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|--------|-----------------------|
| --- | EXISTING RIGHT OF WAY |
| --- | PROPOSED RIGHT OF WAY |
| --- | ROADWAY CENTERLINE |

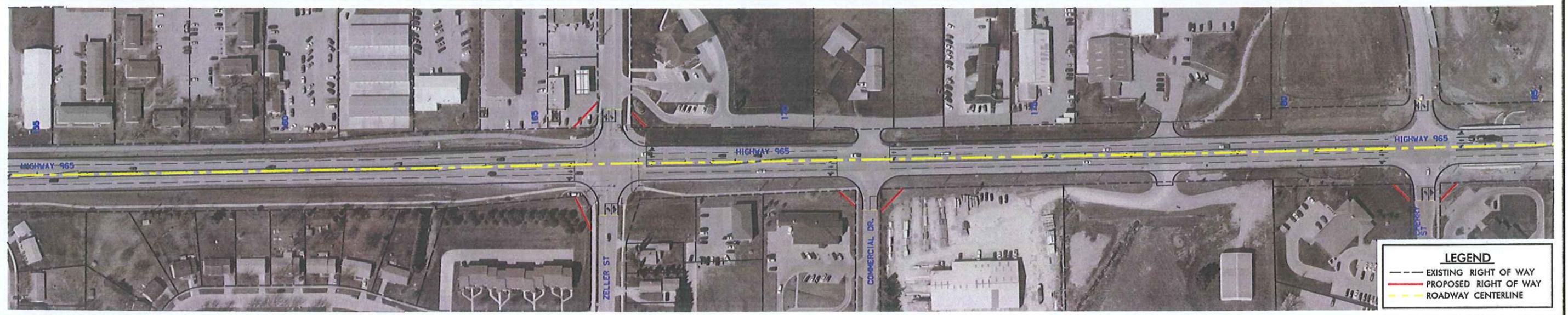
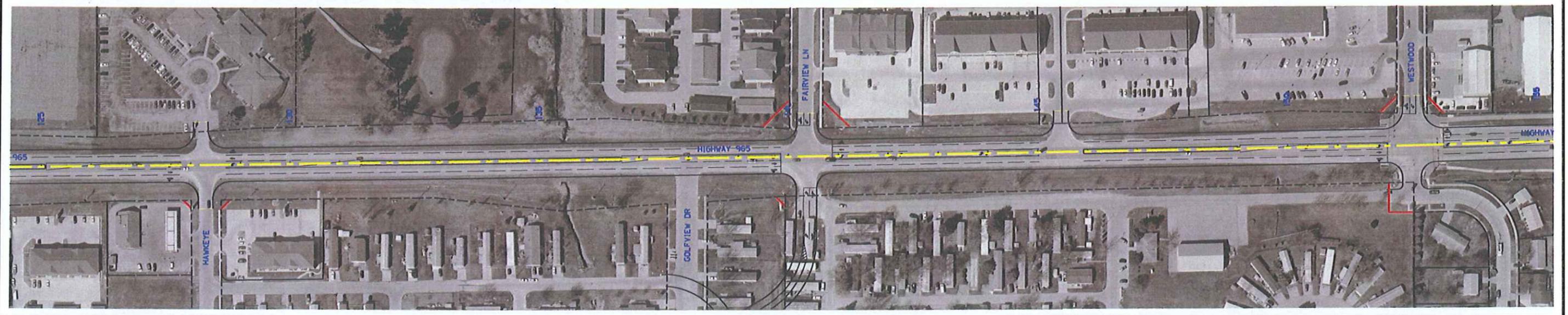
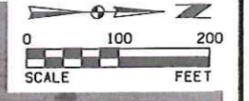
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HIGHWAY 965 CORRIDOR MASTER PLAN
 NORTH LIBERTY/CORALVILLE
 IOWA 2008

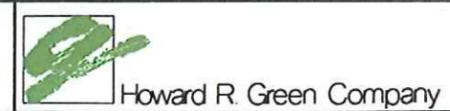
EXISTING AND PROPOSED RIGHT OF WAY

SHEET NO.
 D.01



| LEGEND | |
|--------|-----------------------|
| | EXISTING RIGHT OF WAY |
| | PROPOSED RIGHT OF WAY |
| | ROADWAY CENTERLINE |

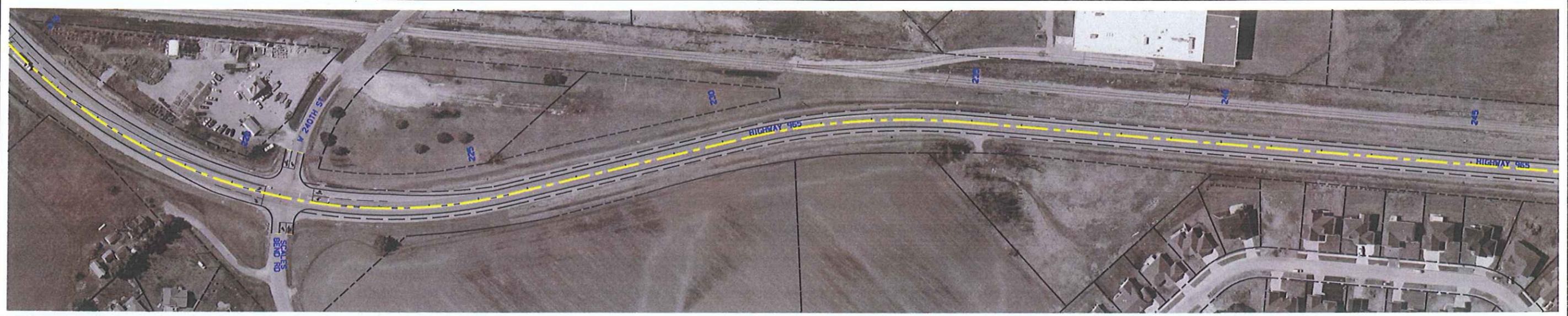
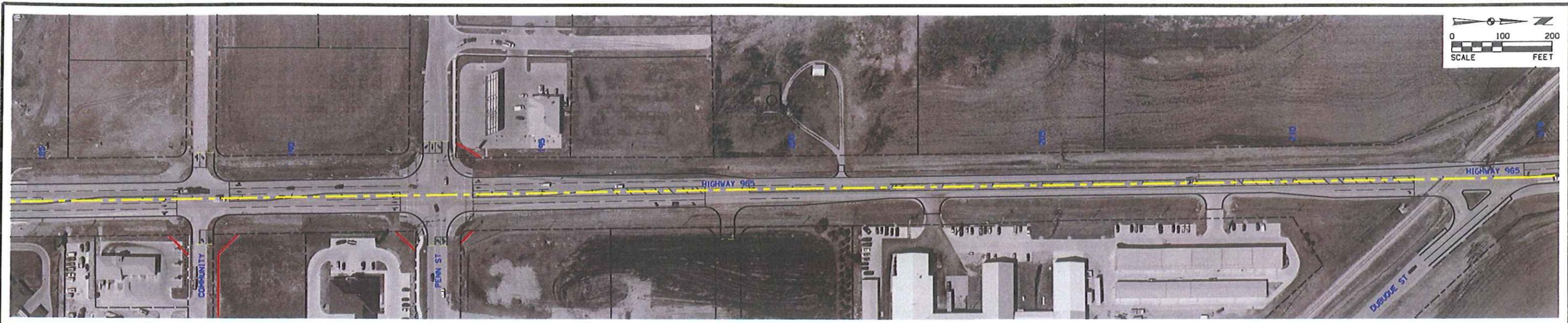
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HIGHWAY 965 CORRIDOR MASTER PLAN
 NORTH LIBERTY/CORALVILLE
 IOWA 2008

EXISTING AND PROPOSED RIGHT OF WAY

SHEET NO.
 D.02



| LEGEND | |
|--------|-----------------------|
| | EXISTING RIGHT OF WAY |
| | PROPOSED RIGHT OF WAY |
| | ROADWAY CENTERLINE |

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HIGHWAY 965 CORRIDOR MASTER PLAN
 NORTH LIBERTY/CORALVILLE
 IOWA 2008

EXISTING AND PROPOSED RIGHT OF WAY

SHEET NO.
D.03

1. Introduction

Highway 965 is an old two lane rural section state highway that once ran from Highway 6 in Coralville, through North Liberty, to 75th Street in Cedar Rapids. The highway was decommissioned in July 2003 and given back to the cities and counties except for the south end which connects Interstate 80 to Highway 6. The former highway is a primary north-south arterial between the Cities of Coralville and North Liberty.

The arterial has experienced significant traffic growth in recent years and is starting to experience a degradation of operation. Some intersection improvements have occurred to alleviate the traffic congestion but other intersections remain in need of improvements. Improvements have included signalization and the addition of left and right turn lanes.

There are still large undeveloped agricultural areas along the corridor that are projected to be developed over the next 20 years. They are located on all four quadrants of the Forevergreen Road and 965 intersection. The areas directly adjacent to 965 are zoned for commercial development and additional areas not directly adjacent to 965 are zoned for residential.

The purpose of the traffic analysis was to determine the required geometry for the Highway 965 corridor to carry the projected 2035 traffic volumes with an adequate level of service.

2. Existing Conditions

The study area is from Holiday Road in the south to 230th Street in the north and is within the cities of Coralville and North Liberty. The study includes all intersections on Highway 965 within the study area.

The accident data from 2001-2006 was examined using the Iowa Department of Transportation CMAT software. The accident analysis is shown on Sheet E.02 of this report. The majority of the accidents are from failure to yield right of way when making a left turn and following too close. These are occurring all along highway 965 with clusters at the intersections.

The Johnson County Council of Government staff conducted AM and PM Peak hour turning movement counts at the major intersections along the corridor between July 2007 and August 2007. The AM Peak Hour generally occurs from 0700-0800 and the PM Peak Hour generally occurs from 1630-1730. The raw count data was balanced through out the corridor so that the incoming and outgoing volumes matched between the intersections. The existing traffic volumes are shown on Sheet E.03 of this report.

The existing Level of Service (LOS) is shown on Sheet E.07 of this report. The signalized intersections all operate at LOS of C or better but many of the unsignalized intersections have approaches that are operating at LOS of F because of delays. The arterial LOS is generally LOS C or better but there are some segments that drop to LOS D and one segment that has enough delay to show a LOS of F.

During the peak hour, significant queuing occurs on 965 between Forevergreen Road and Westwood because of the number of unsignalized intersections without turn lanes. The left turning vehicles have to stop in the through lane which backs up traffic waiting for them to turn. The queues sometimes extend back far enough to affect the adjacent upstream intersection. This is especially a problem at Fairview and Golfview intersections because of their close proximity.

3. Proposed Development

The Iowa Department of Transportation worked with the Johnson County Council of Government transportation planners to implement a new traffic model for the Iowa City/North Liberty/Coralville area. The model was generally complete in the late fall of 2007 and preliminary 2035 model forecasts were generated. The City of North Liberty staff, McClure Engineering Company, and Howard R. Green Company worked with the DOT to debug the initial runs and provide updated employment and zoning information for the model. The final 2035 Forecast was delivered in February of 2008 by JCCOG.

The 2035 Forecast model included the following elements:

1. A new interchange at Forevergreen Road and Interstate 380.
2. Kansas Avenue extended from Penn Street to Highway 6.
3. Jones Blvd extended from Forevergreen Road to Highway 6.
4. All existing agricultural area adjacent to 965 was fully developed commercial.

Four different scenarios were completed to see the effects of different geometry on the traffic volumes. Two lane capacity (existing geometry); three lane geometry (left turn lanes at all intersections); four lane geometry (two through lanes but no additional left turn lanes); and five lanes (two through and left turn lanes at the intersections). Three of the scenarios were used in the analysis: existing, three lane, and five lane. The 2035 Forecast average daily total (ADT) volumes are shown on Sheet E.04 of this report.

The traffic forecast provided ADT volumes for the arterial roads only. The 2035 ADT volumes were converted to PM Peak Hour volumes using a K value of 8%. The intermediate intersections were estimated beginning with the existing counts and the turning movement percentages and then increasing 965 based on the nearest 2035 forecast volume. Finally the volumes were balanced across the network so that entering and departing intersection volumes matched at each intersection.

The three lane scenario has less ADT traffic than the five lane because the capacity is maxed out. This results in a larger volume of traffic on both Jones Blvd and Front Street for the three lane scenario. The five lane scenario draws more traffic from the network than the three lane and also results in less growth on Jones and Front. Although those streets were beyond the scope of this study, it appears Jones would need to be improved to handle the additional traffic from the three lane scenario.

A traffic forecast was generated for the three lane scenario and the five lane scenario. The three lane scenario is located on Sheet E.05 of this report. The five lane scenario is located on Sheet E.06 of this report.

4. Future Conditions

The two scenarios were analyzed using the traffic modeling software Synchro and SimTraffic. The Synchro software is used to build the model, analyze the operation of individual intersections, and optimize timing plans. SimTraffic is used to develop a simulation of the network and it factors in the interaction between intersections.

Both software packages provide reports of how the system is operating. The Highway Capacity Software (HCS) report generated by Synchro is the standard for evaluating the operation of intersections. This works well where there is minimal interaction between the intersections but during high volumes where traffic is backing up from one intersection and delaying the upstream intersection, the HCS report underestimates delay.

SimTraffic simulates the operation of the entire network and takes into consideration the interaction between the signals. The SimTraffic arterial delay report shows the actual delays between intersections and includes the interaction of traffic between intersections. During high volumes, SimTraffic may show significantly higher delays for the arterial than the Synchro report.

The analysis began using the existing traffic control for the intersections and then the model was simulated. It was determined all major intersections will need to be signalized to handle the 2035 volumes and maintain an adequate level of service for the intersections. The signals will also need to be interconnected and coordinated for optimum performance. The turn lane lengths were determined based on model calculated queue lengths and observation of the simulation.

The three lane scenario broke down at the 2035 volumes. There is not enough capacity with three lanes and the northbound vehicles queue up from Forevergreen Road south to Oakdale Blvd during the PM Peak hour. The system breakdown is shown in the arterial delay charts on Sheet E.07 where delay increases to a high of 436 seconds per vehicle with a vehicle speed of 5 mph.

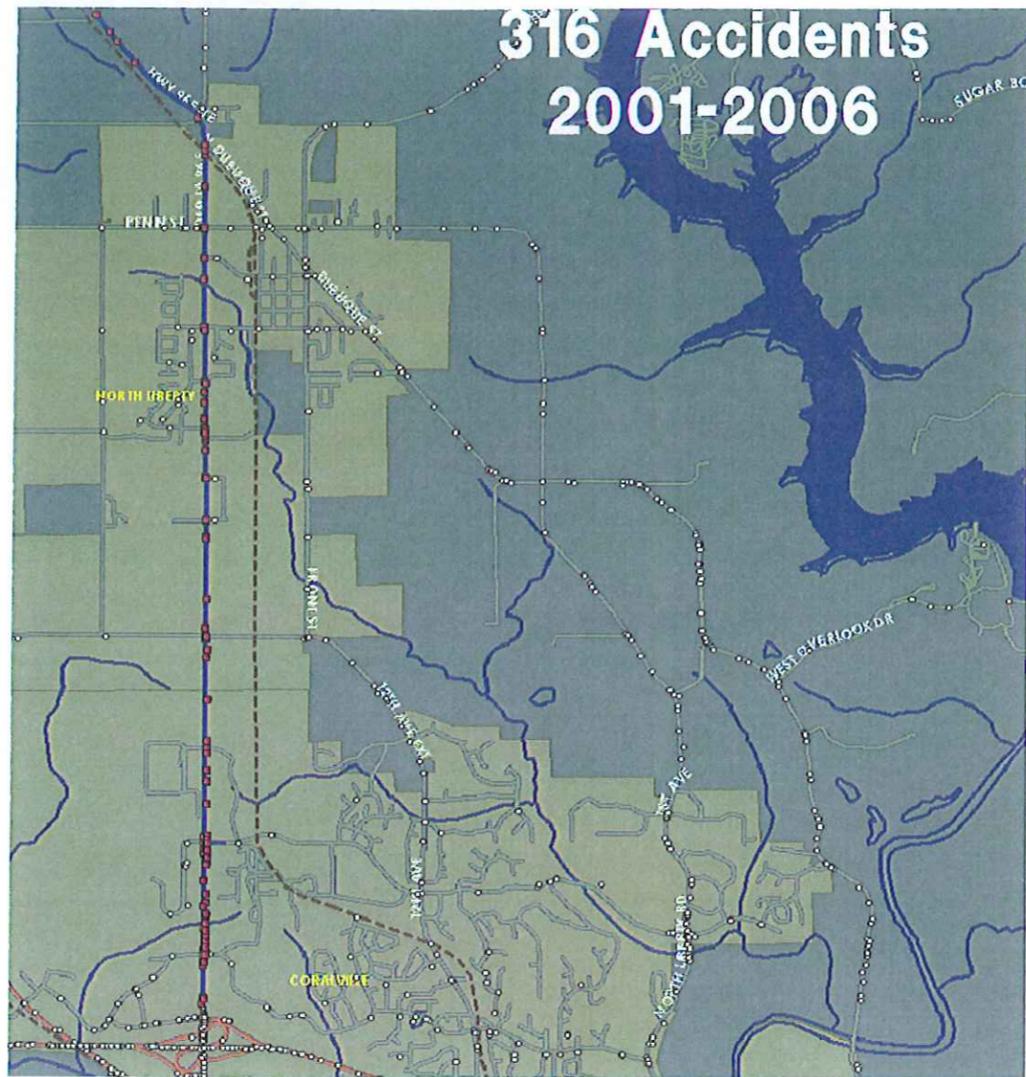
The five lane scenario functions with adequate level of service throughout the corridor for the 8% K value. The highest arterial delay is only 36.4 seconds with a vehicle speed of 16 miles per hour even with the larger volume of traffic with the five lane scenario.

The K value was increased to 10% to see the effects. At 10% there are some queuing issues north of Forevergreen Road during the Peak Hour and 965 at Oakdale needs dual left turns. Although some queuing occurs during the peak hour, developing beyond the five lane section for the North Liberty section is not practical.

The level of service for the future scenarios is show on Sheet E.07 of this report.

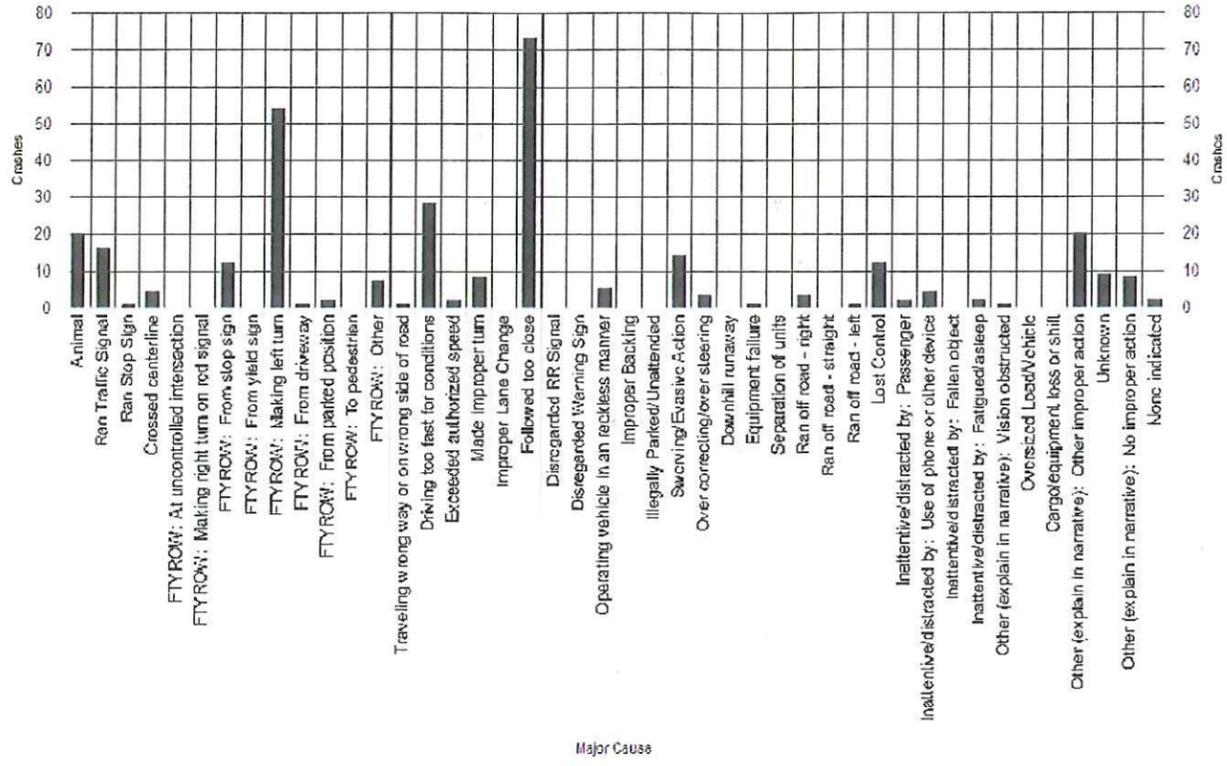
5. Recommendations

The traffic analysis clearly shows the three lane section is inadequate for the 2035 volumes and the five lane section should ultimately be constructed.

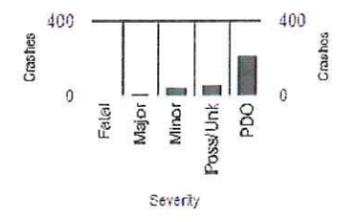


316 Accidents 2001-2006

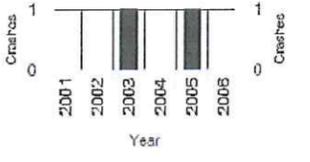
Accident Location Map 2001-2006



Accidents by Cause



Accidents by Severity



Fatalities

ACCIDENT ANALYSIS

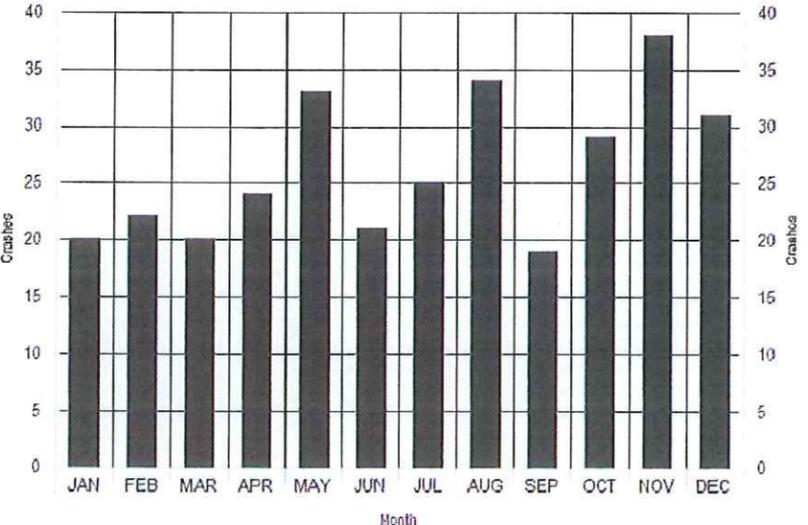
There have been 316 accidents including two fatalities between 2001 and 2006. The accidents are distributed relatively evenly along 965 with clusters of accidents at the intersections. The yearly accident totals increase between 2001 and 2005 with a slight decrease in 2006.

The primary accidents are: following to close, and failure to yield ROW while making a left turn. These accidents are occurring at the intersections and demonstrate the need for improvements including turn lanes and eventually traffic signals. The majority of the accidents are property damage only and a few involved minor or major injuries.

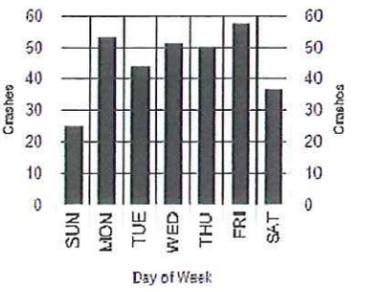
The two fatalities both occurred in December and appear to be weather related. One accident occurred in 2003 and one in 2005 and both were located mid block.

The accidents by month chart shows the accidents increase in the fall (October - December) and in the months of May and August. The accidents are distributed throughout the month with no spikes indicating specific problem days. During the week, more accidents occur during the weekdays than weekend and there are spikes on Monday and Friday which is a typical accident distribution.

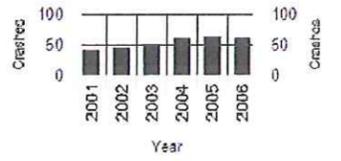
There are no specific locations that have a significantly higher accident rate. The accident data instead shows a need for intersection improvements throughout the corridor. Adding left turn lanes at all intersections and traffic signals as they become warranted should reduce the rates of accidents along the corridor.



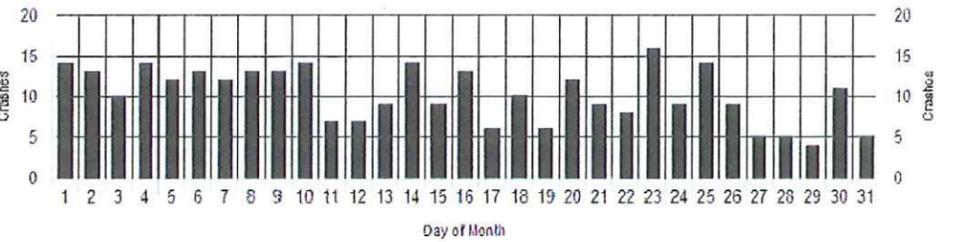
Accidents by Month of Year



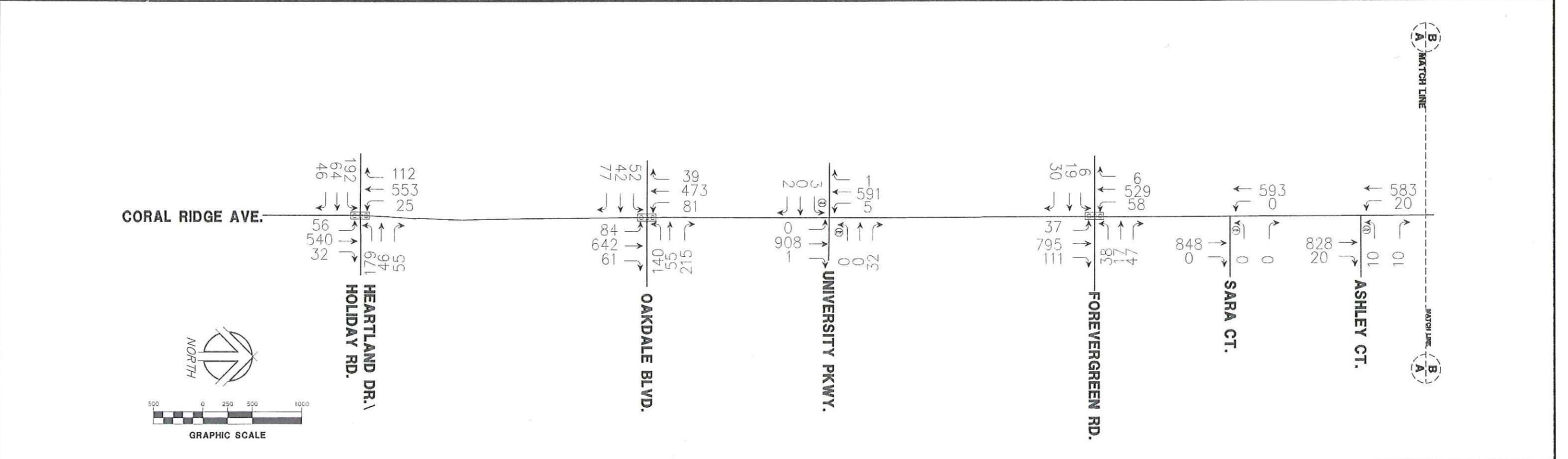
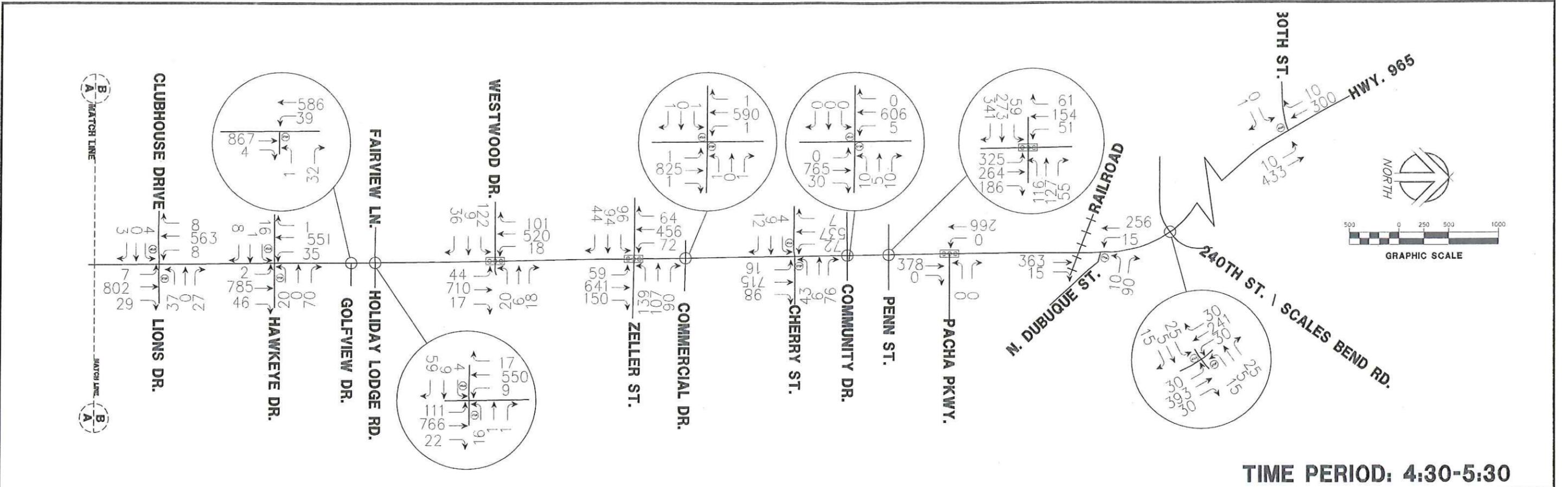
Accidents by Day of Week



Accidents by Year



Accidents by Day of Month



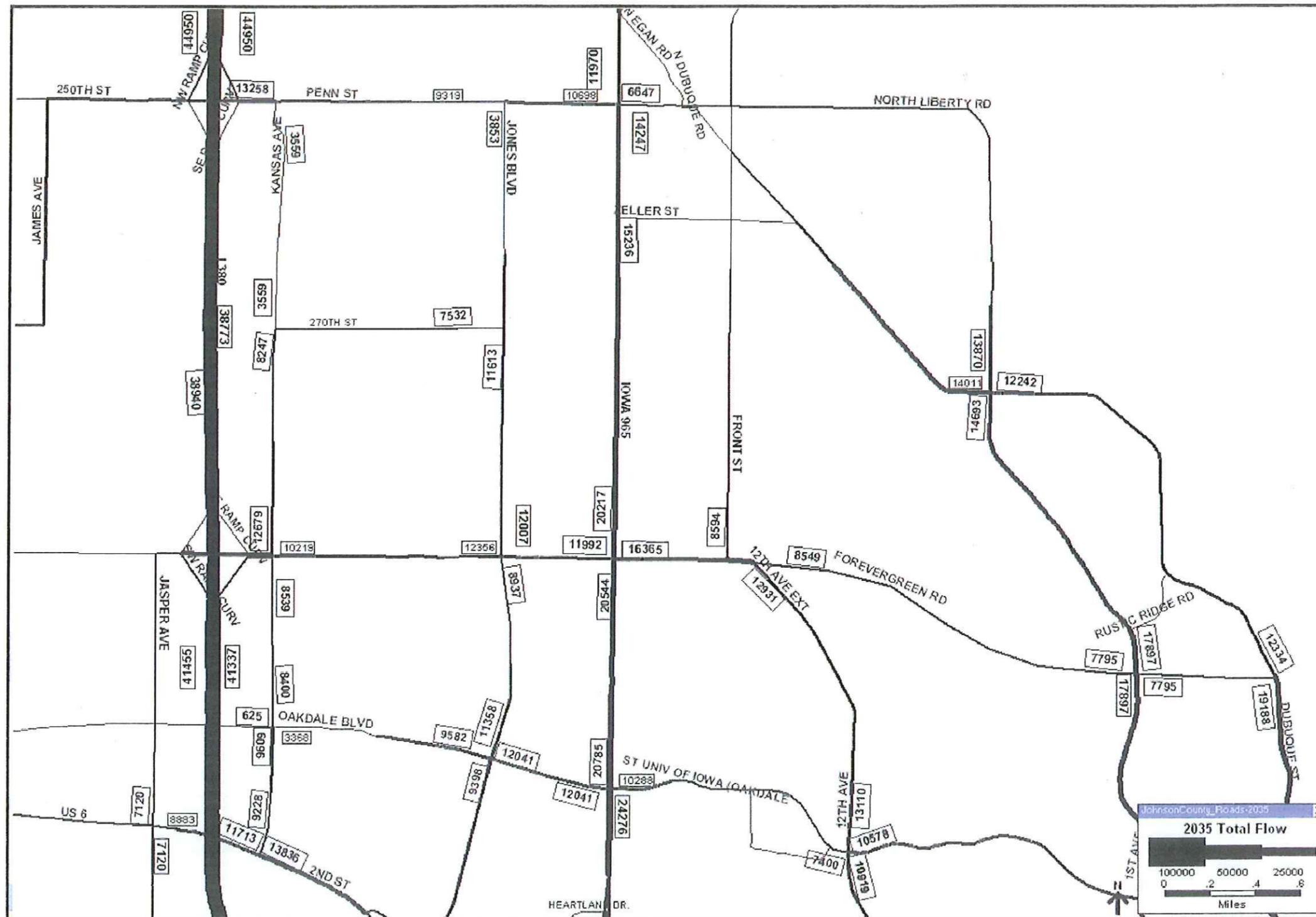


Figure 8: 3-Lane Capacity (Iowa 965) Moderate (Mixed) Zoning

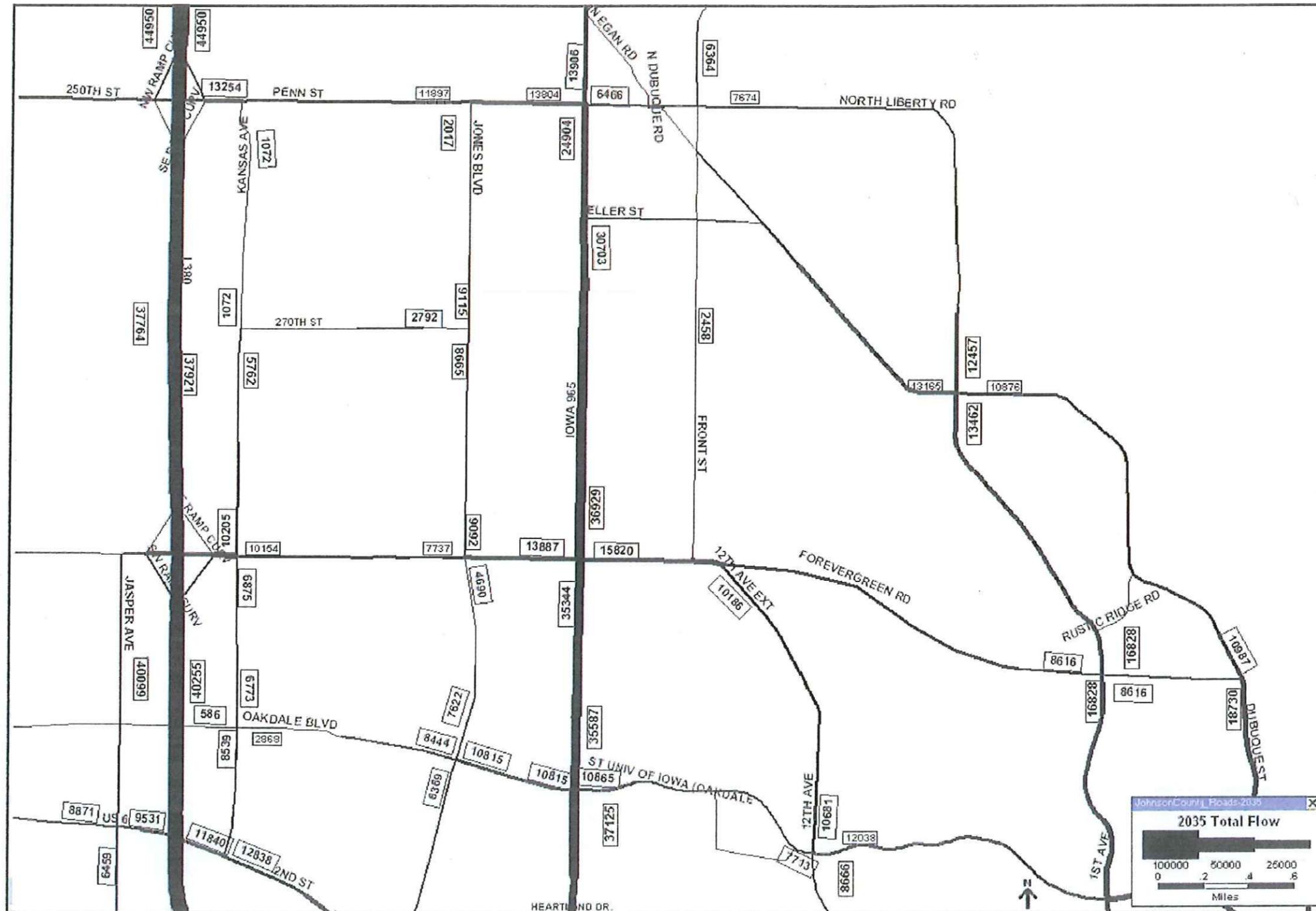
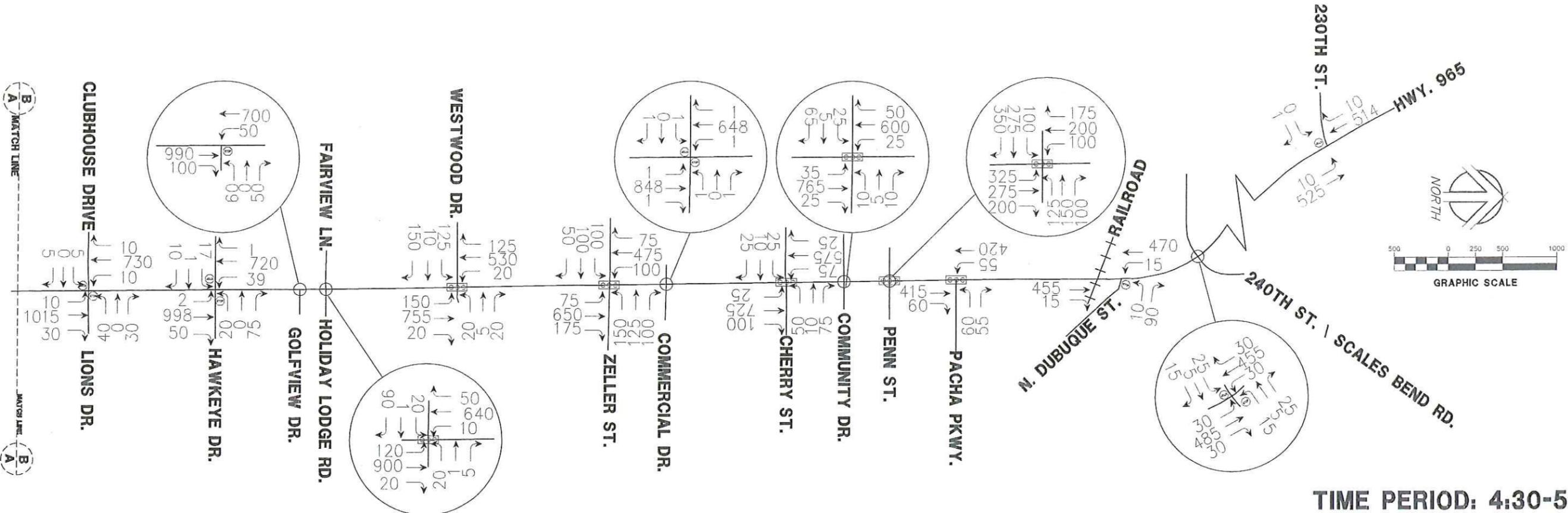
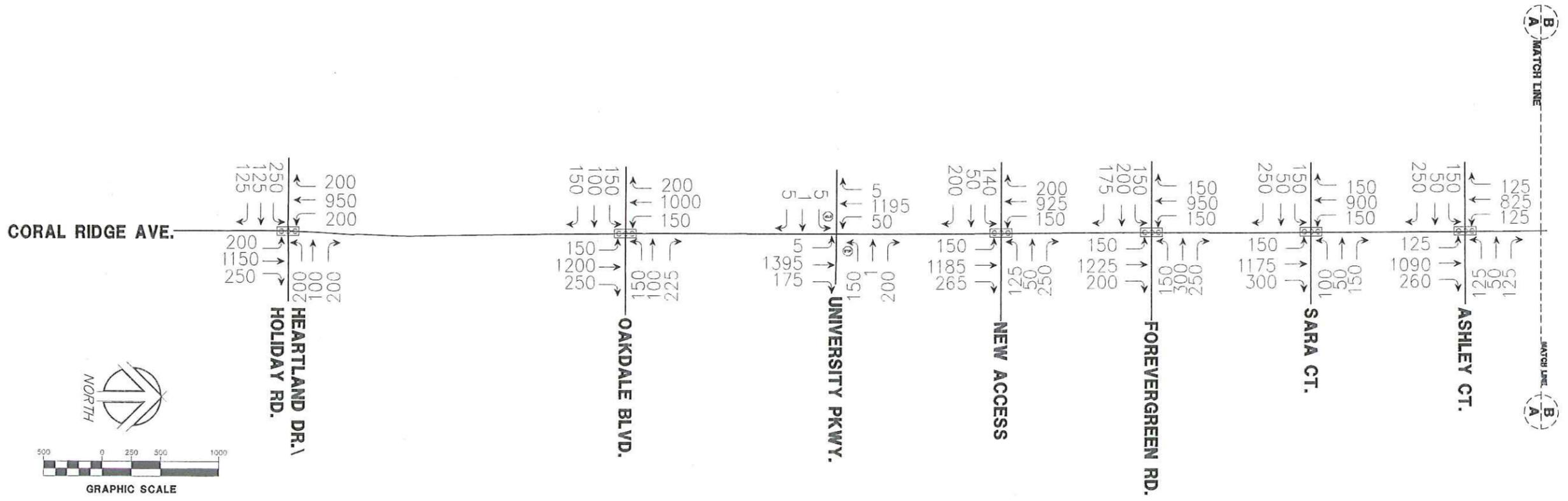
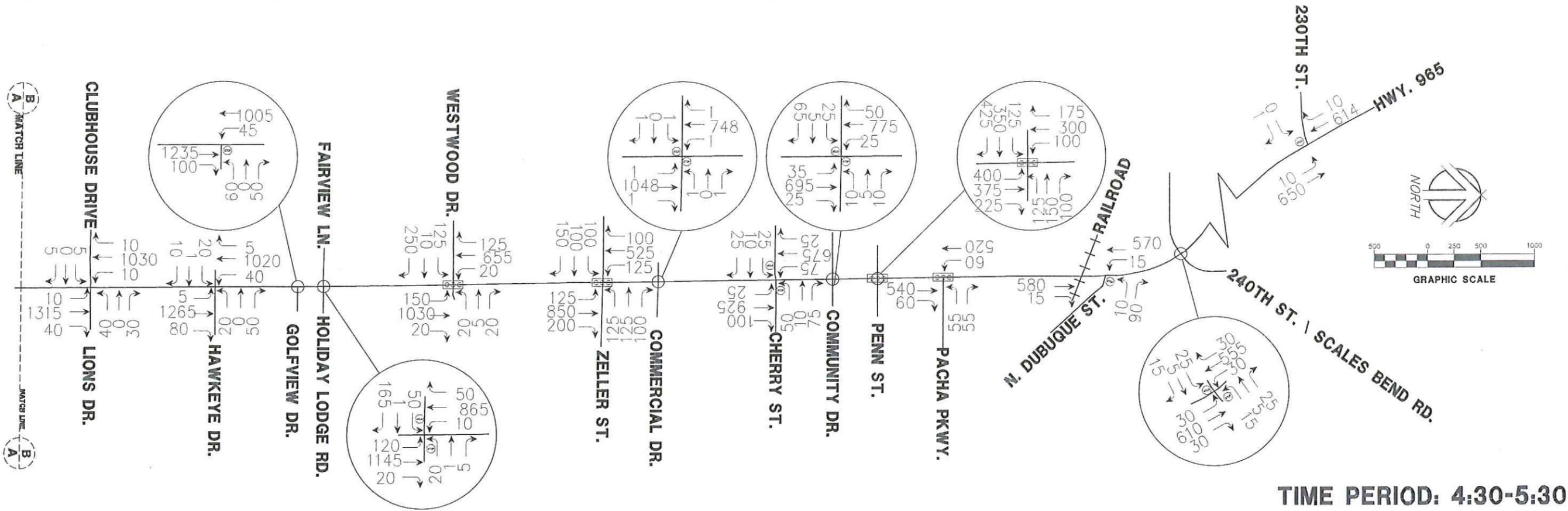


Figure 9b: 4-Lane Capacity (Iowa 965) **with** left turns
Moderate (Mixed) Zoning





Arterial Level of Service: NB Hwy 965

| Cross Street | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|--------------------|---------------|-----------------|-----------|----------------|
| I-80 Ramp | 11.1 | 28.8 | 0.2 | 24 |
| | 1.7 | 9.1 | 0.1 | 29 |
| Cedar | 0.1 | 4.6 | 0.0 | 33 |
| Holiday Road | 20.3 | 38.2 | 0.2 | 19 |
| | 4.2 | 13.8 | 0.1 | 22 |
| Oakdale Blvd | 16.7 | 55.0 | 0.5 | 30 |
| University Parkway | 8.0 | 39.2 | 0.5 | 42 |
| Forevergreen Road | 22.2 | 58.6 | 0.5 | 33 |
| Sara Court | 3.7 | 16.0 | 0.2 | 34 |
| Ashley Ct | 4.3 | 25.1 | 0.3 | 36 |
| Lions Drive | 7.2 | 21.2 | 0.2 | 29 |
| Hawkeye Drive | 5.6 | 27.7 | 0.2 | 27 |
| Golfview Drive | 15.5 | 34.9 | 0.2 | 19 |
| Fairview Lane | 10.3 | 15.4 | 0.0 | 11 |
| Westwood Drive | 79.8 | 103.8 | 0.2 | 8 |
| Zeller Street | 17.6 | 45.7 | 0.3 | 21 |
| Commercial Drive | 2.5 | 13.0 | 0.1 | 27 |
| Cherry Street | 4.4 | 26.7 | 0.2 | 28 |
| Community Drive | 3.0 | 13.6 | 0.1 | 26 |
| Penn Street | 21.9 | 31.2 | 0.1 | 11 |
| Pacha Pkwy | 2.3 | 13.5 | 0.1 | 28 |
| Dubuque | 2.9 | 32.7 | 0.3 | 33 |
| Scales Point | 8.2 | 23.7 | 0.1 | 19 |
| Total | 273.4 | 691.6 | 4.6 | 24 |

Arterial Level of Service: SB Hwy 965

| Cross Street | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|--------------------|---------------|-----------------|-----------|----------------|
| Dubuque | 0.3 | 17.3 | 0.1 | 26 |
| Pacha Pkwy | 10.0 | 43.9 | 0.3 | 24 |
| Penn Street | 17.9 | 24.3 | 0.1 | 16 |
| Community Drive | 2.3 | 12.4 | 0.1 | 27 |
| Cherry Street | 0.9 | 11.4 | 0.1 | 31 |
| Commercial Drive | 2.7 | 24.9 | 0.2 | 30 |
| Zeller Street | 12.2 | 22.3 | 0.1 | 16 |
| Westwood Drive | 32.5 | 61.2 | 0.3 | 16 |
| Fairview Lane | 6.0 | 30.2 | 0.2 | 27 |
| Golfview Drive | 3.9 | 9.1 | 0.0 | 19 |
| Hawkeye Drive | 4.7 | 24.4 | 0.2 | 27 |
| Lions Drive | 6.3 | 28.8 | 0.2 | 26 |
| Ashley Ct | 3.9 | 18.7 | 0.2 | 33 |
| Sara Court | 3.9 | 24.8 | 0.3 | 37 |
| Forevergreen Road | 11.5 | 23.8 | 0.2 | 23 |
| University Parkway | 8.3 | 45.2 | 0.5 | 43 |
| Oakdale Blvd | 17.1 | 47.7 | 0.5 | 35 |
| | 7.7 | 45.4 | 0.5 | 37 |
| Heartland Drive | 16.4 | 24.9 | 0.1 | 12 |
| Cedar | 3.0 | 21.6 | 0.2 | 33 |
| | 0.4 | 4.9 | 0.0 | 31 |
| I-80 Ramp | 18.5 | 24.8 | 0.1 | 10 |
| Total | 190.3 | 591.9 | 4.4 | 27 |

Arterial Level of Service: NB Hwy 965

| Cross Street | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|--------------------|---------------|-----------------|-----------|----------------|
| Cedar Entrance | 1.1 | 9.3 | 0.1 | 41 |
| Holiday Road | 32.8 | 49.1 | 0.2 | 15 |
| | 9.8 | 20.6 | 0.1 | 22 |
| Oakdale Blvd | 118.8 | 151.2 | 0.4 | 10 |
| University Parkway | 436.1 | 473.6 | 0.5 | 6 |
| New Access | 203.1 | 226.5 | 0.3 | 5 |
| Forevergreen Road | 153.1 | 174.2 | 0.3 | 5 |
| Sara Court | 32.6 | 43.2 | 0.2 | 12 |
| Ashley Court | 85.3 | 111.6 | 0.3 | 9 |
| Lions Drive | 4.6 | 22.8 | 0.2 | 28 |
| Hawkeye Drive | 4.4 | 26.7 | 0.2 | 28 |
| Golfview Drive | 5.8 | 25.8 | 0.2 | 26 |
| Fairview Lane | 1.7 | 6.1 | 0.0 | 27 |
| Westwood Drive | 8.5 | 27.9 | 0.2 | 30 |
| Zeller Street | 32.9 | 61.3 | 0.3 | 16 |
| Commercial Drive | 4.2 | 12.8 | 0.1 | 27 |
| Cherry Street | 8.3 | 30.4 | 0.2 | 24 |
| Community Drive | 5.7 | 16.5 | 0.1 | 22 |
| Penn Street | 19.7 | 29.2 | 0.1 | 11 |
| Pacha Parkway | 3.8 | 15.6 | 0.1 | 25 |
| Dubuque | 4.3 | 34.2 | 0.3 | 30 |
| Scales Bend Rd | 2.8 | 16.6 | 0.1 | 29 |
| | 1.5 | 14.1 | 0.1 | 36 |
| | 1.3 | 14.8 | 0.2 | 40 |
| | 2.9 | 28.6 | 0.3 | 38 |
| 230th Street | 3.2 | 11.9 | 0.1 | 40 |
| Total | 1188.2 | 1657.1 | 5.1 | 13 |

Arterial Level of Service: SB Hwy 965

| Cross Street | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|--------------------|---------------|-----------------|-----------|----------------|
| | 1.1 | 12.4 | 0.1 | 35 |
| | 2.8 | 26.4 | 0.3 | 39 |
| | 1.9 | 15.5 | 0.2 | 38 |
| 240th St | 1.9 | 11.5 | 0.1 | 44 |
| Dubuque | 1.6 | 14.3 | 0.1 | 35 |
| Pacha Parkway | 5.6 | 36.1 | 0.3 | 29 |
| Penn Street | 34.5 | 45.7 | 0.1 | 9 |
| Community Drive | 8.4 | 18.0 | 0.1 | 18 |
| Cherry Street | 5.9 | 16.8 | 0.1 | 22 |
| Commercial Drive | 3.3 | 24.9 | 0.2 | 30 |
| Zeller Street | 21.0 | 29.1 | 0.1 | 12 |
| Westwood Drive | 11.9 | 40.1 | 0.3 | 24 |
| Fairview Lane | 3.5 | 23.3 | 0.2 | 35 |
| Golfview Drive | 2.2 | 6.0 | 0.0 | 36 |
| Hawkeye Drive | 2.0 | 21.5 | 0.2 | 31 |
| Club House Drive | 3.4 | 25.5 | 0.2 | 30 |
| Ashley Court | 18.5 | 36.4 | 0.2 | 17 |
| Sara Court | 27.3 | 53.0 | 0.3 | 17 |
| Forevergreen Road | 99.5 | 114.6 | 0.2 | 7 |
| New Access | 22.4 | 43.9 | 0.3 | 21 |
| University Parkway | 6.9 | 30.1 | 0.3 | 34 |
| Oakdale Blvd | 13.4 | 50.9 | 0.5 | 32 |
| | 6.9 | 41.7 | 0.4 | 36 |
| Holiday Road | 24.9 | 34.5 | 0.1 | 13 |
| Cedar Entrance | 3.5 | 20.4 | 0.2 | 36 |
| Total | 334.4 | 792.7 | 5.0 | 24 |

Arterial Level of Service: NB 965

| Cross Street | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|-------------------|---------------|-----------------|-----------|----------------|
| Cedar Entrance | 0.7 | 8.2 | 0.1 | 39 |
| Heartland Drive | 25.0 | 43.4 | 0.2 | 17 |
| | 4.5 | 14.6 | 0.1 | 29 |
| Oakdale Blvd | 24.3 | 59.1 | 0.4 | 26 |
| Driveway | 13.7 | 51.7 | 0.5 | 32 |
| New Access | 28.0 | 51.8 | 0.3 | 20 |
| Forevergreen Road | 36.4 | 57.4 | 0.3 | 16 |
| Sara Court | 18.5 | 34.8 | 0.2 | 18 |
| Ashley Court | 10.3 | 37.0 | 0.3 | 24 |
| Lions Drive | 3.7 | 21.9 | 0.2 | 29 |
| Hawkeye Drive | 3.9 | 26.1 | 0.2 | 29 |
| Golfview Drive | 4.1 | 23.7 | 0.2 | 28 |
| Fairview Lane | 1.4 | 6.3 | 0.0 | 27 |
| Westwood Drive | 6.9 | 30.7 | 0.2 | 26 |
| Zeller Street | 18.2 | 46.6 | 0.3 | 21 |
| Commercial Drive | 2.6 | 12.9 | 0.1 | 27 |
| Cherry Street | 5.4 | 27.3 | 0.2 | 27 |
| Community Drive | 2.3 | 11.8 | 0.1 | 31 |
| Penn Street | 25.1 | 33.4 | 0.1 | 12 |
| Pacha Parkway | 5.9 | 17.7 | 0.1 | 22 |
| Dubuque Street | 4.5 | 34.5 | 0.3 | 30 |
| 240th St | 3.2 | 17.0 | 0.1 | 26 |
| | 1.8 | 11.2 | 0.1 | 34 |
| | 2.1 | 17.3 | 0.2 | 39 |
| | 4.4 | 28.9 | 0.3 | 37 |
| 230th Street | 2.4 | 14.1 | 0.1 | 33 |
| Total | 299.2 | 739.0 | 5.1 | 25 |

Arterial Level of Service: SB 965

| Cross Street | Delay (s/veh) | Travel time (s) | Dist (mi) | Arterial Speed |
|-------------------|---------------|-----------------|-----------|----------------|
| | 1.0 | 12.6 | 0.1 | 36 |
| | 3.0 | 27.6 | 0.3 | 39 |
| | 2.2 | 17.5 | 0.2 | 38 |
| 240th St | 2.6 | 11.3 | 0.1 | 34 |
| Dubuque Street | 3.4 | 16.6 | 0.1 | 26 |
| Pacha Parkway | 6.0 | 36.8 | 0.3 | 28 |
| Penn Street | 29.4 | 40.8 | 0.1 | 10 |
| Community Drive | 7.4 | 17.5 | 0.1 | 19 |
| Cherry Street | 3.1 | 13.5 | 0.1 | 27 |
| Commercial Drive | 1.8 | 23.8 | 0.2 | 31 |
| Zeller Street | 13.2 | 23.4 | 0.1 | 15 |
| Westwood Drive | 12.8 | 41.6 | 0.3 | 23 |
| Fairview Lane | 3.6 | 27.3 | 0.2 | 30 |
| Golfview Drive | 0.6 | 5.5 | 0.0 | 30 |
| Hawkeye Drive | 1.6 | 21.3 | 0.2 | 31 |
| Club House Drive | 2.3 | 24.4 | 0.2 | 31 |
| Ashley Court | 9.1 | 27.7 | 0.2 | 23 |
| Sara Court | 11.3 | 36.1 | 0.3 | 24 |
| Forevergreen Road | 18.3 | 34.2 | 0.2 | 16 |
| New Access | 20.7 | 42.4 | 0.3 | 22 |
| Driveway | 13.1 | 36.2 | 0.3 | 28 |
| Oakdale Blvd | 20.2 | 57.4 | 0.5 | 29 |
| | 8.6 | 44.0 | 0.4 | 35 |
| Heartland Drive | 10.0 | 18.8 | 0.1 | 22 |
| Cedar Entrance | 2.7 | 21.5 | 0.2 | 34 |
| Total | 207.9 | 682.2 | 5.0 | 26 |

Existing 2007 Arterial Delay

The Arterial Delay chart shows the actual delay experienced by vehicles traveling the corridor. The delay includes the interaction between intersections where queuing from one intersection may interfere with the operation of the upstream intersection. The chart also includes the travel time between intersections and the average speed of vehicles.

The chart clearly shows the large delays generated by the 3-lane scenario when vehicle queues become so large they back up and affect the operation of the upstream signals. The large delays on the mainline cause increase delays on the side street traffic. The 5-lane scenario operates with delays only slightly worse than today's peak hour.

3-Lane 2035 Arterial Delay

5-Lane 2035 Arterial Delay

| 2007 Existing | | Approach Levels of Service | | | | | | | | | | | |
|--------------------|--------------|----------------------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|
| | | Side Street | | | Side Street | | | Highway 965 | | | Highway 965 | | |
| Street Name | | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Cedar Entrance | Unsignalized | - | - | - | - | - | A | - | A | A | A | A | - |
| Heartland Drive | Signalized | D | C | C | C | C | C | C | B | A | C | B | A |
| Oakdale Blvd | Signalized | C | C | C | D | C | C | A | B | A | A | A | A |
| University Parkway | Unsignalized | E | E | E | F | F | F | A | A | A | A | A | A |
| New Access | Future | - | - | - | - | - | - | - | - | - | - | - | - |
| Forevergreen Road | Signalized | C | C | C | C | C | C | A | A | A | A | A | A |
| Sara Court | Unsignalized | - | - | - | A | - | A | - | A | A | A | A | - |
| Ashley Court | Unsignalized | - | - | - | D | - | D | - | A | A | A | A | - |
| Lions Drive | Unsignalized | E | E | E | F | F | F | A | A | A | A | A | A |
| Hawkeye Drive | Unsignalized | F | F | F | E | E | E | A | A | A | A | A | A |
| Golfview Drive | Unsignalized | - | - | - | C | - | C | - | A | A | A | A | - |
| Fairview Lane | Unsignalized | D | D | D | F | F | F | A | A | A | A | A | A |
| Westwood Drive | Signalized | C | C | C | C | C | C | B | B | B | A | A | A |
| Zeller Street | Signalized | C | C | C | C | C | C | A | A | A | A | A | A |
| Commercial Drive | Unsignalized | E | E | E | F | F | F | A | A | A | B | B | B |
| Cherry Street | Unsignalized | E | E | E | F | F | F | A | A | A | B | B | B |
| Community Drive | Unsignalized | A | A | A | D | D | D | A | A | A | A | A | A |
| Penn Street | Signalized | B | C | B | B | B | B | B | B | B | B | B | B |
| Pacha Parkway | Signalized | - | - | - | A | - | A | - | A | A | A | A | - |
| Dubuque | Unsignalized | - | - | - | B | B | B | A | A | A | A | A | A |
| 240th St | Unsignalized | C | C | C | C | C | C | A | A | A | A | A | A |
| 230th St | Unsignalized | B | - | B | - | - | - | A | A | - | - | A | A |

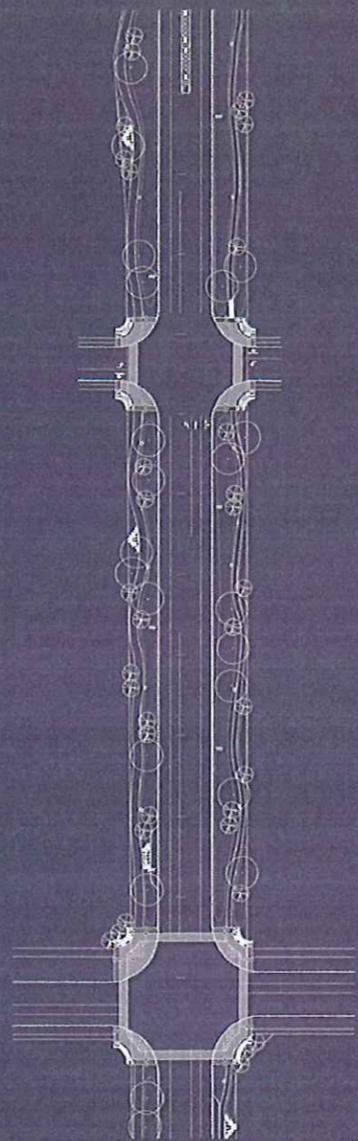
| 2035 3 Lane | | Approach Levels of Service | | | | | | | | | | | |
|--------------------|--------------|----------------------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|
| | | Side Street | | | Side Street | | | Highway 965 | | | Highway 965 | | |
| Street Name | | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Cedar Entrance | Unsignalized | - | - | - | - | - | A | - | A | A | A | A | - |
| Heartland Drive | Signalized | D | D | D | D | D | D | D | C | B | B | C | A |
| Oakdale Blvd | Signalized | D | D | D | D | D | D | A | B | A | C | B | A |
| University Parkway | Signalized | C | C | C | D | C | C | A | A | A | A | A | A |
| New Access | Signalized | D | D | D | C | D | D | B | C | B | B | A | A |
| Forevergreen Road | Signalized | B | C | C | B | C | C | C | C | C | C | C | C |
| Sara Court | Signalized | F | D | D | D | D | D | A | B | B | E | B | B |
| Ashley Court | Signalized | F | D | D | D | D | D | A | C | C | C | B | B |
| Lions Drive | Unsignalized | F | F | F | F | F | F | A | A | A | C | C | C |
| Hawkeye Drive | Unsignalized | F | F | F | F | F | F | A | A | A | B | B | B |
| Golfview Drive | Unsignalized | - | - | - | - | - | C | - | B | B | B | B | - |
| Fairview Lane | Unsignalized | E | B | B | F | F | F | A | A | A | A | A | A |
| Westwood Drive | Signalized | D | C | C | C | C | C | A | A | A | A | A | A |
| Zeller Street | Signalized | D | C | C | D | D | D | A | C | C | C | B | B |
| Commercial Drive | Unsignalized | F | F | F | F | F | F | A | A | A | B | B | B |
| Cherry Street | Signalized | D | D | D | D | D | D | A | A | A | A | A | A |
| Community Drive | Signalized | D | D | D | D | D | D | A | A | A | A | A | A |
| Penn Street | Signalized | C | D | C | C | C | C | A | B | A | B | C | C |
| Pacha Parkway | Signalized | - | - | - | B | - | A | - | A | A | A | A | - |
| Dubuque | Unsignalized | - | - | - | B | B | B | A | A | A | A | A | A |
| 240th St | Unsignalized | C | B | B | C | B | B | A | A | A | A | A | A |
| 230th St | Unsignalized | B | - | B | - | - | - | A | A | - | - | A | A |

| 2035 5 Lane | | Approach Levels of Service | | | | | | | | | | | |
|--------------------|--------------|----------------------------|-----|-----|-------------|-----|-----|-------------|-----|-----|-------------|-----|-----|
| | | Side Street | | | Side Street | | | Highway 965 | | | Highway 965 | | |
| Street Name | | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
| Cedar Entrance | Unsignalized | - | - | - | - | - | B | - | A | A | A | A | - |
| Heartland Drive | Signalized | C | D | D | D | D | D | B | B | B | A | A | A |
| Oakdale Blvd | Signalized | D | D | D | D | D | D | B | B | A | C | A | A |
| University Parkway | Signalized | C | C | C | D | D | D | A | A | A | B | A | A |
| New Access | Signalized | E | D | D | D | D | D | C | B | B | D | B | B |
| Forevergreen Road | Signalized | D | C | C | C | C | C | B | B | A | D | B | A |
| Sara Court | Signalized | E | D | D | D | D | C | A | A | A | C | B | B |
| Ashley Court | Signalized | D | D | D | D | D | D | A | A | A | B | A | A |
| Lions Drive | Unsignalized | F | F | F | F | F | F | B | B | B | B | B | B |
| Hawkeye Drive | Unsignalized | F | F | F | F | F | C | B | B | B | B | B | B |
| Golfview Drive | Unsignalized | - | - | - | - | - | C | - | B | B | B | B | - |
| Fairview Lane | Unsignalized | E | C | C | F | B | B | B | B | B | B | B | B |
| Westwood Drive | Signalized | D | C | C | D | D | D | A | A | A | B | A | A |
| Zeller Street | Signalized | D | D | D | D | D | D | A | B | B | B | B | B |
| Commercial Drive | Unsignalized | D | D | D | D | D | D | A | A | A | B | B | B |
| Cherry Street | Signalized | D | D | D | D | D | D | A | A | A | A | A | A |
| Community Drive | Signalized | D | D | D | D | D | D | A | A | A | A | A | A |
| Penn Street | Signalized | C | D | C | C | C | C | B | B | B | B | C | C |
| Pacha Parkway | Signalized | - | - | - | B | - | B | - | A | A | A | A | - |
| Dubuque | Unsignalized | - | - | - | C | C | C | A | A | A | A | A | A |
| 240th St | Unsignalized | C | B | B | C | B | B | A | A | A | A | A | A |
| 230th St | Unsignalized | B | - | B | - | - | - | A | A | - | - | A | A |

LANE LEVEL OF SERVICE COMPARISON

By comparing the 2007, 2035 3-lane, and 2035 5-lane Level of Service chart we can see that there are some intersections that are starting to experience higher delays on the side streets. They are highlighted by yellow for LOS E and red for LOS F. The 3-lane chart clearly shows more approaches operating at LOS F than the 2007 chart. The 5-lane chart shows fewer approaches operating at LOS F, even with greater traffic volumes than the 3-lane scenario.

Note, the lane Levels of Service come from the Highway Capacity Software reports generated by Synchro for both the signalized and unsignalized intersections. The levels of service are based on the delay measured at each intersection based on the volume of traffic projected to pass through the intersection. The calculations do not include interaction between intersections which can result in a lower level of service than is shown in this chart. Refer to the Arterial delay charts to see the corridor operation.



Highway 965 Corridor Master Plan

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F. PROPOSED DESIGN CRITERIA

The standards and criteria chosen for the Highway 965 Corridor Master Plan reflect the current policies of the Iowa Department of Transportation Design Guides, the Statewide Urban Design and Specifications (SUDAS), AASHTO Policy on Geometric Design of Highways and Streets, and the 2005 Iowa Primary Road Access Management Policy.

Following are some of the design criteria used to develop the Corridor Master Plan;

Design Speed

The design speed chosen is typically 5 mph higher than the posted speed limit. This design speed is then used to determine the geometric requirements of the roadway.

Level of Service

Level of Service (LOS) is a measure of the operating conditions of a roadway. It is a measure of traffic performance, and is dependent upon speed, travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Level of Service ranges from A (least congested) to F (most congested).

Access Management

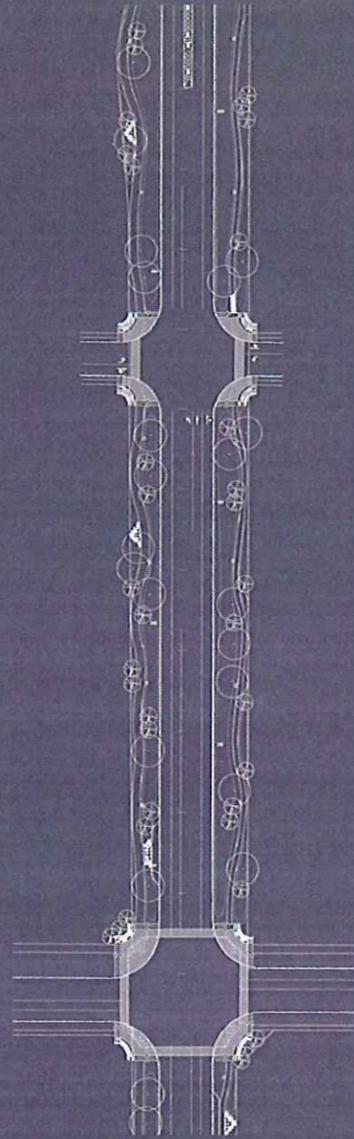
Proper management of access along an arterial roadway is critical for maintaining traffic flow. Minimizing the number of access points along a roadway improves the safety and traffic flow of the roadway by reducing the number of decisions required by the motorist.

Recommended access spacing is dependent upon the design speed and classification of the roadway. The recommended access spacing for the Highway 965 Corridor is shown in the design criteria table on the following page. In addition, plan sheets F.03, F.04, and F.05 illustrate the recommended access management plan for the Highway 965 Corridor. The plan sheets show several existing driveways in the "restricted zones". Due to the proximity of these drives to the adjacent accesses, the recommendation is to eliminate these drives in the future when the land use changes, or as the City deems appropriate.

Clear Zone

The intent of the clear zone is to provide motorists with an unobstructed area outside of the roadway. The clear zone is the area adjacent to the roadway that must be free from all objects (light poles, traffic signals, sign posts, etc.) that could interfere with the motorists ability to regain control of the vehicle. Clear zone distance requirements are dependent upon several factors including; traffic volumes, vehicle speeds, and type of roadway.

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Highway 965 Corridor Master Plan

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| DESIGN ELEMENT | CHOSEN CRITERIA | COMMENT |
|--|---|--|
| Roadway Classification | Arterial | |
| Design Speed Holiday Road to Oakdale Blvd Oakdale Blvd to Forevergreen Rd Forevergreen Rd to Lions Dr Lions Dr. to 230 th St. | 50 mph 50 mph 50 mph 40 mph | Posted Speed, 45 mph Posted Speed, 45 mph (now 55) Posted Speed, 45 mph Posted Speed, 35 mph |
| Level of Service Intersection & Arterial | C or above | IDM Section 1C-1 |
| Access Management 40 mph 45-50 mph | 300 ft. Spacing 600 ft. Spacing | SUDAS 5C-1, Priority IV-b SUDAS 5C-1, Priority IV-a |
| Curb Radii Minimum | 30 ft. | SUDAS 5C-2 |
| Stopping Sight Distance 40 mph 45 mph 50 mph | 305 ft. 360 ft. 425 ft. | Varies by speed. Refer to IDM Section 1C-1 |
| Horizontal Alignment Curve Radius 40 mph 45 mph 50 mph | 565 ft. min. 730 ft. min. 930 ft. min. | IDM Section 1C-1 |
| Vertical Alignment Maximum Grade Minimum Grade Crest Curve Minimum K 40 mph 45 mph 50 mph Sag Curve Minimum K 40 mph 45 mph 50 mph | 6% 0.5% 44/70 61/100 84/140 64 79 96 | IDM Section 1C-1 IDM Section 1C-1 IDM Section 1C-1 Minimum/Desirable IDM Section 1C-1 |
| Lane Geometry Lane Width Through & Turning Lanes Bi-directional Turning Lanes Thru Lane Add Taper Rate Thru Lane Drop Taper Rate | 12 ft. 14 ft. 15:1 30:1 | IDM Section 1C-1 IDM Section 1C-1 IDM Section 6C-1 IDM Section 6C-1 |
| Lateral Clearance (From Back of Curb) 40 mph 45 mph 50 mph | 10 ft. 15 ft. 15 ft. | IDM Section 1C-2 |
| Curb & Gutter Curb Size & Type 35 mph (Posted) 40 mph (Posted) 45 mph (Posted) Width | 6 in. Standard 6 in. Sloped 6-in. Sloped 2.5 ft. | IDM Section 3C-2 |
| Pedestrian Accommodations Multi-Use Path Width Sidewalk Width | 10 ft. 5 ft. 4 ft. | Minimum, IDM Section 11A-1 Preferred, IDM Section 11A-2 Minimum, IDM Section 11A-2 (Requires 5 ft. by 5 ft. passing space every 200 ft.) Comment |

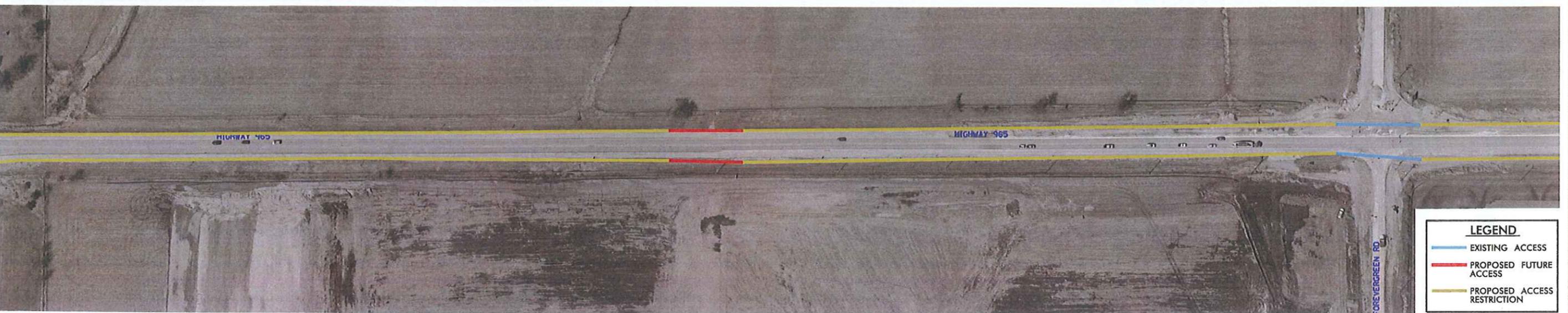
Sources

1. Iowa DOT Design Manual (IDM)
2. Iowa Statewide Urban Design and Specifications (SUDAS)
3. AASHTO Policy on Geometric Design of Highways and Streets
4. 2005 Iowa Primary Road Access Management Policy

PROPOSED DESIGN CRITERIA

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F.02

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LEGEND

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- - - PROPOSED FUTURE ACCESS
- PROPOSED ACCESS RESTRICTION

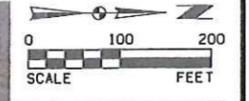
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HIGHWAY 965 CORRIDOR MASTER PLAN
 NORTH LIBERTY/CORALVILLE
 IOWA 2008

ACCESS MANAGEMENT PLAN

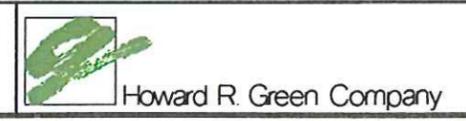
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- PROPOSED ACCESS RESTRICTION

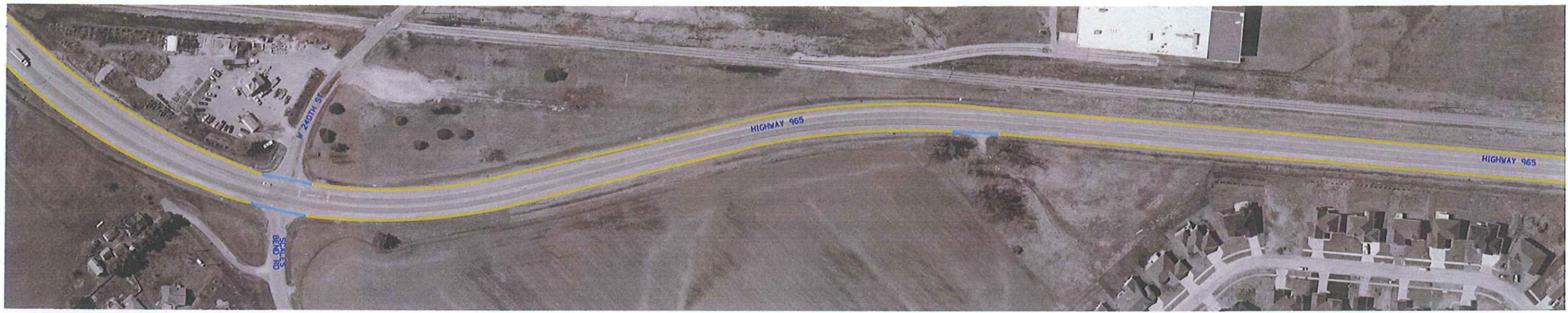
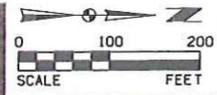
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HIGHWAY 965 CORRIDOR MASTER PLAN
 NORTH LIBERTY/CORALVILLE
 IOWA 2008

ACCESS MANAGEMENT PLAN

SHEET NO.
F.04



| LEGEND | |
|--------|-----------------------------|
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| | PROPOSED FUTURE ACCESS |
| | PROPOSED ACCESS RESTRICTION |

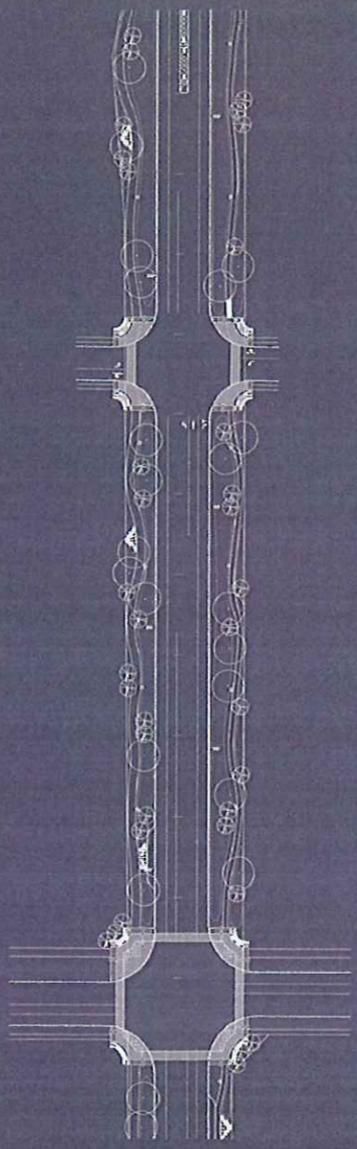
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HIGHWAY 965 CORRIDOR MASTER PLAN
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ACCESS MANAGEMENT PLAN

SHEET NO.
 F.05



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G. PROPOSED TYPICAL PLANS AND SECTIONS

The proposed design criteria and the results of the traffic analysis were the basis for creating the typical sections. Several alternative sections were considered during the study to try and best meet the main goal of the project a balanced solution for all users. The study addressed multiple objectives to satisfy including;

- Overall Corridor Functionality
- Improved Traffic Flow and Capacity
- Improved Pedestrian Safety and Accessibility
- Enhanced Corridor Aesthetics
- A Distinct Image for North Liberty and Coralville
- Design for the Environment

Urban and Rural Sections

Both urban and rural sections were analyzed during the study. The recommendation is to construct a modified urban section for the majority of the Corridor. Curb and gutter will be added to the roadway to allow for the aesthetic enhancements behind the curb, which will increase the visual appearance of the Corridor and, along with the curb and gutter, will act as a natural traffic calming device. The urban concept will include a combination of storm sewer, open ditches, and bioswales to accommodate storm water runoff and design for the environment. At 240th Street the Corridor transitions back to a rural section, while maintaining pedestrian facilities to the northern project limits.

Roadway Width

The study also considered several lane configurations to satisfy the project objectives. As discussed in the traffic analysis, the two main alternatives were a 3-Lane Section and a 5-Lane Section. The recommendation of the Corridor Master Plan is to construct a 5-Lane Section for the majority of the Corridor. In areas between major intersections where there are no turn lanes, and where the two way left turn lane is not required, the center lane will be a raised median, allowing for additional aesthetic enhancements and traffic calming.

The following drawings illustrate the typical roadway characteristics of the Highway 965 Corridor.

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