from Tara to Omaha-Council Bluffs added another 131 miles of track to the Iowa line. By the end of the 19th century, all of Iowa was dotted with towns, most of which owed their location and existence to one railroad or another. The Illinois Central nonetheless managed to locate at least one new town along the Fort Dodge and Omaha line: Ulmer, in Sac County. The name reportedly was bestowed by Chief Engineer John F. Wallace, who gave the station his wife's maiden name "in appreciation of the weeks and months she... patiently waited at home for me to finish this job."[190]

188 Corliss, pp. 150-153.

189 Thomas McCulla, History of Cherokee County, Iowa (Chicago: S.J. Clarke Co., 1914), p. 165.

190 Corliss, p. 288.

Architecture of the Iowa Line

The structures associated with the Iowa line of the Illinois Central Railroad can be categorized by three architectural generations that represent structures constructed between 1861 and the rebuilding program of the 1940s. At this time there are no known extant examples of the architecture associated with the earliest construction phase, from 1855 to 1860, and this period remains to be investigated through archival sources. Construction of the Iowa line from Jesup to Sioux City took place over a period spanning about two decades, with two distinct phases of building: the first stretching from 1861 to 1870 and the second occurring in 1886-1888. First generation buildings, all of which were simply designed and constructed of wood, are associated with these to periods of construction. Second generation buildings comprise structures erected between 1887 and about 1930. These include the first round of replacement depots (usually brick) plus new buildings constructed to serve specific functions, such as oil houses, engine houses, signal towers, signal maintenance houses, supply houses, carpenter's shops, and so forth. This generation of architecture generally corresponds with a period we have called the Golden Age of Railroads in Iowa, ca. 1890-1917, although the correlation is not exact, and there is some overlap, time-wise, with first-generation IC architecture. The field investigation indicates that little if any construction took place during the depression years of the 1930s. Third generation IC architecture comprises the replacement buildings of the 1940s, when the company systematically overhauled the entire line, dismantling most of the older wood frame structures and often rebuilding replacement structures from the salvaged materials.

First Generation Depots: 1861-1890

Plans and/or extant examples of the buildings constructed during the 1860s have not been located. A few historic photographs indicate that at least some of the first buildings were simply designed wooden combination depots. Photographs of the 1866 Iowa Falls depot and the 1870 Cherokee depot show that both of them were two-story gable-roofed structures (living quarters above) with a one-story freight room extension. The walls were covered either with drop siding or with board-and-batten siding, and 6/6 windows were spaced symmetrically along the facades. The buildings were most likely of single-wall construction, very plain in design, and built without the trackside bay which later became a ubiquitous feature of depots.

There is only one known surviving example of the depots built on the Iowa line of the Illinois Central RR during the late 1880s. There are also a few early depot plans from this era, which are located in Chicago Central & Pacific building files in Waterloo. No architect is listed on any of these plans, indicating that they were designed in-house. From these sources, plus a few historic photographs, it appears that the late 1880s combination depots shared some basic similarities with the 1860s depots. Most notably, all of the depots were of wood construction, and many of them probably were combination depots. The amount and type of ornamentation as well as the appearance of the trackside bay window are the chief architectural elements that distinguish early and later wooden depots.

At least one plan for a combination depot survives from the 1887 construction of the Cedar Rapids & Chicago Railroad, the branch line incorporated in 1886 specifically to extend the IC line southward from Manchester to Cedar Rapids. This plan is for a two-story wooden depot with a gable roof,

measuring 18'x 60'on the first floor with smaller second-story living quarters measuring 18'x31.5'. The plan is labeled "Depot Class A" indicating that it was a standard plan design. Handwritten notes on the plan state that it was used to construct combination depots at the towns of Robins and Ryan, which are among the smaller towns located between Manchester and Cedar Rapids. Features which are diagnostic of IC architecture appear on this plan include the use of drop siding, 2/2 windows, and a rectangular bay [Figure 1]. The massive eave brackets with a distinctive chamfered "X" brace which are shown on this plan appear to have emerged as a hallmark of IC buildings at this time, because one finds this feature on second generation buildings as well. The freight house at Fort Dodge, for instance, a brick building constructed in 1901, has this type of eave bracket.

Stations associated with the construction of the 96-mile branch line from Cherokee to Sioux Falls, South Dakota, and the 56-mile line from Cherokee to Onawa, built in 1887 under the auspices of the Cherokee and Dakota Railroad, exhibited some minor stylistic differences. Two-story combination stations, wood frame with gable roofs, also were built along these feeder lines. Once again, the chief difference between the 1880s depots and their 1860s predecessors is the ornamentation.

The 1887 Ticonic station is the only known survivor of this era, all other 1880s IC stations having apparently been recycled for use as freight houses or razed during the extensive rebuilding program of the 1940s. Plans for the Smithland station survive, which show that it was similar to the Ticonic depot, although the surviving plans are not originals, but were made in 1930 for valuation purposes [See Figures 2 and 3]. From historic photographs, we know that depots similar to Smithland and Ticonic existed at Onawa, Iowa Falls, and Cherokee. At both Cherokee and Iowa Falls, the combination depots were relocated and converted to freight houses when new brick depots were erected in 1896 and 1902 respectively.

Information available from these photographs, the 1930 Smithland depot plans, and the extant Ticonic depot indicate that the stations probably were built from standard plans. Nonetheless, although the buildings were similar, they were by no means identical. The Smithland depot plans, for instance, show that it measured 67'7"x24'6", slightly larger than the Ticonic depot, which measures 53'7"x20'6". Trackside bay windows were now standard. At Smithland, the bay was measured 13'4"x3'6", whereas the bay on the Ticonic depot measures 9'11"x3'6". In addition, the bay window of the Smithland depot was designed with a pedimented gable roof dormer, a feature found on other IC depots; the roof over the bay on the Ticonic depot is integral with the gable roof of the building, giving this depot an overall appearance more in keeping with the 1860s depots. Gable-end ornamentation may have been another stylistic difference. Smithland was either constructed without bargeboard or this decorative detail had been removed by 1930. The Ticonic depot still has its lattice-like gable trusses, a feature also found on the IC depots constructed at Newell in 1890 and at Quimby in 1887 or 1888 [Figure 4].[191]

The Smithland plans also show that the freight platform continued inside the building, bisecting the freight room for a distance of about 13' at a perpendicular angle from the freight door. A "cinder"

191 Grant and Bohi, p. 118; Quimby Centennial History, 1987, p. 9.

platform sufficed for foot traffic. Whether these were standard features of other IC depots constructed during this period is unknown.

Both the Ticonic and Smithland depots, however, were constructed as full-length two-story buildings clad with drop siding above the sill line of the first-story windows, vertical false-bevel siding below the sill line. In addition, both depots were constructed with knee-wall windows on the second story except in the gable ends, where full-length windows were installed. The Smithland depot plans show that most windows were 2/2 wood sash, with some 3/3 windows; windows on the Ticonic depot have been boarded over. Brackets on northwestern Iowa depots appear to have been quite different from those used elsewhere. The design used at Smithland, Ticonic, Newell, Quimby, and presumably other northwestern Iowa stations resembles an inverted "A" within another "A". Field investigation shows that the original paint scheme on the Ticonic depot was yellow gold above the sill line and red below with red window surrounds.

Plans for the Newell station, a one-story structure measuring 60"x24" built in 1890, show additional stylistic details that came to be associated with IC architecture. These include 8-light transom windows above the freight doors, three-light transom windows above the pass doors, and freight doors "X" braced on the exterior [Figure 5].

Plans for both Smithland and Newell show that IC stations were built with only a general passenger waiting room; the Ticonic depot also displays this interior plan. Separate facilities for men and women apparently were not standard features of the first generation combination depots.

Second Generation Buildings: Brick Replacement Structures

As the line evolved, some stations took on greater importance than others, either because they were designated as division points, because they handled larger volumes of freight and/or passenger service, or because local citizens demanded a structure they felt worthy of their town's status within the immediate region. Brick depots, freight houses, express buildings, and other structures replaced the first generation wooden combination depots at these stations beginning in the 1890s and continuing until the mid-1920s. From available building plans, all indications are that these structures were designed in-house by the IC Engineering Department. In addition, while some of these brick buildings exhibit stylistic similarities with other buildings on the line, the design of each was tailored to suit the functions and relative importance of its respective locale.

Wooden structures continued to be built, of course, constructed to house the many service functions associated with railroad operations: watchman's shanties, signal towers, tool houses, carpenter's shops, supply houses, coal sheds, and so forth. Field investigation indicates that few of the service buildings constructed during this era survive. Mills Tower, an interlocking signal tower east of the Iowa Falls station, a signal maintenance and supply house located at Mills Tower, and an identical structure at the crossing just west of Ackley appear to be among what can only be a handful of extant buildings from this period. All three of them are distinguished from later IC buildings by their clapboard siding, hipped roofs, and remnants of yellow-gold and red paint.

The two-story brick depot at Independence was among the earliest replacement buildings to be erected. Built in 1892, the structure is distinguished by its cross-wing plan with parapeted gables, corbelled cornices, and no eave overhang. Another distinguishing feature is the cast iron platform canopy which extends equidistant from both sides of the front facade. The design is severely Classical and highly symmetrical, and the Independence depot bears little resemblance to the replacement depots which were built later in central and western Iowa. J.F. Wallace, Chief Engineer for the IC, and Frank Bacon designed the structure.

The station at Cherokee, the westernmost division point between Dubuque and Sioux City as well as the hub for the branch lines to Onawa and Sioux Falls, was completely rebuilt between 1887 and 1896. Cherokee also was one of the most elaborate IC stations to be built in Iowa. In 1887, a two-stall brick roundhouse with attached machine shops was constructed. Sometime shortly after that, though the precise date of construction has not been determined, a brick multipurpose stock room, oil house, and yard office was constructed. Both buildings, which are extant, were of fairly utilitarian design with little ornamentation, although the multipurpose building has a corbelled cornice. No architect other than the IC Engineering Department is listed on the plans. In 1896, the Illinois Central erected a new brick, two-story depot and a separate one-story building to house American Express [Figure 6]. Once again, the plans list only the IC Engineering Department as the architect. In 1898, a separate lunch room building was erected, designed by H.C. Arms and approved by architect Francis Bacon, both of the IC Engineering Department [Figure 7]. Two of the three buildings, the depot and express building remain. All three were designed in an eclectic Romantic style. Distinctive features included a steeply pitched hipped roof with finials, multiple roof dormers with pyramidal roofs, symmetrically spaced windows with splayed lintels, leaded bar windows in key spots, shallow eaves with modillions in an acanthus leaf design, and a pressed metal cornice with an egg-and-dart motif.

The three-story Ft. Dodge freight house, built in 1901, and the one-story Iowa Falls depot, built in 1902, were both constructed with slate roofs. In addition, both buildings are distinguished by their segmental arch windows. No architect is listed on the plans for these buildings [Figures 8 and 9].

The one-story Ft. Dodge depot, completed in 1912, and the one-story Storm Lake depot, built in 1915, have similar platform canopies, distinctive for their swept eave design with Tudor style half-timbering in the gable ends. Likewise, both canopies are supported by brick columns flared at the base [Figures 11 and 11]. J.N. Taggart of the IC Engineering Department designed the Ft. Dodge depot, and the designer of the Storm Lake plans is identified only by the initials "E.E.B." [E.E. Bihl]. The design of both buildings, but especially that of the Ft. Dodge depot, is remarkably similar to the design of the Flossmoor depot in Chicago [Figure 12].

The Ackley depot, built in 1926, may have been the last brick replacement depot on the Iowa line, and it is similar in design to the Marcus depot, constructed in 1917. Both are one-story buildings with low pitched hipped roofs and the facades have very little ornamentation. Ackley differs from Marcus chiefly in the pedimented gable over the trackside bay. The Ackley depot was designed by J.H.Schott of the IC Engineering Department [Figure 13].

With the exception of the Independence depot, hipped roofs are common features of the IC brick replacement depots. Some depots were built with roof dormers, a feature that usually was removed during the 1940s. Ft. Dodge had eyelid dormers on the gable ends; shed dormers along the other elevations. The eyelid dormers remain. Cherokee's pyramidal roof dormers are gone. Storm Lake had no dormers, but it was constructed with pedimented gables over the trackside and rear bays, and the gable ends of both were half-timbered to match the canopy. Ackley likewise had a pedimented gable over the trackside bay.

Third Generation Buildings: The 1940s

During the unevenly distributed prosperity of the 1920s, the Illinois Central upgraded and expanded its facilities considerably. In order to fund this expansion, the IC acquired a substantial debt in order to finance $320 million in improvements made between 1921 and 1930. When the depression hit in 1929, the company was thus in a precarious financial position, and new construction came to a dramatic halt for the duration of the decade. Between 1929 and 1933, the IC lost about 50 percent of its annual gross revenue, losses which forced the company to suspend dividend payments in 1931.[192]

During the 1930s, the IC began retrenching. In order to reduce operating costs, smaller stations were closed and branch lines which produced little revenue were abandoned.[193] The line through Ticonic, for instance, was abandoned in 1934 and the station closed. The company also reduced the number of divisions from 20 to 9 (Iowa's three division stations -- Waterloo, Ft. Dodge, and Cherokee -- were spared). Money budgeted for maintenance of way was used almost entirely to upgrade tracks and switching equipment. During the 1930s, the IC spent only $52 million on the improvement of property and equipment, less than one-sixth of what the company spent in the 1920s.[194]

During the early 1940s, the company undertook a three-year program to evaluate every piece of property in its entire system and to retire all structures that were not essential to cost-efficient operations. As a result, over 3300 items were removed with an estimated value of $19 million. Passenger stations received special attention. Larger stations in need of repair were generally torn down and replaced with much smaller buildings of utilitarian design. The IC Engineering Department reportedly "drew up plans for four standard stations, all planned for efficient use of space."[195] Plans for "Type B" buildings were located at CCP headquarters in Waterloo [Figures 14 and 15].

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192 Wayne A. Johnston, "Depression and War Tested Mettle of Railroad," Illinois Central Magazine, November 1951, pp. 2,4.

193 *Ibid.*, p. 3.

194 *Ibid, pp. 3-4.*

195 *Ibid.*, p. 4.

Most of what remains on the Iowa line represents the retirement and rebuilding program of the 1940s. All of the 1940s replacement buildings, including the depots, are characterized by intersecting or side gabled roofs of low pitch. They are of extremely plain design, with no ornamentation. In fact, sometimes it is only by the location that one can distinguish a depot from a tool house. Invariably the 1940s replacement structures are wood frame clad with drop siding and painted a gun-metal gray. Gray may have replaced yellow-gold and red as the IC's signal colors during the 1940s, although it is possible that gray was adopted earlier. This detail needs more research.

Field investigation indicates that many of these replacement structures were actually built from salvage materials, a technicality which saved the railroad from reporting them as new construction. According to E.T. Parker, who worked for the IC from 1924 until his retirement, the existing Cherokee freight house, which entered this function as the original depot recycled in 1896, was stripped almost to the ground and rebuilt on the same footprint in about 1946.[196] The existing Iowa Falls freight house appears to have followed an identical course. Fortunately, not all of the rebuilding plans were carried out. Drawings dated 1941 and 1943 indicate that the IC intended to remove the second story of the Cherokee depot in addition to making other radical design changes. This station, however, controlled much of the traffic through western Iowa. As it turned out, the plans were partially scrapped, and in 1945-1946 the company settled for renovating the building, removing the roof dormers and the second story balcony, replacing the slate roof with asphalt shingles, and replacing the angled entry bay on the rear facade with one of rectangular design. The changes were still substantial, but only those brick depots which were constructed fairly late in the first replacement period seem to have remained untouched during the 1940s. Field investigation indicates that the original designs of Ackley (1926) and Marcus (1917) are wholly intact.

196 E.T. Parker, Cherokee, Iowa, interviewed by Rebecca Conard and Nicholas Pitsch, October 7, 1989.

Figure 1: Cedar Rapids & Chicago Railway (ICRR)
Two-Story Combination Depot, Class A, Standard Plan, 1887
Source: CCP; Drawing A-8050, File 360 F

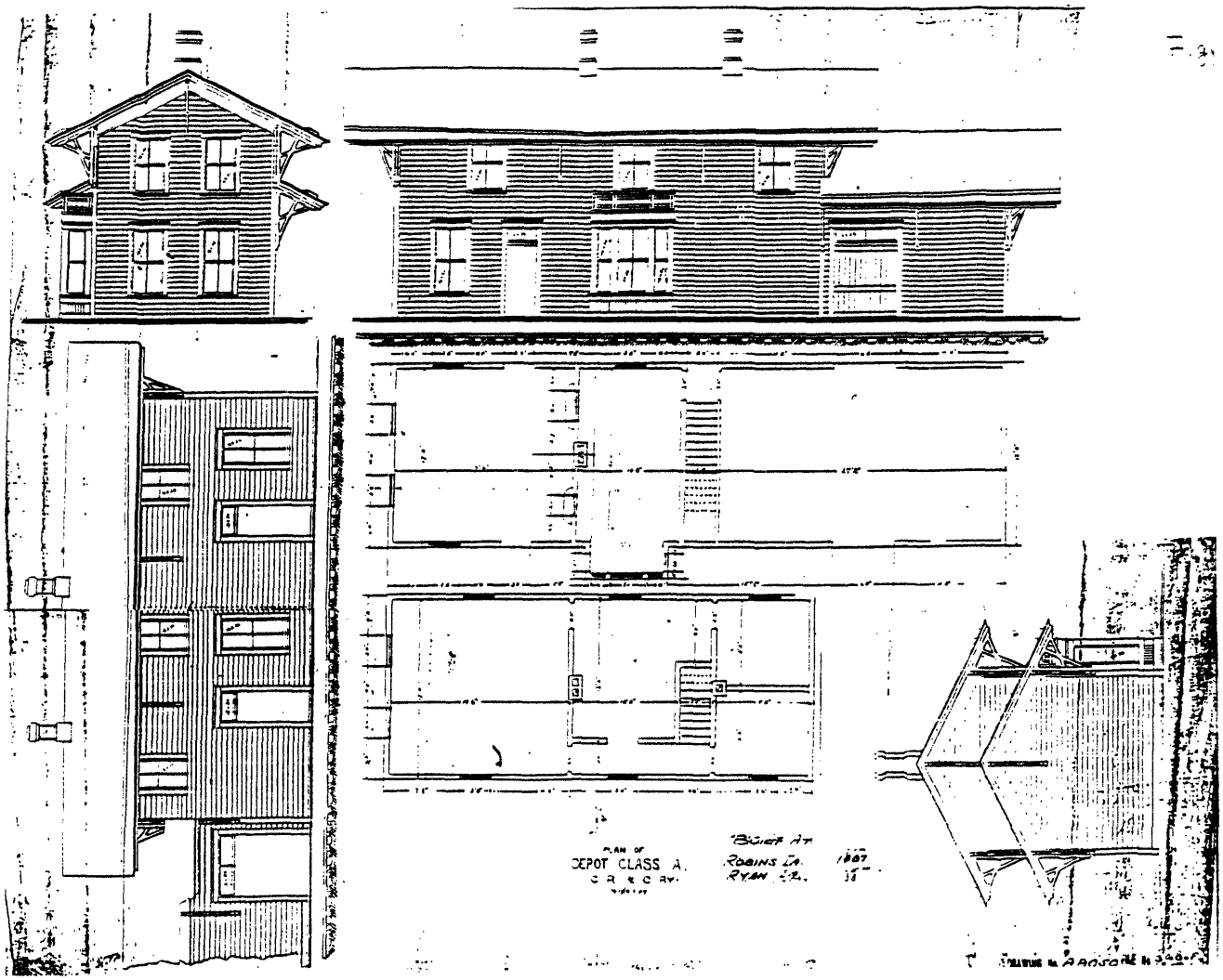


**Figure 2: ICRR Two-Story Combination Depot, Smithland
Elevations, 1930; drawn by L.D. Clark
Source: CCP; Drawing A-22094, File 29-17**

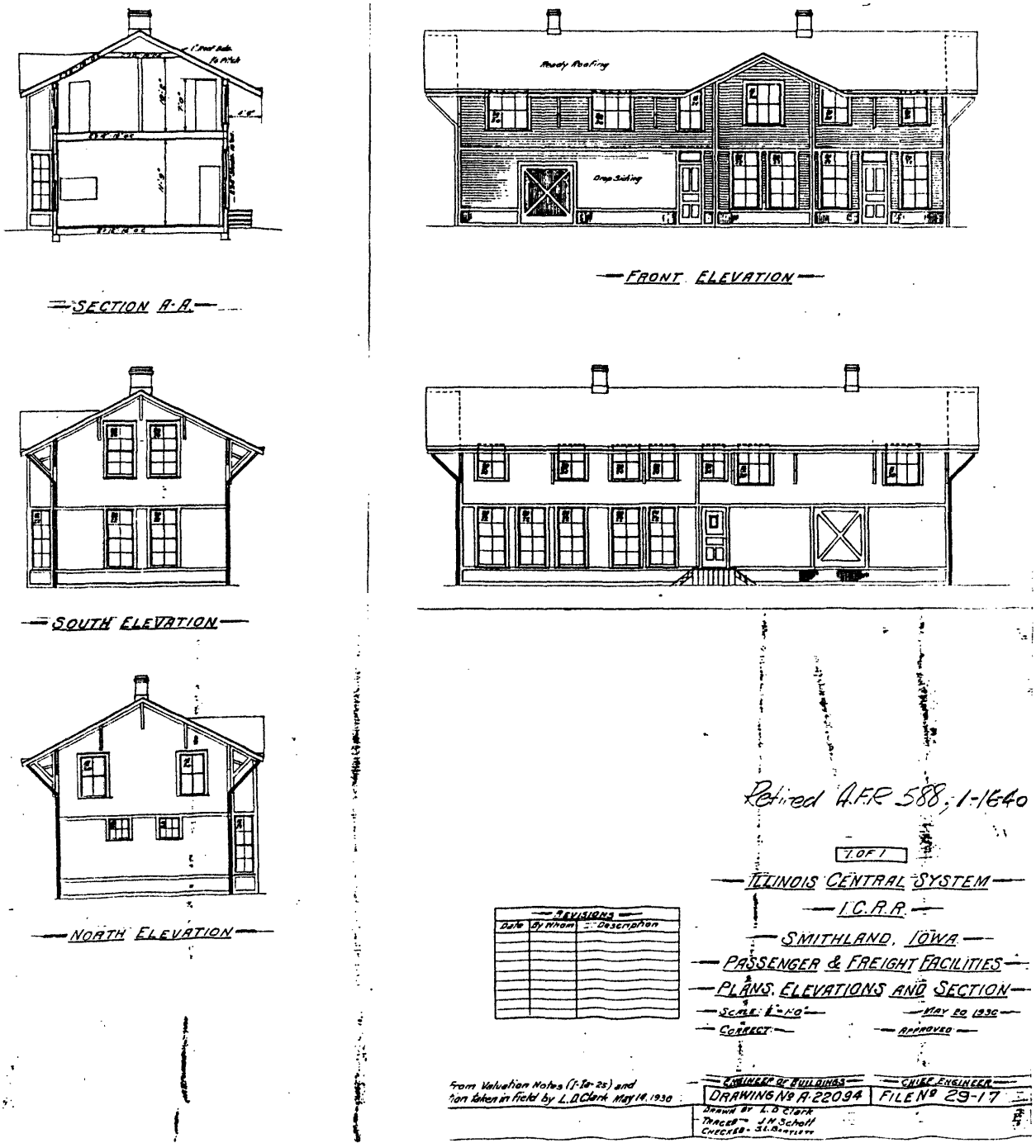
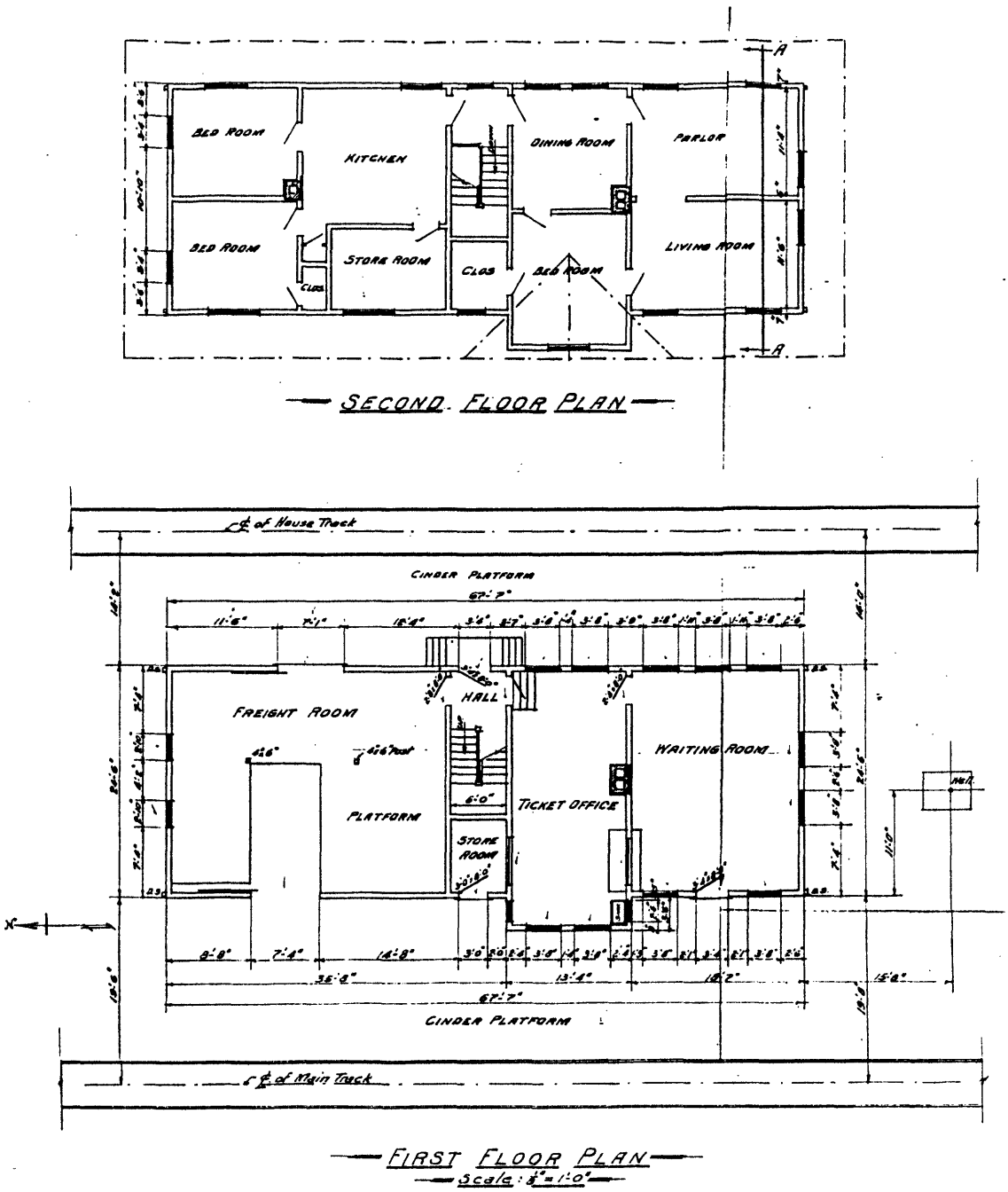
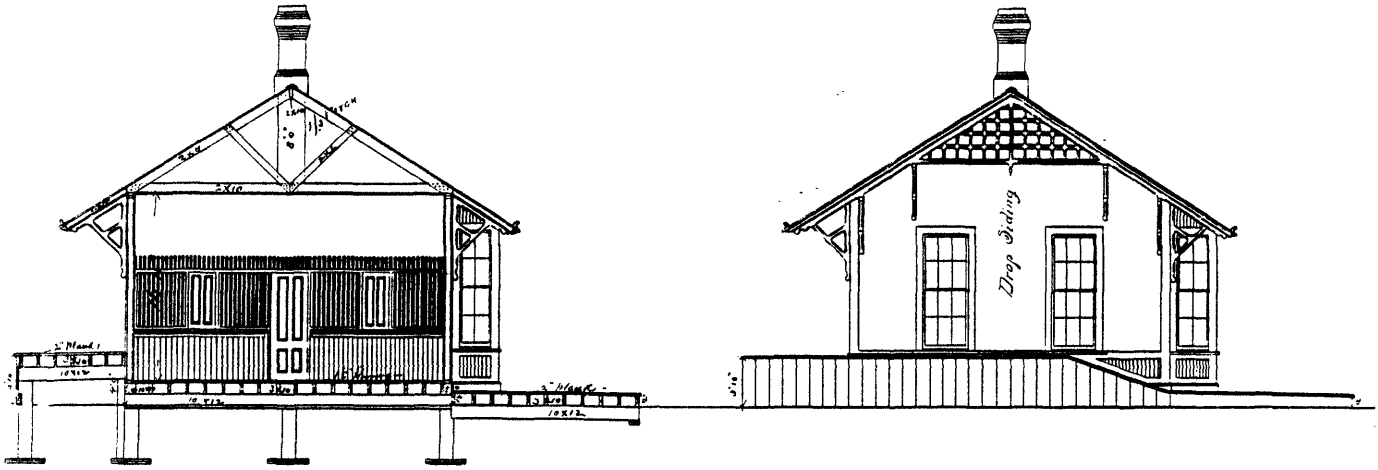


Figure 3: ICRR Combination Depot, Smithland
Floor Plans, 1930; drawn by L.D. Clark
Source: CCP; Drawing A-22094, File 29-17



NOTE:
Condition of building poor, Walls in Freight Room bulge out.
Sills rotten, Roof leaks, Plaster off in spots in Ticket Office.

Figure 4: ICRR Combination Depot, Newell, 1890
End Elevations
Source: CCP; Drawing A-752, File 251



Section at A-B.

End Elevation.

Figure 5: ICRR Combination Depot, Newell, 1890
Side Elevations
Source: CCP; Drawing A-752, File 251

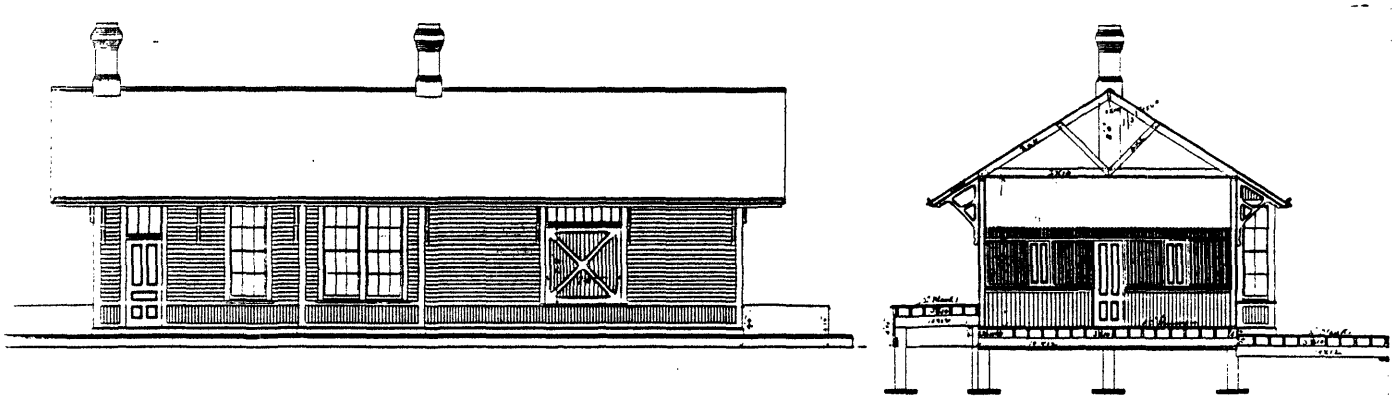


Figure 6: American Express Building, Cherokee, 1896
Source: CCP; Drawing A-8093, File 1422-BB

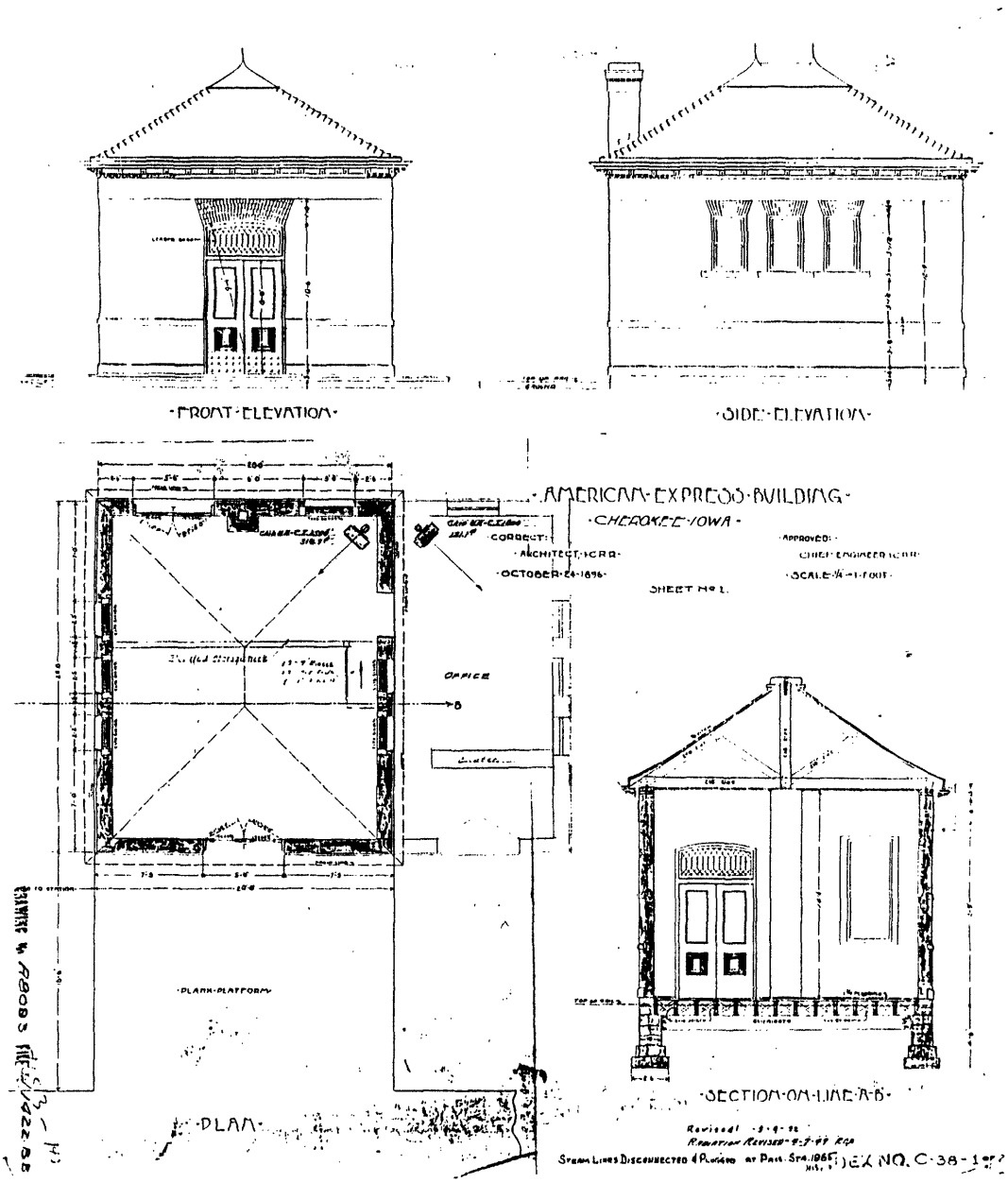


Figure 7: ICRR Lunch Room, Cherokee, 1898
Source: CCP; Drawing A-8061, File 1422-AA

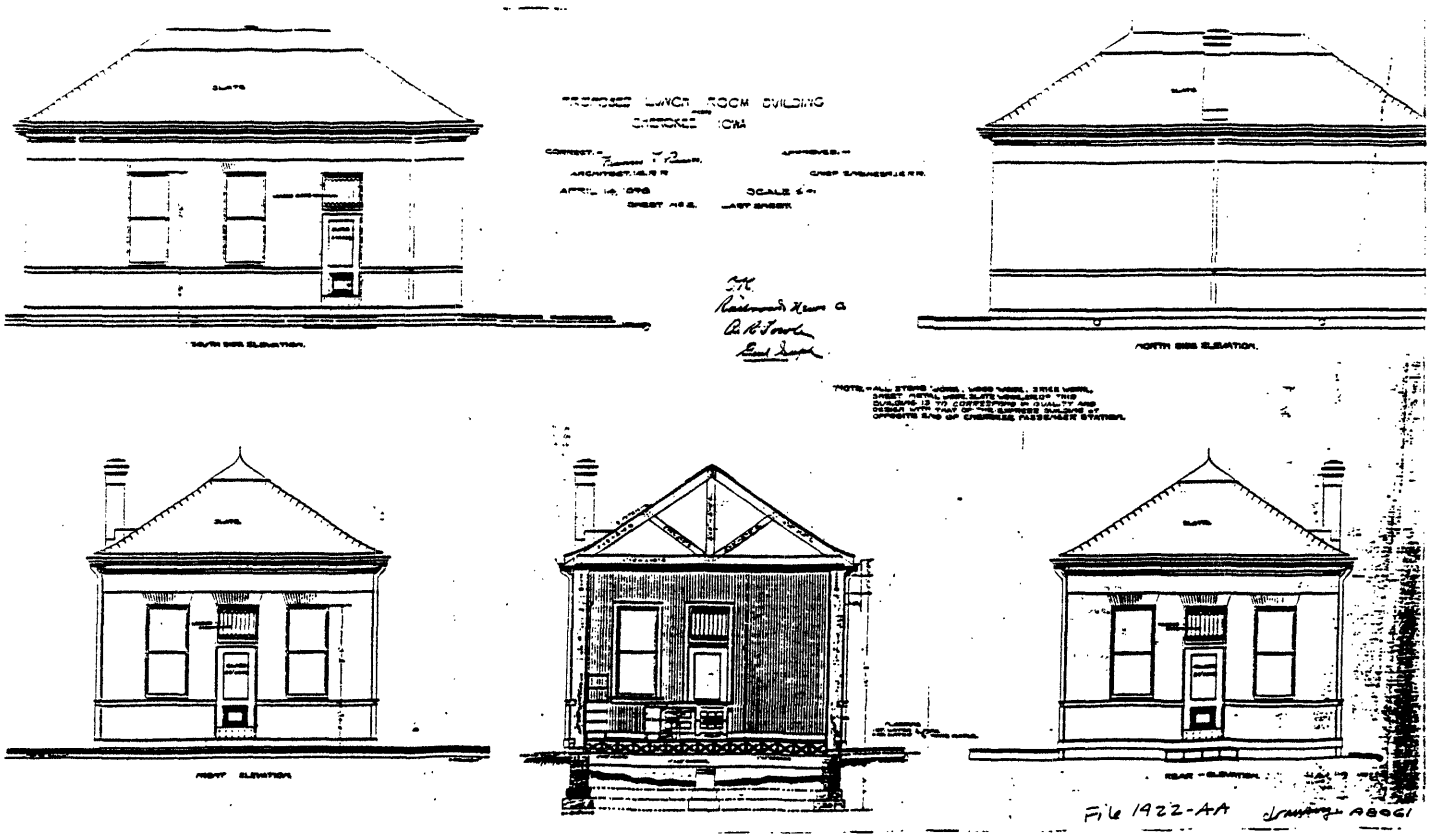


Figure 8: ICRR Freight House, Fort Dodge, 1901
Source: CCP, Drawing A-396

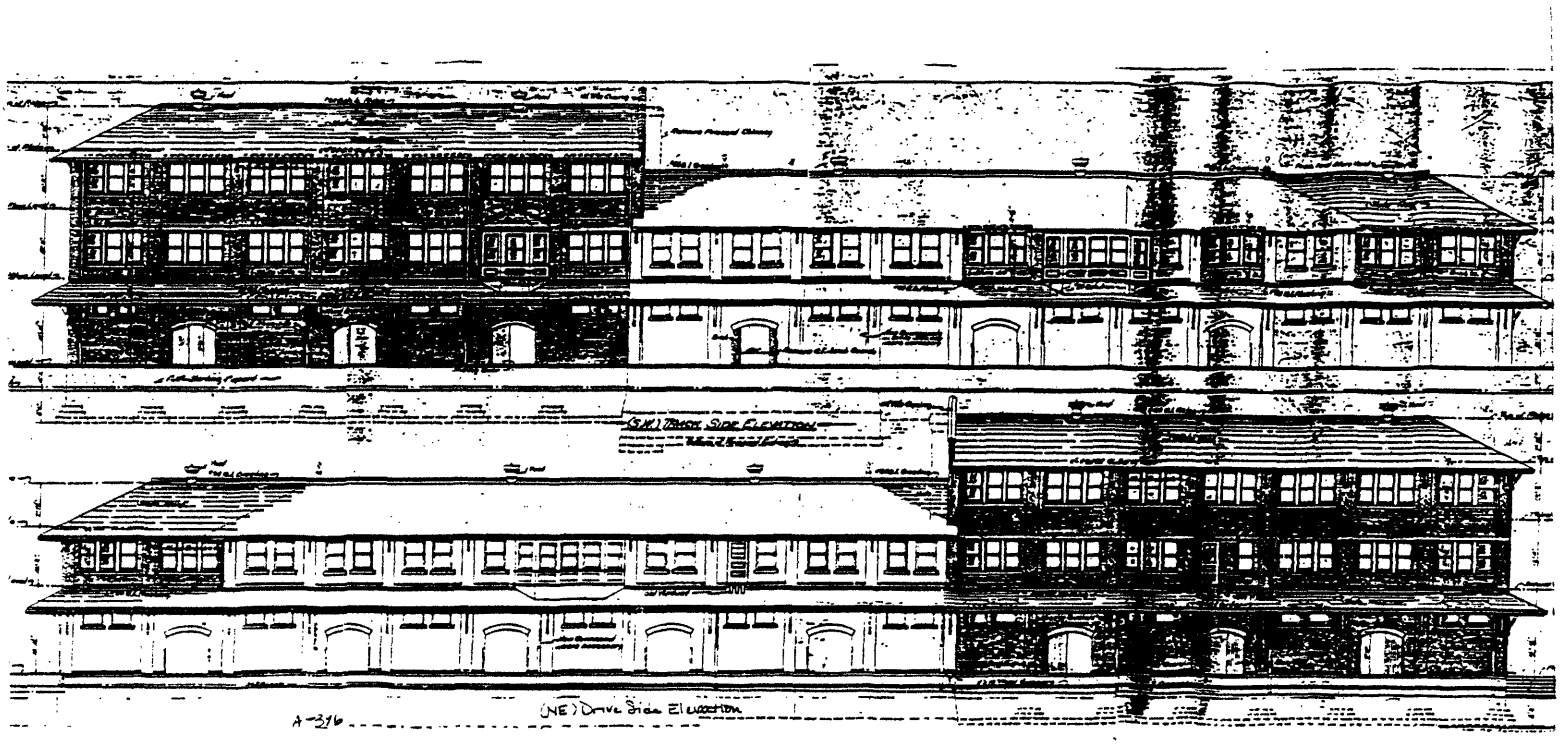


Figure 9: Union Depot, Iowa Falls, 1902
Source: CCP

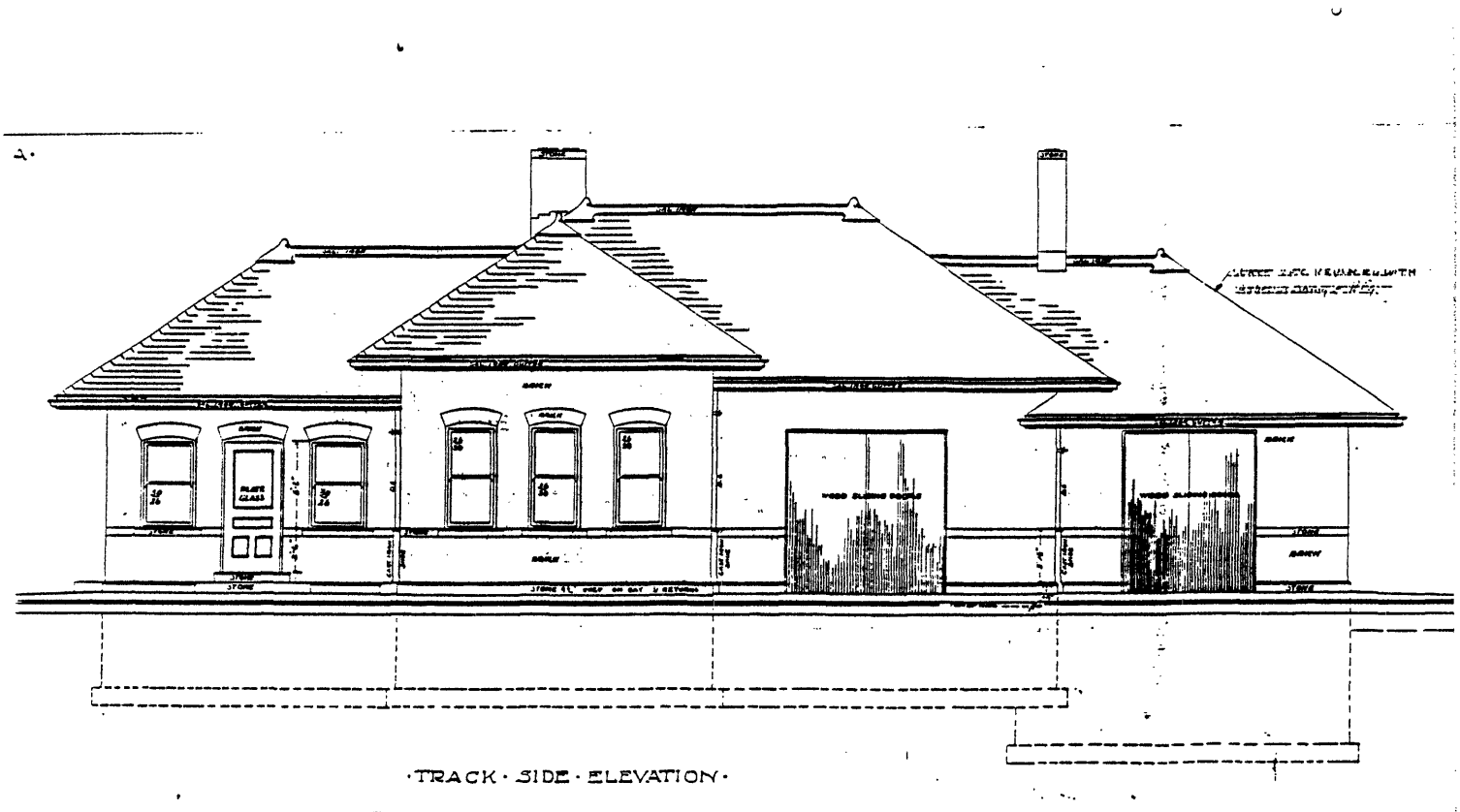


Figure 10: ICRR Passenger Depot, Fort Dodge, 1912
J.N. Taggart, designer
Source: CCP

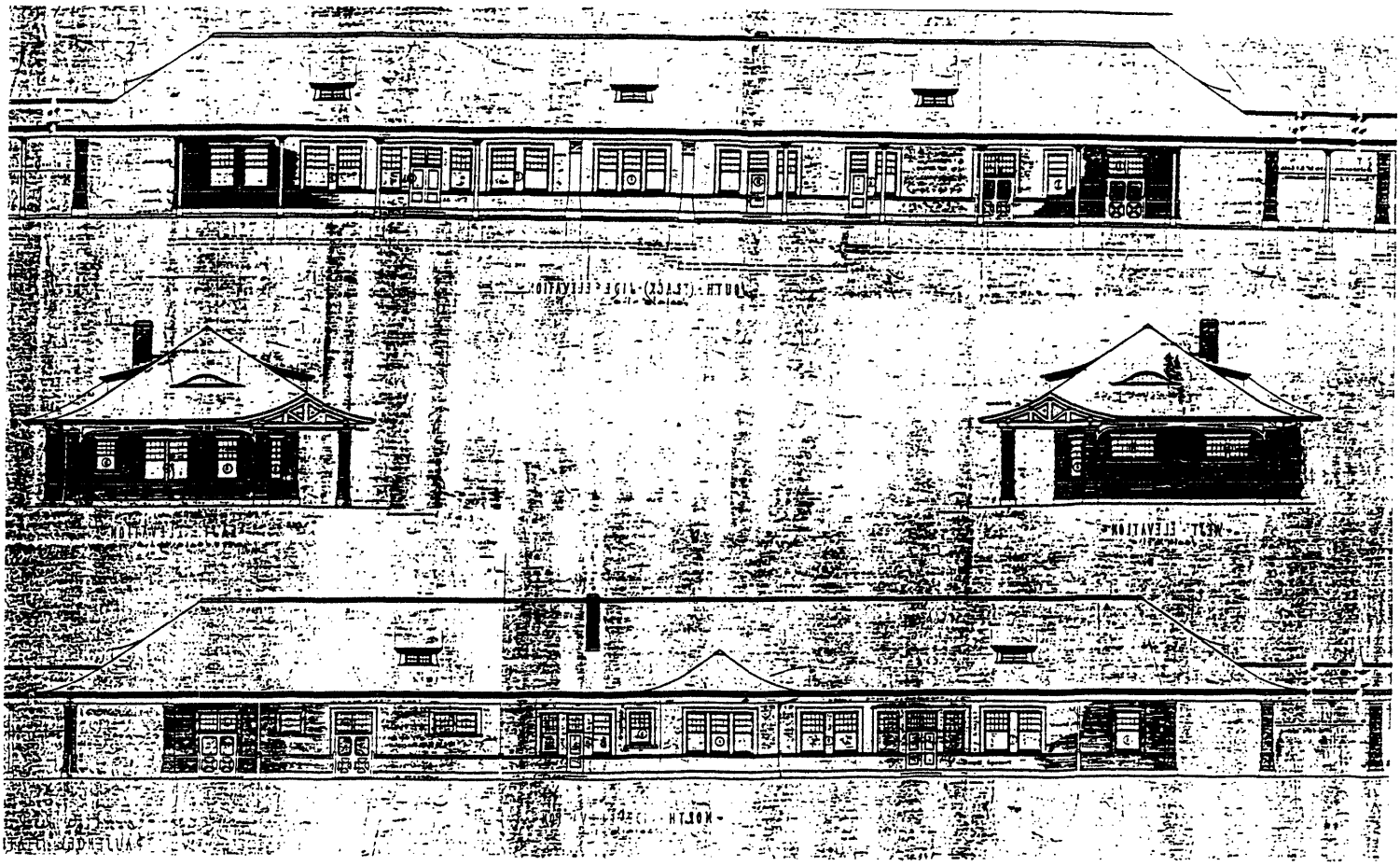


Figure 11: ICRR Passenger Depot, Storm Lake, 1915
Drawn by E.E. Bihl
Source: CCP, Drawing A-4969, File 1335-C

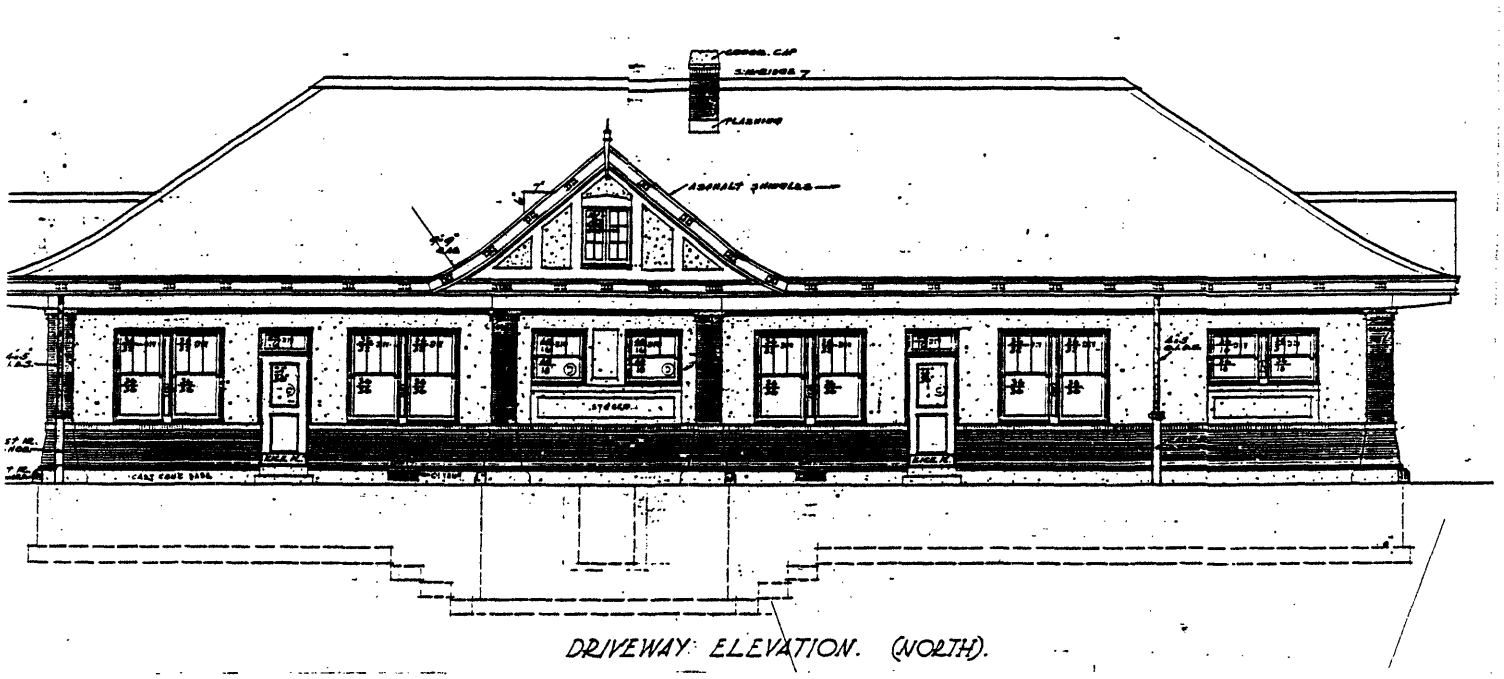


Figure 12: ICRR Depot, Flossmoor
Source: Bach and Wolfson, *A Guide to Chicago's Train Stations* (1986)

Figure 13: ICRR Depot, Ackley, 1926
J.H. Schott, designer
Source: CCP

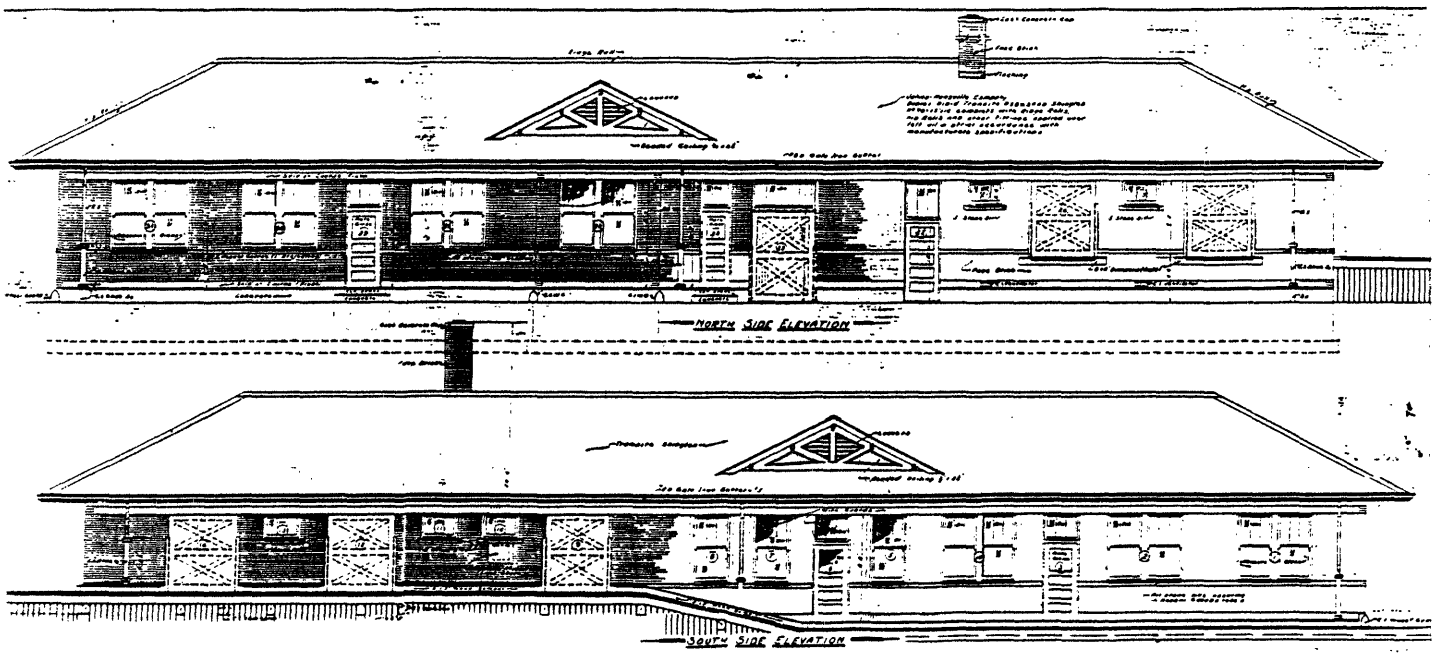
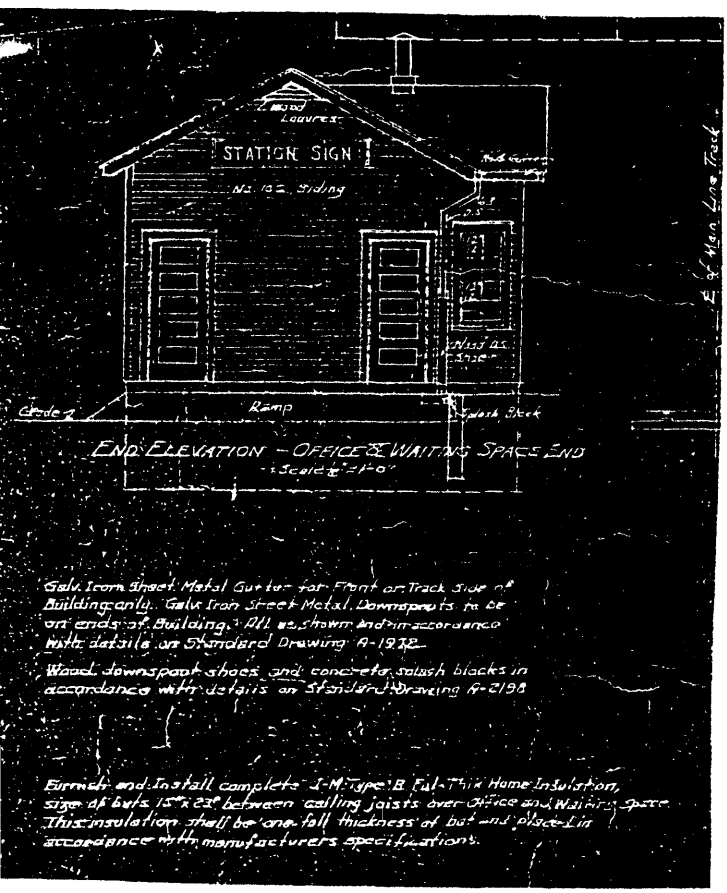


Figure 14: ICRR Type B Depot
Elevations, 1942; drawn by George Wavrinek
Source: CCP, Drawing A-25058, File 198-K



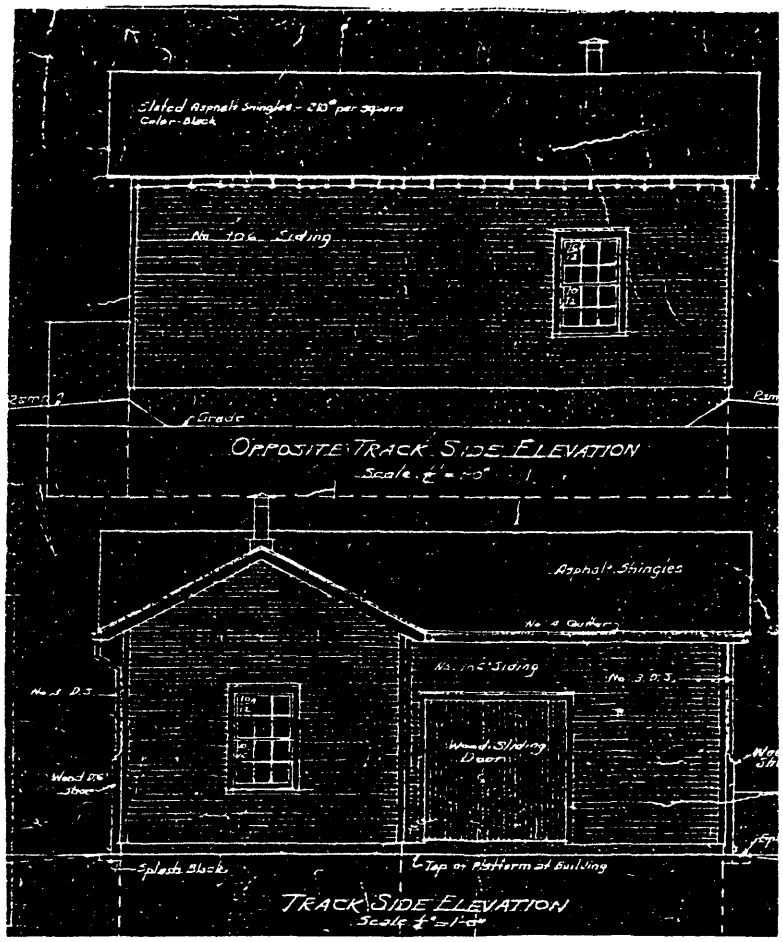


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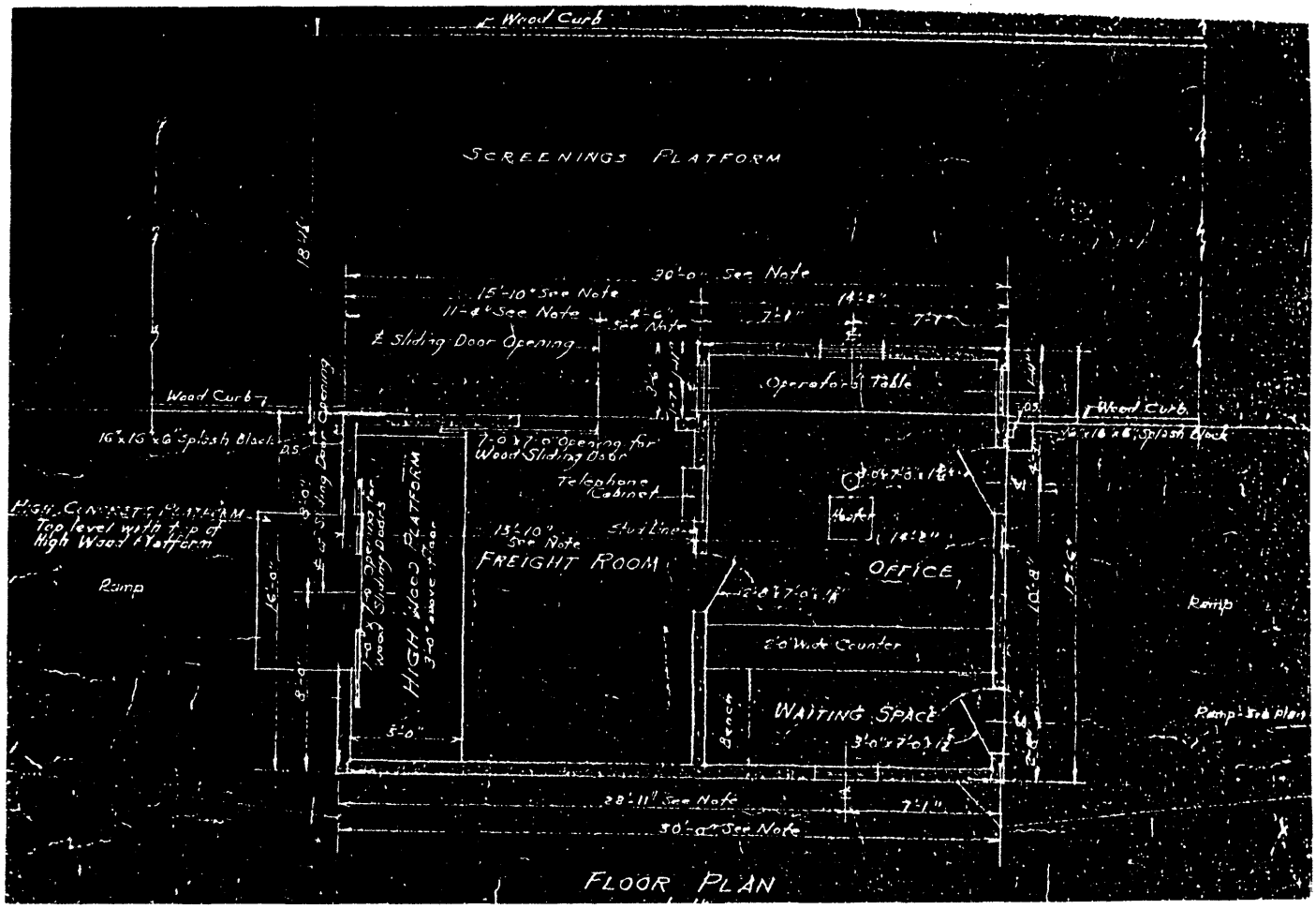
Figure 15: ICRR Type B Depot
Plans, 1942, drawn by George Wavrinek
Source: CCP, Drawing A-25058, File 198-K



VII. RAILROADS AND ARCHITECTURAL STANDARDIZATION: THREE GENERATIONS, 1855-1940

Railroad companies were pioneers in the area of architectural standardization. The well-worn axiom that "form follows function" may be debatable for many types of buildings, but it accurately describes railroad architecture. In the interests of cost and speed, railroads adopted the practice of erecting combination depot-freight houses, or, in some cases, just flag stops, from inexpensive materials and standard designs. This was particularly true west of the Mississippi, where railroad lines often went in advance of town settlement. After all, the goal was to throw down tracks as fast as possible in order to beat the competition and worry about developing the physical plant when the line began to generate adequate revenue. Standard railroad building designs prefigured the business of mail-order house plans that Montgomery Ward, Alladin Homes, the Hodgson Company, and Sears Roebuck initiated between 1895 and 1910.[197]

Grant and Bohi opened the scholarly study of standardized railroad architecture in 1978 with the publication of The Country Railroad Station in America, which contains particularly good discussions of standard designs used by the Chicago and North Western Railroad and by the Milwaukee Line.[198] Iowa receives fairly extensive coverage. Charles Parrot also contributed to the understanding of Chicago and North Western architecture with his 1971 study of the C&NW passenger stations designed by Charles S. Frost. The Parrot study begins to show the degree to which second-generation brick C&NW depots in Iowa echo design elements of C&NW depots erected in Chicago. Frost was the principal architect designing buildings for C&NW between the early 1890s and the 1920s.[199]

The study of railroad architecture is rich with research possibilities, although work currently is hampered by the availability of source material. Illinois Central building records for the Iowa line are in the possession of the Chicago Central & Pacific Company, located in Waterloo. Other IC records are in the process of being transferred to the Newberry Library, which has already catalogued a small volume of material.[200] Rock Island records are split between the Newberry Library and the

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197 Katherine Cole Stevenson and H. Ward Jandl, Houses by Mail: A Guide to Houses from Sears, Roebuck and Company (Washington, D.C.: Preservation Press, 1989), p. 19.

198 Grant and Bohi, The Country Station in American, passim.

199 Charles Parrott, "An Architectural Study of the Chicago and North Western Railway Passenger Stations on the Iowa Division Designed by Charles S. Frost, 1893-1919," (Ames: Iowa State University, Department of Architecture, August 1971).

200 Carol Semmes (Newberry Library) to Rebecca Conard, letter dated November 3, 1989.

University of Iowa Library, the latter of which has not even begun to sort and catalog the material in its possession.[201]

Much of Chicago & North Western's records appear to have been destroyed. The company headquarters in Chicago and the CNW Historical Society have some building records, but little pertaining to Iowa. A complete set of C&NW records generated by the Valuation Act of 1913 is located at the National Archives. According to H. Roger Grant, these records are "rich in detail."[202] As of 1978, building plans and records for the Chicago, Burlington & Quincy line were located at Burlington Northern headquarters in St. Paul, Minnesota, although a fire in 1922 destroyed many CBQ records.[203] As of 1975, some plans for Milwaukee stations were located at the Office of Division Engineer in Perry.[204] Unfortunately, so many early depots have been lost that one cannot look to the physical evidence to provide anything close to a complete record of early standard designs.

Nonetheless, based on the field and archival data examined for this study, it appears as though railroad architecture can be categorized into three generations which generally correspond with the periods of development that can be discerned from the historical record. The first generation of buildings, which date from about 1855 through 1889, appears to have been characterized by wooden depots, and the earliest depots were very simple affairs. The existence of an 1850s brick depot in Fort Madison is evidence that first generation depots were not universally constructed of wood, but the generalization is nonetheless sound. Decorative elements and trackside bay windows do not seem to have appeared on depots until the later years. Although the construction of wooden depots began to wane by 1890, railroads continued to build them at stations of lesser importance (from the railroad company's point of view) into the early 20th century. Standard plans were used extensively, and except for ornamental details and paint schemes, the buildings of one railroad would have been largely indistinguishable from those of another.

Combination depots and flag stations constituted the mainstay of railroad facilities until about 1890. Considering that nearly every town in the state had a wooden station at one time, remarkably few of these structures have survived. Most of them were removed by railroad companies themselves, or were recycled for new use, as part of periodic line maintenance and upgrade programs. For this reason alone, surviving first generation depots take on greater significance. At present, four wooden depots in Iowa are listed on the National Register: the 1873 BCR&N depot at Walker, the 1874

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201 Robert McCowen (University of Iowa Library) to Rebecca Conard, telephone conversation of May 23, 1989.

202 H. Roger Grant to Rebecca Conard, letter dated July 21, 1989. Grant currently is working on a general history of the Chicago & North Western Railroad.

203 M. Svendsen-Roesler to Lowell Soike, memo dated January 3, 1978.

204 G.D. Doherty (Chicago, Milwaukee, St. Paul and Pacific Railroad Co.) to James K. Beranek, letter dated April 29, 1945.

Milwaukee depot at Fayette, the 1879 Milwaukee depot at Grafton, and the 1899 Milwaukee depot at Albert City. All four of them are two-story combination depots.

This survey identified eleven first generation wooden depots: the 1887 Illinois Central depot at Ticonic (moved); the Rock Island depot at Gowrie (moved to park and restored); a much-altered MSTL depot at Otho (in residential use); the Toledo and North Western depot at Owasa (moved to Eldora); and CBQ depots at Newmarket (moved), Farragut, Randolph (moved), Percival (moved), Bartlett (used as store), and McPaul (moved); and the 1903 Wabash depot at Shenandoah. Most if them probably survive chiefly because they have been moved. Of the ten, only the Shenandoah depot remains substantially unaltered, although the Gowrie depot has been restored almost to its historic appearance. The Ticonic depot is the only first generation IC depot known to exist in the state, but it has been substantially altered and has been used as a barn since the 1930s.

In addition to these combination depots, the survey identified four flag stations: the CBQ station originally at Ladoga (moved to Bedford), the CBQ station originally at Brooks (moved to Creston), the Rock Island station at Racine (southern Webster Co)., and Charlie's Station (FDDM station southeast of Gowrie). The two CBQ flag stations have been restored and moved into parks. The Rock Island and FDDM flag stations in Webster County currently are located on farms. While they are of historical interest, both buildings are in poor physical condition.

Chicago, Burlington & Quincy depots, especially the first generation structures, warrant further investigation. Compared with other major railroads in the state, more CBQ first generation stations appear to have survived. Survival has come at some cost to integrity, however. All of the combination stations in southwestern Iowa have been remodeled for new uses, either residential or farm, and most of the flag and combination stations have been moved. Because the loss of integrity appears to have been substantial, first-generation CBQ buildings are not at this time considered good candidates for National Register listing. However, there is high potential for at least some of these buildings to have historical significance, and a thorough study of the entire line is therefore needed. This is no small task, since the corporate history of the CBQ is perhaps the most complex of any of Iowa's many railroads. In the six southwestern counties surveyed, there were no fewer than eleven predecessor lines. Unlike the predecessor lines of the Illinois Central, the lines that merged into the CBQ system were either completely separate entities or had greater autonomy from the parent company. There is enough variation among the buildings recorded during the survey to suggest that the distinctive historical evolution of the CBQ is reflected in these extant structures. First, though, buildings must be identified by predecessor line, and then the corpus of surviving structures needs to be evaluated within the context of the line history.

During the heyday of railroads, roughly from 1890 to 1920 (though in some cases longer), railroad companies relied less on standard plans for depot construction but probably used them more heavily for constructing support buildings. Second generation railroad structures reflect the prosperity that railroads enjoyed as the dominant mode of passenger and freight transportation during these years. The Golden Age of Steam Railroading is distinguished architecturally in two ways. First, many of the depots built during this period were brick replacement structures, usually built in communities where the traffic warranted more substantial facilities. Second, railroads began building structures to house

specific functions, and all regular activities associated with railroad operation seem to have warranted separate facilities. Railroads built everything from 4'x4' wooden shelters for watchmen at crossings to 3-story brick freight houses and 16-stall roundhouses.

It is during this period that architect-designed buildings began to appear. Since the major railroads operating in Iowa were headquartered in Chicago, it is natural to expect that the administrative and economic ties railroads established between Iowa and Chicago would also be reflected in railroad architecture. This indeed is the case. Charles Frost, a Chicago-based architect who designed buildings for Chicago and North Western during this period, designed several depots in Iowa. Design elements found in his Iowa depots share many similarities with his Chicago depot designs. For instance, the tower (roof altered), rusticated stone veneer, and complex roof line of the Frost depot at Carroll, built in 1896, seem to be hallmarks of his earlier work, since these design elements are also evident in Frost's designs built in the Chicago area during the 1890s. Chicago architect Daniel H. Burnham, working individually and with one of his partners, John Wellborn Root, designed railroad buildings for several railway companies, including many structures for the Chicago, Burlington, & Quincy. Five CBQ buildings in Iowa were designed either by Burnham or by Burnham and Root: the library and station at Creston (1883, 1885), the station at Des Moines (1884), the station at Ottumwa (1889), and the station at Burlington (1892).[205]

Through architect-buildings railroads could project an image of prosperity and stability to the public. However, not all railroads went to the length (or expense) that the CNW did to dress up their corporate image. Building plans for Illinois Central brick replacement depots, for instance, show that without exception all of them were designed in-house. Here, too, there are design correspondences among Iowa depots as well as between Iowa and Chicago depots. Since the IC Engineering Department was located in Chicago, all of the plans came from there, and a number of individuals were involved in building design. Extant buildings and building plans indicate that designers borrowed not only from their own previous works, but from one another as well. In this sense, IC architecture is more corporate in nature; that is, the company rather than individuals "owned" the intellectual property. This policy is reflected on building plans, which often identify only the ICRR Engineering Department as the architect. It is therefore difficult to trace the body of work produced by any one individual who designed buildings for the Illinois Central. Presumably, other railroad companies adopted a similar policy. However, Charles Parrot's study of Frost and the data compiled during this study demonstrate that much more research needs to be done in order to study the degree to which Chicago-based professional architects and engineers influenced the look of railroad stations in Iowa.

Railroad engineering departments (aka bridge and building departments) also produced the standard plans required for tool houses, carpenter's shops, machine shops, watchman's shanties, crossing towers, express buildings, and the many other functionally specific buildings that railroads erected in order to run smooth operations. These buildings, perhaps more than the fancy brick replacement depots, symbolized the economic strength of railroads. Likewise, when railroads began to lose their

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205 Charles Moore, *Daniel H. Burnham: Architect, Planner of Cities* (New York: Da Capo Press, 1968): Appendices C,D

dominant position in the transportation industry, support buildings were often the first to go when the fat was trimmed from operating budgets. Consequently, with the exception of freight houses, very few support buildings are extant. Most railroads have cleared these structures from their lines. Only along the Illinois Central line, now operated by Chicago, Central & Pacific, does one find support buildings in any appreciable number, and their days probably are numbered.

Third generation buildings reflect the austerity programs that railroads adopted after 1930 in order to stay afloat. While companies continued to spend large amounts of money on their physical plants during the 1920s, the building activities of this decade appear to have been geared more toward line maintenance and streamlining operations. New facilities were built, but the 1920s clearly was a transition decade because automobile and truck transportation were beginning to dent the market. Thus, the depression of the 1930s hit railroads doubly hard. As a result, the decades of the 1930s and 1940s witnessed the dismantling of much of what had been built up during the previous seventy years. Standard plans and prefabricated units became the rule as railroads sought to improve their operating cost efficiency in the wake of depression -- and then the ensuing decline that resulted from increasing competition from airlines and trucking companies after World War II. If first generation depots had been simply designed, third generation replacement structures were positively spartan. One might go so far as to say that function sometimes failed to influence form during this period. Plain rectangles (or, in the case of the IC, plain L-plans) might serve as a depot or as a support building. Much of what remains along the operating lines throughout the state belongs to this generation of building activity, and these structures are, in many ways, a sad commentary on the post-World War II decline of the railroad industry. While there is little of architectural interest, the buildings nonetheless reflect an important chapter in railroad history. Few of the buildings from this era are yet old enough or exceptional enough to meet National Register criteria, but third generation structures will bear reexamination within a few years.

VIII. TOPICS FOR FUTURE RESEARCH

Although railroad magnates have been portrayed as chief among the "robber barons" in general historical literature, writers of railroad history in Iowa first viewed railroads as bearers of the blessings of the Modern World, led by powerful and benevolent figures who wanted to unite the hinterlands with the East for the good of the country. This view prevailed in accounts written from the early 1900s to the 1940s, but it also persisted into the 1950s. County histories invariably reflect this perspective. Mildred Throne's Streamliners in Iowa (1951); Frank P. Donovan's articles on the largest railroad companies in the state, published in the Palimpsest; and William Petersen's series of railroad vignettes, also published in the Palimpsest, are typical of this genre of historical literature. A few objective accounts of railroad legislation and economic practices nonetheless came out of this early period. Peter Dey's Railroad Legislation in Iowa (1893) remains a classic.

The revisionist period of the 1960s produced several attempts to study railroads more "scientifically," or at least more objectively with fact-based analyses of their development and history. The common folk and their role in the development and operation of railroads also received attention for the first time. John Stover's American Railroads (1961), Richard Overton's The Burlington Lines, Robert

Riegel's The Story of the Western Railroads (1964), and George Sieber's "Railroad's and Lumber Marketing, 1858-1878" in the Annals of Iowa (1967) reflect this trend.

During the 1970s, scholars turned their attention to the railroads and society. In addition, much more was written about the physical legacy of the railroads, mainly the depots and bridges. This phase continues to the present. Iowa Trolleys, edited by Norman Carlson (1975) and H. Roger Grant's many books and articles on depots are good examples of this latest strain of historiography.

Despite the voluminous literature on railroads, many topics have not been investigated in much depth, thus links between history and extant historic resources are difficult to perceive, let alone document. For instance, scholarly studies are needed of ethnic groups in Iowa and their relation to railroads. Railroad labor in general needs more focused attention. The role of women and railroad development/operation is a small, but potentially worthwhile area in need of investigation. Likewise, there is need for systematic study of Iowans who played key roles in railroad development. Town studies are sorely needed in order to examine the influence of railroads in the growth and decline of local economies. Finally, additional studies of individual railroad lines are needed in order to determine whether the general patterns of architectural evolution outlined in this context are valid.

Railroads and Ethnic Groups

There is no general treatment that discusses which ethnic groups were closely associated with railroad development and operations. Which railroads in the state recruited or employed blacks? Have southern and eastern European nationalities been omitted from railroad histories because by the time they arrived the great need for immigrant labor on Iowa lines had passed? What was the relationship between ethnic groups and the Brotherhoods? Were they excluded on the basis of their nationality? If so, which nationalities were excluded? How many Iowa railroads had Jim Crow restrictions?

From the 1850s until the 1870s railroads often recruited laborers from the throngs of immigrants who disembarked in eastern seaports. They advertised job opportunities and land for sale in European newspapers. In this early phase of Iowa railroad development the State was still too sparsely settled to provide many local laborers, making recruitment and advertising necessary.

Numerous railroad historians refer to the Irish and German immigrants comprising construction crews on Iowa's earliest railroads. In Monroe County, most Irish-born residents "came from Pennsylvania or St. Louis by way of Keokuk. Almost all of them worked for a time on railroad construction. Many helped to build the Keokuk-Ft. Des Moines railroad and then bought land at $1.25 per acre with their wages."[206] This was the general pattern of settlement for many immigrants in Iowa. They worked on the railroad just long enough to save money to buy a farm or business. (German and Scandinavian immigrants, however, often arrived with more capital than did the Irish and therefore spent less time in railroad employment if at all.)

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206 Homer L. Calkin, "The Irish in Iowa," Palimpsest, February 1964, p. 51.

In the 1890s and 1900s immigration patterns shifted from the northern European nations to the southern and eastern European nations. Although Iowa railways had ceased their extensive campaigns to attract immigrant laborers by 1890, the companies may have hired many of the Italians, Slavs and Poles who came to Iowa. This author discovered that no historian writing of Iowa railway development refers to the above groups as temporary or permanent employees with the state's railroads. Information regarding these groups and their possible employment on the rails will probably be found in the works of ethnohistorians.

One such work mentions briefly the relationship of Greeks in Des Moines to the railroads. The first men to arrive in the early 1900s were penniless and, like immigrants before them, they commonly worked for the rail companies until they could afford to open a business. George Cotrones (not his real name), typified the Iowa Greeks employed by the railways. He worked for the railroad from 1912 to 1919, earning $1.75 per day, most of which he sent home to his family in Greece. At the earliest opportunity he left his railroad job to buy a partnership in a Des Moines restaurant.[207]

African Americans are also absent from the literature about railroads in Iowa. According to Nicholas L. Pitsch, railroad historian, the Illinois Central transferred African American railroad men from the southern states along its Gulf Route to its Iowa Division. This might explain in part the small population of African Americans now living in Fort Dodge and Waterloo.

The mining town of Buxton, now gone, in Monroe County was fifty-five percent African American, and as employees of the Chicago and North Western's subsidiary coal company, Consolidation Coal, these Buxton residents were indirectly employed by the railroad. Other railroads in the state may have similarly employed African Americans in their captive coal companies.

Railroads and Labor

The topic of railroads and labor in general also needs further examination in order to discern how labor relations affected the built environment. At this point, we can link important labor strikes to various sites, but there is little information to focus on other labor-related questions, for instance to what extent railroads directly influenced employee housing patterns or worker house types, or whether employees directly influenced the design and construction of functionally specific support structures.

In the first years of Midwestern railroad development, companies encountered a shortage of labor as well as one of funding. The region was simply not settled enough to provide a pool of local labor, and railways sent representatives to Eastern seaports to recruit laborers from the droves of Irish and German immigrants then entering the nation. While some immigrants moved immediately to new states like Iowa, others went to work in New England mills and factories. Since they were often willing to work for low wages they eventually displaced many in the "native" labor force. Unable to make a

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207 Virginia K. Fisher Cunning, "Ethnicity in a Midwetern City: An Anthropological Investigation of the Greeks in Des Moines" (Master's Thesis, Iowa State University, 1975), p. 42.

living in the East, the ex-factory workers headed west where they found jobs in the railroad construction gangs. Thus, immigration supplied railways with labor both directly and indirectly.

Nonetheless, this new labor supply was neither reliable nor skilled. The majority of immigrants and Eastern migrants worked on the rails only as long as necessary. Turnover was high because their primary goal in coming west was to secure a farm, a business, or a fortune in another field, and they soon moved on to more attractive opportunities. (Although the problem of high turnover tapered between between 1880 and World War I, the rail companies never fully eliminated it.) Unskilled labor was scarce, but skilled labor was even more so. Most of the immigrants and a portion of the migrant Easterners were unskilled. There was no system for training workers until almost 1900 and the railroads depended upon those who learned their jobs on eastern lines.[208]

Working on the railroad was a dangerous occupation, and in the 1860s employees began forming mutual-insurance societies since regular insurance was cost-prohibitive. The societies "represented [the] various crafts" engaged in railroad-related work, and were the forerunners of railroad labor unions, which generally predated the development of unions in other industries.[209]

The first union was the International Brotherhood of Locomotive Engineers, organized in 1863. Three years later the Engineers initiated a "voluntarily contributed fund for...widows, orphans, and totally disabled members." By 1890 contribution was compulsory. Three other major railroad unions were the Order of Railway Conductors of America (1868), the Brotherhood of Locomotive Firemen (1873), and the Brotherhood of Railroad Trainmen (1883). All established insurance funds based on the Engineers' example. Numerous, lesser brotherhoods were later created and by 1950 twenty-two organizations existed, of which the above four reigned supreme.[210]

The Panic of 1873 heralded a financial downturn that would last until the end of the decade, and old and young rail companies alike were adversely affected. Trying to cut operating expenses, most eastern roads reduced wages. In 1877 the Baltimore & Ohio's frustrated firemen and brakemen walked off their jobs in protest. Strikes reverberated across the nation, hitting Buffalo, Chicago, St. Louis, Omaha and St. Paul. Police and army troops were dispatched immediately, and since the protesters were unorganized (the Brotherhoods opposed strikes), the strikes were easily broken. When Chicago railroad employees walked out, the CBQ shut down its Iowa lines so that its Iowa employees would not even have the chance to strike, and the general strike in this state collapsed without police or military assistance.[211] Information regarding the Omaha strike is practically non-existent, and how exactly it affected rail traffic in Iowa, other than forcing delays, is unknown.

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208 Riegel, The Story of the Western Railroads, pp. 229-234.

209 Encyclopaedia Britannica, 1952 ed., s.v. "Railways."

210 *Ibid.*

211 Larson, p. 158.

By the 1880s Iowa was well-settled and able to supply more workers for railroads, which had just launched massive building campaigns. Indeed, the roads required more than just construction crews. As population and the economy expanded in the late-1800s and early 1900s, additional workers were needed to handle the growing volume of freight and passenger traffic. By 1900 there was an average of 5.2 employees per mile of track, and by 1910 railroad employees composed 4.4 percent of the nation's total workforce.[212]

Wages rose correspondingly, with railroad employees earning an average of $102 per year more in 1900 than they did in 1880. Railway workers were fortunate in that their wages paralleled the rising cost of living, and that they actually earned more than the average American.[213] Rail companies were also among the first big businesses to extend benefits to their employees. In the 1880s the CBQ and the Wabash were two roads that commenced erecting club rooms, recreation centers, and library and dining facilities for its workers; they also aided the establishment of local hospitals.[214] Keep in mind, however, that higher wages and the introduction of benefits merely compensated workers for ten to twelve hour days, exposure to inclimate weather and the risk of losing life or limb. Benefits did not include worker's compensation, sick pay, or old age pensions. In 1892 the president of the CBQ, Charles Perkins, stated emphatically that workers should not receive old age pensions; they should provide for themselves with what they earn.

Despite relatively high wages and benefits, small strikes broke out among workers in each decade of the period this paper covers, primarily as a result of slight economic recessions. During times of financial difficulty companies almost always laid off superfluous employees, cut wages and increased work loads in attempts to remain profitable or even solvent. Naturally their employees balked and protested at the measures.

The four large Brotherhoods did not participate in the 1877 general strike, but by the 1890s they realized the power of collective bargaining and became actual unions. While they favored negotiation and arbitration, they occasionally resorted to strikes. Union engineers of the CBQ walked off their jobs in 1888 when negotiation with the company for more equitable pay schedules fell through. Union workers on other roads (predominantly west of the Missouri River) sympathized and refused to handle Quincy cars and freight as long as the strike lasted.[215]

The dispute was a drawn-out affair complete with incidents in which radical strikers "threw" switches, added chemicals to water tanks thereby disabling engine boilers, and dynamited tracks in and near

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212 Stover, American Railroads, pp. 176-177.

213 *Ibid.*

214 Riegel, The Story of American Railroads, p. 241.

215 *Ibid.*, p. 252.

Aurora, Illinois and Creston, Iowa. Of newspapers polled in Iowa, approximately half supported the strikers and half opposed them, revealing that many Iowans had little love for the railroads. In March 1888, the Davenport *Times* "thought that the company was more interested in damaging the brotherhoods than in maintaining [its] principle [of managerial control.]"[216] Farmers tended to oppose the strike since it hampered freight traffic more than passenger traffic. The CBQ finally defeated the brotherhoods in 1889 with the help of Pinkerton detectives and court injunctions, failing, all the same, to eradicate them. This dispute proved the durability of the railroad brotherhoods, and the company's directors sought to strengthen its ties to its employees (weakening the relationship between workers and the brotherhoods at the same time). In 1892 the Burlington created a Voluntary Relief Department to aid sick or injured employees and their widows in case of death, even though its president disfavored the idea.[217]

The Panic of 1893 resulted in the second and more intense nationwide railroad strike of the 19th-century. In response to the depression Pullman reduced the wages of his car manufactory workers by twenty-five percent. When they agitated for reduced rent for their company-owned housing he refused, claiming that "he was building cars at a loss [in spite of the fact that] his company was continuing to pay dividends." In 1894 Pullman employees struck in protest, and were soon joined by the members of the American Railway Union, headed by Eugene V. Debs. Similar to the CBQ strike a few years earlier, the ARU refused to handle trains hauling Pullman cars, effectively paralyzing the nation. As in the 1877 strike federal troops were called in to break the strike, Debs and others were imprisoned for breaking a court injunction to end the strike, and thousands of ARU members were blacklisted when they applied for new railroad jobs.[218] Again, it is not known exactly how Iowa railroads were affected by this strike or to what extent Iowa rail employees participated in it.

The depression of the 1890s also weakened the Chicago Great Western and ultimately caused perhaps the largest employee uprising in Iowa railroad history. Following another slight depression in 1907 the machinists and boilermakers at the CGW shops in Oelwein struck for a nine-hour day and wages of forty-five cents per hour. They had been working ten hour days at thirty-eight cents per hour, and found it difficult to make ends meet. In August, 1907, two hundred machinists and one-hundred fifty boilermakers walked off their jobs. The company retaliated by replacing them with four to five-hundred scab laborers, whereupon the remaining union shopworkers joined the strike in sympathy. Occasional violence broke out between guards and scabs, and strikers and scabs, but there were no riots in Oelwein.

Despite their fervor, many strikers could not survive without work and by November, 1907, half had left Oelwein. Gradually workers returned to their jobs and the dispute officially ended a month later.

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216 Donald L. McMurry, The Great Burlington Strike of 1888: A Case History in Labor Relations (Cabridge: Harvard University Press), p. 160.

217 *Ibid.*, p. 265.

218 Stover, American Railroads, p. 119.

The CGW compromised by offering returning workers a nine-hour day but only a three-cent raise. In the end, the dispute so weakened the CGW that it filed bankruptcy papers and was reorganized by J. P. Morgan in 1909. The Morgan syndicate controlled the road for five years, changed its name from the Maple Leaf Route to the Corn Belt Route, and refurbished its roadbed, rolling stock, equipment and shop facilities.[219]

The development of the railroad brotherhoods demonstrated railway employees' growing awareness of their rights to more reasonable wages, work days, and treatment. The strikes of 1877, 1888, 1894 and 1907 demonstrated the lengths to which they would go to obtain those conditions. Effectiveness of the strikes varied, but in general, labor succeeded in making railroad management acknowledge deficiencies in the pay, treatment and working conditions of its employees. Strikes cost the companies revenue (in the case of the Great Western, its independence), and railroad directors gradually adopted more uniform pay schedules among the various crafts and the eight-hour work day (1917). They eventually implemented company insurance and worker's compensation policies. In the mid-1930s Congress passed laws "providing for extensive arbitration and mediation" and a retirement program, and railroad strikes declined.[220]

It is difficult to know the full extent of labor-management relations and discrepancies in Iowa because of the dearth of literature regarding this topic. Were railroad companies operating in the state more benevolent than in other states? Were there fewer strikes in the state because of the generally conservative nature of Iowa residents? Or perhaps the lack of well-developed industrial centers, where union sentiment so often germinates, reduced the number of disputes? Perhaps there were so few strikes because the predominantly agrarian populace opposed strikes, which interrupted the flow of produce from, and manufactured goods to the otherwise isolated rural areas.

Women and the Railroads

The history of railroad is distinctly gender specific. The railroad industry was (and is) very much a man's business. Railroads were built, operated, invested in and regulated by men. Women between 1850 and 1940 were much more tied to their homes because of prevailing social values, and were "less likely than men to be affected by rapid changes in transportation and other technological advancements."[221] Women were probably not employed by railroads until nearly the turn of the century when they served occasionally as railroad station agents, telegraphers and clerks.[222] During

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219 Divine, p. 526; James Thomas Craig, "The 'Big Strike' at Oelwein Shops," Annals of Iowa 28 (October 1946), pp. 116-138.

220 Stover, American Railroads, pp. 219-220.

221 Glenda Riley, Frontierswomen: The Iowa Experience (Ames: Iowa State University Press, 1981), p. 173.

222 H. Roger Grant, "The Railroad Station Agent in Small Town Iowa," Palimpsest, 1983, p. 94.

the World Wars female station agents were a more common sight. Women may also have been bookkeepers and waitresses at station lunchcounters, and some wealthy Iowa women may have invested in railroads, but they are absent from the history books.

History books do mention women as passengers, and at least one as a savior. Sixteen-year old Kate Shelley was immortalized for risking all to save a passenger train from going over a washed-out bridge near Moingona, in 1881. In fact, the Chicago & North Western appointed her agent at the Moingona station later when she was older, in reward for her bravery.[223]

As passengers, women were frequently granted separate or above-average accommodations. "American trains, unlike the English, had no first- or second-class carriages, but rather had gentlemen's and ladies' cars."[224] On most trains in Iowa, however, there was probably never enough passenger traffic for women to travel separately. Women often had their own waiting rooms, which were more elaborately decorated than a station's common waiting room. The Albia depot, for example, had a "fancy" waiting room for women and a plain one for men, because each day large numbers of men returned from the southern Iowa coalfields covered with coal dust.[225]

The role of women and the railroads also deserves scholarly attention. There are scattered references to women as ticket agents and stenographers. When did women first work for railroads? To what extent did Iowa women work on the railroads in comparison to other states? What is the distribution of female railroad employees around the state? Did more women in small towns work for the railroad, or did more city women? Did women assume any of the "heavier" jobs on Iowa railroads during either of the World Wars, especially World War II?

Iowans and Railroad Development

Iowans who were major figures in railroad development also warrant serious study. The major lines operating in Iowa all originated outside the state's boundaries, yet the process of creating the extensive network criss-crossing the state could not have been accomplished without help from within. The roles of men such as Grenville Dodge, William P. Hepburn, and Senator William B. Allison are briefly mentioned in this study, and historic places associated with some of the individuals active in railroad politics have been previously identified and recognized. The Hepburn House in Clarinda and the Grenville Dodge House in Council Bluffs have been designated as National Historic Landmarks. Listed on the National Register of Historic Places is Montauk, the Clermont home of Governor William Larrabee, who, during the 1880s, engineered effectual state regulation of railroads and reformed the railroad commission. So is the Des Moines homes of Governor (and Senator) Albert

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223 Albert P. Butts, Walter Willson and His Crooked Creek Railroad (Webser City: Fred Hahne Printing Co., 1976), p. 15.

224 Stover, Iron Road to the West, p. 21.

225 H. Rogert Grant, "Iowa's Railroad Stations: A Pictorial Essay,", p. 19.

Baird Cummins, who pushed railroad regulation and reform legislation through the state during the Progressive Era and co-authored the Esch-Cummins Act of 1921 which set the stage for federal regulation of railroads. Nonetheless the process of sorting out the key players on both a statewide and a regional basis remains to be done. In addition, not all of the important figures were involved in railroad development or regulation. Lorenzo Coffin, for instance, was an important figure in the railroad safety movement. In recognition of his contribution to social reform and industrial safety, the Brotherhood of Railroadmen has maintained his burial site northwest of Fort Dodge as a memorial since 1947, and in 1975 the site was listed on the National Register of Historic Places.[226]

Railroads and Town Development

We need good town studies which focus on railroads in relation to the development and decline of local economies. Although the overall purpose of railroad companies was to keep a stream of products moving eastward to major cities, the process of siting stations within a few miles of one another created a transportation system that encouraged the development of small enterprises serving regional markets. Creameries could ship butter, eggs, and cream to the next town as well as into Chicago. Hatcheries could ship fragile baby chicks short distances to farmers in the surrounding area. Bakeries could ship a box of fresh bread out on the morning train and have the loaves delivered to stores around the county by mid-morning. Shoppers could likewise hop the morning train for a trip to the nearest city or big town and return by evening. Local economies may not have been entirely dependent upon the railroads, but they hummed around them.

The tie between railroads, the mining industry, and town settlement is a special case that deserves more scholarly attention. The town of Buxton, now a National Register historic archaeological site, was the company town of the largest captive mine in Iowa, owned by the Chicago and North Western Railroad.[227] The link was not always so direct, however. The former town of Dunreath, for instance, was platted in 1882 by the Union Land Company in anticipation of the arrival of the St. Louis and Des Moines Railroad (which became part of the Wabash Line). The Union Land Company, as it turns out, was "synonymous with the Red Rock Coal and Mining Company."[228] Several coal companies which operated in Dunreath provided the major sources of employment, and when the coal mines began to shut down in the 1940s, the town dwindled to crossroads hamlet.[229]

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226 National Register Nomination for Lorenzo S. Coffin Burial Plot, prepared by Roger Natte, Webster County Historical Society, January 10, 1975.

227 Schwieder, *Black Diamonds*, p. xi.; see also David M. Gradwohl and Nancy M. Osborn, *Exploring Buried Buxton* (Ames: Iowa State University Press, 1984).

228 Leah Rogers, et al., *The Sutton (13MA266) Site and the Townsites of Percy (13MA347) and Dunreath (13MA449): Data Recovery at Three Historic Sites, Lake Red Rock, Iowa.* (Decorah: Bear Creek Archaeology, 1989), p. 101.

229 *Ibid.*, p. 115-116.

Just as railroads encouraged the development of local enterprises, the decline of towns in rural Iowa may be tied, in part, to the decline of the railroads. Rural decline has been linked primarily to the vicissitudes of agriculture, but a closer look at its relationship to the loss of rail service during the post-World War II era is worthy of attention.

Railroad Line Studies

We also need more studies of individual railroad lines which look at the development of line architecture and the physical plant in relationship to the larger patterns of railroad history. This study includes an initial analysis of structures associated with one line, the Illinois Central. The study is by no means complete inasmuch as we did not look at all the extant structures on this line, nor did we conduct the kind of systematic and thorough archival research that would enable one to construct a complete picture. While the study leads to a plausible hypothesis concerning the generations of railroad architecture, this hypothesis requires further investigation.

IX. RAILWAY COMPANY ACRONYMS

The following list of companies and their acronyms does not include all the companies that ever operated in Iowa. Rather, it is a selected list which represents those companies for which there is some documentation of buildings and other structures, either from survey records or from various photograph collections. Most of the companies listed below are discussed within the historical context presented here, but some are not.

ALRY	Albia Light & Railway
ANS	Atlantic North & South
APNC	Appanoose County
ATSF	Atchison, Topeka & Santa Fe
BCRN	Burlington, Cedar Rapids & Northern
BMO	Burlington & Missouri
BMR	Burlington & Missouri River
BN	Burlington Northern
BSV	Boone & Scenic Valley
CBQ	Chicago, Burlington & Quincy
CBSJ	Council Bluffs & St. Joseph
CBSL	Council Bluffs & St. Louis
CC	Crooked Creek
CCP	Chicago Central & Pacific
CCW	Charles City Western
CD	Cherokee & Dakota
CDM	Clinton, Davenport & Muscatine
CFM	Cedar Falls & Minnesota
CGW	Chicago Great Western
CIC	Cedar Rapids & Iowa City (aka CRANDIC)
CIN	Chicago, Iowa & Nebraska
CMA	Centerville, Moravia & Albia
CMO	Chicago, St. Paul, Minneapolis & Omaha
CNW	Chicago and North Western
CRC	Cedar Rapids & Chicago
CRIF	Cedar Rapids, Iowa Falls & North Western
CRMR	Cedar Rapids, & Missouri River
CSL	Clarinda & St. Louis
CVAR	Cedar Valley
DD	Dubuque & Dakota
DMCI	Des Moines & Central Iowa
DMFD	Des Moines & Fort Dodge
DMIF	Des Moines, Iowa Falls & Northern
DMT	Des Moines Terminal

DMV	Des Moines Valley
DP	Dubuque & Pacific
DRI	Davenport, Rock Island & Northwestern
DSC	Dubuque & Sioux City
DW	Dubuque Western
FDDM	Ft. Dodge, Des Moines & Southern
FDO	Ft. Dodge & Omaha
FMNW	Ft. Madison Northwestern
GN	Great Northern
GW	Great Western
HS	Humeston & Shenandoah
IAC	Iowa Central
IC	Illinois Central
IFSC	Iowa Falls & Sioux City
KN	Keokuk Northern
KW	Keokuk & Western
LIC	Lyons & Iowa Central
MA	Moulton & Albia
MADM	Moulton, Albia & Des Moines
MCCL	Mason City & Clear Lake
MCFD	Mason City & Ft. Dodge
MILW	Chicago, Milwaukee, St. Paul & Pacific
MIN	Missouri, Iowa & Nebraska
MM	Mississippi & Missouri
MNS	Muscatine North & South
MO	Manchester & Oneida
MSTL	Minneapolis & St. Louis
MWC	Midwest Central
NI	Northern Iowa Railroad
NN	Newton & Northwestern
NW	Norfolk & Western
RI	Chicago, Rock Island & Pacific
SCP	Sioux City & Pacific
SIN	Southern Iowa & Nebraska
SLKC	St. Louis, Kansas City & Northern
SPDM	St. Paul & Des Moines
SPKC	St. Paul & Kansas City Short Line
TNW	Toledo & North Western
TPW	Toledo, Peoria & Western
WAB	Wabash
WCFN	Waterloo, Cedar Falls & Northern
UP	Union Pacific

F. Associated Property Types

I. Name of Property Type Significant Properties Associated with the Advent and Development of Railroads in Iowa from 1855 to 1940

II. Description

See Continuation Sheets

III. Significance

IV. Registration Requirements

☒ See continuation sheet

☐ See continuation sheet for additional property types

G. Summary of Identification and Evaluation Methods

Discuss the methods used in developing the multiple property listing.

See Continuation Sheets

[X] See continuation sheet

H. Major Bibliographical References

See Continuation Sheets

[X] See continuation sheet

Primary location of additional documentation:

[xX] State historic preservation office
[ ] Other State agency
[ ] Federal agency
[ ] Local government
[ ] University
[ ] Other

Specify repository: Iowa State Historical Society, Bureau of Historic Preservation

I. Form Prepared By

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F. SIGNIFICANT PROPERTIES ASSOCIATED WITH THE ADVENT AND DEVELOPMENT OF RAILROADS IN IOWA FROM 1855 TO 1940

The following typology is based on the classification system developed by Walter Berg during the 1890s and published under the title of *Buildings and Structures of American Railroads* in 1893. Berg developed his classification system during the time when railroad companies were rapidly expanding their physical plants and erecting a host of functionally specific structures. His purpose was to provide a useful reference book for railroad managers, superintendents, mechanics, engineers, architects, and others with an interest in the existing practices of American railroads. Berg's work remains the classic treatise on railroad architecture, in large part because he provided a highly rationalized approach to studying the subject, and it is still considered by architectural historians and students of railroad history to be a standard reference work. The typology presented here thus follows existing scholarship and classifies structures by function rather than by association with a particular time period or historical theme. As such, it provides a standard method for identifying and comparing the structures among various railroads.

Properties marked with an asterisk (*) are being nominated to the National Register of Historic Places with this submittal.

1. PROPERTY TYPE: DEPOTS

Subtypes:

- **a. Terminal or Union**
- **b. Combination**
- **c. Passenger**
- **d. Flag**
- **e. Portable, Temporary, and Replacement**

2. Description

a. Terminal or Union Depot [Plate 1]

Characteristics:

Terminal passenger depots were erected to accommodate passengers and related support services at railroad terminals -- generally large cities, but also at important junction points of two or more railroads. When more than one railroad entered the same town, the companies often cooperated to build a "union depot." Terminal stations can be further classified into side-stations, head-stations, and island stations. At side-stations the depot building was situated on one side of the tracks. At head-stations, it was situated across the dead-end of the tracks; and at island stations, between the tracks. Terminal passenger depots almost always were custom designed by an architect to suit the particular needs of the location, with several

functions housed under one roof. Very few terminal stations were built in Iowa; but because so many lines intersected across the state, union depots cropped up in some unexpected locations.

Diagnostic Information: none

Extant Examples:

Union Station and Burlington Freight House, Davenport, 1923

* Iowa Falls Union Depot (Illinois Central Ry. and Des Moines, Iowa Falls & Northern Ry.), 1902

Non-Extant Examples:

Union Pacific Depot, Council Bluffs; 1877
HABS-IA-6; see Wesley I. Shank, The Iowa Catalog (Iowa City: Univ. Iowa Press, 1979)

b. Combination Passenger and Freight Depot [Plates 2-7]

Characteristics:

The combination depot was the most common type of station building built in Iowa. Such buildings housed the combined functions of passenger shelter, train control, and freight at stations of relative minor importance, where the amount of freight or the volume of passenger business did not warrant the construction of separate buildings. Combination depots often were built from standard plans which placed the waiting area at one end, the office in the center, and the freight section at the other end. With rare exceptions, the central office area was built with a trackside bay window so that trains and other track activity could be viewed in both directions from inside the depot. In locations where the railroad preceded appreciable town development, living quarters for the station agent often were incorporated into the plan. Other interior rooms might include a baggage room, telegraph office, and toilets. Since the freight handling area was incorporated into the combination depot plan, the building might also have a bi-level platform, with a low platform space for passengers and a high platform space for transferring cargo. To offset the monotony inherent in standardization, railroad companies employed a variety of minor architectural variations (brackets, siding, roof overhang, color scheme, etc.) that added visual interest and, at the same time, provided a corporate identity by which the buildings of one line could easily be distinguished from those of another.

Diagnostic Information:

Chicago, Burlington & Quincy

CB&Q stations display a variety of styles because the railroad included so many predecessor lines, and the history of line architecture remains to be analyzed. About 1929 the company adopted a standard method of updating old depots. Remodeled buildings received a brick veneer base to the level of the window sills, topped with a sill course of precast concrete. The wall surface above the window sill level was covered with stucco on metal lath. The increased wall thickness required new windows and doors. The roof overhang also was shortened and the brackets removed. Interior alterations included replacing wooden floors with tile, plastering the interior walls, and installing electric wiring and modern toilet facilities. In some instances, the original general waiting room was divided into separate waiting facilities for men and women. This modernization plan was carried out under the direction of W.T. Krausch, Engineer of Buildings for the CB&Q.

CB&Q station nameboards are recognized by white letters on a black background.

Chicago, Milwaukee, St. Paul & Pacific (The Milwaukee Line). (Based on Grant and Bohi, but revised as dictated by field evidence):

angle braces with the cross-piece recessed so that the brace resembles an "A" set at a 45-degree angle

original paint scheme was ochre with brown band below windows and brown trim; later scheme was two-tone gray paint with the darker tone below window level

4-pane rectangular window above freight door

rectangular bay with tall 2/2 wood sash windows

in NW Iowa, some stations had an angle bay window

Two-story plan (introduced by late 1870s; Hornick, Grafton, and Albert City Depot exemplify this plan)

24'x60' plan with first floor space divided as per Garden City plan; agent's living quarters on second floor

two-story angle bay window covered by intersecting gabled roof (after 1901 this feature dropped)

Garden City plan (first implemented 1902 at Garden City, SD)

single-story 24'x60' basic plan with 20'x23' waiting room, 10'x10'office, and 16'x23' freight room (modified as local needs dictated)

vertical siding below window level at in gable ends

sawtooth pattern along lower edge of vertical siding in gable ends

Chicago & Northwestern (as documented by Grant and Bohi):

Number Three Plan (1904-1920):

16'x40' rectangular plan with 15'x11'6" waiting room, 8'x13'office, and 15'x18'6" freight section

Number Two Plan (Dike depot exemplifies this plan):

20'x72' rectangular plan with 21'9"x19' waiting room, 12'6"x19' office, 37'9"x19" freight section, and 9'x6' train register room

distinctive two-level hipped roof with higher pitched section over waiting room and office

intersecting gable roof over rectangular bay window; diagonal woodwork in gable end

4/2 wood sash windows

drop siding

slate shingles on roof

Number One Plan:

20'x90' rectangular plan; same interior space partitions as Number Two Plan with the addition to 21'6"x19" women's waiting room

other features same as Number Two plan

Toledo & North Western (as documented by Grant and Bohi):

[Note: The Owasa TNW depot, now located at Eldora, is the only known Iowa example still in existence]

Two-story depots with board-and-batten siding

Freight room usually one-story, but sometimes two

Fenestration, 6/6 or 9/6 lights

One-story angled or rectangular bay window with hipped roof

Illinois Central (Based on field and archival study as part of this survey project):

Three generations of IC architecture have been discerned from field investigations and an examination of building plans for the Iowa Line on file at Chicago Central & Pacific headquarters in Waterloo. The first generation depots were constructed of wood, and stations built between 1861 and 1890 show a high degree of similarity. While the earliest depots were built without a bay window on the track side, this feature came to be standard. On IC depots, the trackside bay is almost always rectangular. First generation depots also have gable roofs. In western Iowa, the IC built many two-story depots with agent's quarters on the second floor. Window treatment and siding appears to have varied. Some early stations were clad with board-and-batten, others with drop siding. From available evidence, first generation combination depots seem to have incorporated a general passenger waiting room rather than separate rooms for men and women. The color scheme for these buildings was dark red and yellow-gold.

Second generation IC depots comprise brick replacement structures erected between ca. 1887 and ca. 1930. These were not built according to standard plans, although buildings constructed at a similar point in time share similar architectural elements. Nonetheless, almost all of them have hipped roofs, and the rectangular bay remains a constant feature (the Storm Lake IC depot is a rare exception). Separate men's and women's waiting rooms are common in these depots.

Third generation IC depots are among the plainest railroad buildings ever designed. During the 1940s, the company completely overhauled its physical plant, removing structures which no longer served a useful purpose and "rebuilding" many service structures. The 1940s depots are highly standardized in plan, and it is sometimes difficult to distinguish a depot from a service building. Almost invariably, the depot is a small L-shaped structure with an intersecting gable roof. The walls are clad with drop siding, and the structure is painted gun-metal gray.

See Section VI of the Context for a more complete discussion of IC depot architecture.

Rock Island: Considerable research remains to be done with respect to the Rock Island line, but the following features appear to be diagnostic:

intersecting gable roof over rectangular bay window

angle braces with curved cross-piece

4/4 wood sash windows

vertical siding below window level

Wabash: Drake has classified Wabash depots into five classifications: 1) early wood design, 2) poured concrete style, 3) brick structures, 4) asbestos wood frame buildings, and 5) modern poured concrete units.

Early wood Wabash depots are clad with a variety of siding materials although the main wall sections above the window sill line are covered with board-and-batten. False-bead tongue-and-groove wainscotting is usually found below the sill line, and patterned wood shingles may further decorate the exterior walls. Early Wabash depots are easily distinguished by their Victorian gingerbread appearance. Another distinguishing feature of Wabash combination depots is the floor plan. Commonly, Wabash depots were built with an angle bay on the street side and a rectangular operator's bay on the track side. The typical arrangement was general waiting room, office (with two bays on opposite sides), and freight area. The earliest paint scheme appears to have been box-car red with white station-name lettering.

The poured concrete style began to appear in about 1910. It following the same basic plan as the wood depot, but the walls were of poured concrete. The color scheme appears to have seem to have changed at about the same time to gray with black station-name lettering and black trim. The poured concrete station was usually built as a replacement structure.

Like IC brick depots, Wabash brick depots followed no standard plan, although architectural similarities exist. In general, brick depots were built in larger communities served by the railroad, although a smaller community might have negotiated for one of these substantial buildings.

During the 1940s, the Wabash Railroad began replacing older wood depots with frame buildings that were clad with asbestos siding. Like the IC 1940s replacement structures, these generally were small in size compared with earlier depots. Originally, the siding was left unpainted, but later the asbestos panels were painted with gray.

Also during the later 1940s or early 1950s, prefabricated concrete-wall depots began to replace more wood depots. According to Bork, the precast units were shipped to site by rail car and constructed in a tilt-up wall manner. The original paint scheme of these depots was buff with maroon trim.

Extant Examples:

Burlington, Cedar Rapids & Minnesota Depot, Walker, 1873 (NRHP)

Burlington, Cedar Rapids & Northern Depot, Clarion, 1898

Burlington, Cedar Rapids & Northern Depot, Rock Rapids, 1886 (NRHP)

Chicago, Milwaukee & Pacific Depot, Albert City, 1899 (NRHP)

Chicago, Milwaukee & St. Paul Depot, Fayette, 1874 (NRHP)

Chicago, Milwaukee & St. Paul Depot, Grafton, 1879 (NRHP)

Chicago, Milwaukee & St. Paul Depot, Rockwell City, ca. 1881

Chicago & Northwestern Depot, Dike, by 1903

Chicago, Rock Island & Pacific Depot, Grinnell, 1892-93 (NRHP)

Illinois Central Depot, Ticonic (First Generation), 1887

* Illinois Central Depot, Ackley (Second Generation), 1926; designed by J.H. Schott, ICRR Engineering Dept.

* Illinois Central Depot, Storm Lake (Second Generation), 1915; designed by E.E. Bihl, ICRR Engineering Dept.

Illinois Central Depot, Marcus (Second Generation), 1917; designed by ICRR Engineering Dept.

Minneapolis & St. Louis Depot, Tara (also housed Illinois Central operators), c. 1905

* Wabash Depot, Shenandoah (Early Wood Design), 1903

c. b. **Passenger Depot (Local) [Plates 8-9]**

Characteristics:

Local passenger depots were built solely to accommodate passengers at stations where the passenger business was of sufficient importance to warrant a separate building. The size, design, and class of building varied according to local needs. Many local passenger depots were built from standard plans, although first-class depots, that is, larger buildings of customized design may have been architect designed. Interior features varied. The waiting area may have been separated into men's and women's waiting rooms, rather than one general room. Other partitioned areas might include a separate baggage room, express room, mail

room, telegraph office, lunch room, supply rooms, rooms for conductors and trainmen, toilets, and offices.

Diagnostic Information: none

Extant Examples:

Burlington, Cedar Rapids & Northern Passenger Depot, Waterloo, 1889; Josselyn & Taylor, architects

Burlington, Cedar Rapids & Northern Depot, Vinton, 1900; H.P. White, Chief Engineer, BCR&N, designer; A.H. Connor & Co., Cedar Rapids, builder

Chicago, Burlington & Quincy Depot, Creston, 1899 (NRHP)

Chicago & Northwestern Depot, Ames, 1900; Charles Frost, architect

* Chicago & Northwestern Depot, Carroll, 1896; Charles Frost, architect

Chicago & Northwestern Depot, Clinton, 1917; Charles Frost, architect

Chicago & Northwestern Depot, Jefferson, ca. 1900; Charles Frost, architect

Chicago & Northwestern Depot, Onawa, 1901; Frost & Granger, architects

Chicago & Northwestern Depot, Marshalltown, ca. 1897; Charles Frost, architect

Chicago, Rock Island & Pacific Depot, Iowa City, 1898 (NRHP)

Chicago, Rock Island & Pacific Depot, Pella, 1905-06

Chicago, Rock Island & Pacific Depot, Stuart, 1868-69 (NRHP)

* Illinois Central Depot, Cherokee, 1896; designed by ICRR Engineering Dept.

* Illinois Central Depot, Fort Dodge, 1912; designed by J.N. Taggart, ICRR Engineering Dept.

Illinois Central Depot, Independence, 1892; designed by J.F. Wallace Chief Engineer, ICRR

Rock Island Depot, Council Bluffs, 1899; John Volk & Co., builder

c. **Flag Depot (or Flag Station) [Plate 10]**

Characteristics:

Flag depots were the smallest type of station constructed, built where only a limited number of trains stopped. The simplest plan consisted of an open or covered platform, sometimes covered on three sides and open toward the track. In harsher climates, a small building may have been erected to provide more shelter for waiting passengers. If service increased, offices, waiting rooms, baggage rooms, or other facilities may have been added; consequently, the distinction between a local passenger depot and a flag depot often becomes blurred.

Diagnostic Information:

Flag depots typically were built from standard plans. Too few of these structures are left in Iowa to provide good diagnostic information, and this subject remains a topic for archival research.

Extant Examples:

Charlie's Flag Station [Charlie Bloomquist], Southeast of Gowrie on the Arne Bloomquist Farm, date unknown.

Racine Flag Station, Robert Robison Farm, Hardin County, Ellis Township, Section 18, SW quarter.

Ladoga Flag Station (CB&Q), located at Bedford in park.

d. **Portable, Temporary, or Replacement Depots [Plate 5]**

Characteristics:

The smallest of the depot types comprises those buildings which were temporary in nature or which replaced an earlier depot when service had declined to the point where all the functions could be housed in a small structure. Few if any of the early temporary depots seem to have survived, presumably because they were removed or readapted for new use once a town reached the size where a standard combination depot was warranted. Conversely, many of the depots still in service in rural towns are replacement depots built during the 1940s and 1950s. The chief characteristics shared by these two subtypes are size (generally, small enough to be transported by rail car), inexpensive construction, and lack of ornamentation. It is not unusual to find old box cars pressed into extended service as replacement depots.

Diagnostic Information:

Illinois Central

As noted above, during the 1940s, the IC replaced many older structures with very simply designed depots built on an "L" plan. These buildings are easily recognized by their configuration, the intersecting gable roof of medium pitch, and drop siding painted gun-metal gray.

Wabash

During the 1940s and early 1950s, the Wabash line replaced older buildings with precast concrete structures, as noted above.

Extant Examples: There are many extant IC replacement depots, including the following:

Anthon Depot (IC), Anthon

Correctionville Depot (IC), now located at Cushing

Dunlap Depot (IC), Dunlap

Dyersville Depot (IC), Dyersville

3. Significance

Depots are the primary structures associated with railroads, and they derive significance in a number of ways. These buildings were the first structures erected, and station operations generally were controlled from depots. Railroad companies pioneered in the use of standard building plans, and, therefore, there are more similarities than differences among depots of different generations as well as among depot styles of different companies. Nonetheless, railroads expressed their individuality chiefly through the architecture of their depots. Depots were, and still are, the primary buildings that the public-at-large associates with railroads, and it is hard to overstate the evocative power of an extant depot. People who are old enough to have ridden trains with any regularity or who ever frequented a local railroad station attach tremendous symbolic value to depots. In short, depots recall the glory days of the railroad industry. In addition, depots were among the most prominent buildings in any town, no matter the size. Iowa depended heavily on railroads to move goods and people from the 1850s through World War II, and many towns in the state owe their very existence to railroads. Consequently, almost every extant depot is significant at the local level.

4. **Registration Requirements**

a. Area of Significance:

Criterion A: Depots associated with a railroad that had a major influence in the growth and development of the community; depots associated with railroad division points or other key locales historically important in the operation of a railroad line.

Criterion B: As places of public congregation, depots are not significant under this criterion.

Criterion C: Depots that exemplify the work of an Iowa architect/designer; depots that exemplify the work of an individual who designed many railroad structures; depots that demonstrate the diffusion of stylistic elements from Chicago (or from any other identifiable source); depots that exemplify the evolution of a corporate style(s) associated with a particular railroad; depots that exemplify the architectural standardization practices of railroads; depots which are a rare or unique type associated with any railroad; and depots that embody distinctive elements associated exclusively with a particular railroad.

Criterion D: Building ruins and subsurface features that have the potential to yield important information concerning the location, use, and spatial arrangement of abandoned stations.

b. Integrity Considerations

The very nature of railroad maintenance operations dictated routine or periodic improvements to the physical plant, and it is unusual to find structures which have not been altered. Although substantial brick buildings were likely to escape removal during major line overhauls, they nonetheless were subject to design changes. The functional needs at any particular station always outweighed considerations of aesthetics. Sometimes the company stood the expense of matching original materials as closely as possible, such as fabricating a replacement beltcourse out of stone rather than a cheaper material, in order to maintain a good appearance. Other times the changes are more obvious. In any case, modifications reflect the common attitude among railroad companies toward all buildings as utilitarian structures, no matter what their architectural grandeur may be. Integrity of design, materials, and workmanship therefore should be based on whether alterations were done by the railroad and whether the structure still conveys a sense of historical time and place.

Extant buildings, particularly depots, often have compromised integrity of location, setting, and association simply because railroad companies have abandoned so many stations and ripped up so many miles of track. Quite often, in order to save a depot from demolition, it must be moved off site or at least relocated a greater distance from the track, if indeed the track is left. Once a depot is moved, it usually loses its integrity of setting and association as well. Depots in their original setting usually mark the heart of an old industrial or commercial area. The typical setting for a moved depot is a park, and if a track is present, it is likely to be a short section providing a platform for a railroad car. This is a much more serene setting than

that historically associated with depots, which were the nexus of community as well as station activity: passengers embarked and disembarked here; mail, baggage, local freight, and express packages came through here; and rail traffic was controlled from here. Nonetheless, given the realities of preserving railroad depots, integrity of location and setting should not always depend on whether a depot, or a related building such as an express building, is still located on its original or historic site. However, if an active line still passes through a community, integrity can be measured by whether the building is sited adjacent to it in such a manner as to preserve the historical relationship of track to building, that is, with the operator's bay facing the track. If no active line exists, there is no other way to demonstrate this essential historical relationship other than by recreating it. As a general guideline, the question of integrity should be determined by whether the essential relationship between depot and track has been retained.

Plate 1: Iowa Falls Union Depot
(IC and Des Moines, Iowa Falls & Northern), 1902

Plate 2: CB&Q Depot at Corning, 1929 standard remodeling style

Plate 3: First Generation IC Depot at Cherokee, 1870; converted to freight house 1896

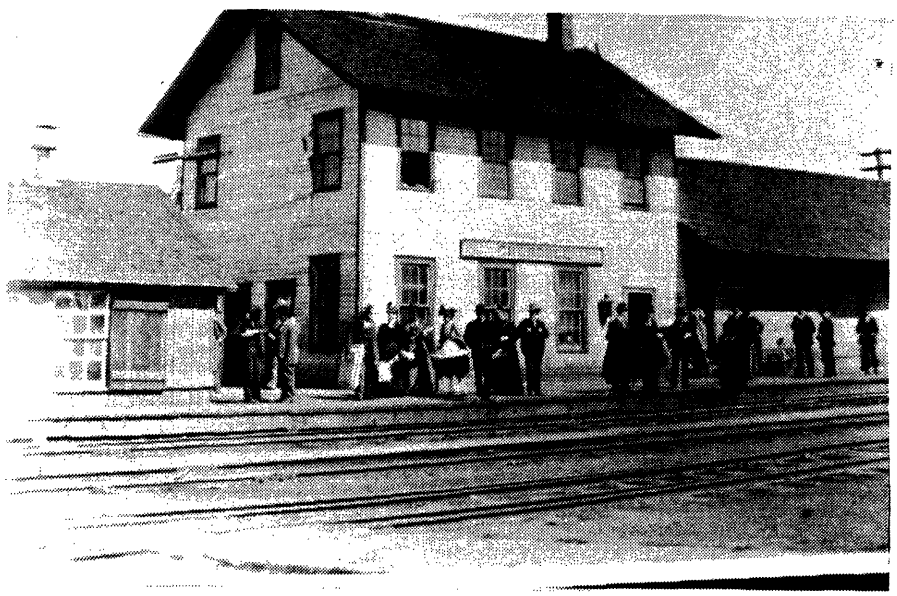


Plate 4: Second Generation IC Depot at Ackley, 1926; late example of brick replacement depot

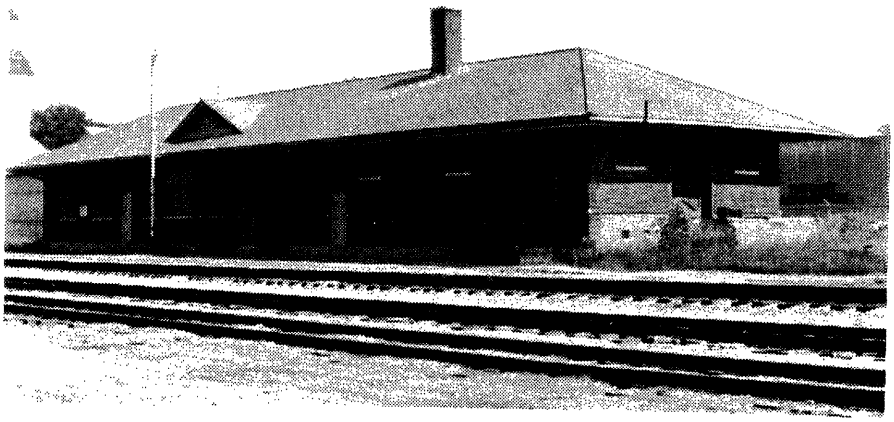


Plate 5: Third Generation IC Depot at Anthon, ca. 1945 now used as a store

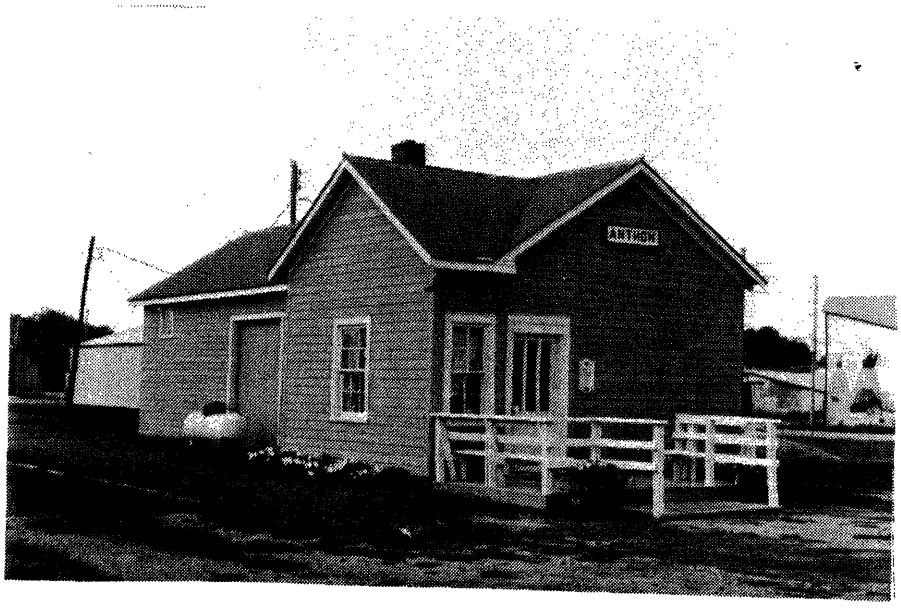


Plate 6: Rock Island Depot at Gowrie, 1899
restored and moved to city park

Plate 7: Wabash Depot at Shenandoah, 1903
Early Wood Style

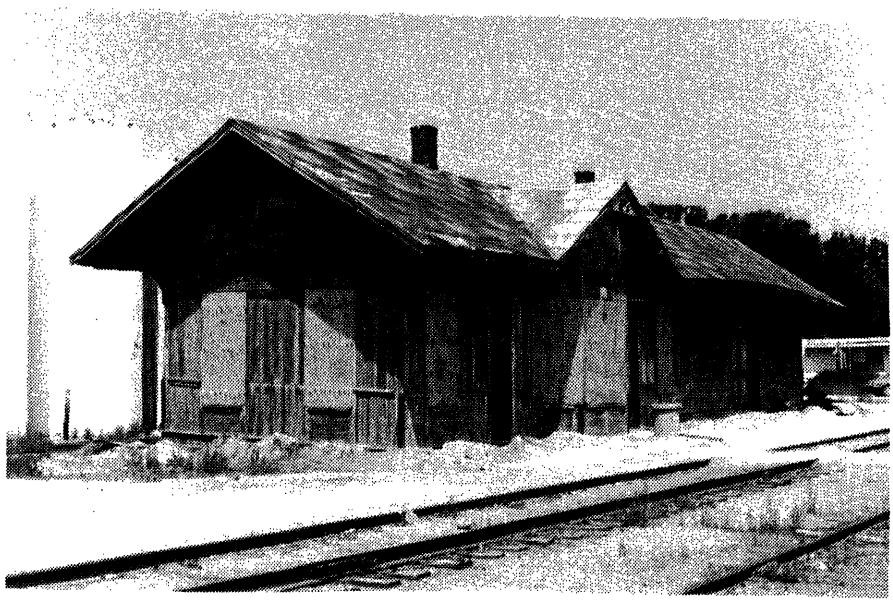


Plate 8: IC Passenger Depot at Fort Dodge, 1911

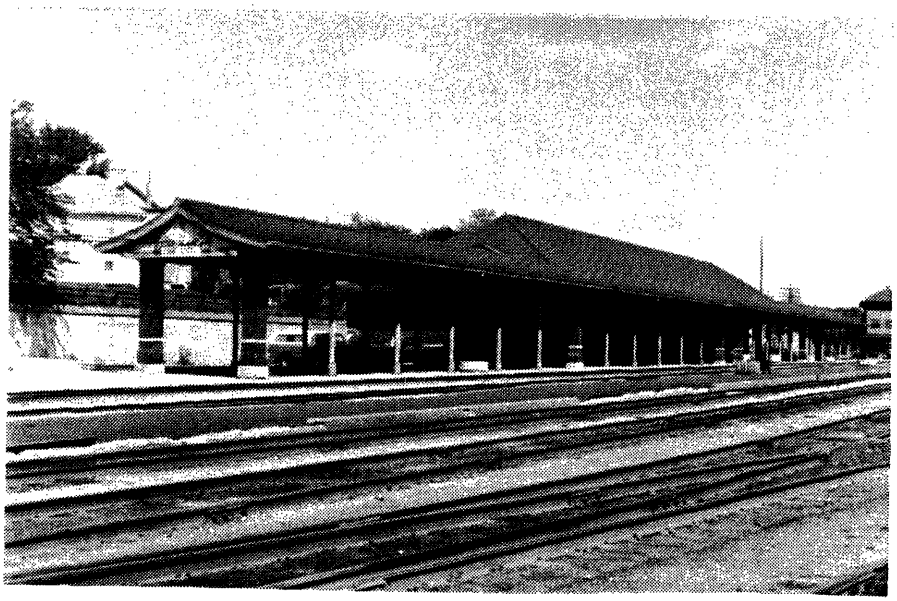


Plate 9: IC Depot and Express Building, Cherokee, 1896

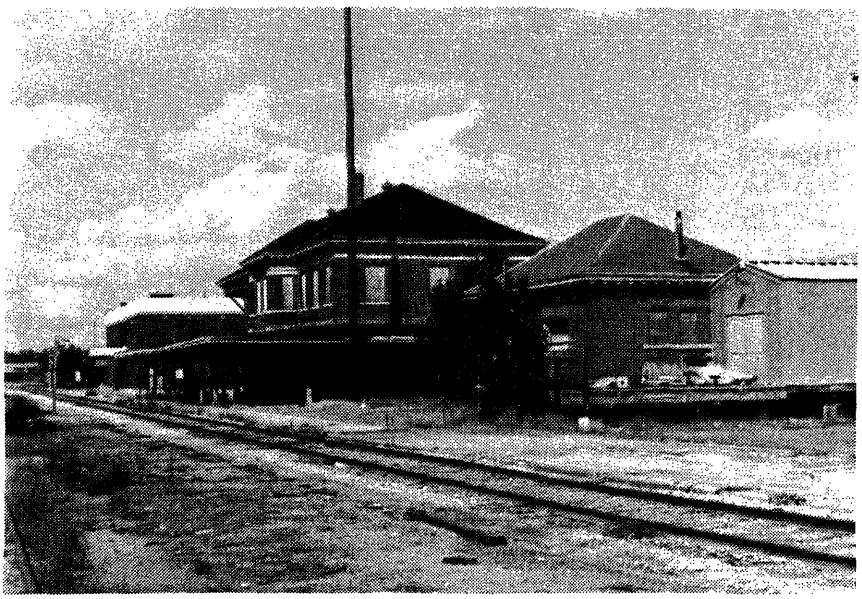
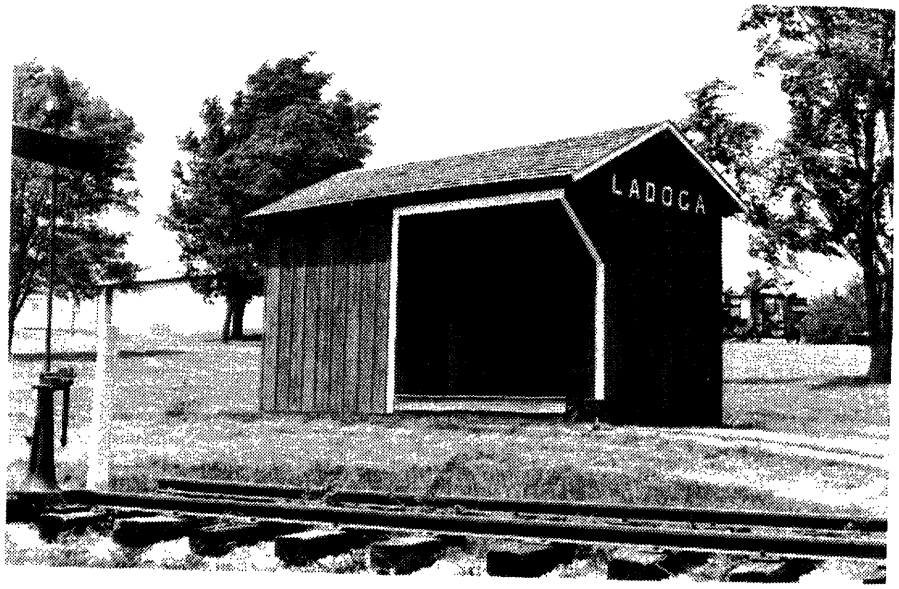


Plate 10: Ladoga Flag Depot (CB&Q); moved to Bedford City Park



1. PROPERTY TYPE: SUPPORT STRUCTURES

Subtypes:

Platforms
Freight House
Express Building
Engine House
Car Shed or Car Barn
Shops
Tool House (Section House)
Signal Tower, Watchman's Shanty, and Signal Maintainer's House
Oil House
Water Tank/Station and Pump House
Coaling Station, Coal House, and Ashpit
Sand House
Ice House
Section House, Employee Dwelling House, and Other Crew Buildings
Power House
Multipurpose and Miscellaneous Structures

2. Description

a. **Platforms [Plates 8-9, 12]**

Characteristics:

Platforms were constructed to accommodate passengers and to facilitate the transfer of baggage and freight. Passenger depots usually were built with low platforms, sometimes close to or at ground level. Sometimes the platform is constructed simply from brick pavers laid at ground level. Freight buildings received high platforms, sometimes with an incline or ramp at one end to facilitate the handling of machinery or heavy cargo. Such platforms generally were constructed of heavy timbers. At combination depots the platforms were built, depending upon local needs, either low, high, or low and high combined, with a low platform in the vicinity of the waiting rooms and a higher platform near the freight room. The platform shed, found only at more important stations, offered railroads a good opportunity to dress up a station with architectural embellishments as well as provide additional shelter for passengers.

Diagnostic Information: none

Extant Examples:

* Illinois Central Depot, Fort Dodge, concrete platform with platform canopy and brick paver baggage platform between tracks.

* Illinois Central Depot, Storm Lake, brick paver passenger platform partially sheltered by platform canopy.

* Wabash Depot, Shenandoah, brick paver platform with no platform canopy.

b. Freight House [Plates 11-12]

Characteristics:

Freight houses can be divided into terminal freight buildings and local freight houses, although since Iowa had few terminal stations, the distinction is generally unimportant here. Larger facilities sometimes had separate inbound and outbound freight houses. When the freight house was intended to handle primarily local freight, it was usually located near a prominent thoroughfare, as close to the business portion of town as feasible. At stations which handled considerable car-load freight, it was customary to locate the freight house alongside the tracks. Freight houses in larger cities were often two-story or combination one- and two-story brick buildings. Stations that handled a smaller volume of freight received single-story frame structures with high platforms on one or more sides. It was not uncommon for old combination wood depots to be recycled as freight houses when a new depot was constructed.

Diagnostic Information: none

Extant Examples:

Burlington, Cedar Rapids & Northern Freight House, Burlington, 1898 (NRHP)

Burlington, Cedar Rapids & Northern Freight House, Dubuque, 1901

Chicago, Milwaukee, St. Paul & Pacific Freight House, Davenport, 1917 (NRHP)

Illinois Central Freight House, Cherokee, original 1860s wood depot recycled and substantially rebuilt during 1940s line upgrade

* Illinois Central Freight House, Fort Dodge, 1901/enlarged 1917

Illinois Central Freight House, Iowa Falls, original wood depot recycled and substantially rebuilt during 1940s line upgrade

c. Express Building [Plate 9]

Characteristics:

During the late 19th century, stations which handled large volumes of express freight erected separate buildings to handle this traffic as well as the agents required to process the paperwork. Field investigation indicates that these buildings typically were sited near the depot and designed in the same architectural style as they station depot. Since only larger stations warranted this type of structure, they were built from customized plans. Data examined during the survey indicate that railroad companies constructed the facilities to handle express freight, although the express freight company may have been a separate entity.

Diagnostics: none

Extant Examples:

* American Express Building (Illinois Central), Cherokee, 1896

* American Express Building (Chicago and North Western), Carroll, before 1898

d. Engine House [Plates 13-14]

Characteristics:

Engine houses were constructed at terminal stations, division yards, or junction stations. This building type can be divided into rectangular houses, which accommodated one or two engines, and polygonal buildings, generally called "roundhouses," which accommodated several engines. The latter takes its common name from the building's circular configuration around a turntable, with tracks leading from the turntable radially into the house. Roundhouse plans were either full circle, known as a closed or full-circle house, or a segment of a circle, known as an open or segmental roundhouse. The exterior walls of the building usually were not actually circular, but in the shape of a polygon, the circle being divided up into stalls or panels, and the walls in each panel being built on the chords connecting the panel points. Stalls rarely were less than 100' in length, and 105'-112' was the common length. The most common roundhouse structural design consisted for concrete foundations, brick walls, heavy wood posts, wood beams, composition roofing, and wood doors. Auxiliary structures generally were located near the engine house in such a way as to allow coal, water, sand, oil, waste, and other supplies to be taken on board the engine, either on its way in or out of the engine house.

Facilities meant to handle a limited number of engines were usually rectangular buildings into which one, two, or more tracks entered at one end, the length of the building being slightly in excess of the longest engine used and the width dependent on the number of tracks entering the building. In some layouts, especially on small roads, or at points of minor importance on

large systems, an engine house might consist simply of a shop building fitted for making more extensive repairs.

Diagnostic Information: none

Extant Examples:

* Illinois Central Roundhouse (original section), Cherokee, 1888; J.M. Starbuck, builder

Non-extant Examples:

Illinois Central Roundhouse, Fort Dodge, 1887, demolished 1989

e. Car Sheds and Car Barns [Plate 15]

Characteristics:

Car sheds were built to protect expensive passenger or private cars from the weather when they were not running, and also to provide a facility where cars could be cleaned under cover. These buildings were not universally used in the United States. Generally, they were built only at terminal or junction points, where passenger cars were side-tracked when not in use. In Iowa, their use appears to have been limited to housing interurban cars. In order to clean car exteriors, car sheds generally were designed to provide for good light, a convenient water supply, and ample space between the tracks as well as between the side of the building and the nearest track.

Diagnostic Information: none

Extant Examples:

Fort Dodge and Des Moines Car Barn, Fort Dodge, date undetermined

f. Shops

Characteristics:

Railroads employed a variety of shop buildings for the purpose of making minor repairs to engines and cars. This type of structure does not appear in the 19th century building maintenance literature, suggesting that separate shops equipped for specific functions were not built until the 20th century. **Running repair shops** were built in connection with engine houses, either attached to the larger structure or situated in close proximity. The purpose of running repair shops was to provide a place for making those repairs which did not require

taking an engine out of service for more than a few days. Typical equipment included lathes, including a wheel lathe, drills, a steam hammer, and a blacksmith department. **Back shops** were designed for the general repair of engines at central points on small systems or at key locations on larger systems. Back shops were large structures, usually of brick or other fireproof material, with extensive facilities for completely dismantling and rebuilding locomotives as well as a boiler shop, a tank shop, and separate departments for heavy and light machine work, electric work, painting, welding, employee locker rooms, supply rooms, tool rooms, and offices. **Freight car shops** were constructed at division points and at large terminals in order to handle minor repairs to cars. These buildings generally were of frame construction, sometimes with the sides left uncovered to a height of about 10'.

Diagnostic Information: none

Extant Examples:

* Illinois Central Roundhouse (with machine shop and boiler room), Cherokee, 1887

g. Tool House (Section House) [Plates 16-17]

Characteristics:

Tool houses were built to store hand cars, tools, and supplies required in connection with the construction or maintenance of the track and roadbed. Railway companies usually had one tool house for every track section of the road or for every regular track gang. Consequently, in Iowa tool houses often were referred to as section houses, although in other parts of the country the term "section house" was reserved for section crew housing. Large yards might have several small tool houses or one large tool house. With few exceptions, tool houses were of wood frame single-wall construction and roofed with tin, shingles, or corrugated iron. Designs differed mainly in the location of the large door necessary for hand-car storage and the position the hand-car track occupied inside the house. Generally, tools houses were located alongside the track, and a short track section provided easy hand-car ingress and egress.

Diagnostic Information:

According to the 1926 Railway Engineering and Maintenance Cyclopedia, the A.R.E.A. recommended three different sizes for tool houses: 10'x14', 12'x18', and 14'x20. The smallest size had the short dimension parallel to the track, and the two larger sizes had the long dimension parallel to the track.

Railroads no doubt also built tool houses according to standard plans, and any company-specific stylistic details or paint schemes would be similar to those described under the Combination Depot section.

Illinois Central tool houses are similar in overall design to other service buildings. They invariably are rectangular in shape, and the size varies according to the locale. On this line, tool houses built prior to 1940 appear to have been clad with clapboard siding and were originally painted dark red and yellow-gold. Tool houses and other service buildings which were built during the 1940s line upgrade are clad with drop siding and are painted gun-metal gray.

Extant Examples:

Illinois Central Tool House, Ackley, west side of town (pre-1940 style), date undetermined

Illinois Central Tool House, Aurelia (1940s style)

Illinois Central Tool House, Cherokee (1940s style)

Illinois Central Tool House, Mills Tower, Iowa Falls (1940s style)

h. Signal Tower, Signal Maintainer's House, and Watchman's Shanty [Plates 18-20]

Characteristics:

Signal towers and watchman's shanties (the latter also called switch-tender's shanties, flag houses, or watch boxes) were erected along railroads at exposed points, at crossings, drawbridges, sharp curves, dangerous cuts, or at yard systems -- wherever a watchman or switch tender was required. Railway companies built signal towers wherever it was necessary to station a watchman, signalman, gateman, switch tender, or operator at a sufficient elevation above the railroad in order to command a good view of the tracks and surroundings. Two types of signal towers were built: those intended to protect exposed points on the line, and those forming part of a block-signaling systems. The former were, as a rule, simply watchman's shanties set on trestles in order to afford protection at railroad and highway grade crossings, tunnels, sharp curves, dangerous points on the line where the view was obstructed, and at switch yards. Block-station signal towers formed part of a signaling system by which the road was divided into sections, or "blocks." The signal tower was equipped with the requisite signaling apparatus and connected with neighboring towers by wire. Shanties universally were small wood-frame structures sometimes as small as 3'x3' and generally not larger than 5'x7' -- enough room to accommodate one person and perhaps a small stove, bench, and/or locker. Shanties were built from standard plans, though the shape might vary: square, octagonal, or rectangular. Signal maintainer's houses were built to house the specific equipment needed to maintain or repair crossing gates, train signals, and other types of signaling devices used by railroads.

Automatic signals date to about 1871, although they saw only limited use until about 1900. The first automatic signals were operated by en electromagnet, and in 1885 an electropneumatic system was introduced. Beginning in 1900, direct current track circuits came into use, but they were soon replaced with alternating current (AC) systems. The first experiments with AC systems took place in California, but the installation of Union Pacific's AC signaling system near Council Bluffs in 1906 marked the beginning of extensive automatic block signaling systems.

Until 1913, semaphore signals were used almost exclusively. Between then and 1920, the industry began switching to other types of signals. The Baltimore and Ohio RR was the main force behind the use of color position (four colors in an eight-light circle) light signals, which were used extensively in the East. According to Nicholas Pitsch, railroads operating in Iowa adopted search lights (one or two lights) rather than color position signals, although semaphores remained in use until relatively recently. Branch lines often did not use signals, and it has been estimated that as much as half of the trackage in Iowa was dark.

The long, tapered wooden crossing gate raised and lowered by means of hand or electric power came into wide use along with the automobile. The danger posed by auto-train accidents made the use of crossing gates and other warning devices almost mandatory.

Diagnostic Information:

Railroads built signal towers, watchman's shanties, and signal maintainer's houses according to standard plans, and any company-specific diagnostic details would be similar to those described under the Combination Depot section.

Extant Examples:

* Mills Tower (interlocking tower for Illinois Central and Rock Island), Iowa Falls, ca. 1909. This is the only extant interlocking tower in Iowa.

Illinois Central Watchman's Shanty, Ft. Dodge, 1940s style

Illinois Central Watchman's Shanties (2), Tara, 1940s style

* Illinois Central Signal Maintainer's House, Mills Tower, pre-1940 style

Illinois Central Signal Maintainer's House, Ackley, pre-1940 style

i. Oil House [Plate 21]

Characteristics:

Any structure or shed alongside a track offering space for the storage of barrels under cover may have been used as an oil storehouse. Wherever relatively small amounts of oil were stored, the interior of the building generally was fitted with shelves, benches, or trestles for the oil cans, bins for holding waste, drip boxes or drains to catch drippings from the faucets, racks, pigeon holes, and shelves for miscellaneous supplies and car inspectors' tools. Wherever larger amounts of oil were stored, it was customary to empty the oil into tanks located in a basement level. As oil was needed, barrels were hoisted to the upper floor or rolled up an incline. Oil houses generally were located alongside a track leading to or from an engine house, coaling or water station, or facing any track that engines would take when coming in from or preparing to start out on a run. Because of fire danger, oil houses often were constructed of fireproof materials.

Diagnostic Information: none

Extant Examples:

* Illinois Central Oil House (also yard office and supply room), Cherokee, late 1880s

Non-extant Examples:

Illinois Central Oil House, Fort Dodge, demolished 1989

j. Water Tank/Station, Pump House

Characteristics:

Until about 1900, wooden water tanks formed a distinctive feature of American railroads as compared with Europe, where iron tanks were more common. Water tanks usually were placed along a track leading to or from the engine house or coaling station, or at the head of the yard so that engines could take on water along with other supplies. Tanks generally were built circular in shape. Wooden tanks were made of 14', 15', or 16' staves with diameters ranging from 16' to 30'. The tank was usually set about 12' to 15' above the track. Water was conveyed to the tank by either windmill, mechanical pump, or gravity feed from a reservoir or other groundwater source. Tank foundations were usually wooden trestle-bents on mudsills, concrete footings, or small stone foundation walls.

Elevated steel tanks by-and-large replaced wooden water tanks during the 20th century. Concrete tanks also came into use early in the 20th century. In addition, by 1920, railroads had begun to install water softening devices in order to cut the repair time and out-of-service time due to the damage caused by mineral-encrusted water boilers, clogged water pipes, corroded metal parts, and the like.

Pump houses typically were small, inexpensive frame buildings used to house the engine and pump that supplied water to the water tank. They varied in size but generally were no smaller than 12'x16'.

Diagnostic Information:

Chicago Bridge and Iron Works

Chicago Bridge and Iron Works manufactured several types of all-steel water tanks for railway use. Their 1914 catalogue illustrates two elevated cylindrical tanks, one designed with a conical bottom, the other with an elliptical bottom. Both of these designs elevated rather large diameter tanks with a 100,000 gallon capacity to a relatively low height on four steel posts. Accumulated sediment could be drawn off by means of a valve in the bottom of either design.

The 1914 catalogue also illustrates two hemispherical-bottomed tanks elevated much higher a trussed steel superstructure. The larger of the two tanks, with a 125,000-gallon capacity, was intended to store water for fire protection. The smaller (10,000-gallon) tank, suspended beneath the large tank, stored water for general use. The company also manufactured all-steel standpipes.

Chicago Bridge and Iron Works advertised that the following Iowa companies were using its all-steel water tanks: Chicago, Burlington & Quincy; Chicago, Rock Island & Pacific; and Chicago, Milwaukee & St. Paul.

As small auxiliary buildings, pump houses no doubt we built from standard plans and exhibited stylistic details -- such as wall cladding, roof pitch, eave brackets, and paint scheme -- similar to those noted for combination depots.

Extant Examples:

Hamburg Water Tank (CB&Q, steel tank), date undetermined

k. Coaling Station, Coal House, and Ash Pit

Characteristics:

During the era of steam railroading, massive quantities of coal were required to fuel engines, and a variety of structures were needed just to maintain the fuel supply and the tenders. Railway companies employed several methods of supplying coal to engines. The simplest method consisting of shoveling coal directly from cars into the tender of the locomotive, which required no special structures. A slightly more sophisticated method, known as the **derrick station**, consisted of using a stationary crane to hoist coal (stored at the station) in small cars

to a high platform. From the platform, the coal might be shoveled or "tipped" into the tender from tipping boxes. A similar system, known as the **clamshell station**, consisted of using a clamshell to scoop the coal from exposed piles on open ground directly into tenders, a system which required no special buildings. Alternatively clamshells were also used to transfer coal directly from cars to tenders, again a system which required no buildings. One of the major differences between a derrick station and a clamshell station appears to be that, at derrick stations, the coal was protected from the elements in a storehouse until it was needed.

At points where rapid coaling was required, elevated chutes were erected. **Chute stations** were arranged either to dump sideways into tenders on a coaling track running along the face of the chute, or to dump from an overhead bridge spanning a number of tracks. Coal was conveyed to the elevated chute in any one of a number of ways: by horse and cart up a ramp or long incline, by hauling cars up an incline with a cable rope attached to a stationary engine, by hoisting cars on a small platform elevator, by a continuous bucket-belt elevator, or by a trough conveyor. Mechanized chute were also known as **mechanical stations.** Many designs for mechanical stations were patented, but most shared four common features: 1) dumping coal from cars onto a breaking device where the fuel was broken (either hand or machine) to the required size; 2) hoisting the crushed coal to a storage bin some distance above the track; 3) drawing the coal from the storage bin into chutes for delivery to tenders; and 4) weighing the coal. The largest mechanical coaling stations (500 or more tons) often were constructed on reinforced concrete. Smaller mechanical stations were often constructed of steel.

Coal houses usually were small, inexpensive frame buildings, measuring perhaps no more than 8'x10' and typically of board and batten construction. A section of the roof might have been hinged to provide an opening through which coal could be shoveled.

Ashpits were required along the main line of a railroad at terminal and division yards or anywhere there was a shop and roundhouse system. The general design of an ashpit was similar to that of an engine house pit, except that the paving and side walls were protected in some manner from the deteriorating influence of hot ashes. The length of an ashpit varied according to its location, the quality of the coal used, and the volume of material received. Track gauge governed the width of an ashpit. Common materials used for the foundation include concrete, stone rubble, or stone paving grouted with cement. The side walls usually were built of stone or hard brick, sometimes with a cast-iron facing. Large stones, timber stringers, or iron plates commonly were used for coping on the side walls.

Diagnostic Information:

The Chicago Bridge and Iron Works:

The Chicago Bridge and Iron Works began manufacturing all-steel coaling stations early in the 20th century. The company advertised that it had built stations along the Rock Island, Burlington, and Wabash lines. A 1914 catalogue shows two different designs: an overhead chute and a side chute. The overhead design incorporated a sand

tank and two 10-ton weighing hoppers. The coal bin for both designs, however, was identical -- a relatively squat cylinder, varying in height depending upon the capacity, which ranged from 100 to 300 tons.

Coal houses usually were built from standard plans, but there probably was great similarity of design among railroad companies. To that degree, the paint scheme and eave brackets might be the major diagnostic elements.

Extant Examples:

Burlington, Cedar Rapids & Northern Coal Shed (originally a lime house), Iowa Falls, date undetermined

Chicago and North Western Coaling Station (concrete), Council Bluffs, date undetermined

Illinois Central Coal Shed, Barnum, date undetermined

Illinois Central Coaling Station (concrete), Council Bluffs, date undetermined

l. Sand House

Characteristics:

Sand houses were provided at points on a railroad where engines were changed, or wherever there were engine houses and coaling stations. The purpose of the sand house was to dry and store sand for use on engines to increase the friction of the driving wheels on the rails wherever heavy grades were encountered or whenever trains operated under slippery conditions. Sand houses were constructed to serve three distinct functions: storage of wet (freshly dug) sand, drying sand, and storage of dry sand. Sand houses varied greatly in size and style depending on the location and the number of engines to be supplied daily.

Diagnostic Information: none

Extant Examples:

Illinois Central Sand House (steel), Cherokee, 1940s

m. Ice House [Plate 23]

Characteristics:

Railroads required large supplies of ice to preserve perishable freight while it was in transit in refrigerator cars or stored in freight houses. To a lesser extent, ice also was used to supply drinking water at depots, offices, shops, and on passenger cars. Ice houses generally were built at junction or terminal stations, at division yards, or anywhere passenger trains changed engines and cars were iced. Railway companies generally built wood frame ice houses, although larger stations might have received a brick ice building. To make the walls as non-conductive of heat as possible and to prevent the passage of air through them, an air space, or a space filled with sawdust, shavings, ashes, cork, or some other non-heat-conducting material was introduced into the walls. Layers of tar paper felting might also have been employed, and the roof rafters might be planked top and bottom in order to create an air space equal to the thickness of the rafters. Good ventilation over the top of the ice was essential to prevent sweating. To accomplish this, ice houses often were built with small board windows half-way down the sides so that, when the level of the stored ice got below these windows, they could be opened during cold weather, or on cool nights, in order to purify the body of air at the lower level. The floor of an ice house generally was built higher than the surrounding ground, and some system of drainage carried away waste water.

Large freight stations might also have had a head house and/or an icing platform. The head house contained machinery for crushing ice and elevators to lift the ice to the crusher and to transport the crushed ice to an icing platform. The icing platform usually was a double-deck structure built alongside the track. A conveyor belt down the middle of the platform moved block and/or crushed ice from the ice house or head house to the cars. Larger stations may also have had a smaller ice house or an ice room within a multipurpose building where smaller quantities of ice were stored for use within the station complex or to supply the needs of passenger cars

Diagnostic Information: Railroads built all service buildings from standard plans, and any company-specific stylistic details or paint schemes would be similar to those described under the Combination Depot section.

Extant Examples:

Chicago and North Western Ice House, Belle Plaine (NRHP eligible), ca. 1895

Illinois Central Ice House (also oil room, carmen's lockers), Fort Dodge, 1940s style

n. Section House, Employee Dwellings, and Other Crew Buildings

Characteristics:

In most parts of the country, the term section house refers to the living quarters supplied by the railroad company for the use of the men employed on the track. The distinction between a section house and an employee dwelling house lies mainly in the different styles and sizes of

the two, the section house usually being much smaller and built on a cheaper scale than employee dwelling houses. Two kinds of section houses were built: one for the accommodation of one or more families and the other for a number of men. Section houses almost always were wood-frame buildings, roofed with shingles or tin, and clad with vertical boards or horizontal weather boards.

Few section houses appear to have been built in Iowa. The reason for this is probably that towns were established relatively close to one another, so rail lines did not traverse long open stretches of land as they typically did farther west. Another reason for their infrequence may have been that railroad companies tended to incorporate agent's quarters into depots in remote or sparsely settled locations of Iowa.

At terminals or junction points, railway companies sometimes provided special rooms or small buildings set apart for employees. The accommodations consisted either of rooms for making up reports, for lounging, for changing clothes, for reading, or for sleeping.

Diagnostic Information: none identified

Extant Examples: none identified

o. **Power House**

Characteristics:

Wherever a railroad company located extensive facilities, it might also have installed its own power system to provide the required heat and light. Power houses generally were of fireproof construction, with one large high room for the boilers and one room of lesser height for the engines, generators, air compressors, switchboards, and other equipment.

Diagnostic Information: none identified

Extant Examples:

Des Moines & Central Iowa Substation (interurban), Des Moines
Omaha & Council Bluffs Street (interurban), Council Bluffs

p. **Multipurpose and Miscellaneous Structures**

Characteristics:

Many types of functionally specific buildings were erected during the zenith of steam railroading, and the division point yard would have a variety of buildings to support the crew

and the tasks performed there. Most railroads have removed these structures, and about the only line along which they can be found in Iowa is the Illinois Central line, now operated by Chicago Central & Pacific. Miscellaneous service structures include carpenter's shops, millroom storage sheds, locker rooms, scale houses, hose cart houses, supply sheds, riptrack houses, and telephone booths. Although standard plans may have been drawn up for some of these buildings, it is more likely that carpenters employed at division stations simply built these structures, as needed and ordered, from standard materials supplied through company headquarters.

Railroads appear to have utilized telephone communications rather extensively by the early 1920s. The 1926 edition of Railway Engineering and Maintenance Cyclopedia illustrates two types of telephone booths: a rectangular cast iron design, manufactured by Paul Dickinson, Inc. and a precast cylindrical concrete design, manufactured by The Massey Concrete Products Corp. These booths were located at regular intervals along the line so that section workers and other railroad employees were never far from a means of communicating with a station. Field investigation indicates that along the Illinois Central line watchman's shanties often were converted to telephone booths, which may explain why a handful of these small buildings are still extant.

Extant Examples:

Illinois Central Carpenter's Shop, Cherokee

Illinois Central Hose Cart House, Cherokee

Illinois Central Riptrack, Cherokee

Illinois Central Locker Room, Cherokee

Illinois Central Locker Room, Fort Dodge

* Illinois Central Scale House, Cherokee

3. Significance

Second generation support buildings are primarily associated with the Golden Age of Steam Railroading, and they reflect the economic dominance that railroads enjoyed in the transportation industry from about 1890 into the 1920s. The equipment, particularly steam engines, required fairly extensive maintenance facilities. Likewise, the quantity and variety of freight shipped by rail required specialized handling and storage facilities. Since these structures often were the first to go when railroads began to retrench in the 1930s and 1940s, comparatively few of these structures are left, and their increasing scarcity gives them growing importance as buildings that reflect the elaborate physical plants railroads needed and were able to build during their heyday. Third generation support

buildings, unlike their predecessors, reflect the cost-cutting measures railroads were forced to take beginning in the 1930s in order to maintain a position in the transportation industry. While few of these buildings are yet old enough to be considered historically significant, they should be reexamined within the next five-to-ten years. Architecturally, support structures are significant as examples of the architectural standardization that emanated from railroad engineering departments.

4. **Registration Requirements**

a. Area of Significance

Criterion A: Structures associated with key locales in the evolution of major railroad transportation routes (e.g., terminal stations, division stations, important line crossings); structures associated with railroad stations that were the focus of a community's transportation system.

Criterion B: As utilitarian structures, railroad support structures are not significant under this criterion.

Criterion C: Structures the exemplify the standard plans associated with particular railroad companies; structures that exemplify the work of an Iowa architect; structures that exemplify the work of an architect who designed many railroad buildings; structures that exemplify the range of functionally specific building types associated with the Golden Age of Steam Railroading; structures which embody distinctive architectural elements associated with a particular railroad.

Criterion D: Building ruins and buried deposits with good potential to document the spatial arrangement, extent, and/or uses of individual structures at historically important locales.

b. Integrity Considerations

Field investigation shows that service buildings often were recycled or they were dismantled and the salvage materials used to construct new buildings. If a town got a new brick depot, the old wooden combination depot was likely to be placed into service exclusively as a freight house, as was true of the Illinois Central depots at Cherokee and Iowa Falls. Both of them likewise were later rebuilt during the IC's building evaluation and retirement program of the 1940s. Vacated tool houses, supply sheds, and other small buildings observed during the field study were sometimes found resting on makeshift foundations fabricated from railroad ties, indicating that they had been used as portable structures. Assessing the relative integrity of service buildings is thus problematic, and it is doubtful that many of the remaining structures can meet the standards required for National Register eligibility. Still, if the tracks were the bloodstream of railroads, these utilitarian structures were the vital organs of a smoothly operating line. And the mere fact that railroads no longer require all these buildings housing specialized functions, and consequently most lines have removed them, gives extant service

buildings importance as the physical record associated with the era of steam railroading. In addition, recycling buildings and constructing new buildings from salvage materials was part and parcel of the way railroads maintained their physical plants. Historically, this practice was as important to cost-efficient operations as was the practice of constructing buildings from standard plans. Therefore, consideration should be given to preserving some of the buildings, such as the rebuilt freight houses, which exemplify an important chapter in the history of railroad architecture.

Plate 11: IC Freight House at Fort Dodge, 1901, enlarged 1917

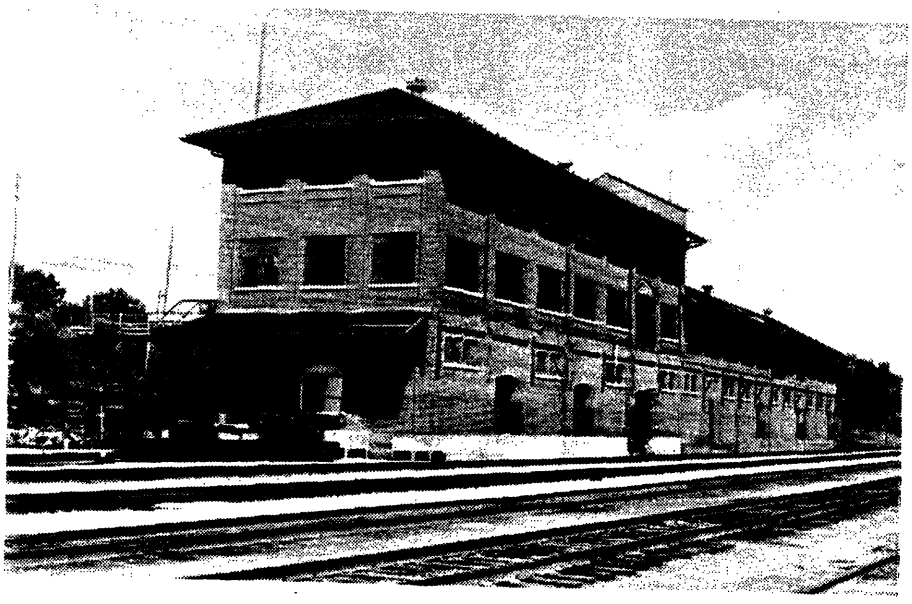


Plate 12: IC Freight House at Iowa Falls
First Generation Depot Recycled as Freight House, 1902; rebuilt during 1940s line rehabilitation

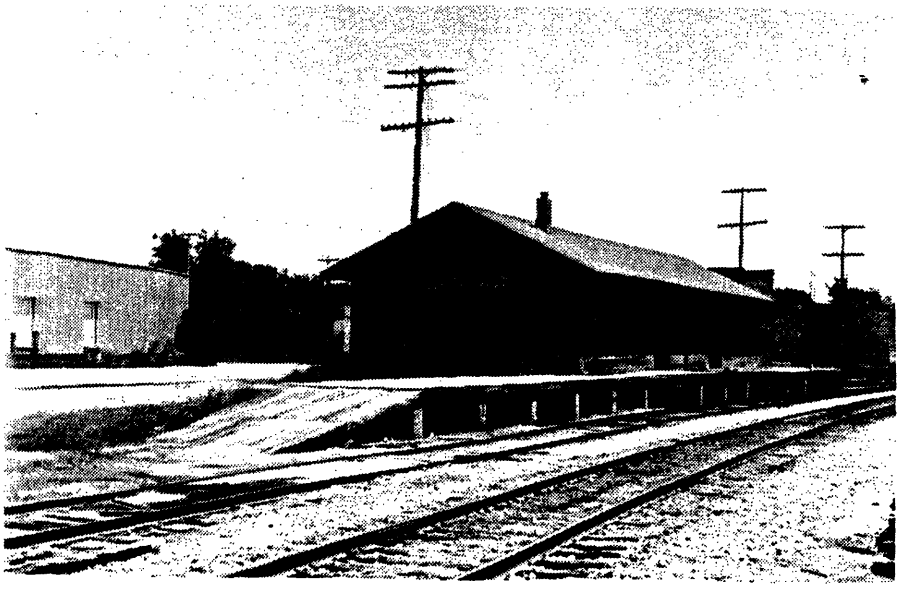


Plate 13: IC Roundhouse at Fort Dodge, 1887-1989

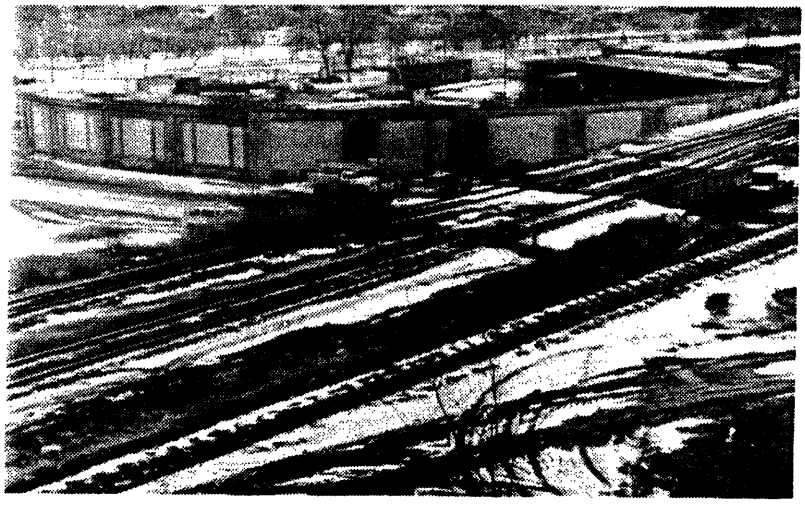


Plate 14: IC Roundhouse at Cherokee, original section, 1887, additions demolished 1978

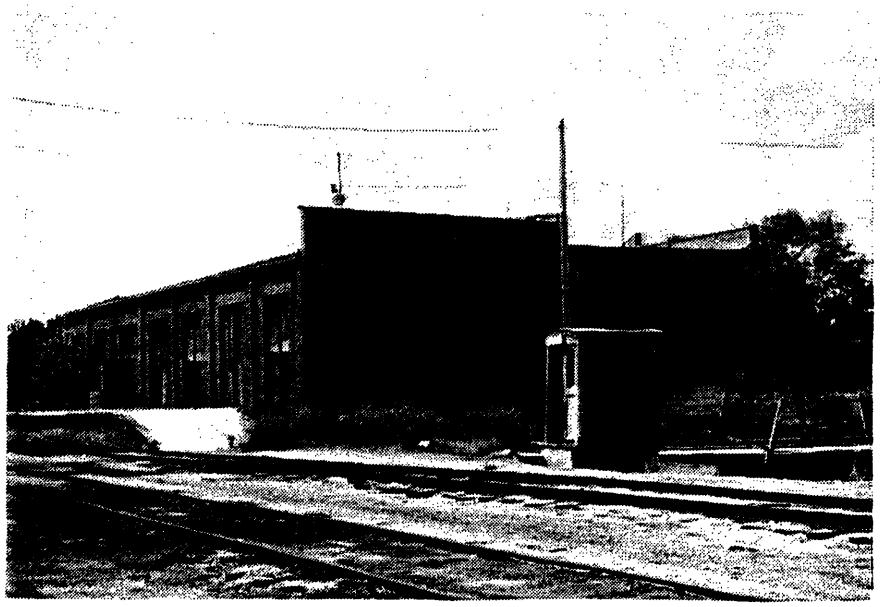


Plate 15: Fort Dodge and Des Moines Car Barn, Fort Dodge

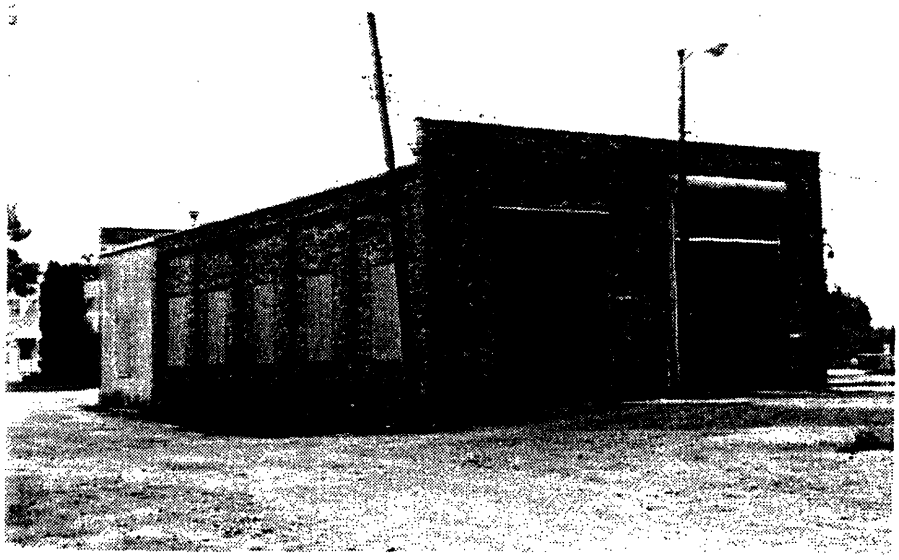


Plate 16: IC Tool House, Aurelia, 1940s Replacement Style

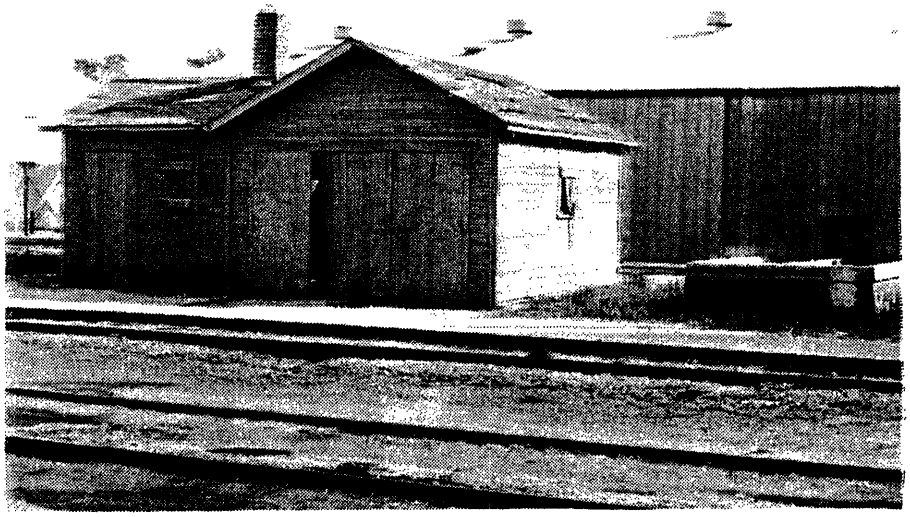


Plate 17: IC Tool House, Ackley, 1940s Rehabilitated Building

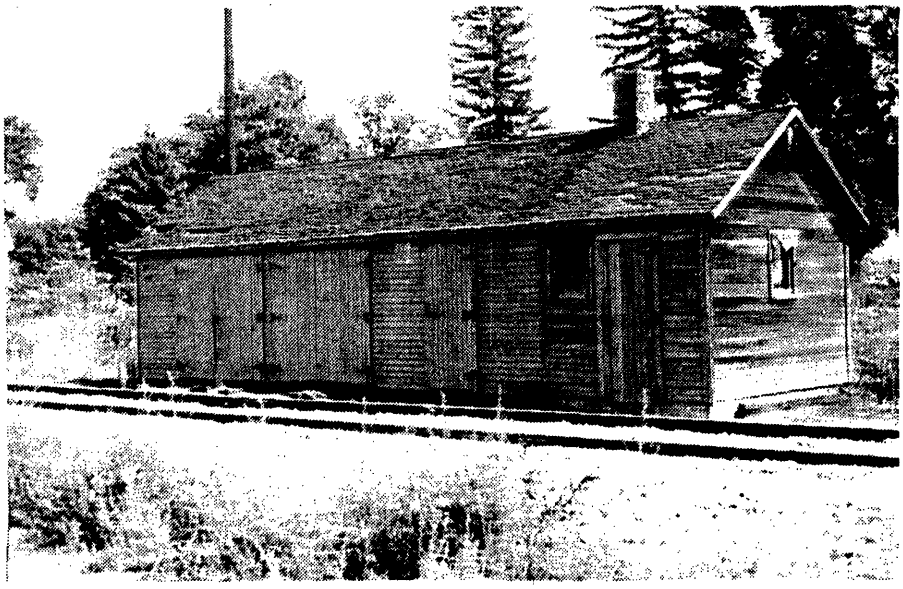


Plate 18: Mills Tower (IC and RI), c. 1909

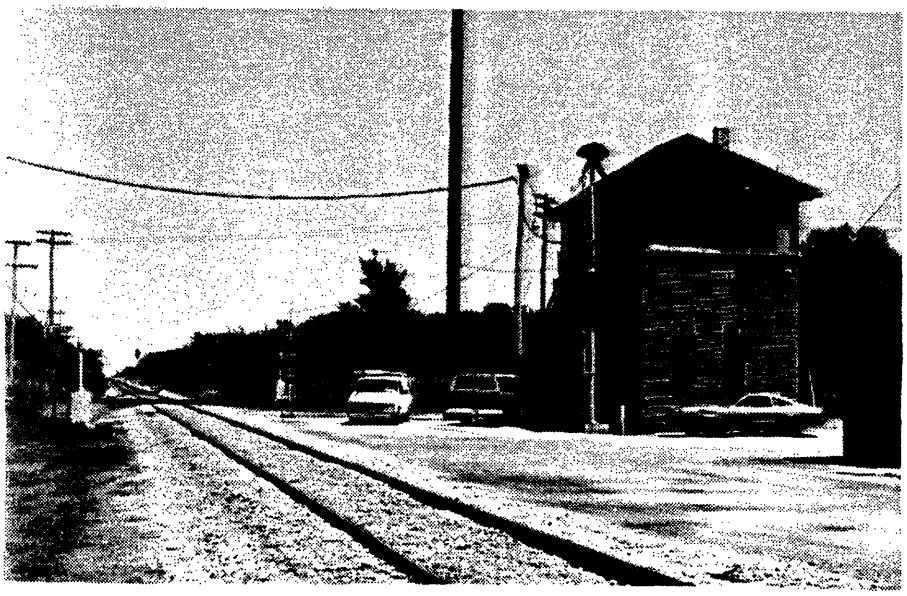


Plate 19: IC Signal Maintainer's House, Ackley, pre-1940s style

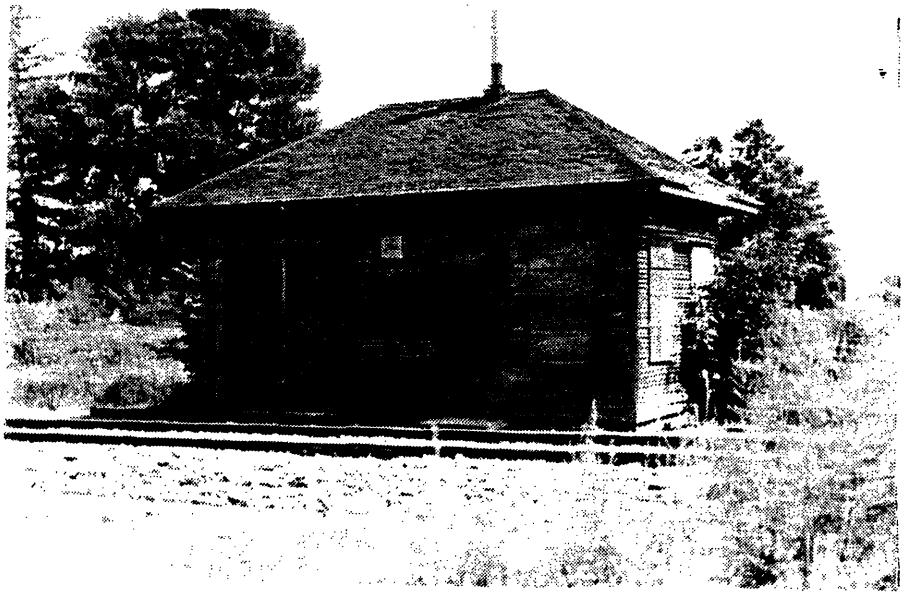


Plate 20: IC Watchman's Shanty and Crossing Gate, Tara, 1940s style

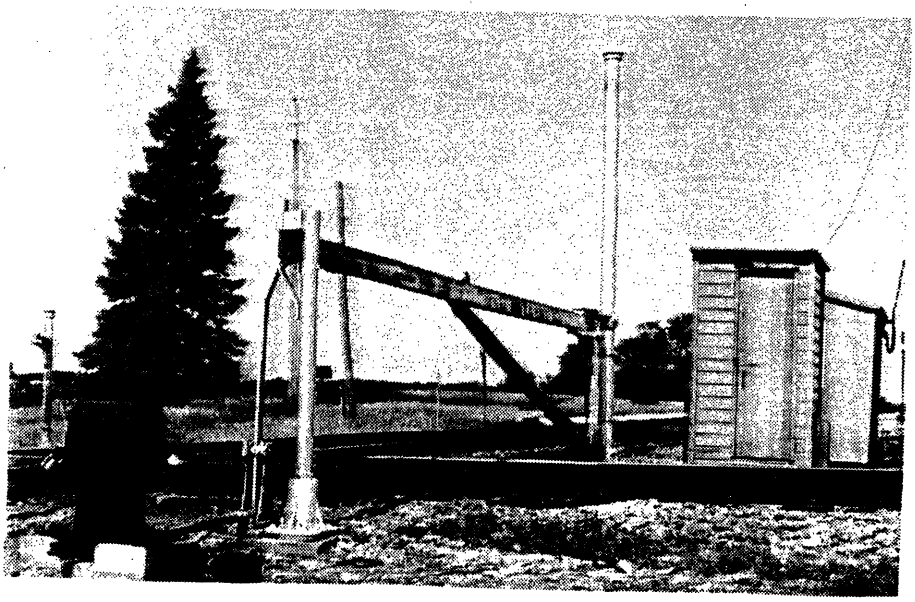


Plate 21: IC Oil House, Supply Room, and Yard Office, Cherokee, late 1880s

Plate 22: IC Coal Shed, Barnum, date undetermined

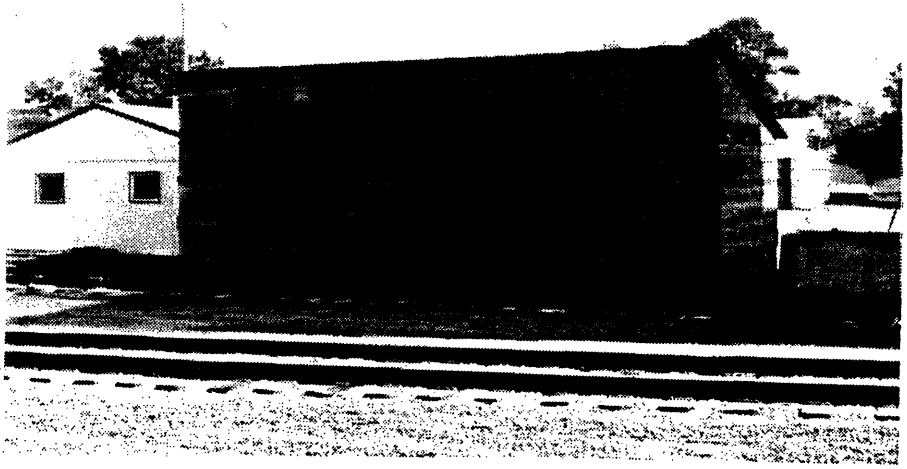
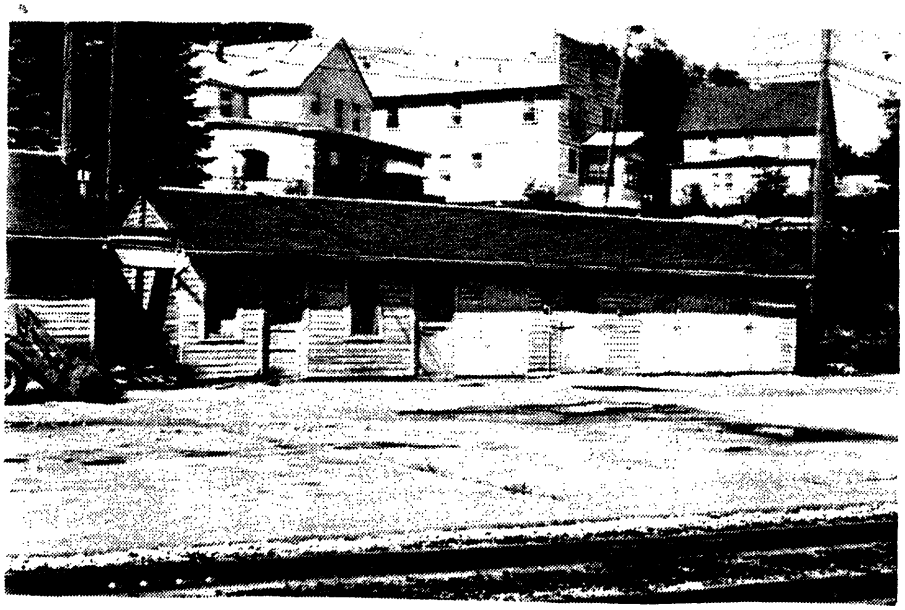


Plate 23: IC Ice Room, Carmen's Lockers, and Oil Room, Fort Dodge, 1940s style



1. **PROPERTY TYPE: BRIDGES**
[Plates 24 and 25]

2. **Characteristics:**

The demand for bridges as a necessary prerequisite for railroad expansion provided much of the impetus for civil engineers to develop the structural mechanics of iron truss bridge design during the last half of the 19th century. Consequently, the iron or steel truss bridge constitutes an important class of railroad bridge types. Until 1850, most bridges, including railroad bridges, were built by "rule of thumb". Scientifically designed bridges date from the mid-19th century, after William Howe patent a design in 1840 and Thomas and Caleb Pratt patented another in 1844. Then, roughly between 1850 and the Civil War, Wendel Bollman and Albert Fink developed two new designs specifically for the Baltimore and Ohio Railroad. The Bollman truss was the first design in which iron was used exclusively. Up until the Civil War, railroad companies tended to design and build their own bridges. After the war, much of this work was contracted out to bridge companies, a development which contributed to the standardization of design and construction methods. There are several truss subtypes, illustrated on the accompanying chart, and sometimes subtypes are combined in bridges of multiple spans.

Girder bridges form another important type of railroad bridges. These are iron or steel bridges designed so that the load is carried by a horizontal unit that spans the gap between two supports. Girder bridges may be encased in concrete.

Railroads also built many trestle bridges. A trestle bridge us built of bents, that is a structure of capped piles erected at regular intervals in order to support a bridge deck (either open or solid). Trestle bridges constituted approximately 50 percent of all railroad bridges until well into the 20th century. Most trestle bridges were built of timber, although some were of steel or concrete. Wood trestle bridges are still used in Iowa, though generally they are found only where a narrow span is needed.

There are two types of railroad bridge decks: open and solid (or ballasted). On an open deck, the ties are attached directly onto the iron or steel structure so that there are open spaces between the ties. A solid deck has a continuous bed of reinforced concrete or some other material. Ballast, generally in the form of crushed rock, is laid on top of the solid bed, and the crossties are arranged in the ballast the same as they are on a regular rail roadbed.

Metal truss railroad bridges once were a common feature of the Iowa landscape, and comparatively few are left. Most of them have been replaced with deck girder bridges; occasionally, one finds a bridge with mixed truss and deck girder spans.

Diagnostic Information:

See the attached Historic American Engineering Record identification chart (reproduced from Transportation Research Board, Historic Bridges: Criteria for Decision Making, 1983) and various illustrations from Train Shed Cyclopedia: Bridges & Trestles (Newton Gregg, Publ., 1977).

Extant Examples:

Chicago Great Western Viaduct (steel trestle), Fort Dodge

IC Bridge over the Des Moines River, Fort Dodge

3. **Significance**

Bridges were, and still are, vital links in rail transportation systems. Because the extension of railroad lines depended on the construction of bridges that were structurally sound and yet cost-efficient, railroads greatly influenced the design and engineering of these structures, particularly of steel truss bridges. In addition, the trestle bridge was (and to a degree still is) a form used so extensively by railroads that, like depots, extant trestles, especially those of great length, have strong evocative power as symbols of the heyday of steam railroading. In addition, bridge building seems to have been one type of activity where railroads used considerable amounts of native stone in the, particularly in the construction of bridge abutments and piers.

4. **Registration Requirements**

a. Area of Significance

Criterion A: Bridges associated with key crossings in the evolution of major railroad transportation routes; bridges which have been the site of important historic events.

Criterion B: As conveyances for public transportation, there is no evidence that railroad bridges would be significant under this Criterion.

Criterion C: Bridges that exemplify a design and/or construction method associated closely with railroads; bridges designed and/or constructed by a master builder; bridges that exemplify the use of native materials; and bridges that represent rare or unique examples of a type.

Criterion D: Bridge ruins that are the only remaining physical evidence associated with historically important railroad crossings.

b. Integrity Considerations

Field investigation indicates that the structures which have suffered the greatest loss of design integrity are bridges. In the survey counties of Hardin, Webster, and Cherokee, the only intact structure is the Chicago Great Western viaduct at Ft. Dodge. It appears as though most of the truss bridges have been removed and replaced with deck girder structures that may or may not rest on the original abutments and piers (usually of stone). In most cases the changes have been so radical that the appearance of the structure no longer conveys a sense of time and place that can be associated with any historical period of railroad construction and/or operation. Timber trestle bridges, the oldest type associated with railroads, are still found at narrow crossings, through even these are becoming rarer, and the timbers and ties have undoubtedly been changed many times as part of the process of maintaining the way.

Plate 24: Chicago Great Western Viaduct, Fort Dodge

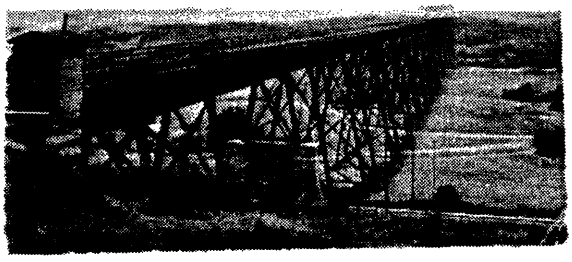


Plate 25: IC Bridge over Des Moines River, steel truss and deck girder replacement span, date undetermined

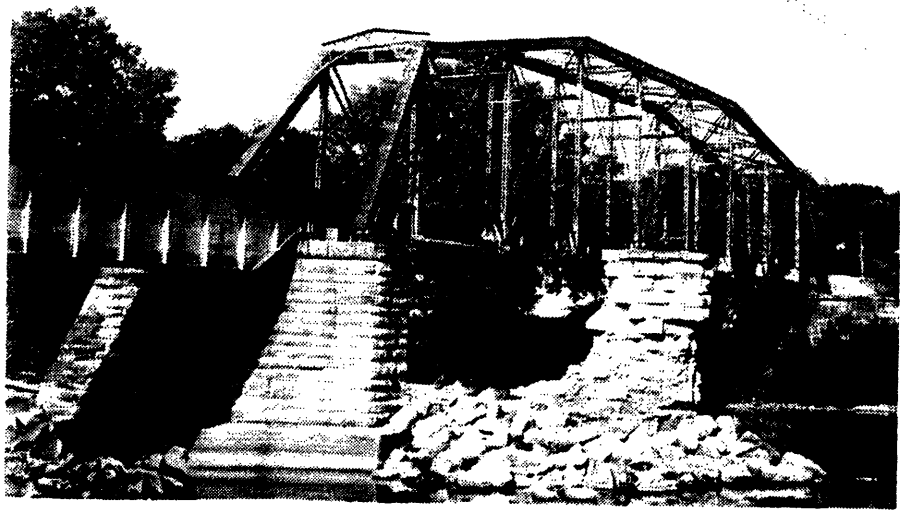


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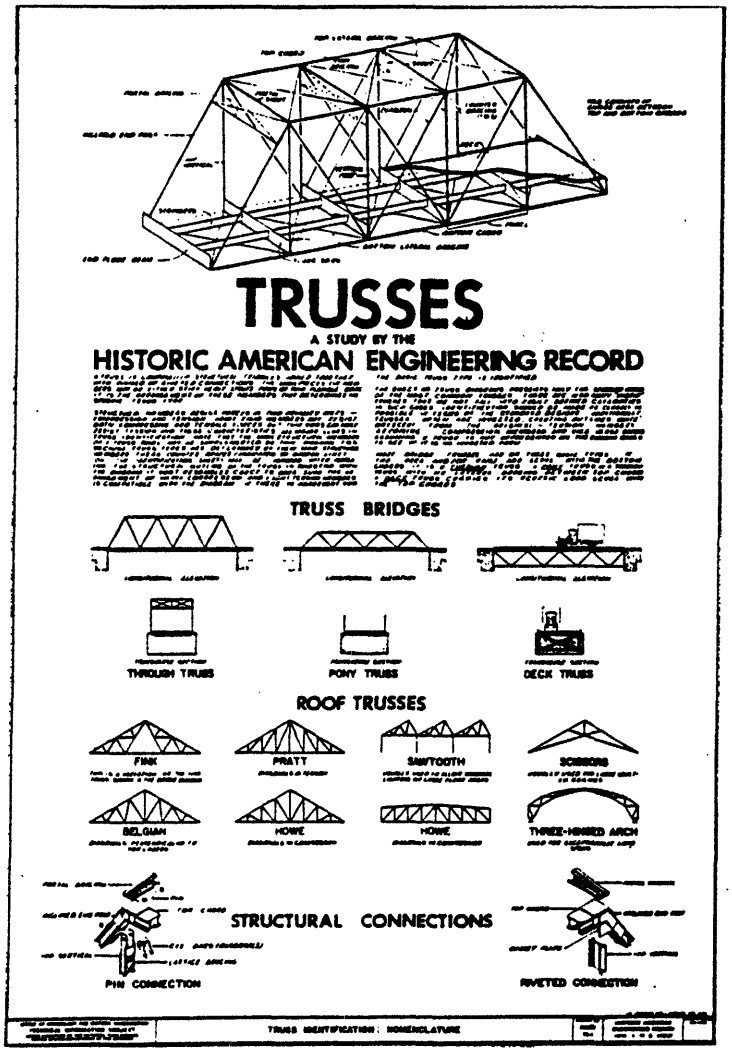
Figure 1: Truss Identification, Nomenclature and Types
Source: Historic American Engineering Record



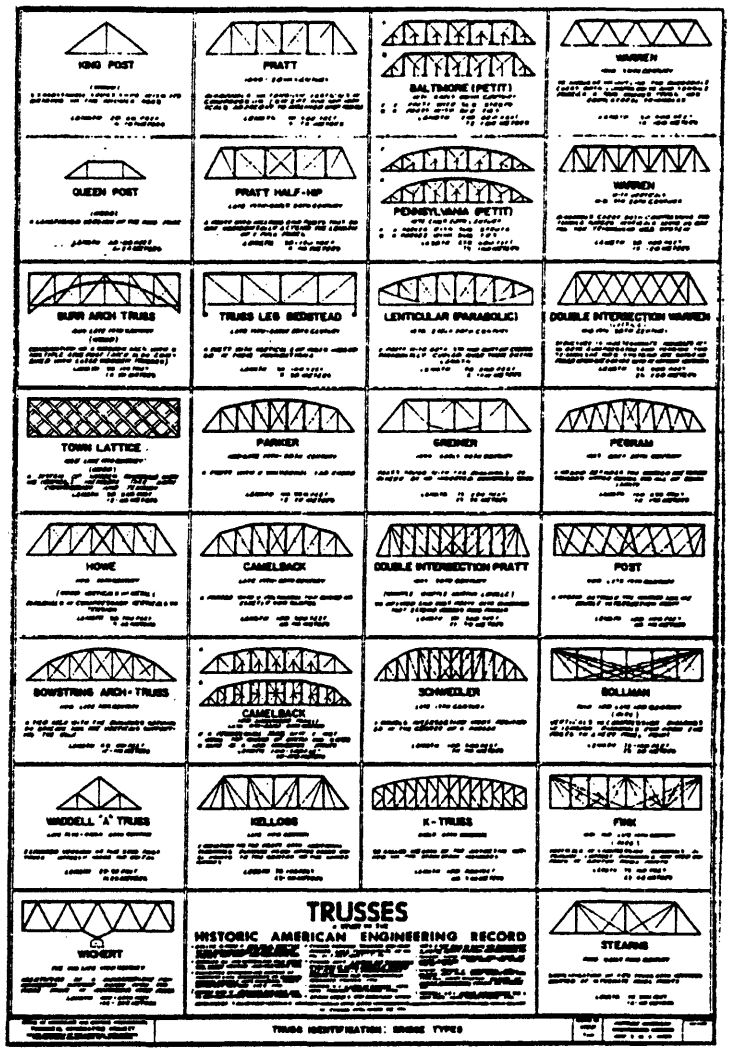
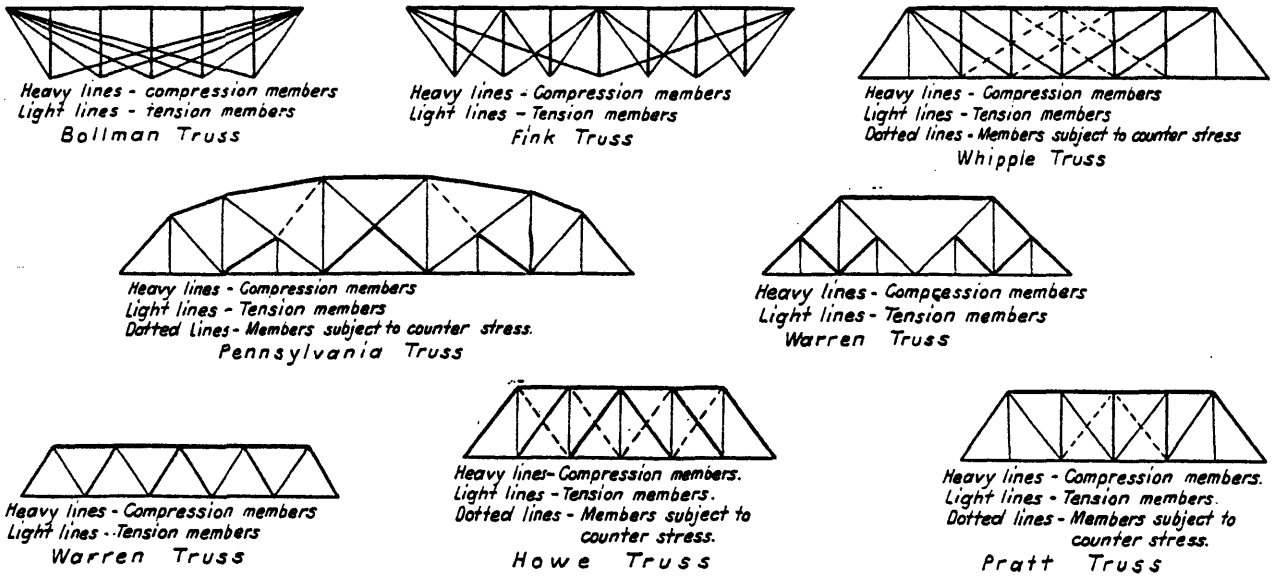
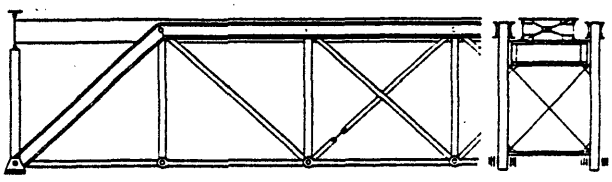


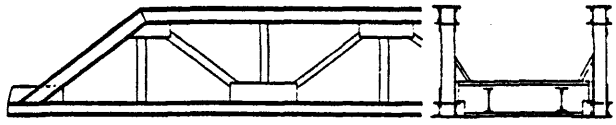
Figure 2: Truss Identification
Source: Gregg, *Train Shed Cyclopedia*, 1977



Diagrams of Various Types of Truss Bridges

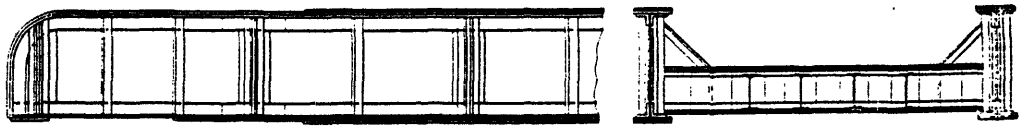


Sketch of a Pin Connected Deck Truss

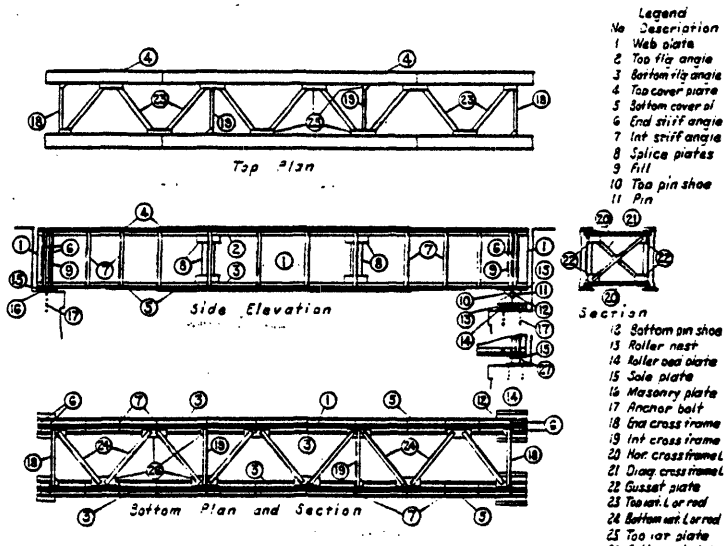


Sketch of a Through Riveted Pony Truss

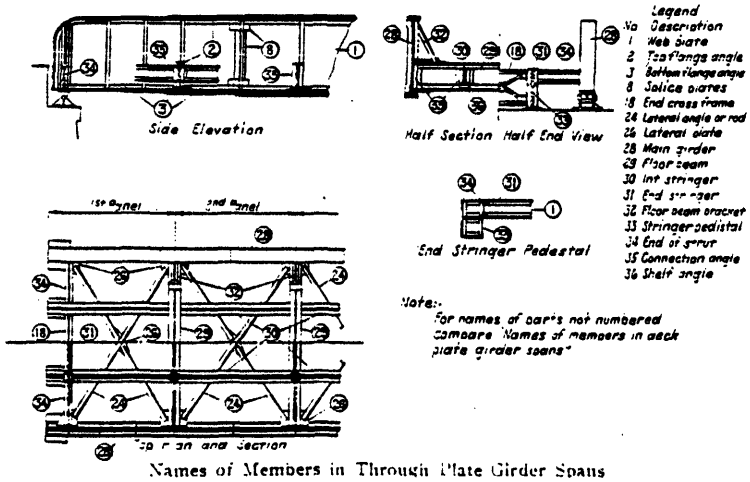
Figure 3: Railroad Girder Identification
Source: Gregg, *Train Shed Cyclopedia*, 1977



Elevation and Cross Section of a Double Track Through Girder Span

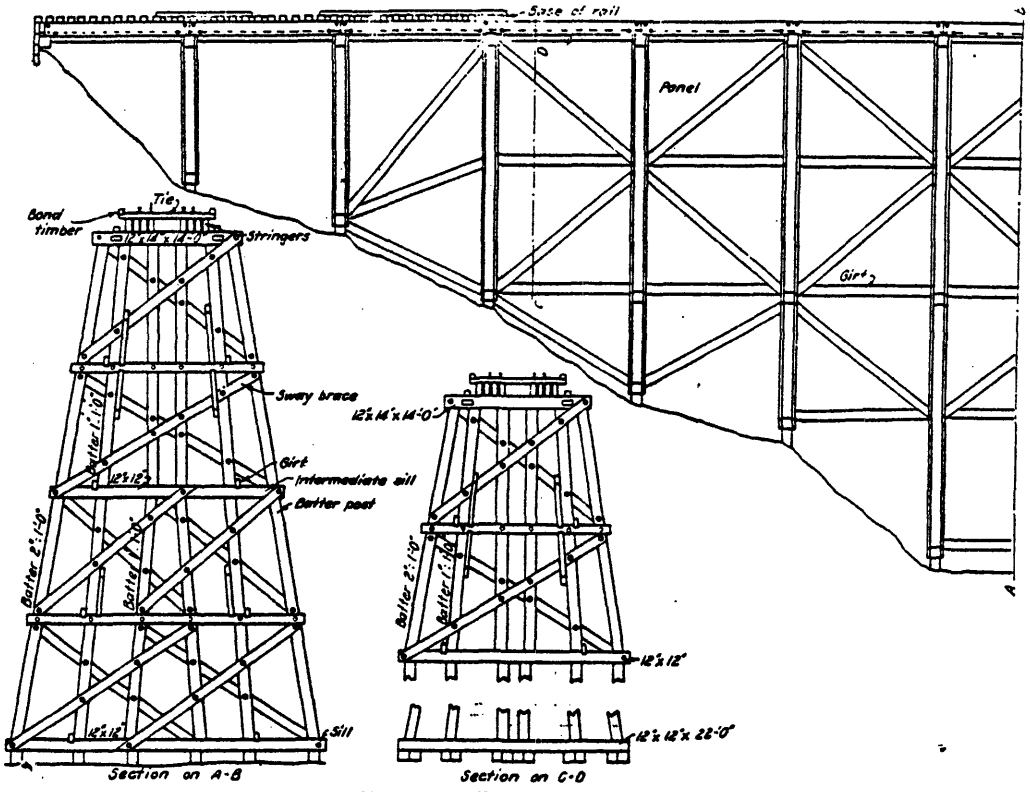


Names of Members in Deck Plate Girder Spans

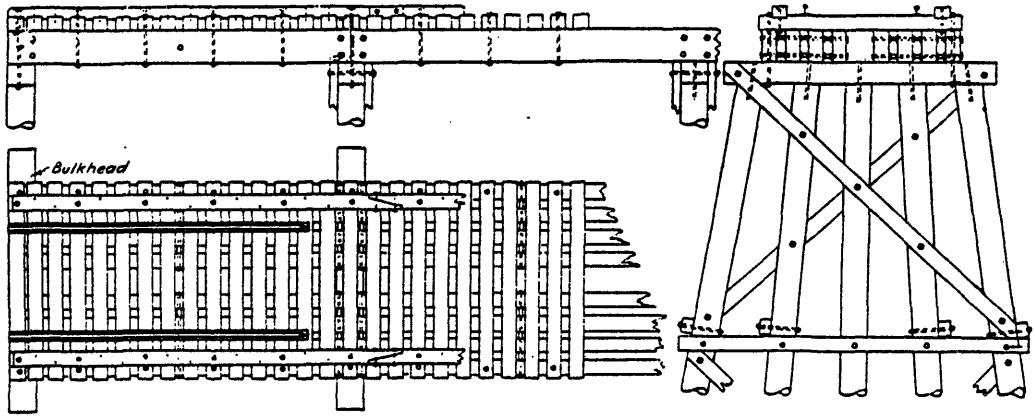


Names of Members in Through Plate Girder Spans

Figure 4: Timber Trestle Design
Source: Gregg, *Train Shed Cyclopedia*, 1977

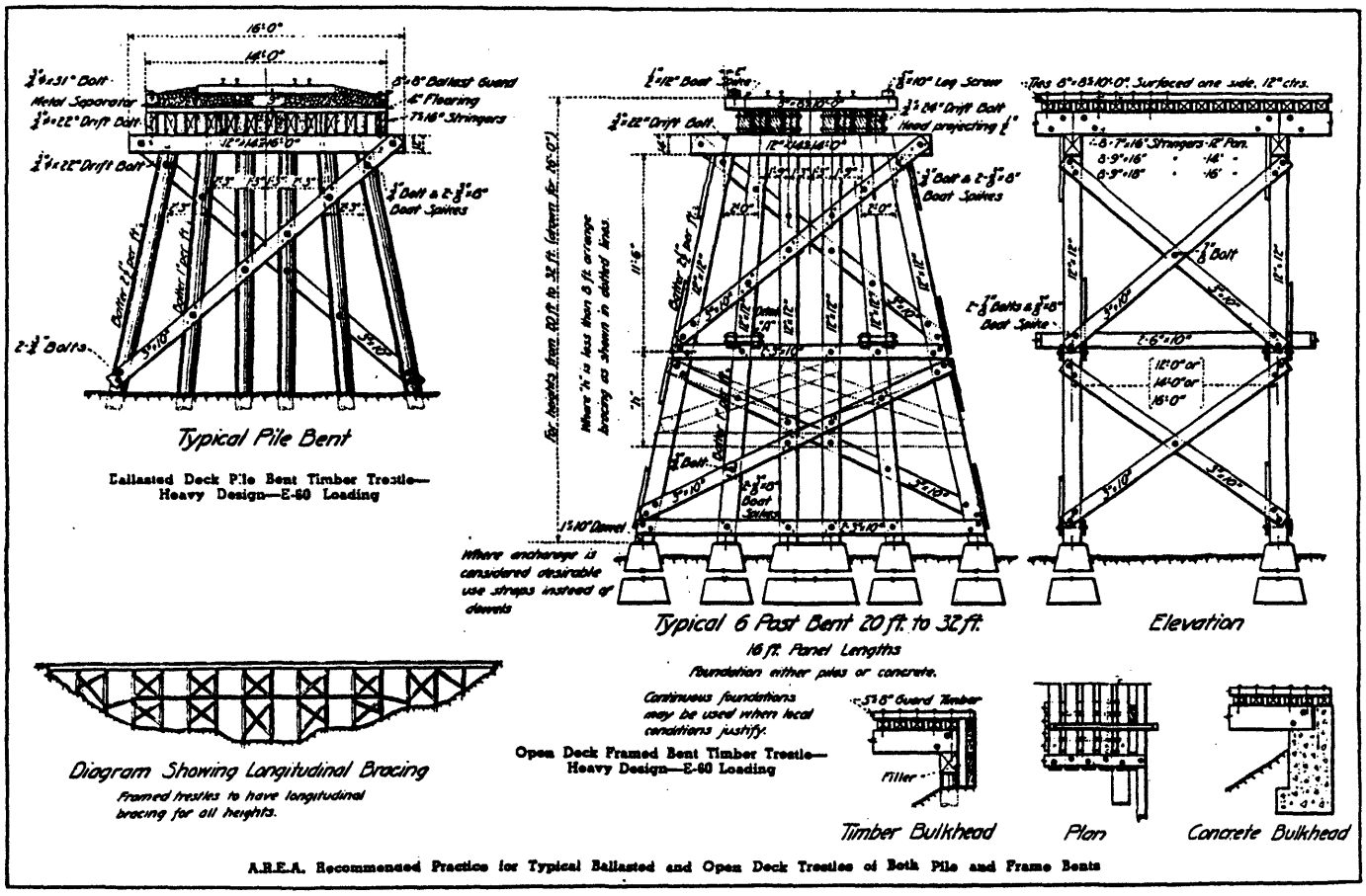


Sketch of a Wooden Frame Trestle



Sketch of a Timber Pile Trestle

Figure 5: Timber Trestle Design
Source: Gregg, *Train Shed Cyclopedia*, 1977



Section G: SUMMARY OF IDENTIFICATION AND EVALUATION METHODS

The multiple property listing of historic and architectural resources associated with the advent and development of railroads in Iowa is based on a 1989 survey conducted under the auspices of the Iowa Bureau of Historic Preservation. The project team included Rebecca Conard, PI, Tracy A. Cunning, and Nicholas Pitsch. Ms. Conard holds a Ph.D. in history from the University of California, Santa Barbara. Ms. Cunning holds a B.A. in history from Drake University. Mr. Pitsch is an avocational railroad historian who has concentrated his personal studies on railroad structures in Iowa. The archival investigation, out of which flowed the historical context, covered the State or Iowa. Therefore, the entire state comprises the theoretical limits of the survey. Nonetheless, given the number of extant railroad structures in the state and the time/budget constraints of the project, actual fieldwork was limited to a target area selected after a preliminary review of Nick Pitsch's photograph collection. Since 1982, Mr. Pitsch has assiduously located and photographed extant depots and other major railroad structures within the state; his collection of over 700 images as well as his personal knowledge about the evolution of specific railroad lines was immensely valuable for this project. Without his participation, the field survey would have been, of necessity, much smaller in geographical scope. The field survey area included three north central and northwest counties -- Hardin, Webster, and Cherokee -- and six southwestern counties: Taylor, Page, Montgomery, Fremont, Adams, and Mills [Map 1]. A total of 120 structures were recorded, itemized by type as follows:

Depots		Bridges	17
Passenger	8	Railroad-Related	
Combination	27	Grain Elevators	10
Flag	4	Hotels/Rm.House	2
Support Structures		Restaurant	1
Freight House	4	Lumber Whse.	1
Express Building	2	Poultry Bldg.	1
Tool House	8		
Engine House	1		
Turntables	2		
Watchman's Shanty	3		
Oil House	1		
Mill Room	3		
Coal Shed	2		
Sand House	1		
Signal Maint.	3		
Multipurpose	3		
Water Tank	1		
Interlocking Tower	1		
Car Barn	1		
Box Cars	2		
Miscellaneous	13		

Each structure was photographed and mapped. Physical attributes were described on Railroad Property Characteristics Forms developed specifically for the project [Figure 1]. Evaluations of significance or potential significance were recorded on Iowa Site Inventory Forms. Site-specific archival research was limited to a review of pertinent fire insurance maps located at the State Archives as well as an examination of published and unpublished historical materials located in local public libraries and/or historical organizations. In addition, James K. Beranek of Mt. Vernon shared information he has gathered from trade literature and other sources concerning those properties which were considered for National Register nomination. All site inventory records and related materials are housed at the Iowa Bureau of Historic Preservation.

The geographical field coverage was discontiguous, and there were several reasons for this, one of which was to target focus survey and nomination efforts on counties previously unsurveyed or underrepresented in National Register listings. Field survey methods also varied between the three northern counties and the six southwest counties. In Hardin, Webster, and Cherokee counties, railroad *and* rail-related structures were surveyed. These three counties were selected because the preliminary review of Pitsch's data showed that substantial concentrations of structures existed in the Town of Cherokee (Cherokee County) and Fort Dodge (Webster County) and because a greater variety of building types seemed to be extant in these counties. Actual field investigation further revealed that most of the extant structures in these three counties were associated with one line, the Illinois Central [see Maps 4-5 in Section E]. In addition to recording structures actually built by railroads, including bridges, the survey in these three counties took in a sampling of rail-related structures, such as grain elevators, lumber yards, warehouses, and hotels. The original intent of including rail-related structures was to discern the extent to which commercial, industrial, and/or service structures (or districts) that grew up around railroad stations are still intact. Once in the field, however, it quickly became apparent that direct associations between such structures and a railroad in a particular locale are difficult if not impossible to discern without first examining the history of development in the subject locale in some detail. Individual town studies obviously were beyond the scope of this project. Nonetheless, the in-field comparison of fire insurance maps with extant resources suggests that except for grain elevators, a great many of the historic structures once associated with railroad yards have been removed or are in poor physical condition.

While the three-county area in north central/northwest Iowa included rail-related structures and bridges, only railroad *buildings* (i.e., depots, freighthouses, etc.) associated with the Chicago, Burlington, & Quincy Railroad were surveyed in Taylor, Page, Montgomery, Fremont, Adams, and Mills counties [Map 2]. This line was selected because the architecture of CB&Q depots is varied and visually interesting. Southwestern Iowa was chosen because relatively little survey work has been done in this part of the State. In addition, the preliminary review of Pitsch's photographs indicated that field data from these six counties had the potential to yield useful information concerning the stylistic elements associated with one line over time. This indeed is the case, but archival research revealed that the corporate

history of the CB&Q, and therefore the evolution of the line through Iowa, is extremely complex. The relationship of extant structures to the history of the line proved to be a task beyond the constraints of this project. It is an important topic that remains to be investigated. Also, many extant examples of CB&Q depots (or its predecessor lines) have been removed from their historic physical contexts, a factor further complicating research and analysis.

In addition to these areas of systematic coverage, the Wabash depot in Shenandoah (Page County) as well as isolate depots in Buena Vista, Carroll, Woodbury, Monona, and Dallas counties were included in the data base. Isolate depots in the these counties were included because of their National Register potential, because they were the focus of community historic preservation efforts, or because they exemplified interesting architectural attributes associated with a particular line.

The historical context was developed principally from a review of published literature, augmented by oral history information and primary source materials on the Illinois Central obtained from the Newberry Library and from Chicago Central & Pacific headquarters in Waterloo, Iowa. Since the published literature alone is voluminous, no attempt was made to treat the subject exhaustively. Research was focused on works containing information on the physical development of railroad lines throughout the State. The analysis of property types is based on Walter C. Berg's seminal reference work, Buildings & Structures of American Railroads (1896), the historical context, and field data. Since the range of building types associated with railroad operations is extensive, they were classified into three broad categories -- depots, support structures, and bridges -- and related subtypes were treated within the appropriate category. Integrity considerations were based on knowledge of existing properties in the survey area.

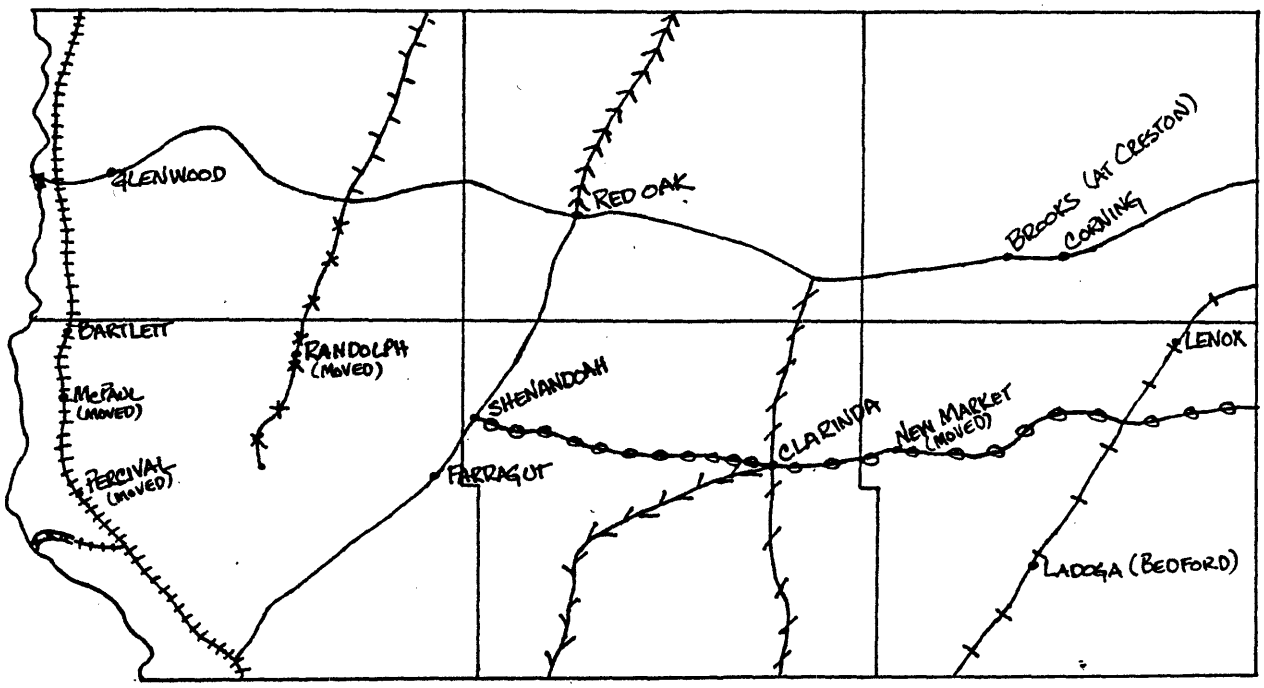
Archival and field investigation revealed a strong correlation between at least three periods of historical development in Iowa and three discernible generations of building types. Wooden depots are principally associated with the period of Early Railroad History, 1855-c.1889; brick depots and support structures are principally associated with the Golden Age of Steam Railroading, c.1890-c.1920; and wooden replacement structures are principally associated with the period of Efficiency Improvement and Retrenchment, c. 1921-1940. Thus, all properties, except for those associated with electric interurban lines, were grouped according to these historical contexts. Based on archival research, the early period could be further divided into pre- and post-Civil War activity, but there are few if any resources left which predate the Civil War. Archival research demonstrated several other pertinent thematic contexts which did not fall conveniently into one of the three time periods discerned: railroads and settlement patterns, consolidation of the railroad industry, interurban railroads, and the interplay between technology and efficiency. The latter is a constant theme throughout the history of railroads, but one which outside forces pushed to the forefront during the 1920s, 1930s, and 1940s. Many railroad properties reflect one of these contexts. Results of the field investigation indicated that the associated historical contexts should also include studies of at least all the major lines through Iowa. One line, the Illinois Central, was chosen for inclusion

with this listing, a decision based on the comparatively high number of IC properties in the inventory, their degree of historical integrity, and the availability of primary research data.

The ten properties nominated with this multiple property listing represent only a small portion of the structures throughout the State with National Register potential [Map 3]. They have been selected as among the best candidates from the survey to demonstrate the relationship between the history of railroads in Iowa and the physical resources of railroads. The Multiple Property Documentation Form, however, has been written to cover all identified property types in the State in order to facilitate the addition of individual properties and districts to the National Register in the future.

Map 1: Field Survey Area

Map 2: Extant CB&Q Depots CB&Q Predecessor Lines in the Six-County Survey Area of Southwest Iowa



Map 3: Location of Nominated Properties

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Figure 1: Railroad Property Characteristics Form, Side 1

Property Characteristeristic Form - RAILROAD

Survey ID Number _____
Database ID Number _____

Historic Name: _____
Location: _____

Location Integrity: Original Site (OS) Moved (MV) Date _____ ___
Original Construction Date _____ Modification/Addition Dates:

Physical Condition: [ ] Excellent [ ] Good [ ] Fair [ ] Deteriorated

Surroundings: [ ] Open Land [ ] Scattered Buildings [ ] Residential [ ] Industrial
[ ] Commercial [ ] Other _____

Threats to Site: [ ] None Known [ ] Private Development [ ] Vandalism [ ] Zoning
[ ] Public Works Project [ ] Other _____

Railroad(s): [ ] CNW [ ] CBQ [ ] CGW [ ] IC [ ] MILW [ ] MSTL [ ] RI
[ ] Other (see key) _____
[ ] Active Line [ ] Inactive Line [ ] Abandoned Line

Building/Structure Type (see railroad architecture typology; if railroad-related building or structure, such as warehouse, elevator, lumber yard, check appropriate slot and specify):
(Original/Historical uses only)

[ ] Passenger Depot, Local
[ ] Passenger Depot, Terminal
[ ] Combination Depot
[ ] Flag Depot
[ ] Platform
[ ] Watchman's Shanty
[ ] Tool House
[ ] Signal Tower
[ ] Other _____
[ ] Freight House
[ ] Engine House
[ ] Turntable
[ ] Car Shed
[ ] Shop (Machine, Paint, etc.)
[ ] Coaling Station
[ ] Ice House or Icing Station
[ ] Railroad-related _____

Notes: _____

Architectural Style/Stylistic Influences | Key Stylistic Attributes | Code

Diagnostic Railroad Architectural Elements or Stylistic Attributes: (brackets, signage, etc.)

Builder(s) _____ Architect/Designer(s) _____

Photographs: Roll/Frame
____/____
____/____
____/____
____/____
____/____

Sketch Map

Figure 2: Railroad Property Characteristics Form, Side 2

DESIGN FEATURES

Ground Plan: a. Building Shape(s) _____ b. Width _____ by Depth _____ in ft

Number of Stories _____

Roof Shape _____ Pitch: [ ] Steep [ ] Medium [ ] Low

Materials: Foundation _____ _____
Walls _____ _____
Roof _____ _____
Other _____ _____

Structural System: [ ] Balloon Frame [ ] Solid Masonry [ ] Steel Frame [ ] Other _____

Windows _____

Doors _____

Decorative _____

Significant Interior Design Features:

[ ] General Waiting Room	[ ] Express Room
[ ] Freight Room	[ ] Mail Room
[ ] Baggage Room	[ ] Telegraph Office
[ ] Ticket Office	[ ] Supply Room(s)
[ ] Division Offices	[ ] News Stand
[ ] Other Office(s)	[ ] Toilets
[ ] Lunch Room	[ ] Agents Quarters

[ ] Other _____

Related Structures/Features:

[ ] Track	[ ] Crossing Sign/Signal
[ ] Roadbed	[ ] Crossing Gate
[ ] Information Sign	[ ] Track Crossing
[ ] Track Signal	[ ] Telephone Booth

[ ] Other _____

Surveyor Comments:

Sources:

Continuation Sheet [] Needs Further Study/Anomaly []

Surveyor _____ Date _____

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