Phase I

DeLEUW CATHER

De Leuw, Cather & Company
Engineers and Planners · Chicago

Report to
Linn County Regional Planning Commission
Rail Study Advisory Committee

Comprehensive Railroad Study
for
Linn County, Iowa

January 1980

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Chapter I

INTRODUCTION

To support continued and orderly development of the Cedar Rapids metropolitan area, appropriate local, county, regional and state government agencies are jointly committed to the definition and implementation of transportation system improvements. Currently, attention is focused on developing an action plan for improving the railroad facilities and operations which are vital to supporting the local economic base.

This report documents a comprehensive rail system study sponsored by the Linn County Regional Planning Commission (LCRPC). Although all of Linn County was considered as a part of these efforts, the main focus was on formulating a rail network improvement plan for the Cedar Rapids metropolitan area. This action plan was developed in a manner optimizing the joint interests of the rail carriers, rail service users, and the community at large.

BACKGROUND

The Cedar Rapids metropolitan area is located in the center of the eastern half of Iowa--a rich agricultural region. Cedar Rapids has one of the largest concentrations of cereal mills in the world. Other major industry includes the processing of corn and soybeans, meat packing, fabrication of heavy machinery and the assembly of electronics equipment. These industries rely on the local and regional rail systems for the import of raw materials and the export of finished goods to national and international markets.

The development of both the Cedar Rapids metropolitan area and its rail system followed the pattern typical of many American communities. The initial community evolved around a defined city center located near the Cedar River. Early commercial and industrial activities located within or near this city center, and rail lines were built connecting to it. Residential areas then grew and eventually surrounded the industrial concerns. Today, yards and numerous rail corridors run through Cedar Rapids, Marion, Robins and Hiawatha. Both railroad yards and downtown industries have no room for expansion due to the nearby river, commercial districts, and residential neighborhoods. New industrial concentrations have more recently developed on the urban

periphery. Today, operating personnel of the rail carriers serving Linn County are faced with a local railroad system tailored to service the former urban structure. Several problems have thus been inherited: railroad facilities considered inferior by today's rail standards, and reduced operating speeds and increased accident potential in congested urban areas. More current concerns include the lack of adequate rail cars during peak periods and slow, erratic movement of traffic. These problems are directly reflected in the level of service and transit times provided to local customers. Recent economic conditions within the rail industry have generally prevented most rail carriers from making significant improvements.

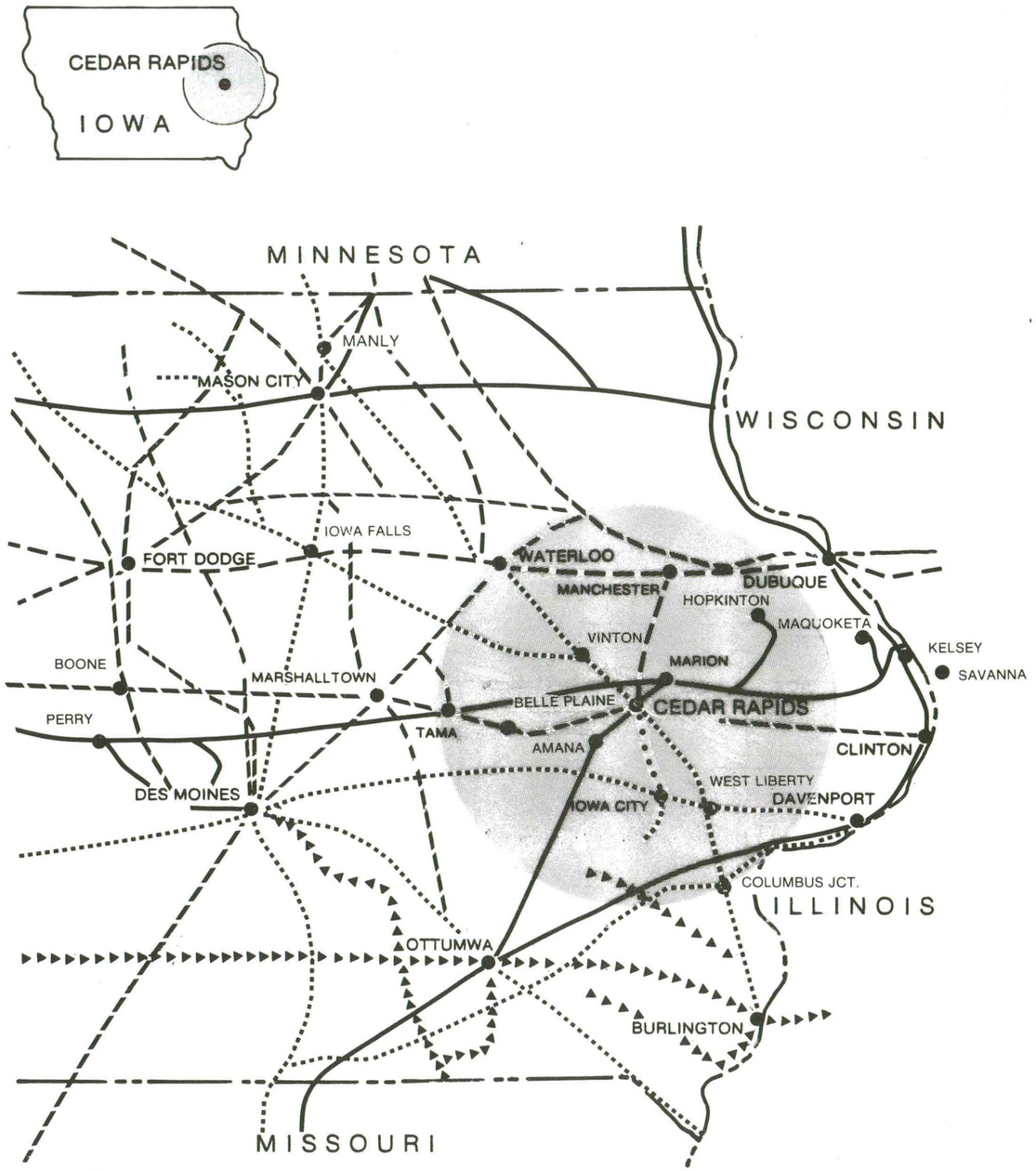
LINN COUNTY AND THE REGIONAL RAIL SYSTEM

The Cedar Rapids metropolitan area's setting in the regional and county rail systems is illustrated in Figure I-1. Cedar Rapids is served by five rail carriers:

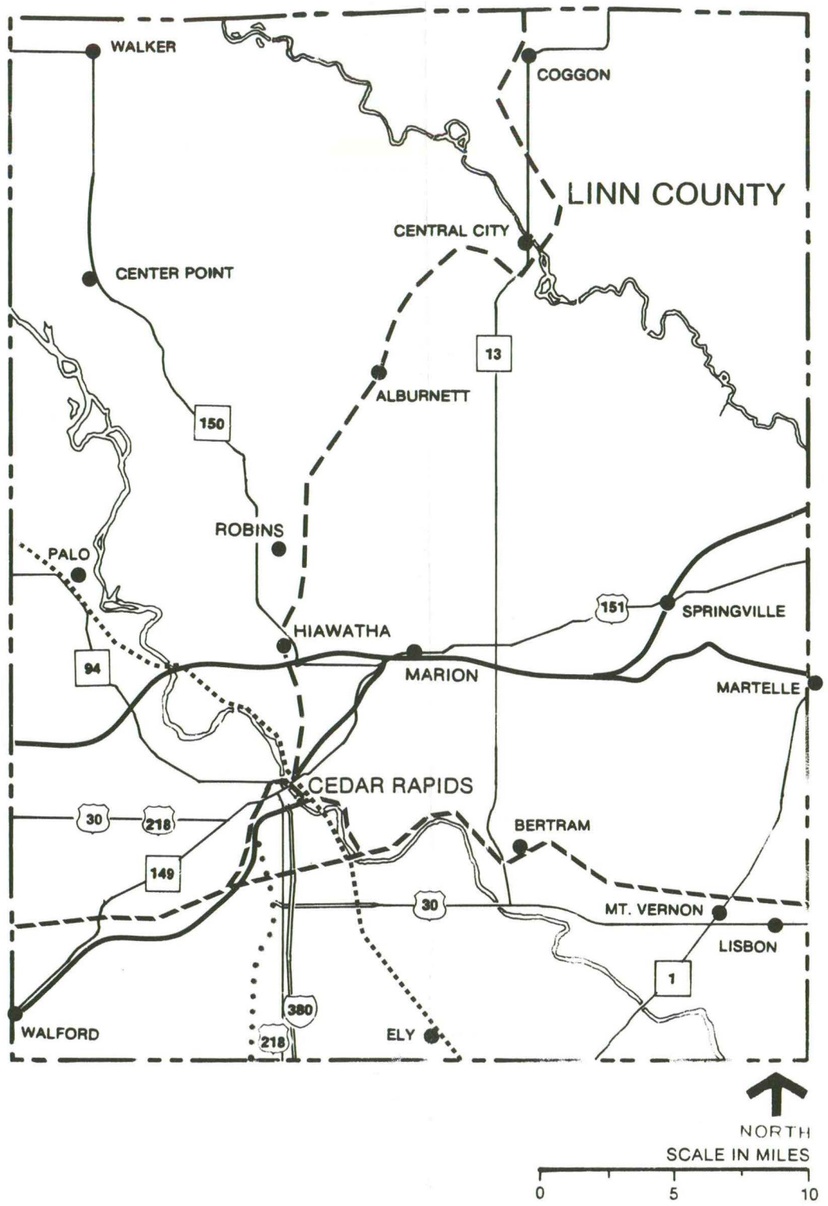
- Cedar Rapids and Iowa City Railway Company (CRANDIC)
- Chicago, Milwaukee, St. Paul and Pacific Railroad Company (MILW)
- Chicago and North Western Transportation Company (CNW)
- Chicago, Rock Island and Pacific Railroad Company (RI)
- Illinois Central Gulf Railroad Company (ICG)

The CRANDIC is a short-line railroad operating between Cedar Rapids and Iowa City (25.4 miles to the south). The other four are major line haul carriers. A sixth railroad, the Waterloo Railroad Company, is a wholly owned subsidiary of the ICG, and has limited local facilities. The operations of the Waterloo are, for practical purposes, completely integrated with the ICG.

The MILW Chicago-Council Bluffs main line passes through Marion, but is now used only by one daily through freight in each direction between Savanna and Marion, and by way freights serving local customers. Chicago-Council Bluffs trains are now operated over the CNW between Clinton and Tama. The MILW has proposed abandoment of the line segment between Green Island and Council Bluffs. Locally, the MILW has a branch line extending from Marion through Cedar Rapids, and southwest to Ottumwa. The MILW has also proposed to abandon this entire branch line.



REGIONAL RAIL SYSTEM



LINN COUNTY RAIL SYSTEM

LEGEND

- CEDAR RAPIDS AND IOWA CITY
- CHICAGO AND NORTH WESTERN
- CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC
- CHICAGO, ROCK ISLAND AND PACIFIC
- ILLINOIS CENTRAL GULF
- OTHER

CEDAR RAPIDS METROPOLITAN AREA SETTINGS
THE REGIONAL AND COUNTY RAIL SYSTEMS
LINN COUNTY RAILROAD STUDY

The CNW's most important and heaviest traffic density route is between Chicago and Omaha and Fremont, Nebraska. This line crosses Iowa from Clinton to Council Bluffs and traverses the southern portion of the Cedar Rapids metropolitan area.

The RI line between Waterloo and Burlington passes through Cedar Rapids in a northwest-to-southeast direction. This line intersects the RI Chicago-Council Bluffs main line at West Liberty and the Chicago-Kansas City main line at Columbus Jct.

The ICG's east-west main line through Iowa runs from Dubuque to Fort Dodge, where it splits into two lines--one running to Council Bluffs and the other to Sioux City and Sioux Falls. A 42.1-mile branch extends south from Manchester, through Robins and Hiawatha, to Cedar Rapids.

Although Cedar Rapids rail-oriented business has access to five railroads, resulting in a highly competitive situation, service is somewhat deficient. Also, two of the major carriers, the MILW and the RI, are bankrupt; whether they will continue to operate into Cedar Rapids, or continue to exist as separate entities, is questionable. Because of these circumstances, changes are probable in the corporate structure and routes of some of the railroads serving Cedar Rapids. In any event, substantial improvement over present conditions must be made if the railroads are to provide service adequate to retain or increase present traffic levels and satisfy demands of rail-oriented industry.

STUDY OBJECTIVES AND PROCEDURES

In the last five years, the Linn County Regional Planning Commission (LCRPC) has been studying rail-service problems of existing industries, and deficiencies that must be corrected to support industrial expansion. As a part of these efforts, the LCRPC assembled a Rail Advisory Committee made up of railroad personnel, industrial representatives, city officials, and LCPRC staff.

In mid-1976, after itemizing major rail system operating and service deficiencies in preliminary form, it became apparent that a comprehensive study was required to formulate short-term and long-term solution alternatives. In late 1978 and early 1979, the LCRPC and De Leuw, Cather & Company determined a suitable scope for the required comprehensive investigations. This report documents the activities of De Leuw, Cather in carrying out that study program.

Investigations were carried out in three interrelated phases:

Phase I: Inventory, Forecasts and Problem Identification

Phase II: Development and Evaluation of Improvement Alternatives

Phase III: Action Plan Development

Phase I efforts are documented in this report.

Although all elements of the community are affected by rail operations throughout the metropolitan area, the study was directed primarily toward devising a program to remedy deficiencies in rail service to industrial concerns. Although such problems as delays to highway traffic exist at the numerous rail crossings in Linn County--and such problems are worthy of attention--it was not the primary objective of this study to reduce highway/ rail interface conflicts. However, inventory activities were directed in part toward an understanding of present rail/highway conflicts and, wherever practical, suggested railroad plant and operational improvements were tailored to mitigate rail-caused highway delays.

The primary objective of the study was to develop and evaluate rail modification alternatives in sufficient detail to provide all agencies and citizens at interest with the information required to assess available opportunities and to agree on the most suitable program to upgrade the rail network and operations.

Chapter II

RAILROAD FACILITIES AND OPERATIONS

To gain an understanding of the existing physical plant and operations of the five railroads serving Cedar Rapids, on-the-ground inspections of all lines were made and interviews conducted with officers of each carrier. The level of detail was sufficient for determination of improvement alternatives and critical analysis of such alternatives as the study progressed. Supplementary information was obtained as the need arose during the course of the study. The Cedar Rapids metropolitan rail system is shown in Figure II-1.

In addition to a description of the physical facilities and operations of each railroad, a section on interchange procedures has been included, because this activity is critically important in any restructuring of present operations. Another section outlines the operations of the Cedar Rapids Grain Inspection Service as they relate to the railroads.

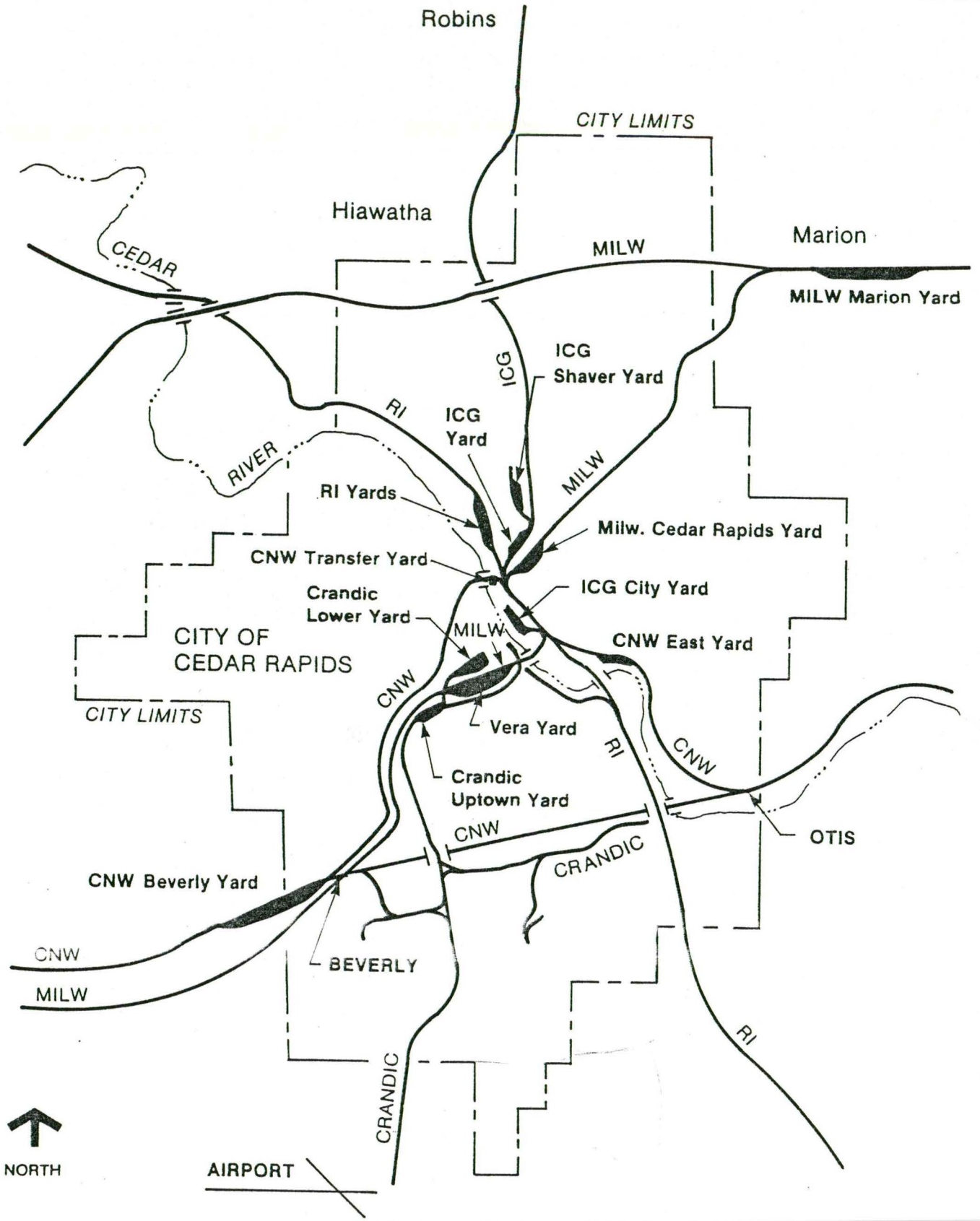
CEDAR RAPIDS AND IOWA CITY RAILROAD COMPANY (CRANDIC)

The Cedar Rapids and Iowa City (CRANDIC), as shown on Figure II-2, is a short-line railroad, owned by Iowa Electric Light and Power Company. It operates between Cedar Rapids and Iowa City, Iowa, a distance of 25.4 miles. The CRANDIC owns 57 miles of track, including main line, yards, sidings and industry tracks. Maximum operating speed on the main line is 25 mph, with a 15-mph speed restriction in Cedar Rapids. Road train operation is governed by train orders with radio control from the chief dispatcher at the Uptown Yard in Cedar Rapids. The main line trackage consists of 90# and 100# jointed rail, which is in good condition, and crushed-rock ballast. Ties are generally in good condition (about 25 percent are defective), and the line and surface of the track has been adequately maintained. Operating and maintenance headquarters for the CRANDIC are at Uptown Yard.

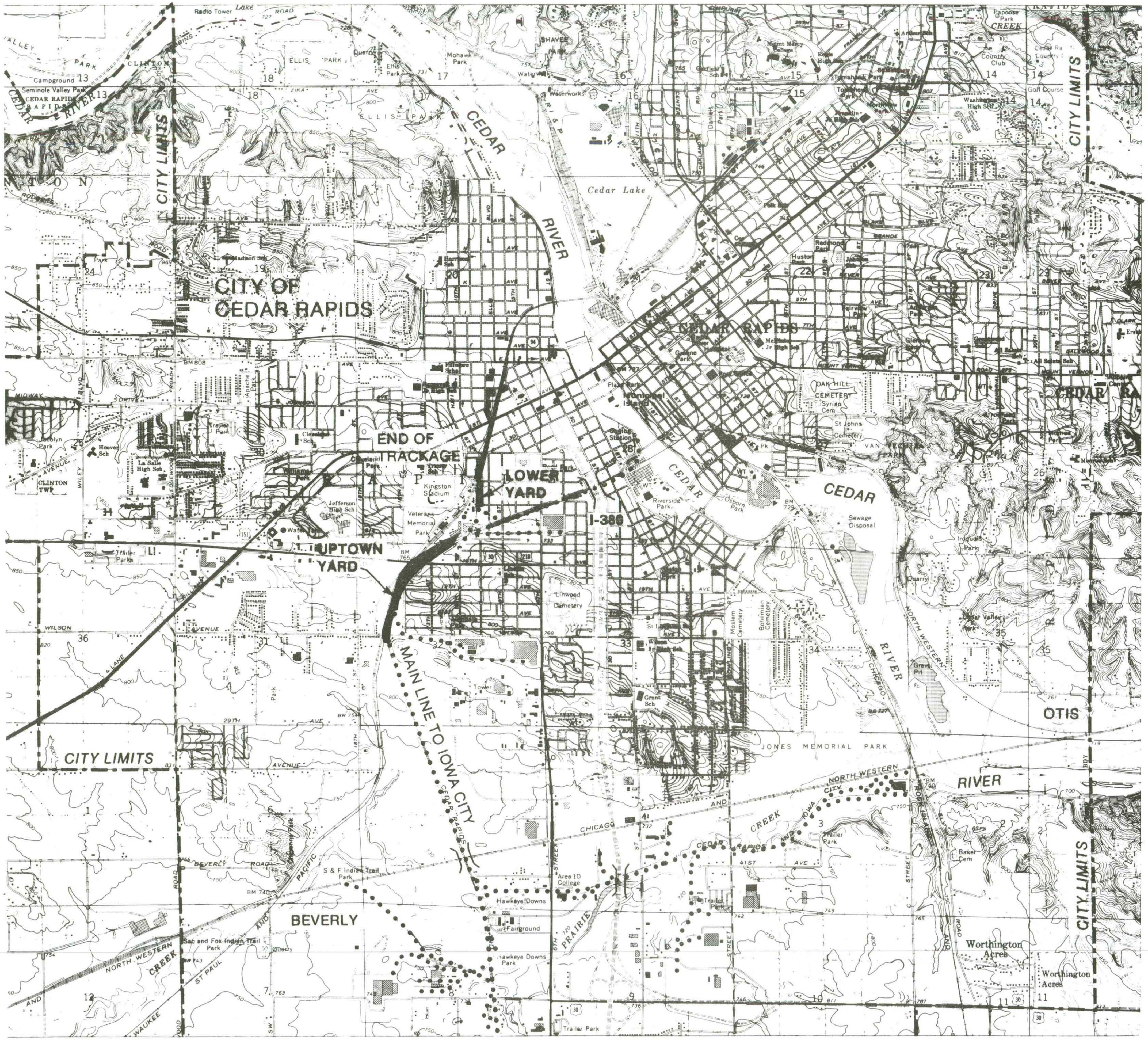
Yards and Facilities

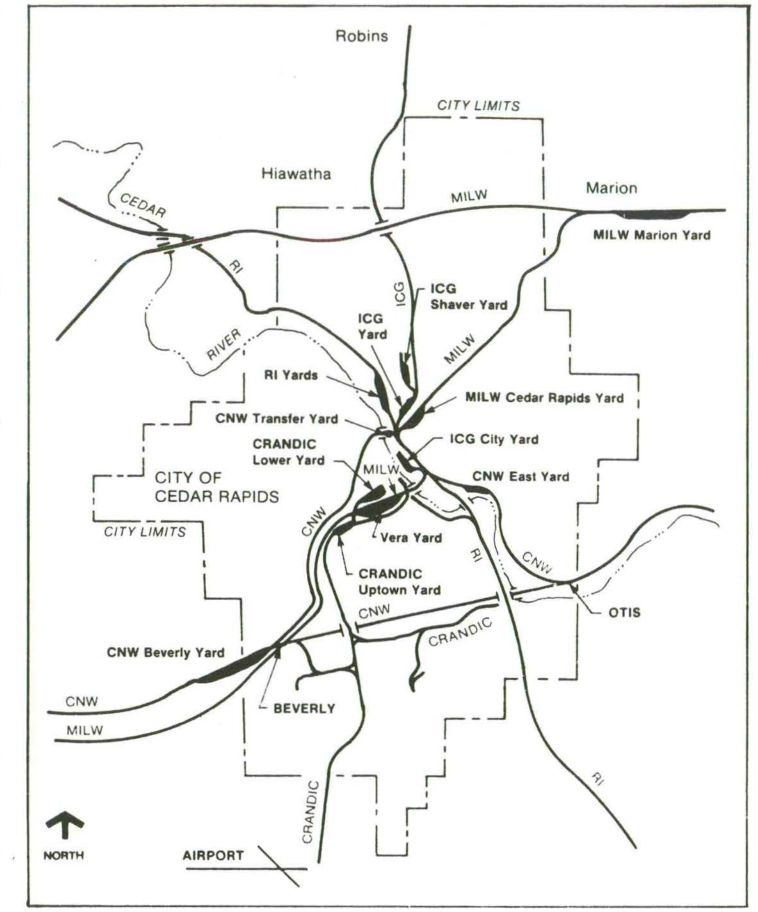
The CRANDIC's main yard is Uptown Yard, near Wilson Avenue on the southwest side of Cedar Rapids. In addition to facilitating the classification of cars, this yard serves as an interchange with the MILW and contains car and locomotive repair facilities.

FIGURE II-1



METROPOLITAN RAIL SYSTEM
LINN COUNTY RAILROAD STUDY





KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

CRANDIC FACILITIES IN THE METROPOLITAN AREA

LINN COUNTY RAILROAD STUDY

The yard has 12 tracks with a capacity of about 275 cars. Rail includes 70#, 80# and 90# sections, and ballast consists of crushed stone and cinders. Ties are becoming marginal on some tracks, but the overall condition of the yard is fair.

All of CRANDIC's car and locomotive maintenance is performed at Uptown Yard. The shop building, with three tracks (two used for locomotives and one for cars), is relatively modern. Mechanical department staff includes a master mechanic and eight car and locomotive repairmen working one shift daily. All maintenance and servicing work on the CRANDIC's seven locomotives, with the exception of heavy overhauls (which are done by outside contractors), is done here. Repairs are made on about five cars daily in the shop or on one outside repair track.

The yard also includes a track scale on which approximately five cars are weighed per day. A limited amount of car cleaning, mostly flatcars, is also performed at Uptown Yard.

A small materials department, manned by one store keeper, stocks and distributes all necessary parts and equipment. The maintenance-of-way department is headquartered at Uptown Yard, with a superintendent heading up a staff consisting of one roadmaster, one bridge foreman, one carpenter, and 15 trackmen. An additional 15 trackmen are usually added during the summer. Operating personnel at Uptown Yard include one assistant superintendent, one trainmaster, one chief dispatcher, three dispatchers, and five yard clerks.

Immediately northeast of Uptown Yard is Lower Yard, adjacent to the Cargill West plant. This yard consists of eight tracks with a capacity of about 130 cars. Lower Yard is used for switching and storage of cars originating or terminating at the Cargill West facility. Overall track condition is good.

Three industrial leads extend east from Uptown Yard; two extend to 6th Street, the other to the Cedar River. All three leads provide access to various industries along the respective routes.

The only other yard on the CRANDIC is adjacent to the Corn Sweeteners plant. This yard consists of eight tracks with a capacity of about 190 cars. It is used solely for servicing Corn Sweeteners. Immediately northwest of this yard

are three tracks with a capacity of about 120 cars, used for interchange with the CNW; and two storage tracks for Corn Sweeteners that hold 150 cars.

Train and Yard Operations

The CRANDIC normally operates one round trip to Iowa City daily except Saturday. When coal traffic is heavy, a second run is made. All of the Iowa City traffic is interchanged with the RI. The train delivers about 70 cars to the RI and picks up 35 to 40. The train leaves Cedar Rapids at 7:00 p.m. and returns about 2:00 a.m.

The CRANDIC has three switch engines assigned to Corn Sweeteners. They go on duty at 7:00 a.m., 3:00 p.m. and 11:00 p.m. daily except Saturday and Sunday. On Saturday and Sunday, two jobs are worked at Corn Sweeteners, going on duty at 7:00 a.m. and 7:00 p.m. In addition to switching Corn Sweeteners, these engines switch Harnischfeger and handle traffic to and from the CNW interchange.

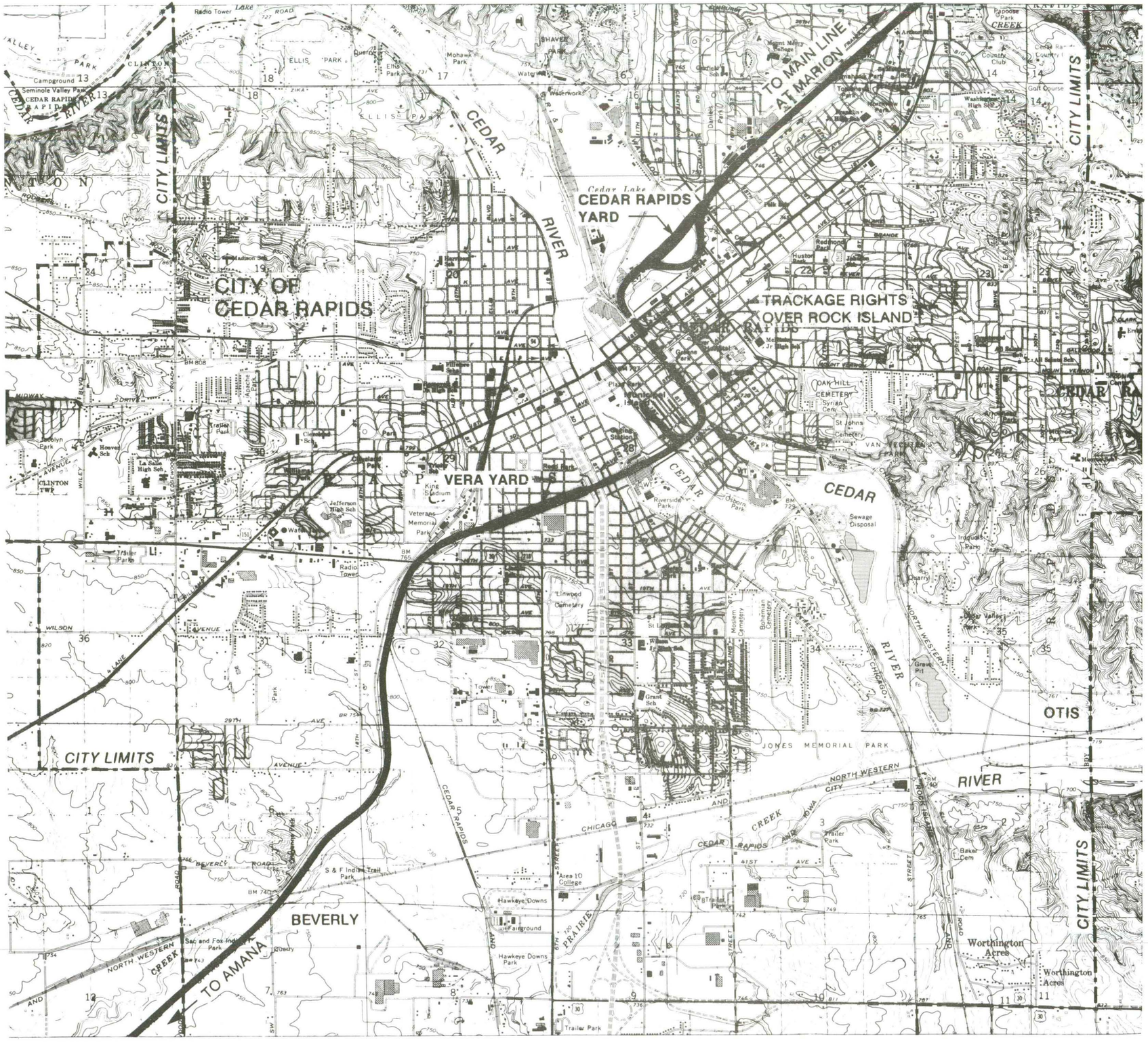
Monday through Friday, two engines are assigned at Uptown Yard, one going on duty at 6:30 a.m. and the other at 5:00 p.m. One 10:00 a.m. assignment operates Saturday and Sunday. These engines switch Uptown Yard, Lower Yard, handle MILW interchange, and switch all Cedar Rapids industries located on the CRANDIC except for Corn Sweeteners and Harnischfeger.

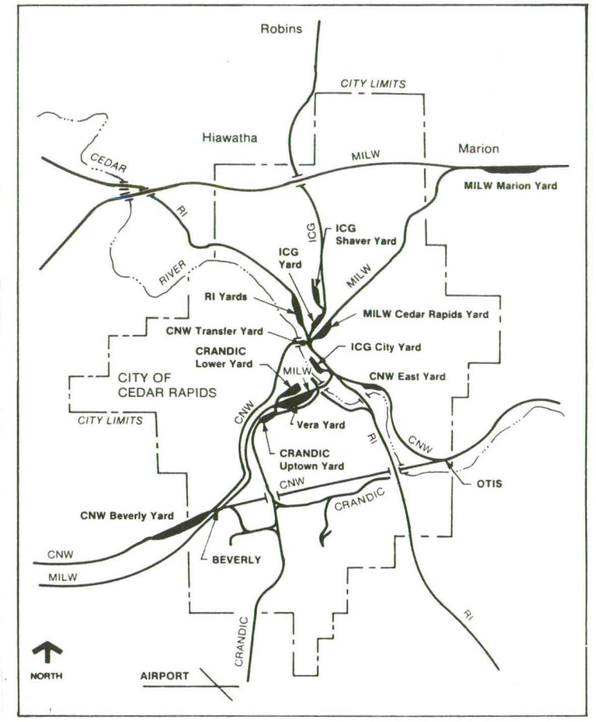
CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILROAD COMPANY (MILW)

The Chicago, Milwaukee, St. Paul and Pacific Railroad Company (MILW), as shown on Figure II-3 and II-4, has two lines that pass through the Cedar Rapids area. One is the former main line between Chicago, Illinois and Council Bluffs, Iowa, which passes through Marion in an east-west direction. The other is a branch diverging from the main line at Indian Creek Interlocking, which is located on the west side of Marion, passing through Cedar Rapids, and extending to Ottumwa, Iowa.

The former main line to Council Bluffs runs from Savanna, Illinois through Marion and Perry, Iowa, and terminates in Council Bluffs, Iowa. Once a high-speed passenger and freight route, the track maintenance has been deferred for a number of years; consequently, its condition has severely deteriorated. Although the current timetable indicates maximum authorized speed to be 40 mph, the entire line is restricted to 10 mph because of poor track conditions. West

FIGURE II-3





KEY MAP

NORTH

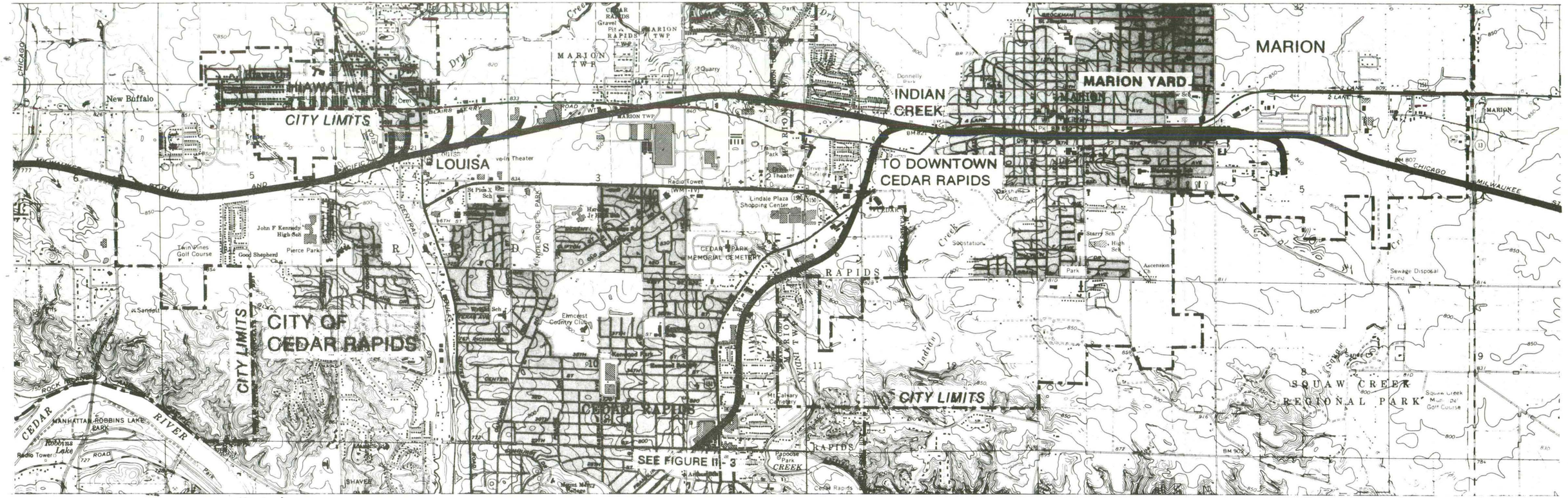
SCALE IN FEET

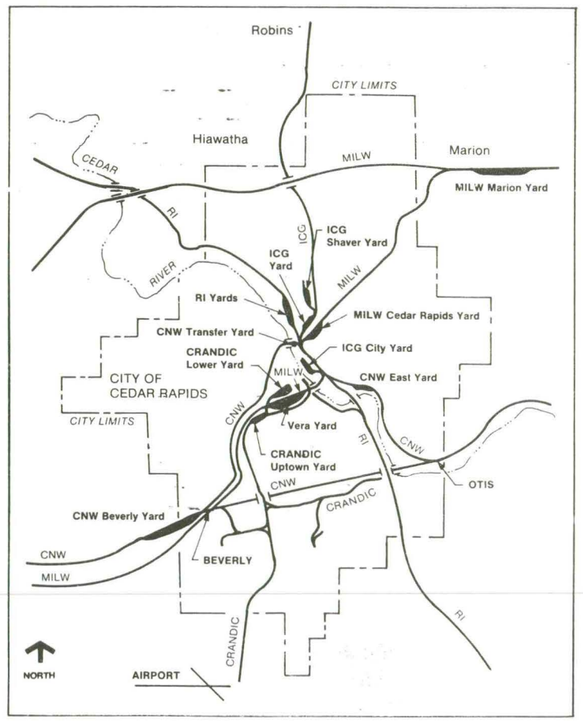
0 3000 6000

MILW FACILITIES IN THE METROPOLITAN AREA

LINN COUNTY RAILROAD STUDY

FIGURE II-4





KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

MILW FACILITIES IN THE METROPOLITAN AREA

LINN COUNTY RAILROAD STUDY

of Indian Creek, the rail is 132#, while east of this point, it is 115# and 112#. In the Cedar Rapids area, the ballast consists of fouled pit-run gravel and the ties are in poor condition. Because of this, the line and surface are poor. Train movement is governed by a Centralized Traffic Control system between Kelsey and Tama, which is controlled by the train dispatcher in Perry. Currently, the MILW does not use this portion of the line for through-freight service between Chicago and Council Bluffs. Instead, between Tama and Clinton, Iowa, through freights are operated over the CNW. However, local service is maintained on this line.

The line between Indian Creek and Ottumwa passing through Cedar Rapids and Amana is laid with 90#, 100#, and 112# rail, much of which is surface-bent. Ties are deteriorated and the gravel ballast is badly fouled, resulting in overall poor track condition. Timetable speed is 25 mph, but the entire line is restricted to 10 mph because of track deficiencies. Train movement is governed by timetable and train orders.

Yards and Facilities

Marion Yard, on the east side of Marion, contains seven tracks with a total capacity of about 300 cars. Yard trackage is mostly 90# rail in fair condition. Ties are poor and the gravel ballast badly fouled. The overall condition is fair.

Facilities at Marion Yard includes a TOFC ramp, which handles about 12 trailers per month, and a locomotive fueling station. No car repair is work done at Marion. Personnel headquartered at Marion Yard include a trainmaster, roadmaster, assistant roadmaster, chief of police, district manager of adjustment services, a clerk, and five yard clerks at the yard office; a section foreman, and a laborer.

Marion Yard is used mainly as a termination and origin point for one daily through freight to and from Savanna, for locals operating east and west of Marion, and for transfer runs to and from Cedar Rapids.

Cedar Rapids Yard, on the east side of Cedar Lake, contains 19 tracks with a total capacity of about 500 cars. Yard trackage is mostly 80# and 90# rail in fair to poor condition. Ties are badly deteriorated (about 70 percent defective) and the gravel ballast is completely fouled and overgrown with weeds. The general condition of the yard is poor.

Cedar Rapids Yard is the focal point of MILW's operation in town and is used mainly as a service yard for industries in Cedar Rapids and for interchange with the RI, ICG, CNW, and CRANDIC. Transfers are operated between Cedar Rapids Yard and the Vera Yard.

Facilities at Cedar Rapids Yard include a track scale, a yard office, and an engine house. About 10 to 12 cars are weighed on the track scale each day. Locomotive service is limited to sanding and fueling, with occasional running repairs. Car repairs are handled on two repair tracks, which have a capacity of about 18 cars. Personnel headquartered at Cedar Rapids Yard include one general yardmaster, three yardmasters, and five clerks. One car foreman, two carmen, two mechanics, one section foreman, and three laborers make up the maintenance force at Cedar Rapids Yard.

MILW's third yard in the Cedar Rapids area is Vera Yard, which extends west from the Penick & Ford plant to 12th Street. The four tracks in this yard have a capacity of about 180 cars. Trackage is mainly 80# rail, in fair condition. Ties are fair to poor, and the gravel ballast is fouled and weed-covered. The yard is crossed at four locations by streets. The overall condition of the yard is fair.

Vera Yard is used to store interchange cars with the CRANDIC and serves as a termination and origin point for trains No. 398 and 399, which operate to and from Perry. There are no maintenance facilities or personnel at Vera Yard.

In addition to operating facilities and personnel, the MILW has a regional data processing office at the freight house in downtown Cedar Rapids. This office is staffed by about 25 clerks under the direction of a regional manager of accounting.

Train and Yard Operations

Between Marion and Savanna, the MILW currently runs one train daily except Sunday in each direction. These trains, No. 106 and 107, are routed over the old main line and do local switching, as well as handling through traffic along the way. No. 107 is scheduled to arrive in Marion at about 3:00 a.m. and No. 106 is scheduled to depart at about 3:00 p.m.

Between Cedar Rapids and Perry, three trains per week normally operate on an irregular schedule in each direction. These trains, No. 398 eastbound and No. 399 westbound, operate over the CNW between Vera and Tama. Train No. 398 usually terminates at Vera Yard and No. 399 originates there.

Between Cedar Rapids and Amana, one local freight going on duty at 9:00 a.m. makes a round trip daily except Sunday. This train carries 10 to 15 cars per trip, serves the industry in the Amana area, and does any necessary switching between Cedar Rapids and Amana.

A way freight, doing all enroute switching, works out of Marion five days a week. On Monday and Thursday, it makes a round trip between Marion and Hopkinton. On Tuesday and Friday, it makes a round trip between Marion and Maquoketa, and on Wednesday, it runs west to Tama and back.

Three yard engines (one each shift) operate out of Marion daily except Sunday. The crews are responsible for switching at Marion Yard, serving industries in Marion and Louisa, and moving cars to and from Cedar Rapids. One transfer move to Cedar Rapids is normally made each shift.

Interchange movements and industrial servicing in Cedar Rapids are handled by five yard engines assigned at Cedar Rapids Yard. Two engines work first and second shift, with one on third. These engines do all local industry work and make interchange deliveries to all other railroads.

CHICAGO AND NORTH WESTERN TRANSPORTATION COMPANY

The east-west main line of the Chicago and North Western (CNW) between Chicago and Council Bluffs/Fremont, as shown on Figure II-5, passes through the south edge of Cedar Rapids. The CNW has an 8.1-mile city track branching off the main line at a location known as "Otis" on the southeast edge of the city which makes a loop through Cedar Rapids. This city line follows the Cedar River north to the downtown area and follows 4th Street north to C Avenue, where it heads west and crosses the Cedar River. From there, the line runs southwest to the main line connection on the southwest edge of the city just east of Beverly Yard. This spur was the main line until the early 1920's, when the Linn County Cutoff, the present main line, was built. The spur through the city was used by passenger trains until passenger service was discontinued. It is presently used for

731.34
1/24/80
RCP

p.2 Define key objectives? 1-4
Define responsibilities of each participant?

Railroad Base Data:
Location[1,2,3], condition[1,2] capacity[2] characteristics[1,2,3]
of (1) trackage (2) yards. (3) service facilities

Capacity of interchange points

Location & special facilities

p.4 Planned physical changes over next 5 yrs.

Trains ~~Stated~~ Schedules, frequencies

Terminal - transfers + yard moves

Volume per segment

Schedule volume delivery method at interchanges

Op speeds, running times.

Labor agreements

Switch patterns for major industry

5-yr. Operational changes

Phase II to address this outline. 1/24/80

IDENTIFIED PROBLEM AREAS AND POSSIBLE SOLUTIONS AND IMPROVEMENT ALTERNATIVES

1. Insufficient Supply of Serviceable Rail Cars

Possible Solutions

1. Industries buy or lease cars.

2. Railroads acquire cars.

3. Railroads repair or upgrade bad order cars.

4. Industries finance railroad rehabilitation of cars and be repaid on a rebate basis.

5. Cleaning or upgrading track (possibly joint among railroads) to reduce number of rejected cars.

6. Set up Cedar Rapids car pool with cars furnished by industries or railroads. or State pool.

7. Improve and better coordinate car ordering and distribution procedures. timing of supplies

8. Speed up car movement to get increased car utilization.

2. Inadequate or Inefficient Yards and Connecting Trackage

Possible Solutions

1. Build a new joint yard at some location outside of the center of Cedar Rapids.

limited space in Cedar Rapids
but very expensive and may not solve problems.

2. Joint use of existing yards.

more needed
Milwaukee yard used jointly or as interchange yd.

a. Some or all railroads use MILW yard.

b. CNW use part of existing RI yard.

@ north of quaker oats
labor agreements resolved -

3. Expand Beverly yard. tight on room
main split in yard is not ideal -

4. Use Marion yard for car storage.

lack of storage space all over.

5. Industries finance storage tracks for their cars.

6. Get stored heavy bad orders moved to some location outside of Cedar Rapids.

?

7. When industries have a large number of leased or assigned cars on hand, arrange to store them outside of Cedar Rapids.

3. Poor Condition of Yards and Connecting Trackage

Possible Solutions

1. Retire unnecessary yard and running tracks.
Some even in Cedar Rapids
Sell off old material and clean up.

2. Industries rehabilitate their trackage as necessary.
Industries not carrying their burden.

3. Railroads rehabilitate all trackage to such condition that it is adequate for continued service with routine maintenance. To the extent possible the railroads should fund internally with outside financial assistance if required.

4. Delays Associated With Interchange Movement

Possible Solutions

1. Establish direct interchange between CRANDIC and ICG. Feel strongly here interchanges delay movements ~~Use Milw yard~~.

2. Establish direct interchange between CRANDIC and ~~ICG~~. RI.

3. Set up pool interchange yard - possibly in the MILW yard.

4. Better coordination of interchange movements between railroads.
Not well operated.

5. Lack of Disciplined and Co-ordinated Program for Industrial Switching, Interchange, Classification and Road Movement of Traffic

Possible Solutions

1. Each railroad provide schedules for over-all movement of traffic to and from major gateways and local points.

2. Where appropriate establish regular switch time for industries.

3. Examine blocking now done to see if changes can be made to improve car movement.

4. To the extent possible, each railroad ensure that trains handling Cedar Rapids traffic have adequate power and are within tonnage limits to permit scheduled movement of cars.

INCREASE LOCOMOTIVE POWER SPEEDS UP MOVEMENT AND REDUCES NEED FOR MORE LOCOMOTIVES.

5. Set up a group including a supervisory representative from each railroad to meet on a regular basis to maintain coordination between carriers.

6. Lack of or Inappropriate Location of Track Scales and Other Support Facilities

Possible Solutions

1. CNW install scale at Beverly.
   Planned for Several yrs.

2. Joint use of scale at MILW yard.

3. Establish cleaning and upgrading program on each railroad or joint facility.
   Keep cars clean so they won't be rejected by next industry.

7. Inadequate and Inefficient Configuration or Poor Condition of In-Plant or Industry Owned Trackage

Possible Solutions

1. To the extent possible, expand or revise trackage to permit more efficient operations.

2. Remodel loading and unloading facilities to accomodate modern rail cars.
40' box car outdated.

3. Where not already done, industries take over maintenance responsibility for in-plant trackage.

8. Car Delays Caused By Industry Operating Practices

Possible Solutions

1. Unload inbound cars promptly.
some set loaded

2. Bill outbound cars when loaded or ordered out of plant. delay in billings

3. Industries furnish railroads with accurate forecast of equipment needs as far in advance as possible.

4. Industries give railroads accurate switch orders as far in advance as possible and keep changes in instructions to a minimum.

5. Minimize grain inspection at Cedar Rapids.
Probably not a big problem
Grain dropped to 25% of 7 yrs ago.
Zero grain inspection in C.R. is goal.

9. Rail-Highway Conflicts - Fourth Street Corridor

Possible Solutions

Rock Isl. to Quaker Oats.

1. Reduce trackage to one main line between 1st and 9th Avenue. Too much now.

2. Upgrade remaining main line for 25 mph maximum speed. Now 10 mph max.

3. Install remote control power switches and necessary signaling to permit continuous rail movements through corridor.
manually line them now. Takes stop time

4. Modernize crossing warning devices.
Review Not modern. Circuits set for wrong speeds motion detectors. 65% activated w/o ~~rail~~ train

5. Complete connection between ICG and MILW yards.

6. Study feasibility of grade separation(s).
Costly.

7. Rebuild all grade crossings in connection with trackwork. Rubber or high type.
Street repairs

8. To the extent possible minimize rail movements during peak traffic periods. Can be done but not popular.

Other Areas That Warrant Consideration

1. Provision for continued service to industries located on the Milwaukee Road which might be accomplished by:

   . One carrier taking over all MILW trackage.

   . MILW trackage being split up with sections served exclusively by two or more railroads.

   . Two or more carriers having joint operating rights and access to some or all industries located on MILW.

2. Retire trackage in the City yard area to permit redevelopment. Transp. Center being constructed. New Library 4th St. River, 9th Ave.

3. Retire part of MILW line between Cedar Rapids and Marion. CNW might take Milw.

FUNDING CONSIDERATIONS

Possible Sources of Funding

1. Cost participation by railroads.
   Chances slim unless maintenance savings, 2 yr. return desirable.

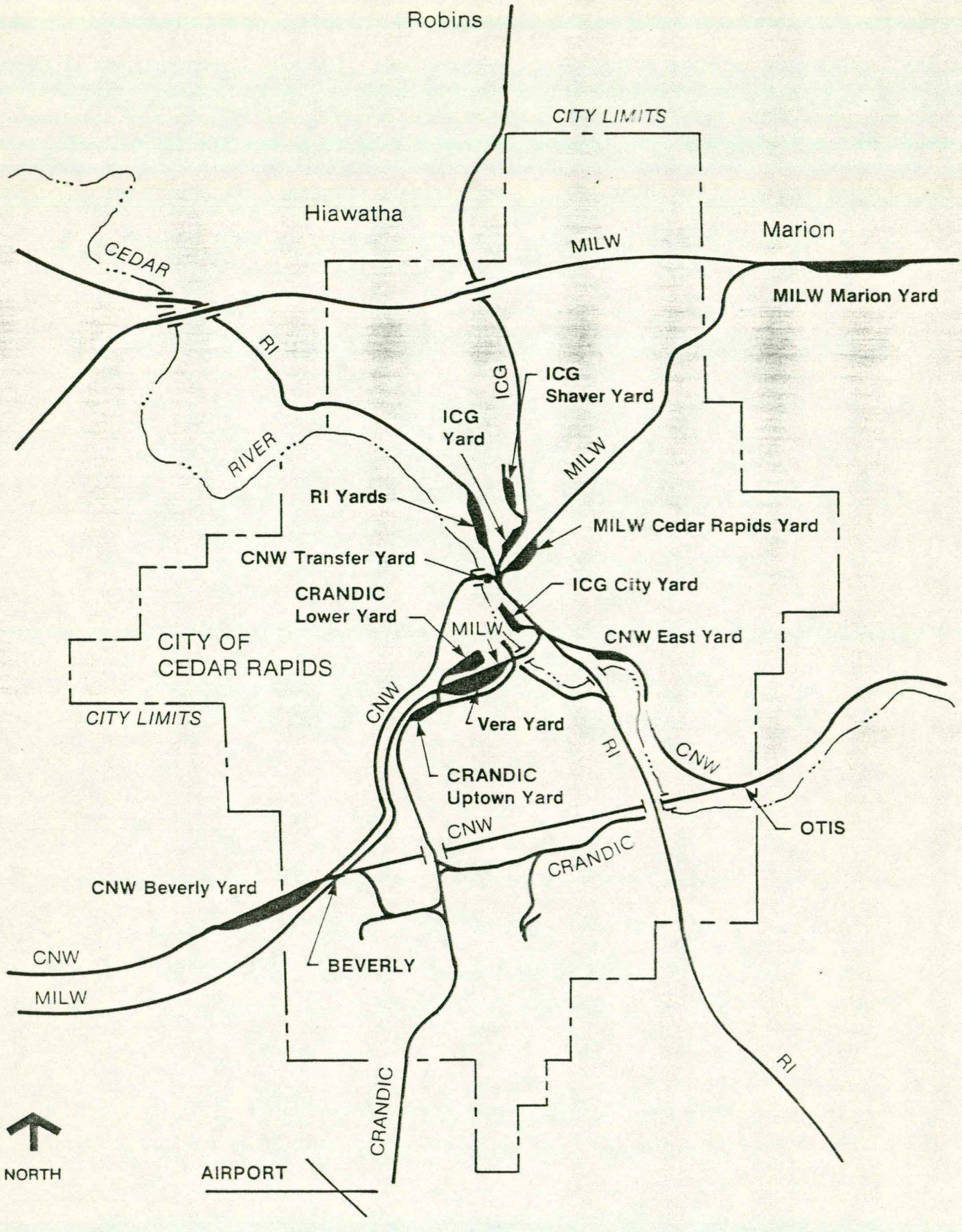
2. Cost participation by industries.
   possible

3. Federal programs

   - 4R funds - Big $, but loans
   - HUD grants -
   - FHWA funds -

4. State assistance programs.
   Branchlines $1.8m in FY'81
   Future may include terminals. $10m. May not get approved

5. Local funding (frequently bond issues).
   Low interest loan to RR



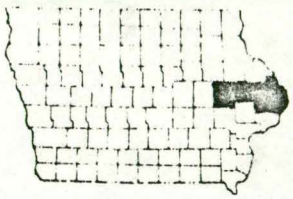
METROPOLITAN RAIL SYSTEM
LINN COUNTY RAILROAD STUDY

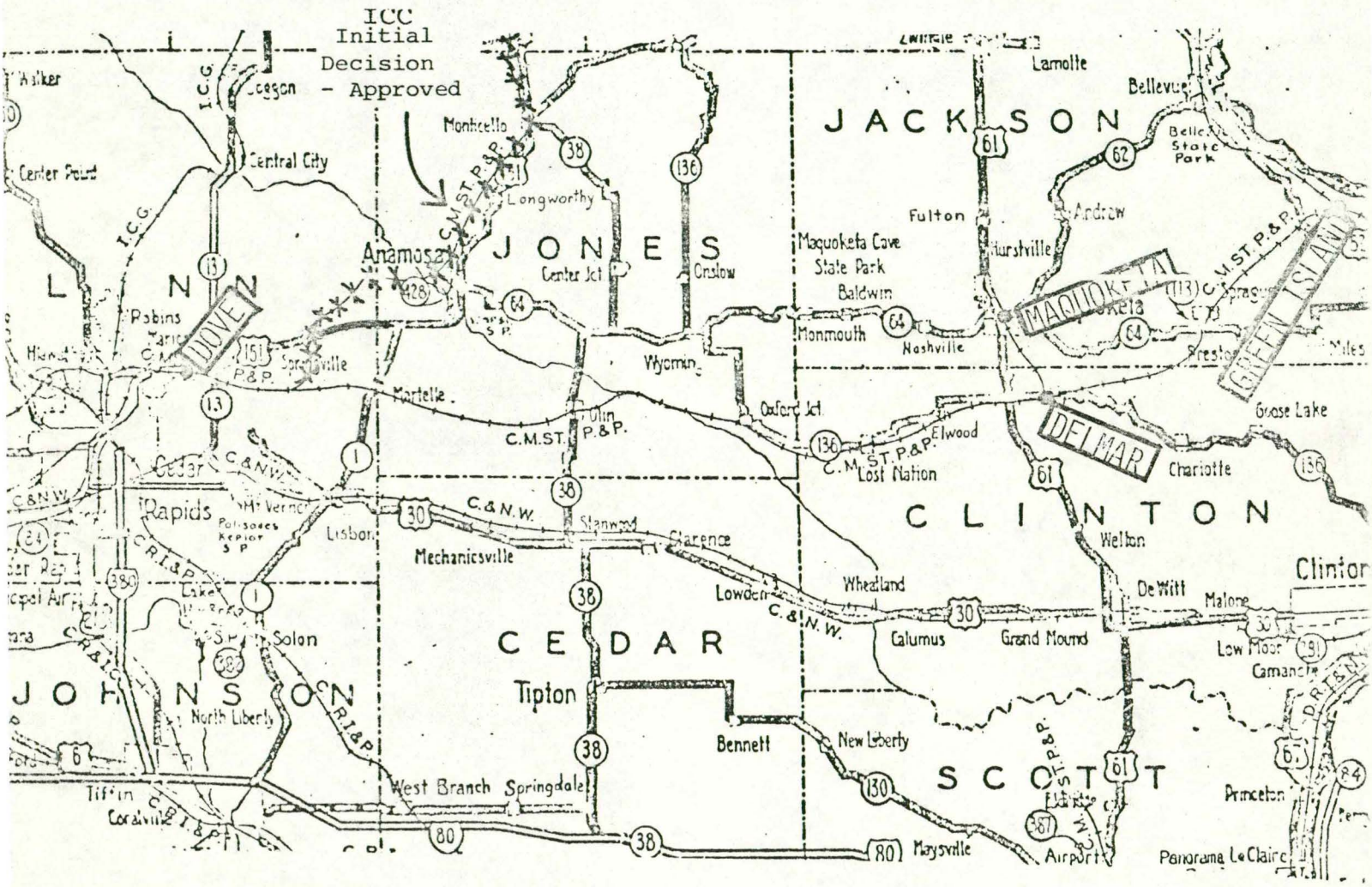
April 17, 1979

ABANDONMENT APPLICATION

STAFF REPORT
Iowa Department of Transportation

Green Island to Dove ; Maquoketa to Delmar
Chicago, Milwaukee, St. Paul
and Pacific Railroad Company
ICC Docket No. AB-7 (Sub-No. 81F)





I. Timetable

Notice of Intent	February 26, 1979
Public Meeting	October 18, 1978
Application Filed	March 21, 1979
Public Meeting	April 12, 1979
DOT Commission Meeting	April 17, 1979
Final Date for Comments	April 25, 1979
Earliest Effective Date if Application Approved	May 20, 1979

II. Railroad Abandonment Proposal

1. Proposal

The Chicago, Milwaukee, St. Paul and Pacific Railroad Company (Milwaukee) proposes to abandon the line of railroad known as a portion of the Chicago - Omaha mainline extending from milepost 152.5 near Green Island to milepost 225.9 near Dove including the Maquoketa Branch extending from milepost 26.7 near Delmar to milepost 33.2 near Maquoketa, a distance of 79.9 miles, in Jackson, Clinton, Jones and Linn Counties, Iowa. Service will continue for shippers at Dove, and Green Island.

2. Reasons for Abandonment

The Milwaukee states in their application the following:

a) The demand for service on the lines are insufficient to justify continued operations.

b) The lines are in poor physical condition, requiring a substantial expenditure to maintain the track.

c) The lines will not produce a reasonable return on any investment that may be made to rehabilitate it.

d) The operation of these lines, without the through traffic, drains the limited financial resources of the applicant.

III. Rail Service

1. Since December 11, 1978, by authority of the ICC, Milwaukee's through trains have been operating over the Chicago and North Western trackage between Clinton and Tama. Prior to December, 1978, local service was provided by through trains. Local service is now provided in both directions by a crew which operates six days per week between Savanna, Illinois, and Atkins, Iowa, via Green Island; and by a crew which operates on Tuesday and Friday between Marion and Maquoketa via Delmar.

2. Shippers Identified on Lines*

Delmar (Pop. 599)
Farmers Supply Center

Maquoketa (Pop. 5677)
Clinton Engines Corp.
American Feather Company
Golden Sun Feed, Inc.
Hutchinson Lumber Co.
Cornelius Farm Store
Lamb Fertilizer
Andrew Coop (Andrew)
Martin Ag Service (Preston)
Buckhorn Sales
Maquoketa Newspapers, Inc.
Rosenburg Auto Supply
Maquoketa Lumber
Mississippi Valley Milk Prod.
Iowa Electric Light & Power
Hide Company
Anamosa Silo

Lost Nation (Pop. 547)
Farmers Coop
Consumers Coop Association

Oxford Junction (Pop. 666)
Steffens Farm Supply

Olin (Pop. 710)
Olin Soil and Feed Service
Ralston Purina
Grays Cashway Lumber

Morley (Pop. 123)
Pro Gro
Morley Feed and Grain

Martelle (Pop. 341)
Martelle Coop
Standard Div. - Amoco Oil Co.

*Includes potential shippers identified.

3. Traffic Data

(See Exhibit A for traffic detail)

Commodity	1976	1977	Jan.-June 1978 Cars	Shipper Project. 1979
Grain	58	176	128	
Fertilizer	158	215	124	
Other	800	723	309	
TOTAL	1,016	1,114	561	1,451

IV. Condition of the Lines

1. General Condition

a) Green Island to Dove:

The Milwaukee Road's application states that the general condition of the railroad line is "poor". Rail on the line is predominately 115-pound with a small amount of 112-pound. Ties are fair; and ballast is gravel generally in poor condition. The bridges appear in adequate condition. The Milwaukee Road stated that more than 90 miles of the total distance of approximately 128 miles between Green Island and Tama are restricted to 10 mph.

Delmar to Maquoketa:

The track is laid primarily with 65-pound rail, laid second hand. The bolts and angle bars are well worn as is most of the rail. Cross ties are generally in poor condition. Ballast is a mixture of gravel and dirt. Line and surface are poor and drainage is fair.

b) A review of the condition of these lines has been made by state inspectors in May and September of 1978. The report on these lines confirms the Milwaukee's description of the condition of the lines.

2. Maintenance and Upgrading Costs

a) Green Island to Dove:

The Milwaukee estimates that the cost is $576,742 to maintain this rail line for 1979 without an initial upgrading.

The applicant states that the cost is estimated at $2.4 million if they rehabilitate this line to Class 2 standards to handle 263,000 pound loads at 25 mph. (Exhibit B-1)

Delmar to Maquoketa:

The Milwaukee estimates that the cost is $82,223 to maintain this rail line for 1979 without an initial upgrading.

The applicant states that the cost is estimated at $1.6 million if they rehabilitate this line to Class 2 standards to handle 263,000 pound loads at 25 mph. This segment would require complete rail relay. (Exhibit B-2)

b) The Iowa DOT cost analysis for maintenance and upgrading of these lines is consistent with the the Milwaukee estimate. (Exhibit C-1, C-2, C-3)

V. Financial Data

1. Revenue and Costs

	1976	1977	6 months ended June 30, 1978
Revenues	$358,436	$414,589	$205,837
Avoidable Costs	$616,949	$648,901	$326,219
Net Revenue (loss)	($258,513)	($234,312)	($120,382)

2. Subsidy

The Milwaukee's revenues and costs for the base year July, 1977, to June 30, 1978, and the projected subsidy year are as follows:

	Base Year July '77-June '78	Projected Subsidy Year
Total Revenues	$421,447	$ 476,981
Total Avoidable Costs	636,374	1,193,585
Avoidable Loss from Operations	$214,927	$ 716,604
Estimated Subsidy	$997,661	$1,507,761

VI. DOT Analysis

1. Transportation Service Available

a) Rail

The Illinois Central Gulf Railroad has a north-south line from Manchester, Iowa to Cedar Rapids, Iowa. The Chicago and North Western has an east-west line that parallels the Chicago, Milwaukee, St. Paul & Pacific Railroad line. The Chicago, Milwaukee, St. Paul and Pacific Railroad has a north-south line that parallels the Mississippi River.

b) Highway

Highway 30 and Highways 151 and 64, east-west routes that parallel the Dove to Green Island line. North-south highways that cross the line on Highways 1, 38, and 61. Arterial 561, a future 4-lane divided facility, is proposed to be located in the U.S. 61 corridor from Davenport to Dubuque. The Iowa DOT 5-Year Transportation Improvement Program identifies completion of 561 to DeWitt by 1981 and tentative improvements from DeWitt to the Jackson County line by 1984. All stations on the line are served by Interstate Motor Freight System and Key Line Freight. Increase in truck traffic on area highways is estimated to be 3030 trucks annually, or 8.3 trucks per day, should rail service be discontinued.

c) Water

Service is available on the Mississippi River at Clinton, Dubuque and Davenport. Delmar is 27 miles from Clinton. Maquoket is less than 40 miles from Clinton, Dubuque or Davenport. Dove is 90 miles from Clinton.

d) Air

Passenger and cargo service are available at Cedar Rapids, Dubuque and the Quad Cities.

2. State Rail Plan

A benefit/cost ratio was developed for this line. Benefits computed were defined as the transportation costs which would be saved if a shipper could transport his commodities by rail as opposed to using trucks. The costs used are the upgrading and maintenance costs, minus salvage value of track. A benefit/cost ratio of 1.0 indicates that for every dollar of costs to upgrade and/or maintain and use the line, shippers may realize a dollar of benefits in transportation cost savings.

GENERAL CONDITIONS COMMON TO ALL B/C RATIOS
1) Shipper based quantities
2) Maquoketa's nearest railhead is 23 miles away at DeWitt.

				ALTERNATIVE A		ALTERNATIVE B	
	Dove - Delmar Maquoketa - Green Island 79.9 mi.	Dove - Delmar 52.9 mi.	Maquoketa - Delmar 6.5 mi.	Maquoketa - Dove 59.4 mi.	Maquoketa - Dove 59.4 mi.	Maquoketa - Green Island 27 mi.	Maquoketa - Green Island 27 mi.
Specific Line Condition	CLASS 2 263,000 lb. Load Limit	CLASS 2 263,000 lb. Load Limit	CLASS 2 263,000 lb. Load Limit..... Assume mainline service is provided.	CLASS 2 263,000 lb. Load Limit	CLASS 2 Present load limit between Maquoketa & Delmar.	CLASS 2 263,000 lb. Load Limit	CLASS 2 present Load Limit... between Maquoketa - Delmar.
Grain	105,323	97,888	7,435	105,323	105,323	11,337	11,337
Fertilizer	49,738	38,794	10,944	49,738	49,738	16,192	16,192
Other Products	62,486	7,755	54,731	62,486	62,486	57,604	57,604
TOTAL BENEFITS	217,547	144,437	73,110	217,547	217,547	85,133	85,133
ANNUAL COSTS	508,989	318,474	67,099	385,573	352,504	190,515	157,446
Benefit/Cost Ratio	.43	.45	1.09	.56	.62	.45	.54

Alternative A with B/C ratio .52 assumes Maquoketa would be served via Dove (59.4 line haul miles). Alternative B with B/C ratio .46 assumes Maquoketa would be served via Green Island (27.0 line haul miles). Alternative A requires operation of 30 additional line haul miles, thus increasing operating costs in fuel and labor over Alternative B. The B/C ratio includes the additional trucking and handling costs to the shippers divided by the costs to reinvest in the rail line. The B/C ratio does not address railroad operating costs. Because of the difference in line haul mileage, operation costs must be evaluated in determining the total cost of providing rail service.

3. Public Contact

Public meetings were held at Cedar Rapids and Maquoketa on October 18, 1978, to review the abandonment procedures and to gather information concerning the Milwaukee's intent to abandon the lines from Green Island to Dove; Delmar to Maquoketa; and Tama to Louisa. Rail Shipper Survey Forms were distributed at the meetings to the shippers. Attendance at the Cedar Rapids and Maquoketa meetings was approximately 37 and 50 respectively.

In addition, the staff attended a meeting on January 2, 1979, called by shippers on the Green Island to Dove and Maquoketa to Delmar lines.

A meeting was held on April 12, 1979, in Maquoketa to review the draft staff report. Additional information was received from shippers and interested persons which has been reviewed and included in this final report.

4. Industrial Development Potential

The Iowa Development Commission was contacted to determine if there is new or expanded industrial development along these lines. They were not aware of any new industry or expansions of existing industry. Local officials could not identify new rail oriented industry which plans to locate on these lines. However, local officials believe there is future industrial potential if rail service is maintained. An industrial park was built in Maquoketa several years ago and has been successful in attracting industry to this community. Eight (8) industries have located in the industrial park. Three (3) of these industries use rail. There are presently four (4) sites remaining and additional land is under improvement for expansion. A company which processes raw hides had planned to install a rail spur prior to the filing of the abandonment application.

5. Property Tax

1977 Taxes (Total)

Jackson	$10,319
Clinton	8,864
Jones	9,711
Linn (half of county)	5,971
	$34,865

Recommendation

It is the recommendation of the staff that the Transportation Commission support the retention of service to the community of Maquoketa, if the communities and/or shippers along these lines provide a financial committment toward the continuation of rail service.

The recommendation is based on the following:

1. The community, railroad, shippers and the Iowa Development Commission encouraged the expansion of industrial development in the past.

2. Alternate service options are available, should rail service be discontinued.

3. Elimination of redundant mainlines within corridors of excess capacity is consistent with Iowa DOT policy.

4. Railroad companies should not be required to continue an unprofitable operation which imposes a financial drain on the company.

5. Identified traffic is insufficient to support a profitable rail operation under present conditions.

6. No definite new industrial development requiring rail service has been identified by local officials, however, local officials believe there is potential if rail service is maintained.

EXHIBIT A

TRAFFIC DATA

Town & Commodity		1976	1977	(10 Mo.) 1978	Projected 1979
		(All Shippers)		Significant Shippers	
Delmar					
Grain		2	1		
Fertilizer		12	13		
Other		123	88		
	TOTAL	137	102	43	82
Maquoketa					
Grain		1	-		
Fertilizer		46	38		
Other		269	306		
	TOTAL	316	344	149	619
Lost Nation					
Grain		-	-		
Fertilizer		49	58		
Other		-	3		
	TOTAL	49	61	50	130
Oxford Junction					
Grain		-	3		
Fertilizer		24	17		
Other		13	13		
	TOTAL	37	33	49	120
Olin					
Grain		10	3		
Fertilizer		5	6		
Other		401	405		
	TOTAL	416	414	272	377
Morley					
Grain		4	18		
Fertilizer		1	7		
Other		-	-		
	TOTAL	5	25		96
Martelle					
Grain		36	103		
Fertilizer		20	31		
Other		-	1		
	TOTAL	56	135	106	27
Total on Line		1,016	1,114	718	1,451

EXHIBIT B-1

Chicago, Milwaukee, St. Paul & Pacific Railroad

Estimated Cost
To Upgrade From Green Island to Dove (73.4 mi.)
FRA Class 2 (25 mph Standard) 263,000 pounds

ITEM	QUANTITY	UNIT COST	MATERIAL	LABOR	TOTAL
Rail Anchors, New 10/Rail	197,100	$ .90	$ 177,390		
Track Spikes - 400 kegs	800 CWT	26.00	29,800		
Cross Ties - New 300/mi	22,200	13.00	288,600		
Switch Ties - New	25 MBM	320.00	8,000		
Crossing Timber	2.7 MBM	410.00	8,500		
Drive Spikes	720	1.25	900		
Bituminous Surfacing	40 Ton	50.00	2,000		
Ballast - 440 CY/Mi.	32,600 cy	4.30	140,180		
Store Expense - OTM		11%	2,288		
Purchase Expense - Ballast		1%	1,402		
Trans. of Material	4,400,000 Tmi	.0125	55,000		
Equip., Reds & Fuel	73 mi.	3,550.00	259,150		
SUB TOTAL			$ 964,210		
Contingencies		10%	96,421		
TOTAL MATERIAL			$1,060,631		$1,060,631
Renew Cross Ties	22,200	8.50		$ 188,700	
Unload & Apply Bal.	32,600 cy	8.50		277,100	
Line & Dress Track	74 mi.	4,500.00		333,000	
Repair Grade Crossings		8.25		10,000	
Labor Additives		37%		299,256	
Risk Insurance		9.5%		76,836	
SUB TOTAL				$1,184,892	
Contingencies		10%		118,489	
TOTAL LABOR				$1,303,381	$1,303,381
TOTAL COST					$2,364,012

EXHIBIT B-2

Chicago, Milwaukee, St. Paul & Pacific Railroad

Estimated Cost
To Upgrade From Delmar to Maquoketa (6.5 mi.)
FRA Class 2 (25 mph Standard) 263,000 pounds

ITEM	QUANTITY	UNIT COST	MATERIAL	LABOR	TOTAL
Rail,100#SH CWR 68640 L.F.	1,144	$ 200.00	$ 228,800		
Welded Joints(Shop) 312/mile	2,028	27.39	55,547		
Welded Joints(Field) 8/mile	52	54.20	2,818		
Yarding	2,080	1.06	2,205		
Cropping	2,080	4.73	9,838		
Rail Anchors 8400/mi.	54,600	0.90	49,140		
Tie Plates 7-3/4 x 13N 42,250 ea.	8,374	19.13	160,195		
Track Spikes	1,215	26.00	31,590		
Turnouts #10-100#	10	2,633.	26,330		
Cross Ties 1500/mi.	9,750	13.00	126,750		
Switch Ties 10 sets	37.71	320.00	12,067		
Hwy. Crossings	120	30.00	3,600		
Ballast 2138 cy mi.6"	13,900	4.30	59,770		
Store Expense - Rail	1,144	0.89	1,018		
Store Expense - OTM	270,855	11%	29,794		
Pur. Exp.-Ballast	59,770	1%	598		
Transp. of Material	9,410,940	.0125	117,637		
Equip.,resp.&fuel	6.5	3,550	23,075		
SUB TOTAL			$ 940,772		
Contingencies @ 10%			94,077		
TOTAL - TRACK MATERIAL			$1,034,849		$1,034,849
Relay Rail - CWR	6.5	14,000		$ 91,000	
Relay Turnouts	10	3,000		30,000	
Renew Crossties	9,750	8.50		82,875	
Renew Switch Ties	670	16.80		11,256	
Unload & Apply Ballast	13,900	8.50		118,150	
Line & Dress Track	6.5	4,500		29,250	
Repair Grade Crossings	120	8.25		990	
Labor Additives	363,521	37%		134,503	
Risk Insurance	363,521	9.5%		34,534	
SUB TOTAL				$532,558	
Contingencies @ 10%				53,256	
TOTAL - TRACK LABOR				$585,814	$ 585,814
GROSS COST OF TRACK WORK			$1,034,849	$585,814	$1,620,663
Less Salvage					
Rail, Scrap	741	60.00	cr. 44,460		
OTM, Scrap	1413	2.50	cr. 3,533		
NET COST TO UPGRADE LINE			$ 986,856	$585,814	$1,572,670

EXHIBIT C-1

IOWA DEPARTMENT OF TRANSPORTATION
Estimated Cost
To Upgrade Track to
FRA Class 2 (263,000 pounds) 25 mph Standards
Between Dove and Delmar, Iowa (52.9 miles)

ITEM	QUANTITY	UNIT COST	MATERAIL	LABOR	TOTAL
Rail Anchors, New 10/Rail	144,000	.90	129,600		
Track Spikes	720 kegs	55.00	39,600		
Cross Ties - New 680/Mile	35,000	13.00	455,000		
Asphalt Crossings	10	350.00	3,500		
Ballast - 1200 CY/Mi.	63,000 CY	4.00	252,000		
TOTAL MATERIAL			879,700		879,70
Renew Cross Ties	35,000	8.50		297,500	
Unload & Apply Bal.	63,000 CY	8.50		535,500	
Line & Dress Track	53 Mi.	4,500.00		238,500	
Repair Grade Crossings	10	500.00		5,000	
SUBTOTAL				1,076,500	
Labor Additives		44%		473,660	
TOTAL LABOR				1,550,160	1,550,16
TOTAL COST					$2,429,86

EXHIBIT C-2

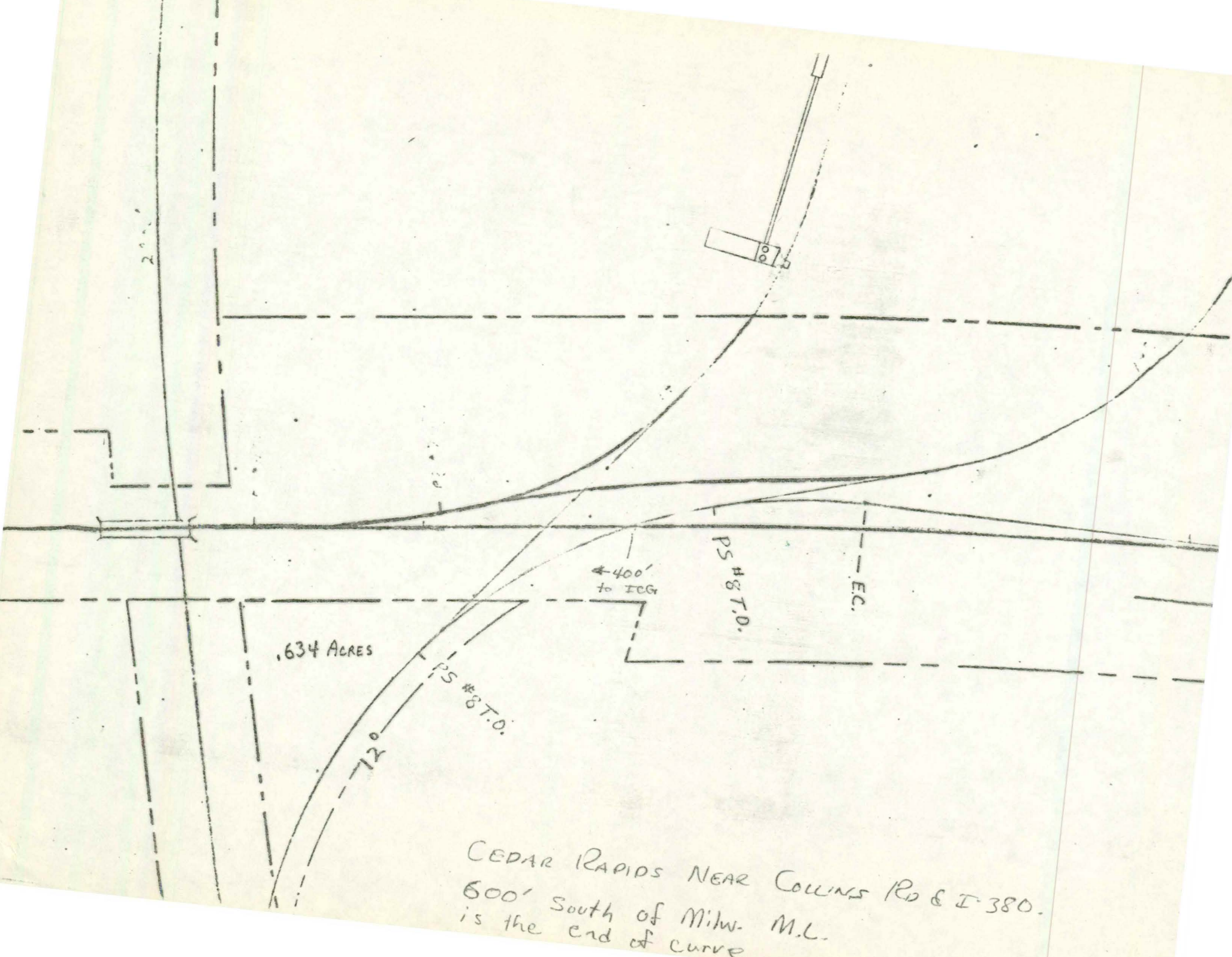
IOWA DEPARTMENT OF TRANSPORTATION
Estimated Cost
To Upgrade Track to
FRA Class 2 (263,000 pounds) 25 mph Standards
Between Delmar and Green Island, Iowa (20.0 miles)

ITEM	QUANTITY	UNIT COST	MATERIAL	LABOR	TOTAL
Rail Anchors, New 10/Rail	54,400	.90	48,960		
Track Spikes	270 kegs	55.00	14,850		
Cross Ties - New 680/Mile	13,600	13.00	176,800		
Asphalt Crossings	2	350.00	700		
Ballast - 1200 CY/Mi.	24,000 CY	4.00	96,000		
TOTAL MATERIAL			337,310		337,31
Renew Cross Ties	13,600	8.50		115,600	
Unload & Apply Bal.	24,000 CY	8.50		204,000	
Line & Dress Track	20 Mi.	4,500.00		90,000	
Repair Grade Crossings	2	500.00		1,000	
SUBTOTAL				410,600	
Labor Additives		44%		180,664	
TOTAL LABOR				591,264	591,26
TOTAL COST					$928,574

EXHIBIT C-3

IOWA DEPARTMENT OF TRANSPORTATION
Estimated Cost
To Upgrade Track to
Maintain Service Without Rail Relay
Between Maquoketa and Delmar, Iowa (6.5 miles)

ITEM	QUANTITY	UNIT COST	MATERIAL	LABOR	TOTAL
Rail Anchors, 4/New Tie	23,400	.90	21,060		
Track Spikes	117	55.00	6,435		
Cross Ties - New 900/Mile	5,850	13.00	76,050		
Asphalt Crossings	7	350.00	2,450		
Ballast - 1500 CY/Mi.	9,750	4.00	39,000		
TOTAL MATERIAL			$144,995		$144,995
Renew Cross Ties	5,850	8.50		49,725	
Unload & Apply Bal.	9,750	8.50		82,875	
Line & Dress Track	6.5 Mi.	4,500.00		29,250	
Repair Grade Crossings	7	500.00		3,500	
SUBTOTAL				165,350	
Labor Additives		44%		72,754	
TOTAL LABOR				238,104	238,104
TOTAL COST					$383,099



CEDAR RAPIDS NEAR COLLINS RD & I-380.
600' South of Milw. M.L.
is the end of curve

2/13/80

The City favors Alt #1
The state may favor Alt #1 because they like the K.C. Southern RR.
A map is being prepared to show these two alternates RCP

ALTERNATIVE I

Assumptions:

1. Milwaukee ceases all operations into Cedar Rapids and Marion.

2. Rock Island ceases all operations into Cedar Rapids and no other road uses existing main tracks.

3. All Milwaukee and Rock Island trackage and facilities within the metropolitan Cedar Rapids area, and the Milwaukee Line to Amana are available for acquisition by the CNW, CRANDIC and/or the Illinois Central Gulf.

4. All existing industries that have rail access will continue to be served by one of the surviving railroads.

Recommended Plan:

1. Illinois Central Gulf acquire Milwaukee facilities and operate between Louisa and Marion and between Indian Creek and Menard Lumber Co.

   Reasons:

   a. Illinois Central Gulf is located better, geographically, to serve this area.

   b. By constructing a connection from the Illinois Central Gulf to the Milwaukee at Louisa, a portion of the Milwaukee Line from Indian Creek to Cedar Rapids can be abandoned.

   c. If CNW or CRANDIC would operate this portion of the Milwaukee, a considerable amount of track rehabilitation would be required between Cedar Rapids and Indian Creek.

   d. Would keep additional rail traffic off the 4th Street corridor.

2. CRANDIC acquire Milwaukee facilities from Amana through downtown Cedar Rapids to Iowa Manufacturing except between Beverly Tower and Vera.

Reasons:

a. CRANDIC should have direct access to 6th Street power plant and direct interchange with ICG.

b. CRANDIC can serve Amana more economically than any other carrier.

c. By building a new connection south of Beverly Tower, existing CNW-Milwaukee interlocking including rail crossings can be retired.

d. If Milwaukee City Yard team track facilities are relocated to CRANDIC's Uptown Yard, it would release property for redevelopment.

3. ICG have operating rights in Milwaukee Cedar Rapids Yard for interchange with CRANDIC, access to and use of scale, access to National Oats via Milwaukee, and whatever other track usage is required. For access to the Milwaukee Yard the transfer track from the ICG Yard to the Milwaukee Yard presently under construction should be completed.

Reasons:

a. ICC should have direct interchange with CRANDIC.

b. ICG use of Milwaukee scale would eliminate need for scale in ICG City Yard.

c. If ICG gets additional trackage in Milwaukee Cedar Rapids Yard, team tracks and other trackage in City Yard could eventually be retired and land made available for redevelopment.

d. Rail traffic would be reduced through 4th Street corridor.

4. CNW would acquire Milwaukee trackage between Beverly Tower and Vera.

Reasons:

a. CNW would gain storage tracks.

b. Trackage is of no use to other railroads.

5. CNW have operating rights between Vera and 9th Avenue Tower.

   Reasons:

   a. Would permit straight movements between Rock Island Yard and Beverly Yard.

   b. Would permit eventual retirement of some trackage between Beverly yard and the Transfer Yard.

   c. Would give the CNW more operational flexibility.

6. CNW would acquire all Rock Island facilities and operations from north end of Cedar River bridge to North Yard limits of Cedar Rapids Yard.

   Reasons:

   a. Would give CNW needed yard space and improve trackage layout in downtown area.

   b. Would give CNW access to a scale in the downtown area and eliminate movement of cars to East Yard for weighing and also eliminate the need for scale at Beverly.

   c. Would permit CNW operation of trains directly into and out of Rock Island Yard rather than to Beverly Yard and subsequent transfer moves.

   d. Trackage in Mill and Transfer Yard could be retired which would release property for possible use by Quaker Oats.

   e. Needed rehabilitation of Transfer and Mill Yard trackage would be avoided.

   f. Grain inspection could all be done in Rock Island Yard, releasing track space at Beverly Yard.

   g. Expansion of Beverly Yard could be avoided.

7. CRANDIC acquire Rock Island from north end of yard to Palo (for access to power plant) and have operating rights from Transfer Yard to North Yard limit board.

   Reasons:

   a. Rail access to power plant at Palo must be maintained.

   b. CNW does not want to take over this portion of Rock Island main line, but CRANDIC would.

8. CRANDIC acquire switching now done by Rock Island at Pennick & Ford by means of new connection in plant.

   Reasons:

   a. Will allow CNW to avoid maintenance of Rock Island's Cedar River bridge and approximately 1.25 miles of lead track.

   b. Pennick & Ford is open to reciprocal switching and ICG and CNW could compete for and get road haul on all traffic.

   c. For amount of inbound Rock Island traffic involved, CRANDIC could handle more efficiently.

9. Rock Island downtown trackage north of 9th Avenue and west of 4th Street should be phased out and facilities relocated.

   a. The property would be available for redevelopment.

   b. Facilities should be located closer to yard to minimize yard engine time.

ALTERNATIVE II

Assumptions:

1. Milwaukee ceases all operations into Cedar Rapids and Marion.

2. KCS acquire Rock Island facilities and operations.

3. All Milwaukee trackage and facilities within the metropolitan Cedar Rapids area and the line to Amana would be available for acquisition by the CNW, CRANDIC, KCS, and/or the ICG.

4. All existing industries that have rail access will continue to be served by one of the surviving railroads.

Recommended Plan;

1. ICG acquire Milwaukee facilities and operate between Louisa and Marion and between Indian Creek and Menard Lumber Co.

   Reasons:

   a. ICG is located better, geographically, to serve this area.

   b. By constructing a connection from the ICG to the Milwaukee at Louisa, a portion of the Milwaukee Line from Indian Creek to Cedar Rapids can be abandoned.

   c. If CNW or CRANDIC would operate this portion of the Milwaukee, a considerable amount of track rehabilitation would be required between Cedar Rapids and Indian Creek corridor.

   d. Would keep additional rail traffic off of the 4th Street corridor.

2. CRANDIC acquire Milwaukee facilities from Amana through downtown Cedar Rapids to Iowa Manufacturing, except between Beverly Tower and Vera.

   Reasons:

   a. CRANDIC should have direct access to 6th Street power plant and direct interchange with ICG.

b. CRANDIC can serve Amana more economically than any other carrier.

c. By building a new connection south of Beverly Tower, existing CNW-Milwaukee interlocking including rail crossings can be retired.

d. If Milwaukee City Yard team track facilities are relocated to CRANDIC's Uptown Yard, it would release property for redevelopment.

3. ICG have operating rights in Milwaukee Cedar Rapids Yard for interchange with CRANDIC, access to and use of scale, access to National Oats via Milwaukee, and whatever other track usage is required. For access to the Milwaukee Yard the transfer track from the ICG Yard to the Milwaukee Yard presently under construction should be completed.

Reasons:

a. ICG should have direct interchange with CRANDIC.

b. ICG use of Milwaukee scale would eliminate need for scale in ICG City Yard.

c. If ICG gets additional trackage in Milwaukee Cedar Rapids Yard, team tracks and other trackage in ICG City Yard could eventually be retired and land made available for redevelopment.

d. Rail traffic would be reduced through the 4th Street corridor.

4. CNW would acquire Milwaukee trackage between Beverly Tower and Vera.

Reasons:

a. CNW would gain storage tracks.

b. Trackage is of no use to other railroads.

5. CNW have operating rights between Vera and 9th Avenue Tower.

Reasons:

a. Would permit straight movements between Rock Island Yard and Beverly Yard.

b. Would permit eventual retirement of some CNW trackage between Beverly Yard and the Transfer Yard.

c. Would give the CNW more operational flexibility.

6. CNW would acquire Rock Island City Yard and two tracks in Grain Yard.

Reason:

a. This would give CNW needed yard space and improve the trackage layout in the Transfer Yard area.

b. Trackage in Transfer Yard and Mill Yard could be retired. This could release property for possible use by Quaker Oats.

c. Needed rehabilitation of Transfer and Mill Yards could be avoided.

d. KCS would still have adequate yard space in the remainder of the Rock Island yards.

7. CRANDIC would perform switching in the Pennick & Ford plant now done by Rock Island.

Reason:

a. Would permit abandonment of approximately 1.25 miles of lead track which is presently in poor condition.

b. Pennick & Ford is open to reciprocal switching and all carriers could compete for the road haul.

c. For amount of inbound Rock Island traffic involved, CRANDIC could handle traffic more efficiently.

8. Rock Island downtown trackage north of 9th Avenue and west of 4th Street should be phased out.

Reason:

a. The property would be available for redevelopment.

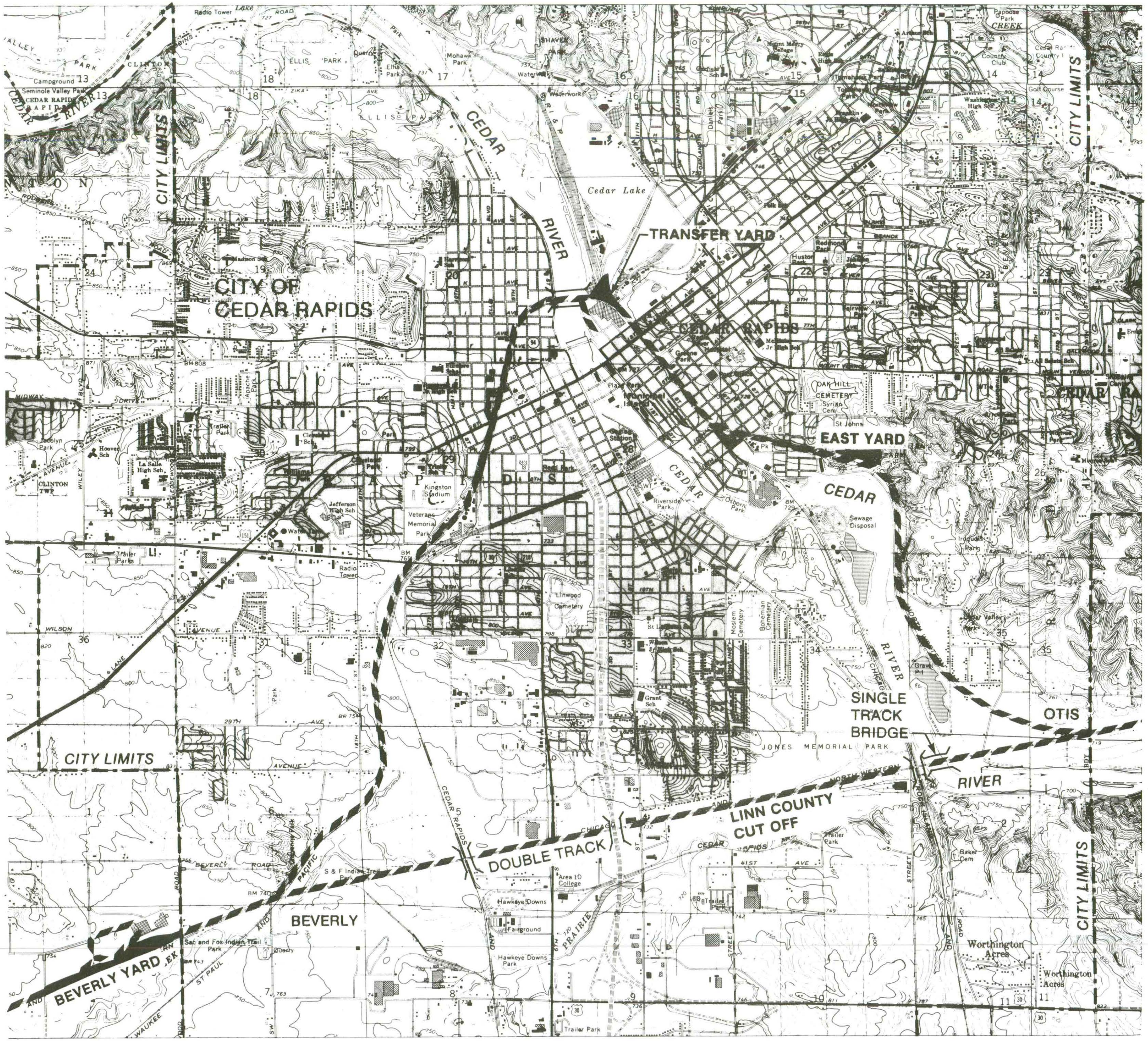
b. Facilities should be located closer to yard to minimize yard engine time.

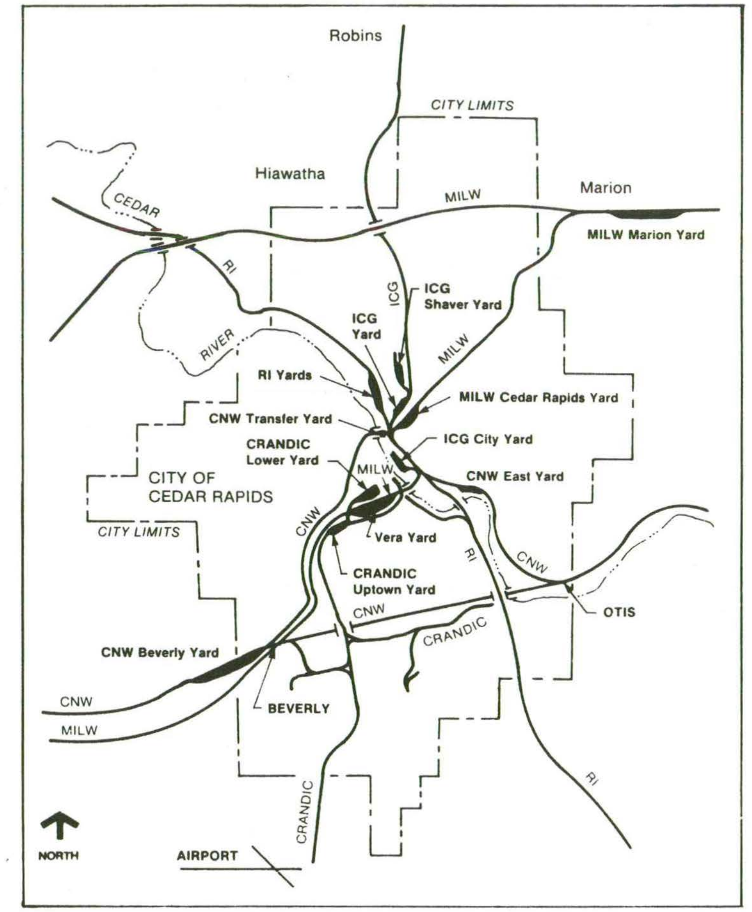
9. CNW has access to use of Milwaukee scale in Cedar Rapids yard.

Reason:

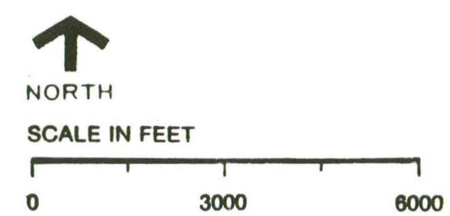
a. Would eliminate moving car to East Yard for weighing.

b. Would eliminate need for scale at Beverly.





KEY MAP



CNW FACILITIES IN THE METROPOLITAN AREA
LINN COUNTY RAILROAD STUDY

access to local industries. Nearly all of the industries served by the CNW in Cedar Rapids are located on this line.

The Chicago-Council Bluffs/Fremont main line is the CNW's highest-density route connecting with the Union Pacific at Council Bluffs and Fremont.

The double track main line is currently being extensively rehabilitated. The eastward main track is being retied, undercut, and surfaced on granite ballast. New 136# continuously welded rail is being laid. The westward main consists of 112# and 115# jointed rail. Ballast is a mixture of slag and crushed rock, which is starting to become fouled in places, affecting the line and surface of the track. The ties are marginal, with 20 percent in need of replacement. The westward main track is also programmed for complete rehabilitation in the near future.

Train movements are governed by an automatic block system and cab signals. Maximum speeds are 70 mph for piggyback trains, 60 mph for manifest trains, and 40 and 50 mph for coal trains, loaded and empty, respectively. These speeds are permitted only on the rebuilt eastward main. Because of track conditions, the westward main is generally restricted to 30 or 40 mph.

The city spur track consists of 112# jointed rail with predominantly gravel and stone ballast. The ties are in fair condition, with approximately 30 percent in need of replacement. Train and engines must not exceed 10 mph except between the Wilson Avenue crossing and Beverly, where train movements are governed by yard limit rules, with a speed limit of 20 mph.

Yards and Facilities

The CNW has three yards in Cedar Rapids. The largest is Beverly Yard, just west of Edgewood Drive on the southwest side of Cedar Rapids. This yard is the focal point of the CNW's operations in Cedar Rapids. It contains 20 yard tracks, with tracks 1 through 14 on the north side of the main tracks and 15 through 20 on the south side. Tracks 1 through 9 are the main switching tracks in the yard; all cars from Cedar Rapids are normally classified there, and outbound traffic is switched and blocked on these tracks. Tracks 10, 11 and 12 are used for car repair. Tracks 13 and 14 are used for car cleaning, although this activity has been largely curtailed. Inbound cars are switched on tracks 15 through 20, with tracks 19 and 20 used as grain inspection tracks, when required. Through trains normally pick up

cars on the north side and set out on the south side. Capacity of the yard is approximately 750 cars.

The condition of Beverly Yard is generally fair. The north side (tracks 1 to 14) consists mainly of 80# and 90# rail, with some of the leads being 100# and 112#. Much of the rail in the body of the yard is surface-bent, with numerous end breaks. Ties are marginal, with about 50 percent defective. The ballast is basically gravel, which has become fouled. Turnouts are predominantly #8's with self-guarded frogs, and are in fair condition. The south side (Tracks 15 to 20) consists of 90# and 100# rail, #8 turnouts with self-guarded frogs, and crushed stone ballast. Ties are in good condition (20 percent defective), and the overall condition of this section of the yard is good, as it was constructed in 1968.

Car repair work is performed during two shifts Monday through Friday and one shift Saturday and Sunday. The car department force consists of a car foreman and 17 carmen. An average of 15 to 20 cars are repaired daily. Car cleaning is done by carmen, with one or two carmen cleaning an average of ten cars per day. All cars are cleaned, but not washed, and are destined for Cedar Rapids industries.

Locomotive maintenance work is limited to minor repairs and inspections performed by one mechanic in charge, working third shift. Engines are also fueled and sanded at Beverly, as required.

No other car and locomotive maintenance or servicing is performed in the Cedar Rapids area.

Other personnel at Beverly include a trainmaster, assistant trainmaster, eight administrative clerks, eleven yard clerks, and two operators. The maintenance-of-way staff consists of a roadmaster, two track inspectors, four signalmen, and a maintenance gang that includes a foreman and nine laborers.

In addition to the personnel at Beverly, an agent and six clerks are headquartered in the CNW's freight office in downtown Cedar Rapids.

The Transfer Yard, adjacent to the Quaker Oats plant just east of the Cedar River, consists of 15 tracks with a total length of approximately 8,000 feet. Both of the old main lines extending from the east end of the yard to the Cedar River bridge are also used as yard tracks, adding about

3,500 feet to the available yard space. Tracks are extremely short, and nearly all lay on curves, which results in a very inefficient configuration. Trackwork is mainly 80# and 90# rail in poor condition. Ties are badly deteriorated. Ballast is badly fouled gravel and cinders. The entire yard is in very poor condition.

The main function of the Transfer Yard is to service Quaker Oats. It is also used for interchange with the ICG, MILW and RI, and engines switching East Yard and other industries operate from here. Four yardmasters and five clerks, working three shifts, are assigned to this location.

There is a considerable amount of additional trackage within the Quaker Oats plant on both sides of the CNW yard. Most tracks have very sharp curvature, and the entire layout is cramped and operationally inefficient.

East Yard, near the Cargill Corn Plant on the southeast side of town, consists of three tracks outside the Cargill plant with a total length of about 5,900 feet. In addition, the running track east of East Yard is normally used for car storage. Cargill owns one track north of the main line, which has a capacity of 50 cars and is used to store inbound cars. East Yard is used mainly for switching the Cargill Corn Plant and for car storage. The CNW's only track scale in Cedar Rapids is located at East Yard, and all cars requiring weighing must be moved to and from East Yard. About 15 cars per day are weighed, most of them outbound cars from Cargill, Quaker Oats, and Diamond V Mills. The yard tracks are mostly 80# and 90# rail in fair condition, except that ties are becoming marginal. Five other tracks are located within the Cargill plant area. No CNW personnel are assigned at East Yard, and switching is performed by engines operating out of the Transfer Yard. Yard clerks from the Transfer Yard office are assigned to weigh cars.

Beverly Tower is located where the MILW branch line to Amana and Ottumwa crosses the CNW main line. The tower is operated on a call basis by the operator at Beverly Yard. The MILW must contact the CNW operator before leaving Cedar Rapids to line the crossing at Beverly for MILW moves to and from Amana.

The CNW has a connection with the MILW at "Vera," near Wilson Avenue on the southwest side of town. This interchange was built around 1970, mainly to eliminate the delays to Penick & Ford traffic that resulted when these cars were

handled through the Transfer Yard. Penick & Ford traffic has decreased, and the interchange facility is now used only by MILW trains operating between Perry and Cedar Rapids.

Train and Yard Operation

CNW main line operations through Cedar Rapids are extremely heavy, with about 30 through freights and one local run daily. In addition, an average of five MILW through freights and one Perry-Cedar Rapids train are run each day on a trackage rights arrangement. Cedar Rapids is an intermediate point, and no trains originate or terminate here. Generally, about 10 to 12 of the scheduled freights may pick up or set out cars at Beverly each day. Tonnage and traffic considerations govern what trains will do the work on any particular day.

Twelve blocks are classified at Beverly for pickup by through trains. The blocks are:

- Clinton
- Proviso
- Nelson
- Peoria
- St. Louis
- St. Louis, Alton and Southern
- Tama
- Marshalltown
- Boone and West
- Kansas City
- Union Pacific, North Platte and beyond
- Burlington Northern

Table II-1 presents approximate schedules of the trains normally performing pickup and setout work at Cedar Rapids, and the traffic handled.

The CNW normally operates 12 yard engines daily in Cedar Rapids; five go on and off duty at Beverly, and the remainder at the Transfer Yard. Certain assignments may be abolished or extra engines operated as traffic fluctuates. The regular complement of yard engines and the work performed by each are listed in Table II-2.

Table II-1

TRAIN SCHEDULES THROUGH CEDAR RAPIDS

Westbound

Train	Origin	Destination	Scheduled Time at Cedar Rapids	Pick Up Traffic Destined	Sets Out Traffic Originating
141	Chicago (Proviso)	Kansas City	6:00 p.m.	Kansas City	None
247	Chicago (Proviso)	Fremont	9:00 a.m.	Union Pacific, Burlington Northern	None
253	Chicago (Proviso)	Boone	8:00 p.m.	Boone, Marshalltown	Chicago
391	St. Louis (A&S)	Boone	12:00 Noon	Boone, Marshalltown	St. Louis
395	Madison, Illinois (St. Louis)	Boone	1:00 a.m.	Boone, Marshalltown	St. Louis
Local	Clinton	Belle Plaine	Bi-weekly M-Th	Local points between Cedar Rapids and Belle Plaine	Local points between Cedar Rapids and Belle Plaine

Eastbound

Train	Origin	Destination	Scheduled Time at Cedar Rapids	Pick Up Traffic Destined	Sets Out Traffic Originating
142	Kansas City	Chicago (Proviso)	10:00 p.m.	Proviso	None
258	Council Bluffs	Chicago (Wood St.)	6:00 a.m.	Clinton, Proviso	None
260	Council Bluffs	Chicago (Proviso)	9:00 a.m.	Clinton, Proviso	Council Bluffs, Boone, Marshalltown
384	Boone	St. Louis (A&S)	7:00 a.m.	St. Louis (A&S)	None
392	Boone	St. Louis	3:30 a.m.	Peoria, St. Louis	None
Local	Belle Plaine	Clinton	Bi-weekly T-Fri	Local points between Cedar Rapids and Clinton	Local points between Belle Plaine and Cedar Rapids

Table II-2

YARD ENGINES

Job No.	On Duty Location	On Duty Time	Frequency	Normal Work
01	Transfer Yard	7:00 a.m.	Daily	Interchange work, switches cars out of Quaker Oats, sets up cars for delivery to Beverly Yard
02	Beverly Yard	7:00 a.m.	Daily	Works north side of Beverly Yard, blocks outbound cars, runs cars to and from town, spots and pulls car repair tracks
03	Transfer Yard	7:00 a.m.	Monday-Friday	Switches Quaker Oats Plant
10	Beverly Yard	7:00 a.m.	Daily	Works south side of Beverly Yard, switches inbound traffic for interchange and local industries, delivers and pulls CRANDIC interchange
04	Transfer Yard	3:00 p.m.	Monday-Friday	Same as 03
05	Beverly Yard	3:00 p.m.	Daily	Same as 02
06	Transfer Yard	3:00 p.m.	Daily	Same as 01
11	Transfer Yard	3:00 p.m.	Daily	Works Cargill Corn Plant, weighs cars
12	Beverly Yard	3:00 p.m.	Monday-Friday	Same as 10
07	Transfer Yard	11:00 p.m.	Monday-Friday	Same as 01
08	Transfer Yard	11:00 p.m.	Monday-Friday	Same as 03
09	Beverly Yard	11:00 p.m.	Monday-Friday	Same as 02, also works industries along main line

CHICAGO, ROCK ISLAND AND PACIFIC RAILROAD COMPANY (RI)

The main line of the Chicago, Rock Island and Pacific (RI), as shown on Figure II-6, runs generally north and south through Cedar Rapids, along the east side of the Cedar River, before crossing the river on the southeast side of town. The line runs south from Cedar Rapids to West Liberty, where it intersects the RI route between Chicago and Council Bluffs, through Columbus Jct., where it intersects the RI Chicago-Kansas City line, and then continues to Burlington, Iowa. North of the Cedar Rapids, the line extends to Manly and Iowa Falls, where it connects with routes to Minneapolis and Estherville. The single-track main line north and south of Cedar Rapids is mainly #110 and #112 jointed rail in good condition. The ties are in good condition, and the slag and rock ballast is fairly clean. The line and surface on the track is generally good. The section of main track through downtown Cedar Rapids, however, is in very poor condition; the 100# rail is worn and bent, the ballast is completely fouled, and the ties are badly deteriorated.

Timetable speed is 40 mph south of RI Cedar Rapids Yard and 30 mph to the north, with a speed restriction of 10 mph through downtown Cedar Rapids. Main line train movements are governed by an automatic block signal system, except in Cedar Rapids between the CNW crossing (9th Avenue) junction switch and B Avenue, where all train and engine movements are governed by the operator at 9th Avenue Tower.

Yards and Facilities

The RI has a yard complex, with four interconnected yards, between the Cedar River and Cedar Lake on the northeast side of Cedar Rapids. The main switching yard is divided into South Yard and North Yard. The South Yard is directly off the main line and has 11 tracks (tracks 2 to 12) with a capacity of about 336 cars. The South Yard is used for classification, with cars being blocked for outbound trains. The CNW also delivers interchange cars into this yard. The North Yard consists of nine tracks (tracks 13 to 21) with a capacity of about 500 cars. The North Yard is used for classification also. Grain is inspected either in the South Yard or the North Yard, depending on the availability of an open track. The condition of the South and North yards is generally good. The yard tracks consist of 80# and 90# rail in good condition; ties are fair, with 35 percent defective. Most of the ballast consists of cinders.

FIGURE II-6

ROCK ISLAND YARDS

RI HAS TRACKAGE RIGHTS OVER ICG TO NATIONAL OATS

SINGLE TRACK MAIN LINE

CITY OF CEDAR RAPIDS

BEVERLY

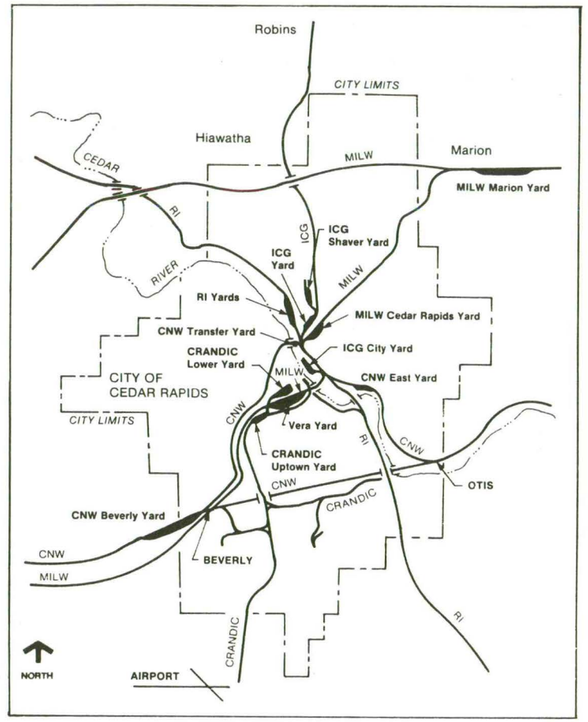
OTIS

CITY LIMITS

CEDAR RIVER

Cedar Lake

JONES MEMORIAL PARK



KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

RI FACILITIES IN THE METROPOLITAN AREA

LINN COUNTY RAILROAD STUDY

The Grain Yard is used to store grain cars destined for Quaker Oats. The RI pulls the cars from the Grain Yard and places them at Quaker Oats' grain dump, where Quaker Oats has a track mobile spot the cars as needed. The Grain Yard consists of four tracks and can hold about 140 cars. The general condition of the yard is fair.

The City Yard is used mainly to hold cars going to industries in Cedar Rapids. Both the MILW and the ICG deliver their interchange cars to the RI at City Yard. The City Yard has nine tracks and a capacity of about 150 cars. The yard trackage is mainly 90# rail, with some 80#, in good condition. The turnouts, mostly #7's and #9's with self-guarded frogs, are also in good condition. The small-stone ballast is slightly fouled. The ties are in relatively good condition, with 35 percent defective. The overall condition of City Yard is good.

The RI facilities include a locomotive fueling and servicing station, a car repair shop, and a yard office and agency. A four-person engine house staff services locomotives and performs inspections and minor repairs. The eight-person car department makes inspections and repairs an average of four cars per day on the car repair tracks. The freight office has 15 clerical employees, under the supervision of the agent. A yardmaster is on duty 24 hours daily. The yard's TOFC ramp handles about 275 trailers monthly. The RI has a scale track opposite the yard office and along the lead to the South Yard. About 20 outbound cars are weighed per day. A clerk from the yard office is responsible for the weighing. All of these facilities are in or adjacent to the old shop area.

The maintenance-of-way force at Cedar Rapids includes two track inspectors, one section foreman, three laborers, one signal lineman, one signal maintainer, and one water service man.

Cedar Rapids is a home terminal for operating crews, and all trains originate or terminate; so, basically, there are no through trains. About 80 enginemen and trainmen are headquartered at Cedar Rapids.

The RI operates the 9th Avenue Tower on the east side of town. The 9th Avenue Tower controls all train and engine movements of the MILW, CNW, RI and ICG between the CNW crossing at 9th Avenue and the MILW junction switch at B Avenue. The tower operator also controls the grade crossing warning devices at 8th, 9th and 10th Avenues. RI operators

man the tower 24 hours daily. The Area Ambulance Service has a hot-line telephone connection with the Tower. Whenever an ambulance has a call on the opposite side of town, they call the 9th Avenue Tower to find out if trains are blocking any of the grade crossings. The tower operator will call the ambulance service if they have a train longer than 50 cars or if a train stops and blocks some crossings.

Train and Yard Operations

The RI's operations in the Cedar Rapids area have been completely disrupted by the recent strike and subsequent partial resumption of service under the management of the Kansas City Terminal by order of the Interstate Commerce Commission. In the Cedar Rapids vicinity, the route south of Columbus Jct. remains out of service because of track and bridge defects. Whether this line will be reopened is not known.

Road train operations are as follows:

Westbound

Train	Frequency	Origin	Destination	Traffic Handled
61	Daily	Silvis	Manly	Cedar Rapids and north
69	Triweekly	Silvis	Cedar Rapids	Cedar Rapids and north
195	Triweekly	Vinton	Iowa Falls	Local
197	Triweekly	Waterloo	Manly	Local
297	Triweekly	Cedar Rapids	Waterloo	Local

Eastbound

Train	Frequency	Origin	Destination	Traffic Handled
62	Daily	Manly	Silvis	Silvis
64	Triweekly	Cedar Rapids	Silvis	Silvis
194	Triweekly	Iowa Falls	Vinton	Local
196	Triweekly	Manly	Waterloo	Local
296	Triweekly	Waterloo	Cedar Rapids	Local

Some extra trains, including unit grain trains, were and continue to be operated.

All engines go on and off duty at the yard office. An average of two extra yard engines are operated weekly based on traffic requirements.

ILLINOIS CENTRAL GULF RAILROAD

The Illinois Central Gulf Railroad (ICG), as shown on Figure II-7, has a main line extending from Chicago, Illinois to Omaha, Nebraska. This line passes through Dubuque, Waterloo, and Fort Dodge, Iowa on its way to Omaha. At Manchester, Iowa, a branch line diverges from the main line and extends 42.1 miles, terminating in Cedar Rapids. This route is the ICG's only access to Cedar Rapids. The branch line is basically 100# jointed rail, with some 90# and 115#. The rail is in good condition for present operations. The ties are good, about 30 percent defective; and slag and stone ballast provides good line and surface for the track. The track is in good overall condition, and maximum authorized speed is 25 mph.

In Cedar Rapids, the ICG has three yards: City Yard, Cedar Rapids Yard, and Shaver Yard. Shaver Yard is part of the Waterloo Railroad, which is a wholly-owned subsidiary of the ICG. City Yard and Cedar Rapids Yard are parts of the ICG Railroad proper.

Cedar Rapids Yard is the main switching yard for the ICG in Cedar Rapids. Situated between Cedar Lake and the Cedar River, the yard consists of seven tracks with a total capacity of about 250 cars. The yard trackage is mostly 90#, with some 100# rail, in good condition. Ties are in good condition (about 25 percent defective), and the small-stone ballast gives the track good line and surface. The overall condition of the yard is good. The yard contains a locomotive maintenance facility, a yard office, and a section headquarters. The yard office is staffed by five clerks and an agent/yardmaster.

A three-man section crew is responsible for track maintenance, and a mechanical foreman is responsible for daily locomotive maintenance. Any major locomotive repairs are done at other facilities. There are no car repair facilities in Cedar Rapids.

The Cedar Rapids Yard is the focal point for the ICG operations in the Cedar Rapids area. All ICG traffic entering and leaving the city passes through this yard. Outbound

FIGURE II-7

END OF WATER LOO RAILROAD

SHAVER YARD

ICG YARD

CITY YARD

TRACKAGE RIGHTS OVER THE ROCK ISLAND AND MILWAUKEE ROAD

CITY OF CEDAR RAPIDS

CITY LIMITS

CITY LIMITS

CEDAR RIVER

CEDAR RIVER

CEDAR RIVER

CEDAR RIVER

CEDAR RAPIDS

CEDAR RAPIDS

BEVERLY

OTIS

CITY LIMITS

CITY LIMITS

JONES MEMORIAL PARK

Cedar Lake

Radio Tower

Campground

Seminole Valley Park

CEDAR RAPIDS

Mohawk Park

Ellis Park

Water Works

Tomahawk Park

Country Club

Golf Course

Washington High Sch

Franklin Jr High Sch

Daniels Park

Roosevelt Jr High Sch

Wilson Jr High Sch

Kenwood Park

Greene Park

Hoover Sch

La Salle High Sch

Jefferson High Sch

Kingston Stadium

Veterans Memorial Park

Riverside Park

Osborn Park

Sewage Disposal

Iroquois Park

Linwood Cemetery

Bohemian Cemetery

Mosiem Cemetery

Grant Sch

Gravel Pit

Trailer Park

Baker Cem

Area 10 College

Hawkeye Downs

Fairground

Hawkeye Downs Park

Sac and Fox Indian Trail Park

S & F Indian Trail Park

Quarry

Worthington Acres

Worthington Acres

Trailer Park

Oak Hill Cemetery

St Johns Cemetery

Van Vechten Park

Mound Park

Prairie Park

Veterans Memorial Park

Cedar Rapids Country Club

Papoose Park

Mount Mary Shrine

Tomahawk Park

Franklin Jr High Sch

Washington High Sch

Golf Course

Country Club

Papoose Park

Creek

Cedar Rapids Country Club

Mohawk Park

Ellis Park

Water Works

Campground

Seminole Valley Park

CEDAR RAPIDS

Radio Tower

Lake

Valley Park

Clinton Park

Ellis Park

Ellis Park

Roosevelt Jr High Sch

Wilson Jr High Sch

Kenwood Park

Greene Park

Hoover Sch

Trailer Park

Carolyn Park

La Salle High Sch

CLINTON TWP

Jefferson High Sch

Water Tower

Kingston Stadium

Veterans Memorial Park

Trailer Park

Radio Tower

Riverside Park

Osborn Park

Sewage Disposal

Iroquois Park

Linwood Cemetery

Bohemian Cemetery

Mosiem Cemetery

Grant Sch

Gravel Pit

Trailer Park

Baker Cem

Area 10 College

Hawkeye Downs

Fairground

Hawkeye Downs Park

Sac and Fox Indian Trail Park

S & F Indian Trail Park

Quarry

Worthington Acres

Worthington Acres

Trailer Park

Oak Hill Cemetery

St Johns Cemetery

Van Vechten Park

Mound Park

Prairie Park

Veterans Memorial Park

Cedar Rapids Country Club

Papoose Park

Mount Mary Shrine

Tomahawk Park

Franklin Jr High Sch

Washington High Sch

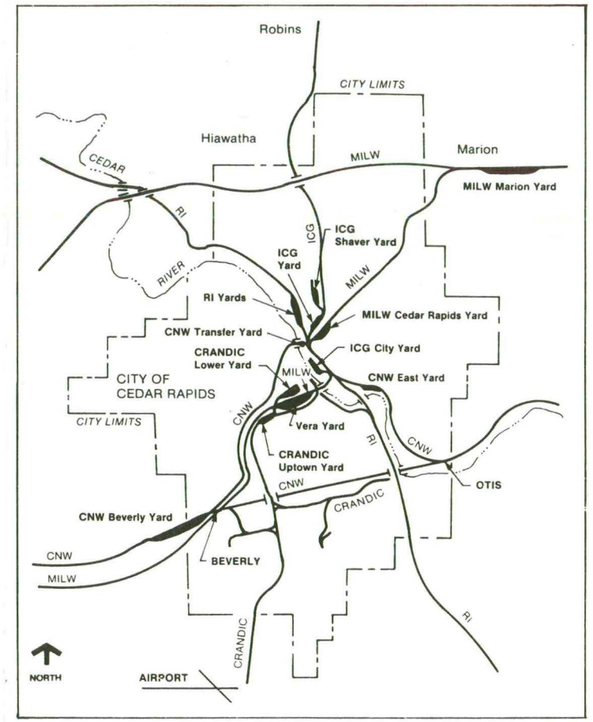
Golf Course

Country Club

Papoose Park

Creek

Cedar Rapids Country Club



KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

ICG FACILITIES IN THE METROPOLITAN AREA

LINN COUNTY RAILROAD STUDY

traffic is blocked here for the following destinations: (1) Dubuque, (2) east of Dubuque, and (3) west of Manchester. Inbound traffic is sorted for movement to the appropriate local industries and interchanges.

City Yard is in the heart of Cedar Rapids, just south of the downtown region between 1st and 2nd Streets, and 5th and 8th Avenues. Access to the yard is over the RI and MILW tracks from D Avenue to 9th Avenue. The yard contains four tracks, which are crossed by roadways at two locations. The yard trackage is primarily 80# rail in fair to poor condition. Ties are in poor condition, with about 60 percent defective. The under-ballast is badly fouled. The overall condition of City Yard is poor. An average of 71 cars per month are weighed on the track scale in City Yard by a clerk from the yard office. This yard serves local industries, with one track serving as a team track.

Shaver Yard is north of the ICG's Cedar Rapids Yard. Comprised of six tracks, it can hold about 200 cars. The physical condition of Shaver Yard ranges from good to poor. The south and north ends of the yard have recently been supplied with 115# switches with self-guarded frogs. The south end of the yard consists of 115# rail, new ties, and small-stone ballast. The remainder of the yard consists of rail ranging between 70# and 112#. The lighter rail is in poor condition; the heavier rail is in good condition, and the ties are marginal. The overall condition of the yard is fair.

This facility is used primarily to store any overflow cars from Cedar Rapids Yard, and for grain inspection.

Yard and Train Operations

The ICG operates one 10:00 a.m. yard engine daily except Sunday. This assignment does all classification and industrial work, as well as interchange movements with other railroads.

One road train, No. 478, is scheduled to depart Cedar Rapids at 4:30 p.m. daily except Sunday. It makes a round trip to Manchester, returning as No. 477, scheduled to arrived in Cedar Rapids at 10:00 p.m. This train sets out outbound cars at Manchester, where they are picked up by other trains operating between Freeport, Illinois and Waterloo, Iowa. Traffic for Cedar Rapids is then picked up. Certain Dubuque

District trains are normally scheduled to set out and pick up at Manchester; however, this varies from day to day because of traffic fluctuations.

INTERCHANGE OPERATIONS

For decades, the essentially unrestricted interchange of traffic between all railroads was regarded as a superior aspect of North American operations as compared to those in other areas of the world. In more recent years, interchange has been properly recognized as an all-too-frequent source of delay to car movement. Elimination of interchange between two railroads is nearly always one of the arguments cited in merger applications. Any terminal area served by two or more railroads usually has a considerable amount of interchange activity, and with few exceptions, traffic delays result.

With five railroads operating in the Cedar Rapids metropolitan area, all of which serve a number of industries, it is not surprising to find problems and delays caused by the interchange of cars. For this reason, interchange between the various railroads was given particular attention.

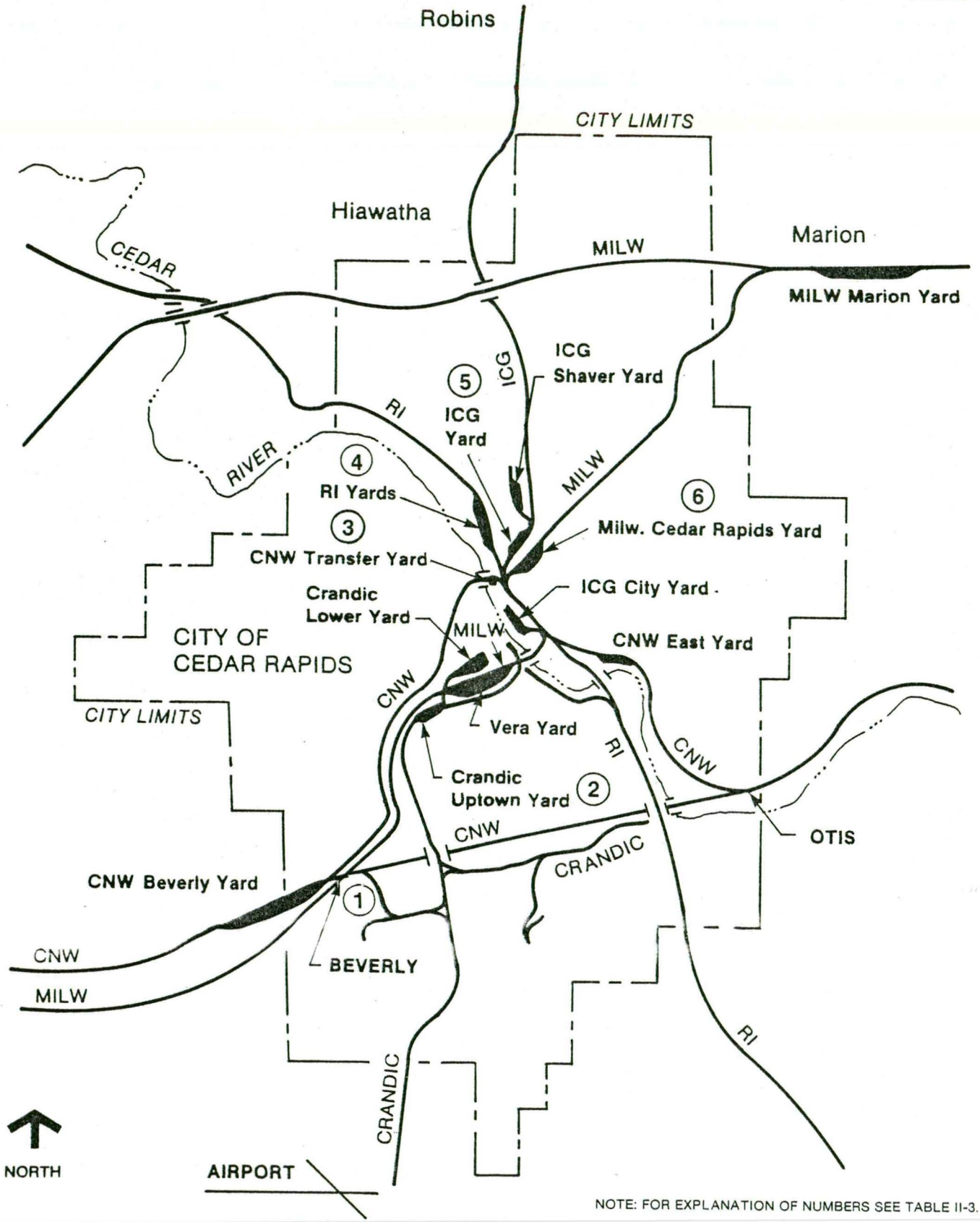
Interchange is either direct, in which two railroads deliver and pull from one another; or indirect, in which the interchange between two railroads is handled by an intermediate carrier.

In Cedar Rapids, all railroads have direct interchange with all others, except that the CRANDIC has an indirect interchange with the ICG and RI via the MILW. The CRANDIC has a direct interchange with the RI at Iowa City, which for various operational and competitive reasons is normally used rather than the bridge route over the MILW in Cedar Rapids.

With one exception, the delivering carrier is responsible for the movement of cars to the receiver carrier. The exception is the CNW-ICG interchange; in this case, the ICG both delivers and pulls.

Figure II-8 graphically indicates where interchanges occur in the Cedar Rapids area. Table II-3 summarizes these operations.

FIGURE II-8



NOTE: FOR EXPLANATION OF NUMBERS SEE TABLE II-3.

INTERCHANGE LOCATIONS
LINN COUNTY RAILROAD STUDY

Table II-3

INTERCHANGE TRAFFIC

FROM \ TO	CRANDIC	MILW	CNW	RI	ICG
CRANDIC		CRANDIC delivers to MILW on transfer tracks at CRANDIC Uptown Yard. (2)	CRANDIC delivers to transfer tracks near Beverly. (1)	CRANDIC delivers RI cars to transfer track at CRANDIC Uptown Yard. MILW pulls cars from CRANDIC to RI Yard Also delivers to RI at Iowa City. (2) (4)	CRANDIC delivers ICG cars to transfer track at CRANDIC Uptown Yard. MILW pulls cars and delivers to ICG Yard. (2) (5)
MILW	MILW delivers along with RI and ICG cars to CRANDIC Uptown Yard. (6) (2)		MILW delivers to CNW Transfer Yard. (3)	MILW delivers to RI City Yard (includes cars from CRANDIC). (4)	MILW delivers to ICG Yard. (5)
CNW	CNW delivers to transfer tracks near Beverly from Beverly Yard. (1)	CNW delivers to MILW Cedar Rapids from CNW Transfer Yard. (6)		CNW delivers to RI South Yard for CNW Transfer Yard. (4)	ICG pulls from CNW Transfer Yard. (3)
RI	RI delivers cars to MILW Cedar Rapids Yard. MILW delivers to CRANDIC at Uptown. Also delivers cars to CRANDIC at Iowa City. (6) (2)	Deliver to MILW Cedar Rapids Yard including cars destined for the CRANDIC. (6)	RI delivers to CNW Transfer Yard. (3)		RI delivers to ICG Yard. (5)
ICG	ICG delivers cars to MILW Cedar Rapids Yard. MILW delivers to CRANDIC Uptown Yard. (6) (2)	ICG delivers to MILW Cedar Rapids Yard including cars destined for the CRANDIC. (6)	ICG delivers to CNW Transfer Yard. (3)	ICG delivers to RI City Yard. (4)	

Table II-4 shows the average number of cars interchanged daily between railroads. It is interesting to note that, based on the daily average of 368 cars interchanged, 1.6 cars are handled between railroads for each load originated or terminated in Cedar Rapids. This would indicate that over 60 percent of the originating or terminating loads are interchanged between carriers in Cedar Rapids.

Table II-4

AVERAGE DAILY TOTAL CARS
INTERCHANGED BETWEEN RAILROADS

		And			
		MILW	RI	ICG	CNW
	CRANDIC	65	23 102*	34	69
Between	MILW		36	20	34
	RI			9	45
	ICG				33

* Interchanged at Iowa City

Total cars interchanged per day: 368

per year: 134,320

Briefly, interchange operations between railroads are conducted as follows:

CRANDIC-MILW

CRANDIC and MILW deliver to each other on various tracks in or adjacent to the CRANDIC's Uptown Yard. Normally, both roads deliver two or three times daily. Included in this interchange are bridge cars to and from the ICG and RI, which the MILW handles as an intermediate carrier.

CRANDIC-RI

CRANDIC-RI traffic interchanged in Cedar Rapids is bridged between these two roads by the MILW. The MILW pulls cars from the CRANDIC's Uptown Yard, moves them to the MILW yard

in downtown Cedar Rapids, and delivers them to the RI's City Yard.

RI-CRANDIC traffic is handled in reverse order; the RI delivers cars to the MILW yard, and the MILW then moves the cars to the CRANDIC's Uptown Yard.

The preponderance of CRANDIC-RI traffic, however, is interchanged in Iowa City. For a number of reasons, this has proven advantageous both for the two railroads and for the expeditious movement of cars.

CRANDIC-ICG

The CRANDIC-ICG interchange is also handled by the MILW as an intermediate carrier. The MILW pulls ICG cars (included in MILW delivers) from the CRANDIC's Uptown Yard, moves them to the MILW yard, switches them out, and delivers them to the ICG yard.

The ICG interchange to the CRANDIC is performed in the opposite fashion; the ICG delivers to the MILW; the MILW then switches out the CRANDIC cars and delivers them to the CRANDIC at Uptown Yard.

CRANDIC-CNW

The CRANDIC-CNW interchange is performed on interchange tracks south of the CNW main line east of Beverly yard. Both roads deliver to and from these tracks. The CRANDIC places and pulls cars at least three times daily; the CNW at least once and often twice daily.

MILW-RI

The MILW and RI deliver to each other at their downtown Cedar Rapids yards.

MILW-ICG

The MILW and RI deliver to each other at their downtown Cedar Rapids yards.

MILW-CNW

The MILW and CNW deliver to each other at their downtown Cedar Rapids yards.

RI-ICG

The MILW and ICG deliver to each other at their downtown Cedar Rapids yards.

RI-CNW

The RI delivers to the CNW in the Transfer Yard. The CNW delivers to the RI in the RI's South Yard.

ICG-CNW

ICG delivers and pulls from the CNW Transfer Yard.

GRAIN INSPECTION

Grain inspection in the Cedar Rapids Metropolitan Area is performed by a local firm known as Cedar Rapids Grain Inspection Services (GIS), which is licensed by the United States Department of Agriculture.

The procedures of grain inspection in Cedar Rapids are similar to those at other locations in the country. Approximately 65 percent of all rail-inbound grain is inspected, with 75 percent of the inspections being performed at the CNW's Beverly Yard. Other inspection points are the MILW Cedar Rapids Yard, ICG Shaver Yard, and the RI South Yard.

Grain on hand for inspection is reported by the railroads to GIS by 9:00 a.m. daily. Inspection services commence at 7:00 a.m. at the MILW, RI and ICG. On the CNW, inspection services commence at 9:00 a.m. GIS reports test results to consignees at about 10:00 a.m. for grain on hand at the MILW, RI and ICG, and at about 2:00 p.m. for grain held by the CNW. The consignees can then give the railroad's disposition on the cars. Inspections are normally performed Monday through Friday, but will be made on weekends during peak-demand periods.

Inspection services in Cedar Rapids are relatively efficient, but many problems inherent to grain inspection points are evident. Some of these problems are:

- Yard congestion and inadequate capacity.
- Delays caused by railroads not switching cars to inspection tracks promptly.

- Double handling of cars because of reconsignments.
- Cars arriving early during the weekend to wait for a Monday inspection.
- Cars to be inspected in four different yards, and perhaps on various tracks within the yard.
- Delays in reporting the cars available for inspection.
- Failure of consignees to give railroads disposition promptly.

None of these problems are unique to the Cedar Rapids Grain Inspection Service, nor can they be attributable solely to the railroads, inspection service, or the consignees. Nevertheless, these problems contribute to transit time delays and car delays, and are directly related to poor car utilization and car supply.

Chapter III

COMMUNITY PROFILE

The study of rail operations in the Cedar Rapids area took place within the context of the entire community environment. This perspective made it possible to devise rail service improvements that will be compatible with surrounding community activities and, where possible, contribute toward the improvement of the metropolitan area.

A community profile is presented in this chapter. The existing land use patterns, highway transportation network, and other community resources are described in relation to the rail network.

LAND USE

The land-use policy plan for the Cedar Rapids Metropolitan Area is shown in Figure III-1. The policy plan is generally consistent with existing land uses (particularly in the inner developed core) or reflective of present land use trends.

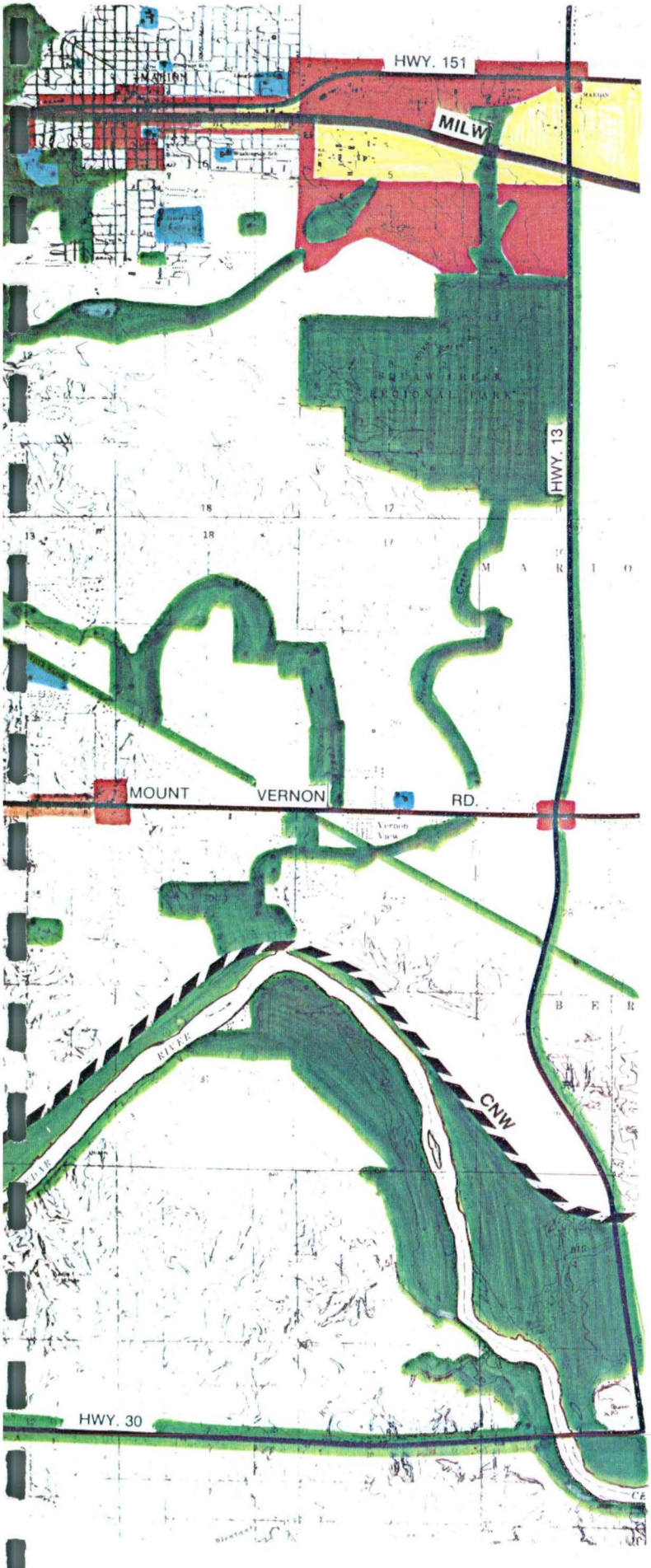
The pattern of land use is characterized by a core of commercial development in the center of Cedar Rapids. This is surrounded by a ring of residential development, one to two miles wide, broken by open space contiguous to the Cedar River. The river bisects the core in a generally northwest-southeast direction.

Several large industrial sites are located within the central commercial area; however, the primary industrial land use area lies about two miles south of the center of Cedar Rapids development.

About four miles north of the central core, an east-west linear industrial/commercial development pattern extends east along Blairs Ferry Road from Hiawatha through Marion. Additional narrow bands of commercial development lie along Mount Vernon Road, First Avenue and Center Point Road.

Land uses bordering the existing railroad trackage are, with few exceptions, either commercial, industrial or open space. Most of the open space is not structured park land, but rather unimproved area and floodplain areas bordering the Cedar River and tributaries. As such, they are compatible

CNW
MILW
HWY 149
HWY 218
HWY 94
ROBBINS
RD.
CEDAR
RIVER
RI
MILW
EDGEWOOD
DR.
HWY. 151
CNW
CRANDIC
6TH
ST.
I 380
CRANDIC
MILW
CRANDIC
1ST
ST
CNW
BOWLING
ST.
CRANDIC
1ST AVE
ICG
CENTER
POINT
RD.
BLAIRS
FERRY
RD.
HWY 150
MILW
CNW
RI
RD.



LEGEND

- TRANSITIONAL
- OPEN SPACE
- PUBLIC/SEMI PUBLIC
- WAREHOUSE AND INDUSTRY
- COMMERCIAL AND OFFICE
- RESIDENCE

RAILROAD LEGEND

- CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC
- ILLINOIS CENTRAL GULF
- CHICAGO AND NORTH WESTERN
- CEDAR RAPIDS AND IOWA CITY
- CHICAGO, ROCK ISLAND AND PACIFIC

NORTH

SCALE IN FEET

0 4750 9500

LAND USE POLICY MAP
LINN COUNTY RAILROAD STUDY

with rail corridor use. Industrial areas are, of course, compatible with all levels of rail operations. Commercial development can serve as a buffer between residential land uses and rail uses. However, where rail trackage runs through areas of heavy commercial activity, conflicts can arise between rail and street traffic. This conflict now exists most noticeably in the central business district of Cedar Rapids at street crossings along the Fourth Street rail corridor.

Rail tracks passing through residential areas may cause noise and general safety hazards. Generally, rail lines in the Cedar Rapids metropolitan area do not traverse any high-density residential zones; however, some residential use borders the MILW between Cedar Rapids and Marion and the CNW west of the downtown area.

HIGHWAY SYSTEM

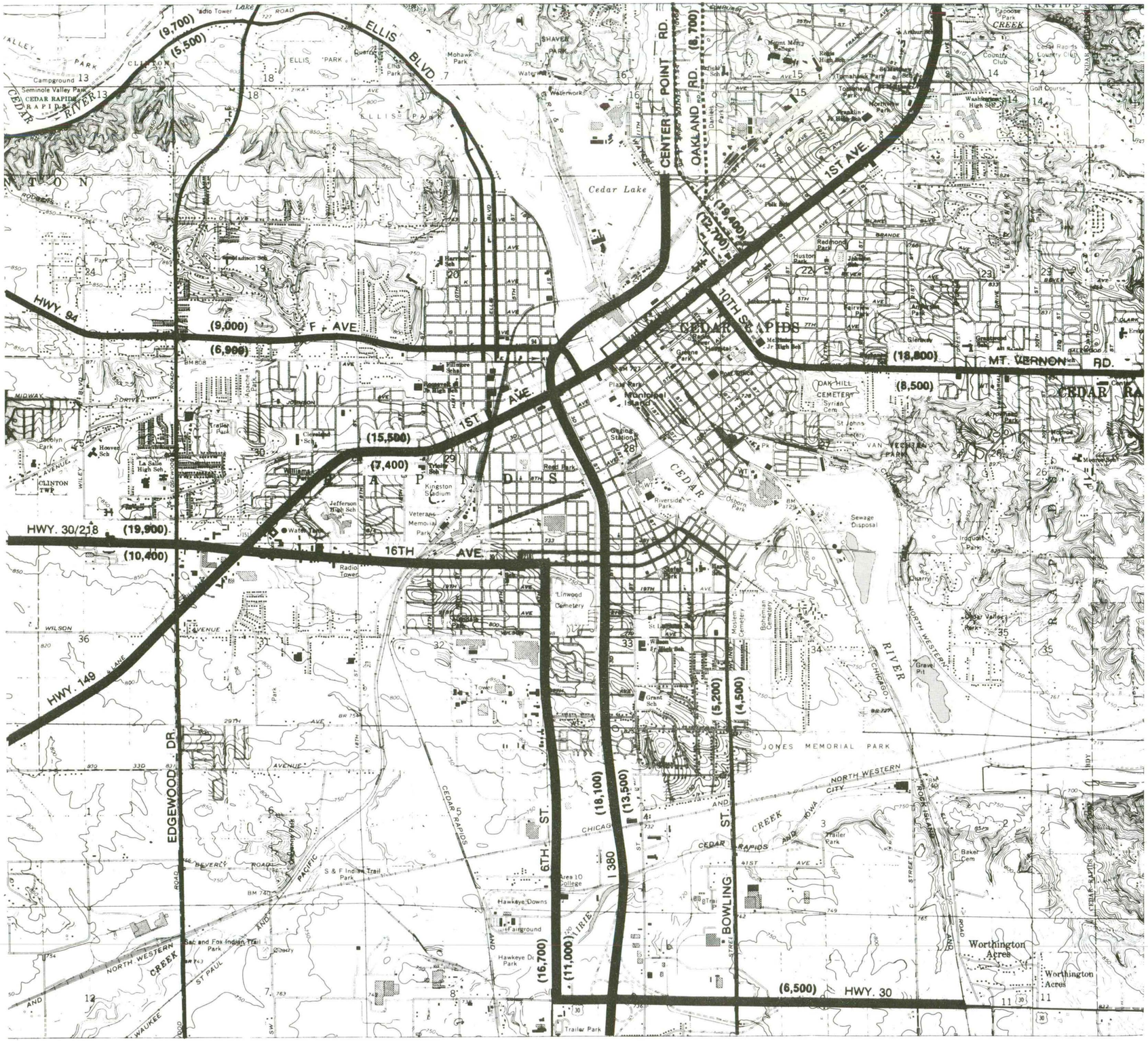
Figures III-2 and III-3 show the principal streets and highways serving the Cedar Rapids metropolitan area. The community core (central Cedar Rapids) was laid out with streets parallel and perpendicular to the Cedar River, which runs northwest to southeast. Major streets entering from the surrounding areas, oriented in the more common north-south or east-west directions, combine to form a radial pattern of streets emanating from central Cedar Rapids. Table III-1 lists the principal streets by location relative to central Cedar Rapids, their 1977 functional classifications, and their 1977 traffic volumes.

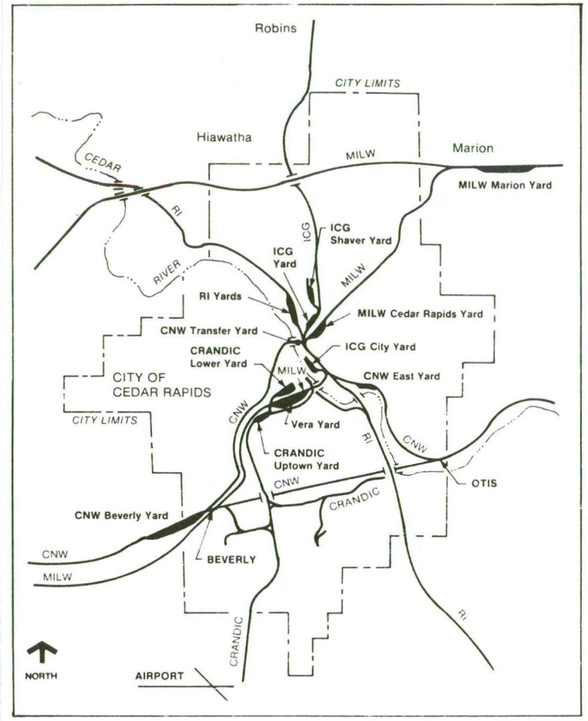
Travel between the Cedar Rapids area and other parts of Iowa is by three U.S. highways, one major state highway, two minor state highways, and an interstate connector. East-west access is provided directly by Highway U.S. 30 and indirectly from Interstate 80 (located 20 miles south) via the Interstate 380 connector. Highway 151 serves travel to the northeast of Cedar Rapids, and Iowa Highway 149 extends to the southwest. The principal north-south roadways are U.S. Highway 218 and I-380. Iowa Highway 150 also serves the area north of Cedar Rapids.

AT-GRADE CROSSINGS

An inventory of at-grade crossings was conducted for the City of Cedar Rapids by city personnel in 1977. Additional field inventories were made in Marion, Hiawatha, Robbins, and the surrounding study area to supplement the Cedar Rapids data.

FIGURE III-2





KEY MAP

LEGEND

- FREEWAY/EXPRESSWAY
- ARTERIAL CONNECTOR
- TRUNK
- MINOR ARTERIAL*
- ( ) HIGHEST AND LOWEST DAILY TRAFFIC VOLUMES (1977)

*SHOWN BECAUSE OF HIGH TRAFFIC VOLUME AND SERVICE AREA; OTHER MINOR ARTERIALS OMITTED.

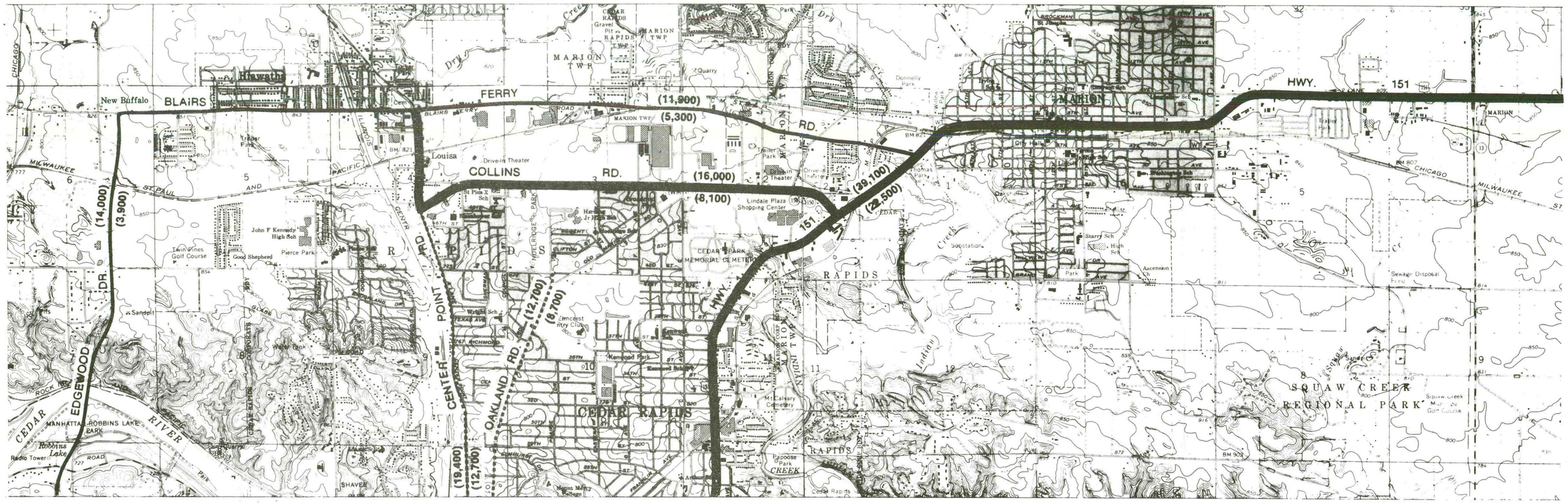
NORTH

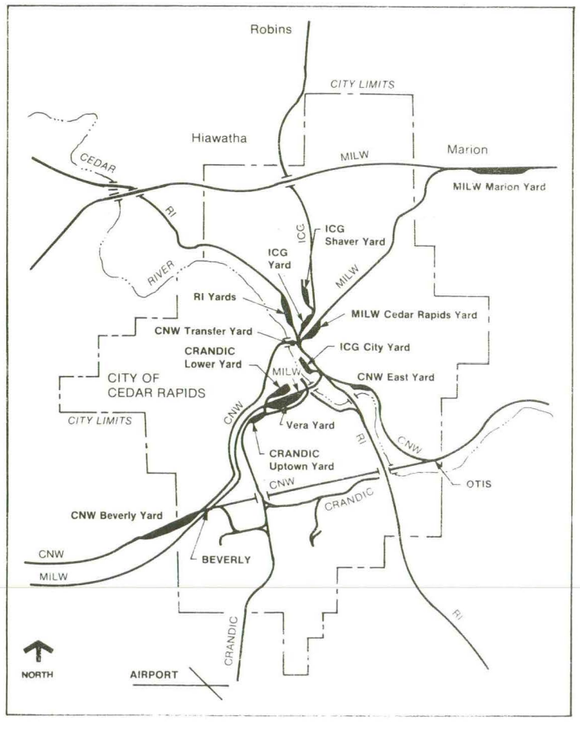
SCALE IN FEET

0 3000 6000

PRIMARY ROADWAY SYSTEM
LINN COUNTY RAILROAD STUDY

FIGURE III-3





KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

LEGEND

- FREEWAY/EXPRESSWAY
- ARTERIAL CONNECTOR
- TRUNK
- MINOR ARTERIAL*
- ( ) HIGHEST AND LOWEST DAILY TRAFFIC VOLUMES (1977)

*SHOWN BECAUSE OF HIGH TRAFFIC VOLUME AND SERVICE AREA; OTHER MINOR ARTERIALS OMITTED.

PRIMARY ROADWAY SYSTEM
LINN COUNTY RAILROAD STUDY

Table III-1

PRIMARY ROADWAYS IN CEDAR RAPIDS METROPOLITAN AREA
LINN COUNTY RAILROAD STUDY

Roadway	General Location[a]	Service Direction	1977 Functional Classification	1977 Traffic Volume Range[b] Low	High
Hwy. 149 - 1st Ave.	West	NE/SW	Expressway	7,400	15,500
Hwy. 30/218 - 16th Ave.	West	E-W	Expressway	10,400	19,900
Hwy. 94 - F Ave.	West	E-W	Arterial Connector	6,900	9,000
Ellis Blvd.	North	N-S/E-W	Trunk	5,500	9,700
Edgewood Rd.	West	N-S	Trunk	3,900	14,600
Blairs Ferry Rd.	North	E-W	Trunk	5,300	11,900
Collins Rd.	North	E-W	Expressway	8,100	16,000
Center Point Rd.	North	S-bound	Minor Arterial	12,700	19,400
Oakland Rd.	North	N-bound	Minor Arterial	8,700	12,700
1st Ave. - Hwy. 151	East	NE-SW	Expressway	22,500	39,100
Mt. Vernon Rd.	East	E-W	Arterial Connector	8,500	16,500
Kirkwood Blvd. - Bowling St.	South	N-S	Trunk	2,200	5,200
I-380	South	N-S	Freeway	13,500	18,100
6th St.	South	N-S	Arterial Connector	5,800	16,700
Hwy. 30	South	E-W	Expressway	6,500	6,500

Source: 1978 Traffic Engineering Data Bank, City of Cedar Rapids.

a Location relative to central Cedar Rapids.

b Range indicates low- and high-volume segments within community.

The inventory shows a total of 144 at-grade crossings in the study area, as shown on Figures III-4 and III-5. These are distributed as shown below:

City Area	Number of Crossings
Cedar Rapids	118
Marion	11
Hiawatha	4
Surrounding study area	11
Total	144

RAIL/ROADWAY CONFLICT

Conflicts between rail traffic and roadway traffic occur daily throughout the area. The magnitude of conflict at any location depends on a number of factors, including:

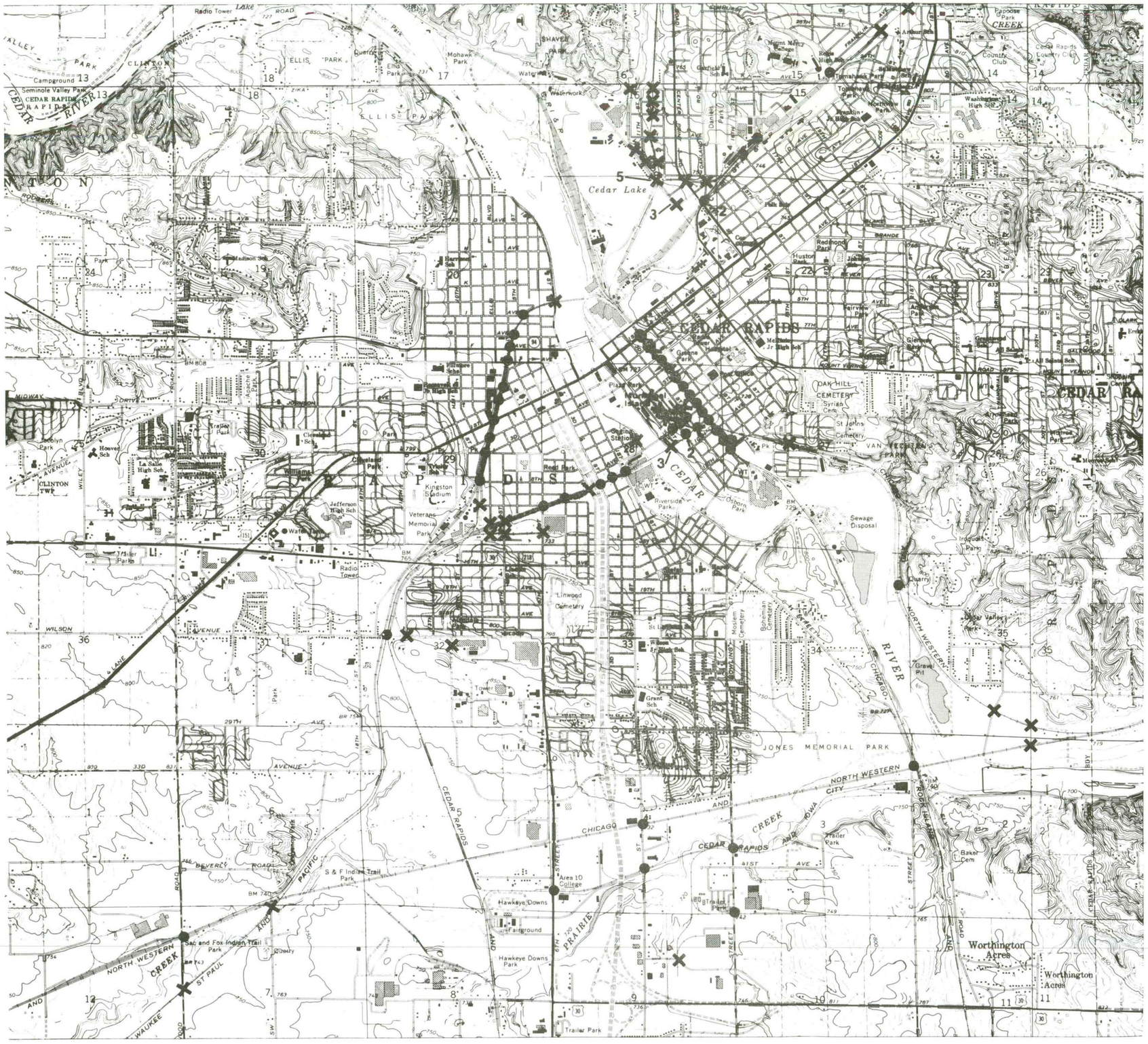
- Rail traffic volume
- Duration of rail movements at crossings
- Roadway traffic volume
- Timing of rail traffic relative to peak roadway traffic periods
- Effects on emergency service

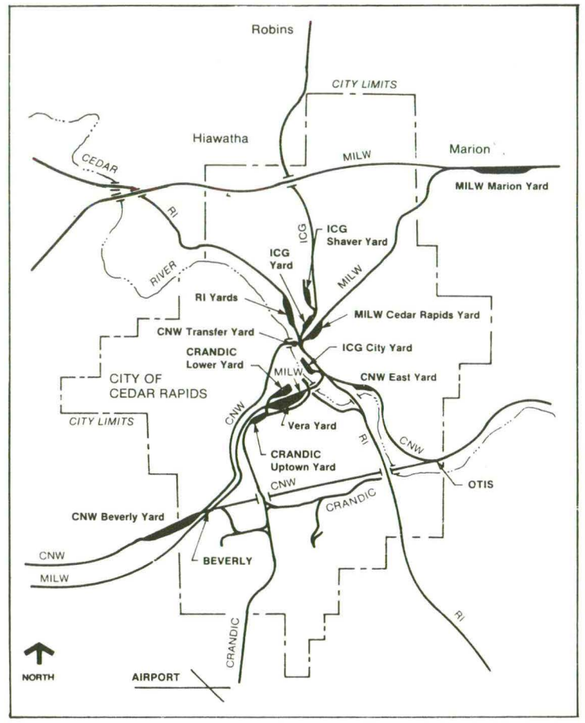
Even when these factors are quantified, and resulting vehicle delays computed, the severity of the conflict at any location remains to be judged subjectively by people within a community, rather than by any rigidly applied standards. The same amount of delay can be considered simply annoying at one location and intolerable at another. Effects on emergency vehicles are often considered a major factor in the magnitude of conflict.

Accident experience at rail crossings is a function of the same elements, and is also judged relative to accident experience at other rail crossings and non-rail crossing locations throughout the area.

Thus, an extensive review of traffic planning documents, combined with interviews with traffic department personnel and other representatives of the study area communities, was

FIGURE III-4





KEY MAP

LEGEND

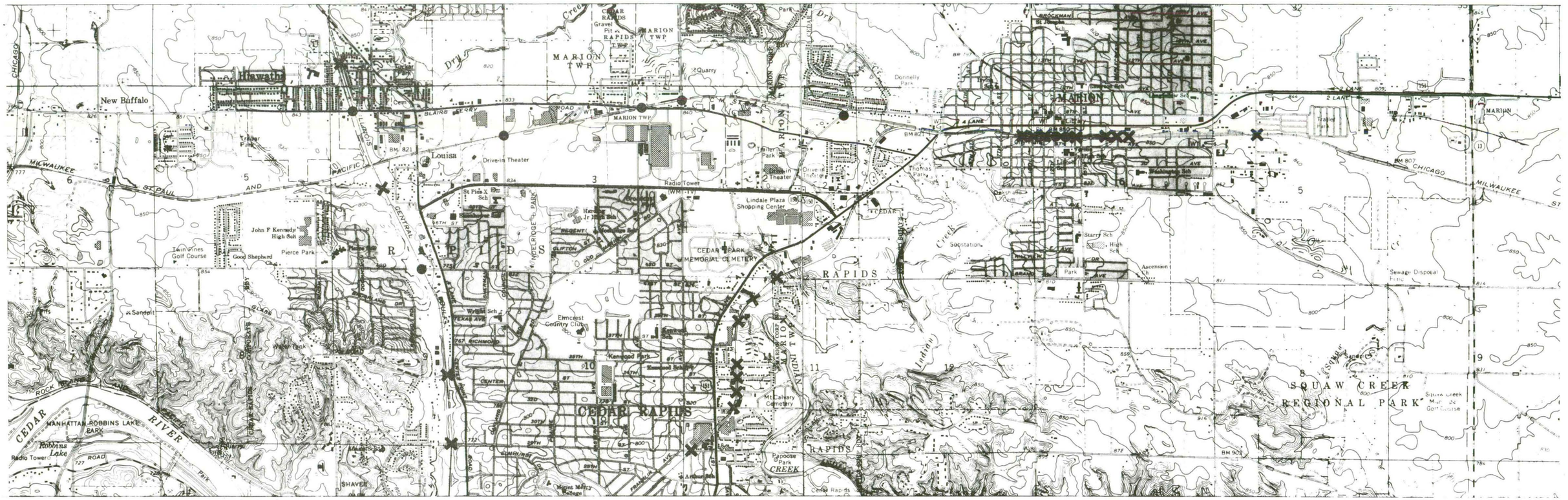
- ● CROSSING SIGNALIZED WITH EITHER FLASHERS, GATES, OR BOTH
- ✕ NON-SIGNALIZED CROSSING
- 0 REPRESENTS NUMBER OF CROSSINGS - TOO MANY TO SHOW

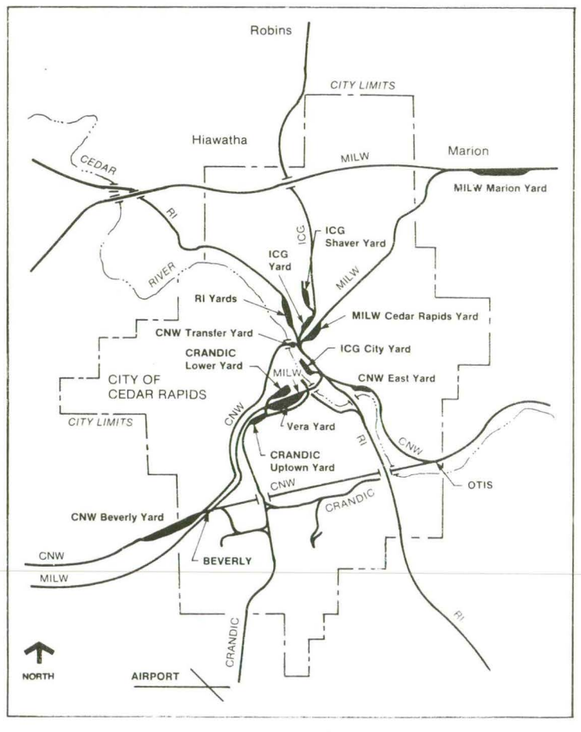
NORTH

SCALE IN FEET

0 3000 6000

LOCATION OF AT GRADE CROSSINGS
LINN COUNTY RAILROAD STUDY





KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

LEGEND

- ● CROSSING SIGNALIZED WITH EITHER FLASHERS, GATES, OR BOTH
- ✕ NON-SIGNALIZED CROSSING

LOCATION OF AT GRADE CROSSINGS
LINN COUNTY RAILROAD STUDY

undertaken to identify locations where rail/roadway conflicts are now considered a problem, and where future problems may arise. The prelimary results of this effort are summarized below. A detailed record of all comments made by representatives of local agencies is included in Appendix A.

The Transportation System Management Plan* (TSM) is charged with a review of all forms of traffic and transportation needs within the urbanized area. In formulating this plan, comments pertaining to traffic problems were obtained from each city in the study area.

The City of Cedar Rapids cited seven railroad crossings as candidates for signalization due to accident potential. Comments from the City of Marion cited four crossings for roughness and three crossings as "confusing" and in need of signalization.

The TSM also lists accident locations in the Cedar Rapids area. No railroad crossings were included on this list, which includes all locations where ten or more accidents occurred during 1978.

Interviews with representatives of each city called attention to two problem areas. Signals at the Wilson Avenue crossing of the CRANDIC tracks are often activated by rail-switching activity in the CRANDIC yard, often with no train passing. This causes unnecessary traffic delay and eventual disregard of the signals.

The most serious delay problems are associated with the 4th Street rail corridor in Cedar Rapids. This has been the subject of one study (CBD Railroad Crossing Study, Traffic Engineering Department, Department of Public Safety, City of Cedar Rapids, December 1972) and a subsequent update (August 1974). The major findings of the report are summarized below:

- The 4th Street corridor contains up to three tracks used by all railroads (except the CRANDIC) operating in Cedar Rapids. Five CBD arterial streets (1st through 5th Avenues) carry more than 90,000 vehicles per day (1972) over the 4th Street tracks on at-grade crossings.

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* Transportation System Management Plan, FY 80-84, Preliminary Copy, August 1979, Linn County Regional Planning Commission.

- Traffic movements were interrupted between 66 and 23 times per day (decreasing from 1st Avenue to 5th Avenue) by train movements or crossing signal activation between 6:00 a.m. and 6:00 p.m. on the days surveys were made.

- At the worst crossing (1st Avenue), signals were activated 15 percent of the 12-hour period, but the tracks were actually blocked by train movements only seven percent of the time. This pattern was also observed at other crossings.

- Based on traffic volume and train crossing data, a total annual delay cost of $102,000 was computed. To minimize the delay, the report recommended upgrading the signal system to eliminate signal activation when trains would not occupy crossings, and minimizing movements during peak traffic periods.

The TSM also reported street sections having volume/capacity ratios exceeding 1.00. Rail crossings where these conditions exist may slow traffic and thus aggravate the capacity deficiencies. This situation exists at:

- 1st Avenue and 4th Street (part of the above-mentioned 4th Street corridor)

- Center Point Road at the crossing with the MILW tracks

- Wilson Avenue at the crossing with the CNW, MILW, and CRANDIC tracks.

One site, the Edgewood Dr. crossing at the CNW's Beverly Yard, was mentioned as a potential problem as additional traffic is generated by the opening of the Westdale Shopping Mall. Anticipated expansion of residential development west of Cedar Rapids and the industrial areas south of Cedar Rapids is also expected to increase highway traffic at this crossing. Grade crossing warning signals are often activated during yard-switching operations without a physical blockage. This is particularly a problem at this location because of the short arm gates.

CONTEMPLATED HIGHWAY IMPROVEMENTS

The data inventory generated information on several planned or programmed improvements to the highway system that could directly affect the flexibility of rail operations. They were:

- The extension of I-380 northward, utilizing abandoned Waterloo Railroad right-of-way.

- The proposed construction of the Northwest Bypass, which would utilize the existing MILW east-west line right-of-way south of Hiawatha, if this trackage were to be abandoned. If this track is not abandoned, the highway would parallel the right-of-way.

- The proposed one-way couple in Marion (10th and 11th Streets), which may focus traffic on these streets, causing increased delays and increased concern over train blockages on the MILW line through Marion.

- Improvement of the junction of Iowa 150 and U.S. 151 west of Marion, which may require a new grade separation over the MILW track.

In addition to the above specific plans, the adapted 1995 traffic network shows roadway projects that will require seven additional rail-highway intersections. Five of these would be on the Northwest Bypass and presumably would be grade-separated crossings. Also, roadway rebuilding and widening included in the plan would affect ten existing crossings, although the improvements are not directly related to the presence of the railroad crossings.

Finally, it is anticipated in the 1995 traffic plan that person-trips will increase by 58 percent between 1970 and 1995. This will increase delays at rail crossings unless offset by a significant reduction in rail traffic. While it is not the intent of this study to examine this subject in great detail, analysis was made on a case-by-case basis relative to proposed rail operational changes, using the projected traffic information obtained during the inventory.

OTHER COMMUNITY SEGMENTS

During the interviews with representatives of the communities within the study area, impacts were examined, of rail facilities and operations on various other community segments, including parks, ambulances, fire services and schools. As part of this effort, the 1975 Park and Outdoor Recreation Plan* was analyzed.

Review of the Park and Outdoor Recreation Plan showed that continued improvement and expansion were planned for parks and open space along and near rail trackage, indicating compatibility of uses. The present low number of trains passing through Robins and Marion do not present obstacles to school- or emergency-related travel.

In Cedar Rapids, ambulance vehicles are routed around track blockages through communication between vehicle dispatchers and the RI operator at the 9th Avenue tower. Ambulance services responding to traffic improvement surveys in the TSM mentioned only rough crossing surfaces as a problem.

The Cedar Rapids Police Department indicated that rail operations in the city do not interfere with police operations.

Representatives of the Cedar Rapids Fire Department cited the 4th Street corridor as a problem when it is necessary to move special equipment (such as the 100-foot ladder unit) from one side of the city to the other. Most calls do not require this. In addition, access to central business district buildings is reduced due to other traffic clogging streets blocked by passing trains.

SUMMARY

The existing land use plans, highway system, highway/rail interface, and future highway plans have been examined and presented to serve as a community profile within which the rail operations planning can take place. Although no serious rail-related conflicts were noted (with the major exception of the 4th Street corridor), various rail operational changes will be analyzed with respect to their effects on other segments of the community.

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* Linn County Regional Planning Commission, June 1975.

Chapter IV

INDUSTRIAL CONSIDERATIONS

All businesses with access to rail service were initially identified by means of a field inventory. Representatives of these firms were interviewed to determine whether the firms were active rail users and, if so, to compile information on the volume and character of rail traffic.

Representatives of 109 firms were interviewed; of these firms, 71 presently use rail service. The 38 businesses not utilizing railroad transportation were asked if they might do so in the future and, if so, under what conditions.

Information obtained from active rail customers included:

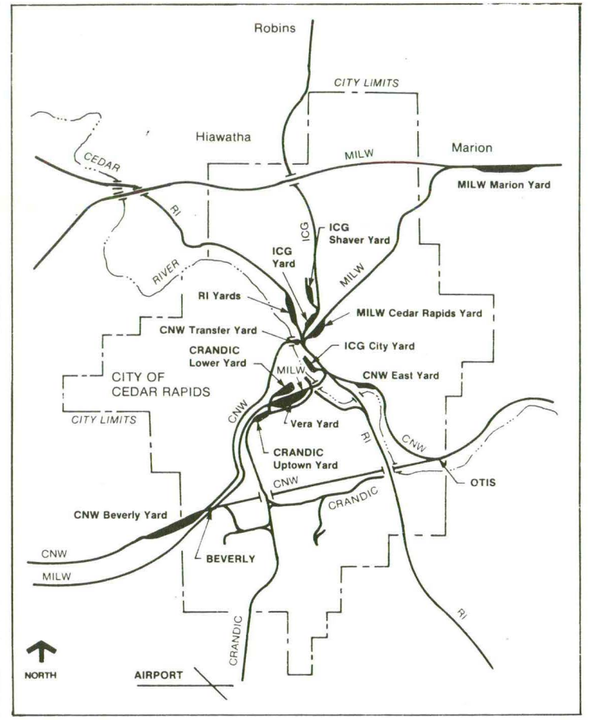
- Traffic volume and commodities
- Switching service provided
- Routing of traffic and transit times
- Special requirements, such as weighing
- Plant rail-related facilities
- Traffic split between rail and truck
- Traffic forecast
- Deficiencies or problems with present rail service.

Figures IV-1 and IV-2 show the locations of all firms with rail access and, in the case of active rail users, the approximate traffic volume for each.

Traffic figures supplied by firms indicated weekly average inbound and outbound carloads of 860 and 1,010, respectively. These figures compare fairly closely with the actual 10-year average compiled by the Western Weighing and Inspection Bureau. Inbound and outbound carloads for the years 1969-1978 are shown in Table IV-1 and displayed graphically in Figure IV-3.

The volume ranges shown in Table IV-2, in addition to segmenting firms by amount of traffic, also roughly indicate switching requirements. Businesses in the various volume ranges probably require the following service:

FIGURE IV-1



KEY MAP

LEGEND

× HAS RAIL SIDING BUT DOES NOT USE

AVERAGE NUMBER OF INBOUND AND OUTBOUND CARS PER WEEK

- 0 TO 4
- 5 TO 19
- 20 TO 74
- 75 AND UP

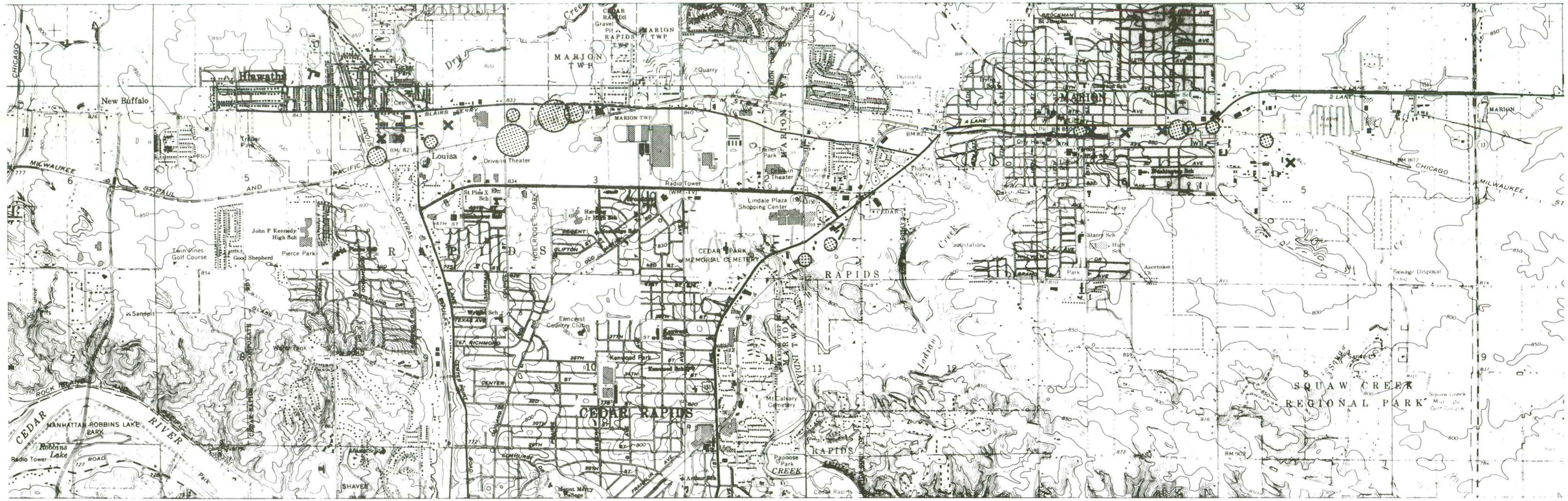
NORTH

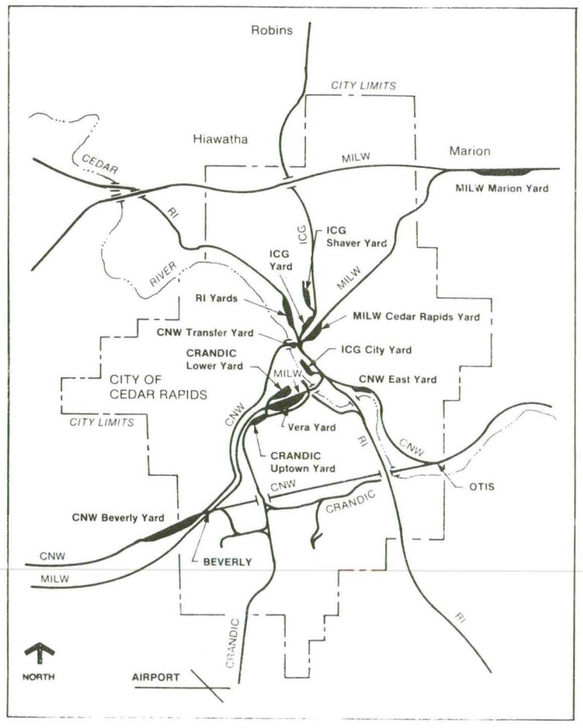
SCALE IN FEET

0 3000 6000

LOCATION OF RAIL USERS
LINN COUNTY RAILROAD STUDY

FIGURE IV-2





KEY MAP

NORTH

SCALE IN FEET

0 3000 6000

LEGEND

× HAS RAIL SIDING BUT DOES NOT USE

AVERAGE NUMBER OF INBOUND AND OUTBOUND CARS PER WEEK

0 TO 4

5 TO 19

20 TO 74

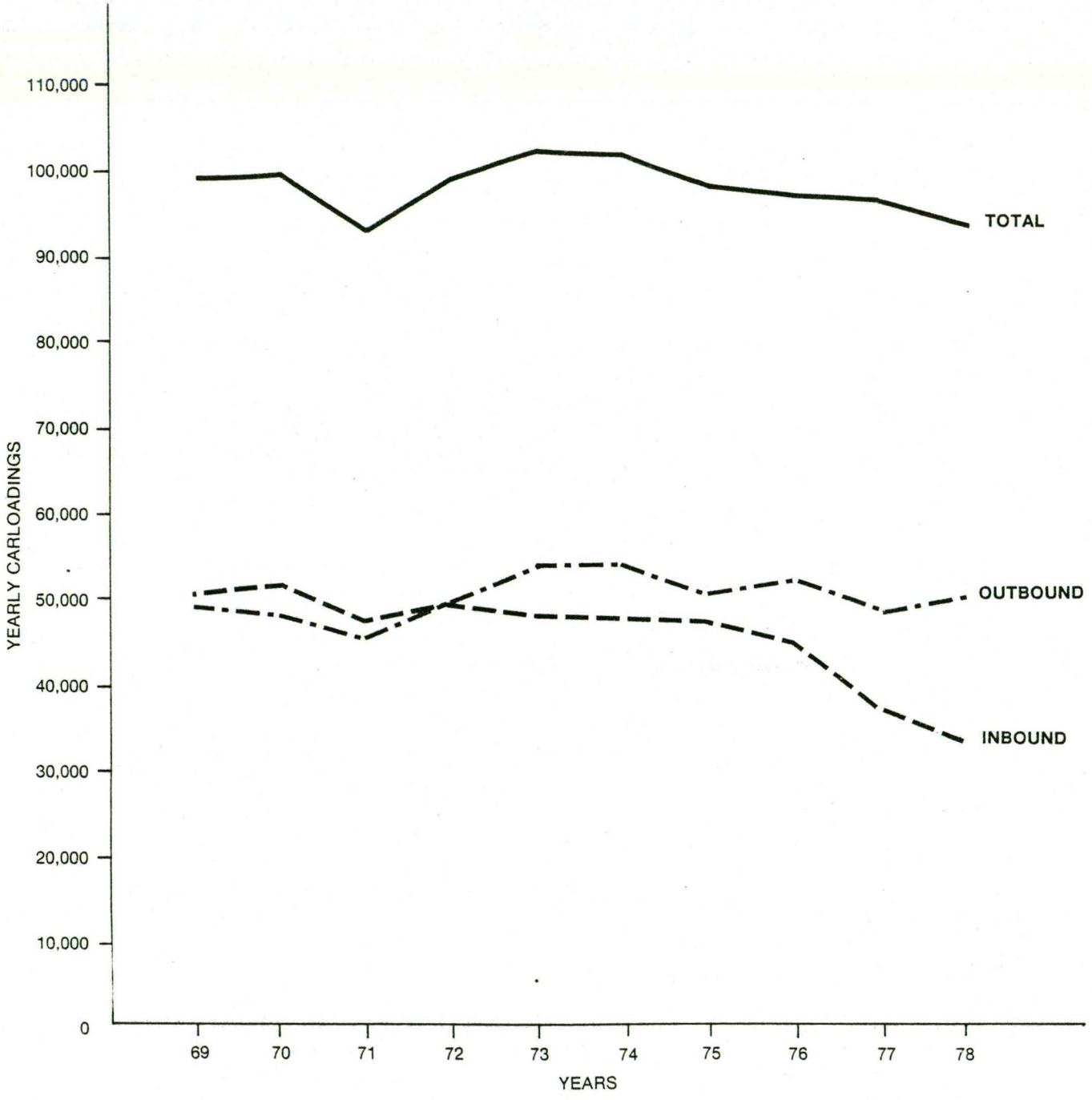
75 AND UP

LOCATION OF RAIL USERS
LINN COUNTY RAILROAD STUDY

Table IV-1

CEDAR RAPIDS CARLOADING BY YEAR

Year	In	Out	Total
1969	50,244	49,017	99,261
1970	51,541	48,177	99,718
1971	47,929	45,282	93,282
1972	49,550	49,900	99,450
1973	48,525	53,949	102,474
1974	48,378	54,175	102,553
1975	47,879	51,197	99,076
1976	45,161	52,669	97,830
1977	37,854	49,288	87,142
1978	33,721	50,687	84,408
Average Per Year	46,078	50,434	96,520
Average Per Week	886	970	1,856



YEARLY CARLOADINGS
LINN COUNTY RAILROAD STUDY

Table IV-2

DISTRIBUTION OF TRAFFIC BY VOLUME

	Average Loads In and Out Per Week			
	0-4	5-19	20-74	75 of Greater
Number of Industries	43	10	10	8
Percent of Total	60	14	14	11
Total Weekly Loads	45	113	299	1,405
Percent of Total	3	6	16	75
Average Weekly Loads Per Industry	1	11	30	165

Weekly Volume	Average Daily Switches
0-4 cars	Less than 1
5-19	1
20-74	2
Over 75	Over 3

Table IV-2 also illustrates a typical situation in the railroad industry--a limited number of firms frequently account for a disproportionate share of traffic. In Cedar Rapids, eight businesses generate 75 percent of total traffic. On the other end of the scale, the 43 Cedar Rapids firms using 0-4 cars per week account for only three percent of total carloads.

Figure IV-4 denotes the volume of major rail-shipped commodities in the Cedar Rapids area. As would be expected, grain and grain products are by far the largest groups, comprising about 69 percent of all carloadings. Even though inbound transportation of grain has largely shifted to truck, this commodity is still an important source of railroad traffic.

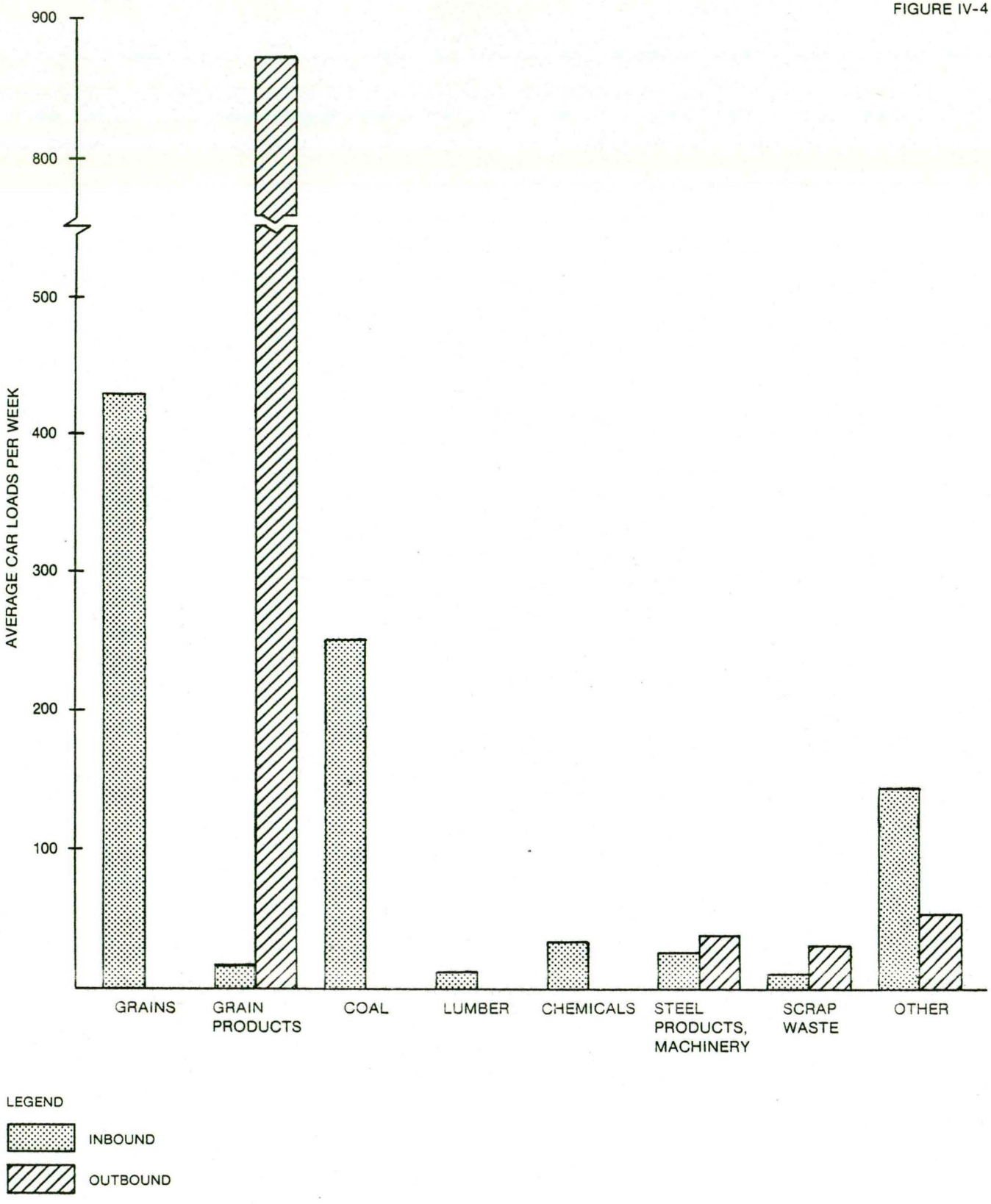
According to the estimates supplied by firms, trucks account for about 61 percent of inbound and 51 percent of outbound traffic for active rail users. In most cases, industrial representatives indicated that they would prefer to use trucks less and rail more if rail equipment availability, service and/or transit time were improved.

Six firms have their own switch engines or track mobiles for spotting cars. All others depend on the various railroads for switching service. Two other firms are served by engines assigned specifically to them. All other businesses are switched by engines that serve a number of customers, in addition to doing other classification and interchange work. Except for some comments about irregularity, switching, per se was not mentioned as a serious problem. Interyard movement and interchange, however, were a matter of concern.

In general, special service requirements are limited to car cleaning, weighing, and inspection and measurement of excess dimension loads. All these functions create certain problems, which will be discussed later.

One area frequently cited as a problem was the chronic shortage of suitable rail cars. Although some major shippers lease cars (particularly tank cars and covered hoppers), all

FIGURE IV-4



VOLUME OF RAIL CARS BY COMMODITY TYPE
AVERAGE WEEKLY VOLUMES
LINN COUNTY RAILROAD STUDY

largely depend on the serving railroads to meet their requirements for both outbound and inbound shipments. Although only a few firms felt that track layouts and physical conditions within plant areas caused rail service problems, such problems were apparent at several locations. Also, because of the nature of traffic, certain large firms frequently have a considerable number of cars on hand and do not have adequate track space available. Serving railroads must store these cars, causing congestion in the terminal area.

Table IV-3 summarizes pertinent information from businesses relating to rail service.

For the most part, established rail shippers are located either in the central area of Cedar Rapids, where significant expansion is unlikely, or in industrial zoned belts on the southwest or north sides of the metropolitan area. Most of these areas of potential industrial growth are on the CNW and CRANDIC on the southwest and the MILW on the north. While access to immediate rail service is excellent in these areas, problems result when traffic must be interchanged to another carrier, because such traffic must generally be routed into central Cedar Rapids. The one exception is traffic originating or terminating on the CRANDIC that is interchanged with the RI at Iowa City.

In the United States as a whole, rail carloadings declined 17 percent between 1969 and 1978. For the Western District, the decline was 10 percent.

Carloadings, however, are somewhat deceiving, as car capacity over the past ten years has steadily increased. The average freight carload in the United States in 1969 was 53.1 tons compared to 62.1 tons in 1978--an increased capacity of 17 percent. In the Western District, the comparable figures are 52.2 tons for 1969 and 64.3 tons for 1978. This amounts to an increased capacity of 23 percent. The increase is directly attributable to the general increase in car size and particularly to utilization of 100-ton covered hoppers.

Total carloadings in the Cedar Rapids Metropolitan Area has generally followed the national trend of the past decade. Total loadings in 1969 were 99,261. The peak for the decade was 102,553 in 1974, and the low was 84,408 in 1978. Carloadings in the past two years have been less than 90,000, or about ten percent less than the preceding eight years. Generally, outbound carloadings have remained stable. In 1969, outbound loads amounted to 49,017; 50,687 were shipped in 1978. The peak number of outbound loads was 54,175 in 1974. Inbound

Table IV-3

SUMMARY OF INFORMATION FURNISHED BY INDUSTRIES

Number of Firms with Direct Rail Access	109
Number of Firms that Presently Use Rail	71
Active Rail Users Served by Each Railroad	
CRANDIC	26
MILW	25
CNW	9
RI	12
ICG	6
Average Weekly Carload Traffic	
Inbound	860
Outbound	1,010
Estimated Division of Traffic Between Rail and Truck	
Inbound Rail	39%
Outbound Rail	49%
Inbound Truck	61%
Outbound Truck	51%
Rail Traffic Interchanged in Cedar Rapids Area	
Inbound	61%
Outbound	54%
Firms Requiring Special Services	
Weighing	23
Cleaning	10
Inspection	5
Number of Firms with Switching Capability (Engines, Trackmobiles, Car Pullers)	9

Table IV-3 (Concluded)

SUMMARY OF INFORMATION FURNISHED BY INDUSTRIES

Number of Firms with Rail Switch Engines Assigned	2
Number of Firms Receiving Daily (or More Frequent) Switches	17
Number of Firms Having Expansion Plans that would Increase Rail Traffic	19
Number of Firms Indicating that Lack of Satisfactory Rail Service is Discouraging Expansion	8
Number of Firms that would Increase Percentage of Rail Traffic if Service were Improved	39

shipments, however, have shown a steady decline. Inbound shipments for 1969 amounted to 50,244. They peaked at 51,541 in 1970. The low for the decade was 33,721 in 1978.

The substantial decrease of inbound traffic over the past decade appears to be caused largely by the diversion of grain traffic from rail to truck. Lack of rail cars and erratic movement have contributed to this decline. Also, the increase in export traffic and the concentration by both railroads and shippers on 25- to 75- car unit movements have had an effect. Cars are committed to high-volume, long-haul unit movements and traditional single-car, short-haul movements have largely been taken over by trucks. Although several Cedar Rapids firms receive unit train grain shipments, the preponderance of grain has for some time been trucked. Table IV-4 shows the number of inbound rail cars and trucks of grain inspected at Cedar Rapids from 1971 to 1979. An approximate comparison, based on 2.25 trucks per rail car, is also shown. Figure IV-5 compares the number of inbound rail cars and trucks of grain inspected in Cedar Rapids for the same period of time. Two points are obvious: first, inbound grain to Cedar, Rapids has shown a fairly steady increase; second, in eight years the truck share of this traffic has gone from 7.8 to 86.6 percent. In Chapter VI, the likelihood of a return of this traffic to the railroads will be discussed.

With respect to traffic volumes, periodic fluctuations must be considered. The physical and operational characteristics of any railroad terminal area determine a practical car handling limit. When traffic exceeds this limit, efficiency is lost and car movement becomes slow and erratic. The volume handled in a typical terminal is normally well within the efficient limit, but because of seasonal movements of certain commodities, peak production periods, and other factors, traffic tends to peak at times and overload the system.

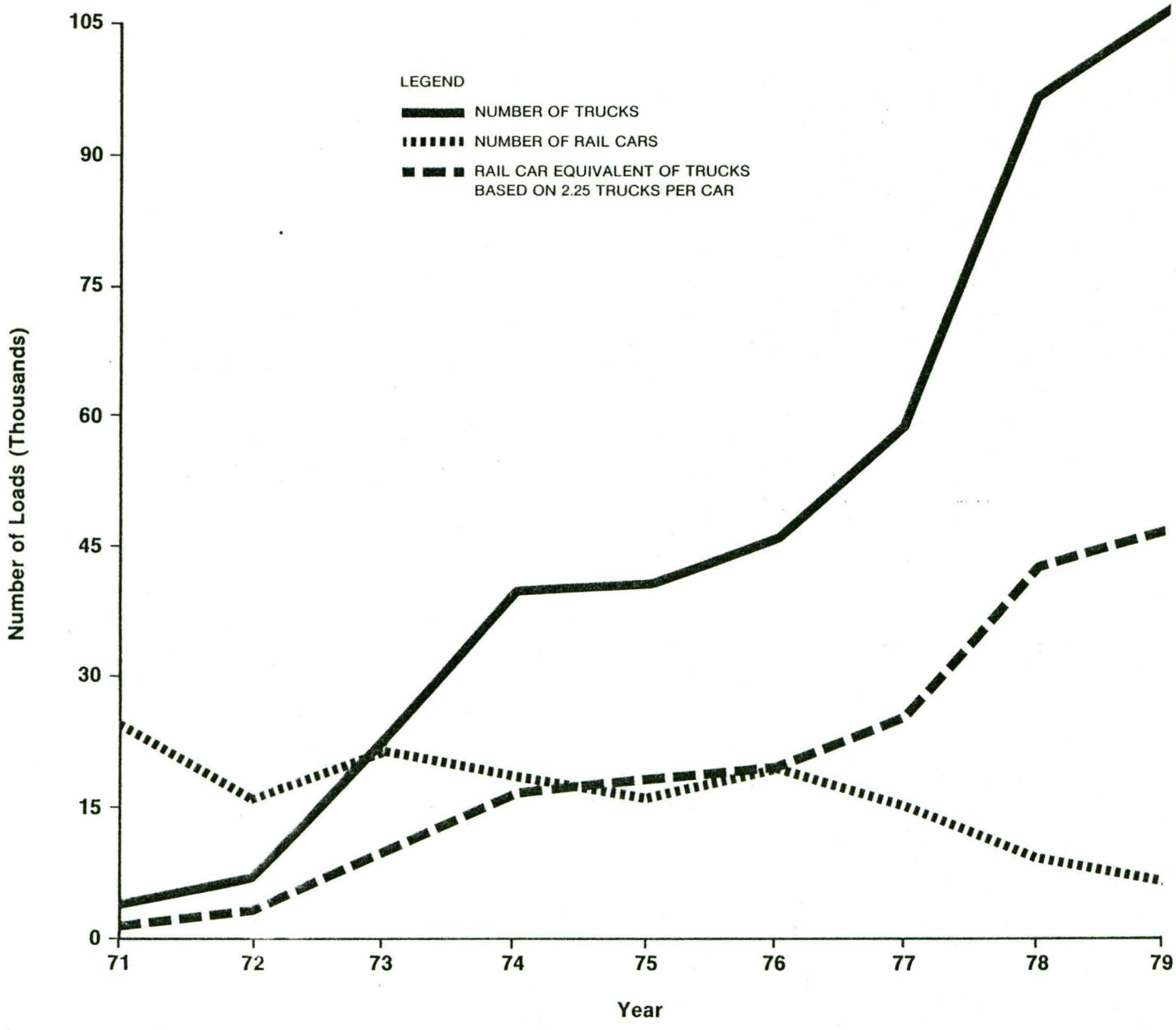
Car movement in the Cedar Rapids area follows this pattern. Figure IV-6 denotes total inbound and outbound loads by month for the years 1977-1979. The monthly average for each year is also plotted. Peak periods for 1977 and 1978 exceed the average by about 16 percent. The 1979 peak is over 25 percent above the norm, but the extreme fluctuations in 1979 were caused to a large extent by the Rock Island strike.

Table IV-5 lists the peak carload month for each year from 1969 to 1979 and compares this figure to the yearly average. Figure IV-7 compares in and outbound peaks to average by months for the same years.

Table IV-4

INBOUND GRAIN 1971-1979

Year	Number of Rail Cars	Number of Trucks	Number of Trucks Equivalent to Rail Cars	Total Equivalent Rail Cars	Percent Truck
71	24,286	4,616	2,052	26,320	7.8
72	16,711	7,387	3,283	19,994	16.4
73	21,904	23,717	10,541	32,445	32.5
74	19,036	39,184	17,415	36,451	47.8
75	16,722	41,705	18,536	35,258	52.6
76	20,273	46,553	20,690	40,963	50.5
77	15,967	59,008	26,226	42,193	62.2
78	10,533	96,709	42,982	53,515	80.3
79	7,351	107,289	47,684	55,035	86.6



GRAIN INSPECTED – RAIL VS. TRUCK
LINN COUNTY RAILROAD STUDY

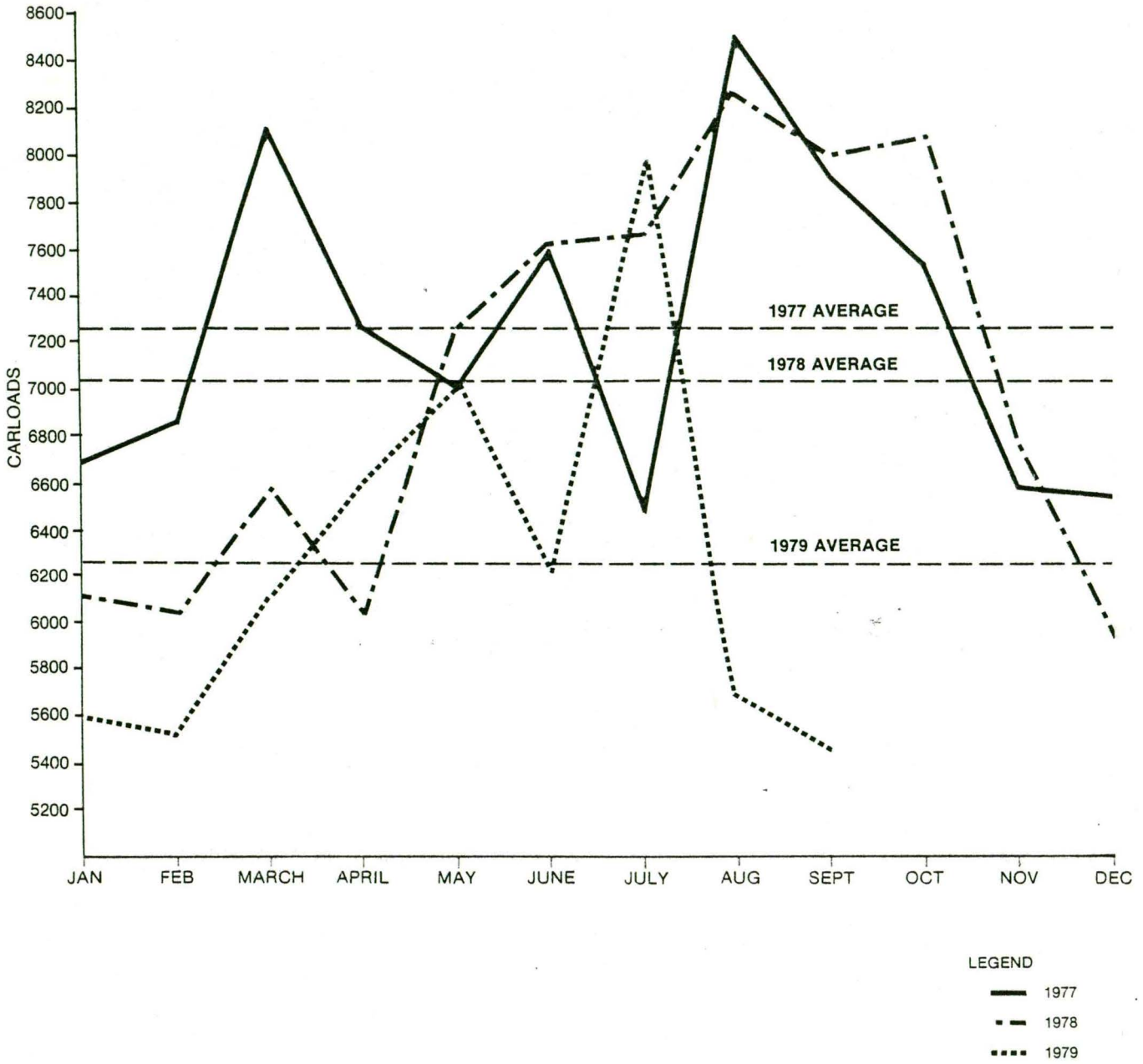
FIGURE IV-5

Table IV-5

PEAK CARLOAD MONTH FOR EACH YEAR 1969-1979

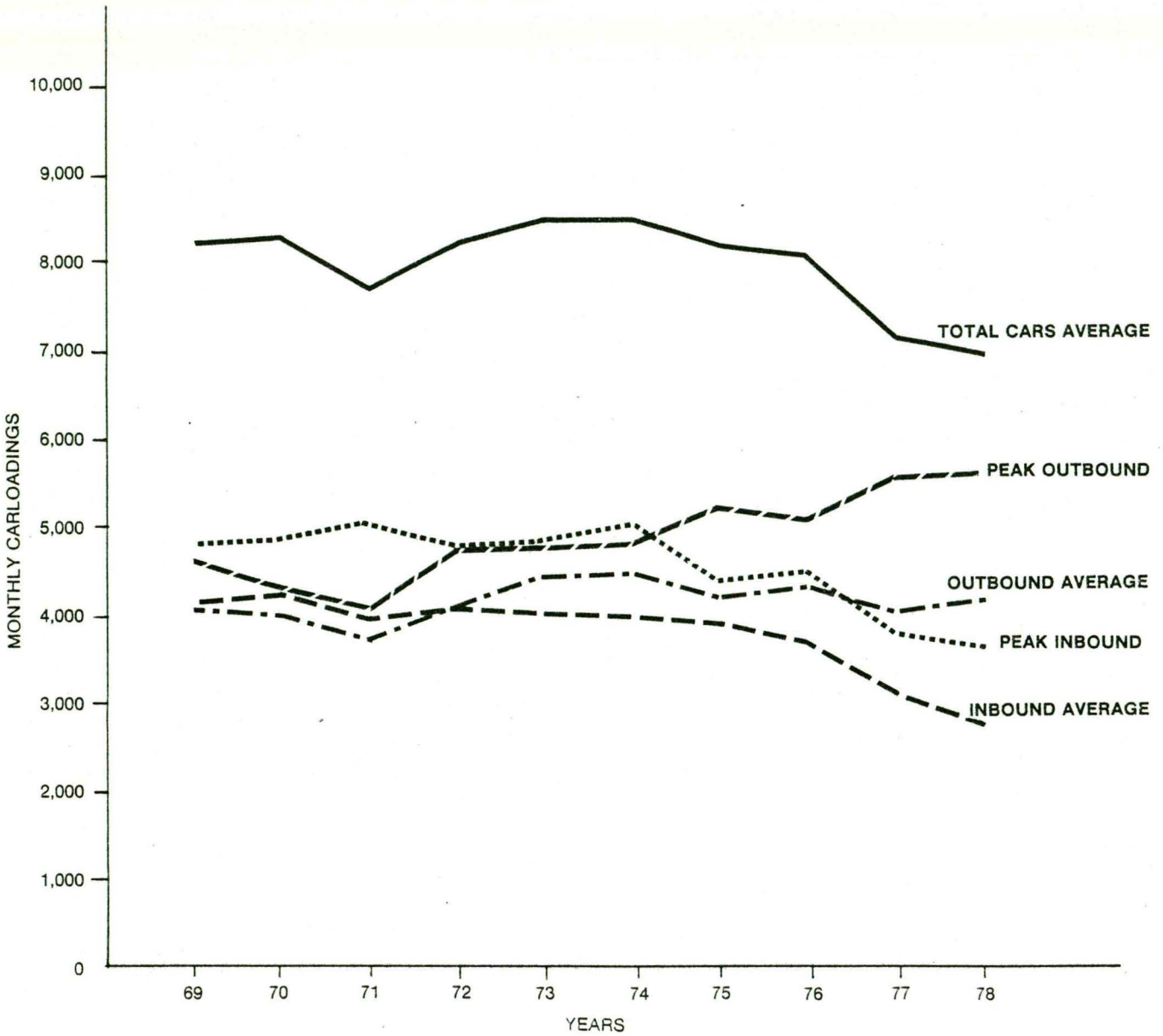
Year	Inbound		Outbound		Total		Percent Above Average
	Peak	Average	Peak	Average	Peak	Average	
1969	4813	4187	4680	4085	9493	8272	14.76
70	4900	4295	4328	4015	9228	8310	11.05
71	5088	3994	4100	3774	9188	7768	18.28
72	4833	4129	4788	4158	9621	8287	16.10
73	4907	4044	4853	4496	9760	8540	14.29
74	5095	4032	4881	4515	9976	8547	16.72
75	4463	3990	5282	4266	9745	8256	18.04
76	4585	3763	5118	4389	9703	8152	19.03
77	3849	3155	4655	4107	8504	7262	17.10
78	3719	2810	4700	4224	8419	7054	19.35
79	3132	2198	4828	4056	7960	6254	27.28
Average 1969-1979	4489	3691	4747	4190	9236	7881	17.19

FIGURE IV-6



CARLOADS PER MONTH 1977-1979
LINN COUNTY RAILROAD STUDY

FIGURE IV-7



MONTHLY CARLOADINGS COMPARISON
LINN COUNTY RAILROAD STUDY

Monthly averages for total cars have ranged from seven to nine thousand and the trend has been slightly down. Inbound peaks and average figures have both shown a decline. Outbound carload averages have gone up slightly and there has been an increasing spread between the average and peak.

Based on this data it would appear that any planning should contemplate peaking of approximately 20 percent above average traffic. The only factor that might cause peaks in excess of this figure would be a reversal in the trend for inbound grain to be hauled by truck. This possibility will be discussed later.

Overall, the physical rail facilities in Cedar Rapids should be able to accommodate anticipated peak traffic with proper operational adjustments as conditions require. There are specific problem areas and these will be examined in Phase II.

Chapter V

EVALUATION OF EXISTING CONDITIONS AND DEFICIENCIES

RAILROADS

The railroad system radiating from the Cedar Rapids metropolitan area offers potential routes for efficient movement of traffic through all major gateways in the Midwest. The important rail gateways and the railroads having reasonably direct routes from Cedar Rapids are:

Gateway City	Served from Cedar Rapids by
Chicago	MILW CNW RI ICG
St. Louis	CNW ICG
Kansas City	MILW CNW RI
Omaha/Council Bluffs	MILW CNW RI ICG
Minneapolis/St. Paul	CNW RI

Additionally, all carriers offer service from local points both within the area circumscribed by the gateways and beyond.

Although two or more railroads connect Cedar Rapids with all important gateways, service is not necessarily competitive because deteriorated track conditions on some routes prevent expeditious train movement. Also, the future of some routes is in doubt. For example, all MILW lines serving the Cedar Rapids area are to be abandoned according to current reorganization plans. Some of this trackage might be taken over and operated by another carrier, but to what extent and by which railroad is unknown at this time.

RI main line trackage into Cedar Rapids is in poor condition and no significant rehabilitation work is planned because the RI, as well as the MILW, is in bankruptcy.

Only the CNW and ICG have routes into Cedar Rapids with track in reasonably good condition. The CNW is in the midst of a large main line track upgrading and signaling program and, barring any unforeseen developments, should have the route through Cedar Rapids in excellent condition within the next few years. The ICG line into Cedar Rapids should remain adequate with reasonable routine maintenance.

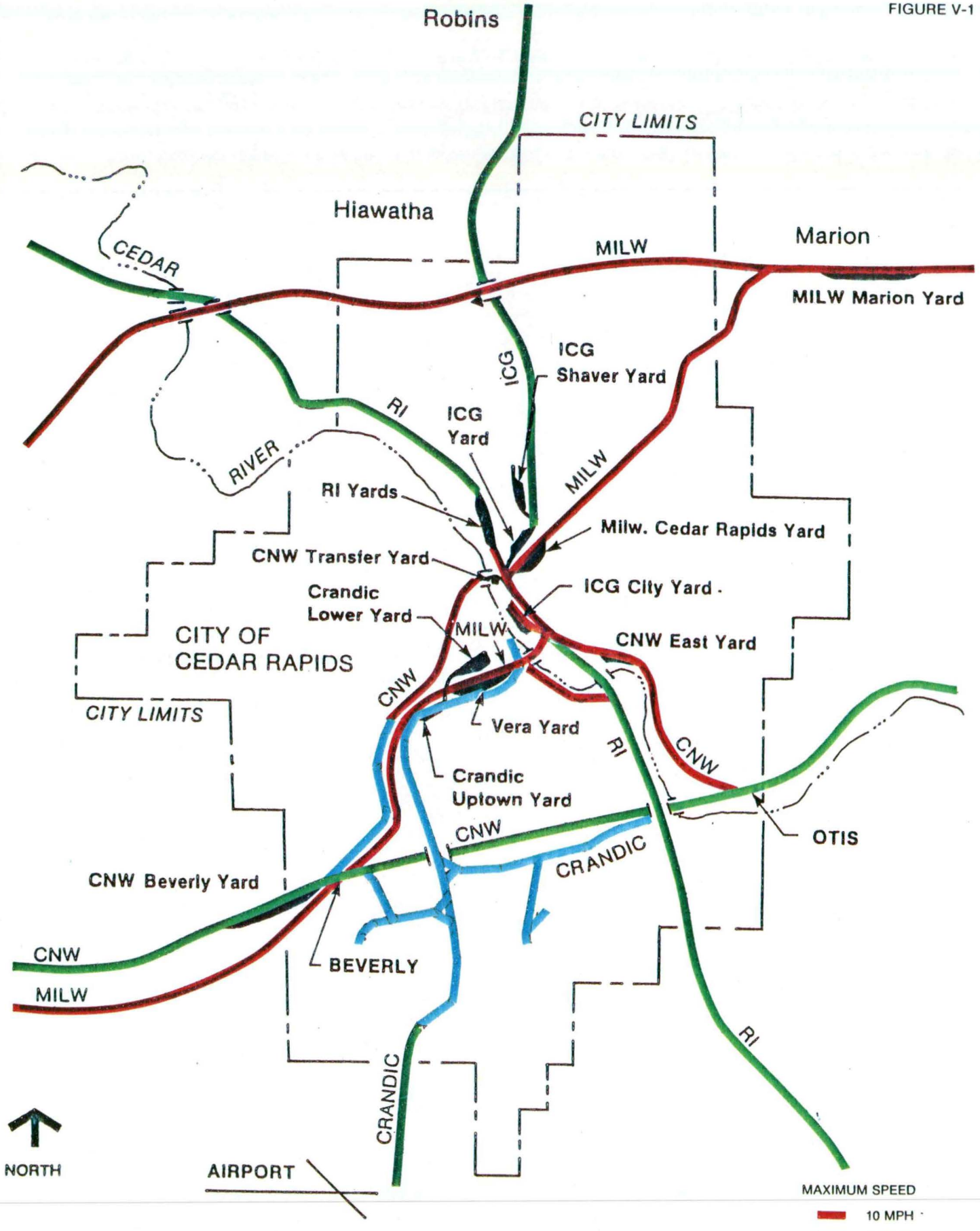
Given the financial condition of the MILW and RI, it is distinctly possible that Cedar Rapids, in the not-too-distant future, might be served by only two Class I railroads, plus the CRANDIC. This could considerably alter the competitive situation, as well as the traffic share handled by each railroad. These factors, though not strictly within the scope of this study, must be considered as well as physical facilities and operations within the Cedar Rapids metropolitan area.

As noted, deferred maintenance on certain routes into Cedar Rapids has created some major problems. However, line capacity, as such, is ample for any realistic increased traffic volumes, with one exception. The exception is the CNW, which now operates at a traffic level that sometimes exceeds efficient capacity of the line. Until the track is rehabilitated and an improved signal system is installed, this condition will continue. Although all railroads periodically delay cars because of tonnage, restrictive traffic patterns, or power shortages, these problems have been most acute on the CNW.

Within the study area, rail lines linking the various yards and industries are satisfactory from a volume standpoint, but track conditions range from fair to very poor and, in general, the maximum permissible speed on all routes is 10 mph. Another factor reducing prompt movement of traffic is the practice of some carriers to use main tracks for car storage and switching operations. The CNW, particularly, nearly always has cars stored between Otis and East Yard and frequently on the track west of the Quaker Oats plant.

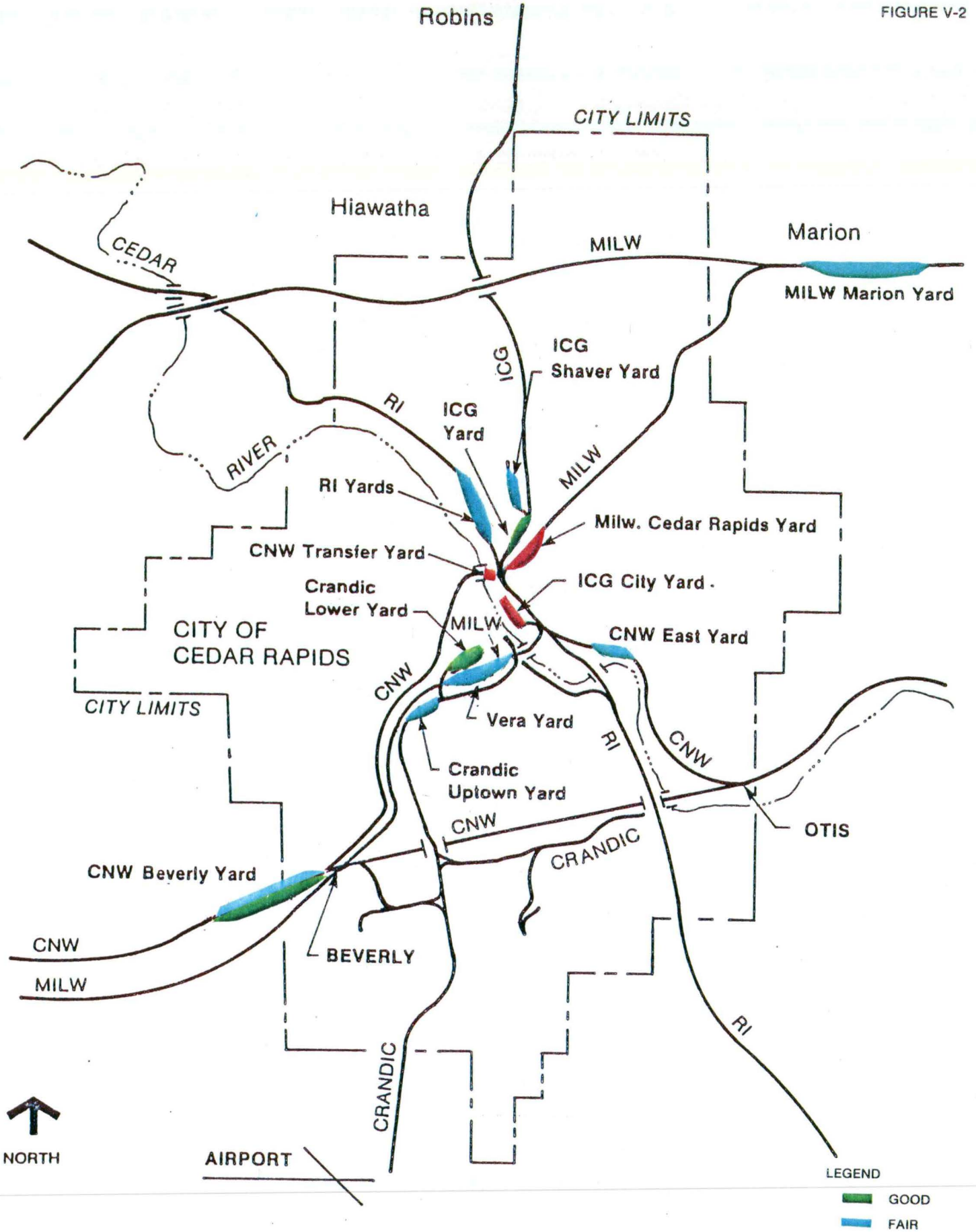
The running capacity of all yards appears inadequate or, at best, marginal, except for the RI yard complex, which is probably sufficient to handle normal traffic. However, because of recent service disruptions, a "typical" operating pattern is difficult to determine for the RI.

FIGURE V-1



MAINLINE TRACK CONDITIONS
LINN COUNTY RAILROAD STUDY

FIGURE V-2



YARD CONDITIONS
LINN COUNTY RAILROAD STUDY

In addition, certain operating practice on the part of both the railroads and the industries result in cars being held or not moving promptly, which, in effect, creates the need for more yard trackage.

The condition of yard trackage in general is fair to extremely poor. The layout of many local yards is inefficient because of curvature, short tracks, and streets crossing through the body or leads of the yard. In some cases, the yards are confined to the extent that expansion or modification is impossible.

The lack or poor location of such support facilities as track scales, car cleaning tracks, and repair and maintenance installations also cause delays due to extra handling of cars.

One problem area, and a source of many complaints, is the lack of suitable and sufficient rail cars. This is a chronic nationwide problem that, in the final analysis, cannot be corrected by local action. However, some improvement can be made, and the means will be explored.

In some cases, the scheduling of road train movement, industrial switching, and interchange permits optimum speed of car movement. On the other hand, many examples of loose scheduling (or none at all) result in delayed traffic. The whole area of scheduling of movements by individual railroads, and liaison between railroads, will be further examined so as to devise a more disciplined, more efficient overall movement of traffic.

A number of possibilities seem to exist for joint use by the various railroads of physical facilities (either existing, new, or modified) within the terminal area. Also, some service improvement may be possible through better liaison among railroads and between railroads and industry.

INDUSTRIES

With several notable exceptions, industrial firms in Cedar Rapids have reasonably adequate trackage for efficient service. A fairly large proportion of this trackage is in poor condition, which ultimately causes derailments and traffic delays. This is at least partially a railroad rather than industrial problem because much of this track is owned and maintained by the railroads. As the study progresses, specific shortcomings will be pointed out and, where possible, improvements suggested.

Operating procedures of various industries seem to be responsible for more problems than inadequate physical facilities. One example is giving priority to the unloading of trucks rather than rail cars. This not only delays cars, but creates congestion in yards. Another is the failure, in some cases, to promptly bill outbound cars.

Grain inspection does not now appear to be a major cause of car delay, though a certain amount of delay is inherent in switching out the cars, holding them for inspection, and moving them to the consignee. These procedures will be further examined to determine possible improvements.

Liaison between railroads and industries are critical to a smooth operation. In many cases, better communications can eliminate problems with little or no change in operations or physical plant. Such possibilities will be studied.

COMMUNITY

Except for rail-highway conflects within the 4th Street corridor area and at several other crossings, no serious incompatibility exists between the present rail network and the community. Solutions to rail-highway conflicts, such as modified signaling or changes in railroad operating procedures or scheduling, will be examined.

SUMMARY OF IDENTIFIED PROBLEMS

Railroad-Related

- Inadequate or inefficient yards
- Poor condition of yards and connecting trackage
- Lack of or inappropriate location of track scales and other support facilities
- Insufficient supply of serviceable rail cars
- Traffic and tonnage restrictions
- Power shortages
- Lack of disciplined and coordinated program for industrial switching, interchange and road movement of traffic

- Inappropriate blocking of cars and scheduling of trains for optimum movement of traffic
- Interchange operations between railroads not coordinated

Industry-Related

- Inadequate and inefficient configuration of plant trackage
- Poor condition of plant trackage
- Inbound cars not unloaded promptly
- Outbound cars not billed promptly
- Inadequate communications between industries and railroads
- Delays associated with grain inspection

Community-Related

- Rail-highway conflicts, especially in the 4th Street corridor

APPENDIX A

COMMENTS RELATIVE TO RAIL/ROADWAY CONFLICT

. The Transportation System Management Plan* (TSM) for fiscal years 1980 through 1984 lists the highest 54 accident locations in the Cedar Rapids area. No railroad crossings were included on this list. (The list includes all locations with ten or more accidents during 1978.)

. The TSM also surveyed city officials regarding traffic problems within their communities. Responses to these surveys relative to railroad crossings were the following:

From Area Ambulance Service: 8th Avenue track crossings from 1st Street to 4th Street in bad (rough) condition, creating potential to damage equipment when crossing.

From Cedar Rapids: Seven crossings cited for accident potential requiring crossing signals. These were:

- 9th Street S.W. railroad crossing
- B Avenue and 29th Street N.E. railroad crossing
- Oakland at G Avenue N.E. railroad crossing
- Center Point Road N.E. at G Avenue railroad crossing
- 10th Street southwest railroad crossing
- 24th Street S.W. railroad crossing
- C Street S.W. railroad crossing.

From Hiawatha: No rail-related comments.

From Linn County: No rail-related comments.

From Marion: Rail crossings at 10th, 12th, 35th and Lindale Streets were cited for roughness. The crossings at 10th, 12th and 35th Streets were termed "confusing" and signalization was recommended.

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* Transportation System Management Plan, FY 80-84, Preliminary Copy, August 1979, Linn County Regional Planning Commission.

From Robins: No rail-related comments.

Interviews were held with representatives of municipalities and other agencies to receive comments relative to this study. The comments included:

From Cedar Rapids: The 4th Street problem was identified. No other particular rail-related problems were mentioned. A pin map showing accident locations was examined. No rail crossings had a significantly large number of accidents.

From Iowa Department of Transportation District 6: No current rail-related traffic problems were mentioned.

From Hiawatha: Three crossings on a now abandoned rail line were mentioned as being rough. Flashers, on a paralleling active track, installed within the last two years at Blairs Ferry Road have reduced accidents. Due to the low number of trains (two per day), delay is not a problem.

From Marion: At the present time, there are no significant accident or delay problems. The City has been negotiating with the MILW to get more crossings signalized in return for closing some of the crossings.

From Linn County Sheriff's Department: There are no unique problems in the surrounding Linn County.

GLOSSARY OF TERMS

Ballast:	Selected material placed on the roadbed for purpose of holding the track in line and surface.
Branch Line:	The secondary line or lines of a railway.
Carrier:	An individual or company engaged in the operation of a transportation service hire for hire, classified as a common carrier if serving the public and as a private or contact carrier if not serving the public.
Cinders:	The fused residue from coal burned in locomotives and other furnaces.
Continuous Welded Rail (CWR):	A number of rails welded together in lengths of 400 feet or longer.
Crossing (track):	A structure, used where one track crosses another at grade, and consisting of four connected frogs.
Crossover:	Two turnouts with the track between the frogs arranged to form a continuous passage between two nearby and generally parallel tracks.
Cross Tie:	The transverse member of the track structure to which the rails are spiked or otherwise fastened to provide proper gage and to cushion, distribute, and transmit the stresses of traffic through the ballast to the roadbed.
Derail:	A track structure for derailing rolling stock in case of an emergency.
Flangeway:	The open way through a track structure which provides a passageway for wheel flanges.
Frog:	A track structure used at the intersection of two running rails to provide support for wheels and passageways for their flanges, thus permitting wheels on either rail to cross the other.

Bolted rigid: A frog built essentially of rolled rails, with fillers between the rails, and held together with bolts.

Spring rail: A frog having a movable wing rail which is normally held against the point rail by springs, thus making an unbroken running service for wheels using one track, whereas the flanges of wheels on the other track force the movable wing rail away from the point rail to provide a passageway.

Solid manganese steel: A frog consisting essentially of a single manganese steel casting.

Self-guarded: A frog provided with guides or flanges above its running surface, which contact the tread rims of wheels for the purpose of safely guiding their flanges past the point of frog.

Frog Angle: The angle formed by the intersecting gage lines of a frog.

Frog Number: One-half the votangent of one-half the frog angle, or the number of units of enter line length in which the spread is one unit.

Gage (of track): The distance between the gage lines, measured at right angles thereto. (Standard gage is 4 feet, 8 1/2 inches.)

Guard Rail: A rail or other structure laid parallel to the running rails of a track to prevent wheels from being derailed or to hold wheels in correct alignment to prevent their flanges from stiking the points of turnout or crossing frogs or the points of switches.

Guard Timber: A longitudinal timber placed outside the track rail to maintain the spacing of ties.

Joint Bar: A steel member embodying beam-strength and stiffness in its structural shape and material, commonly used in pairs for the purpose of

joining rail ends together, and holding them accurately, evenly, and firmly in position with reference to surface and gage-side alignment.

Lead: The length between the actual point of switch and the one-half point of the frog measured on the line of the parent track.

Level: The condition of the track in which the elevation of the two rails transversely is the same.

Line: The condition of the track in regard to uniformity in direction over short distances on tangents, or uniformity in variation in direction over short distance on curves.

Rail: A rolled steel shape, commonly a T-section designed to be laid end-to-end in two parallel lines on cross ties or other suitable supports to form a track for railway rolling stock.

Railway Track Scale: A scale especially designed for weighing railway equipment.

Salvage: Material and its value recovered from property retired or from material used as a construction aid.

Siding: A track auxiliary to the main track for meeting or passing trains.

Slag: A nonmetallic fused product resulting from the reduction of ores in furnaces.

Switch Tie: The transverse member of the track structure which is longer than, but functions as does, the cross tie and, in addition, supports a crossover or turnout.

Terminal: An assemblage of facilities provided by a railway at a terminus or at an intermediate point for the handling of passengers or freight and the receiving, classifying, assembling and dispatching of trains.

Tie Plate: A plate interposed between a rail or other track structure and a tie.

Track: An assembly of rails, ties and fastenings over which cars, locomotives and trains are moved.

- Classification Track: One of the body tracks in a classification yard, or a track used for classification purposes.
- Departure Track: One of the tracks in a departure yard on which outgoing cars are placed.
- Hold Track: One of the body tracks in a hold yard or a track used for hold purposes.
- House Track: A track alongside or entering a freight house, and used for cars receiving or delivering freight at the house.
- Interchange Track: A track on which cars are delivered or received, as between railways.
- Ladder Track: A track connecting successively the body tracks of a yard.
- Lead Track: An extended track connecting either end of a yard with the main track.
- Main Track: A track extending through yards and between stations, upon which trains are operated by time table or train order, or both, or the use of which is governed by block signals.

Passing Track: A track auxiliary to the main track for meeting or passing trains.

Receiving Track: One of the body tracks in a receiving yard or a track used for receiving trains.

Repair Track: A track on which cars are placed for repairs.

Scale Track: A track leading to and from and passing over a track scale.

Spur Track: A stub track diverging from a main or other track.

Team Track: A track on which cars are placed for transfer of freight between cars and highway vehicles.

Transfer Track: A track so located with respect to other tracks and to transferring facilities as to facilitate the transfer of lading from one car to another.

Wye Track: A triangular arrangement of tracks on which locomotives cars and trains may be turned.

Track Capacity: The number of cars that can stand in the clear on a track.

Turnout: An arrangement of a switch and a frog with closure rails, by means of which rolling stock may be diverted from one track to another. The turnout number corresponds to the frog number of the frog used in the turnout.

Yard: A system of tracks within limits provided for making up trains, storing cars, and other purposes, over which movements not authorized by time table or by train order may be made, subject to prescribed signals and rules or special instructions.

Track Conditions:

Good: Adequate for continued service with routine maintenance.

Fair: Adequate for continued service but routine maintenance must soon be supplemented with a rehabilitation program.

Poor: In immediate need of rehabilitation.