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Access Management: Coralville, Iowa, Case Study. Impact on Safety, Operations and Business Vitality

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Access Management: Coralville, Iowa, Case Study. Impact on Safety, Operations and Business Vitality

Abstract

The community of Coralville is located about 100 miles east of the Des Moines metropolitan area. Coralville lies just west of Iowa City, home of the University of Iowa. While Coralville has a population of about 12,000 people, the total urbanized area around Iowa City is well over 75,000 people. Both Iowa City and Coralville lie along Interstate 80 and at the southern end of Interstate 380. The University of Iowa campus, athletic facilities, University Hospital and Clinics, as well as the Veteran's Administration Hospital are located very close to the Coralville study area, and are major traffic generators. As a result, traffic volumes along US Highway 6 can be very heavy at times, especially during University of Iowa athletic events. This report will give details of the study area and findings.

Keywords

Access control (Transportation); Case studies; Highway operations; Special events; Traffic data; Traffic volume

Disciplines

Civil Engineering

Comments

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**ACCESS MANAGEMENT:
CORALVILLE, IOWA, CASE STUDY**
IMPACT ON SAFETY, OPERATIONS, AND BUSINESS VITALITY

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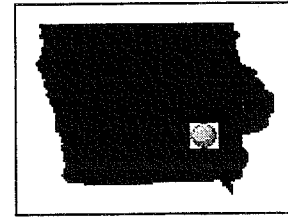


*Center for Transportation
Research and Education*

IOWA STATE UNIVERSITY

July 1998

Coralville Case Study
(Median at Intersection / Continuous Two-way Left-turn Lanes)
US Highway 6 / 2nd Street
from Clear Creek to Rocky Shore Drive



I. Introduction

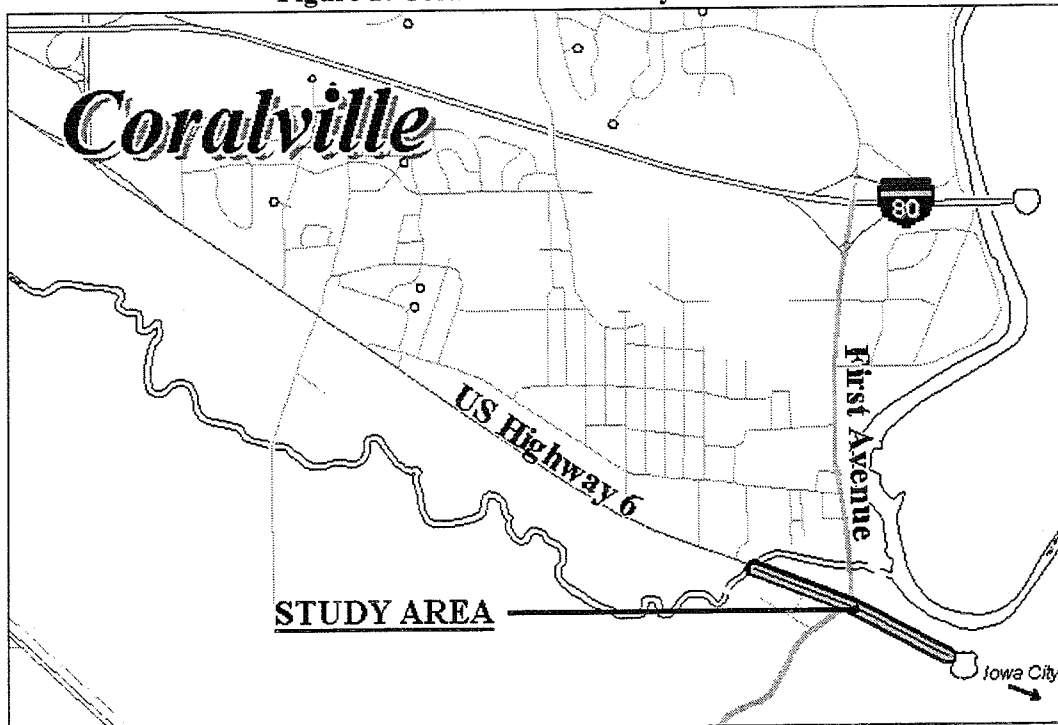
A. City and Regional Background

The community of Coralville is located about 100 miles east of the Des Moines metropolitan area. Coralville lies just west of Iowa City, home of the University of Iowa. While Coralville has a population of about 12,000 people, the total urbanized area around Iowa City is well over 75,000 people. Both Iowa City and Coralville lie along Interstate Highway 80 and at the southern end of Interstate 380. The University of Iowa campus, athletic facilities, University Hospital and Clinics, as well as the Veteran's Administration Hospital are located very close to the Coralville study area, and are major traffic generators. As a result, traffic volumes along US Highway 6 can be very heavy at times, especially during University of Iowa athletic events.

B. Case Study Area

The area of focus for this case study is a section of US Highway 6 in Coralville. The study area extends from Clear Creek on the west to Rocky Shore Drive on the east (see Figure 1). This section of US Highway 6 was a four-lane undivided roadway as of the early 1990s. The roadway itself had no curb and gutter system, and was considered a "rural" style road. The study area is approximately 0.7 miles in length with a posted speed limit of 35 miles per hour. Within this study area traffic volumes are very high. 1994 AADT volumes were measured at about 29,000 vehicles per day.

Figure 1: Coralville Case Study Location



C. Study Corridor Environment

US Highway 6 in Coralville serves as a one of the city's major east to west arterial corridors. For several years, this corridor has also developed as a major commercial corridor for Coralville as well as much of the entire urbanized area. Along the study area, land uses include several types of commercial activities. Among these businesses are service and auto repair stations, numerous restaurants, motels, and business offices. The southern side of the study area east of the 1st Avenue intersection is much different than the other parcels adjacent to US Highway 6. This area has historically been unused or used as athletic fields. Because of this, there had been no driveways along the southern side of this section of roadway. Only recently, a driveway entrance was located to provide access for the athletic fields.

Over the years, the "Coralville Strip" developed into a classic case of a commercial strip development. For several years, access to the main roadway from the area businesses was liberally allowed. For example, in 1993 between 1st Avenue and Rocky Shore Drive, there were over 15 driveways accessing US Highway 6 on the northern side of the roadway alone. This translates to approximately 1 driveway every 100 feet. In comparison, it is commonly recommended that multi-lane urban arterials similar to the "Coralville Strip" should maintain driveway spacing of around 600 feet. West of 1st Avenue, there was a similar frequency of business access points along both the northern and southern sides of US Highway 6.

II. Analysis

As a result of the extensive number of access points, the US Highway 6 study area began to see typical access related problems by the late 1980's and early 1990's. The combination of high traffic volumes and unmanaged access led to a very significant safety and congestion problem within the area. Because of concerns over these two problems, steps were taken in the early 1990's to correct the access characteristics of the "Coralville Strip".

A. Safety Concerns

As seen in other access management case studies, poor access leads to safety problems. More specifically, the safety problems along the study corridor included higher than average accident rates. Between January of 1991 and December of 1993, this section of roadway experienced an accident rate of approximately 589 accident per hundred million vehicle miles. This rate equates to about 79 accidents per year along the study corridor. Because of this, plans were put in motion to correct the access problem along US Highway 6. By the time the first phase of this project was undertaken, this accident rate on this section of roadway was one of Iowa's worst.

B. Operational Problems

In addition to the high accident rate along the study corridor, US Highway 6 was seeing operational problems as well. In 1994, this roadway operated at a level of service "D" on an average day. It is reasonable to assume that during peak hour and during University of Iowa events, the roadway would experience even more congestion and a lower level of service. As mentioned earlier, the high number of commercial driveway accesses had much to do with this problem.

C. Improvement Process

As a result of the accidents and operational problems, plans were undertaken in 1994 to improve the access problem along the "Coralville Strip". The reconstruction of this section of US Highway 6 was funded through the Iowa Department of Transportation's Traffic Safety Improvement Program (TSIP).

Plans to improve this area were only a small part of a greater improvement project planned for the entire US Highway 6 corridor from the western Coralville city limits to Rocky Shore Drive. The first phase of the project was to be improvements along the eastern leg of the study area, from 1st Avenue to Rocky Shore. The second phase of improvements would be the widening and modernizing of the western half of the study area.

III. Results

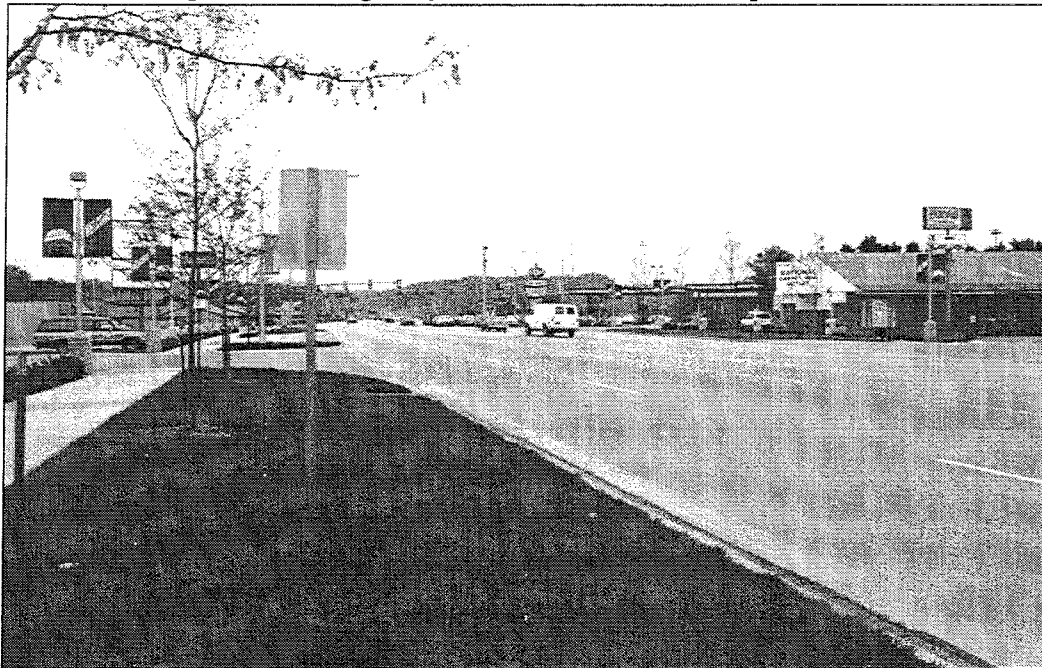
A. Access Modifications

As a result of this plan, a project was undertaken in 1994 to reconstruct the eastern leg of the study area. Federal HES funding was used to finance a portion of the project. The project completely modernized the existing roadway. Specifically, the first phase widened the roadway enough to allow for an additional lane. A continuous two-way left-turning lane was added down the center to accommodate the turning traffic into local business locations. In addition, the project consolidated the number of driveways along this stretch of road from 17 to only 9 driveway accesses. Of these, 8 were located along the north side of the road. The widening also allowed for sidewalks to be added along both sides of the roadway. At the western end of this leg, at 1st Avenue, a raised median was installed with left-turn bays. This phase of reconstruction was completed in the fall of 1994.

Phase II of the overall US Highway 6 improvement project included similar improvements on the western leg of the study area. Modernization of the roadway to “urban” specifications, the addition of a fifth center turning lane from the bridge at Clear Creek to 1st Avenue, and further driveway consolidation. About the same number of driveways were consolidated on the western leg of US Highway 6, leaving 11 driveways for business access (see Figure 2). Also at the 1st Avenue intersection, a raised median was installed with a protected left-turning bay. The other two legs of the 1st Avenue intersection were already channelized prior to 1994. This second phase of the Coralville project was completed in the late 1995.

Currently, the third phase of the US Highway 6 improvements is being completed at the western edge of Coralville. The fourth phase is to be completed during 1998. This phase includes the widening of the bridge at Clear Creek to allow for all 5 lanes and sidewalks. The final phase will be a total reconstruction and realignment of the 1st Avenue intersection. This large-scale project will be initiated during the 1999 construction season.

Figure 2: US Highway 6 in Coralville After Improvements



B. Project Safety and Operations Results

The improvements made on US Highway 6 in Coralville were expected to make a significant positive impact on safety and traffic flow along the corridor. The use of a combination of access management techniques, as seen in other case studies, can be very effective in improving both of these areas. In fact, today the study corridor functions at a level of service "C", and is very close to operating at level "B" at times. This operational improvement can be attributed in part to the reduced number of commercial driveway access points and the subsequent lessened amount of all turning traffic that impedes traffic flow. The removal of left-turning traffic from the major four lanes of through traffic also significantly improved traffic flow.

In addition to the operational improvements seen along the "Coralville Strip", there were also improvements made in safety. An analysis of the accident data for this section of roadway shows that even though the traffic volumes along US Highway 6 increased from before to after the improvement project, the accident rate has dropped. During 1996, there were 52 accidents along the study corridor. This number reflects a 34 percent reduction in the raw number of yearly accidents. The overall accident rate, which reflects the increase in traffic along the study section of US Highway 6, was reduced to 375 accidents per hundred million vehicle miles. This after rate is more than a 36 percent reduction in the yearly accident rate along the "Coralville Strip". This number is similar to the accident rate reductions seen in other access management case studies in Iowa and elsewhere.

C. Business Environment

This section of US Highway 6/2nd Street is, as mentioned earlier, one of the major commercial zones in the metro area. As for the businesses along US Highway 6, The R.L. Polk Directory information shows approximately 40 potential survey participants within the study corridor. According to the directory, the addresses range from 49 2nd Street to 327 2nd Street. Most of the businesses also have odd addresses and are therefore along the northern side of the street. The area of the study corridor is almost exclusively a commercial business district.

A breakdown of the businesses in the study area shows a variety of business types (see Figure 3 on the following page). Types of commercial developments along the Coralville Strip include auto repair shops, furniture stores, health care businesses, motels, beauty and hair shops, specialty shops, other small businesses, and several restaurants. There are a few apartments in the study area. The last few businesses listed are possibly on the western side of Clear Creek. In this instance, these businesses would not be included in the study area. This corridor is similar to the business and geometric makeup of the Spencer or Ames case study corridors.

Coralville, as a community, is a very strong retail center. In 1996, it had a retail sales "pull factor" of 1.62, indicating that its businesses sell 62 percent more goods and services than would be expected given the city's population. This means that Coralville serves a large number of shoppers from other places; the "pull factor" will continue to rise as a new regional shopping mall is completed in the western part of the city. Coralville is a particularly strong competitor in terms of home furnishings, specialty stores, and eating and drinking places. These types of businesses are strongly represented along the "Coralville Strip". Coralville is weaker in terms of businesses such as apparel and general merchandise. Few of these business types are found along the "Coralville Strip".

Businesses in Coralville are very similar to those found in Iowa as a whole in terms of survival rates. About half of Iowa businesses survive over a five-year period, indicating a failure rate of about 10 percent per year. In Coralville, the five-year survival rate was about 47 percent from fiscal year 1988 through 1991.

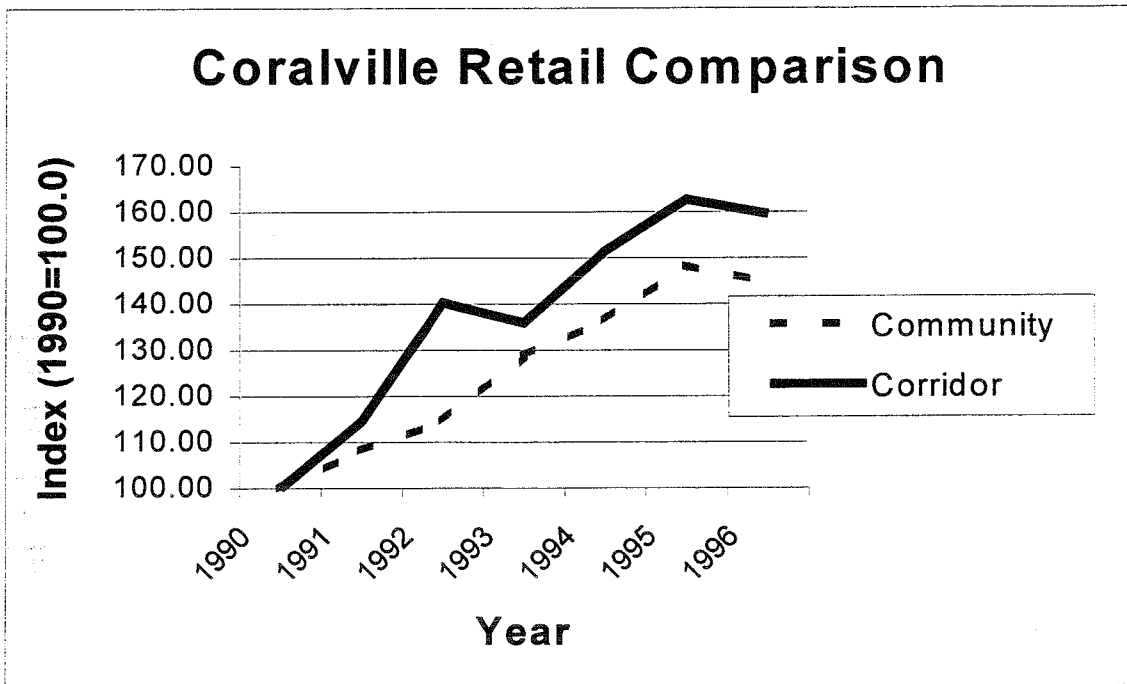
Figure 3: Businesses Along US Highway 6 Study Area

<u>Business Name</u>	<u>Address</u>	<u>Business Type</u>
Boubin Brake and Muffler	53 2nd Street	Auto repair
Long John Silver's Seafood Shop	59 2nd Street	Restaurant
Donutland	61 2nd Street	Restaurant / coffee shop
Best of America Car Wash	69 2nd Street	Auto service
Jiffy Lube	71 2nd Street	Auto service
Shakey's Restaurant	75 2nd Street	Restaurant
Heartland Inn	87 2nd Street	Motel
Fast Photo & Horan Studio	89 2nd Street #1	Film developing
Concord Custom Cleaners	89 2nd Street #2	Cleaners
Check Into Cash	89 2nd Street #3	Check cashing
Iowa Hair Cutting Company	89 2nd Street #4	Hair salon
It's A Grind	89 2nd Street #5	Coffee shop
E D A Futon	89 2nd Street #6	Furniture store
Coralville Vision Center	89 2nd Street #7	Optical store
Reck Violin Shop	89 2nd Street #8	Music store
Carew Chiropractic Clinic	89 2nd Street #9	Chiropractic clinic
Subway	89 2nd Street #10	Restaurant
China Garden	93 2nd Street	Restaurant
Coralville Amoco	102 2nd Street	Gas station
Hardee's Restaurant	107 2nd Street	Restaurant
National Carpet Mill Outlet	114 2nd Street	Carpet store
Hunan Restaurant	118 2nd Street	Restaurant
Essany Custom Cabinetry	120 2nd Street	Cabinet specialty store
Williams Water Systems	123 2nd Street	Water purifying
Taco John's	204 2nd Street	Restaurant
University Inn	205 2nd Street	Motel
Checkered Flag Collectables	205 2nd Street	Collectibles shop
Lone Star Steakhouse and Saloon	210 2nd Street	Restaurant
Moovies	211 2nd Street	Video rental
Frohwein Office Supply Company	218 2nd Street	Office supply
Watershed Incorporated	302 2nd Street	Pools and spas
Kinetic Concept Incorporated	302 ½ 2nd Street	Therapy services
Sluggers Sports Bar and Grill	303 2nd Street	Restaurant
360 Degrees Communications	304 2nd Street	Telephone store
Salon Salon	306 2nd Street	Hair salon
Narco Medical Services	310 2nd Street	Medical services
Iowa Furniture Gallery	311 2nd Street	Furniture store
Iowa Lodge	320 2nd Street	Motel
Iowa Land Corporation	320 2nd Street	Real Estate
Nevada Bob's	327 2nd Street	Sporting goods

D. Corridor Versus Community Sales Trends

Retail sales for the entire community of Coralville grew almost 45 percent from 1990 through 1996, from \$124 million to \$179 million. This represents a growth rate of somewhat less than ten percent per year. As shown in Figure 4, businesses in the project corridor generally outperformed those in the entire community. An exception was the 1992-1993 period, when the corridor businesses lost sales; this was prior to the 1994-1995 access management projects being initiated. The sales growth rate for the same period for businesses within the corridor was about 60 percent, or about 10 percent per year. There was no noticeable change in the corridor sales trend during 1994 when the first part of the project was undertaken. However, sales dipped in both the corridor and community during 1995.

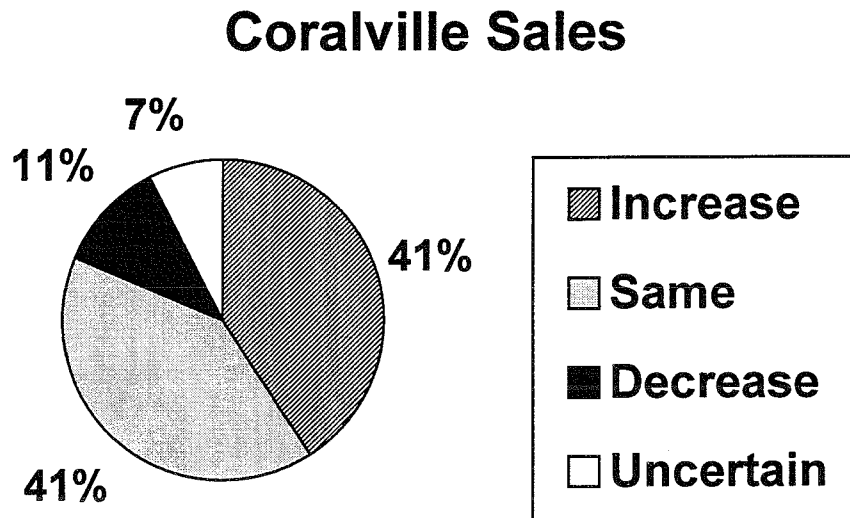
Figure 4: Retail Sales Trend Comparison



E. Opinion Survey Results

A total of 28 business owners and managers were interviewed by the University of Northern Iowa to determine their opinions about the access management project. All of them were familiar with the project. About 93 percent of their businesses were in operation on the “Coralville Strip” prior to the project. About 40 percent of the businesses surveyed indicated that their highway access was affected by the project. However, only 11 percent indicated that their business had lost sales once the project was completed.

Figure 5: Coralville Retail Sales



Over 80 percent of the business owners and managers felt their sales were either the same or higher once the project was completed. A total of 67 percent thought that the project had created a more desirable business environment, while almost 60 percent had received no complaints from customers about access to their business once the project was completed. Over 96 percent of the businesses surveyed expressed support for the project, recognizing that it would probably have positive impacts in terms of traffic safety and operations. Business owners and managers commented that they felt the roadway now “looks better” and that it is now “easier to turn left;” several expressed an interest in having these types of improvements extended farther west along US Highway 6. On the other hand, business owners indicated that it was “harder to enter or exit some driveways” now and that the road was still congested and difficult to travel on during rush hours.

Thirty motorists were also surveyed in Coralville. About two-thirds of them were aware that the access management project had been recently completed and 63 percent drove on this stretch of US 6 prior to project completion. Fully 95 percent of them expressed support for the project and survey results indicated that most of the motorists agreed that the roadway was safer, flows better, and is easier to turn left on. One city official was interviewed and made mostly positive comments about the project and its impacts.