Cedar-Iowa River Rail Transit Project
Feasibility Study

Submitted To

Five Seasons Transportation & Parking
and
The Johnson County Council of Governments

JCCOG

Submitted By

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Cedar-Iowa River Rail Transit Project Feasibility Study

Final Report

Acknowledgements

R.L. Banks & Associates, Inc., in conjunction with HNTB Corporation and Snyder & Associates, Inc., (hereafter "the Consultant Team") wish to recognize the contribution to this report made by members of organizations which, in alphabetical order, are:

- City of Cedar Rapids;
- City of Coralville;
- City of Hiawatha;
- City of Iowa City;
- City of Marion;
- City of North Liberty;
- City of Tiffin;
- City of University Heights;
- Johnson County;
- Linn County;
- University of Iowa;
- The 15 in 5 Committee;
- Five Seasons Transportation & Parking and
- The Johnson County Council of Governments.

The Consultant Team also wishes to recognize the special contribution made by Cedar Rapids and Iowa City Railway Company (CRANDIC) and Iowa Interstate Railroad System (IAIS) in providing both vital data and essential review time. In particular, the Consultant Team would like to thank Mr. Randall J. Walker (CRANDIC, Roadmaster) and Mr. Scott Woodward (IAIS, Engineer – Maintenance of Way) for their time, knowledge and effort in facilitating inspection of all three rail corridors.

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Executive Summary

Purpose of the Study

Five Seasons Transportation & Parking (FSTP) and the Johnson County Council of Governments (JCCOG) are interested in evaluating the feasibility of prospective passenger rail service(s) that would operate over existing trackage of the Cedar Rapids and Iowa City Railway Company (CRANDIC), seen below left, and/or the Iowa Interstate Railroad System (IAIS), seen below right, connecting Cedar Rapids, Iowa City and the Amana Colonies. To perform the study, FSTP and JCCOG selected R.L. Banks & Associates, Inc. (RLBA) as Prime Contractors, HNTB Corporation (HNTB) and Snyder & Associates, Inc. (Snyder) as Subcontractors, hereafter Consultant Team. Both railroads participated in the study and contributed time and resources, as did many local government and civic organizations. The purpose of the study is to determine whether it is feasible to establish regularly scheduled passenger rail service and/or special event excursion rail service, in conjunction with the Five Seasons Transit system, Iowa City Transit, East Central Iowa Transit, Coralville Transit and the University of Iowa CAMBUS. The study is subdivided into working sections or "Tasks" including:

- Task 1 – Infrastructure Requirements
- Task 2 – Service Plan and Potential Conflicts
- Task 3 – Demand Estimation
- Task 4 – Investment Requirements
- Task 5 – Steering Committee and
- Task 6 – Federal Requirements.

Infrastructure Requirements

Track infrastructure improvements are recommended in Task 1 to coincide with various service plans, matching improvements with a desired level of train frequency and projected maximum train speeds. The primary elements of infrastructure improvements are upgrades to the track structure (rail and ties, as needed) and construction of stations, parking lots and layover tracks (locations to store and service trains overnight). Proposed track infrastructure improvements would enable reliable and comfortable rail passenger services to be provided, consistent with continuation of efficient and cost-effective freight operations. Capital infrastructure improvement costs associated with each service plan are summarized in Table ES-1.

Service Plan and Potential Conflicts

After an initial examination of all three rail routes, three potential services were selected for detailed evaluation, including

- daily commuter-type services between Eastern Iowa Airport (with a bus connection to downtown Cedar Rapids) and Iowa City,
- daily commuter-type service between North Liberty and Iowa City, and
- Special Event Excursion service.

The daily commuter service alternatives target people making regular trips to work, school, shopping or entertainment. Service implementation would require various degrees of infrastructure improvement and the acquisition of railroad passenger equipment. Both of the promising commuter services would operate within the confines of the CRANDIC Hills Line between the Eastern Iowa Airport and downtown Iowa City.

Immediate potential exists to undertake Special Event Excursion Service and/or Vintage Excursion Service. The CRANDIC Hills Line between the Eastern Iowa Airport, Iowa City and Hills hosts only occasional freight train use and, therefore, is available to support passenger service, subject to reaching agreement with CRANDIC concerning liability and other terms. Other CRANDIC trackage and the IAIS Iowa City-Amana (Yokum Connection) routes also may be available on an occasional basis, subject to coordinating passenger and freight use. Service could be tied to area sports, entertainment or cultural events or could focus on the rail trip itself as entertainment. Equipment is potentially available on a trip lease basis in the form of a locomotive and coaches being outfitted for Hawkeye Express service by the Iowa Northern Railroad. Alternatively, a replica of a vintage self-propelled railcar could be obtained from a firm such as Miner Rail Services of Donnellson, Iowa. Those service opportunities could be pursued immediately. Characteristics of excursion and regular service options examined are summarized in Table ES-1.

Table ES-1

Summary Service Statistics
(In 2006 Dollars)

	Capital Costs					
Service	**Track/Bridges (1)**	**Equipment (Purchased or Leased)**	**Stations & Layover Facilities**	**Total**	**Ridership (2)**	**Annual Operating Costs**
Special Event Excursion Service	**$25,000**	**$3,000+/- (Leased)**	**$15,000**	**$ 40,000**	**Up to 6,046**	**$25,000**
Vintage Excursion Service	**25,000**	**400,000**	**15,000**	**440,000**	**Up to 75**	**20,000**
Alternative 2. Eastern Iowa – Airport to Iowa City Commuter Service (2006)	**4,107,000**	**4,500,000**	**12,800,000**	**21,407,000**	**837**	**5,014,000**
Alternative 2. (2030)	**14,981,000**	**7,500,000**	**12,800,000**	**35,281,000**	**1,991**	**11,960,000**
Alternative 3. N. Liberty – Iowa City Commuter Service (2006)	**1,448,000**	**8,400,000**	**8,800,000**	**18,648,000**	**742**	**4,078,000**
Alternative 3. (2030)	**6,615,000**	**12,600,00**	**8,800,000**	**28,015,000**	**1,336**	**6,797,000**

Notes:
1. CRANDIC has reserved the right to consider whether rail must be replaced on the Hills Line prior to initiating 30 mph, 2006 commuter service. If so, capital costs would increase by approximately $9,247,000.
2. Special Excursion Service ridership shown represents the estimated potential rail market. Actual ridership would be limited by train seating capacity and whether more than one trip was offered in conjunction with various events.

The three rail lines examined differ significantly in terms of the amount of freight use. The CRANDIC Hills Line between the Eastern Iowa Airport, Iowa City and Hills hosts only occasional freight train use. The CRANDIC Amana Line hosts interchange operations between CRANDIC and IAIS and CRANDIC and Union Pacific, as well as switching activity at the Smith-Dows freight yard. The IAIS Iowa City-Yokum line is part of that company's main line between Omaha and Chicago and hosts through and interchange trains. The CRANDIC lines in Cedar Rapids north of Archer Daniels Midland (ADM) host intensive industrial switching and interchange activities with extended periods of track occupancy by freight crews.

Due to the extensive CRANDIC freight activity north of ADM, additional tracks and other infrastructure improvements amounting to around $35 million would be required to implement regular service on that line segment. Given this cost and the desire to minimize initial capital expenditures, daily service over the segment was ruled out as an initial service option.

Demand Estimation

In Task 3, existing and future demand is estimated in connection with two distinct trip purposes, daily commuter and event/excursion trips. Rail ridership numbers are estimated from available data sources for the most recent existing (year 2000) and estimated (year 2030) conditions, and are summarized for primary service options in Table ES-2. Daily commuter service revenues are estimated based on ridership projection. Future ridership could be boosted through transit oriented development as described in this Task.

Daily Commuter Service Ridership

The daily commuter ridership forecast provides an estimate of the number of daily boardings that would be anticipated were rail service provided along all or portions of the three legs of the triangle served by tracks owned and operated by CRANDIC and the IAIS. Commuter ridership methodology assumes patrons make their mode choice based on an evaluation of travel times and costs.

Year 2000 daily service ridership was estimated in connection with three alternatives:

1) passenger rail service on the entire rail network under consideration;
2) service only on the segment of the CRANDIC line connecting the airport with Iowa City and
3) service using CRANDIC between Iowa City and North Liberty.

Ridership estimates in connection with Alternative 1 identified the territory adjacent to existing rail line with the highest ridership potential. That section was between North Liberty and Iowa City. Additional analysis was provided in Alternatives 2 and 3, which focused on the Cedar Rapids - Iowa City corridor. The highest number of boardings was between North Liberty and Iowa City, with the second highest boardings between Cedar Rapids and the Eastern Iowa Airport. As would be expected, ridership was higher in the combined corridor linking Cedar Rapids with Iowa City than within the individual sections. The two lines connecting the Amana Colonies with Cedar Rapids and Iowa City, respectively, do not show sufficient ridership potential for further consideration.

Event Service Ridership

The event ridership methodology assumes patrons to/from the various events do not make their mode choice based on a rigorous economic evaluation of travel times and costs but rather that

they seek to enjoy the complete experience of an event. This experience is enhanced by utilizing a reasonably competitive rail service connecting a patron to an event. Events (including University of Iowa sports, Amana Colonies and Coral Ridge Mall) and attendance data were identified by respective chambers of commerce staff in the three communities: Cedar Rapids, Iowa City and the Amana Colonies area. There is also community interest in "Vintage Excursions" which would include basic rail tours not oriented to specific events. Estimates of rail service ridership potential in connection with a number of events are provided in Task 3.

Investment Requirements

Costs

In Task 4, the costs of providing the proposed service are estimated including initial capital investments as well as operating and maintenance costs which are summarized in Table ES-1. Different types of equipment, such as vintage rail cars (below, top left), conventional trains (top right) and old and modern self-powered rail cars (bottom), could be utilized in connection with specific types of service considered in this study.

Funding

A number of different federal funding opportunities are available. The Federal Transit Administration (FTA) Small Starts Program, a component of the SAFETEA-LU surface transportation legislation, is a federal funding option this project could pursue. The law, signed in August 2005, requires the Secretary of Transportation to issue regulations establishing an evaluation and rating process governing capital grants of less than $75 million. FTA advises that interim guidance will be published in September 2006 and a Final Rule in January 2008.

There are at least a dozen federal programs which may provide some form of funding assistance, some in amounts which would constitute relatively small portions of total required project funding. Perhaps the most important federal funding opportunity, allowed under SAFETEA-LU, is an "earmark." The next surface transportation authorization is expected in year 2009. Project sponsors should work with the congressional delegation toward obtaining an earmark in that authorization. Priority should be given to pursuit of SAFETEA-LU Small Start

Program funds if Regional FTA officials are supportive (see Federal Requirements section). In addition, there may be a short-term opportunity to pursue an exempt FTA grant, as detailed in the Federal Requirements section. State, local and private funding possibilities also exist.

Steering Committee
As part of Task 5, the Consultant Team participated in a public meeting held on December 7, 2005, at Kirkwood Community College with members of the Steering Committee present including Bill Hoekstra and Jeff Davidson. Additional stakeholder meetings have been conducted. A public presentation by FSTP and JCCOG is expected upon Study completion.

Federal Requirements
Federal procedures required to obtain FTA New Starts or Small Starts passenger rail funding are detailed, time-consuming and, in addition, will require considerable funding to complete. There is no assurance that funding requests will be approved. Project sponsors should obtain from Regional FTA officials their candid opinions regarding the possibility that this project will obtain federal FTA funding. An FTA guideline, expressed a few years ago, was that 15,000 riders per day are required to justify federal funding to support detailed planning of a fixed guideway project. Even the Very Small Starts program requires 3,000 riders with 1,000 at the terminal. The ridership figures estimated in connection with this project are below those figures. Thus the Consultant Team recommends strongly that project sponsors be under no illusions and obtain early an FTA assessment of prospects.

If FTA Regional officials are optimistic with regard to the likelihood of federal grant funding, notwithstanding the modest ridership estimates in this Study, then FTA New Starts or Small Starts funding should be pursued.

There is another possible window of opportunity to obtain FTA grant funds. If total estimated project investment is low enough so that a $25 million federal exempt grant is deemed sufficient and if Regional FTA officials indicate that there is time to obtain such a grant before the projected January 2008 publication date of the Small Starts Final Rule, which will mark the end of the current program allowing $25 million exempt grants (which do not require evaluations or ranking), then project sponsors should pursue the $25 million FTA grant. Otherwise, it is necessary to go through the various steps required to qualify for a FTA grant. (A project with total FTA funding under $25 million is exempt from new start criteria and requires no alternatives analysis.) When Small Starts evaluation procedures are published – interim procedures in September 2006 and the Final Rule in January 2008 – these procedures are expected to encompass at least many of the features of the traditional FTA New Start project evaluation and ranking processes. It is recommended that project sponsors discuss this possibility with FTA, as it may present an attractive method of obtaining initial federal funding.

Conclusions
Findings of all technical tasks are summarized in Table ES-1. It is apparent that excursion service – either special event or regularly scheduled tours – is an option that is feasible to pursue immediately. The regular commuter service options between North Liberty and Iowa City, the Eastern Iowa Airport and Iowa City and on all three corridors between Cedar Rapids, Iowa City and the Amana Colonies are more expensive and the timing of implementation is a decision to be weighed by the communities as demand grows and funding becomes available.

Overview

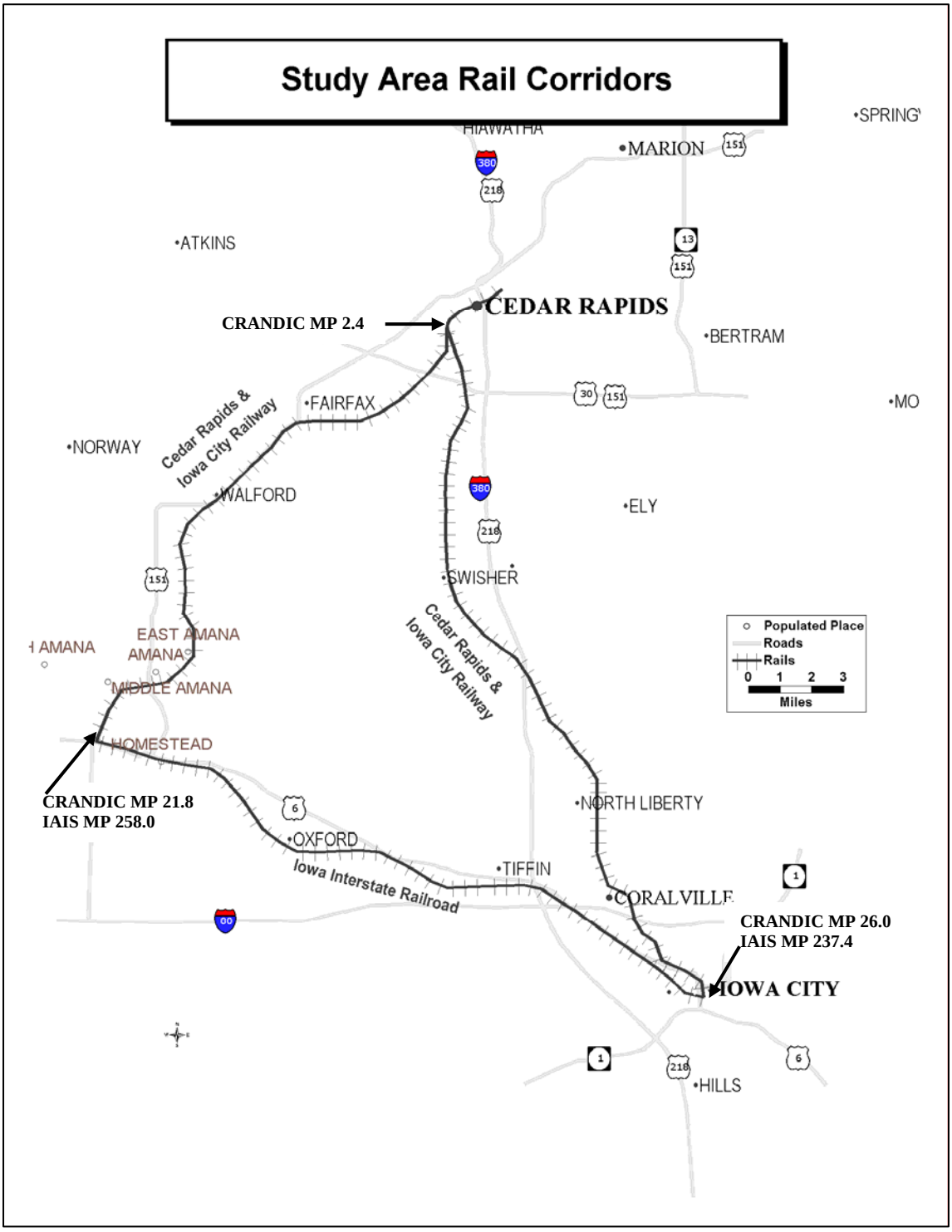
R.L. Banks & Associates, Inc. (RLBA), HNTB Corporation (HNTB) and Snyder & Associates, Inc. (Snyder), hereafter "Consultant Team," combined together and were chosen by a selection committee spearheaded by Five Seasons Transportation & Parking (FSTP) and The Johnson County Council of Governments (JCCOG) to complete the Cedar-Iowa River Rail Transit Project Feasibility Study (Study). The Study is funded in part by:

- The City of Cedar Rapids;
- The City of Coralville;
- The City of Hiawatha;
- The City of Iowa City;
- The City of Marion;
- The City of North Liberty;
- The City of Tiffin;
- The City of University Heights;
- Johnson County;
- Linn County and
- The University of Iowa.

The underlying purpose of the Study is to determine if passenger rail (specialty, commuter or other variations) is feasible in three, distinct, existing rail line corridors connecting Cedar Rapids, Iowa City and the Amana Colonies, as seen in Figure One on the next page. Each of the three municipalities (cities, villages and/or business districts) are unique and require and have received individual attention regarding potential passenger rail services as well as the three railroad corridors connecting those points. Many intermediate points of interest lay along the rail corridors, presenting additional opportunities to grow and enhance passenger rail services should they commence.

This Study follows-up on an earlier 1995 *East Central Iowa Commuter Rail Feasibility Study*, one recommendation of which was to revisit feasibility in about ten years or when population growth warranted, although the earlier Study was more focused on conventional commuter rail service than is this one.

Figure One


Study Area Rail Corridors
HIAWATHA
•MARION
•SPRING
•ATKINS
CEDAR RAPIDS
CRANDIC MP 2.4
•BERTRAM
•FAIRFAX
•MO
•NORWAY
Cedar Rapids & Iowa City Railway
•WALFORD
•ELY
•SWISHER
EAST AMANA
AMANA
MIDDLE AMANA
HOMESTEAD
Cedar Rapids & Iowa City Railway
Populated Place
Roads
Rails
0 1 2 3
Miles
CRANDIC MP 21.8
IAIS MP 258.0
•NORTH LIBERTY
•OXFORD
•TIFFIN
Iowa Interstate Railroad
•CORALVILLE
CRANDIC MP 26.0
IAIS MP 237.4
IOWA CITY
•HILLS

Glossary of Terms

The following terms are used in this Report and placed in alphabetical order.

ABS – Automatic Block Signaling, the presence or absence of a train affects the track circuit and controls the signals. The system is *fail safe*, in that a broken rail or circuitry wire results in no display of a clear signal.

Consist – a series of attached rail vehicles; the make-up of a train.

Crossover – the connection of two parallel tracks, by two turnouts and the necessary intermediate (between the two turnouts) track. In other words, the arrangement of turnouts and track which allows a train to cross over from one track to the other parallel track.

Crosstie (or "tie") – the transverse wood, concrete, metal or synthetic member which supports the rails of a railroad. The function of cross ties is to carry and distribute the forces of train traffic from the rails to the ballast.

CTC – Centralized Traffic Control, a train movement system by which a remote dispatcher controls switches and sets signals.

CWR – continuous welded rail: rail welded into long lengths at a welding facility, as contrasted with bolted or jointed rail. Where traffic is heavy, CWR reduces track maintenance cost, eliminates bolt holes (which can be a source of rail failure) and improves quality of ride (less damage for cargo, smoother ride for passengers). Also called "ribbon rail."

Dark territory – railroad track without signals.

Frog – The assembly which lets the flanged wheels cross over the opposite rail.

Grade crossing (also at-grade, highway-rail crossing) – the crossing of railroad and highway at the same level.

Joint Bar – part of the track structure used to join the ends of regular, jointed rails together.

OTM – other track material: track materials other than rail and ties, e.g., bolts, spikes, tie plates, and rail anchors.

RRIF – "Rail Rehabilitation and Improvement Financing" is a direct loan program administered by the Federal Railroad Administration (FRA).

Right-of-way – the land occupied by a railroad for its tracks.

Rolling stock – vehicles used in a transportation system. In railroading, the term applied to locomotives and railcars.

SAFETEA-LU – "Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users" is a federal transit funding source administered by the Federal Transit Administration (FTA).

Short line railroad – term generally applied to a small railroad, smaller than a Class I or regional.

TIFIA – "Transportation Infrastructure Finance and Innovation Act" is a credit assistance program administered by the Secretary of Transportation.

Tie Plate – a part of the track structure placed under the rail to distribute the wheel load to the tie, cant the rail to the desired angle, assist in maintaining the track to gauge and protect the tie.

Turnout – a switch, a device allowing a train to depart one track and access another.

Yard – system of parallel tracks utilized for switching, train make-up and storing of cars.

Source: RLBA, American Railway Engineering and Maintenance-of-Way Association (AREMA) Manual and *The Railroad – What It Is, What It Does*.

Description of Corridors

As seen in Figure One on the previous page, the subject three corridors form a triangle between the areas of interest. With Cedar Rapids and Iowa City being the largest points of interest and most likely having the greatest ridership potential, the Study focused on the corridor connecting those two points and proceeded in a clockwise manner around the remainder of the corridors.

Cedar Rapids – Iowa City Corridor

This corridor connects the two most populous areas that are the subject of this Study (Cedar Rapids and Iowa City) to the southeast and likely has the greatest passenger rail ridership potential and availability due to light freight rail traffic in many areas. An Alliant Energy subsidiary, The Cedar Rapids and Iowa City Railroad Company (CRANDIC) owns and operates this corridor also known as the "Hills Line" with twice-weekly freight service to its most southern industry served. Significant switching activity occurs closer to Cedar Rapids as will be discussed in detail later. The corridor is characterized as "dark territory" since it is unsignalled with train movements accomplished at "yard speed," twenty miles per hour (mph) or less. Track actually continues through Iowa City to Hills, IA where it serves one industry before terminating as seen below.

CRANDIC Switch Engine at Penford

Track structure is comprised of scattered, various lengths of regular, jointed rail (115, 112, 110, 100 and 90 pounds per yard, hereafter "pound," weights) as illustrated in Table One on the next page, a mixture of four and six-hole joint bars, standard wood crossties, corresponding sized single and double shoulder tie plates, rail anchors and regular cut spikes.

Industry and End of Track at Hills, IA

The Hills Line is approximately 33.2 miles long, ranging from MP 0, at the Cedar Shop Area in Cedar Rapids to MP 33.2 at end of track, south of Hills, IA. Iowa City extends along the track approximately two miles between MP 25 and MP 27 and therefore, areas of interest to this Study range between MP 0 and 27 on the Hills Line. In the Cedar Rapids area, both the Hills Line and the Amana Line use the same track between MP 0 and MP 2.4.

Table One

Summary of Rail
Cedar Rapids and Iowa City Railroad, Hills Line

Rail Section	Miles	Control-Cooled
115	5.2	Yes
112	1.7	Yes
112	0.4	No
110	1.6	No
100	6.4	Yes
100	6.2	No
90	3.9	Yes
90	1.6	No
Total	**27.0**	

Source: CRANDIC track chart and RLBA calculations.

As noted in Table One, some 9.8 miles of the Hills Line is constructed of non- "control- cooled" (CC) rail of various weights. According to Sperry Rail Service's Defect Manual "An attempt to solve the transverse fissure problem by elimination of the prime cause (shatter cracks or hydrogen flakes) resulted in the development of the "control-cooled" process of rail manufacturers and led to the general adoption of the process in 1936 – 1938 by American steel mills. The transverse fissure problem was essentially solved by the control cooling processes and the vacuum degassing process subsequently used by some manufacturers in recent years."[1] A discussion of the importance of this distinction will follow in the Infrastructure section. There are 39 curves on the Hills Line with 35 in the interest area. Curves in the area under review range up to about six degrees 50 minutes (maximum) with the exception of a curve near Iowa City which is shown in the CRANDIC-provided track chart as 20 degrees and 35 minutes. During the hi-rail inspection, CRANDIC's Roadmaster, Randall Walker, stated that particular curve was a source of regular maintenance concern. Grades on the Hill Line can be quite steep, approaching up to 2.06 percent near Iowa City with 1.5 percent (and greater) scattered throughout the entire line. Existing passing tracks (or the potential for one where one of the two accessing switches have been removed) are relatively short (approximate footage given) and located at:

- Airport – MP 6.2 – 1,240 feet long;

[1] Rail Defect Manual, Compiled by Sperry Rail Service for the use of railroads, p. 25.

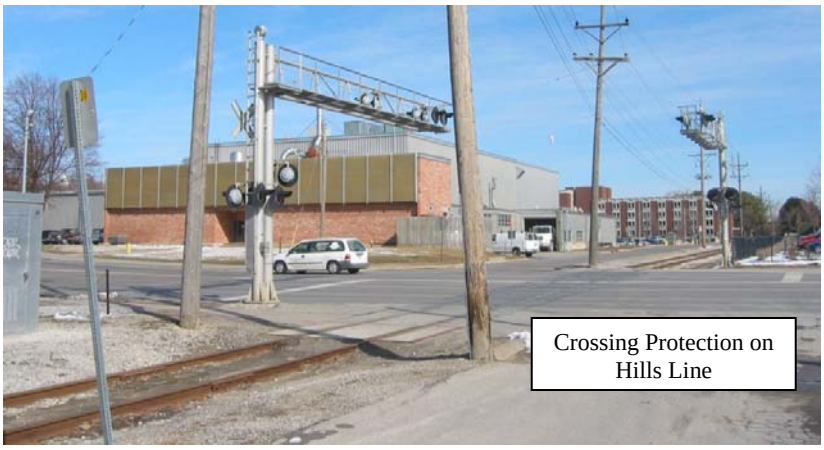
- Swisher – MP 8.5 – 860 feet long – north switch has been removed;
- MidRiver – MP 13.5 – 1,400 feet long;
- North Liberty (east) – MP 17.0 – 670 feet long;
- North Liberty (west) – MP 17.0 – 880 feet long – north switch has been removed;
- Great Lakes – MP 22.7 – 1,750 feet long and
- Iowa City – MP 25.2 – 1,050 feet long.

Rail weight varies by location with the larger rail section (115 pound) having been installed most recently. Rail is checked once every eighteen months for internal flaws via a contract detection company. Defective rails are replaced as necessary to comply with FRA criteria.

Tie condition was stated as fair to good given the class of track but was snow covered on the day of the initial inspection as seen in the photo to the right. According to Mr. Walker, ties are installed on a regular basis or as needed to comply with FRA regulations. Mr. Walker furnished tie installation information dating back to 1993 by milepost and number installed. Additional information obtained from the CRANDIC-provided track chart indicating tie installation amounts and dates suggested that tie conditions in the corridor are most likely sufficient given the current class and speed of the track.


Snow covered track

Public at-grade, highway-rail crossings vary in composition, including full-depth concrete, timber and asphalt (T&A), gravel-filled, timber only (moss) and rubber. Mr. Walker stated that two crossings are scheduled to be upgraded in 2006. All private crossings are gravel only filled. Crossing protection also varies across the territory in that most private crossings either have crossbucks only or nothing at all, while many public crossings feature combinations of flashing lights, gates and/or bells, as seen to the right.


Crossing Protection on Hills Line

Switches are predominately number 8 (#8), which is a measure of angularity and composed of 90 pound rail in the areas of older 90 and 100 pound rail. Where rail is larger (112 and 115 pound), switch components match the adjoining sized rail. All switches are manually controlled with plane switch points and rail bound manganese (RBM) frogs. According to Mr. Walker, switch tie condition is fair, given the track class.

There are 27 bridges (including six overhead and one on the Prairie Creek side track to the power plant) on the line with three being south of MP 27 and therefore outside the area of interest on this line, resulting in a total of 17 bridges contained within the Study corridor. According to Mr. Walker, bridge inspection is accomplished by Kelly Engineering, Inc. (an Iowa-based engineering firm) and provided a copy of the latest inspection (2005) to facilitate the Consultant Team's review. Upon review of the latest bridge inspection, overall bridge condition is listed as good, fair and poor according to an individual bridge's characteristics. Individual bridge requirements will be addressed later.

Iowa City - Amana Colonies Corridor

The most southern corridor lies approximately east to west between Iowa City and the Amana Colonies. Iowa Interstate Railroad System (IAIS) owns and operates this corridor, formerly the Rock Island Railroad, as a portion of its larger east/west corridor between Council Bluffs, IA and Chicago, IL. Daily, local freight service along with a small volume of through freight traffic constitutes the total rail traffic on this corridor. During fall weekends of the most recent two years, the Hawkeye Express passenger train (as seen at right) has traveled between Vernon Siding and Iowa City, delivering fans to and from the University of Iowa football stadium. Train operations will be discussed in greater detail later. The IAIS territory in this area is also unsignalled; however operations are dispatched out of Cedar Rapids, with train movements restricted to 25 mph over the entire area of interest.


Hawkeye Express

Mr. Scott Woodward (IAIS, Engineer – Maintenance of Way) furnished a current track chart of the corridor along with piloting a hi-rail inspection of the line. IAIS trackage of interest lies between MP 236.9 (Clinton Street) and MP 258.0, which is the east end of Yocum Connection Wye track (seen at left) going in an east to west direction, making the corridor about 21.1 miles long. IAIS rail in this corridor is much more homogeneous than that in CRANDIC's Hills Line and contains both regular jointed and continuous welded rail (CWR). Rail weights in this corridor are as follows:


Yocum East leg of Wye Switch
(Look West)

- MP 236.9 - MP 238.5 contains 112 pound, regular jointed rail;
- MP 238.5 - MP 243.6 contains 115 pound, regular jointed rail;
- MP 243.6 - MP 244.5 contains 119 pound CWR and
- MP 244.5 - MP 258.0 contains 115 pound CWR.

A mixture of four and six-hole joint bars exists in the jointed rail section. Other track components include standard, wood crossties, corresponding sized double shoulder tie plates, rail anchors and regular cut spikes. There are sixteen curves in the subject area with the sharpest being about three degrees, located near Iowa City. IAIS grades on this line range up to 1.15 percent in just a few places scattered throughout the corridor. Existing passing tracks, an example of which can be seen below, (or the potential for one where one of the two accessing switches has been removed) vary in length (approximate), are mostly short and located at:

- Vernon – MP 240.7 – 1,660 feet long – west switch has been removed;
- Hawkeye – MP 242.7 – 1,270 feet long and
- Homestead – MP 256.1 – 2,995 feet long.


West End Homestead Siding

All rail in the corridor is control-cooled, which traditionally reduces the number of defects, all else equal. Internal rail flaws are checked annually via a contract detection company. Defective rails are replaced as necessary to comply with FRA criteria.

Mr. Woodward stated that tie condition was good, sufficient given the current use, class and speed of the track but it was snow covered on the day of inspection. A subsequent visual inspection near at-grade, highway-rail crossings confirm this statement.

Public, at-grade, highway-rail crossings vary in configuration, including full-depth concrete, T&A, gravel filled, moss and rubber. All private crossings are timber and gravel or gravel only filled. Crossing protection also varies across the territory in that most private crossings either have crossbucks only or nothing at all, while many public crossings feature combinations of flashing lights, gates and/or bells.

Switches are predominately #10 and composed of 115 pound rail. All switches are manually controlled and most have Sampson (undercut) switch points with RBM frogs. According to Mr. Woodward, switch tie condition is fair, given the track class.

There are 22 bridges (including two overhead bridges) on the line within the area of interest. According to Mr. Woodward, bridge inspection is accomplished by Kelly Engineering (same firm does CRANDIC's bridge inspection). A copy of the latest bridge inspection was provided to facilitate the Consultant Team's review. Upon review of the latest bridge inspection, overall bridge condition is good, fair, poor or emergency depending on an individual bridge's characteristics.


IAIS interchanging at Smith-Dows Yard

Amana Colonies - Cedar Rapids Corridor

The last corridor reviewed is also owned by CRANDIC and operated on by both IAIS and CRANDIC (as evidenced by the photo to the right illustrating an IAIS train interchanging with the CRANDIC at Smith-Dows

Yard just southwest of Cedar Rapids) with service between the Amana Colonies and Cedar Rapids, hence its name, the Amana Line. Depending on the direction of travel, this corridor has either a southwestern or a northeastern direction and forms the last leg of the triangle.

Shared track on both the Hills and Amana Lines ranges between MP 0 and MP 2.4, as previously stated. Significant switching activity occurs close to Cedar Rapids as discussed in detail later. The Amana Line is also considered dark territory since it is unsignalled, with train movements accomplished at yard speed, not exceeding twenty mph, with the exception of between MP 0 and MP 6, which is restricted to a maximum speed of ten mph. Track structure is comprised of scattered, various lengths of regular jointed rail (115, 112 and 90 pound as illustrated in Table Two, a mixture of four and six-hole joint bars, standard, wood crossties, corresponding sized single and double shoulder tie-plates, rail anchors and regular cut spikes. The Amana Line is approximately 21.8 miles long, ranging from MP 0, at the Cedar Shop Area in Cedar Rapids to MP 21.8 at Yocum connection track, south of Amana. There are 25 additional curves on the Amana Line beyond those already counted on the Hills Line within the interest area. Curves in the area under review range up to about sixteen degrees (maximum), with the majority of the sharper curves near Cedar Rapids.

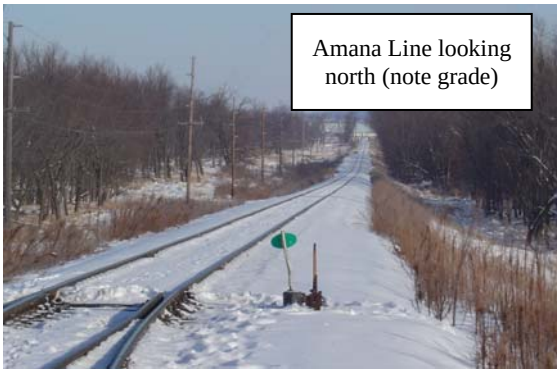
Table Two

Summary of Rail
Cedar Rapids and Iowa City Railroad, Amana Line

Rail Section	Miles	Control-Cooled
115	6.4	Yes
112	0.3	Yes
112	14.9	No
90	0.2	No
Total	**21.8**	

Source: CRANDIC track chart and RLBA calculations.

Grades on the Amana Line can be quite steep, approaching up to 1.8 percent near Cedar Rapids and in the Amana area as seen in the photo to the right.


Amana Line looking north (note grade)

Approximately 15.1 miles of rail on the Amana Line is not control-cooled as illustrated in Table Two. Existing passing tracks (or the potential for one where one of the two accessing switches has been removed) are mostly short (approximate footage given) and are located at:

- Fairfax – MP 8.1 – 590 feet long – north switch has been removed;
- Walford – MP 11.6 – 1,130 feet long;
- Amana Depot (east) – MP 18.4 – 1,670 feet long;
- Amana Refrigeration (West) – MP 19.7 – 1,200 feet long and

- Amana Refrigeration (East) – MP 19.8 – 2,300 feet long.

The majority of Amana line rail is of a medium sized rail section (115 and 112 pound) with the 115 pound being installed most recently. According to Mr. Walker, the only locations containing 90 pound rail are some switch areas. Rail is checked once every eighteen months for internal rail flaws via a contract detection company. Defective rails are replaced as necessary to comply with FRA criteria.

Tie condition was stated as fair to good given the class of track but was snow covered on the day of inspection. According to Mr. Walker, ties are installed on a regular basis or as needed to comply with FRA regulations. Mr. Walker furnished tie installation information dating back to 1993 by milepost and number installed. Additional information obtained from the CRANDIC-provided track chart indicated tie installation amounts and dates are most likely sufficient to suggest adequate tie conditions given the current class of and speed limit on the track.

Public, at-grade, highway-rail crossings vary in composition, ranging from full-depth concrete, T&A, gravel filled to full-depth rubber. All private crossings are only gravel filled. Crossing protection also varies across the territory in that most private crossings either have crossbucks only or nothing at all, while many public crossings feature flashing lights, gates and bells.


Amana Line
OH Bridge

Switches are predominately #10 or #11 and composed of 90, 112 and 115 pound rail with manually controlled switches and almost all plane switch points and RBM frogs. According to Mr. Walker, switch tie condition is fair, given the track class.

There are 21 bridges or drainage structures on the line (excluding the bridges, water and overhead, that are shared by both the Amana and the Hills Lines) including one, wooden, overhead bridge (CRANDIC maintenance) as seen in the photo at left. Bridges with newer tie decks have included new walkway installation on one side. According to Mr. Walker, bridge inspection is accomplished by Kelly Engineering. A copy of the latest 2005 inspection was provided to facilitate the Consultant Team's review. Upon review of the latest bridge inspection, overall bridge condition is primarily good, fair or poor, depending on the individual structure's characteristics. Potential bridge or structure maintenance needs will be discussed later.

CRANDIC Shops – Downtown Cedar Rapids Corridor

One segment of track owned by CRANDIC but not yet discussed stretches between the shop area at MP F 2.0 near Wilson Avenue and downtown Cedar Rapids MP F 0.0, also known in part as the Fourth Street Corridor. If any proposed passenger service were to serve the downtown Cedar Rapids business district and especially the city-owned Park and Ride located near 8th Avenue and 2nd Street, this corridor must be traversed. While no track chart was made

available to the Consultant Team, Mr. Walker stated that the rail in this area is a mix of 110, 112 and 115 pound (jointed and CWR) and is operated on at ten mph. This corridor contains one bridge crossing the Cedar River just east of Penford industries and one near Wilson Avenue. Turnouts on this corridor are all hand operated, standard switch points ranging in angularity between #8 and #11. There are four curves on this portion of track between downtown Cedar Rapids and the CRANDIC shops.

Existing Freight Operations

CRANDIC

The CRANDIC operates freight service on two main lines. The Hills Line extends south from downtown Cedar Rapids to Iowa City and beyond to Hills, while the Amanas Line branches from a connection with the former at Pinney (near the Route 30 overpass) through the ADM plant and southwest to a connection with IAIS at Yocum, near the Amanas. Numerous customers are located on the Oak Ridge Spur, a stub-ended line which branches off of the Hills Line just north of Pinney.

Freight activity is light on the Hills Line south of 60th Avenue in Cedar Rapids; customers in North Liberty, Iowa City and Hills are served twice a week.

Freight activity also is relatively light on the Amanas Line south of Smith-Dows Yard (located near Edgewood Road in Cedar Rapids). Two on-line customers receive only an occasional car, less than one per month. IAIS crews use the line for at least one daily round trip to interchange cars at Smith-Dows Yard, as described below.

However, north of 60th Avenue and Smith-Dows Yard, CRANDIC is characterized by intensive industrial switching along with numerous transfer moves between yards, interchanges and customer facilities. Some of CRANDIC's principal customers include ADM, Alliant Energy, Cargill, Cedar River Paper and Penford Products.

Interchange is conducted with Union Pacific (UP) at three locations: ADM (inbound cars from UP to CRANDIC), Wilson Avenue (outbound cars from CRANDIC to UP) and Fairfax (solid inbound unit trains of coal or corn and returning empty cars). Interchange with Canadian National (CN) is conducted near the Quaker plant in downtown Cedar Rapids. The Iowa Northern delivers corn between five and seven nights per week, coming off of the Fourth Street Corridor and across the river, delivering loads and picking up empty cars at the OR Tracks, Wilson Avenue or ADM, as the situation dictates. The final interchange, with IAIS, is conducted daily at CRANDIC's Smith-Dows Yard by an IAIS crew operating on CRANDIC between Yocum and Smith-Dows and returning. IAIS occasionally makes a second daily trip to deliver coal or corn or when the interchange volume exceeds that which can be handled in one train. CRANDIC notes that the second daily IAIS interchange is occurring with increasing frequency as carload volumes increase.

All CRANDIC freight crews begin and end their tour of duty at Shops (on Rockford Road in Cedar Rapids) and either start from that location with their locomotive or are transported by motor vehicle to another location such as ADM where a previous crew has left a locomotive. CRANDIC crew starts and operations are essentially the same seven days per week.

All CRANDIC main line tracks are operated under Yard Limits authority. That requires that all trains operate at "Restricted Speed," able to stop short of another train or obstruction and not exceeding 20 mph. There is no dispatcher, as crews may use any track as needed. The Yard Manager at Shops coordinates work but does not issue movement authority.

Operations on CRANDIC main lines are summarized in the table below and seen graphically in Figure Two on the following page.

Table Three

Freight Operations on CRANDIC Main Lines

CRANDIC Crew	Principal Duties	Main Line Occupancy (see note)
5:00 AM	ADM	Two to four hours intermittent occupancy. Amount of time fluctuates.
6:00 AM	Oak Ridge Spur customers. Two days per week serves customers in North Liberty, Iowa City and Hills.	Moves on Main Line between Shops, OR Tracks and Oak Ridge Spur. Occupies *Hills Line* two days per week.
6:30 AM	Yard, Cargill, Vera Yard. Serves Oak Ridge Spur on the days that the 6:00 AM crew serves the *Hills Line*.	Crosses Main Line near Shops up to six times per day, one hour nominal occupancy. Moves on Main Line between Shops, OR Tracks and Oak Ridge Spur two days per week.
7:00 AM	ADM	Two to four hours intermittent occupancy. Amount of time fluctuates.
10:00 AM	Penford. Goes to OR tracks to line up train, shoves to Penford, switches and returns to OR tracks.	Four hours +, between Shops and OR Tracks and then at Penford extending toward Cedar River bridge.
1:00 PM	ADM	Two to four hours intermittent occupancy. Amount of time fluctuates.
2:00 PM	Interchanges with CN near the Quaker Plant and delivers coal to the 6th Street Power Plant.	Two hours +/-.
3:00 PM	ADM	Two to four hours intermittent occupancy. Amount of time fluctuates.
4:30 PM	Penford. Goes to OR tracks to line up train, shoves to Penford, switches and returns to OR tracks.	Four hours +, between Shops and OR Tracks and then at Penford extending toward Cedar River bridge.
6:00 PM	Oak Ridge Spur and ADM.	Two hours +/-.
Non-CRANDIC Crews Using the CRANDIC Main Line		
Iowa Northern	Fourth Street Corridor over the river and to the OR Tracks, Wilson Avenue or ADM and return. Operates 5-7 days per week.	Four hours +/-.
Iowa Interstate	Yocum Connection (near Amanas) to Smith-Dows Yard (Edgewood Road) and return. Daily; occasionally a second train per day. Also about three coal trains per month and occasional trainloads of corn to ADM.	Four hours +/- on the *Amanas Line* and at Smith-Dows Yard.

Note: All main line occupancy refers to tracks between ADM and downtown Cedar Rapids, inclusive, unless otherwise specified.

Figure Two

CRANDIC Rail Freight Facilities

IAIS

IAIS conducts the following regular freight activity in the vicinity of Iowa City:

- A yard engine on duty in Iowa City at 0800 works the yard and local industries, six days a week. The yard job occupies the main line inconsistently throughout the day in yard limits (between MP 234 and MP 244) to switch both inbound and outbound trains and serve the demands of local customers;

- The Cedar Rapids "Turn" goes on duty at Iowa City at 1100, seven days a week. This job occupies the main line, departing Iowa City at about 1200, running west to East Yocum, clearing the main line at East Yocum at about 1400 and running to Cedar Rapids on the CRANDIC;

- At about 1400, the East Train occupies the main line at East Yocum and runs to Iowa City, arriving Iowa City at about 1600, where it meets the West Train;

- The West Train departs Iowa City at about 1700 after arrival of the East Train and clears East Yocum at about 1800;

- At 1800, the CRANDIC Turn returns from East Yocum to Iowa City, arriving about 1930. This train sits on the main line in Iowa City until 2359 when it departs as a Rock Island Turn and

- The Rock Island Turn, having departed at 2359, arrives back at Iowa City at 0800 and occupies the main in Iowa City until the 1100 CRANDIC Turn comes on duty to run to Cedar Rapids.

IAIS also runs unit coal trains and grain trains in the corridor on an as-needed basis. In 2005, there were 12,000,000 gross tons handled between Iowa City and East Yocum or about 424 cars per day.

At some time in the future, IAIS expects this freight activity to increase by 50 to 70%. Currently, there is no excess capacity in Iowa City and there are no sidings between East Yocum and Iowa City to facilitate meeting or passing trains. A considerable amount of very time sensitive freight operates in this corridor. IAIS believes that any rearrangement of the existing freight schedules may jeopardize that revenue.

Task 1 – Infrastructure Requirements

Robert Moses is quoted as saying "you can draw any kind of pictures you like on a clean slate and indulge your every whim in the wilderness in laying out a New Delhi, Canberra and Brasilia, but when you operate in an overbuilt metropolis, you have to hack your way with a meat ax." The parallel drawn from this quote germane to this Study is that as the Project surrounding area becomes more complex, so do the solutions as well as associated price tags. Track infrastructure improvements recommended herein coincide with a desired level of service increase (frequency), increased speed and necessary replacement of existing infrastructure. Track capacity should provide the infrastructure to enable rapid, reliable and comfortable rail passenger services, including station and support facilities but infrastructure needs to be consistent with continuation of efficient and cost-effective freight service at projected future volumes while sharing some or all infrastructure with passenger services. Providing infrastructure capable of continued efficient rail freight operations and growth is good public policy and critical to the long term financial health of both CRANDIC and IAIS.

The Consultant Team estimated infrastructure needs and associated costs corresponding up to FRA Class 3 track, allowing passenger speeds of up to 55 mph. A general description of track structure components necessary to achieve that class track follows. Where unit costs were verified with railroad personnel, the Consultant Team mostly utilized CRANDIC cost figures due to them likely being more conservative (higher) given that since IAIS is larger, it quite possibly could receive better bulk prices for rail, ties, etc.

Rail

Probably the most readily recognizable component of railroad track structure is rail. A distinction was previously made concerning whether or not rail was control-cooled "cc." Rail rolled since the mid 1930's was subjected to the control-cooling process which reduces the probability of internal rail flaws such as transverse fissures. All rail currently on the corridor that IAIS owns is control-cooled. Certain areas of CRANDIC-owned tracks contain cc rail and therefore most likely are still capable of continued use. One of the main track upgrade objectives is to eliminate all non-cc rails before passenger operations begin in the 55 mph range (estimated to commence in Year 2030).

The Consultant Team proposes to join the 112 pound or greater jointed cc rails existing in the field by a process known as flash butt welding, essentially forming continuously welded rail (CWR) in the field. It is estimated that an internal rail flaw detection test would be performed before any welding process to ensure only good rail was joined together and left in track. In addition, any new rail installation would be accomplished by purchasing (and installing) ribbon rail sections totaling 1,440 feet long or welding newly installed 80 foot rails via the same flash butt welding technique. In conversations with CRANDIC, the Consultant Team was informed that CRANDIC occasionally gives thought to and obtains prices regarding welded rail in its rail replacement program. Citing economic reasons, CRANDIC, in the past, has utilized 115 pound, 80 foot rails for replacement purposes; therefore, the Consultant Team proposes to use that as the standard in this Study, in conjunction with the flash butt welding process. Of course, if obtaining 1,440 foot ribbon rails was found to be more economical or the CRANDIC required its use as a condition of service implementation, longer rails would be an acceptable alternative standard. Utilizing long ribbon rails requires the use of specialized rail trains which are

sometimes hard to procure or schedule. This rail weight, 115 pound, is also predominant on the IAIS-owned corridor as well as all newly-installed rails on the CRANDIC. All newly installed rail in conjunction with any potential passenger service would conform to American Railway Engineering and Maintenance-of-Way Association (AREMA) Chapter 4 (Rail) specifications and standards relating to 115 pound rail or any other weight if determined at a later date. It should be noted that 112 and 115 pound rail have the same base width and utilize essentially the same other track materials (OTM) except joint bars. Cost estimates (per mile) are about $420,000, including material, flash-butt welding and labor to install completely new rail, while $100,000 is estimated for flash-butt welding existing rail in track and are listed in Table 1-1 at the end of this section.

Ties

The next most recognizable track component is the crosstie. Costs associated with use of new standard, seven by nine inch by eight foot six inch (7" x 9" x 8'6") hardwood crossties were estimated and verified by unit costs obtained from CRANDIC. All ties would be compliant with AREMA Chapter 30 (Ties), specifically Part 3 (Solid Sawn Timber Ties). About 700 ties are estimated as being replaced per mile in upgraded track to selected corridors with a per mile cost approaching $42,000.

Turnouts

Switch component and/or complete turnout replacement would be accomplished by utilizing: 1) #10 switches (or components) for industry track access switches and 2) #20 with power and/or spring switches where potential meets occur. Those turnout sizes coincide with acceptable standards on both railroads. The use of spring switches in lieu of power switches would need to be discussed further with the railroads to determine the best individual location and operational application as neither railroad currently utilizes that type of switch. In dark territory such as that found on both railroads, the use of spring switches could eliminate a person having to actually get on the ground to align the switch for movement through the turnout where train meets would be required. All turnouts would be constructed complaint with AREMA Portfolio of Trackwork Plans specific to that switch size. The Consultant Team estimated that initially the railroad would be operated without signals, thereby warranting the use of spring switches, with the understanding that the long range goal would be install a complete signal system as growth warranted implementation (power switches). Associated estimates are $75,000 for a #10 switch and $150,000 for a #20 turnout.

Other Track Materials

Other track materials (OTM) are vital sub-components to the track structure that: 1) transfer loads to the ballast and then ultimately the roadbed and 2) stabilize the tie and rail interface. OTM consists of items such as tie plates, anchors, joint bars, spikes, bolts, washers, nutlocks, etc. There are many variations in each kind of general item, a few of the more prominent of which will be described. The Consultant Team recommends and estimated costs associated with double-shouldered, seven and three quarters by fourteen inch (7¾" x 14") tie plates with a five and one-half (5½) inch base, compliant with AREMA Standard Chapter 5 (Track) Part 1, punched (rail and anchor) for standard cut spikes (AREMA Standard Chapter 5, Part 2), which are commonly used with 115 pound rail. Newly Installed rail anchors currently utilized on CRANDIC are known as "knock-on" or "drive-on" while the IAIS currently uses "snap-on" type rail anchors. Both anchor types are effective and approximately the same cost. Therefore, the Consultant Team employed a single unit cost even though it suspects that each carrier would

use the type of anchor it currently prefers, both of which would comply with AREMA Standard Chapter 5, Part 7. Assuming that most of the rail would be welded, only a limited number of joint bars may be necessary near turnouts and locations where rail sizes change, requiring the utilization of compromise joint bars. Any joint bars placed in track are estimated to be 36 inch, six-hole and comply with AREMA Chapter 4 (Rail) Section 1.2 (Joint Bars and Assemblies). A $44,000 per mile OTM upgrade cost estimate was associated with each mile of affected rail corridor.

Ballast
Any new construction or track upgrades would utilize ballast similar to that currently in use on that line segment. Presently, both CRANDIC and IAIS use limestone ballast on all their lines in the subject corridors, although provided by different quarries. Costs associated with locally provided limestone ballast, which would be complaint with AREMA Standard Chapter 1, Part 2, was estimated to approximate $12,000 per mile, depending on amount of curves on corridor.

Bridges and Drainage Structures
The Consultant Team utilized railroad-furnished bridge inspection information as a basis to determine corridor bridge needs and associated costs. Included with each individual bridge inspection by Kelley Engineering was a cost estimate of necessary repairs noted during the bridge inspection. Given this information, the Consultant Team utilized the furnished cost estimates as sufficient to comprehend any additional requirements due to potential passenger operations. Associated bridge expenses will be dealt with in each individual corridor's service plan. A unit cost estimate of $5,000 per mile, on each selected corridor, was associated with the need to potentially repair up to three culverts and/or ditching of any drainage structures.

At-Grade, Highway-Rail Crossings
Many, if not all, of the existing, private, at-grade, highway-rail crossings are constructed of gravel only. In the selected service corridors, a $10,000 allotment was estimated to upgrade each existing individual, gravel private crossing with materials providing flangeways and asphalt, thereby reducing the possibility of vehicular traffic becoming stuck at the crossing.

Individual, public at-grade, highway-rail crossings are assumed to be upgraded from gravel filled to full-depth concrete construction on an as-needed basis for the selected corridors at a cost of about $700 per foot, assuming an average crossing length of 50 feet for a total of $35,000 per crossing. At-grade, highway-rail crossings are estimated to be constructed in compliance with AREMA Standard Chapter 5, Part 8 or the individual railroad's construction standard, whichever is more stringent.

Completely New Track and Bridge Construction
A cost estimate of $165 per track foot (includes earthwork) was used when entirely new track was assumed to be built, such as that associated with a layover yard. Similarity, a $10,000 per linear foot cost estimate was utilized in conjunction with new, steel bridge construction.

Table 1-1 on the next page illustrates the unit costs associated with each individual track component that served as the basis of service corridor cost estimates.

Table 1-1

Track Component Unit Costs

Track Component	Unit	Cost
Rail (new rail)	Per mile	$420,000
Rail (existing rail)	Per mile	100,000
Ties	Per mile	42,000
Turnouts (# 10)	Each	75,000
Turnouts (# 20)	Each	150,000
OTM	Per mile	44,000
Ballast	Per mile	12,000
Bridges	Each	N/A
Culverts	Per mile	5,000
At-grade, highway-rail crossing (private)	Each	10,000
At-grade, highway-rail crossing (public)	Each	35,000
New track construction	Per foot	165
New bridge construction	Per foot	10,000

Source: RLBA.

A more detailed breakdown of individual costs associated with a specific corridor is developed in Task 4.

Railroad Signal System

The Consultant Team has long advocated that lines hosting substantial passenger service should be equipped with an Automatic Block Signal (ABS) or Centralized Traffic Control (CTC) System. CTC incorporates the facilities and features of ABS but provides superior control and capacity. There are ABS-controlled lines which host passenger service but the standard in passenger-driven signal installations is CTC. A CTC system provides the following benefits as compared with non-signaled trackage:

- Dispatcher-controlled switches and signals, enabling more efficient meets and passes and enhanced capacity;
- Signal protection against intrusion by a freight car;
- Signal protection against a switch not properly aligned and
- Signal protection against most broken rails.

FRA, Amtrak and major freight railroads are testing GPS-based Positive Train Control (PTC) systems that offer many CTC advantages, plus intervention by the system were a train to violate permissible speed or the limits of its operating authority. These systems are not entirely proven nor available for installation at this time but appear to be a future option.

The Consultant Team believes that a signal system should be part of the long term development of passenger rail on any of the region's lines. Recognizing the fact that both potential host freight railroads are currently unsignalled, however, it is possible to implement service first and install the signal system as train volumes grow. Deferring CTC installation is most tolerable

where passenger train speeds are modest and passenger and freight volumes are light. Some of the safety benefits normally attending CTC signal systems may be attained by some or all of the following:

- Rail improvement through replacement or welding;
- Eliminating or limiting the number of train meets between passenger trains;
- Increasing rail defect detection to twice per year and
- Providing switch position indicator signals.

Signal system installation costs approximately $1 to $2 million per mile depending upon system complexity and are recommended in long-range planning but may be bypassed for a small start-up service or select special event passenger service.

Task 2 – Passenger Service Plan and Potential Conflicts

Service Planning Considerations
Daily service on each of the three rail routes was evaluated in the first phase of market/ridership evaluation. The rail corridor that demonstrated the most immediate regular service potential was on the CRANDIC between Cedar Rapids and Iowa City. However, the Consultant Team believes that all three routes demonstrate special event excursion service potential. Service planning considerations related to each of the three routes are presented below, followed by presentation of service plans appropriate to current circumstances as well as potential future service representative of the way service may develop by the year 2030.

Route I. Cedar Rapids – Iowa City
In evaluating service options on the route, the intense freight switching activity north of 60th Avenue in Cedar Rapids suggests two distinct service scenarios: 1) a service between downtown Iowa City and a location in Cedar Rapids south of 60th Avenue (an Airport Station at State Route 84 is representative of this option) and 2) service between downtown Iowa City and a location as near to the Cedar Rapids central business district as possible.

Cedar Rapids Downtown – Airport Segment
It is intuitive that any Cedar Rapids rail service would be more attractive if extended into the downtown area. A downtown terminal could be located on the east side of the Cedar River, perhaps near Ninth Avenue and Second Street along track owned by CRANDIC. A location along the Fourth Street corridor also is a possibility but it would require the cooperation of Union Pacific, the line's operator. In addition to downtown, it might be desirable to have an outlying station at Hawkeye Downs.

Implementing service between downtown Cedar Rapids and The Eastern Iowa Airport would require crossing the Cedar River and going through or around a number of freight activity nodes. From north to south, those include:

- Penford Products Company;
- Vera Yard;
- CRANDIC Shops;
- Upper Yard;
- The OR tracks (and the adjacent ADM railcar maintenance facility);
- Engleside Wye (junction with the Amanas line and ADM plant trackage) and
- Waconia Yard north of 60th Avenue.

All of those facilities are the location of extensive switching activities which occupy the main line for extended periods. The Consultant Team believes that implementation of anything more than occasional and limited, pre-arranged passenger excursion trips on the CRANDIC (consistent with its freight train scheduling) would warrant construction of a separate passenger track alongside the existing freight tracks over much of the segment. It may be possible to share use of the Cedar River Bridge and the bridge over the UP tracks near Hawkeye Downs.

Construction of new track and switches deemed necessary to overcome the obstacles is detailed in the Task 4 description. The estimated cost is approximately $35 million.

Eastern Iowa Airport – Iowa City

This route segment features very light freight activity, which makes passenger service implementation simpler and less expensive. Potential station locations on this route include:

- Eastern Iowa Airport;
- Swisher;
- North Liberty;
- Coralville;
- Riverside Drive (Iowa City) and
- Court Street (Iowa City).

All station locations in this Study are conceptual and were selected to support ridership, service and financial planning. Actual station locations should be selected in conformance with extensive community input during subsequent service implementation planning.

Freight Conflicts

As previously noted, freight service on the CRANDIC line between Cedar Rapids and Iowa City is presently limited to one crew that serves on-line customers two days per week. There are no through freight trains on this route. The two local crews likely could be shifted to nighttime hours to avoid any conflict with passenger service. Such a shift would mean that no capacity improvements would be necessary to permit passenger service on the line. Of course, condition improvements to upgrade speed, ride quality and safety still would be required.

Passenger service would require that a new train dispatching system be implemented. Yard Limits authority, discussed earlier, does not permit operations faster than 20 mph. To increase maximum passenger speeds, an affirmative dispatching system would have to be implemented, wherein the dispatcher grants authority to trains or maintenance personnel to use specific segments of track under prescribed conditions. Track users must comply with the limits and conditions established by the dispatcher. One such system that would be appropriate is known as Track Warrant Control (TWC). When granted exclusive and unrestricted use of a segment, a train then may operate at maximum authorized speed. That maximum will be established considering track condition, curvature, grade and municipal ordinances subject to an absolute Federally-mandated maximum of 59 mph in non-signaled territory and 79 mph where a conventional signal system is present. Thus instituting TWC on this non-signaled route could support speeds of up to 59 mph, however, track and rail condition (see Task 4) would limit initial passenger speeds to 30 mph.

Strictly regulated temporal separation of freight and passenger activities would provide the option to use either standard passenger equipment or so-called “non-compliant” equipment, as discussed in Task 4. However, the Consultant Team recommends that conventional, compliant equipment be used for reasons of capacity and flexibility, as described in Task 4.

Route II. Cedar Rapids – Amana Colonies

This route segment, entirely owned by CRANDIC, hosts the important CRANDIC-IAIS interchange trains operating daily but very little other freight activity south of Smith-Dows Yard (located just west of Edgewood Road). North of the yard, the line hosts substantial switching activity and movement of coal and grain trains received in interchange from UP as well as IAIS.

Potential, conceptual station locations identified on this route include:

- Downtown Cedar Rapids;
- Hawkeye Downs;
- Edgewood Road and
- Amana Depot.

Freight Conflicts

This corridor splits into two segments with much different freight service characteristics as does the Cedar Rapids-Iowa City corridor. The downtown Cedar Rapids-Edgewood Road segment presents the same intense freight activity and challenges discussed above with respect to the north end of the Cedar Rapids-Iowa City corridor and also faces the problem of getting around the ADM plant and support trackage. Specifically, from north to south, the obstacles include:

- Penford Products Company;
- Vera Yard;
- CRANDIC Shops;
- Upper Yard;
- The OR tracks (near ADM railcar maintenance facility);
- Engleside Wye (junction with the Amanas line and ADM plant trackage);
- ADM plant and support trackage;
- Smith-Dows Yard and
- CRANDIC-UP interchange connection near Wilson Avenue.

South of the UP connection, the line hosts only two on-line customers which rarely receive railcars.

North of Edgewood Road, the Consultant Team believes that implementation of anything more than occasional and limited, pre-arranged passenger excursion trips on the CRANDIC (consistent with its freight train scheduling) would warrant construction of a separate passenger track alongside existing freight tracks over much of the segment. The cost of such improvements is conceptually estimated to be about $35 million. Temporal separation of freight and passenger service over this segment is extremely unlikely, as is construction of an entirely separate passenger route. As a result, FRA-compliant passenger equipment would be required.

South of Edgewood Road, there is some prospect of successful passenger-freight track sharing under the proper circumstances. Any service traversing Smith-Dows Yard and the UP connection is likely to require FRA-compliant equipment due to frequent freight activity in that area. South of the UP connection, operation of one or two daily round-trip CRANDIC-IAIS

interchange trains, plus occasional coal and corn unit trains, should not pose an insurmountable problem. However, the daily train operates during the late morning/early afternoon period on a schedule coordinated with the IAIS road freight schedule and CRANDIC's switching plan, making its rescheduling questionable. Hence, FRA-compliant passenger equipment probably is necessary on all portions of the Cedar Rapids-Amana Colonies line.

Route III. Iowa City – Amana Colonies

Service between Iowa City and the Amana Colonies would rely upon use of 21.1 miles of track owned by IAIS, although in order to reach the Amana depot, 3.3 miles of CRANDIC also would be used. The IAIS segment is a portion of the Chicago-Omaha main line, which regularly hosts a pair of through trains, the daily CRANDIC-IAIS interchange train(s), the Iowa City yard assignment which works industries as far west as Tiffin and periodic extra trains. The CRANDIC segment normally hosts only one or two daily interchange train(s) and occasional coal and grain trains.

Freight Conflicts

IAIS is concerned about passenger train interference with freight trains over this segment. There are no sidings long enough to hold a normal freight train on the segment, although Hawkeye Siding and Homestead Siding could hold a passenger train. Regularly scheduled passenger trains normally would be expected to demand and receive priority over freight trains ("forcing" them to enter a siding and stop until a conflicting passenger train passed, for example in the opposite direction) but excursion trains operating on a less demanding schedule, potentially could exit the main line at one of those sidings to allow an oncoming freight train to pass.

Potential Passenger Service Plans

Based upon market analysis and ridership estimates described in Task 3 and freight operations and railroad infrastructure considerations, the Consultant Team and Steering Committee decided to focus on three service options as the most likely to prove feasible in the near term. Those included:

1. Eastern Iowa Airport – Iowa City commuter-type service on the CRANDIC Hills Line;
2. North Liberty-Iowa City all-day shuttle service on the CRANDIC Hills Line and
3. Excursion service between origins and special event destinations located on the Cedar Rapids-Iowa City-Amana rail lines, including potential seasonal tourist train service on the CRANDIC Hills Line.
4. Vintage Rail Excursion – exclusively south of the Eastern Iowa Airport on the CRANDIC Hills Line.

Options 1 and 2 were evaluated under present circumstances and service plans were developed appropriate to current circumstances as well as potential future service representative of the way service may develop by the year 2030. Specific service characteristics associated with each scenario follow.

1. Eastern Iowa Airport – Iowa City Commuter-Type Service

Year 2006

- Equipment: Locomotive and coaches operating in push-pull configuration or diesel multiple unit (DMU) cars
- Maximum speed: 30 mph
- Running time including stops: 50 minutes
- Headway: Two hours
- Days of operation: weekdays
- Level of service:
    - Morning: two southward trips and one northward trip
    - Evening: two northward trips and one southward trip
    - All trips can be provided using one set of equipment

Year 2030

- Equipment: Locomotive and coaches operating in push-pull configuration or DMU cars
- Maximum speed: 55 mph
- Running time including stops: 33 minutes
- Peak Headway: weekdays, 30 minutes; weekends, 60 minutes
- Levels of service (weekdays):
    - Morning: six trains, each direction on 30-minute headways
    - Midday: headway of 90 minutes (one set of equipment)
    - Evening: six trains each direction on 30 -minute headways
- Levels of service (weekends):
    - Morning: three trains, each direction on 60-minute headways
    - Midday: headway of 90 minutes (one set of equipment)
    - Evening: three trains, each direction on 60-minute headways

2. North Liberty – Iowa City Commuter-Type Service

Year 2006

- Equipment: Locomotive and coaches operating in push-pull configuration or DMU cars
- Maximum speed: 30 mph
- Running time including stops: 20 minutes
- Headway: One hour
- Days of operation: weekdays
- Levels of service:
    - Continuous service between 6:00 AM and 7:00 PM
    - All trips can be provided using one set of equipment

Year 2030

- Equipment: Locomotive and coaches operating in push-pull configuration or DMU cars
- Maximum speed: 55 mph
- Running time including stops: 15 minutes
- Headway: 20 minutes
- Levels of service (weekdays):

  - Continuous service between 6:00 AM and 9:00 PM
  - 20-minute headway using two sets of equipment
- Levels of service (weekends):
  - Continuous service between 6:00 AM and 9:00 PM
  - 40-minute headway using one set of equipment

3. Special Event Excursion Service

Numerous events held in venues in close proximity to the rail lines throughout the Study area attract large numbers of attendees and represent rail excursion opportunities, as documented in Task 3. Those excursions could operate on any of the three rail lines in this Study. A sponsoring entity would need to make access, schedule and crew arrangements with the railroad(s), provide equipment, arrange liability insurance and manage or conduct a marketing campaign. Excursion trips typically originate at locations with abundant parking, although stops could be made en route to pick up additional customers. On-board services could include the selling of refreshments, souvenirs and event tickets. Those could be catered or provided by community groups seeking to fund their programs. Many excursions use "car hosts," usually volunteers, who assist passengers, often in return for free passage.

Characteristics of excursion service are likely to include:

- equipment: locomotive and coaches operating in push-pull configuration or DMU cars;
- maximum speed: varies according to track segment used;
- running time: varies according to route and
- headway: one or more round trips per event.

An example of a possible special event excursion train would be service between Cedar Rapids and the Amana Colonies on a weekend day in late September upon the occasion of the Oktoberfest. The excursion could originate at the Eastern Iowa Airport, or, better yet, with the cooperation of the CRANDIC, at the park near Second Street and Ninth Avenue SE, close to the FSTP parking facility. Subsequent stops to board passengers could be made at the airport, North Liberty and Iowa City, perhaps both downtown and at the Hawkeye Express parking lot. It is important that most stops offer adequate parking. The trip could be timed such that all station stops are made in daylight, hence little is needed in the way of facilities other than a level place to board passengers and a portable lift to accommodate wheelchair patrons.

The train could travel over CRANDIC's Hills Line between Cedar Rapids and Iowa City, IAIS's main line between Iowa City and the Yokum Connection and CRANDIC between Yokum and Amana. After unloading, the train could be moved off of the CRANDIC main line, perhaps to Homestead on IAIS, to allow freight train use. In the evening, the train would return to pick up passengers at Amana and then return to Cedar Rapids via the reverse route.

Because Oktoberfest is a popular event, with effective advance promotion it should be possible to generate considerable interest. The trainset being purchased and outfitted as the Hawkeye Express by the Iowa Northern could accommodate nearly 700 riders and would be appropriate for this service, in which the train ride provides transportation service as well as an entertainment experience.

The train's operating crew (conductor and engineer) would be provided by one or both of the host railroads. It is likely that volunteers could be recruited to serve as car hosts in exchange for free passage, perhaps working in conjunction with a local rail enthusiasts' organization such as the Cedar Rapids Area Railfans Association. Community service organizations could be offered the opportunity to sell beverages and snacks on board.

The sponsoring organization would have to lease equipment, arrange insurance coverage, use of parking lots, marketing and ticket sales. Advance ticket sales should be considered as a way of regulating demand.

This example is more complex than many possible excursions because it traverses the busy freight switching area north of ADM and because it utilizes the track of both CRANDIC and IAIS. Other origin/destination combinations could use just one railroad's trackage or avoid the freight switching area of Cedar Rapids.

Little or no improvements to rail lines would be necessary to operate such excursion services, other than making sure that train boarding locations have safe and level footing.

4. Vintage Rail Excursion Service

In addition to special event excursion trains, which provide both transportation and entertainment, another variety of excursion train trip focuses primarily on the entertainment aspect. These trips often feature vintage equipment, including steam, diesel and self-propelled. It is reminiscent of interurban cars and other passenger trains that operated in central Iowa during the last century, combining nostalgia and novelty, making a rail trip into a form of entertainment. An intriguing opportunity exists to offer such trips featuring Iowa-themed equipment by using a self-propelled, vintage railcar rebuilt by Miner Rail Services of Donnellson, Iowa.

Miner specializes in rebuilding historic equipment used in both transit and entertainment applications. The car pictured above is a vintage "doodlebug" self-propelled railcar used by the Chicago, Burlington and Quincy Railroad, as rebuilt by Miner. Cars like this seat between 40 and 70 people. Such vintage railcars are not FRA-compliant, and thus would have to be operated on a track segment that hosted no conventional rail operations at all during the period of passenger operation. It is likely that only the CRANDIC Hills Line could be made available under those conditions due to the volume and nature of freight train operations on the other two

line segments studied. An operating plan would have to be devised that assured: 1) that the line segment was clear of other trains at the outset of the passenger period (perhaps requiring an inspection of the line) and 2) that no other movements were permitted during the passenger operating period. The operating plan would require FRA approval and waivers of several other FRA safety requirements would be required. (Such waivers find precedent in San Diego, Salt Lake City and other locations.)

Rail excursions using a vintage car like that shown above could be promoted as pleasant outings where the ride is the attraction, or could be coupled with other events. The car seats far fewer passengers than the Iowa Northern train described above, so the doodlebug is best suited for smaller events or short shuttles where the objective is not to move hundreds of people at one time. An afternoon of round trip shuttles between the Eastern Iowa Airport and the Mid-River Public Use Area is a possible option. As above, local railfan organizations might assist as hosts and public service organizations might provide refreshments for sale, box lunches or a cookout. Alternatively, a longer trip could be offered between the airport and a smaller event at the University of Iowa, such as a musical or theatrical performance.

As with the Special Event Excursion Service, the train's operating crew would be provided by one or both of the host railroads. It is likely that volunteers could be recruited to serve as car hosts, perhaps working in conjunction with a local rail enthusiasts' organization such as the Cedar Rapids Area Railfans Association. The sponsoring organization would have to arrange insurance coverage, use of parking lots, marketing and ticket sales. Advance ticket sales should be considered as a way of regulating demand.

Little or no improvements to rail lines would be necessary to operate such excursion services, other than making sure that train boarding locations featured safe and level footing.

Service Operation

Some likely principles of service operation can be determined at this time, while details would remain to be established during implementation planning and negotiations. Based upon standard industry practices and discussions with the Study area railroads and the Steering Committee, the following principles are likely:

- Service would be sponsored and funded by an existing or new public agency. The passenger service is expected to require a subsidy; the railroads cannot be expected to assume financial risk or responsibility for the service;

- The railroads would perform specific services, such as train operation (crews and supervision) or equipment maintenance on a contract basis as negotiated. They would be compensated for such efforts by the sponsoring agency;

- Provision of equipment, whether by purchase or lease, is usually the responsibility of the sponsoring agency and that should be the expectation with respect to Cedar River rail service. As noted in Task 4, an opportunity exists to obtain excursion train equipment on a trip lease from the Iowa Northern Railway;

- Railroads would be compensated for use of their tracks and a reasonable profit as negotiated with the sponsoring agency. Such fees could be based on per trip or per train-mile charges;

- Liability would be assumed by and insurance costs paid by the sponsoring agency since the dollar risk associated with a potential accident would dwarf the potential profit available to the railroads. Accordingly, it is standard procedure across the rail passenger industry that public agency sponsors assume risk responsibility; and

- Marketing, fare policy and transit coordination are important roles generally assumed by the sponsoring agency.

Task 3 – Passenger Service Plan Demand and Revenue Estimation

Introduction

The City of Cedar Rapids and the Johnson County Council of Governments (JCCOG) are studying the feasibility of passenger rail service over the existing trackage of CRANDIC and IAIS. To determine the feasibility of the rail service, rail ridership estimates were developed for two distinct trip purposes, daily commuter and event/excursion trips. Rail ridership numbers were estimated from available data sources for existing (year 2000) and estimated (year 2030) conditions.

Commuter Ridership

The daily commuter ridership forecast estimated the number of daily boardings anticipated were rail service provided along all or portions of the three legs of the CRANDIC and IAIS. The rail lines are shown in Figure 3-1. The daily commuter ridership forecast was conducted at a level to meet the needs of the feasibility Study. The 20 districts comprising the ridership estimation study area are shown in the technical appendix.

Total Commuter Market

The total daily commuter market is the total number of trips occurring each day for the purpose of getting to work. This data is available for portions of the Study area from travel demand models within the Linn County Regional Planning Commission (LCRPC) and JCCOG areas, respectively. Daily commuting between the two metropolitan areas and to and from the Amana Colonies was not explicitly available but was determined using known information from census Journey to Work data. The total commuter market of persons traveling to and from work is approximately 139,000 person-trips per day.

Bus service is provided independently in both the Cedar Rapids and Iowa City metropolitan areas. Both bus services focus on providing service between residential areas and the downtown core of their respective metro areas.

Mode Analysis Values

The decision to utilize rail service depends upon the utility of that service compared to other available services, namely the bus service and personal automobile. Rail speeds were developed and used to calculate average travel time between all districts in the study area. The utility of rail service included factors such as rail travel time, access time to and from stations, transfer times, headways and rail fares. Auto costs considered in the study included in-vehicle travel time, access time to /from the auto and parking.

Results - Year 2000

Alternative 1- Total Commuter Shed

Rail ridership was first estimated assuming the three corridors in the study area would be served with daily commuter rail service. This alternative generated a total of 1,285 daily commuter trips, which equates to approximately 0.9% of all daily commuter trips within the Study area. Total Alternative 1 ridership by rail segment is shown in Figure 3-2.

Figure 3-1

Rail Lines in Study Area

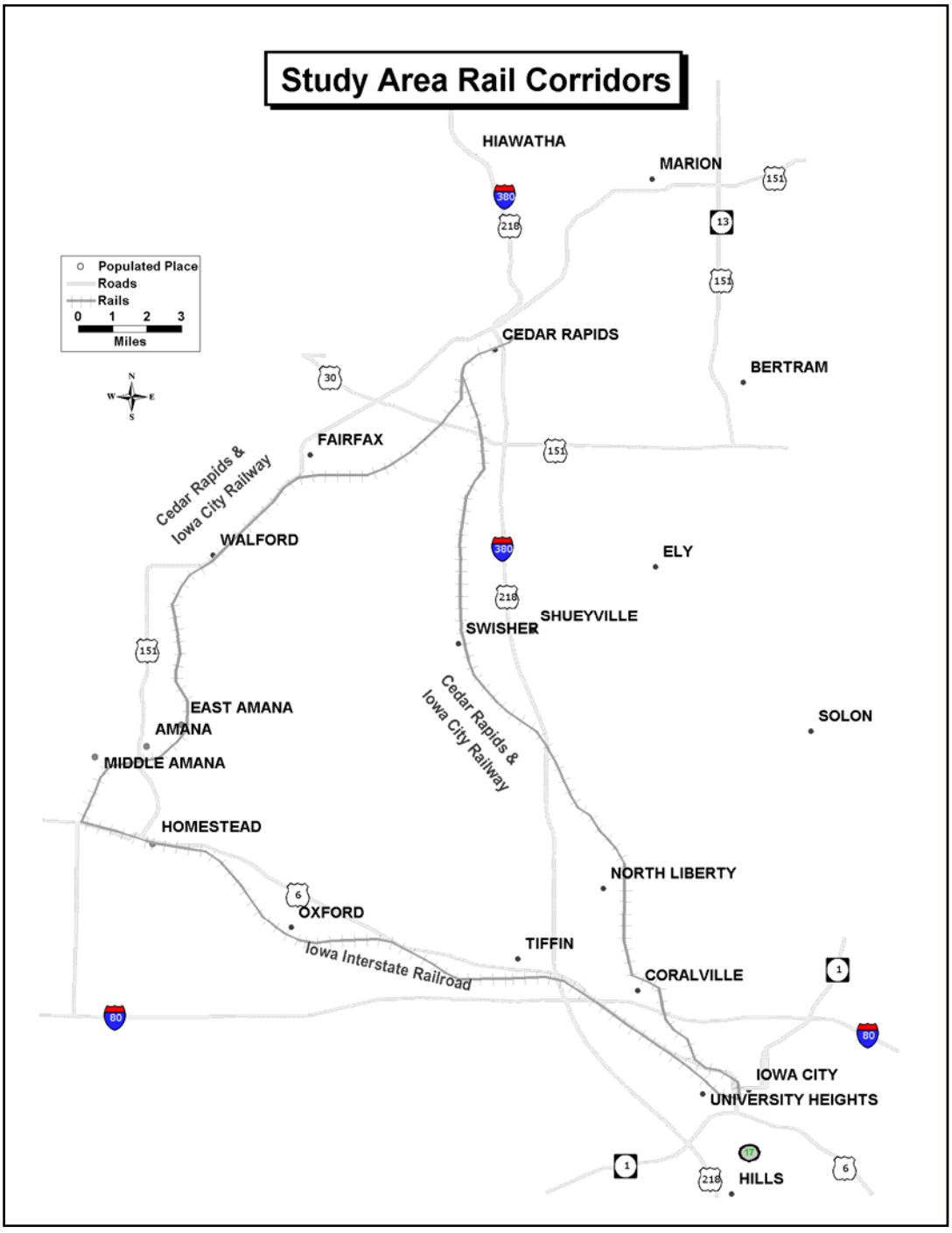
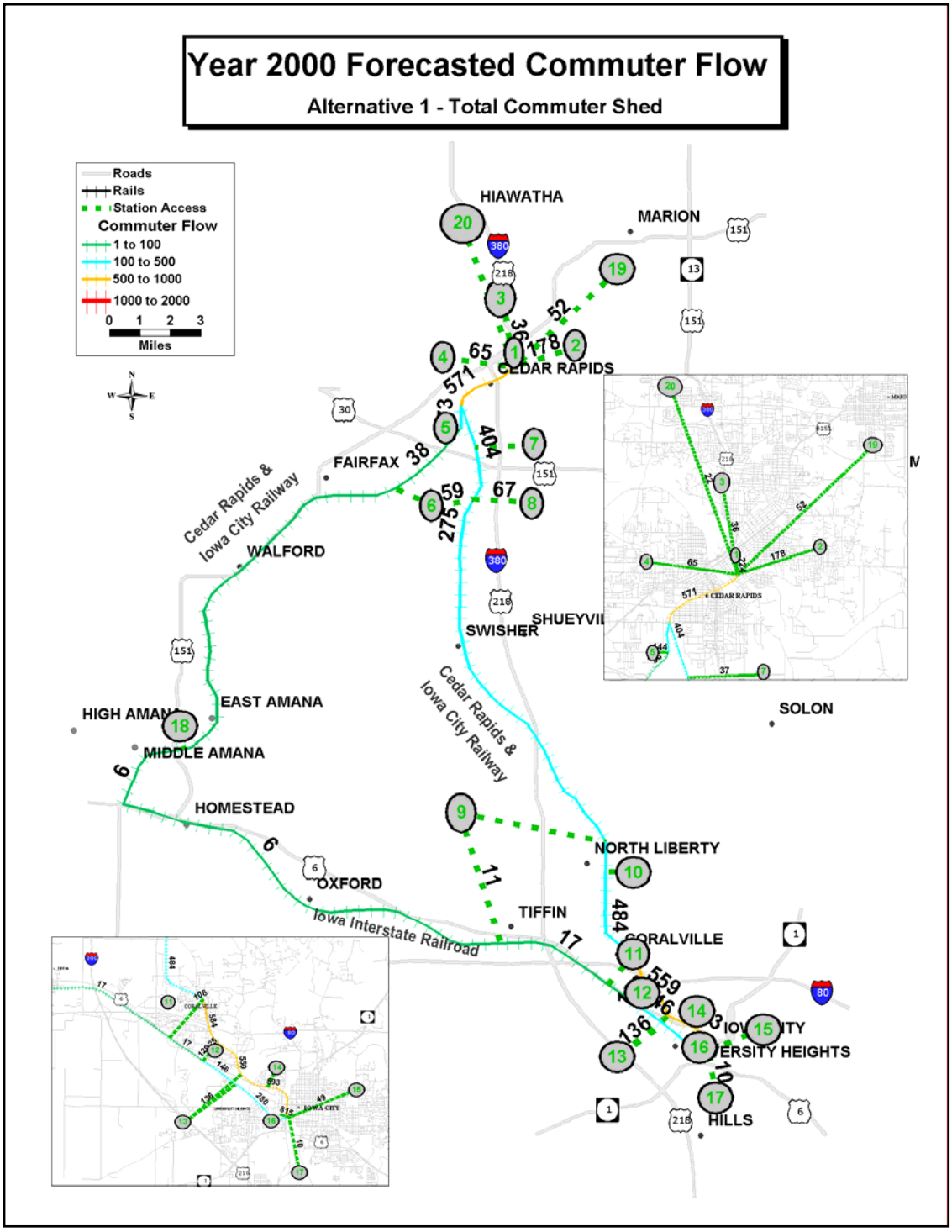


Figure 3-2

2000 Commuter Ridership Alternative 1 – Total Commuter Shed



Alternative 2 – Iowa City to Eastern Iowa Airport

Ridership estimates generated for Alternative 1 were investigated to determine the most feasible segments of the three corridors to provide daily commuter service. Alternative 2 utilizes the CRANDIC line from downtown Iowa City to the Eastern Iowa Airport with continued bus service to downtown Cedar Rapids. Passenger rail service on CRANDIC north of the airport would require extensive rail improvements to mitigate anticipated passenger delays associated with freight operations north of the airport, thereby making that segment of rail too expensive for further consideration at this time. The two lines connecting to the Amana Colonies did not show sufficient ridership potential for further consideration in Alternative 2. Daily boardings in Alternative 2 total 837 and are shown by rail segment in Figure 3-3.

Two bus routes currently operate in the vicinity of the Eastern Iowa Airport as shown in Figure 3-4. Route 11 provides direct service between downtown Cedar Rapids and the airport along the 6th Street corridor west of Interstate 380. Route 7 does not currently provide direct access to the airport, but does provide service between downtown Cedar Rapids and several school facilities along the Kirkwood Boulevard corridor including Kirkwood College east of Interstate 380. Modifying Route 7 to cross under Interstate 380 at either 76th Avenue or Wright Brothers Boulevard would provide a second bus corridor for use by rail passengers to and from the airport. A multi-modal facility at 18th Street and Wright Brothers Boulevard would provide access between air, rail, bus and auto modes and would enhance mobility in the area.

Alternative 3 – Iowa City to North Liberty

Alternative 3 utilizes the CRANDIC line between downtown Iowa City and North Liberty. This segment showed the highest in Alternative 1 ridership potential. Due to the much shorter distance covered by Alternative 3, the schedule headway was reduced for ridership estimation purposes to 40 minutes. Daily Alternative 3 boardings total 742 and are shown by rail segment in Figure 3-5. This rail alternative provides similar service to the existing Oakdale Cambus line connecting Oakdale and Coralville with the main University of Iowa campus. The ridership along this line averages about 275 riders per day, mostly from the Oakdale area. This bus line currently has schedule problems due to roadway congestion along the route. The potential boardings indicate that a more reliable service that also extends into North Liberty could enhance the ridership along this corridor.

Intercity Bus Service

The existing bus service provider in the Cedar Rapids - Iowa City corridor is Burlington Trailways. Bus service between Cedar Rapids and Iowa City is part of a larger interstate service system with two buses traveling between Cedar Rapids and Iowa City in each direction daily. The trip takes approximately 40 minutes with a one-way fare of $7.50 per rider. Burlington Trailways stated that although ridership on the bus line between Cedar Rapids and Iowa City is considerable, most riders are traveling solely longer distances; they average about two riders per day traveling between Cedar Rapids and Iowa City. A potential multi-modal facility located near 18th Street and Wright Brothers Boulevard at the Eastern Iowa Airport could also serve intercity bus service between Cedar Rapids and Iowa City to supplement potential rail service in the corridor.

Figure 3-3

2000 Commuter Ridership Alternative 2 - Iowa City to Eastern Iowa Airport

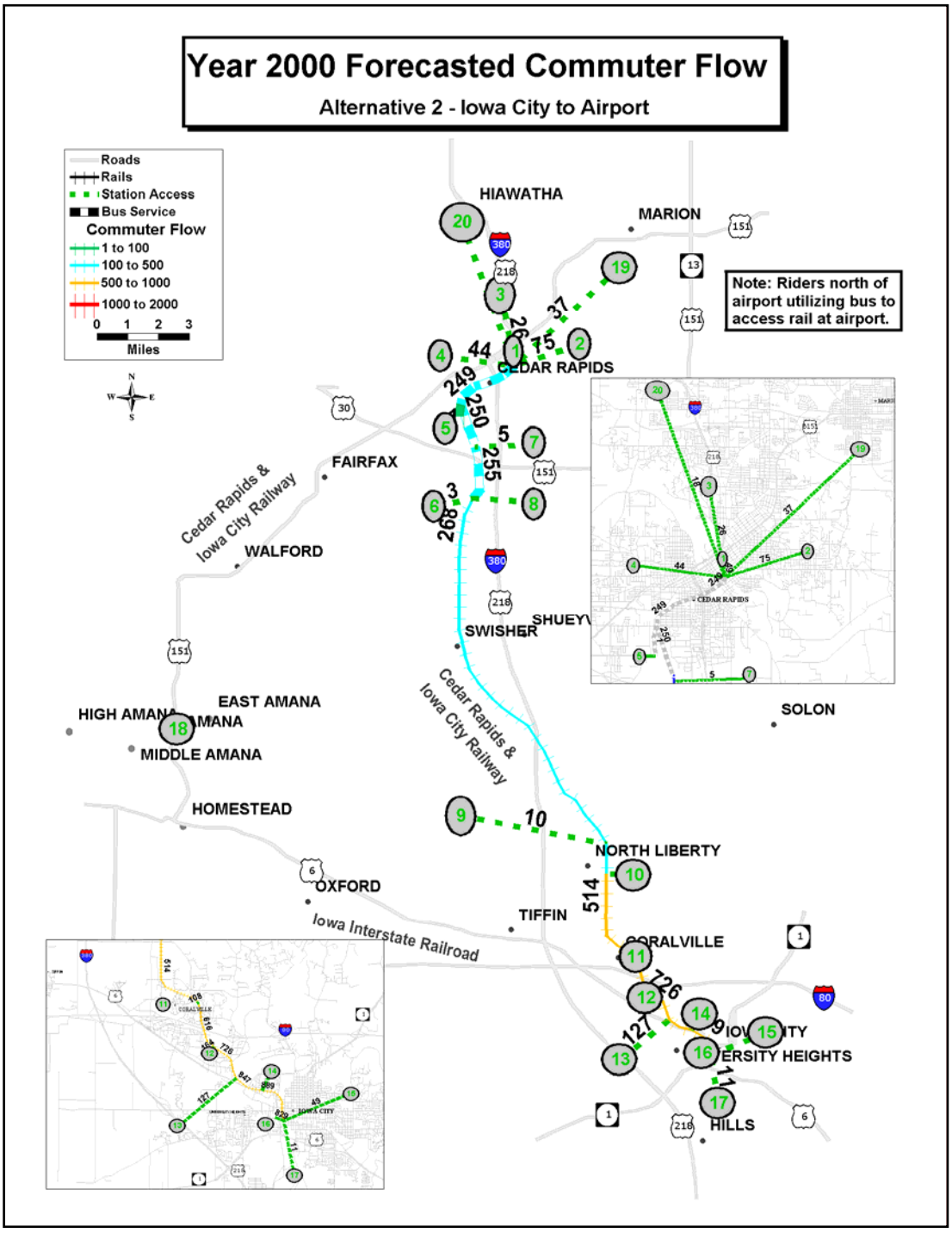
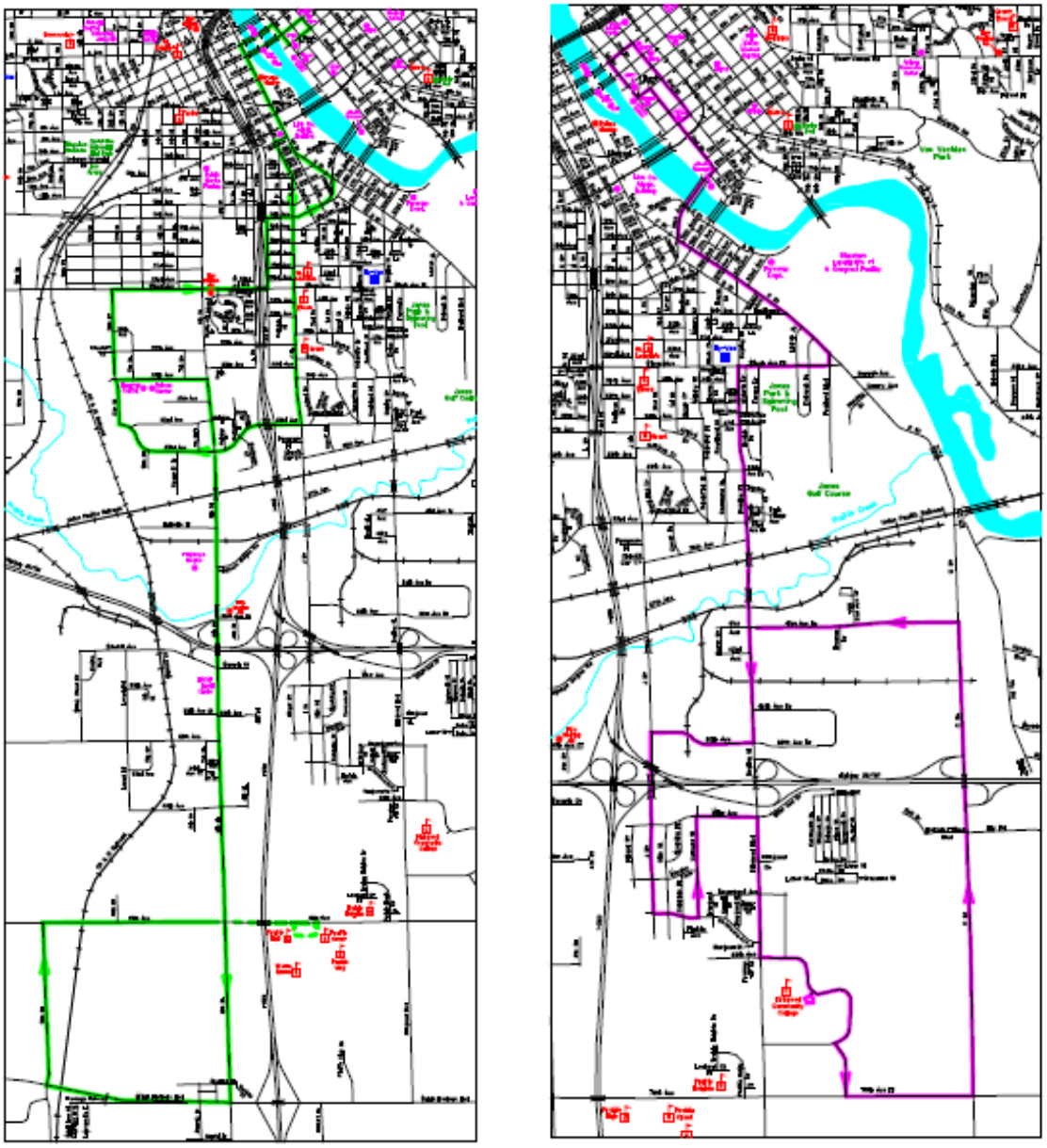


Figure 3-4

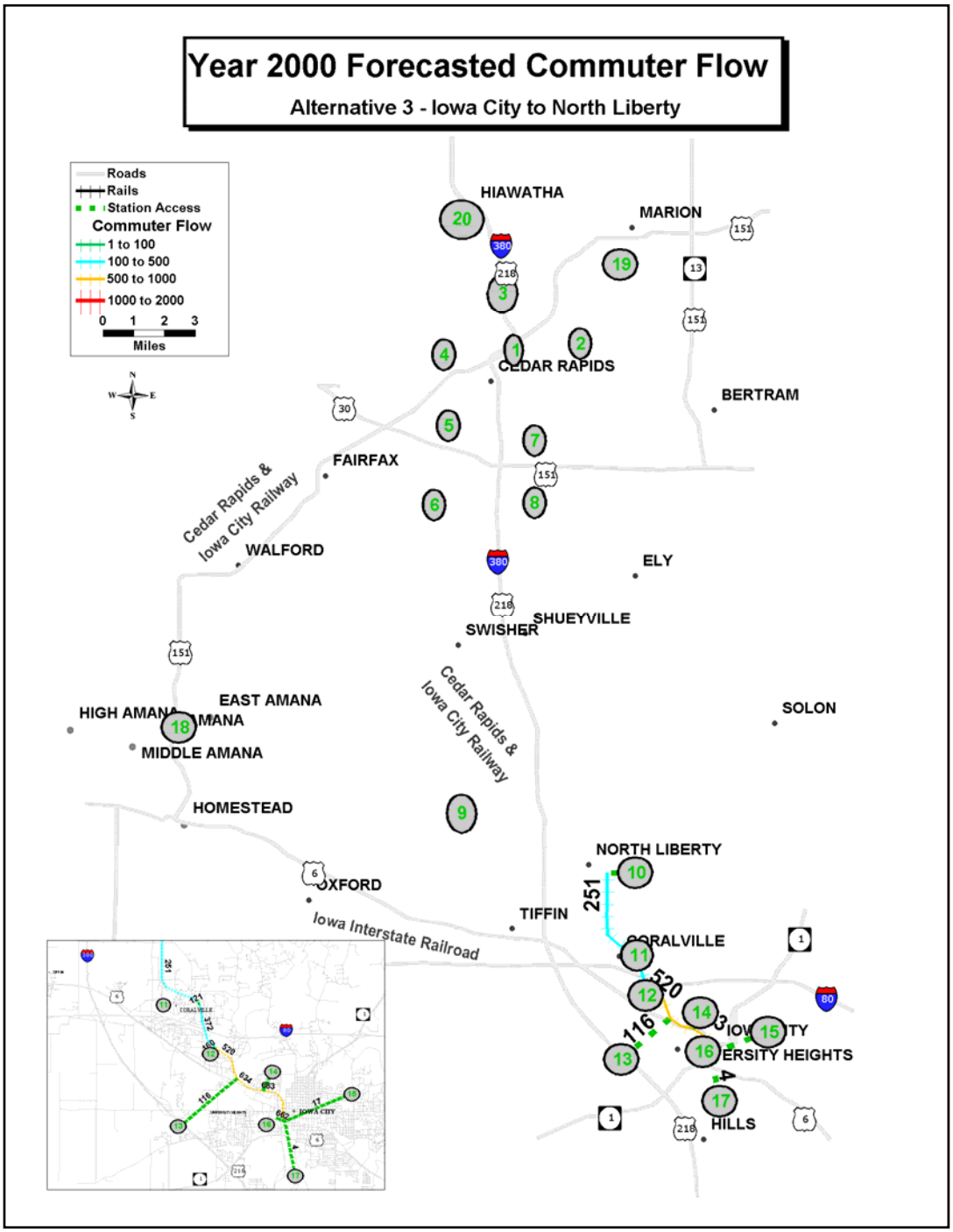
Bus Routes 11 and 7



Source: http://www.crbus-parking.org/schedules_routes.htm.

Figure 3-5

2000 Commuter Ridership Alternative 3 - Iowa City to North Liberty



2030 Commuter Ridership Estimation

Home-based work trip tables were provided by the JCCOG and LCRPC for the years 2030 and 2040 respectively. A planning horizon of 2030 was selected due to the ability to scale back the Cedar Rapids area 2040 data to a 2030 timeframe. The 2030 information was utilized to generate a total commuter trip table for the year 2030 in a similar manner as shown for the base year 2000 data. The total estimated trip ends increased from just under 139,000 in 2000 to just over 180,000 in 2030, a compounded growth of approximately 0.9 percent per year across the study area.

The general attributes of both rail and highway modes were held constant over time, except that travel speeds on major roadway facilities within the study area with posted speeds greater than 25 miles per hour were reduced by 10 percent to reflect anticipated congestion due to growth in vehicular travel up to 2030. Appropriate and feasible railroad operations were determined to increase rail travel speeds within the study area. It is assumed that inflation will affect all transportation costs in the same relative fashion, therefore travel costs such as parking, fares and the value of time were assumed to hold constant at year 2000 monetary values.

The three rail alternatives described above were tested for the 2030 horizon year. The total commuter shed estimate totals 1,985 boardings, an approximate increase of 1.46 percent per year, as shown in Figure 3-6. The Alternative 2 ridership estimate, the Iowa City to airport option, totals 1,991 boardings in year 2030, an approximate increase of 2.56 percent per year. Figure 3-7 shows Alternative 2 2030 daily boardings. The Alternative 3 ridership estimate, the Iowa City to North Liberty option, totals 1,336 boardings in year 2030, an approximate increase of 2.22 percent per year. Figure 3-8 shows Alternative 3 2030 daily boardings.

Weekend Commuter Ridership

Weekend rail ridership demand is anticipated to be considerably lower than weekday ridership since most commuters have Monday through Friday jobs. A conservative estimate of twenty percent of the weekday commuter demand was assumed to occur during a weekend day, while headways were assumed to be double those weekdays in year 2030. Weekend commuter boardings total 397, 398 and 267, respectively in the three rail alternatives for the 2030 horizon.

Event/Excursion Ridership

Event Locations and Attendance

Cedar Rapids, Iowa City and the Amana Colonies form the cultural center of eastern Iowa. Several events within the Cedar Rapids, Iowa City and Amana Colonies area potentially could attract riders to a rail service scheduled to coincide with the event. Those events and attendance data were identified by respective chamber of commerce staff in the three communities. Attendance data at the various events is shown in Table 3-1. Event locations are shown in Figure 3-9.

Figure 3-6

2030 Commuter Ridership Alternative 1 – Total Commuter Shed

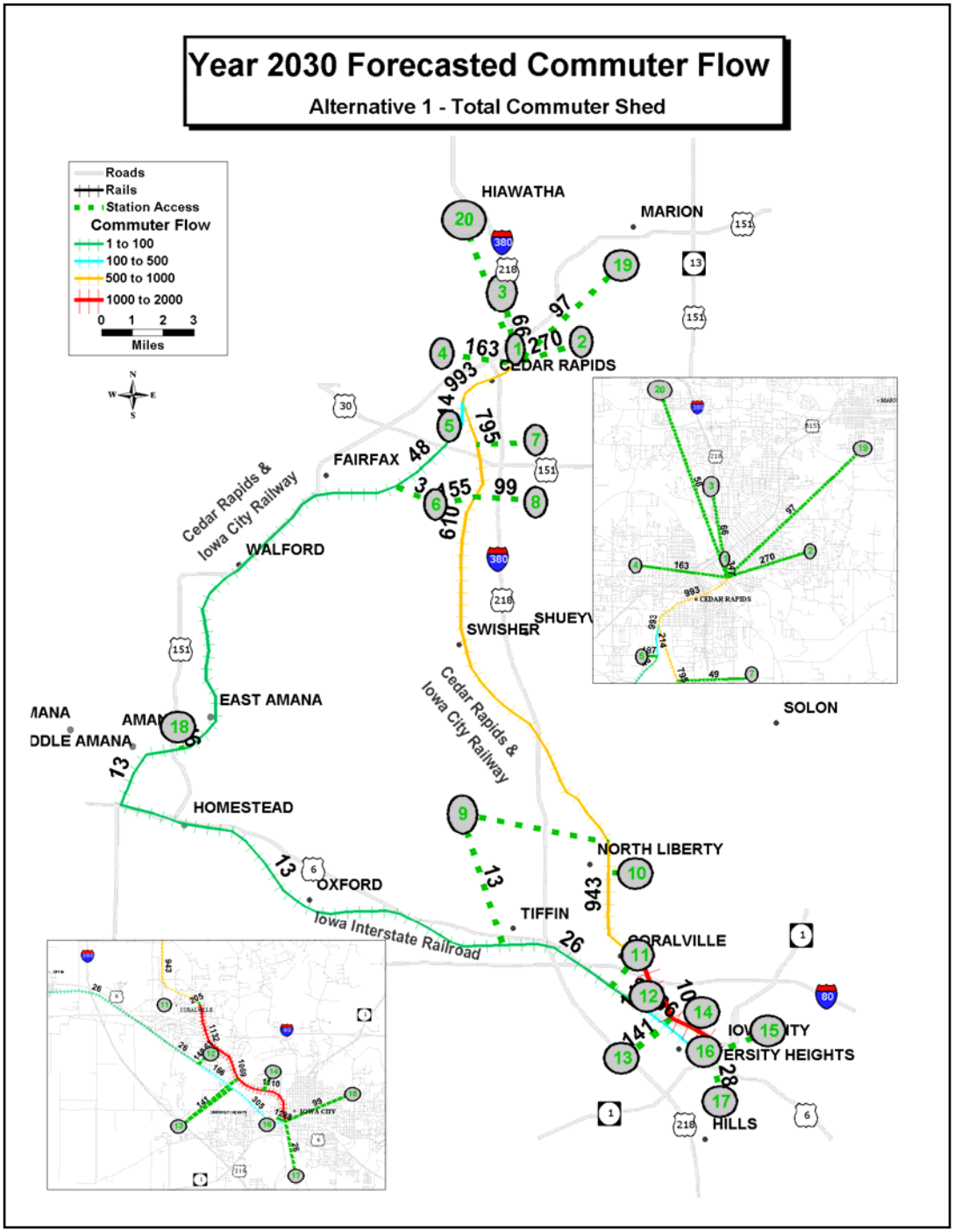


Figure 3-7

2030 Commuter Ridership Alternative 2 - Iowa City to Eastern Iowa Airport

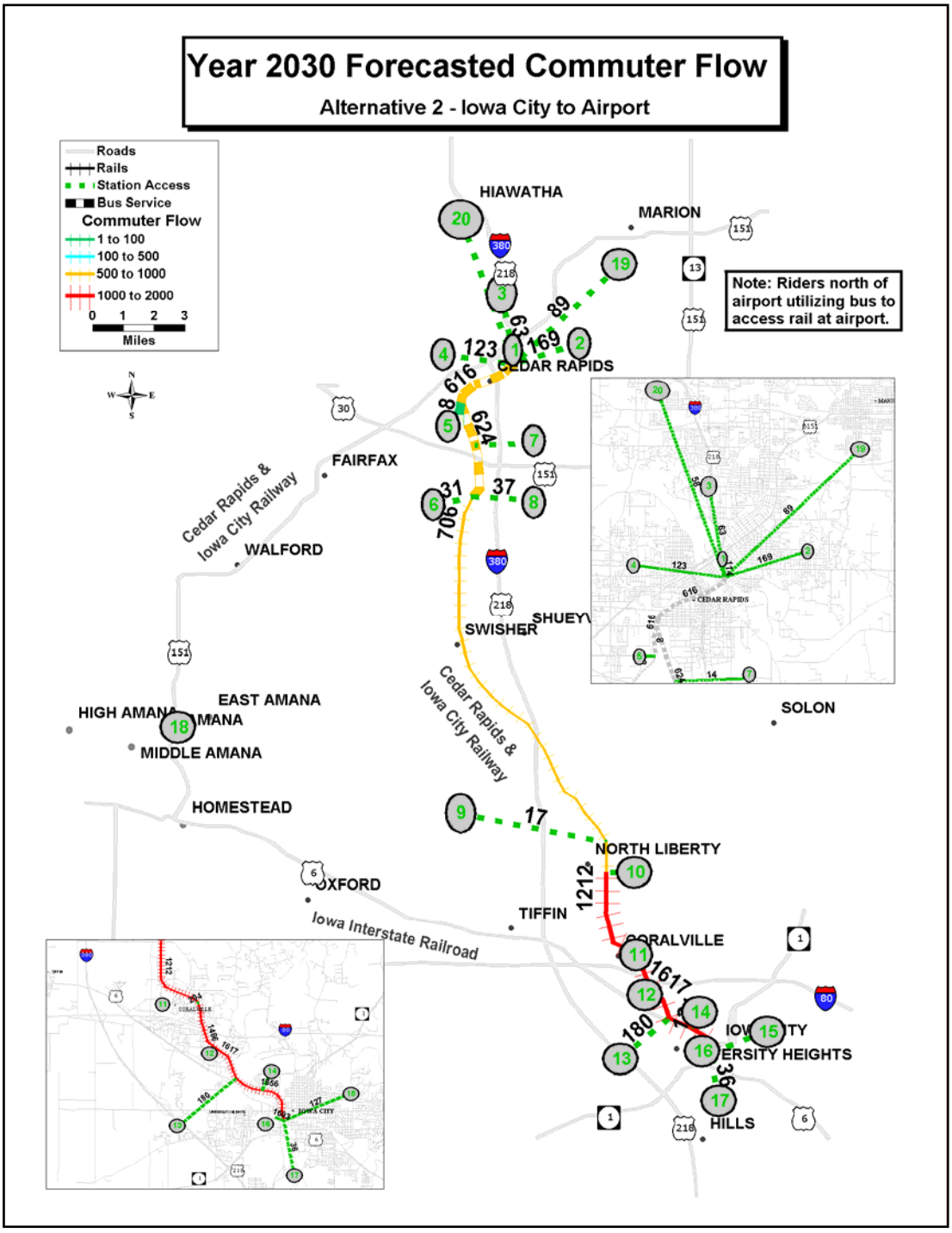


Figure 3-8

2030 Commuter Ridership Iowa City to North Liberty

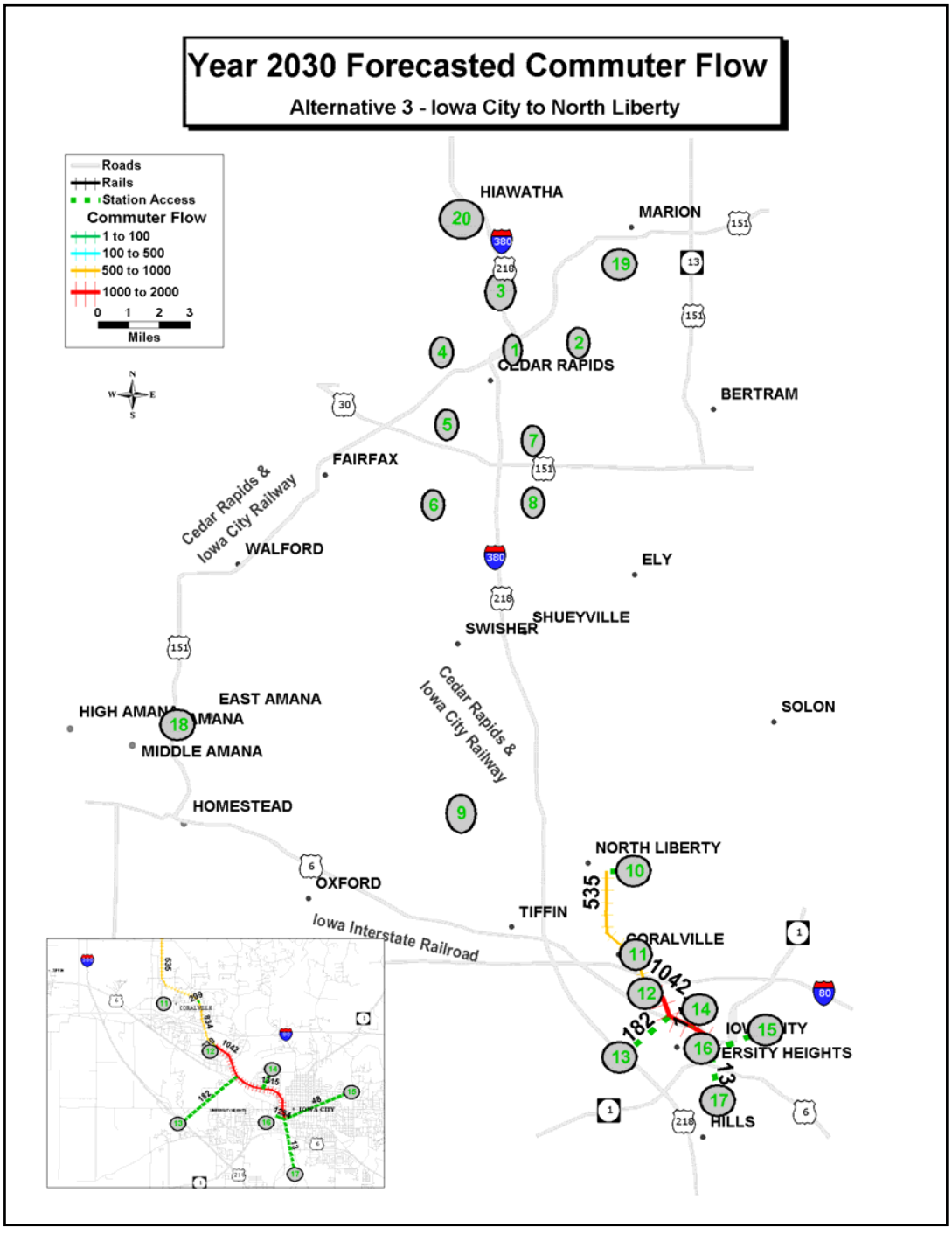


Table 3-1

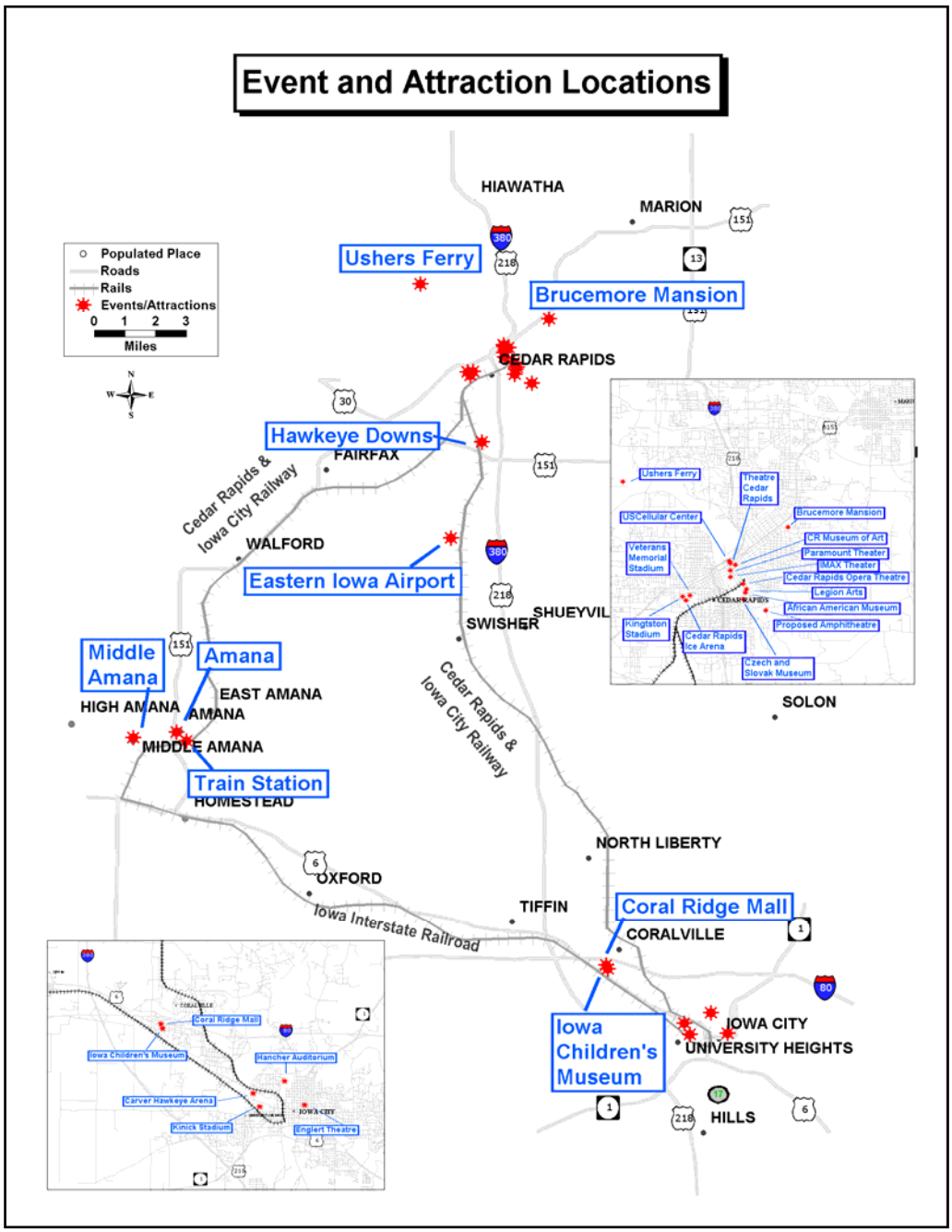
Events in Cedar Rapids, Iowa City and the Amana Colonies

Event	District	Yearly Attendance	Peak Daily Attendance	Potential Peak Daily Boardings
African-American Museum	1	8,500	50	3
Cedar Rapids Museum of Art	1	40,000	500	29
Cedar Rapids Opera Theatre	1	4,000	550	32
IMAX Theatre	1	100,000	700	41
Legion Arts	1	15,000	300	18
National Czech and Slovak Museum	1	36,000	500	29
Paramount Theatre	1	120,000	1,900	112
Proposed Amphitheatre (a)	1	n/a	n/a	n/a
Theatre Cedar Rapids	1	60,000	1,200	71
US Cellular Center	1	300,000	10,000	588
Brucemore Mansion	2	35,000	500	8
Cedar Rapids Kernels Baseball	4	185,000	5,400	532
C.R. Rough Riders Hockey/Ice Arena	4	90,000	4,000	235
Kingston Stadium	4	100,000	15,000	1,148
Veterans Memorial Stadium	4	65,000	5,400	413
Hawkeye Downs	5	300,000	2,500	147
Eastern Iowa Airport	6	1,000,000	4,000	300
Coral Ridge Mall	12	10,000,000	40,000	408
Iowa Children's Museum	12	120,000	1,000	46
Hancher Auditorium	14	55,000	1,000	46
Englert Theatre	16	10,000	150	7
University of Iowa Football	16	490,000	70,000	6,046
University of Iowa Men's Basketball	16	250,000	15,000	1,296
University of Iowa Women's Basketball	16	75,000	7,000	605
Amana Colonies	18	1,000,000	7,000	259
Usher's Ferry Historical Museum	20	25,000	400	6

(a) Data not available for Proposed Amphitheatre.

Figure 3-9

Special Event and Attraction Locations



Event Ridership Methodology

Many events within Cedar Rapids, Iowa City and the Amana Colonies listed in Table 3-1 are within reasonable proximity of the CRANDIC and IAIS rail corridors. The event ridership methodology assumes patrons to the events do not make their mode choice based on a rigorous economic evaluation of travel times and costs but rather are looking to enjoy the complete event experience. This experience is enhanced by utilizing a reasonably competitive rail service connecting a patron and event. The event ridership methodology is based on work previously completed for the Milwaukee, Wisconsin Downtown Connector project, in which event ridership was quantified for a variety of cultural and sporting events in downtown Milwaukee. Table 3-1 also shows potential peak daily rail boardings associated with each various special event within the Study area. Table 3-2 provides a calendar of potential significant peak events that could be served by passenger rail service within the Study area on a month-by-month basis. Additional events within proximity of the rail corridors also may be served by rail service. Event ridership will be enhanced by coordinated marketing efforts to include rail service as part of the overall event experience.

TRANSIT SUPPORTIVE LAND USE

One way to increase transit ridership and make the system more viable is to focus development around transit facilities. Transit-oriented development (TOD) is the name given to land use planning and zoning actions that lead to greater density near transit stations. The benefits of those activities include improved air quality, pedestrian friendly environments, increased transit ridership and revenue, the potential reduction of urban sprawl and reorientation of urban development patterns around both rail and bus transit facilities. The FTA encourages implementing supportive land use policies with investments in rail transit systems as those policies can contribute to the overall success of any project.

Today, many communities across the country are studying or have implemented TOD programs. TOD participants range from small local and intercity bus systems with community-related services to large local and intercity rail systems with numerous projects. Increasingly, transit agencies are looking at programs and analyzing real-estate competitiveness to solicit developer interest.

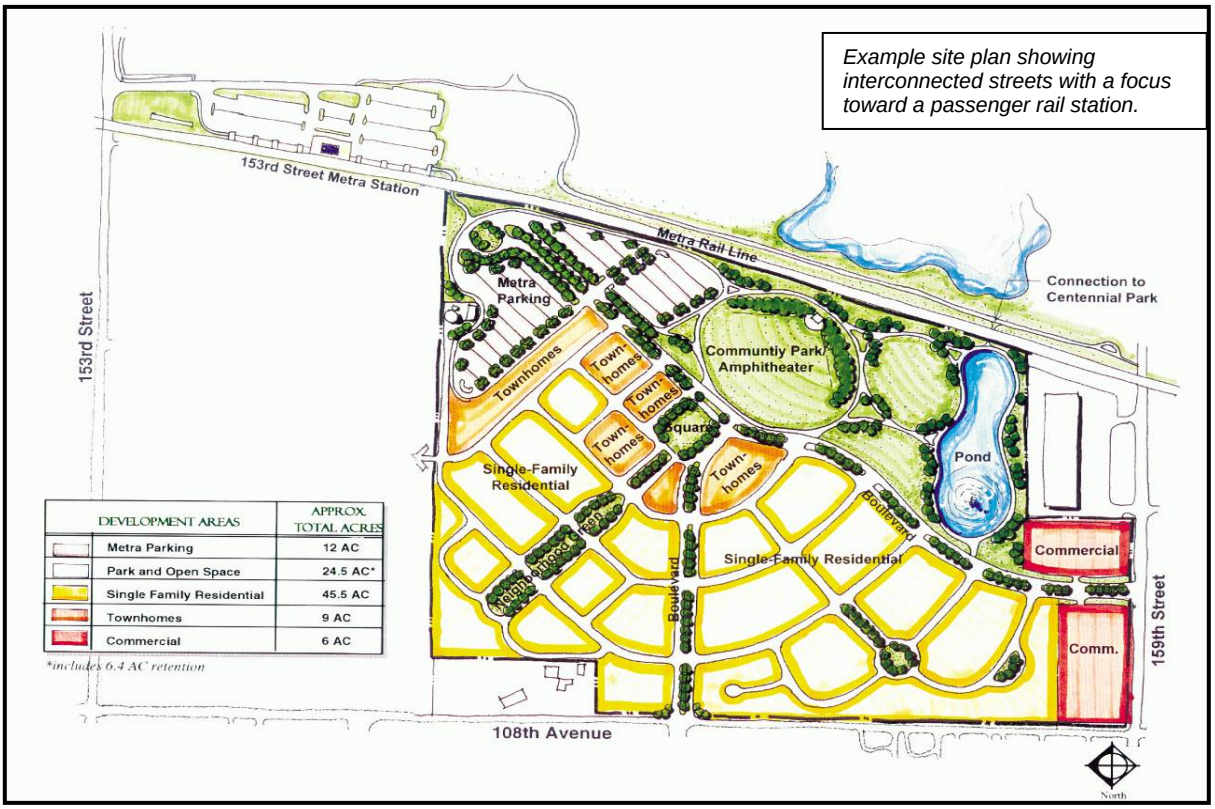
An example of a TOD development near a commuter rail station in the suburban Chicago area is shown in Figure 3-10 on page 3-16.

Table 3-2

Calendar of Potential Peak Events

Month	Events	Potential Peak Daily Event Boardings
January	Iowa Hawkeye Men's Basketball	1,300
	Iowa Hawkeye Women's Basketball	600
	CR Rough Riders Hockey	235
	Amana Colonies Winterfest	100
	Winter Snow Sightseeing Tour	200
February	Iowa Hawkeye Men's Basketball	1,300
	Iowa Hawkeye Women's Basketball	600
	CR Rough Riders Hockey	235
March	CR Rough Riders Hockey	235
April	CR Kernels Baseball	530
	Spring Sightseeing Tour	200
May	CR Kernels Baseball	530
	Amana Colonies Maifest	200
June	CR Kernels Baseball	530
	Summer Sightseeing Tour	200
July	CR Kernels Baseball	530
	Summer Sightseeing Tour	200
August	CR Kernels Baseball	530
	Summer Sightseeing Tour	200
September	Iowa Hawkeye Football	6,000
October	Iowa Hawkeye Football	6,000
	CR Rough Riders Hockey	235
	Amana Colonies Oktoberfest	260
	Autumn Foliage Sightseeing Tour	200
November	Iowa Hawkeye Football	6,000
	CR Rough Riders Hockey	235
December	Iowa Hawkeye Men's Basketball	1,300
	Iowa Hawkeye Women's Basketball	600
	CR Rough Riders Hockey	235
	Amana Colonies Tannenbaum Fest	100

Figure 3-10: Chicago Transit-Oriented Development



TOD implementation ideally starts with a vision and proceeds to strategic station-area planning backed by appropriate zoning as well as policy incentives and regulations. Overlay zones are the most common means of controlling land uses densities, and site designs of TOD. Overlays, often introduced on an interim basis to head off automobile-oriented uses that might compromise a TOD, usually specify desired land uses, such as housing and convenience shops. Some of the more progressive TOD zoning districts also lower automobile parking requirements and sometimes even set bicycle parking mandates. The picture to the right shows an example from the suburban Chicago area of a TOD development near a passenger rail line.

Chicago area TOD.

EXISTING LAND USE POLICIES

The CRANDIC and Iowa Interstate rail corridors extend through a number of established communities. Each of those communities varies in size, density and composition. This diversity is reflected in different land use plans and zoning regulations. A general overview of land use

policies is included with respect to the following communities: Cedar Rapids, North Liberty, Coralville and Iowa City.

Cedar Rapids

Cedar Rapids has a fairly standard land use classification and zoning process. The land use classifications tend to segregate land uses into desired categories. The Cedar Rapids Comprehensive Plan identifies a number of key action items that are to be used to implement the plan's recommendations. Those action items include developing standards and incentives for mixed use, pedestrian-oriented and traditional neighborhood development. A second action item includes revising planned zoning guidelines to set parameters for density tradeoffs, to describe a process and criteria for density bonuses, and to set criteria for neighborhood commercial uses within a residential planned development. Implementation of those action items would begin a process that would allow a mix of uses and densities near transit stations.

North Liberty

North Liberty also employs a standard land use classification and zoning process. The current zoning process does not specify mixed use and density flexibility outside the downtown area. Further consultation with the City of North Liberty is needed to determine the flexibility of current land use regulations to allow higher residential densities near potential future transit stations and to determine support for new policies that would encourage transit oriented development in the future.

Coralville

The Coralville land use plan has a goal of better separation of land uses than has been experienced in the past. Previously, various types of residential development have been mixed, and in some cases residential and non-residential development have been mixed in ways that may not be desirable from a market or planning perspective. The City of Coralville is working to encourage higher density residential and a mix of neighborhood commercial in more established areas, many of which are located close to the CRANDIC railroad. A possibility exists when zoning regulations are modified to create TOD districts or overlays that encourage higher residential densities and mixed commercial uses.

Tracks through Iowa City near Benton Street.

Iowa City

Iowa City is a more compact city than the other cities in the corridor. The Iowa City Comprehensive Plan discusses a community of neighborhoods that support neighborhood commercial land uses and encourage diverse housing densities. The plan encourages diversity rather than large concentrations of apartments and university student housing. The plan describes continuation of interconnected grid streets to reduce congestion on main roads, provide more direct routes for travel, narrower local streets

and provision of sidewalks. All of those features are important to support pedestrian access to transit.

LAND USE DEVELOPMENT OPPORTUNITIES

There are a number of redevelopment activities that are planned or are in a conceptual stage in the vicinity of the CRANDIC line. They are described below:

Iowa City Central Planning District

One is located in Iowa City on the east side of the Iowa River in the vicinity of Benton Street. Much of this area contains a mix of commercial uses ranging from retail and service to quasi-industrial uses. This area is in the location of a private recycling center and the City's north pollution control plant. This area has been identified as a possible redevelopment site. Because of the proximity of the CRANDIC line, this area would have a high potential to be redeveloped using many TOD characteristics including higher residential densities, neighborhood commercial, a strong pedestrian environment, location of a transit station, and good sidewalk and bicycle access. This area is located conveniently to the major employment center in Iowa City. Future service between Iowa City and Coralville TOD areas potentially could be accomplished using a vintage passenger vehicle on a defined, close headway schedule given the limited freight use by CRANDIC of the Hills Line.

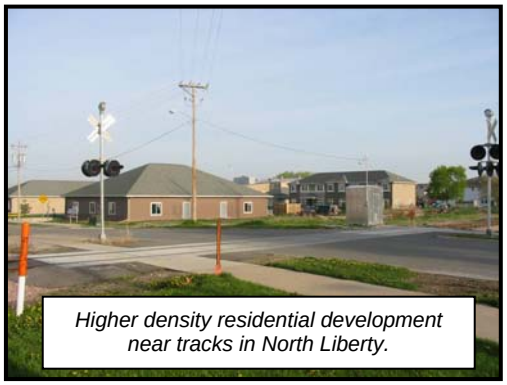
Coralville Old Industrial Park Redevelopment Area

The area south of I-80 and east of 1st Avenue in Coralville has been identified as the Old Industrial park Redevelopment Area, now called Iowa River Landing. This is the location of a new Marriott convention center. The CRANDIC line is located on the southwest part of this area. This area will eventually include a high density residential neighborhood which could be served by rail transit service. Rail transit could also serve an intermodal transportation center which is planned for this area.

Convention Center under construction in Coralville.

North Liberty

The rail line bisects the City of North Liberty, which provides excellent opportunities for permitting higher density residential development and also neighborhood commercial development to take place. In addition, existing zoning regulations could be amended to allow mixed-use TOD uses near a future transit station.



Higher density residential development near tracks in North Liberty.

Area between tracks and Eastern Iowa Airport terminal.

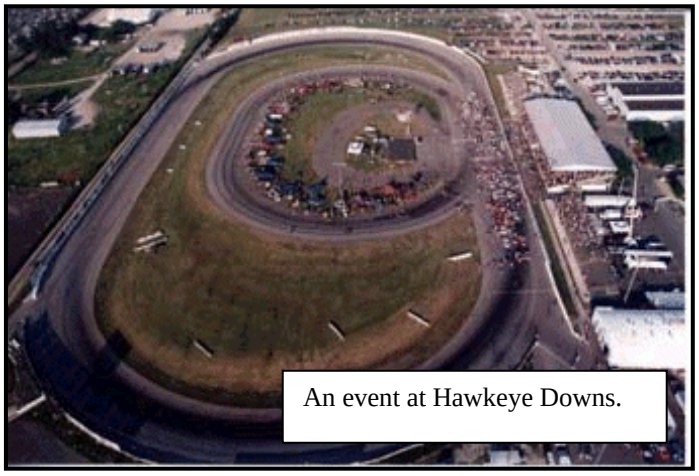
Eastern Iowa Airport

The CRANDIC line is located just east of the airport terminal. While no land use strategies are needed, site development and transportation enhancements are critical to provide improved walking, and bus shuttle service to this stop location support intermodal connections. To further support transit connections, two Five Seasons transit routes could be modified to interline with the rail station at the Eastern Iowa Airport. Those transit routes could provide service to Kirkwood Community College and other destinations in Cedar Rapids.

Kirkwood Community College

This college is located just over three miles from the CRANDIC line. A van shuttle service or a fixed route transit service connection would need to be provided to gain access to the college from the Eastern Iowa Airport stop or at another location. The shuttle also would provide circulation within the college campus for those without auto access.

Kirkwood Community College campus, located 3 miles from tracks.

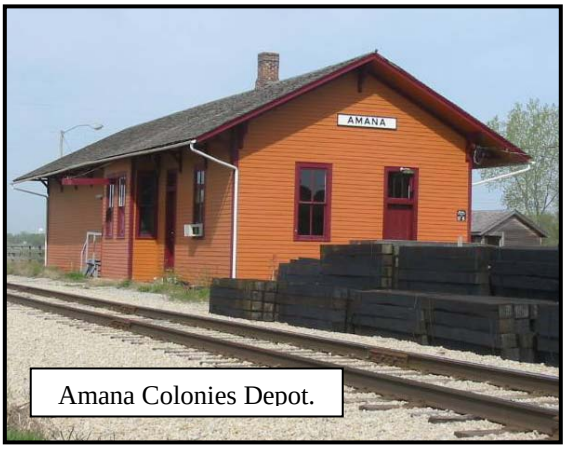

An event at Hawkeye Downs.

Hawkeye Downs

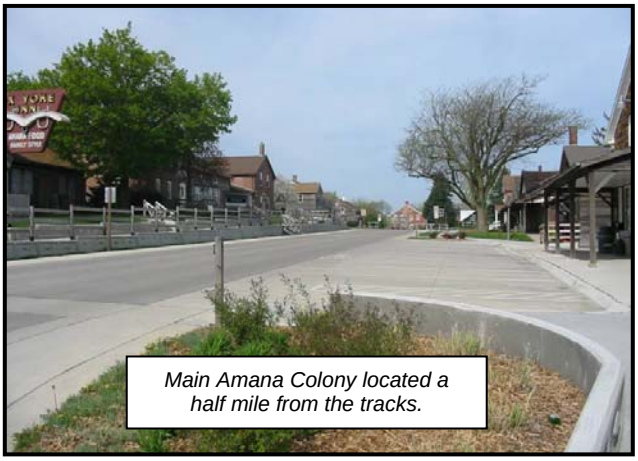
This area is industrial in nature. It is also the location of a racing speedway and fairgrounds. Hawkeye Downs hosts the Hawkeye Downs Fair each year in addition to weekly bingo, concerts, trade shows, animal shows, manufacturer and retail shows as well as a variety of other events. The Hawkeye Downs Fairgrounds also includes a camping area, a motocross track, tractor-pulling track, various livestock show arenas and livestock barns. TOD opportunities are more challenging in this location.

Amana Colonies

The CRANDIC operates a rail line between Cedar Rapids and the Amana Colonies. The line is located in close proximity to the main Amana Village which contains the Amana Depot, a visitor's center and over 40 other shops and destinations. The existing land use development pattern is supportive of a pedestrian environment.



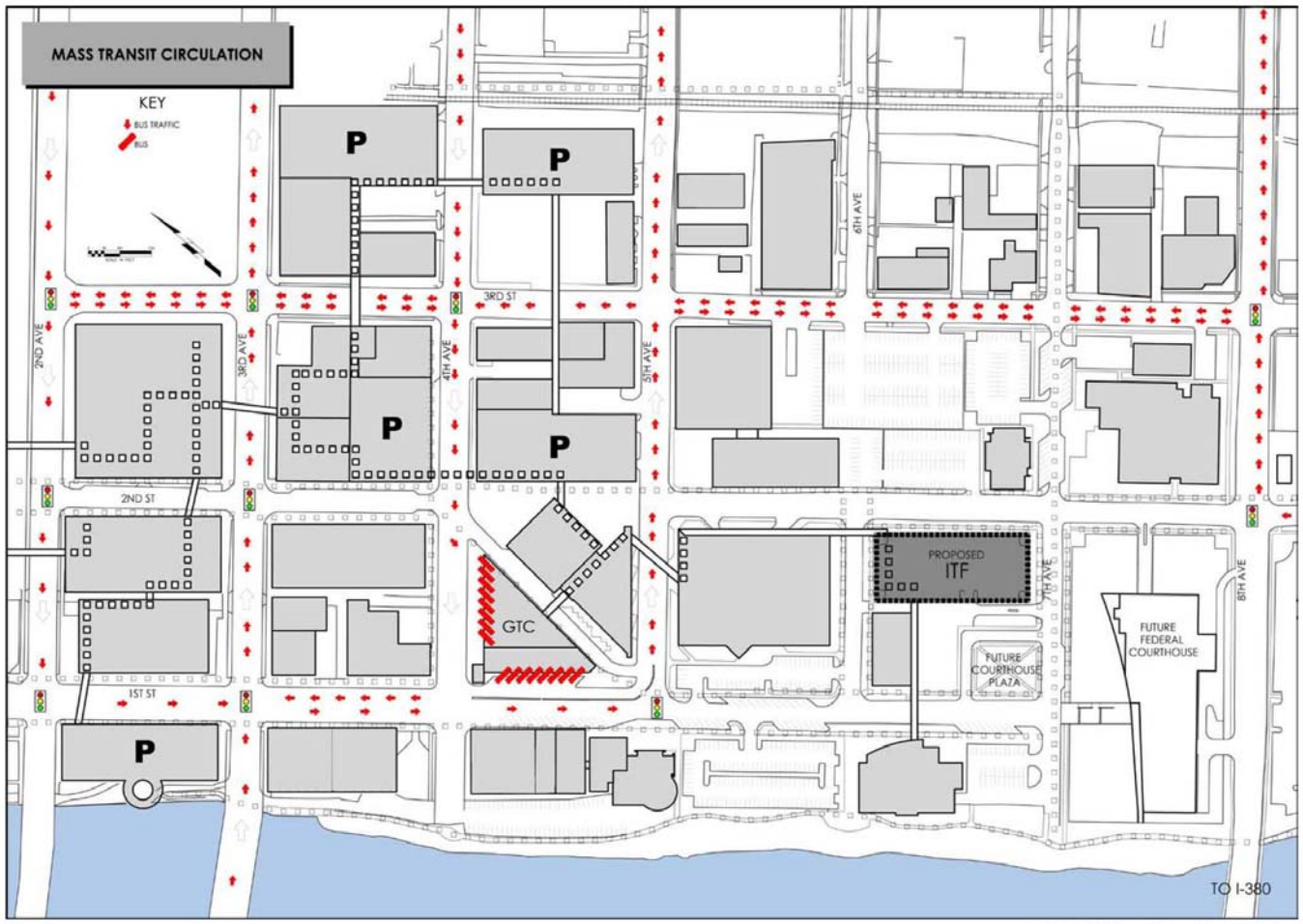
Amana Colonies Depot.


Main Amana Colony located a half mile from the tracks.

Downtown Cedar Rapids

The CRANDIC main line extends across the Cedar River adjacent to 8th Avenue on the south edge of downtown Cedar Rapids. This is a redevelopment area which is creating a downtown, high-density neighborhood. Warehouse conversions to condominiums and apartments have already occurred and more are planned in the future as well as new residential construction. This is also the area where two large-scale development projects are planned for the near future: a transit intermodal center for Five Seasons Transportation and Parking in 2007 and a new federal court house in 2008. With the CRANDIC line adjacent to this area, opportunities exist for TOD.

Possible northern terminus located on the south side of the Cedar Rapids CBD and located in a park and ride lot.



Shive-Hattery, Inc.
Substance Architecture
Walker Parking Consultants
The Goodman Corporation
The Weidt Group

Cedar Rapids Intermodal Transit Facility Interview
January 24, 2006

Downtown Iowa City and the University of Iowa

Downtown Iowa City is located approximately a half mile east of the CRANDIC line. This downtown area and the adjacent University of Iowa campus is the focal point of the three bus systems serving the area – Iowa City Transit, Coralville Transit and CAMBUS. The CRANDIC line potentially would provide access to both portions of the University campus located on each side of the Iowa River.

The rail line connects directly to the University of Iowa Campus.

Task 4 – Passenger Service Plan Investments and Costs

Costs of potential service plans relating to different levels and types of passenger service are estimated and illustrated in Table 4-1 (seen below), based on the following capital, operating and maintenance costs. A short description of each type service and associated costs is presented below. Potential sources of funding (federal, state, local and private) are described at length later in this Task.

Table 4-1

Capital Requirements
(In 2006 Dollars)

	Track/Bridges	Equipment	Stations/Layover Facilities	Total
Alternative 2. Eastern Iowa – Airport to Iowa City Commuter Service				
Year 2006	$4,107,000	4,500,000	$12,800,000	$21,407,000
Year 2030	14,981,000	7,500,000	12,800,000	35,281,000
Alternative 3. N. Liberty – Iowa City Commuter Service				
Year 2006	1,448,000	8,400,000	8,800,000	18,648,000
Year 2030	6,615,000	12,600,000	8,800,000	28,015,000
Special Event Excursion Service	25,000	0 (Leased)	15,000	40,000
Vintage Excursion Service	25,000	400,000	15,000	440,000

Source: RLBA.

Infrastructure

Total capital infrastructure costs associated with the individual passenger service scenarios vary in length, complexity and price. As described in Task 1 and Task 2, upgrade costs are estimated and those unit costs listed at the end of Task 1 are applied to the characteristics specific to the individual operating scenario. Following, is a brief description of the costs associated with each of two preferred commuter options, related to both the current year and 2030 as well as a short description of the expected infrastructure improvements associated with pre-arranged special event excursion trips and vintage excursion service.

Infrastructure costs in Current Year commuter alternatives are based on not replacing the non-cc rail. RLBA proposed limiting passenger train speeds to 30 mph operation unless that rail were changed, and CRANDIC agreed with that suggestion but still reserved the right to consider whether the rail should be changed out before starting any new regular passenger service. However, the issue remains open and implementation negotiations with CRANDIC could lead to more expensive initial service options if CRANDIC required rail replacement.

Alternative 2 – Current Year

Understanding that passenger rail speed is restricted to 30 mph in this 19.1 mile segment alternative, only ten percent of the rail is estimated to be replaced when weight is less than 112 pound (per yard) after an additional internal rail-flaw detection test is completed. In conjunction with new rail replacement, it is assumed that all OTM, consisting of tie plates, rail anchors and

spikes are changed also. Approximately 13,800 standard, wooden crossties are estimated to be replaced along with complete renewal/replacement of eleven turnouts. After rail and timber replacement, sufficient ballast will be distributed and surfaced to provide a smooth rail surface. Bridge repairs listed as being recommended by Kelley Engineering in the CRANDIC bridge inspection reports and their associated costs were estimated in addition to a per-mile culvert reconditioning allotment. Nine private and four public at-grade, highway-rail crossings upgrades are estimated. Table 4-2 below illustrates all cost estimates and traditional allotments of items such as material transportation, construction management, agency administration and contingency figures amount to over $4.1 million or about $215,000 per mile. For a complete breakdown of track structure cost estimates, please refer to Section 4 of the Technical Attachment.

Table 4-2

Alternative 2 – Current Year Track Cost Estimates
(In 2006 Dollars)

	Cost	Cost
Rail (material)	$338,000	
OTM (material)	100,000	
Rail and OTM (labor)	334,000	
Crossties (material and labor)	802,000	
Turnouts (material and labor)	825,000	
Ballast	226,000	
Bridges and Culverts	289,000	
At-grade, highway-rail crossings	230,000	
Subtotal		$3,144,000
Transportation Costs (10 %)	314,000	
Construction Management (6 %)	207,000	
Agency Administration (2%)	69,000	
Subtotal		590,000
Contingency (10%)	373,000	
Subtotal		373,000
Grand Total		**$4,107,000**

Source: RLBA estimates.

Were CRANDIC to require the replacement of all rail weighing less than 112 pounds before regular commuter operations were to begin, an additional $9,247,000 is estimated to be needed in rail and OTM replacement.

Alternative 2 – Year 2030

This scenario is similar to the current year Alternative 2 scenario with the exceptions that all rail weighing less than 112 pounds is replaced (as well as flash-butt welded) and a one mile long passing siding is estimated to accommodate meeting of trains along with two accessing switches, driving total cost to about $15 million or $784,000 per mile. Table 4-3 on the next page shows the associated costs. Again, for a more detailed breakdown of the cost estimates, please refer to the Technical Attachment.

Table 4-3

Alternative 2 –Year 2030 Track Cost Estimates
(In 2006 Dollars)

	Cost	Cost
Rail (material)	$3,404,000	
OTM (material)	736,000	
Rail and OTM (labor – including welding)	3,708,000	
Crossties (material and labor)	802,000	
Turnouts (material and labor)	1,125,000	
Ballast	226,000	
Bridges and Culverts	289,000	
At-grade, highway-rail crossings	230,000	
New Siding Construction	871,000	
Subtotal		$11,391,000
Transportation Costs (10 %)	1,139,000	
Design (10% of Siding Cost)	87,000	
Construction Management (6 %)	752,000	
Agency Administration (2%)	251,000	
Subtotal		2,229,000
Contingency (10%)	1,362,000	
Subtotal		1,362,000
Grand Total		**$14,982,000**

Source: RLBA estimates.

Alternative 3 – Current Year

This alternative is much shorter that Alternative 2 in that it only extends between North Liberty and Iowa City, making it about 7.9 miles long. The same general conditions apply as in the previous Current Year alternative as far as rail, OTM, tie, turnouts, crossing replacement and bridge repair. Table 4-4 on the next page shows the costs associated with this scenario of approximately $1.5 million or $183,000 per mile.

Alternative 3 – Year 2030

This scenario is also similar to current year Alternative 3 scenario with the exceptions, again, concerning replacing all the rail weighing less than 112 pounds (including flash-butt welding) and construction of a one mile long passing siding to accommodate meeting of trains along with two accessing switches. Table 4-5 on the next page demonstrates the costs totaling over $6.6 million or $837,000 per mile associated with this alternative.

Special Event Excursion Service

This service scenario assumes that little track upgrade work would be necessary due to the limited number of trips and the likelihood that equipment would be trip leased, negating the need to cover the cost of storage track construction. Understanding this, a $25,000 track structure lump sum allotment was estimated for minor repairs to commence pre-arranged special excursion trips on any of the three corridors.

Table 4-4

Alternative 3 – Current Year Track Cost Estimates
(In 2006 Dollars)

	Cost	Cost
Rail (material)	$128,000	
OTM (material)	39,000	
Rail and OTM (labor)	126,000	
Crossties (material and labor)	332,000	
Turnouts (material and labor)	225,000	
Ballast	95,000	
Bridges and Culverts	153,000	
At-grade, highway-rail crossings	10,000	
Subtotal		$1,108,000
Transportation Costs (10 %)	111,000	
Construction Management (6 %)	73,000	
Agency Administration (2%)	24,000	
Subtotal		208,000
Contingency (10%)	132,000	
Subtotal		132,000
Grand Total		**$1,448,000**

Source: RLBA estimates.

Table 4-5

Alternative 3 –Year 2030 Track Cost Estimates
(In 2006 Dollars)

	Cost	Cost
Rail (material)	$1,291,000	
OTM (material)	280,000	
Rail and OTM (labor – including welding)	1,433,000	
Crossties (material and labor)	332,000	
Turnouts (material and labor)	525,000	
Ballast	95,000	
Bridges and Culverts	153,000	
At-grade, highway-rail crossings	10,000	
New Siding Construction	871,000	
Subtotal		$4,990,000
Transportation Costs (10 %)	499,000	
Design (10% of Siding Cost)	87,000	
Construction Management (6 %)	329,000	
Agency Administration (2%)	110,000	
Subtotal		1,025,000
Contingency (10%)	601,000	
Subtotal		601,000
Grand Total		**$6,616,000**

Source: RLBA estimates.

Vintage Excursion Service

This service scenario also assumes that little track upgrade work would be necessary due to the limited number of trips, small track space required to store vintage equipment and limited wear due to lightweight equipment. Similarly, a $25,000 track structure lump sum allotment was estimated in connection with minor repairs which might be necessary to commence pre-arranged vintage excursion trips on the CRANDIC Hills Line.

Equipment – Self-Powered Rail Cars – Vintage

The Consultant Team researched many sources/remanufactures of vintage self-powered railcars (SPRCs), an example of which can be seen below. The M-55 Motor Car seen to the left originally was manufactured by Brill in 1930 and seats about 38 individuals. Edwards Rail Car Company was involved in the refurbishment of the car to its current condition. Understanding the desire of FSTP and JCCOG to utilize Iowa-based firms, the Project Manager telephoned Miner Rail Services (MRS) of Donnellson, Iowa and spoke to Mr. Dave Miner about the ability of MRS to procure Vintage SPRCs to support the Project. MRS performs high quality trolley restoration services. The Consultant Team also subsequently visited MRS.

M-55 Arizona Eastern Railway car
Source: Marc Pearsall

MRS offers two types of vintage SPRCs – “Doodle Bugs” and Presidential Conference Committee (PCC) electric traction cars, which carbodies come from Philadelphia. Doodle Bugs are standard gauge gas/diesel powered passenger railcars that typically operate in a single-car configuration. MRS produces both large and small configurations, capable of accommodating a maximum of 80 and 40 persons, respectively. The cars feature FRA-compliant glazed glass windows. The maximum operating speed of these vehicles is 30 miles per hour. The total per car cost to acquire a Doodle Bug is $400,000.

MRS also rehabilitates PCC cars. Kenosha, Wisconsin procured five cars from MRS in 2000 at a per car cost of $67,000. The vehicles were acquired from Philadelphia and required steel carbody repair and fabrication of new skirts. Accelerators, contactors and controllers were cleaned, repaired and tested prior to delivery. The cars also were re-trucked, outfitted with new seats and a wheelchair lift and painted. MRS supplied a three-year warranty to Kenosha in connection with the five cars.

Equipment – Self-Powered Rail Cars – Modern

A primary feature distinguishing various SPRCs is whether or not they comply with FRA passenger car safety standards. FRA regulates structural safety standards with respect to passenger equipment to be operated in “shared use,” i.e., over tracks jointly used by both freight

and passenger equipment. Equipment which meets FRA recommendations is termed "compliant;" equipment which does not, "non-compliant." Non-compliant equipment is generally lighter and therefore costs less, requires less power, consumes less fuel and may have better acceleration, turning and braking characteristics, compared with compliant equipment.

The Self-Powered Rail Car Technologies Subcommittee of the Transportation Research Board (TRB) reported that there are 75 SPRCs currently operating, on order or in engineering on behalf of North American urban transit applications.[2] The Subcommittee groups SPRCs into three categories:

- Category 1 describes FRA compliant cars;
- Category 2 includes non-compliant railway cars and
- Category 3 covers diesel light rail vehicles, also non-compliant, which are described by the Subcommittee as "shorter, lighter, articulated cars designed to negotiate tight turns required for street running trolley operations."[3]

Category 1 includes cars from three different manufacturers, Budd/AMF, United Transit Systems and Colorado Rail Car. Of the three, the Budd cars (seen to the right) are remanufactured, no longer produced and available units are extremely difficult to procure. As shown in Table 4-6 on the next page, approximate costs vary between $1.8 for a Budd car to $4.2 million per car for Colorado Rail Car's Double-Deck DMU. Colorado Rail Car's units can run on a diesel-ethanol blend of up to five percent, without voiding their warranty.

Category 2 includes cars from manufacturers Bombardier and Siemens, ranging from $3.9 million to $4.2 million, an example of which can be seen to the left.

Category 3 features cars from the manufacturer, Stadler, ranging in price from $3.6 million to $5.4 million, though the latter price reflects parts, support and finance charges.

[2] 2006 Self-Powered Railcar Fact Sheet. Transportation Research Board. http://www.trbcommuterrail.org/docs/AP070_1_%20Vehicle%20Fact%20Sheet%20January%2027%202006.pdf February 24, 2006.
[3] Ibid.

Table 4-6

Self-Powered Rail Cars
(In Service, On Order Or In Engineering)

System	Manufacturer	Level	Seating	Cost (Millions)
DART, Dallas, TX	Budd/AMF	Single	96	$1.80
Triangle Transit, Raleigh, NC	United Transit Systems	Single	80	2.64
Tri-Rail, Miami, FL	Colorado Rail Car	Single	92	2.90
Tri-Rail, Miami, FL	Colorado Rail Car	Bi	188	4.20
Tri-Met, Portland, OR	Colorado Rail Car	Single	76	3.60
O-Train, Ottawa, ON	Bombardier	Single	135	3.90
Sprinter, Oceanside, CA	Siemens	Single	139	4.22
River Line, New Jersey Transit	Stadler	Single	90	3.60
Metro, Austin, TX	Stadler	Single	90	5.40

Source: TRB.

Since SPRCs can be used individually or in consists of multiple units, a variety of service options and flexibility are available, especially when using double-deck equipment such as that from Colorado Rail Car. The company makes single level and double-deck trailers (no propulsion) that can be hauled by either of their powered models. The single level trailer can seat 92 while their double-deck trailer seats 218. The costs of these versions are $2.0 million and $3.1 million, respectively. A single level SPRC pushing/pulling a double-deck trailer could seat 310 at a cost of $6.34 million while a double-deck SPRC pushing/pulling a double-deck trailer could seat 406 at a cost of $7.3 million.

Equipment – Locomotive Hauled, Bi-Level Passenger Rail Cars
Bi-level cars are fairly typical of commuter rail systems that feature locomotive hauled passenger rail cars. As seen in recent sales to systems in California, New Mexico and Rhode Island, the average current cost of such a new car is around $2 million, as displayed in Table 4-7 on the next page.

[4] When contacted by phone in February of 2006, Colorado Rail Car quoted $3.2 million as the cost of their single level model as opposed to the $2.9 million quoted by the TRB as the cost to Tri-Rail.

Table 4-7

Locomotive Hauled Bi-Level Passenger Rail Cars

System	Manufacturer	Seating	Cost (Millions)
Metrolink - Los Angeles, CA	Rotem	140-150	$2.02
Rail Runner - Albuquerque, NM	Bombardier	140	2.30
MBTA - Rhode Island	Kawasaki	182	2.00

Source: Manufacturers, service operators and various media.

Equipment – Conventional Locomotive Hauled

Locomotives such as Wabtec Corporation's MPXpress model have been purchased at a cost of approximately $2.5 million apiece as in the case of New Mexico's Rail Runner service. Subsequently, a train made up of a locomotive and three bi-level passenger cars would cost approximately $8.5 million and seat up to between 420 and 546 passengers, depending on ADA compliance configuration and/or crash management system.

The use of second-hand, locomotive-hauled, bi-level passenger equipment in connection with prospective excursion services was considered. Upon learning that Iowa Northern Railway (IANR) possesses such equipment, RLBA telephoned Mr. Dan Sabin, President of IANR to learn more. The railroad acquired one former Amtrak EMD F40PH and six former METRA bi-level coaches, viewed to the right. One cab car – which facilitates movements with the locomotive pushing the train consist – also is reportedly being acquired by IANR. The bi-level coaches feature 170 seats per car. IANR maintains equipment at its Waterloo shop but is constructing a new shop and yard at Shell Rock. Passenger equipment maintenance would be conducted at IANR's facility.

Mr. Sabin indicated that IANR was able and willing to facilitate the use of its equipment for excursion services, as long as such participation does not, in any way, damage or interfere with IANR's substantial business relationship with CRANDIC. As discussed elsewhere in this report, IANR interchanges a significant number of railcars with CRANDIC each day.

The Consultant Team also queried Mr. Sabin regarding the cost to use IANR equipment in connection with excursion services. He estimated that one locomotive and six cars could be leased for approximately $2,500 to $3,000 per day, excluding the cost of fuel, oil and other servicing items. Liability insurance coverage and costs would not be assumed by IANR.

Equipment Recommendations

The Consultant Team has investigated thoroughly all available options with respective to passenger railroad rolling stock in connection with the Study. While vintage SPRCs are technically feasible, the main constraint is that they are not FRA-compliant vehicles and would require either temporal or physical separation from existing freight operations. Given the extensive current freight activity on both CRANDIC and IAIS and the physical and financial constraints associated with new track construction, separation is highly unlikely.

The Vintage SPRCs also are an unknown commodity to potential host freight railroads, CRANDIC and IAIS. As potential passenger rail hosts and prospective operations and maintenance contractors, every effort should be made to coincide with the knowledge and experience of the railroads since substantial efficiencies will be potentially enjoyed if potential rail services(s) can benefit from the use of CRANDIC and/or IAIS personnel in the operations and maintenance functions of the service(s).

For those reasons, vintage SPRCs are considered only in the context of excursion passenger service on the Hills Line and would require additional coordination in connection with their use in selected tourist and recreational passenger services.

Modern SPRCs are an option available to the Project. The Colorado Railcar DMU, for example, is FRA compliant, which means that it could easily intermingle with existing CRANDIC and IAIS freight operations. Other advantages associated with the DMU are that it can be used to service lighter-density passenger loads, is scalable and could be supplemented with additional trailer cars as ridership increases. DMUs also can be equipped with double-ended operator controls, facilitating shuttle services like the one envisioned in the North Liberty – Iowa City corridor. Operations and maintenance functions required in connection with the DMU likely would be complementary to host railroads' expertise. One downside to modern SPRCs is cost. Table 4-6 above illustrated the capital costs associated with acquisition. New starts have little choice but to bear those high acquisition costs, as no used market really exists given the relatively recent popularity of DMUs in the United States.

The Consultant Team issues a preliminary recommendation favoring the use of conventional, locomotive-hauled trains (Airport-Iowa City) and modern SPRCs (North Liberty-Iowa City) in the Project relating to commuter passenger operations. The final equipment decision should be based upon ridership and equipment market conditions at the time of implementation. The advantages of such equipment are as follows:

- FRA-compliance is not an issue;
- Cost – the used, conventional equipment market could be investigated to unearth quality equipment at a good price;
- Familiarity – conventional trains and equipment could easily be operated, maintained and stored by CRANDIC forces and
- Ability to match North Liberty-Iowa City service characteristics (frequent trains, light passenger loads) with the flexibility and lower maintenance costs of SPRCs.

Prior to equipment acquisition, it is recommended that both the new and second-hand equipment market be surveyed to determine the best available options at the time. The second-hand passenger equipment market should be investigated as early as possible, once a decision

to implement services has been made. Historically, the used market has produced great value to prospective new start operators, as quality, well-maintained equipment has often been furloughed because of issues such as capacity and other growth-related operational changes making certain equipment no longer compatible. When such equipment is disposed of – like Virginia Railway Express's Mafersa coaches a couple of years ago – the acquiring agency procured a handful of low-mileage, high quality cars that will last for many years at a bargain price. VRE was and continues to grow so quickly that single-level coaches no longer fit its operating plan; the cars were otherwise of great value to VRE. Given enough advance investigation, such a scenario could unfold again, yielding a high quality second-hand trainset at a great price.

It is expected that a used passenger locomotive – such as an EMD F40PH formerly operated by Amtrak or a rebuilt General Purpose (GP) type locomotive – could be acquired in good condition and set up for service at a cost of approximately $1 million per unit. Second-hand passenger coaches could be acquired at a cost of approximately $500,000 per car, which takes in account the cost to transport, perform limited updates to the interior, paint and other ancillary tasks to set up a coach to operate in a new service.

Table 4-7 and associated text above illustrate the difference in capital costs associated with new versus used passenger equipment.

New locomotive-hauled equipment, in addition to a larger price tag, can be challenging to procure but is available. The number of passenger locomotives pales in comparison to the number of heavy-duty, large freight locomotives under construction every year at both EMD and General Electric. Both firms still manufacture passenger locomotives and other firms do, as well, but it takes time to procure, manufacture and deliver such units, especially considering the focus of today's builders.

Locomotive-hauled trains are assumed in estimating Airport-Iowa City service costs. Current cost estimates reflect the use of a new single locomotive, three coaches and a cab car, however as stated previously, the availability of used equipment should substantially reduce initial capital cost. Year 2030 cost estimates reflect the use of two trainsets or double the current start-up cost. North Liberty-Iowa City service cost estimates assume the use of one SPRC in 2006 and two in 2030.

Special event excursion equipment was assumed to be leased for purposes of this study as well as the purchase of one vintage railcar in conjunction with the vintage excursion service.

Station Costs

Basic commuter stations typically are commuter-oriented, with more limited connections to local bus and shuttle routes. Access to and from those stations will be primarily via private automobile, although some passengers also will travel by bus, bicycle and foot. Station facilities can range between very minimal (such as the simple gravel parking lot seen to the right utilized in conjunction with the Hawkeye Express specialty passenger

train) to a more traditional commuter rail configuration, with simple platforms and basic amenities such as public phones, benches, along with an information kiosk, passenger drop-off area and a bus or shuttle stop.

For each commuter rail station, an example of which can be seen below, located outside an established area, fringe area park and ride lots should be located and designed to optimize:

- visibility from major roadways;
- safe and convenient access along well defined access routes with adequate capacity;
- safe and efficient on-site traffic operations both for cars and local/express bus services;
- convenience and safety for pedestrians walking between their cars and the commuter rail platform;
- facilities for dropping off and picking up (kiss-and-ride) car passengers and
- adequate and comfortable facilities available for waiting and alighting commuter rail passengers.

The Music City Star commuter rail service is expected to begin operation in late summer of 2006 between Lebanon and Nashville, Tennessee. Station costs related to this service average $2.4 million and typically include one, 300-foot platform, three canopies and a 200-space parking lot. A temporary station in Martha has been included in the Music City Star system at a cost of $138,681, featuring a single platform, three paved ADA parking spaces and an 80-vehicle gravel parking lot. However, there is already concern that parking will be inadequate and that costs will rise considerably when the issue is addressed.

Station costs, of the Rail Runner Commuter Rail Service between Albuquerque and Belen, New Mexico which begins June 2006, average about $2 million according to Chris Blewett, Director of Transportation and Planning Services of the Mid-Region Council of Governments. Costs vary according to parking lot size and length of access roads, with the cheapest costing about $1.8 million. Stations feature one, 300-foot platform with two canopies that cover about half of their length. Parking varies at each station, with the largest facility having over 250 spaces.

A lump sum amount of $15,000 was estimated in conjunction with gravel lots at station locations used in both special event and vintage excursion services. However, in commuter rail service, the Consultant Team estimated station costs of $2 million for each of the outlying stations such as at the Airport, Swisher, North Liberty and Coralville. The station at Iowa City (Riverside Drive) was estimated to cost approximately 50 percent as much or about $1 million. It should be noted that any service can choose to spend as much or as little at it want in the start-up time period.

Layover Facility Costs

Layover facilities (associated with regular commuter passenger service) are required in conjunction with overnight train storage, light servicing and cleaning. It is preferable to locate these as close as possible to a commuter rail line's outer terminals. It is assumed that a layover facility would be constructed near Iowa City or near North Liberty depending on land availability. Estimated to cost about $1.8 million, it would include the following:

- Sufficient tracks for two trainsets, with additional space to expand considering the possibility of future fleet size increases;
- 480 volt standby power (required to maintain train heat and cooling and operate lights and doors without running the train's locomotive);
- Crew and maintenance building;
- Fencing and security;
- Lighting;
- Level storage tracks with drip pans for locomotives;
- Ability to change consists without entering the main track;
- Roadway vehicle access to all tracks and
- Drop pans for locomotives.

Operations and Maintenance Costs

Estimated operating costs are based upon the recommended service plans. The inputs required to operate the services, such as labor hours, and outputs, such as locomotive-miles and DMU-miles, were calculated. Next, appropriate unit costs from passenger railroad experience were applied. Finally, adjustments were made as appropriate, to reflect any unique characteristics of the proposed service. Principal operating cost components are examined below:

Train Operations costs include crew wages, fuel, clerical support, supplies, dispatching and supervision. Crew wages were estimated based upon train schedules, crew assignments and typical compensation. Fuel and other remaining costs were estimated based upon train-miles to be operated under each service plan.

Equipment maintenance costs were developed based upon equipment type (DMU and conventional passenger equipment) and quantity as well as train-miles operated.

Access and Maintenance Costs: Rail passenger services operating over freight railroad tracks generally pay for track access in two ways: 1) by making capital improvements or contributions to improve line condition or increase line capacity, or both and 2) by means of an incremental cost approach which recognizes the additional resources needed to maintain facilities to support passenger service. The first component is included in the infrastructure portion of the capital cost estimate in this report. The second component includes the compensation paid to the track owner for a share of track maintenance, dispatching, supervision and overhead costs in addition to an incentive payment. Cost elements which reflect incremental expense in terms of track maintenance, dispatching and administration as well as a host railroad profit component are included in the operating estimate.

Insurance expense and general and administrative (G&A) expenses were projected based on the experience of other commuter and light rail services, with particular attention to experience typical of the first years of operation. G&A costs reflect establishment of a modest administrative and funding agency, or a new adjunct to an existing governmental or transit entity. This new agency would be responsible for marketing, public outreach, contract administration and financial matters.

A summary of total annual operating costs applied to the Eastern Iowa Airport-Iowa City and North Liberty-Iowa City services, expressed in current (2006) dollars, appear in Table 4-8 below.

Table 4-8

Estimated Annual Operating Costs

	Eastern Iowa Airport and Iowa City		North Liberty and Iowa City	
	2006	2030	2006	2030
Operating Costs:				
Train operations	$ 485,000	$ 1,594,000	$ 622,000	$1,493,000
Equipment maintenance	1,328,000	5,767,000	171,000	592,000
Railroad Access Fees	307,000	1,432,000	402,000	1,856,000
Station maintenance and operations	210,000	210,000	140,000	140,000
Total operating costs	$2,330,000	$ 9,003,000	$1,335,000	$4,081,000
General and Administrative	$1,635,000	1,635,000	1,485,000	1,485,000
Insurance	810,000	752,000	1,064,000	907,000
Contingency	239,000	570,000	194,000	324,000
Total costs	$5,014,000	$11,960,000	$4,078,000	$6,797,000

Operating costs associated with offering an excursion service on an occasional basis between Cedar Rapids or Iowa City and the Amana Colonies also was estimated. Excursion services, particularly when operated on an occasional basis, typically will incur higher operating costs than passenger services operating on a regular basis. Total operating costs per excursion train trip appear in Table 4-9 below.

Table 4-9

Estimated Operating Costs Per Excursion Train

Equipment rental	$ 4,500
Trains operations and track rental	9,000
Insurance	9,500
Contingency	2,000
	$25,000

Financial Recommendations

The Consultant Team reviewed all funding avenues including federal, state, local and private sources. Following is a short description of each, with a more in-depth look at the most applicable to this Project.

Federal Funding

The following discussion emphasizes those potential funding sources deemed most likely, but also lists other that might be possible.

SAFETEA-LU is the starting point. Signed into law by the President in August 2005, the "Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users," provides a record level of transit funding over a six-year period. SAFETEA-LU is the successor to ISTEA (Intermodal Surface Transportation Efficiency Act of 1991) and TEA-21 (Transportation Equity Act for the 21st Century (1998)). Section 3043(c)(32) of SAFETEA-LU authorizes preliminary engineering of the Cedar Rapids, Iowa, River Rail Project.

The Small Starts Program (Section 3011 of SAFETEA-LU) is perhaps the most likely federal funding opportunity for this project. Small Starts applies to projects with a federal share of less than $75 million, including streetcar, trolley, and commuter rail projects with an overall net capital cost of $250 million or less. The Federal Transit Administration (FTA) plans to devise an approach to evaluating these Small Start projects, which are intended to receive less federal scrutiny than projects which are the subject of Major Capital Investment Grants of $75 million or more (the "New Starts" Program).

With regard to the Small Starts Program, SAFETEA-LU states that the Secretary of Transportation may provide federal assistance:

- based on results of planning and alternatives analysis;

- where justified, based on supportive land use policies, cost effectiveness and effect on local economic development and
- when supported by an acceptable degree of local financial commitment.

Because of the importance of the Small Starts Program as a potential funding source, it should be pursued as a priority, in close coordination with the U.S. Department of Transportation Federal Transit Administration Region VII Office, 901 Locust Street, Suite 404, Kansas City, MO 64106 (Mark Bechtel, (816) 329-3937).

There is a "window of opportunity" available for those projects with a Federal Share of less than $25,000,000. Between now and January 2008, or perhaps in late 2007, when FTA plans to issue a Final Rule on New Starts and Small Starts, the existing rules regarding federal funding of fixed guideway systems remain in effect. If project sponsors are able to submit a project to FTA in time to meet this timeline, then the more detailed requirements of applications to FTA, and the requirement of additional studies, may be avoided. For example, projects in which the federal share is less than $25 million do not have to be rated or evaluated. A project with total FTA funding under $25 million is exempt from new start criteria and requires no alternatives analysis. After the Final Rule is published by FTA, the $25 million opportunity will exist no more. It is recommended that Project sponsors discuss this possibility with FTA, as it may present an attractive method of obtaining federal funding for an initial project.

It should be noted that the Consultant Team viewed both Section 5307 Urbanized Area Formula Program and Section 5309 Capital Grants Program (New Starts) as potential sources of funding and determined that those sources are unlikely to be feasible in connection with the Project.

Section 5311 Non-urbanized Area Formula Program funding already may be utilized by public transit systems in the Amana region. In any event, this is another opportunity which could be pursued.

The Consultant Team further reviewed funding sources known as the Job Access and Reverse Commute (Federal Transit Funds) program and Congestion Mitigation and Air Quality (CMAQ) program, again determining that those may not be likely funding sources of the Project.

A portion of Surface Transportation Program funds called Transportation Enhancements may be used to mitigate transportation infrastructure impacts, including preservation of historic transportation facilities. For example, these funds have been utilized to restore historic rail passenger depots.

Other Federal Funding

The Economic Development Administration in the Department of Commerce administers grants to public works projects in areas experiencing substantial economic distress and in areas under threat of serious economic structural damage. If any counties which include parts of the proposed passenger rail system meet these criteria, this funding opportunity should be pursued.

Federal Rail/Highway Crossing Safety

Section 1401, Highway Safety Improvement Program, of Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) elevates Federal funding of the Section 130 grade crossing improvement program to $220 million annually (from $165 million). Inasmuch as improved track and higher passenger train speeds suggest the need for improved grade crossing protection, these federal funds should be sought also.

The Rail Rehabilitation and Improvement Financing (RRIF) program provides direct loans and loan guarantees to state and local governments, government-sponsored authorities and corporations, railroads and joint ventures that include at least one railroad. Eligible projects include: 1) acquisition, improvements or rehabilitation of intermodal or rail equipment or facilities (including tracks, components of tracks, bridges, yards, buildings, and shops); 2) refinancing outstanding debt incurred for these purposes, or 3) development or establishment of new intermodal or railroad facilities. SAFETEA-LU improves this program by eliminating some onerous loan conditions and by increasing the total authorization in loans outstanding to $35 billion (from $3.5 billion). Loan terms can extend up to 25 years. Again, this is another federal funding opportunity. Inasmuch as RRIF loans are usually associated with freight rail projects, RLBA queried the FRA as to whether passenger rail projects are eligible. Mr. Joe Pomponio of FRA says that they are and mentioned the Great Smoky Mountain Passenger Railroad as an example of RRIF assistance to passenger rail.

The Transportation Infrastructure Finance and Innovation Act (TIFIA) provides credit assistance on flexible terms directly to public-private sponsors of major surface transportation projects to assist them in gaining access to capital markets. TIFIA authorizes the Secretary of Transportation to collect fees from borrowers and fund up to $10.6 billion of direct loans, loan guarantees and lines of credit to support up to 33 percent of project costs. Eligible projects include highway and capital transit projects, intercity bus and rail projects (including Amtrak and maglev systems) and publicly-owned intermodal freight transfer facilities on or adjacent to the National Highway System. SAFETEA-LU reduced the TIFIA threshold from $100 million to $50 million, thus expanding project eligibility. The Secretary of Transportation selects projects based upon factors including national significance, credit-worthiness and private participation.

Earmark Potential. The great number of “earmarks” included in SAFETEA-LU suggests that the Cedar Rapids-Iowa City rail project again may be able to obtain a federal earmark at the time of the next surface transportation authorization, expected in year 2009. This represents an important opportunity.

State Funding

In order to determine state funding opportunities, RLBA consulted the Iowa DOT “Funding Guide” and talked to Iowa DOT officials.

Potential state funding sources include Iowa’s State Transit Assistance (STA) program and Rail Revolving Loan and Grant Program, both of which, after review, were judged to be not feasible in conjunction with this Project.

Railroads and public road jurisdictions may apply for assistance from the State Grade Crossing Surface Repair Fund. There is a 20 percent railroad match and a 20 percent public road jurisdiction match. Annually, $900,000 is appropriated from the Road Use Tax Fund. The 2000

Iowa Rail System Plan indicates that combined federal and state funding of grade crossings in Iowa was $4.8 million in 1997 and the same amount in 1998.

Local Funding

There are numerous means to raise local funding of the project, subject of course to state law and voter approval where required: general obligation bonds, tax increment financing, transit tax, sales tax or property tax. Sometimes local municipalities are asked to fund their own station and parking. Fare box revenues will assist in paying operating costs.

The 1995 Study suggested a one percent sales tax.

The Cedar Iowa River Rail Project document states that the "local share will come from municipal transit levy, land, private investment, fund raising and donations. Alternative funding could be achieved through bonding the purchase of equipment and leasing the equipment back to the system, RISE funding at the state level, state enhancement funds as well as Iowa Clean Air funds." It also states that "we are looking into CMAQ and state enhancement dollars for use in this project. Non federal dollars are coming from local tax dollars, land that is owned and leased, bonding, and private fund raising." (Iowa DOT told RLBA that RISE funding supports highways, not railroads.)

Regarding local funding, the Cedar Rapids area already has obtained from the legislature authority to create a regional tax district. Linn County must approve this and adjacent counties can join the regional tax district. Thus – with county approval – a property tax may be levied.

If New Starts funding were to be sought, the FTA requires that New Starts project sponsors demonstrate adequate local support of a proposed project, as measured by:

- Indicating the proposed share of total project costs from sources other than from the Section 5309 New Starts program, including Federal formula and flexible funds, the local match required by Federal law and any additional capital funding ("overmatch");
- The strength of the proposed project's capital financing plan and
- The ability of the sponsoring agency to fund operation and maintenance of the entire transit system as planned once the guideway project is built.

At this time, it is envisioned that the local share of the passenger rail project could come from municipal transit levies in Cedar Rapids, Coralville and Iowa City. Additional support will need to be explored from North Liberty. Alternative funding includes issuing bonds, RISE funding at the state level, state enhancement funds and Iowa Clean Air funds.

Private Funding

Private interests may benefit from the proposed new rail service. The railroads will benefit to the extent that others fund improvement of their tracks. It may be that the railroads will be willing to contribute something to the project. As an example, the railroads may own land on either side of track, to the extent of right of way width and, depending upon who has title to the right of way, the railroads or private developers may provide land on which to build passenger stations.

Other interests may benefit from the project and be willing to pay a portion of project costs. Amana may benefit from the new passenger rail service. The University of Iowa likewise may experience a benefit from the prospective passenger rail service.

Financial Conclusions

All reasonable sources should be investigated further if decisions are made to pursue this project. It is recommended that all sources be pursued in parallel, as it is possible to combine federal, state and local funding from various sources.

As suggested above, federal funding authorized by SAFETEA-LU should be pursued as a first priority. Small Start Program funding could provide a capital grant equal to a major share of total project funding, and deserves further investigation in coordination with the FTA regional office. However, as recommended above, project sponsors should explore with the FTA regional office the possibility of FTA funding where the federal share is less than $25 million.

Other federal and state sources also should be pursued. As an example of opportunities available, grade crossings on rail lines over which the prospective new passenger service will operate no doubt will require upgrading, in consideration of higher train speeds. Grade crossing safety improvements may be funded using so-called “Section 130” federal funding, distributed at the state level. It would be reasonable to solicit these funds to improve grade crossing safety on this project and provision of those funds would result in one additional funding increment.

There has been some concern that, despite the record levels of funding provided in SAFETEA-LU, there will be insufficient funding to meet transportation needs. If for this or another reason, it turns out that FTA funding is not available for this project, then other federal and state sources should be pursued.

Finally, given the substantial number of “earmarks” in SAFETEA-LU, it is recommended strongly that another earmark be pursued in connection with the next federal surface transportation authorization, expected in 2009.

Task 5 – Steering Committee

An underlying objective of this task is to keep interested stakeholders apprised of Study progress accomplished by the Consultant Team. Progress is best monitored by open lines of communication through a Consultant Team single point of contact with stakeholders as well as regularly held public or select individual meetings. The Study's Project Manger, Gene A. Davis, P.E., served as the Consultant Team point of contact, in frequent contact with everyone involved in this Study. In all of its work, the Consultant Team conducted peer review of all professional analyses; even where performed by experienced and/or senior professionals.

December 7, 2005 Public Meeting
The first public meeting, held on December 7, 2005 at Kirkwood Community College, served as both an introduction of the Consultant Team to members of the 15 in 5 Committee and a Project kick-off meeting. A complete copy of the December 7th meeting minutes are contained in Appendix 5–A. Consultant Team members met with representatives of the City of Cedar Rapids (William Hoekstra, Transportation & Parking Director of FSTP), Johnson County Council of Governments (Jeff Davidson, Director of JCCOG), 15 in 5 Committee, news agencies and other interested stakeholders as well as members of the general public at the initial public meeting. After Joshua Schamberger, Chairman of the 15 in 5 Committee opened the meeting, Mr. Davis provide a brief overview of the Project scope via a video slide presentation. Cheryle Mitvalsky, 15 in 5 Committee Co-Chair, assisted the Consultant Team in fielding questions from the audience concerning Project parameters as well as specific questions relating to Study tasks of interest to individual meeting attendees. The kick-off meeting also served as a source of information concerning the Study's desired direction by attendees. A copy of the slide presentation, along with a script, was furnished to Mr. Schamberger for use in smaller individual, local meetings held between the initial meeting and an interim meeting held in March, 2006. The purpose of holding smaller local meetings was to generate interest in the Study and solicit information concerning potential ridership.

December 7, 2005 Individual Meetings
On December 7, 2005, the Consultant Team held two stakeholder meetings before the open public meeting that evening. At Cedar Rapids City Hall, certain Consultant Team members met with representatives of the Selection Committee in the afternoon, including railroad personnel. After a brief instructional meeting, all adjourned to Kirkwood Community College where additional Consultant Team personnel joined with local stakeholders shortly before the public meeting that directly followed to discuss the evening forum.

February 2006 Progress Report
The Consultant Team provided FSTP and JCCOG with a one page progress report and accompanying map that was utilized by select Cedar Rapids and Iowa City representatives during a visit to Washington, DC with their elected representatives in February, 2006, a copy of which is contained within Appendix 5 – B.

March 21, 2006 Site Visit
Consultant Team Project Manager, Gene Davis, and FSTP Director, Bill Hoekstra, visited Miner Rail Services, a potential source of vintage rail car restoration, in Donnellson, IA. During the site visit, Mr. Dave Miner conducted a sample excursion trip utilizing a vintage trolley over its

own private tracks. Due to poor weather conditions, the trip was only a short distance, however Mr. Miner stated that the car's capabilities were representative of other vintage cars his firm has produced. Cars built for other systems include five electrified PCC trolley cars for the Kenosha, WI system and a non-working car for the East Tennessee Historical Society (exhibit purposes only). A tour of the shop facilities also was conducted. After touring all the facilities, all parties discussed the availability and cost associated with vintage car restoration and FRA compliance issues. Some topics during the conversation included:

- seating for up to about 50 passengers (48 regular plus 2 ADA passengers) in a 43 foot car;
- top speeds of about 35 mph;
- possible availability of about ten (10) vintage cars on the market, however, availability is diminishing and
- unit costs would approach up to $400,000, depending on features and FRA compliance issues.

On the return trip from Donnellson, Mr. Davis and Hoekstra visited CRANDIC track near ADM where track constraints were discussed.

April 12, 2006 Individual Meeting
On April 12, 2006, the Consultant Team met with client representatives, Bill Hoekstra, Jeff Davidson and Dwight Dohlman, P.E. (Cedar Rapids' Facilities Construction Director), at which topics discussed included existing track infrastructure overview, Project status, initial ridership figures as well as potential commuter and special event passenger services on each of the three corridors.

April 12, 2006 Individual Meeting
After meeting with the client, Walter Schuchmann and Gene Davis of RLBA met with Kevin Burke (Chief Operating Officer) and Darrin Felter (Trainmaster) of the CRANDIC concerning potential passenger operations on its Hills and/or Amana Lines and its interaction with current and future freight operations. Refer to Appendix 5 – C for a complete review of the discussion with the CRANDIC.

April 13, 2006 Individual Meeting
Walter Schuchmann and Gene Davis of RLBA met with IAIS representatives, Dennis Miller (President & CEO), Richard Stoeckly (Vice President, Business Development) and Patrick Sheldon (Vice President, Engineering) to discuss potential passenger operations on its track between Iowa City and Homestead. Appendix 5 – D summarizes the IAIS discussion.

April 17, 2006 Site Visit
Gene Davis of RLBA visited the East Tennessee Historical Society's display of a Miner Rail Services restored vintage trolley in Knoxville, Tennessee to gain a better understanding of Miner's refurbishment capabilities. While the vehicle was not in operating order, viewing the vehicle illustrated Miner's Rail Service car repair capabilities.

May 2006 Memorandum of Understanding

The Consultant Team provided both CRANDIC and IAIS with a one-page Memorandum of Understanding (MOU) demonstrating the railroad's participation in the development of the Study specifically regarding the potential of future passenger train operations. Those MOUs are Appendix 5 – E and 5 – F, respectively.

Task 5
Appendices

Appendix 5-A

Cedar-Iowa River Rail Transit Project Feasibility Study Public Meeting
December 7, 2005
Kirkwood Community College
Cedar Rapids, Iowa

The meeting was opened by Joshua Schamberger, Chairman of the 15 in 5 Committee, who introduced the evening's topic and certain members of the 15 in 5 Committee, as well as Project Manager Gene Davis of R.L. Banks & Associates, Inc. (RLBA). Other Consultant Team members present introduced themselves, including Walt Schuchmann (RLBA), Brian Willham (Snyder & Associates) and Clyde Prem and Jerry Shadewald, both of HNTB.

Gene Davis made a presentation outlining the purpose of the Study, the composition and experience of the Study Team, the proposed schedule leading to a report in April, and tasks to be conducted including:

1. Demand Estimation
2. Investment Requirements
3. Infrastructure Requirements
4. Conflicts with Existing Freight Service
5. Steering Committee and Meetings
6. Federal Requirements

Jeff Davidson, Executive Director of the Johnson County Council of Governments, pointed out the existence of a unique opportunity for the region because of the position of Iowa Interstate Railway (IAIS) and CRANDIC as successful railroads willing to participate in the evaluation of passenger rail services. He pointed out that the Study will focus on what may be feasible now as well as later, considering the growth of local communities. He stated that service could start with something small and affordable and then grow in the future.

Bill Hoekstra, Director of Five Seasons Transportation and Parking, noted that the corridor is earmarked for future Federal funding in the new SAFETEA-LU legislation passed by Congress and expected to be signed by the President. He added that Iowa has not received previous large rail project funding and reiterated the start small "crawl, walk and run" philosophy of service development.

Cheryle Mitvalsky, 15 in 5 Committee Co-Chair, stated that Kirkwood is interested in the project. It would like to see rail in the vicinity of the college. She said the rail service planning process has been underway for some time and that the Whistle Stop meetings were a start but more public input was needed starting with that evening's meeting. She circulated pads through the audience to collect questions and comments. Consultants are on board to answer the tough questions. She then opened the floor to questions from the audience concerning the planned Study tasks. Questions, questioners and answers from the Consultant Team follow.

Q. John Staley, University of Iowa Hospitals and Clinics. How is the demand forecast to be conducted and over what time frame?

A. The demand forecasting will examine two components, trip to work and recreational. Time frame will be from today out into the future, perhaps 25 or 30 years. Data collection underlying the forecasts will include current work and recreation trips and origin-destination combinations. Estimates about what portion rail might capture will be developed, along with new trips induced. Information was provided on the project approach, using travel models and census information to estimate the market for travel, and then using information to estimate the share of this travel that would be done by transit. The approach taken in Milwaukee was referenced, where HNTB was able to estimate market share for tourism related travel on rail. This approach will be used here.

Comment: Bill Hoekstra. This latter ability is important.

Q. John Staley, How will leisure trips be estimated?

A. Information will be gathered concerning the destinations and volumes and, to the extent possible, concerning trip origins. The approach will be based upon similar work performed in Milwaukee and other locations.

Q. John Staley, Will ridership be hypothesized at each stop?

A. The analysis primarily will be at the corridor level, although some consideration will be given to likely areas where trains would stop. Exact station locations will not be refined.

Q. Unidentified. Will former interurban station locations be used?

A. They will be considered.

Q. Sarah Henderson, Cedar Rapids City Council. What sorts of market research will be performed?

A. No new, major statistically valid survey is planned. Existing sources will be relied upon and meetings will be held.

Comment: John Hudson, Iowa Arts Council. It seems there will be development around the station stops.

A. This is a good planning practice and a criterion that the Federal Transit Administration wants to be researched. Another important question is does the community want the station?

Comment: Cory Kasner. The Consultant Team should work with the Chamber and Josh regarding future growth plans of companies as well as the Skills 2006 Report.

Q. From the Press. How should light rail be defined?

A. The term “light rail” as used in the transit industry connotes specific vehicle and service characteristics. Those characteristics have not yet been identified for the corridor. First, demand for various services will be evaluated, and then service and vehicle characteristics will be developed to match demand.

Q. Jessica Waver, architect. With respect to inter- and intra-city service, how will it be decided which is more important and how phasing should occur?
A. The Consultant Team will provide technical answers regarding demand and cost. Discussion and decisions about implementation should be local.

A. These areas will be considered in terms of drive to rail potential. No new track will be considered. Transit connections to rail also will be considered.

Q. Clark Parks. The project is a massive boondoggle. When do you declare that the project is not feasible?
A. At the end of the Study, when all facts are known, the Consultant Team will provide an honest finding. RLBA has been part of projects where the results of the Study did not indicate the project to be feasible.

Comment: Bill Hoekstra. The former Study said it was not yet time to start a service, and none was started. It also recommended re-examining the situation once significant growth occurred, as it has.

Comment: Paul Rhein. There is an existing Canadian National track that goes north from downtown, plus and industrial spur.

A. Iowa Interstate and CRANNDIC lines could be a good start based on their support and good citizenship. The CN line could represent a later addition.

Q. Sarah Henderson. Will Task 2 contain startup capital costs as well as operating costs?
A. Yes.

Q. Walt Simmons. If people need to move in both directions over the single track CRANDIC line, how will this be accomplished?
A. The service planning process will determine the need for any new sidings, and cost estimates will be developed.

Q. Eric Langston. Will the increase in fuel costs be considered in demand estimates?
A. There are a number of factors that influence why one mode of transportation is used over another. Most of the factors relate to cost or convenience. The cost of gas, as well as other costs will be part of the analysis.

Comment: Bill Moss. Highway capacity is being used up, and this should be considered. Consider service beyond the triangle, perhaps monorail. Open our minds to the future.

A. This matches the crawl, walk, run philosophy.

Q. Dick Welch. The Midwest Regional Rail plan, if implemented ten years hence will bring five daily train trips between Omaha and Chicago. Is it being incorporated in demand estimates?

A. The initiative is uncertain, and will not be incorporated. However, any such potential connectivity would only help.

Q. Brian James. Many people now alive have no passenger train experience. How would this be overcome?
A. The Hawkeye Express is a good start in acquainting people with passenger train use. Other marketing tools could be used, such as free rides at the time of service startup and/or periodic free rides on weekends.

Q. Laura McLeran. Please tell more about the support from Iowa Interstate and CRANDIC.
A. The railroads have supported the initial track inspections and provided useful data. However, the railroads cannot be expected to support a project if it impairs their freight service.

Comment: Bill Hoekstra. Since the completion of the Yocum connection and the shift of interchange traffic off of the Cedar Rapids-Iowa City line, CRANDIC has continued to maintain that line in good condition despite the reduced traffic. This shows good faith as to potential passenger service. The railroads were not asked to make a financial contribution to this Study.

Q. Walt Simmons, Not everyone who wants to use rail will be able to do so conveniently due to location of the lines.
A. Correct. Employer and transit shuttles could expand the reach of rail service.

Q. Dave Machacek, former 15 in 5 committee member. Is there precedent for freight and passenger track sharing?
A. Yes. Nashville commuter rail is the most current example, but there are other nationwide. The best opportunities are where freight traffic is light to moderate, as here.

Q. Dale Sawyer, When will financial projections be provided?
A. They will be provided as part of the Study final report.

The meeting was closed by Cheryle Mitvalsky and Gene Davis, who thanked the participants for their attendance.

Appendix 5-B
Cedar-Iowa River Rail Transit Project Progress Report as of February 2006

A team comprised of R.L. Banks & Associates, Inc. (RLBA), HNTB Corporation (HNTB) and Snyder & Associates, Inc. (Snyder), hereafter "Consultant Team," was selected to perform the Cedar-Iowa River Rail Transit Project Study ("Study") sponsored by select Iowa entities including, but not limited to, Five Seasons Transportation and Parking (FSTP) and the Johnson County Council of Governments (JCCOG).

Tasks 1 and 5: Infrastructure Requirements and Steering Committee Activities
The Consultant Team initiated the Study in December, 2005 with a kick-off meeting and physical inspection of the three corridors between Cedar Rapids, Iowa City and the Amana Colonies as seen on the accompanying map. Representatives from the Iowa Interstate Railroad System (IAIS) and the Cedar Rapids and Iowa City Railway Company (CRANDIC) conducted hi-rail inspections with Consultant Team members on the subject portions of their railroads, focusing on the physical characteristics of the line as well as current, typical train operations. Track structure on each segment was satisfactory and consistent with the current level of freight service. The potential to introduce specialty passenger rail service appears most likely between Cedar Rapids and Iowa City due to light freight train use and, therefore, greater potential corridor availability. Further assessment of each corridor is on-going.

Task 2: Passenger Service Plan and Potential Conflicts
RLBA is building on the initial railroad contacts to gain a greater understanding of train operations on each corridor. The Consultant Team recognizes that conflicts with existing and future freight operations represent a critical issue that affects capacity and potential passenger service levels. This Task is being performed in parallel with Task 1 and 3 to best match facilities and operations.

Task 3: Passenger Service Plan Demand and Revenue Estimation
Demand estimation includes two distinct travel types, excursion or event-related travel and daily commuting travel. Event attendance data is being collected for the various local and regional events within the Study area and will be verified by respective Chamber of Commerce representatives. Total event attendance data will be analyzed to determine event origins. Once this data is available, the event ridership estimation methodology used in the Milwaukee Downtown Connector project will be applied.

The commuter travel portion of the ridership forecasting task is also in the final data collection stage. The Linn County Regional Planning Commission, Johnson County Council of Governments and the Iowa Department of Transportation's Office of Systems Planning have been coordinating on the total market of work trips. Total work trip data is expected to be available in early February with the estimation of likely rail riders to follow.

Task 4: Passenger Service Plan Investment and Costs

Recognizing the substantial capital investment associated with line electrification, RLBA has initiated contact with potential providers of self-propelled vintage trolley cars, as requested in the Request for Proposal as it is well acquainted with the capabilities and costs of DMU equipment. After determining initial ridership figures, the Consultant Team will work to understand capacity restraints and improvement necessary to mitigate those constraints in connection with each type of proposed service. After an interim meeting with FSTP, JCCOG and other interested stakeholders (expected to be late February to early March, 2005), a service plan will be developed for the best available option(s) along with associated costs.

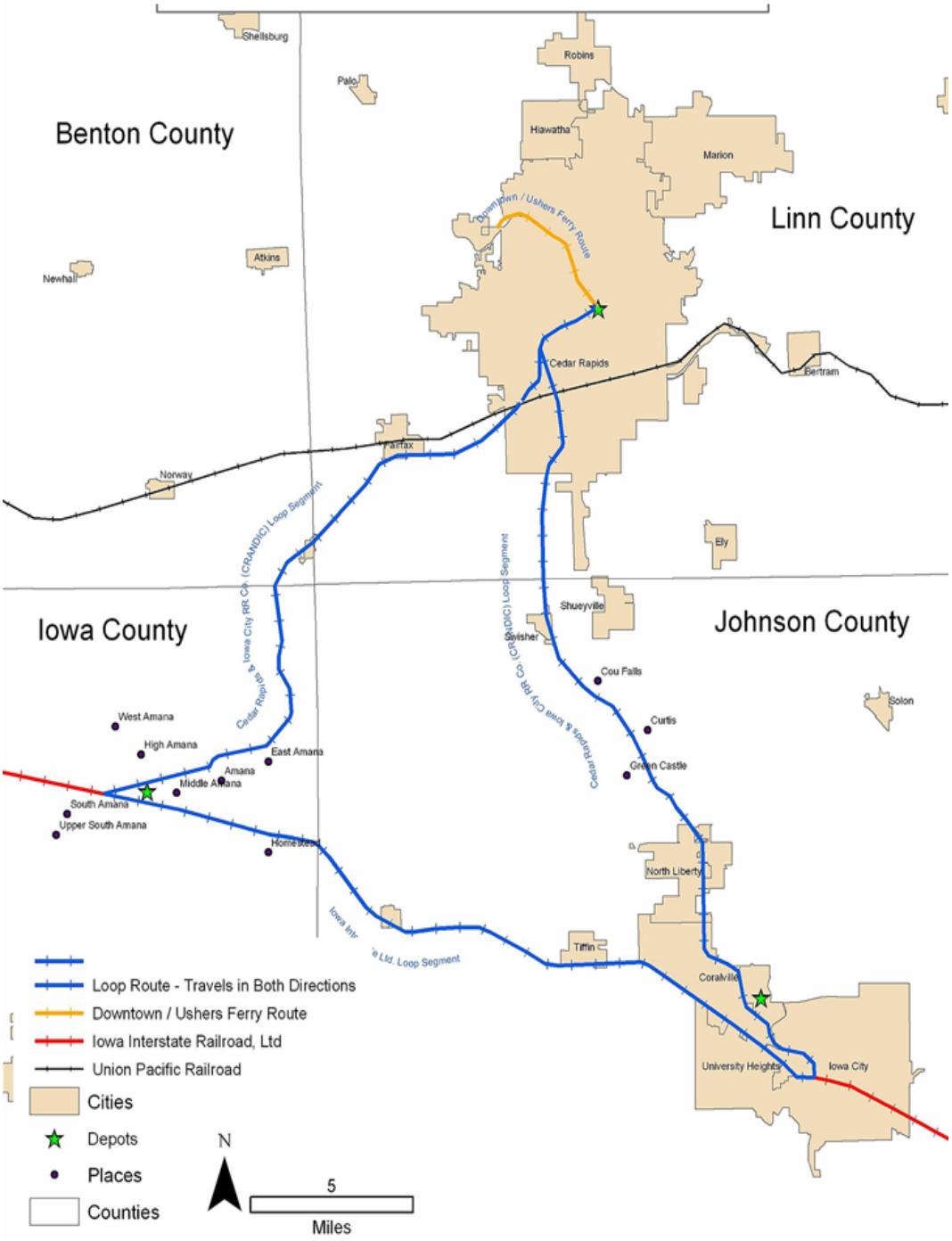
Task 6: Federal Requirements

The Federal Transit Administration (FTA) New Starts process is being reviewed with attention given to providing input on how the project can best follow the procedures outlined in the New Starts process. SAFETEA-LU identified a new but similar process to New Starts called Small Starts. The guidance for Small Starts is being prepared in 2006; however there is some preliminary information about how this program would operate. Attention is being given to the Small Starts process. This review is on-going and being documented.

Where We Are

All Tasks are progressing and Study appears to be on time and at budget. Expected completion date is the end of April, 2006.

Passenger Rail Study Area



Appendix 5-C
Key Issues in Implementing Passenger Service Using CRANDIC Lines

On April 12, 2006, Gene Davis and Walt Schuchmann of RLBA met with Chief Operating Officer, Kevin Burke, and Trainmaster, Darrin Felter, of CRANDIC to discuss the Study and identify key issues in implementing passenger service over CRANDIC lines. The Study's preliminary ridership and capital cost findings were summarized and the passenger services to be developed in the Study's final stage were identified, namely:

- Eastern Iowa Airport-Iowa City daily service, using CRANDIC trackage, based on current and 2020 travel demand forecasts;
- North Liberty-Iowa City daily service, using CRANDIC trackage, based on current and 2020 travel demand forecasts and
- special event excursion service using IAIS and/or CRANDIC trackage.

Lines Under Consideration To Host Passenger Service

Both of the daily services under consideration would use portions of CRANDIC's Hills Line, which presently hosts local freight service twice a week and no through freight trains. RLBA noted that due to the extensive main track occupancy required between downtown Cedar Rapids and the ADM/ 60th Avenue area in order to serve freight customers, regular passenger service was not proposed in that segment until such time as additional main line track could be constructed. Hence the selection of the airport as the northern terminal of Cedar Rapids-Iowa City service. CRANDIC concurred with this thinking and indicated that the portion of the Hills Line south of the airport represented a good passenger service prospect.

Excursion services conceivably could use all or portions of either the Hills Line or the Amana Line. CRANDIC indicated it was open to operating excursions and would consider occasional excursions north of the ADM/60th Avenue area.

CRANDIC indicated that it is interested in services that are beneficial to the community as well as its shareholders and that it would seek to advance such services.

CRANDIC has hosted passenger excursions in the past, most notably to Amana for the Farm Progress Show in 1999.

Track Condition

RLBA noted that the Hills Line which would host the proposed Airport and North Liberty services consists of light weight, non control-cooled rail. As a result, RLBA proposed that train speeds not exceed 30 mph unless the rail were replaced with heavier, control-cooled rail. CRANDIC agreed with that suggestion but reserved the right to consider and review the appropriateness of starting any regular passenger service over the existing rail.

A program of tie replacement and track surfacing should precede implementation of any regularly scheduled passenger service. In addition, grade crossing warning device circuitry would have to be

adjusted to take into account higher train speeds. Also, increasing speed and train volumes could trigger a need for improved grade crossing protection, which should be addressed prior to implementation.

Both the Hills Line and the Amana Line are in appropriate condition to host occasional excursion service.

Dispatching
RLBA noted that the "Yard Rule" which governs train movements over the entire CRANDIC system limits trains to a maximum of 20 mph under optimal conditions. RLBA suggested that passenger train speeds exceeding 20 mph would require a more affirmative method of train control where movements are authorized by dispatchers, timetables or general orders. This would be required only on the portion of the railroad used by passenger trains. CRANDIC agreed and indicated that it is not opposed to implementing dispatcher control and suggested that one option would be to contract that function to another entity such as IAIS.

Equipment
Although CRANDIC procured and provided the equipment used by the Farm Progress Show excursions, that equipment has been disposed of and CRANDIC has no passenger equipment available to host regular or excursion service.

CRANDIC is not inclined to agree to use of passenger equipment that is not fully FRA compliant, although it indicated that position could be reconsidered if necessary to permit a desired service.

Use of the CRANDIC-IAIS Connection in Cedar Rapids
CRANDIC is willing to permit passenger train use of the CRANDIC-IAIS connection in Iowa City, once it is improved to an appropriate condition.

Liability
CRANDIC pointed out that its owner (Alliant Energy Corporation) has high liability standards typical of the electric utility industry and those would apply to passenger operations on CRANDIC.

Railroad Roles
CRANDIC indicated it probably would be willing to be the contract operator of passenger trains. It would consider maintenance of passenger equipment depending upon the circumstances, especially if equipment were of a standard or familiar design.

Other Railroad Concerns
CRANDIC indicated that manpower to staff a daily passenger service is a concern in that it does not have sufficient extra employees to staff such a service at this time and it would be concerned about increasing headcount and obligations to staff a service that could be terminated.

Appendix 5-D
Key Issues in Implementing Passenger Service Using Iowa Interstate Lines

On April 13, 2006, Gene Davis and Walt Schuchmann of RLBA met with IAIS President & CEO, Dennis Miller, Vice President-Engineering, Patrick Sheldon and Vice President–Business Development, Richard Stoeckly to discuss the Study and identify key issues in implementing passenger service over IAIS lines. The Study's preliminary ridership and capital cost findings were summarized and the passenger services to be developed in the Study's final stage were identified, namely:

- Eastern Iowa Airport-Iowa City, using CRANDIC trackage, based on current and 2020 travel demand forecasts;
- North Liberty-Iowa City, using CRANDIC trackage, based on current and 2020 travel demand forecasts and
- Special event excursion service using IAIS and/or CRANDIC trackage.

Lines Under Consideration To Host Passenger Service

Neither of the daily services under consideration at this time would use IAIS trackage. Under some scenarios, special event excursion service could use IAIS trackage, most likely in order to provide service to events at the Amanas from Iowa City or from Cedar Rapids by way of Iowa City. Excursion trains destined to the Amanas are likely to exit the IAIS main line at the Yocum connection and use a short segment of CRANDIC track to reach the Amana train station if it is the chosen destination.

Operation of the Hawkeye Express during the past two University of Iowa football seasons has provided IAIS with excursion train experience in the immediate area. IAIS provides the crew, track access and supervision only; the University made all other arrangements. Other excursion experience includes the Quad Cities Rocket Dinner Train operated on behalf of Butterworth Tours in 1989 and other occasional ventures.

Track Condition

RLBA and IAIS agree that no track work is necessary on the IAIS main line to host excursion service. Main line freight speed west of Milepost 244 (located just east of Tiffin) is expected to be raised to FRA Class 3, which would permit 40 mph freight and 60 mph passenger train speeds.

Dispatching

All IAIS main line trackage is dispatched from company headquarters in Cedar Rapids. IAIS uses "Track Warrant Control System," a proprietary software package developed and marketed by the company which creates an additional computer-based level of safety over and above conventional track warrant train control. The dispatching arrangements are quite satisfactory for operation of excursion trains.

Equipment
IAIS has not provided the equipment to operate the Hawkeye Express and currently has no passenger equipment to make available. During the first two seasons of operation, the University leased equipment from the Colorado Ski Train. It has been reported that the Iowa Northern has acquired coaches and locomotives to use in the 2006 and subsequent seasons.

Railroad Development Corporation (RDC), parent company of IAIS, has acquired two steam locomotives from China and has ownership or options on a number of railcars formerly used in Montreal commuter service. The availability of those cars could be explored upon a decision to implement service. RLBA is following up with RDC.

Use of the CRANDIC-IAIS Connection in Cedar Rapids
IAIS was agreeable to use of the CRANDIC-IAIS connection in Cedar Rapids but noted that trains using the connection could conflict with IAIS yard switching at the west end of the Cedar Rapids yard, near the former Rock Island depot.

Insurance/Liability
IAIS stressed that a certificate of insurance would be required before instituting any passenger train operation and that the sponsor would have to provide it. IAIS would not participate in obtaining the necessary insurance.

Railroad Roles
IAIS would not be interested in any role in passenger train operation beyond providing crews and supervision. It has no available equipment maintenance staff or facilities in the area; its main shop is at Council Bluffs.

Other Railroad Concerns
IAIS noted that any excursion train operations would have to expect to encounter freight traffic and delays may ensue. IAIS freight operations were described previously in this report but IAIS also advised that freight volumes interchanged with CRANDIC have been growing and that a second round trip interchange train is necessary on an increasing number of days. The interchange trains make a round trip from Iowa City to CRANDIC's Smith-Dows Yard via the Yocum connection, thus using all of the IAIS track of potential excursion service interest. Through freight, grain and other train movements also could be encountered on the main track.

Appendix 5-E

Memorandum of Understanding Regarding
The Potential Development of Passenger Rail Service (s)
In the Cedar River Region

Cedar Rapids and Iowa City Railway Company (CRANDIC) acknowledges that it has participated in and provided input to the Cedar River Rail Study.

CRANDIC understands that the three service options under consideration at present include:

1. Eastern Iowa Airport – Iowa City commuter-type service on the CRANDIC Hills line
2. North Liberty-Iowa City all-day shuttle service on the CRANDIC Hills line
3. Excursion service between origins and special event destinations located on the Cedar Rapids-Iowa City-Amana rail lines, including potential seasonal tourist train service on the CRANDIC Hills line

Study sponsors recognize that potential passenger services must not be detrimental to existing or potential freight service.

Study sponsors recognize that there are financial and operational responsibilities that will not be assumed by the host railroad(s) and must be assumed by the entity sponsoring passenger service(s). Those include:

- Liability and insurance coverage protecting against any incidents or claims related to passenger train service(s);
- Cost of capital improvements on the host railroads required or desired in connection with any passenger service(s);
- Compensating the host railroad(s) for all costs related to passenger service operation;
- Arrangements and costs to provide suitable locomotives and cars to support passenger service(s);
- Planning and promotion of passenger service(s), including ticketing, parking, transit connections, advertising, public comfort and safety;
- Compliance with all federal and state regulatory requirements; and
- Others, to be negotiated.

Assuming the satisfactory resolution of the issues outlined above, subject to then-current freight transportation requirements, and under terms that are fair to the railroad and its owners, it supports the continued development of passenger rail services in the region.

Paul Treangen, President & General Manager

10/23/06
Date

William Hoekstra, Director
Five Seasons Transportation & Parking

10-31-06
Date

Jeff Davidson, Director
Johnson County Council of Governments

11-1-06
Date

Appendix 5-F

Memorandum of Understanding Regarding The Potential Development of Passenger Rail Service(s) In the Cedar River Region

Iowa Interstate Railroad System (IAIS) acknowledges that it has participated in and provided input to the Cedar River Rail Study.

IAIS understands that the three service options under consideration at present include:

1. Eastern Iowa Airport – Iowa City commuter-type service on the CRANDIC Hills Line
2. North Liberty-Iowa City all-day shuttle service on the CRANDIC Hills Line
3. Excursion service between origins and special event destinations located on the Cedar Rapids-Iowa City-Amana rail lines, including potential seasonal tourist train service on the CRANDIC Hills Line

Study sponsors recognize that potential passenger services must not be detrimental to existing or potential freight service.

Study sponsors recognize that there are financial and operational responsibilities that will not be assumed by the host railroad(s) and must be assumed by the entity sponsoring passenger service(s). Those include:

- Liability and insurance coverage protecting against any incidents or claims related to passenger train service(s);
- Cost of capital improvements on the host railroads required or desired in connection with any passenger service(s);
- Compensating the host railroads(s) for all costs related to passenger service operation;
- Arrangements and costs to provide suitable locomotives and cars to support passenger service(s);
- Planning and promotion of passenger service(s), including ticketing, parking, transit connections, advertising, public comfort and safety;
- Compliance with all Federal and state regulatory requirements and
- Others, to be negotiated.

Assuming the satisfactory resolution of the issues outlined above, subject to then-current freight transportation requirements, and under terms that are fair to the railroad and its owners, it supports the continued development of passenger rail services in the region and would agree to host such service(s).

Dennis H. Miller, President & CEO
Iowa Interstate Railroad System

9-20-06
Date

William R. Hoekstra
William Hoekstra, Director
Five Seasons Transportation & Parking

10-20-06
Date

Jeff Davidson, Director
The Johnson County Council of Governments

11-1-06
Date

Task 6 – Federal Requirements

Federal Transit Administration Planning Process

Background

New rail systems, extensions to existing rail systems, busways and other types of fixed guideway facilities seeking federal transit funds must follow a Federal Transit Administration (FTA) process called *'major investment planning and project development.'* That process includes a number of steps such as systems planning to identify major corridors and alternatives analysis of fixed guideway options and alignments. It concludes with the engineering and design work necessary to finalize the project scope, environmental analysis, and refined capital and operating cost estimates.

There are a number of basic principles that local governments are asked to follow:

- The proposed project is to be consistent with the region's long range transportation plan;
- The project is shown to be cost-effective as determined through an evaluation of transportation alternatives;
- Projects are based upon realistic cost estimates and
- Local governments should consider and implement policies and actions that would support the project, such as: land use planning, zoning, joint development, parking strategies and the provision of adequate feeder bus service.

The FTA major investment planning process has evolved over may years. It was incorporated into law as part of federal transportation bills in 1987 and 1991 and was part of the Transportation Equity Act for the 21st Century (TEA-21) in 1998. It also was included as part of the most recent federal transportation bill, Safe, Affordable, Flexible and Efficient Equity Act— A Legacy for Users (SAFETEA-LU), signed into law in 2005. SAFETEA-LU seeks to improve or modify the evaluation process used by FTA to evaluate fixed guideway facilities. Potential changes could be applicable to the Cedar – Iowa River Transit Project.

The FTA's Section 5309 New Starts program provides capital funding to develop new fixed guideway transit systems and extensions to existing systems. New Starts funds are allocated on a discretionary basis to state and local governments. At this time, Federal funding decisions are made jointly by FTA and Congress through a four-step process:

- Step 1: Projects are authorized in laws, such as the TEA-21 and SAFETEA-LU, which are enacted by Congress and signed by the President;

- Step 2: Each year, as required by law, FTA evaluates those projects that are in Final Design and Preliminary Engineering and assigns a rating of "highly recommended," "recommended," or "not recommended" based on project readiness, project justification, local financial commitment and other factors. Those classifications are being reviewed as part of possible changes initiated with the passing of SAFETEA-LU;

- Step 3: Once an authorized and recommended project reaches the Final Design stage, FTA and the grantee may begin to negotiate and may ultimately sign a Full Funding Grant Agreement (FFGA). Under such agreements, FTA agrees to seek an agreed-

upon amount of Section 5309 New Starts funding for the project through the annual appropriations process and the grantee agrees to build the project as described in the FFGA and

- Step 4: Funds are appropriated each year by Congress.

NEW STARTS AND SMALL STARTS PROGRAMS

The primary way that new rail systems, extensions to existing rail systems, busways and other types of fixed guideway facilities are developed is through a program called "New Starts". The New Starts program covers fixed guideway systems which utilize and occupy a separate right-of-way, or rail line, for the exclusive use of mass transportation or other high occupancy vehicles (HOV). This includes, but is not limited to, rapid rail, light rail, commuter rail, automated guideway transit, people movers and exclusive facilities for buses (such as bus rapid transit) and other high occupancy vehicles. However, projects that cost under $25 million do not have to follow the New Starts project development process.

A second program included in SAFETEA-LU was called the "Small Starts" program. As the name implies, the Small Starts initiative reflects a less complex project development process appropriate to less extensive projects. Initial discussions have indicated that Small Starts criteria would be applied to capital grants to fund new, fixed guideway systems costing less than $75 million. The total project cost must be less than $250 million. A separate Small Starts funding category would begin in 2007. Grant requests of under $25 million would no longer be exempt from New/Small Starts evaluation but would now fall under the Small Starts funding category.

There are several specific New Starts criteria which the FTA will use to advance transit fixed guideway projects through the New Starts and Small Starts project development process and enter into a long-term financial commitment to implement proposed investments. FTA categorizes those criteria into Alternatives Analysis and Preliminary Engineering, which are described in the following sections.

Alternatives Analysis and Preliminary Engineering

The first step in the New/Small Starts process is called "Alternatives Analysis." That step results in a report that is used to define the project need and provide an analysis of the alternatives that could potentially meet these needs. The purpose of this step is to:

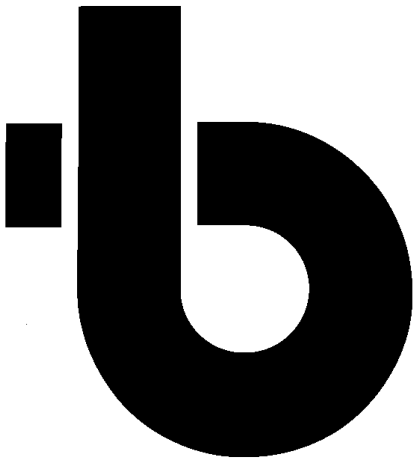
- Describe transportation problems in the corridor and their causes;
- Define the viable options for addressing those problems and
- Describe the benefits and costs of those options.

The next step in FTA's planning and project development process is called "Preliminary Engineering." When a local sponsor makes a request to complete Preliminary Engineering the FTA reviews the Alternatives Analysis report and requires the local governments to include the locally preferred alternative identified in the Alternatives Analysis into the financially constrained regional long range transportation plan.

FTA uses the following project justification criteria to evaluate new starts projects. Each of those items is typically included in both Alternatives Analysis and in Preliminary Engineering.

- *Mobility improvements* – travel time saved, low-income households served and employment near stations;
- *Environmental benefits* – changes in pollutant emissions and energy consumption;
- *Operating efficiencies* – operation cost per passenger-mile;
- *Cost effectiveness* – incremental cost per hour of system user benefit (travel time savings, vehicle operating cost savings and safety benefits);
- *Transit supportive land use and future patterns* – transit supportive plans and impacts of policies and
- *Other factors* – including, but not limited too, the technical capability of the project sponsor to implement and operate the proposed project.

Basic information about each of these items can be documented using the travel model that has been developed in the project. This level of information may be sufficient to support a Small Starts application in the future if that option is pursued. More detailed travel forecast tools would need to be developed if this project were to enter into the New Starts category or if more detail is requested as a Small Start. The approach being taken in this project is to obtain an exemption from the New Starts process. However, the general New Starts approach is being followed in this study in order to aid local decision-making.



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