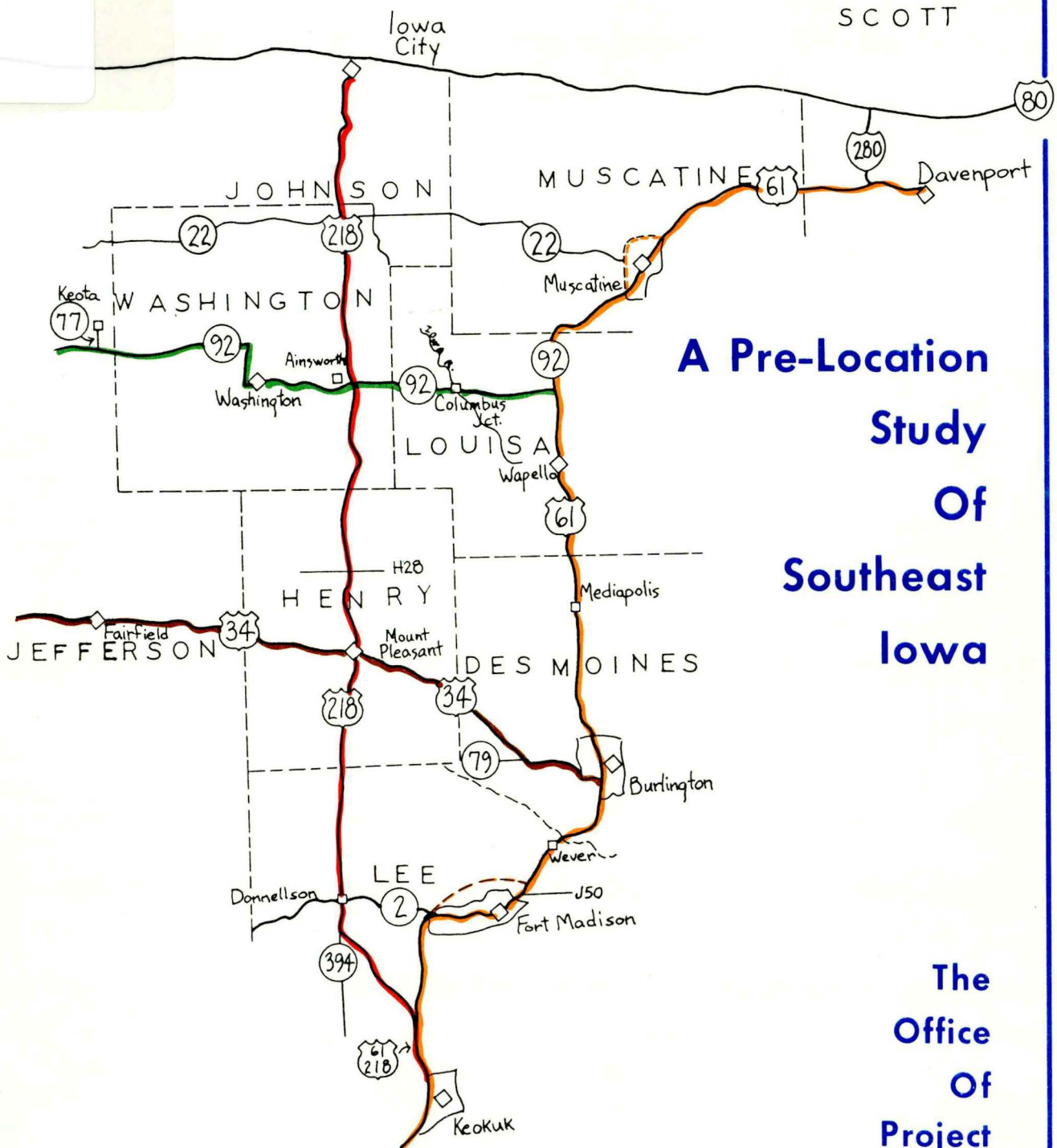


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**A Pre-Location
Study
Of
Southeast
Iowa**

**The
Office
Of
Project
Planning**

April 1986



**Iowa Department
of Transportation**

INTRODUCTION

This study includes four major routes in Southeast Iowa. These are U.S. 218, U.S. 61, U.S. 34, and Iowa 92. Each route is divided into sections so that areas with high traffic, urban congestion, and geometrics not in compliance with today's standards can be identified. Sufficiency ratings, accident history, and pavement matrix ratings have also been considered.

To assist you in using this report, each of the four major routes are identified by color. The U.S. 218 section is pink, U.S. 61 is salmon, U.S. 34 is buff, and Iowa 92 is green.

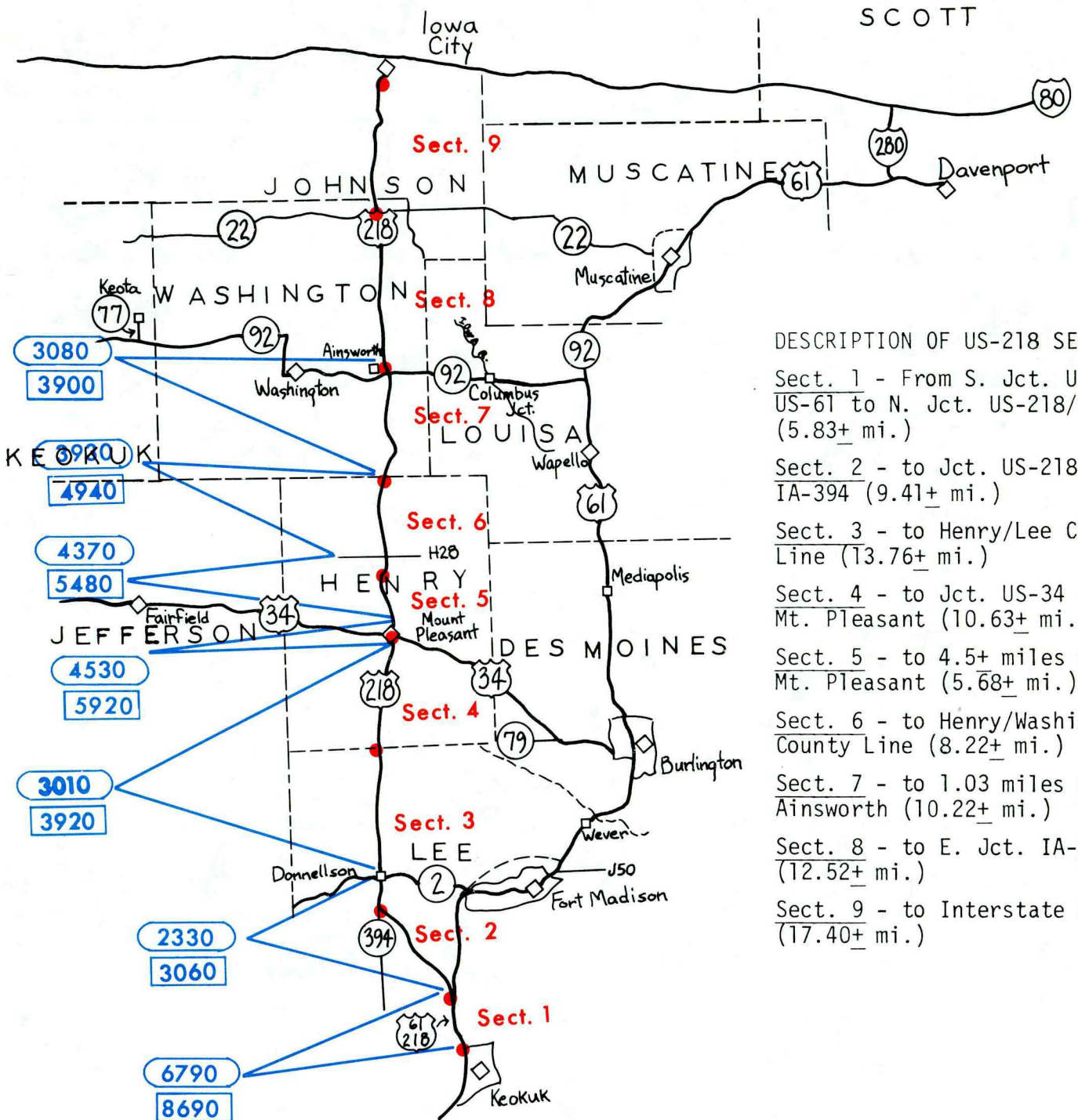
This report is a supplement to the Improvement Categories shown on the 1984-2002 Highway System Plan.

Prepared by
John C. Hocker
Office of Project Planning

CONTENTS

<u>Color</u>	<u>Route</u>
Pink	U.S. 218
Salmon	U.S. 61
Ivory	U.S. 34
Green	Iowa 92
White	Bypass Routes

U.S. 218 STUDY



DESCRIPTION OF US-218 SECTIONS

Sect. 1 - From S. Jct. US-218/US-61 to N. Jct. US-218/US-61 (5.83+ mi.)

Sect. 2 - to Jct. US-218/IA-394 (9.41+ mi.)

Sect. 3 - to Henry/Lee County Line (13.76+ mi.)

Sect. 4 - to Jct. US-34 in Mt. Pleasant (10.63+ mi.)

Sect. 5 - to 4.5+ miles N. of Mt. Pleasant (5.68+ mi.)

Sect. 6 - to Henry/Washington County Line (8.22+ mi.)

Sect. 7 - to 1.03 miles N. of Ainsworth (10.22+ mi.)

Sect. 8 - to E. Jct. IA-22 (12.52+ mi.)

Sect. 9 - to Interstate 80 (17.40+ mi.)

FORECAST TRAFFIC

1988

2008

The U.S. 218 Corridor

General Discussion

This study begins at the south junction of U.S. 218 and U.S. 61 at the northwest edge of Keokuk and proceeds northerly to the junction of U.S. 218 and I-80 at Iowa City. It should be noted, however, that U.S. 218 begins at the Mississippi River Bridge in Keokuk and proceeds northwesterly through town to the junction with U.S. 61. This portion of U.S. 218 is not included in this study.

U.S. 218 warrants four-lane from Keokuk to the north junction of U.S. 61. At this time, the traffic (6,790 VPD), as well as the presence of industrial sites along U.S. 61, indicates the consideration of future four-lane construction should be along the U.S. 61 corridor from the junction of U.S. 61 and U.S. 218 northerly. This is in accordance with the Highway System Plan which was approved in 1984.

From the north junction with U.S. 61 to Mt. Pleasant, estimated traffic for the year 2008 is in the range of 3,060 VPD to 3,980 VPD. This traffic projection warrants a two-lane facility for this section of highway for a 20-year period.

On U.S. 218 from Mt. Pleasant northerly to the junction of Iowa 22, traffic for the year 2008 is in the range of 5,000 VPD. This projection warrants current programming for improvement or reconstruction of a two-lane facility that is compatible with future four-lane construction. The completion of a four-lane facility on this section of roadway will be another step in providing a four-lane roadway from Mt. Pleasant to Interstate 80 and 380.

Although a two-lane facility can be directed through the towns of Swedesburg, Olds, and Crawfordsville, a four-lane roadway with access control would severely alter their commercial operations and property ownership. When a four-lane facility is completed on this section, bypasses of these towns should be considered.

On U.S. 218 from the junction of Iowa 22 northerly to I-80, the facility is now four-lane. This section will require minimal expenditures in the next 20 years.

It should be noted U.S. 218 from Keokuk northerly to the junction with I-80 is functionally classified as Freeway-Expressway. From Mt. Pleasant north this coincides with the need for a four-lane facility. At Mt. Pleasant, however, the need for a four-lane facility is easterly on U.S. 34 to Burlington rather than southerly on U.S. 218.

U.S. 218 STUDY AREA

Section 1: From S Jct. U.S. 218 and U.S. 61 to N Jct. U.S. 218 and U.S. 61.

Existing Facility - Improvements in recent years on U.S. 218 in this vicinity include asphaltic concrete resurfacing of this entire section in 1981. This section is included in the 1986 Transportation Improvement Program for four-lane construction on new location about 1/4 mile east of the present U.S. 218. The existing highway will be transferred to county jurisdiction for access to adjoining properties. The proposed schedule includes purchasing right-of-way in 1987, grading in 1988 and paving in 1989. Also, it is included in the approved Highway System Plan for four-lane development.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 6,790 and 8,690 vehicles per day (VPD) respectively with 21 percent and 26 percent trucks.

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 5.83± miles of roadway included in Section 1 presently carries a sufficiency rating of 7-poor, and a matrix rating of 5.01.

Summary - This section is currently programmed for 1988 and 1989 construction.

Estimated Cost Included in the 1986 Program -

Right-of-Way	\$1,447,000
Grading	3,024,000
Paving	5,257,000
Total	<u>\$9,728,000</u>

Section 2: From N Jct. U.S. 218 and U.S. 61 to Jct. U.S. 218 and IA 394.

Existing Facility - This section of highway has 24-foot pavement with 10-foot stabilized shoulders and 6:1 foreslopes. There is one major structure, a 192'x44' concrete beam bridge which was constructed in 1971. There are no vertical curves of 55 mph or under design speed within this section. It is not anticipated that major construction will be needed on this section of highway in the next 20 years. It is possible, however, that resurfacing and shoulder repair may be necessary within 10 to 15 years.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 2,330 and 3,060 VPD respectively with 28 percent and 32 percent trucks.

Highway Classification and Ratings: - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 9.41± miles of roadway included in Section 2 currently has a sufficiency rating of 95-excellent, and a matrix rating of 6.00.

Accident History - For the purposes of compiling the accident history, the north end of Section 2 was extended an additional 1.75± miles to the junction of IA 2. Accident statistics for the years 1979-1983 show a total of 50 accidents. This total involved no fatalities, 18 personal injury accidents, and 32

property damage accidents. The five-year accident rate of 132 accidents per hundred million vehicle miles (HMVM) approximates the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - The existing facility is adequate, however, future resurfacing and shoulder repair should be considered within 10 to 15 years.

Estimated Cost (Future Programming) -

Resurfacing	\$687,000
Shoulder Repair	94,000
Total	<u>\$781,000</u>

Section 3: From Jct. U.S. 218 and Iowa 394 to Henry/Lee County Line.

Existing Facility - Existing pavement on this section of U.S. 218 is 24-foot wide with 10-foot stabilized shoulders. Foreslopes are 6:1 throughout with the exception of a 0.75-mile section at the Jct. of County Road J-40 where foreslopes are 3:1. Major structures include a 158'x30' concrete beam bridge constructed in 1967 and a 125'x52' concrete slab bridge in an intersection constructed in 1970. Through the town of Donnellson, existing pavement consists of a 31-foot back-of-curb to back-of-curb (b-b) section. Improvement on U.S. 218 in recent years in this vicinity include 0.28 mile of asphaltic concrete resurfacing in Donnellson beginning at the Jct. Iowa 2 and extending northerly. Within the 13.76± miles which make up Section 3, there is one vertical curve of under 55 mph design speed.

The 1986 Transportation Improvement Program includes surface repair projects for 1986 at various locations from Donnellson north to the Henry County line. Major improvements involving grading and right-of-way are not anticipated in the foreseeable future. It is possible however that resurfacing and shoulder repair will be required within the next 10 to 15 years.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section 3 to Jct. Iowa 2 (1.72 mi.)	2,330	25%	3,060	32%
Jct. Iowa 2 to Henry Co. Line (12.04 mi.)	3,010	20%	3,920	27%

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 13.76± miles of roadway included in Section 3 carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 3 to SCL Donnellson (1.47 mi.)	41/Poor	6.00
SCL to NCL Donnellson (1.25 mi.)	82-95/Good to Excellent	--
NCL Donnellson to Jct. Iowa 103 (5.00 mi.)	72/Fair	6.00
Jct. Iowa 103 to Jct. Iowa 16 (4.02 mi.)	93/Excellent	5.01
Jct. Iowa 16 to Henry Co. Line (2.02 mi.)	87/Good	6.00

Accident History - Section 3 is located within the limits of two adjoining statistical segments. Accident histories for these two segments are shown here:

<u>Description of Statistical Segment</u>	<u>1979 - 83 Accidents F-PI-PD-Total</u>	<u>1979-83 5-Year Rate</u>
N Jct. U.S. 61 to Jct. Iowa 2 (11.13 mi.)	0 18 32 50	132
* Jct. Iowa 2 to SCL Mt. Pleasant (21.02 mi.)	5 21 72 98	108

* Section 3 falls primarily within this segment where the 5-year rate is lower than the statewide rate for the same time period (130 accidents per HMVM).

Summary - This section of highway is experiencing pavement structural problems and is programmed for repair in 1986. It

should also be considered for resurfacing and shoulder repair in the next 10 to 15 years.

Estimated Costs -

1. Surface repair - programmed 1986 - \$311,000.
2. Future resurfacing and shoulder repair.

Resurfacing	\$1,005,000
Shoulder Repair	138,000
Total	<u>\$1,143,000</u>

Section 4: From Henry/Lee County Line to Jct. U.S. 34 in Mt. Pleasant.

Existing Facility - This section of roadway has 24-foot pavement with 10-foot shoulders. From the Lee County line north 2.26 miles, the shoulders are stabilized and the foreslopes are 6:1. The remaining 8.37± miles of this section of highway has earth shoulders and 3:1 foreslopes. Major structures on this section are as follows:

<u>Structure Size & Type</u>	<u>Year Constructed</u>
224'x30' steel beam	1964
166'x30' prestressed beam	1963
* 575'x30' steel beam	1963
200'x30' prestressed beam	1963

* Repaired 1981

There are no vertical curves of design speed under 55 mph within this section. Improvements on U.S. 218 in this vicinity in recent years include asphaltic concrete resurfacing in 1981 on the portion of Section 4 beginning 3± miles S of Mt. Pleasant and extending northerly to Jct. U.S. 34.

It is not anticipated that any major construction will be needed on this section of roadway in the next 20 years. It is possible, however, that some resurfacing and shoulder stabilization will be required within the next 10 to 15 years.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section 4 to SCL Mt. Pleasant (8.98 mi.)	3,010	20%	3,920	27%
SCL Mt. Pleasant to U.S. 34 (1.65 mi.)	4,530	13%	5,920	18%

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 10.63± miles of roadway included in Section 4 carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 4 to Co. Rd. J20 (2.26 mi.)	88/Good	6.40
Co. Rd. J20 to NE½ Section 4-T70N-R6W (3.9 mi.)	84/Good	6.50
NE½ Section 4 to SCL Mt. Pleasant (2.82 mi.)	77-81/Fair to Good	6.50
SCL Mt. Pleasant to U.S. 34 (1.65 mi.)	83-90/Good to Excellent	--

Accident History - Section 4 (10.63 total miles) is located within the limits of the statistical segment which begins at the Jct. of Iowa 2 and extends north to the SCL of Mt. Pleasant (20.85 total miles). No accident statistics were figured within Mt. Pleasant. The accident history for the years 1979-83 reflects a total of 98 accidents. This total includes five fatalities, 21 personal injury accidents, and 72 property damage accidents. The five-year accident rate of 108 accidents per HMVM is lower than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of highway is adequate for current needs, however, it should be considered for resurfacing and shoulder repair in 10 to 15 years.

Estimated Cost (Future Programming) -

Resurfacing	\$ 776,000
Shoulder Stabilization	\$ 274,000
Total	<u>\$1,050,000</u>

Section 5: From Jct. U.S. 34 in Mt. Pleasant to 4.5 mi.± N of Mt. Pleasant.

Existing Facility - This section of highway has 24-foot pavement with 10-foot stabilized shoulders and 3:1 foreslopes. Major structures are as follows:

<u>Structure Size & Type</u>	<u>Year Constructed</u>
159'x32' Prestressed Beam	1967
215'x32' Steel Beam	1968
* 158'x32' Prestressed Beam	1968

* Repaired in 1985.

There are three vertical curves of 55 mph or under design speed located within this section.

Improvements on U.S. 218 in this vicinity in recent years include asphaltic concrete resurfacing in 1981 of this entire section. Also, in 1985, U.S. 218 was widened and resurfaced in the vicinity of the intersection with Winfield Street in Mt. Pleasant.

It is possible that resurfacing and shoulder repair will be required on this section in the next 10 to 15 years.

Consideration should also be given to programming major construction on this section for development of a four-lane divided highway using the existing roadway where feasible.

This construction should be compatible with a proposed U.S. 34

bypass of Mt. Pleasant. The easterly portion of the bypass construction should be accomplished concurrently with the U.S. 218 four-laning to relieve existing congestion at the U.S. 34/US 218 intersection.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section 5 to NCL Mt. Pleasant (1.21 mi.)	4,530	13%	5,920	18%
NCL Mt. Pleasant to 4.5 mi.± N of Mt. Pleasant (4.47 mi.)	4,370	12%	5,480	16%

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. This 5.68± miles of roadway included in Section 5 carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 5 to NCL Mt. Pleasant (1.21 mi.)	52-98/Tolerable to Excellent	--
NCL Mt. Pleasant to 4.5 mi.± N Mt. Pleasant	37/Poor	6.20

Accident History - No accident statistics were figured for that portion of Section 5 within Mt. Pleasant. The accident history for the remainder of Section 5, for the years 1979-83, shows a total of 23 accidents. This total includes one fatality, 5 personal injury accidents, and 17 property damage accidents. The five-year accident rate of 73 accidents per

HMVM is significantly lower than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of highway is currently adequate for the existing traffic, however, it is evident that future programming should include rehabilitation of the existing highway as well as expansion to a four-lane facility.

Estimated Cost -

1. Resurfacing Existing Highway (Future Programming) -

Resurfacing	\$ 415,000
Shoulder Repair	57,000
Total	<u>\$ 472,000</u>

2. Expansion to Four-Lane (Future Programming) -

Grade & Pave	\$4,033,000
Structure	796,000
Right-of-Way	284,000
Total	<u>\$5,113,000</u>

Section 6: From 4.5 miles± north of Mt. Pleasant to the Henry/Washington County Line.

Existing Facility - This section of highway has 24-foot pavement with five-foot earth shoulders and 1½:1 foreslopes. There are 15 vertical curves of 55 mph or under located within this highway section.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section 6 to Co. Rd. H28 (1.19 mi.)	4,370	12%	5,480	16%
Co. Rd. H28 to Washington Co. Line (1.03 mi.)	3,930	15%	4,930	19%

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. This 8.22± miles of roadway included in Section 6 carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 6 to SCL Olds (5.87 mi.)	53-55/Tolerable	5.00
SCL to NCL Olds (0.63 mi.)	45-95/Poor to Excellent	--
NCL Olds to Washington Co. Line (1.72 mi.)	45-58/Tolerable	5.00

Accident History - The accident history for the years 1979-83 shows a total of 53 accidents. This total includes one

fatality, 11 personal injury accidents, and 41 property damage accidents. The accident rate of 102 accidents per HMVM is lower than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - The 1986 Transportation Improvement Program shows that this section of highway is scheduled for major two-lane reconstruction and rehabilitation in 1990 and 1991.

This construction should be designed to be compatible for expansion to a four-lane facility.

Future programming should be considered to expand this section to a four-lane facility. The towns of Olds and Swedesburg should be bypassed by this four-lane facility.

Cost Estimate -

1. Two-lane reconstruction and rehabilitation programmed for 1990 and 1991

Reconstruction	\$1,577,000
Shouldering	1,192,000
Right-of-Way	411,000
Total	<u>\$3,180,000</u>

2. Future Four-Lane (Future Programming) -

Add Two Additional Lanes	\$2,996,000
Olds & Swedesburg Bypasses	5,715,000
Right-of-Way for Bypasses	1,000,000
Total	<u>\$9,711,000</u>

Section 7: From Henry/Washington County Line to 1.03± miles north of Ainsworth.

Existing Facility - This section of highway has 24-foot pavement with five-foot earth shoulders and 1½:1 foreslopes. There are 25 vertical curves of 55 mph or under design speed located within this highway section.

Major Structures located in this section are as follows:

<u>Structure Size & Type</u>	<u>Year Constructed</u>
178'x30' Concrete Slab	1964
80'x44' Concrete Slab	1982
92'x30' Concrete Slab	1964
82'x30' Concrete Slab	1964

Improvements on this section of U.S. 218 in recent years include the 1981 asphaltic concrete resurfacing of 0.28± mile beginning just north of the Henry County line and extending northerly.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 3,080 and 3,890 VPD respectively with 17 percent and 22 percent trucks.

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B'

road. This 10.22± miles of roadway included in Section 7 carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 7 to SCL Crawfordsville (3.5 mi.)	51/Tolerable	5.43
SCL to NCL Crawfordsville (0.5 mi.)	96/Excellent	--
NCL Crawfordsville to Jct. Iowa 92 (5.08 mi.)	51/Tolerable	5.43
Jct. Iowa 92 to 1.03 mi. N of Ainsworth (1.14 mi.)	8/Poor	4.60

Accident History - The accident history for the years 1979-83 shows a total of 46 accidents. This total includes no fatalities, 11 personal injury accidents, and 35 property damage accidents. The accident rate of 128 accidents per HMVM approximates the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - The 1986 Transportation Improvement Program shows that this section of highway is scheduled for major two-lane reconstruction and rehabilitation in 1990 and 1991.

Future programming should include expanding this facility to four lanes by adding two lanes adjacent to the existing roadway to create a four-lane divided section. Crawfordsville should be bypassed when a four-lane facility is constructed, and right-of-way should be purchased for a future interchange at the junction of Iowa 92.

Cost Estimate -

1. Two-lane reconstruction and rehabilitation programmed for
1990 and 1991

Reconstruction (U.S. 218)	\$4,198,000
Shouldering (U.S. 218)	598,000
Structures	702,000
Reconstruction (Iowa 92)	1,044,000
Right-of-Way	561,000
Total	<u>\$7,103,000</u>

2. Future Four-Lane (Future Programming) -

Add Two Additional Lanes	\$ 5,127,000
Crawfordsville Bypass	3,715,000
Right-of-Way for Bypass	488,000
Structure	710,000
Interchange	1,402,000
Total	<u>\$11,442,000</u>

Section 8: From 1.03± miles north of Ainsworth to Jct. Iowa 22.

Existing Facility - This section of highway was constructed on relocated alignment and was opened to traffic in 1985. This new 24-foot pavement has 10-foot stabilized shoulders with 6:1 foreslopes. Right-of-way was purchased for four lanes.

Summary - It is not anticipated that major construction will be needed on this section in the next 20 years. Future programming should include adding two lanes to create a four-lane facility.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
From 1.03 mile N of Ainsworth to Co. Rd. G-26	3,170	14	4,030	19
Co. Rd. G-26 to Iowa 22	3,380	13	4,280	18

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. It is approximately 12.52± miles in length.

Cost Estimate -

Probable Expansion to Four-
Lane (Future Programming) -

Grade and Pave	\$ 8,890,000
Structures	<u>2,200,000</u>
Total	\$11,090,000

Section 9: From Jct. Iowa 22 to Interstate 80.

Existing Facility - This section of highway was constructed on relocated alignment and was open to traffic prior to 1985. This new four-lane facility has two 24-foot pavements with 10-foot stabilized outside shoulders and six-foot stabilized inside shoulders. It has 6:1 foreslopes.

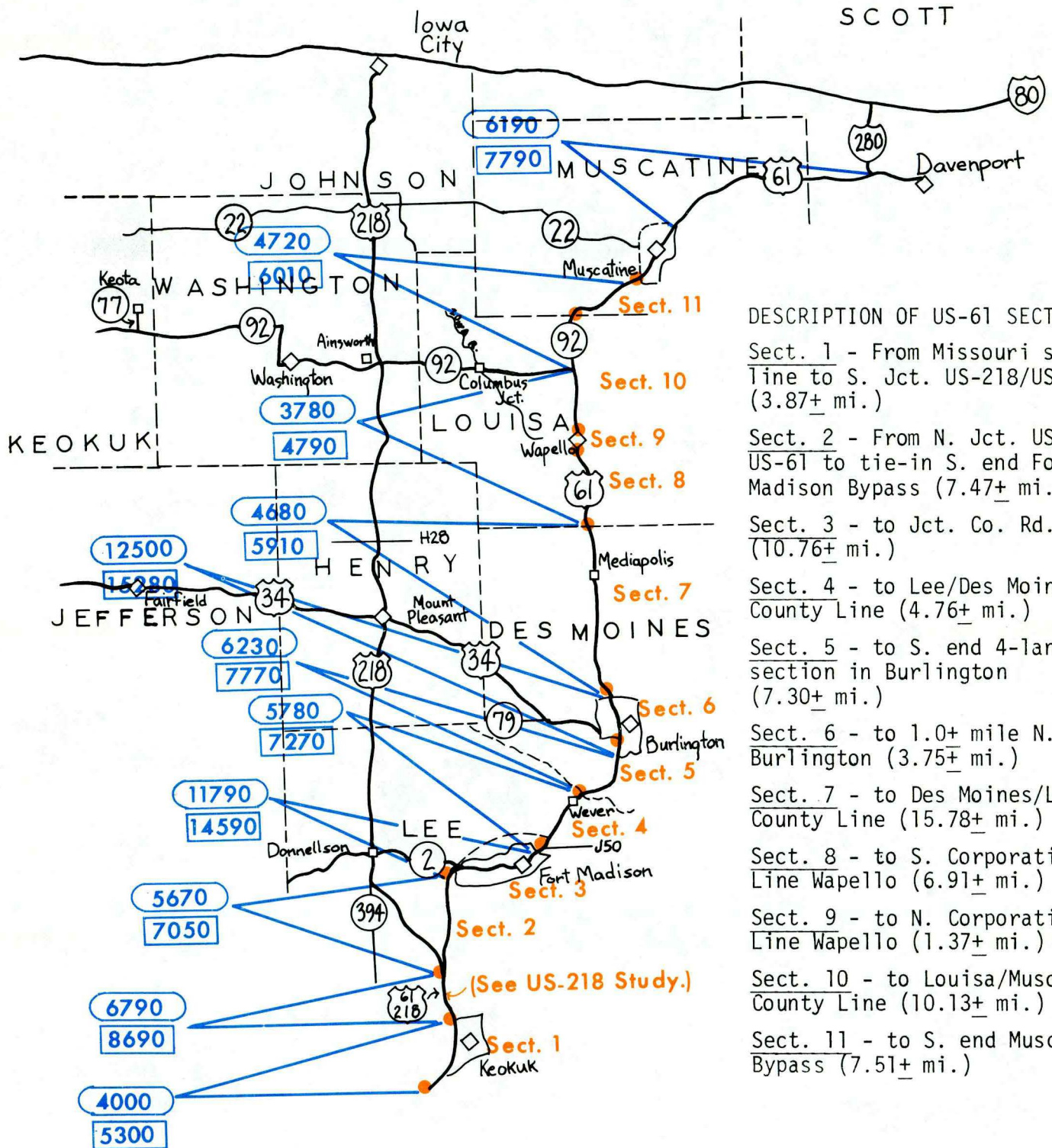
It is not anticipated that major construction will be needed on this section in the next 20 years.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Jct. of Iowa 22 to Co. Rd. F-62	3,850	13	4,880	18
Co. Rd. F-62 to Local Road Interchange	4,670	13	5,920	18
Local Road Interchange to Iowa 1	3,990	12	5,030	17
Iowa 1 to Melrose Avenue	7,610	12	9,400	15
Melrose Avenue to Jct. I-80	9,000	12	11,080	15

Highway Classification and Ratings - U.S. 218 is functionally classified 'freeway - expressway' and is a service level 'B' road. It is approximately 17.4± miles in length.

U.S. 61 STUDY



DESCRIPTION OF US-61 SECTIONS

- Sect. 1 - From Missouri state line to S. Jct. US-218/US-61 (3.87+ mi.)
- Sect. 2 - From N. Jct. US-218/US-61 to tie-in S. end Fort Madison Bypass (7.47+ mi.)
- Sect. 3 - to Jct. Co. Rd. J50 (10.76+ mi.)
- Sect. 4 - to Lee/Des Moines County Line (4.76+ mi.)
- Sect. 5 - to S. end 4-lane section in Burlington (7.30+ mi.)
- Sect. 6 - to 1.0+ mile N. of Burlington (3.75+ mi.)
- Sect. 7 - to Des Moines/Louisa County Line (15.78+ mi.)
- Sect. 8 - to S. Corporation Line Wapello (6.91+ mi.)
- Sect. 9 - to N. Corporation Line Wapello (1.37+ mi.)
- Sect. 10 - to Louisa/Muscatine County Line (10.13+ mi.)
- Sect. 11 - to S. end Muscatine Bypass (7.51+ mi.)

FORECAST TRAFFIC

1988

2008

U.S. 61 Study
General Discussion

This section of U.S. 61 extends from the Missouri State Line northerly to the south end of the four-lane section in Muscatine. The approved Highway System Plan indicates that U.S. 61 from the Missouri State Line to the south end of the existing four-lane in Burlington be constructed as a four-lane facility. The current Project Improvement Program lists the following portions of this section for four-lane construction.

<u>Section No.</u>	<u>Construction Type</u>	<u>Construction Year</u>
1	Bridge over Des Moines River	1988
U.S. 218	Right of Way Grade & Pave	1987 1988 and 1989
4	Right of Way Grade & Pave	1986 and 1987 1989 and 1990
5	Right of Way Grade & Pave	1990 Beyond 1991

The remaining sections of roadway should be included in future programming for four-lane construction. These sections are as follows:

<u>Section No.</u>	<u>Location</u>
1	From Junction of U.S. 136 to the South Junction with U.S. 218
2	From the North Junction of U.S. 218 to the Junction with Iowa 2
3	Fort Madison Bypass

From the end of the four-lane at the north edge of Burlington, northerly to the Louisa County line, future programming should include rehabilitation of the existing two-lane highway. From the Des Moines/Louisa County line to the Louisa/Muscatine County line, the Current Project Improvement Program schedules rehabilitation of the existing two-lane facility with the purchase of right-of-way in 1990 and construction beyond 1991. Both of these sections should be designed to allow future long-range development to a four-lane facility. The section of U.S. 61 from the Des Moines County line to the south end of the existing four-lane in Muscatine should be programmed for rehabilitation of a two-lane facility with provisions for expansion to four lanes from the intersection of Iowa 92 northerly. It is noted the section from the Louisa County line northerly is programmed for shoulder repair in 1987.

Section 1: From Missouri State Line to South Jct. U.S. 218/U.S. 61.

Existing Facility - This section of U.S. 61 has 24-foot pavement with 10-foot granular shoulders and 3:1 foreslopes. There is one major structure, that being the Des Moines River Bridge, a 625'x19.5' steel high truss constructed in 1934. Asphaltic concrete resurfacing of the entire section was completed in 1982.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 4,000 and 5,300 vehicles per day (VPD) respectively with 28 percent and 35 percent trucks.

Highway Classification and Ratings - U.S. 61 in this area is functionally classified 'freeway-expressway' and is a service level 'B' road. The 3.87± miles of roadway included in Section 1 presently carries sufficiency ratings of 51/Tolerable to 93/Excellent and a matrix rating of 5.67.

Accident History - The accident history for the years 1979-83 shows a total of 37 accidents. This total includes one fatality, 16 personal injury accidents, and 20 property damage accidents. The accident rate of 158 accidents per hundred million vehicle miles (HMVM) is higher than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of highway was resurfaced in 1982 and will provide lower maintenance costs and improved rideability for the next 10± years. The 1986 Project Improvement Program schedules the replacement of the bridge over the Des Moines River in 1988 and reconstruction of U.S. 218 from the south junction of U.S. 61 to the north junction of U.S. 61 in 1988 and 1989. Both of these improvements will be four-lane facilities. Future programming should include development of the section south of Ft. Madison (Section 2) into a four-lane divided highway by adding two additional lanes to the existing facility. In this area, both U.S. 61 and U.S. 218 are functionally classified as Freeway, and are included in the approved System Plan for four-lane development. Consideration should be given to the purchase of right-of-way for a future interchange at the south junction of U.S. 61 and U.S. 218.

Estimated Costs (Future Programming) -

1. Add Two Lanes for Four-Lane Facility

Grade & Pave	\$2,516,000
Right of Way	387,000
Total	<u>\$2,903,000</u>

2. Interchange - South Jct. of U.S. 61 and U.S. 218

Grade & Pave	\$ 650,000
Right of Way	125,000
Structures	864,000
Total	<u>\$1,639,000</u>

Section 2: From North Jct. U.S. 218/US 61 to tie-in near South end of Ft. Madison Bypass.

Existing Facility - This section of highway is 24-foot pavement with 10-foot granular shoulders and 3:1 foreslopes. Major structures, year constructed and year repaired are as follows:

<u>Structure Size and Type</u>	<u>Year Constructed</u>	<u>Year Repaired</u>
224'x27.9' Concrete Slab	1958	--
479'x27.9' Steel Beam	1958	1983
210'x28' Prestressed Beam	1958	1984
386'x27.9' Concrete T-Beam	1958	1982 (floor)
169'x27.9' Prestressed Beam	1958	1985

There are four vertical curves of 55 mph or under design speed located within Section 2.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 5,670 and 7,050 VPD respectively with 15 percent and 18 percent trucks.

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 7.47± miles of roadway included in Section 2 presently carries sufficiency ratings of 28 to 42 (Poor) and a matrix rating of 4.99.

Accident History - The accident history for the years 1979-83 shows a total of 147 accidents. This total includes four fatalities, 38 personal injury accidents, and 105 property damage accidents. The accident rate of 206 accidents per HMVM is considerably higher than the statewide average rate for rural primary highways of 130 HMVM for the same time period.

Summary - This section of U.S. 61 has traffic of 5,670 VPD for the year 1988 and 7,050 VPD for the year 2008. The sufficiency ratings are 28 to 42 which is considered poor. This section of highway is included in the approved Highway System Plan for four-lane development. Future programming should include constructing two lanes adjacent to the existing facility to provide four lanes with an interchange at the north junction of U.S. 61 and U.S. 218. It is anticipated the three railroad overpasses on the existing roadway, which have 50 mph design speed, will remain in service.

Estimated Costs (Future Programming) -

1. Add Two Lanes for Four-Lane Facility

Grade & Pave	\$4,856,000
Right of Way	747,000
Structures	2,664,000
Total	<u>\$8,267,000</u>

2. Expansion to Four Lanes

Grade & Pave	\$ 650,000
Right of Way	50,000
Structure	864,000
Total	<u>\$1,564,000</u>

Section 3: From tie-in at South end Ft. Madison Bypass to Jct. Co. Rd. J50.

Existing Facility - Pavement width on this 10.76± miles of roadway ranges from 24 feet to 49 feet. The only major structure is a 70'x48.1' concrete slab bridge over Dry Creek constructed in 1915 and widened in 1969. It has a deck repair scheduled for 1986. Highway improvement projects accomplished in recent years on this section are as follows:

<u>Year</u>	<u>Improvement</u>	<u>Location</u>
1983	Widen & Resurface	From just W of W Jct. Iowa 2/ U.S. 61 E to 41st St. in Ft. Madison
1983	PCC Pave & ACC Resurface	From 41st St. E to 10th St. in Ft. Madison
1984	ACC Resurfacing	From 10th St. in Ft. Madison E & N to 2.19 miles
1985	68'-2.5"x48' CC Slab Bridge	In Ft. Madison

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section 3 to WCL Ft. Madison (2.77 mi.)	5,670	15%	7,050	18%
WCL Ft. Madison to NCL Ft. Madison (4.57 mi.)	11,790	11%	14,590	14%
NCL Ft. Madison to Co. Rd. J50 (3.42 mi.)	5,780	14%	7,270	19%

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 10.76± miles of roadway included in Section 3 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 3 to W Jct. Iowa 2 (1.41 mi.)	26-28/Poor	4.99
W Jct. Iowa 2 to WCL Ft. Madison (1.36 mi.)	80/Good	4.99
WCL Ft. Madison to NCL Ft. Madison (4.57 mi.)	61-95/Tolerable to Excellent	--
NCL Ft. Madison to UAL Ft. Madison (0.34 mi.)	67/Fair	5.00
UAL Ft. Madison to Co. Rd. J50 (3.08 mi.)	16/Poor	4.83

Summary - This section of U.S. 61 extends from the curve at the southwest edge of Ft. Madison to the junction of county road J-50 northeast of town. It passes through light industrial and extensive commercial and residential areas. Through traffic is subject to interrupted traffic flow due to many intersecting streets and entrances. The traffic through Ft. Madison on U.S. 61 is 11,790 VPD for the year 1988 and 14,590 VPD for the year 2008. Adequate service for the through traffic will require future programming of a four-lane bypass of Ft. Madison with interchanges at both the southwest and northeast corners of town. (See bypass section.) This section of highway is included in the approved Highway System Plan for four-lane development. The City and County will be requested to accept jurisdiction of the old highway when the bypass is complete.

Estimated Costs (Future Programming) -

1. Ft. Madison Bypass

Grade & Pave	\$13,849,000
Right of Way	2,300,000
Structures	778,000
Total	<u>\$16,927,000</u>

2. Interchange SW of Town

Grade & Pave	\$ 750,000
Right of Way	200,000
Structure	864,000
Total	<u>\$1,814,000</u>

3. Interchange NE of Town

Grade & Pave	\$ 750,000
Right of Way	50,000
Structure	864,000
Total	<u>\$1,664,000</u>

Section 4: From Jct. Co. Rd. J50 to Lee/Des Moines County Line.

Existing Facility - Pavement width on this highway section is 24 feet with 3-foot shoulders. The only major structure is a 203'x30' steel beam bridge which was built in 1966. The only improvement completed on this section in recent years consisted of a 1.44-mile ACC resurfacing project in 1981 beginning approximately one mile north of Co. Rd. J50 and extending northeasterly.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 5,780 and 7,270 VPD respectively with 14 percent and 19 percent trucks.

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 4.76± miles of roadway included in Section 4 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 4 to Jct. Iowa 16 (4.09 mi.)	16/Poor	4.83
Jct. Iowa 16 to Des Moines Co. Line (.67 mi.)	64/Tolerable	4.83

Summary - This section of highway is listed in the 1986 Project Improvement Program for reconstruction to a four-lane facility in 1989 and 1990. The project extends from the end of the 49-foot curb section at the north edge of Ft. Madison

to the Des Moines County line. There will be a bypass of Wever. This section of highway is included in the approved Highway System Plan for four-lane development.

Estimated Costs (1986 Program) -

Grade & Pave	\$6,457,000
Right of Way	1,785,000
Total	<u>\$8,242,000</u>

Section 5: From Lee/Des Moines County Line to South end of four-lane section in Burlington.

Existing Facility - This section of highway has 24-foot pavement with 3-foot and 10-foot shoulders. Major structures are as follows:

<u>Structure Size and Type</u>	<u>Year Constructed</u>
690'x44.3' Steel Beam	1970
80'x30' Steel Girder	1927
154'x28' Steel Beam	1956

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 6,230 and 7,770 VPD respectively with 14 percent and 17 percent trucks.

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 7.30± miles of roadway included in Section 5 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 5 to S UAL Burlington (5.05 mi.)	20-32/Poor	4.33
S UAL Burlington to S end 4-lane in Burlington (2.25 mi.)	34/Poor	5.00

Summary - This section of highway is listed in the 1986 Project Improvement Program for reconstruction to a four-lane facility. The purchase of right of way is scheduled

for the year 1990 and construction is scheduled beyond 1991.
This section of highway is included in the approved Highway
System Plan for four-lane development.

Estimated Costs (Revised Costs) -

Grade & Pave	\$6,300,000
Right of Way	1,100,000
Structures	2,200,000
Total	<u>\$9,600,000</u>

Section 6: From South end of four-lane in Burlington to 1.0± mile North of Burlington.

Existing Facility - Pavement through this section is four-lane. Major structures are as follows:

<u>Structure Size and Type</u>	<u>Year Constructed</u>
256'x28' Prestressed Beam	1973
188'x28' Prestressed Beam	1977
193'x28' Prestressed Beam	1977

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section 6 to NCL Burlington (2.75 mi.)	12,500	8%	15,280	11%
NCL Burlington to 1.0 mi. N Burlington (1.0 mi.)	4,680	14%	5,910	18%

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 3.75± miles of roadway included in Section 6 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 6 to SCL Burlington (.36 mi.)	99/Excellent	4.45
SCL Burlington to NCL Burlington (.20 mi.)	95/Excellent	--
NCL Burlington to SCL Burlington (.52 mi.)	99/Excellent	4.45
SCL Burlington to NCL Burlington (1.67 mi.)	86-96/Good to Excellent	--
NCL Burlington to N UAL Burlington (.60 mi.)	99/Excellent	4.45
N UAL Burlington to 1.0 mi. N of Burlington (.40 mi.)	58/Tolerable	4.45

Summary - This section of U.S. 61 is a four-lane facility that extends through the City of Burlington. It will provide adequate service for the projected traffic. Surface repair should be programmed in the next 10 to 15 years.

Estimated Costs (Future Programming) -

Surface Repair = \$196,000

Section 7: From 1.0 mi. North of Burlington to the Des Moines/Louisa County Line.

Existing Facility - This section of highway has 24-foot pavement with 10-foot granular shoulders and 3:1 foreslopes. There is a .28-mile segment within Mediapolis which is 48-foot wide. Major structures located in this section include a 243'x30' steel beam bridge over the Flint River constructed in 1966 and a 36'x43.8' steel beam bridge over a branch of Smith Creek constructed in 1927. The latter of these bridges was widened in 1957 and underwent structural repairs in 1983. Other improvements completed on U.S. 61 in this vicinity in recent years include ACC resurfacing of the entire 15.78±-mile section in 1984.

Crest vertical curves in rural areas with design speed below 55 mph are as follows:

<u>Design Speed of Crest Vertical Curves mph</u>	<u>Number of Crest Vertical Curves No.</u>
under 40	4
40 to 45	3
45 to 50	5
50 to 55	7
Total under 55 mph	<u>19</u>

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 4,680 and 5,910 VPD respectively with 14 percent and 18 percent trucks.

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 15.78± miles of roadway included in Section 7 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 7 to SCL Mediapolis (10.61 mi.)	58/Tolerable	4.45
SCL to NCL Mediapolis (1.00 mi.)	43-96/Poor to Excellent	--
NCL Mediapolis to Louisa Co. Line (4.17 mi.)	75/Fair	5.11

Accident History - For the purposes of compiling accident statistics, the south end of Section 7 was extended south 1.0± mile and begins at the NCL of Burlington. Accident statistics for the years 1979-83 shows a total of 145 accidents. This total involved two fatalities, 40 personal injury accidents, and 103 property damage accidents. The five-year accident rate of 121 accidents per HMVM is lower than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of U.S. 61 has traffic of 4,680 VPD for the year 1988 and 5,910 VPD for the year 2008. The sufficiency ratings in the rural areas are 58 and 75 which is considered tolerable to fair. It has 10-foot shoulders and was resurfaced in 1984. This will reduce maintenance costs and improve rideability for the next 10 to 15 years. It should be noted, however, there are four crest vertical curves under 40 mph design speed and eight between 40 and 50 mph

design speed in the rural areas. Correction of these deficiencies would result in reconstruction of approximately one-third of the length of the entire section. Future programming should include rehabilitation of this facility as a two-lane roadway with long-range programming for four-lane by the addition of two additional lanes and the bypass of Mediapolis.

Estimated Cost (1986) -

1. Rehabilitate Two-Lane Facility (Future Programming)

Grade & Pave	\$3,420,000
Shoulder Repair	204,000
Right of Way	268,000
Structures	100,000
Total	<u>\$3,992,000</u>

2. Expand to Four-Lane (Long-Range Programming)

Grade & Pave	\$12,954,000
Right of Way	1,870,000
Structures	630,000
Total	<u>\$15,454,000</u>

Sections 8, 9 and 10: From Des Moines/Louisa County Line to the Louisa/
Muscatine County Line.

Existing Facility - These sections of highway have 24-foot pavement. Shoulder widths are 10 feet between the Des Moines County Line and Iowa 78. They are 3 feet from Iowa 78 to the North Corporation Line of Wapello and 4 feet to the Muscatine County Line. There are short sections of 10-foot shoulder at the junction of Iowa 92 and at the railroad separation just south of the Muscatine County Line.

Major structures are as follows:

<u>Structure Size and Type</u>	<u>Year Constructed</u>
66'x30' Conc. Slab	1956
120'x44' Conc. Slab	1985
266'x44' Conc. Slab	1985
130'x44' Conc. Slab	1985
130'x44' Conc. Slab	1985
130'x44' Conc. Slab	1985
302'x44' Conc. Slab	1985
1,043'x44' Steel Beam	1978
180'x44' Conc. Slab	1977

Crest vertical curves in rural areas with design speed below 55 mph are as follows:

Design Speed of Crest Vertical Curves mph	Number of Crest Vertical Curves No.
20 to 25	1
25 to 30	0
30 to 35	0
35 to 40	3
40 to 45	3
45 to 50	8
50 to 55	6
Total under 55 mph	<u>21</u>

Traffic Estimate - The 1988 and 2008 average daily traffic volumes from the Des Moines County line to Iowa 92 are 3,780 and 4,790 VPD respectively with 18 percent and 23 percent trucks. From Iowa 92 to the Muscatine County line the 1988 and 2008 average daily traffic is 4,720 and 6,010 VPD respectively with 18 percent and 23 percent trucks.

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 18.41± miles of roadway included in Sections 8, 9 and 10 presently carries sufficiency and matrix ratings as follows:

Section 8

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 8 to Jct. Iowa 78 (1.02 mi.)	53/Tolerable	5.28
Jct. Iowa 78 to SCL Wapello (5.89 mi.)	80/Good	5.28

Section 9

The 1.37± miles of roadway included in Section 9 presently carries sufficiency ratings ranging from 90-92/Excellent.

Section 10

The 10.13± miles of roadway included in Section 10 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 10 to S Jct. Iowa 92 (6.03 mi.)	67/Fair	5.28
S Jct. Iowa 92 to Muscatine Co. Line (4.10 mi.)	29-32/Poor	5.40

Accident History

Section 8

Section 8 comprises approximately the south half of the statistical segment which extends from the Des Moines/Louisa County Line north to the SCL of Wapello. No accident statistics were figured within the town of Wapello. For the rural area the accident history for the years 1979-83 shows a total of 111 accidents. This total includes four fatalities, 29 personal injury accidents, and 78 property damage accidents. The five-year accident rate of 149 accidents per HMVM is greater than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Section 9

In the City of Wapello - NA.

Section 10

The 10.13± miles included in Section 10 are divided at the junction with Iowa 92 by adjoining statistical segments as outlined below:

<u>Description of Statistical Segment</u>	<u>Accidents F-PI-PD-Total</u>	<u>1979-83 5-Year Rate</u>
Louisa/Des Moines Co. Line to Jct. Iowa 92 (14.31 mi.)	4 29 78 -111	149
S Jct. Iowa 92 to S end Muscatine Bypass (13.17 mi.)	3 63 95 -161	151

The five-year accident rate for the above sections is well above the statewide average rate for rural primary highways of 130 accidents per HMVM for the same time period.

Summary - Section 8, 9, and 10 are currently listed in the 1986 Project Improvement Program for the purchase of right of way in 1990 and shoulder widening, ditching, and selected reconstruction areas beyond the year 1991 for a two-lane facility. This will provide a roadway that will adequately serve the traveling public for the next 20 years, however, future programming should include provisions for a four-lane highway from the junction of Iowa 92 northerly to the City of Muscatine. This should be accomplished by constructing two additional lanes adjacent to the existing roadbed. Long-range planning should include expanding the existing highway to a four-lane facility with a bypass of Mediapolis.

Estimated Costs -

1. Rehabilitate Two Lanes (Beyond the Year 1991)

Grade & Pave	\$5,638,000
Right of Way	839,000
Structures	496,000
Total	<u>\$6,973,000</u>

2. Expand to Four-Lane Iowa 92 to Muscatine County Line
(Future Programming)

Grade & Pave	\$2,805,000
Right of Way	425,000
Structures	324,000
Total	<u>\$3,554,000</u>

3. Expand to Four-Lane Des Moines County Line to Jct. Iowa 92
(Long-Range Programming)

Grade & Pave	\$12,477,000
Right of Way	1,716,000
Structures	4,005,000
Total	<u>\$18,198,000</u>

Section 11: From Louisa/Muscatine County Line to South End Muscatine Bypass.

Existing Facility - This section of highway has 24-foot pavement with three-foot shoulders and 3:1 foreslopes. There is one major structure, a 113'x44' concrete slab bridge over Muscatine Creek, constructed in 1976. There are two vertical curves of 55 mph or under design speed located within this section. Improvements accomplished in recent years on U.S. 61 in this vicinity include 1.64 miles of ACC resurfacing beginning at the Louisa/Muscatine County line and extending northerly.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for the section are 4,720 and 6,010 VPD respectively with 19 percent and 24 percent trucks.

Highway Classification and Ratings - U.S. 61 is functionally classified 'arterial' and is a service level 'B' road. The 7.51± miles of roadway included in Section 11 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 11 to S UAL Muscatine (3.03 mi.)	33/Poor	4.83
S UAL Muscatine to WCL Muscatine (.57 mi.)	61/Tolerable	4.83
WCL Muscatine to S End Muscatine Bypass (3.91 mi.)	42/Poor	--

Accident History - Section 11 comprises approximately the northeastern two-thirds of the statistical segment which extends from the South Jct. Iowa 92 north and east approximately 11.5 miles to the South end of the Muscatine Bypass. No accident statistics were figured within the corporate limits of Muscatine. The accident history for the years 1979-83 reflects a total of 161 accidents. This total includes three fatalities, 63 personal injury accidents, and 95 property damage accidents. The five-year accident rate of 151 accidents per HMVM is higher than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of U.S. 61 has traffic of 4,720 VPD for the year 1988 and 6,010 VPD for the year 2008. Approximately 7 miles of the highway has a sufficiency rating of 33 to 42 which is considered poor. The shoulders are narrow, and accident rates are above the state average. Future programming should include rehabilitation of the existing two-lane roadway which includes shoulder widening and one area of reconstruction just north of the Louisa County line. Consideration should also be given to constructing a four-lane highway by the addition of two new lanes adjacent to the existing roadbed.

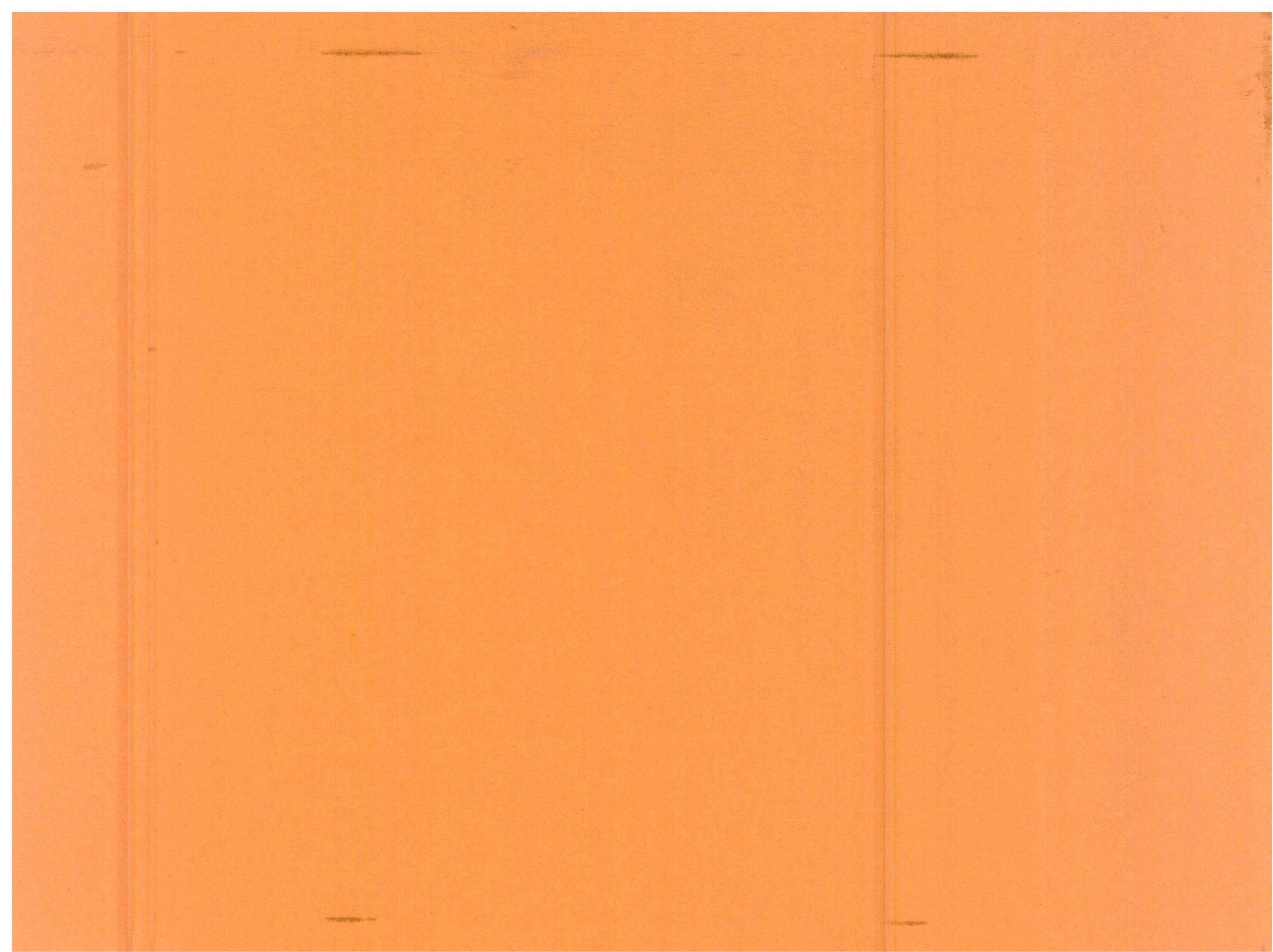
Estimated Costs -

1. Rehabilitate Existing Highway (Two Lanes) (Future Programming)

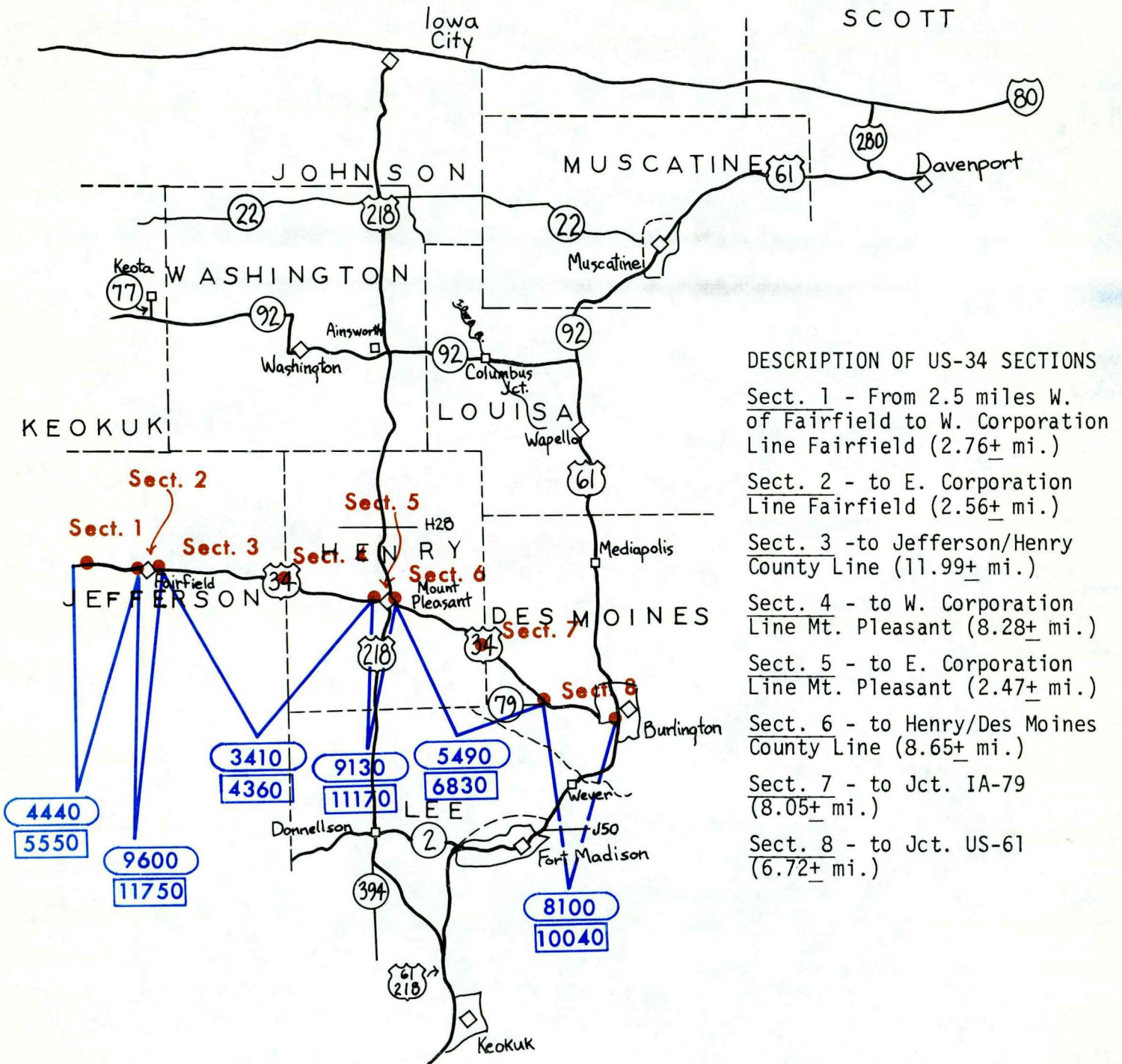
Resurface	\$ 420,000
Grade & Pave	1,981,000
Right of Way	376,000
Structures	238,000
Total	<u>\$3,015,000</u>

2. Add Two Lanes for Four-Lane Facility (Future Programming)

Grade & Pave	\$4,957,000
Right of Way	751,000
Structures	238,000
Total	<u>\$5,946,000</u>



U.S. 34 STUDY



FORECAST TRAFFIC

1988
2008

U.S. 34 Study
General Discussion

The section of U.S. 34 included in this report extends from 2.5 miles west of Fairfield in Jefferson County to the junction with U.S. 61 in Des Moines County.

The section of highway west of Fairfield was resurfaced in 1984 which will reduce maintenance costs and improve rideability for the next 10 to 15 years, however, it should be noted that sufficiency ratings are 39 in the rural area and 16 from the West Urban Area limits to the West Corporation Line. This warrants reconstruction, but traffic congestion would be extensive through Fairfield. In lieu of reconstruction on the existing alignment, future programming should consider a bypass of Fairfield and transfer of jurisdiction of the old highway to the county and city.

The Fairfield bypass could be constructed as a two-lane facility on a four-lane right-of-way. This could be expanded to four lanes at a later date.

The section of highway from Fairfield to Mt. Pleasant will function adequately as a two-lane facility for the next 20 years. It has projected traffic of 3,410 VPD for 1988 and 4,360 VPD for 2008.

The City of Mt. Pleasant also has traffic volumes that will warrant a future bypass. A bypass at Mt. Pleasant should be constructed as a two-lane facility on four-lane right-of-way. It should be noted, however, that a four-lane facility should be constructed from the junction of U.S. 218 easterly to connect to existing U.S. 34. This would provide continuity for a four-lane facility from I-80 to Mt. Pleasant to Burlington.

U.S. 34 from Mt. Pleasant to the junction of Iowa 79 at Middletown shows traffic of 5,490 VPD for 1988 and 6,830 VPD for 2008. The sufficiency ratings in the rural areas range from 31 to 47 which is considered poor. Future programming should consider four-lane reconstruction in this area. The cities of New London and Danville will experience severe alteration of their commercial operations and property ownership if a four-lane facility with access control is constructed through town. Bypasses of these towns should be evaluated if a four-lane facility is constructed.

The existing four-lane section from Middletown to the junction with U.S. 61 should be adequate for the next 20 years. An interchange should be constructed at the junction of U.S. 34 and Mt. Pleasant Street (old U.S. 34).

Section 1: From 2.5± miles West of Fairfield to the WCL of Fairfield.

Existing Facility - This section of U.S. 34 has 24-foot pavement with 10-foot shoulders and 3:1 foreslopes. Major structures in this section include a 91'x28.2' concrete slab bridge over Shirtz Creek constructed in 1951 and a 68'x28.1' steel girder bridge over Mitchell Creek constructed in 1919, which was widened in 1951 and repaired in 1984. There are two vertical curves of 55 mph or under design speed located within this section. Improvements on this section of U.S. 34 in recent years include ACC resurfacing of the entire section in 1984.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 4,440 and 5,550 vehicles per day (VPD) respectively with 14 percent and 18 percent trucks.

Highway Classification and Ratings - U.S. 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 2.76± miles of roadway included in Section 1 presently carries sufficiency ratings ranging from 16 to 39/poor and a matrix rating of 4.51.

Accident History - For the five-year period 1979-83 there were no vehicle accidents recorded for the three-mile section immediately west of the WCL of Fairfield.

Summary - This section of U.S. 34 was resurfaced in 1984 and will provide adequate service for 10 to 15 years. It has a low sufficiency rating (16 to 39), however, and should be considered for reconstruction or relocation. If a bypass of Fairfield is constructed the traffic on this section of highway will be greatly reduced and it can be transferred to county jurisdiction.

Estimated Cost -

From 2.5 miles west of Fairfield to the west corporation line of Fairfield.

Future cost of rehabilitation prior to possible transfer of jurisdiction. (See Bypass Section).

Surface rehabilitation and patching	\$ 84,000
Structure paint and repair handrails	40,000
	<u>\$124,000</u>

Section 2: From WCL of Fairfield to ECL Fairfield.

Existing Facility - Pavement width on this section of U.S. 34 consists of 1.9 miles of 49-foot back-to-back curb section and 0.6 miles of 45-foot back-to-back curb section. There are no major structures on this section of U.S. 34. Improvements on U.S. 34 in this vicinity in recent years include 0.2-mile of reconstruction near the WCL of Fairfield, which was accomplished in 1984.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 9,600 and 11,750 VPD respectively with 8 percent and 10 percent trucks.

Highway Classification and Ratings - U.S. 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 2.56± miles of roadway included in Section 2 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 2 to ECL Fairfield (.03 mi.)	67/Fair	--
ECL Fairfield to WCL Fairfield (.64 mi.)	71-96/Fair to Excellent	5.00
WCL Fairfield to 9th St. (.27 mi.)	61/Tolerable	--
9th St. to W Jct. Iowa 1 (2nd St.) (.48 mi.)	24-46/Poor	--
W Jct. Iowa 1 to E Jct. Iowa 1 (.07 mi.)	63/Tolerable	--
E Jct. Iowa 1 to ECL Fairfield (1.07 mi.)	90-94/Excellent	--

Summary - U.S. 34 in Fairfield passes through extensive commercial development as well as residential areas. Development of this roadway into a four-lane facility with uninter-

rupted traffic flow characteristics is not feasible. Future programming should include a bypass of Fairfield consisting of a two-lane highway on a four-lane right-of-way. Jurisdiction of the old highway should be transferred to the City and the County.

Estimated Cost (Future Programming) -

1. Fairfield Bypass Alt. #1 (See Bypass Section)

Grade & Pave	\$ 6,763,000
Structures	1,683,000
Right-of-Way	2,120,000
Total	<u>\$10,566,000</u>

2. Fairfield Bypass Alt. #2 (See Bypass Section)

Grade & Pave	\$10,017,000
Structures	1,683,000
Right-of-Way	1,985,000
Total	<u>\$13,685,000</u>

3. There are approximately 2.56 miles of U.S. 34 to transfer jurisdiction to the City of Fairfield.

Surface Repair - \$208,000

4. Costs of transfer of jurisdiction of portions of U.S. 34 to Jefferson County are included in Section 3.

Section 3: From ECL Fairfield to Jefferson/Henry County Line

Existing Facility - This section of U.S. 34 has 24-foot pavement with 10-foot shoulders and 3:1 foreslopes. It was constructed in 1954. Major structures on this section include a 102'x27.8' concrete slab bridge over West Crow Creek constructed in 1954 and a 44'x30.1' concrete T-beam bridge over East Crow Creek also constructed in 1954. The East Crow Creek bridge was repaired in 1984. There are three vertical curves of 55 mph or under design speed located within this section.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 3,410 and 4,360 VPD respectively with 16 percent and 22 percent trucks.

Highway Classification and Ratings - Iowa 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 11.99± miles of roadway included in Section 3 currently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 3 to E UAL Fairfield (.10 mi.)	68/Fair	--
E UAL Fairfield to W Line Sec. 32-T72N-R8W (6.75 mi.)	70/Fair	5.00
W Line Sec. 32-T72N-R8W to Henry Co. Line (5.14 mi.)	76/Fair	5.85

Accident History - See U.S. 34 Study, Section 4, Accident History.

Summary - This section of highway will adequately serve the traveling public as a two-lane facility for the next 20 years. Future programming should include resurfacing and shoulder repair and a total of 3,500 feet of reconstruction to eliminate substandard geometrics at two locations. The bridges should be widened to 44 feet.

Estimated Costs (Future Programming) -

1. Rehabilitate two-lane highway.

Resurface and Shoulder Repair	\$ 861,000
Reconstruction	421,000
Right of Way	33,000
Structures	118,000
Total	<u>\$1,433,000</u>

2. If the Fairfield bypass is constructed approximately 2 miles will be transferred to the county for Alternate 1 and approximately 9 miles for Alternate 2.

Rehabilitation costs prior to transfer of jurisdiction could be as follows for 1½ inches of AC.

Alt. #1 - \$ 76,000
Alt. #2 - \$342,000

Section 4: From Jefferson/Henry County Line to WCL of Mt. Pleasant

Existing Facility - Pavement width on this section of U.S. 34 is primarily 24-foot, with the exception of .42 mile near the WCL Mt. Pleasant which is 52-foot. The shoulders are 10 feet wide and foreslopes are 3:1. Major structures on this section include a 528'x27.9' steel beam bridge over the Skunk River constructed in 1957 and a 418'x28' steel beam bridge over Big Creek also constructed in 1957. The latter of these two structures underwent repairs in 1985. There are no crest vertical curves of 55 mph or under design speed located within this section of U.S. 34.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 3,410 and 4,360 VPD respectively with 16 percent and 22 percent trucks.

Highway Classification and Ratings - Iowa 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 8.28± miles of roadway included in Section 4 currently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 4 to NR W½ Cor. Section 12 T71N-R7W (5.31 mi.)	72/Fair	5.28
NR W½ Cor. Section 12-T71N-R7W to UAL Mt. Pleasant (2.55 mi.)	36/Poor	5.28
UAL Mt. Pleasant to WCL Mt. Pleasant (.42 mi.)	82/Good	5.80

Accident History - The accident history discussed here covers that portion of U.S. 34 extending from the ECL of Fairfield easterly to the WCL of Mt. Pleasant, incorporating both Sections 3 and 4 of this U.S. 34 study. This accident history, for the years 1979-83, shows a total of 93 accidents. This total includes two fatalities, 32 personal injury accidents, and 59 property damage accidents. The five-year accident rate of 91 accidents per hundred million vehicle miles (HMVM) is lower than the statewide average rate of 130/HMVM for rural primary highways for the same time period.

Summary - This section of highway will adequately serve the traveling public as a two-lane facility in the next 20 years. Future programming should include resurfacing and shoulder repair and a bypass of Mt. Pleasant. Jurisdiction of the rural section of highway west of town should be transferred to the County. Bridges should be widened to 44 feet.

Estimated Costs (Future Programming) -

1. Resurfacing and shoulder repair

Resurfacing and etc. - \$630,000

2. Surface repair and etc. prior to transfer of jurisdiction
approximately 1 mile.

Patch, Resurface, Paint - \$45,000

3. Widen Bridges

Structures - \$757,000

Section 5: From WCL of Mt. Pleasant to ECL Mt. Pleasant.

Existing Facility - Pavement width on this section of U.S. 34 consists of 45-foot curb section, 49-foot curb section, 53-foot curb section, and 48-foot rural section. No major structures are located on this section. Improvements in recent years on U.S. 34 in this vicinity include 1.15± miles of ACC resurfacing accomplished in 1984 in Mt. Pleasant beginning approximately 1.15 miles west of the Jct. of U.S. 218 and extending easterly.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 9,130 and 11,170 VPD respectively with 6 percent and 8 percent trucks.

Highway Classification and Ratings - Iowa 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 2.47± miles of roadway included in Section 5 presently carries sufficiency ratings ranging from 67/Fair to 97/Excellent, and a matrix rating of 5.80.

Summary - The section of U.S. 34 through Mt. Pleasant passes through extensive commercial development as well as residential areas. Resurfacing of this section will be required in the next 10 to 15 years. Development of this roadway into a four-lane facility with uninterrupted traffic flow is not possible. Future programming should include a bypass of

Mt. Pleasant and jurisdiction of the old highway transferred to the City. Interchanges should be studied at the junctions of U.S. 218 and relocated U.S. 34 and at the East junction U.S. 34 and relocated U.S. 34.

Estimated Costs (Future Programming See Bypass Section) -

1. Surface repair and regulatory painting through Mt. Pleasant prior to transfer of jurisdiction = \$180,000.
2. Mt. Pleasant bypass Section 1 west of U.S. 218 - (two-lane construction, four-lane right-of-way).

Grade & Pave	\$3,030,000
Right-of-Way	875,000
Structures	990,000
Total	<u>\$4,895,000</u>

3. Mt. Pleasant bypass Section 2 east of U.S. 218 (four-lane construction, four-lane right-of-way).

Grade & Pave	\$4,800,000
Right-of-Way	840,000
Structures	1,110,000
Total	<u>\$6,750,000</u>

4. Interchange at Jct. of U.S. 218 and relocated U.S. 34.

Grade, Pave, Structures, ROW - \$2,500,000

5. Interchange at East Jct. U.S. 34 and Relocated U.S. 34.

Grade, Pave, Structures, ROW - \$2,500,000

Section 6: From ECL Mt. Pleasant to Henry/Des Moines County Line.

Existing Facility - Pavement width on this section of U.S. 34 is 24 feet wide. It has 10-foot shoulders and 3:1 foreslopes. No major structures are located on this segment. There are four vertical curves of 55 mph or under design speed located within this section. Improvements in recent years in this vicinity on U.S. 34 include 6.13± miles of ACC resurfacing accomplished in 1981 on the segment from Mt. Pleasant east to New London.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 5,490 and 6,830 VPD respectively with 11 percent and 15 percent trucks.

Highway Classification and Ratings - Iowa 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 8.65± miles of roadway included in Section 6 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 6 to E UAL Mt. Pleasant (.22 mi.)	94/Excellent	5.80
E UAL Mt. Pleasant to WCL New London (6.00 mi.)	31/Poor	5.80
WCL to ECL New London (1.05 mi.)	40/Poor to 95/Excellent	--
ECL New London to Des Moines County Line (1.38 mi.)	47/Poor	5.80

Accident History - See U.S. 34 Study, Section 7, Accident History.

Summary - Recent resurfacing in 1981 has reduced maintenance and improved rideability on this section of highway. It should be noted, however, the projected traffic is 5,490 VPD in 1988 and 6,830 VPD in 2008. The sufficiency ratings in the rural areas are 31 and 47 which is considered poor. Future programming should be considered to improve sight distance conditions at two locations on the existing highway and construction of an additional two lanes along the south side to provide a four-lane divided facility. The City of New London should be bypassed to provide unrestricted traffic flow for the traveling public. Directing U.S. 34 traffic through town would cause severe alteration of commercial operations and property access. An estimate for directing U.S. 34 through town is provided for comparison only.

Estimated Costs (Future Programming) -

1. Four-lane with New London Bypass.

Resurfacing	\$ 180,000
Grade & Pave	8,916,000
Right-of-Way	580,000
Total	<u>\$9,676,000</u>

2. Cost for transfer of jurisdiction in New London.

Surface Repair and Misc. - \$90,000

3. Four-lane with U.S. 34 through New London.

Grade & Pave	\$7,104,000
Right of Way	<u>2,574,000</u>
Total	<u>\$9,678,000</u>

Section 7: From Henry/Des Moines County Line to Jct. Iowa 79.

Existing Facility - Pavement width on this section of U.S. 34 is 24 feet in the rural section and 45-foot back-of-curb to back-of-curb in Danville. The shoulders in the rural section are 10 feet wide with 3:1 foreslopes. No major structures are located on this segment. There are no crest vertical curves of 55 mph or under design speed in this section. Improvements on U.S. 34 in this vicinity include ACC resurfacing of the entire section in 1985.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 5,490 and 6,830 VPD respectively with 11 percent and 15 percent trucks.

Highway Classification and Ratings - Iowa 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 8.05± miles of roadway included in Section 7 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 7 to WCL Danville (3.86 mi.)	42/Poor	5.00
WCL Danville to begin 45-foot Section (.28 mi.)	54/Tolerable	--
Begin 45-foot Section to ECL Danville (.43 mi.)	95/Excellent	--
ECL Danville to WCL Middletown (3.24 mi.)	36/Poor	5.00
WCL Middletown to Jct. Iowa 79 (.24 mi.)	95/Excellent	--

Accident History - The accident history discussed here covers that portion of U.S. 34 extending from the ECL of Mt. Pleasant

to the beginning of the four-lane section east of Middletown, incorporating both Sections 6 and 7 of the U.S. 34 study. This accident history, for the years 1979-83, shows a total of 105 accidents. This total includes four fatalities, 45 personal injury accidents, and 56 property damage accidents. The five-year accident rate of 84 accidents per HMVM is lower than the statewide average rate of 130/HMVM for rural primary highways for the same time period.

Summary - Recent resurfacing in 1985 will reduce maintenance costs and improve rideability on this section of highway. It should be noted, however, the traffic is 5,490 VPD in 1988 and 6,830 VPD in 2008. The sufficiency ratings in the rural areas are 36 and 42, which is considered poor. Future programming should include expanding this facility to a four-lane divided section by constructing an additional two lanes along the south side of the existing roadway. The City of Danville will experience severe alteration of their commercial operations if a four-lane facility with access control is constructed through town. A bypass of Danville should be studied. Bypass Alt. #2 should be considered in lieu of Alt. #1 due to its shorter length and lower cost. An estimate for directing U.S. 34 through town is provided for information only.

Estimated Costs (Future Programming) -

1. Four-lane Danville bypass Alt. #1.

Grade & Pave	\$11,311,000
Right-of-Way	<u>1,858,000</u>
Total	\$13,169,000

Rehabilitation prior to transfer of jurisdiction will cost approximately \$162,000.

2. Four-lane Danville bypass Alt. #2.

Grade & Pave	\$7,953,000
Right-of-Way	<u>1,160,000</u>
Total	\$9,113,000

Rehabilitation prior to transfer of jurisdiction will cost approximately \$100,000.

Section 8: From Jct. Iowa 79 to Jct. U.S. 61.

Existing Facility - This section of U.S. 34 is a four-lane divided highway with 4-foot median in Middletown and a 32-foot median in the rural area.

There are no crest vertical curves of 55 mph or under design speed located within this section. Improvements on U.S. 34 in this vicinity in recent years include 2.96± miles of ACC resurfacing from Middletown easterly into West Burlington accomplished in 1985.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 8,100 and 10,040 VPD respectively with 12 percent and 16 percent trucks.

Highway Classification and Ratings - Iowa 34 is functionally classified 'freeway - expressway' and is a service level 'B' road. The 6.72± miles of roadway included in Section 8 presently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 8 to ECL Middletown (.48 mi.)	90/Excellent	--
ECL Middletown to WCL W Burlington (2.23 mi.)	88/Good	4.45
WCL W Burlington to W Jct. Iowa 406 (.24 mi.)	73/Fair	--
W Jct. Iowa 406 to ECL W Burlington (5.7 mi.)	92-99/Excellent	--
ECL W Burlington to WCL W Burlington (Jct. U.S. 61) (.24 mi.)	99/Excellent	4.45

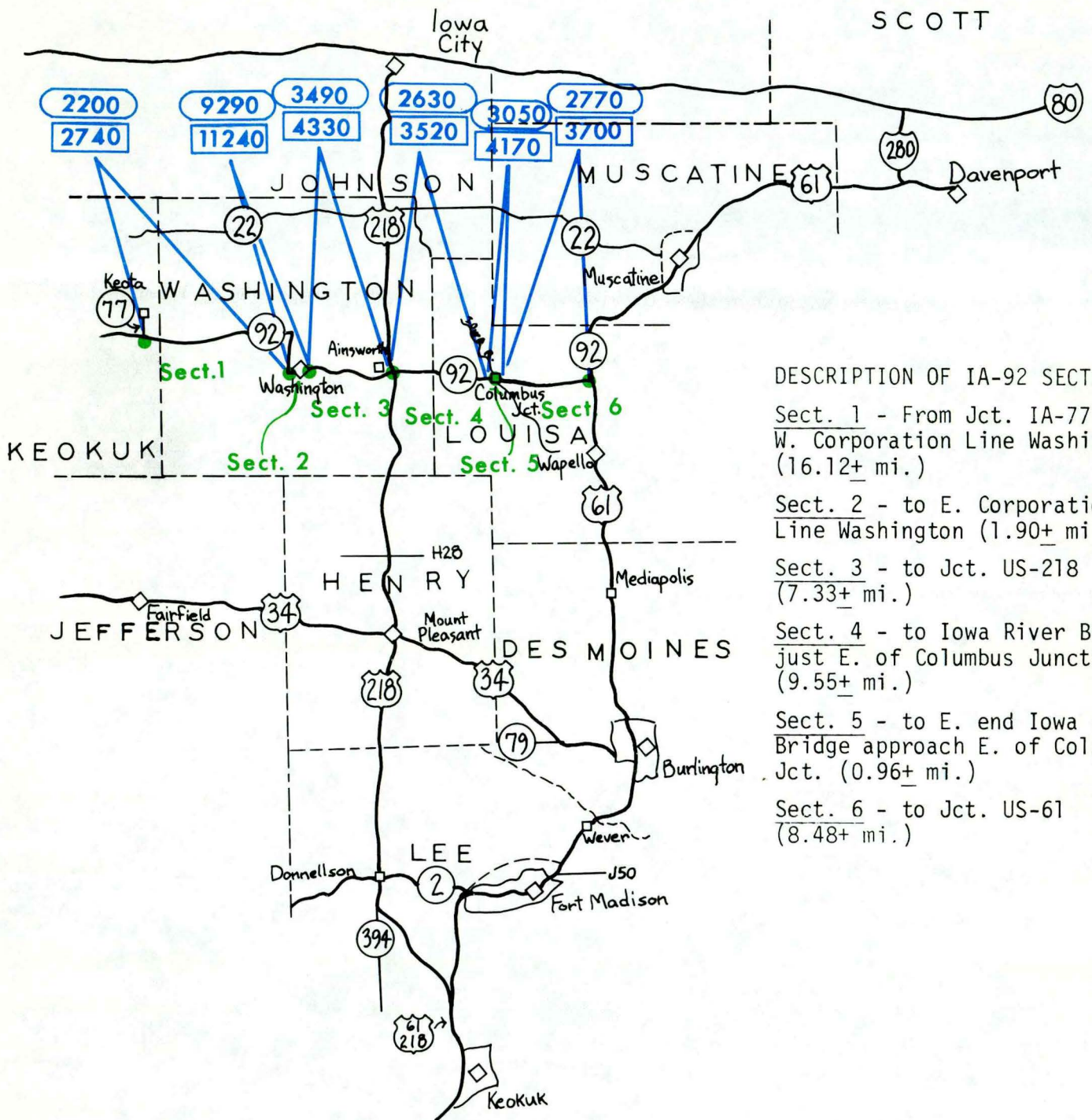
Accident History - The accident history for the years 1979-83 shows a total of 54 accidents. This total includes no fatalities, 13 personal injury accidents, and 41 property damage accidents. The accident rate of 76 accidents per HMVM is considerably lower than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - Recent resurfacing of this section of highway in 1985 will reduce maintenance costs and improve rideability for the next 10 to 15 years. The 1986 traffic is 8,100 VPD and 2008 traffic is 10,040 VPD. Sufficiency ratings are 73 to 99 which is considered fair to excellent. The existing four-lane section should provide adequate service for the next 20 years. It is believed, however, future programming should include the construction of an interchange at the junction of U.S. 34 and Mt. Pleasant Street.

Estimated Costs (Future Programming) -

<u>Interchange</u>	
Grade & Pave	\$ 638,000
Structures	804,000
Right-of-Way	<u>1,200,000</u>
Total	\$2,702,000

IOWA 92 STUDY



DESCRIPTION OF IA-92 SECTIONS

Sect. 1 - From Jct. IA-77 to W. Corporation Line Washington (16.12+ mi.)

Sect. 2 - to E. Corporation Line Washington (1.90+ mi.)

Sect. 3 - to Jct. US-218 (7.33+ mi.)

Sect. 4 - to Iowa River Bridge just E. of Columbus Junction (9.55+ mi.)

Sect. 5 - to E. end Iowa River Bridge approach E. of Columbus Jct. (0.96+ mi.)

Sect. 6 - to Jct. US-61 (8.48+ mi.)

FORECAST TRAFFIC

1988
2008

Iowa 92 Study
General Discussion

The segment of Iowa 92 included in this report extends from the junction of Iowa 77 in Keokuk County easterly to the junction with U.S. 61 in Louisa County.

The section from the junction of Iowa 77 to the West Corporation Line of Washington will provide adequate service as a two-lane facility for the next 20 years. Future programming for rehabilitation of the existing roadway should include limited reconstruction to correct sight distance deficiencies.

The section of Iowa 92 in the City of Washington is currently programmed for reconstruction in 1991.

Iowa 92 from the City of Washington to the City of Columbus Junction has 39 sight distance restrictions in approximately 17 miles. Reconstruction of this section should be considered for future programming.

In Columbus Junction, the bridge over Iowa 70 is programmed for replacement in 1989. It should be noted, however, the intersection of Iowa 92 and Iowa 70 is currently via a city street. Consideration should be given to programming reconstruction in Columbus Junction to improve Iowa 92 to a 31-foot urban section and improving the intersection with Iowa 70.

The Iowa River bridge and approaches were completed in 1985. The existing highway from the river easterly to the junction with U.S. 61 can be rehabilitated by reconstructing limited sight distance areas, surface repair, and shoulder widening.

Section 1: From Jct. Iowa 77 to WCL of Washington.

Existing Facility - This section of Iowa 92 has 24-foot pavement with 10-foot shoulders and 3:1 foreslopes. There is one major structure, a 212'x28' steel beam bridge over Crooked Creek constructed in 1940. There are four crest vertical curves of 55 mph or under design speed located within this section.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 2,200 and 2,740 vehicles per day (VPD) respectively with 15 percent and 19 percent trucks.

Highway Classification and Ratings - Iowa 92 is functionally classified 'arterial' and is a service level 'B' road. The 16.12± miles of roadway included in Section 1 currently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 1 to begin concrete section (.22 mi.)	94/Excellent	6.40
Begin concrete section to Washington Co. Line (.78 mi.)	79/Fair	6.80
Washington/Keokuk Co. Line to begin asphaltic section (4.24 mi.)	86/Good	6.60
Begin asphaltic section to Wellman Co. Rd. (W38) (1.84 mi.)	94/Excellent	6.60
Wellman Co. Rd. to N Jct. Iowa 1 (5.96 mi.)	84/Good	6.00
N Jct. Iowa 1 to S Jct. Iowa 1 (WCL Washington) (3.08 mi.)	38/Poor	5.33

Accident History - The accident history for the years 1979-83 shows a total of 27 accidents. This total includes one fatality, five personal injury accidents, and 21 property

damage accidents. The accident rate of 44 accidents per hundred million vehicle miles (HMVM) is considerably lower than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of highway has 2,200 VPD for the year 1988 and 2,740 VPD for the year 2008. The sufficiency ratings for the section between the junction with Iowa 77 and the north junction of Iowa 1 are 84 and 86, which is considered good. The sufficiency rating for the section between the north and south junctions of Iowa 1 is 38, which is considered poor. The entire section will provide adequate service as a two-lane facility, however, future programming should consider reconstruction at two locations to improve sight distance. Additional improvements should also include resurfacing and shoulder stabilization on the portions which are not reconstructed. The bridge over Crooked Creek is currently programmed for replacement in 1991. This should include one of the reconstruction areas mentioned above.

Estimated Costs (Future Programming) -

1. Replace Bridge and Reconstruction (Programmed 1991)

Grade & Pave	\$336,000
Right of Way	24,000
Structures	475,000
Total	<u>\$835,000</u>

2. Rehabilitate remaining roadway

Grade & Pave	\$1,097,000
Right of Way	86,000
Resurfacing	1,017,000
Shoulder Stab.	251,000
Total	<u>\$2,451,000</u>

Section 2: From WCL to ECL of Washington.

Existing Facility - The pavement width on this section of highway is as follows.

<u>Pavement Width</u>	<u>Type</u>	<u>Length Miles</u>
24*	Rural	0.25
35	Urban	0.13
40	Urban	0.50
45	Urban	1.02

* Has 6-foot shoulders.

Improvement projects accomplished in recent years include ACC resurfacing of Section 2 in 1984.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 9,290 and 11,240 VPD respectively with 6 percent and 8 percent trucks.

Highway Classification and Ratings - Iowa 92 is functionally classified 'arterial' and is a service level 'B' road. The 1.90± miles of roadway included in Section 2 presently carries sufficiency ratings ranging from 18/Poor to 75/Fair.

Summary - This section of roadway is through the City of Washington. The 1986 Project Improvement Program has included reconstruction of approximately 0.5 miles of this section in 1991. Subsequent discussions in regard to pavement width and

condition have increased the scope of this project to extend from the south intersection of Iowa 92 and 2nd Street to the East Corporation Line of town. This is a length of 1.536 miles. New construction will be a 49-foot curb section. It will replace old 35-foot and 40-foot curb sections and some 24-foot non-curbed pavement.

Estimated Costs (1991 Construction) -

Grade & Pave	\$2,955,000
Right of Way	<u>461,000</u>
Total	\$3,416,000

Section 3: From ECL Washington to Jct. U.S. 218.

Existing Facility - This section of highway has 24-foot pavement with 3-foot shoulders and 3:1 foreslopes. Major structures on this section include a 133'x44' concrete slab bridge which was constructed in 1967 and a 72'x29.9' concrete slab bridge constructed in 1927.

The following table lists the crest vertical curves that are substandard within this section of highway.

<u>Design Speed of Crest Vertical Curves mph</u>	<u>Number of Crest Vertical Curves No.</u>
under 40	7
40 to 45	7
45 to 50	4
50 to 55	5
Total under 55 mph	<u>23</u>

Improvements accomplished in recent years in this vicinity on Iowa 92 include ACC resurfacing of the entire section in 1984.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 3,490 and 4,330 VPD respectively with 13 percent and 16 percent trucks.

Highway Classification and Ratings - Iowa 92 is functionally classified 'arterial' and is a service level 'B' road. The

7.33± miles of roadway included in Section 3 currently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 3 to WCL Ainsworth (6.00 mi.)	30-35/Poor	4.85
WCL Ainsworth to ECL Ainsworth (.75 mi.)	67/Fair	--
ECL Ainsworth to Jct. U.S. 218 (.58 mi.)	25/Poor	4.85

Accident History - The accident history for the years 1979-83 shows a total of 58 accidents. This total includes two fatalities, nine personal injury accidents, and 47 property damage accidents. The accident rate of 184 accidents per HMVM is considerably higher than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of highway was resurfaced in 1984. This will reduce maintenance costs and improve rideability for the next 10 to 15 years, however, notice should be given to the poor geometrics (seven crest verticals under 40 mph) and poor sufficiency ratings (30 to 35) in the rural areas. This section also has a high accident rate. It is recommended this section of highway be programmed for two-lane reconstruction rather than shouldering as shown in the current Five-Year Program. Future programming should also include construction of an interchange at the junction with U.S. 218.

Estimated Costs -

1. Two-Lane Reconstruction

Grade & Pave	\$4,434,000
Right of Way	348,000
Structure	220,000
Total	<u>\$5,002,000</u>

2. Interchange at Jct. of U.S. 218 and Iowa 92 (Includes relocation of Iowa 92)

Grade & Pave	\$1,819,000
Right of Way	150,000
Structures	475,000
Total	<u>\$2,444,000</u>

Section 4: From Jct. U.S. 218 to Iowa River Bridge just East of Columbus Junction.

Existing Facility - Pavement width on this section of Iowa 92 is 24 feet with 4-foot shoulders. Major structures located in this section include a triple 10'x10' culvert and a 118'x40' prestressed beam bridge constructed in 1984 and a 472'x23.8' steel girder bridge constructed in 1935.

Crest vertical curves below 55 mph design speed on this section of highway are as follows:

<u>Design Speed of Crest Vertical Curves mph</u>	<u>Number of Crest Vertical Curves No.</u>
under 40	0
40 to 45	4
45 to 50	10
50 to 55	2
Total under 55 mph	<u>16</u>

Improvement projects in recent years on this section of Iowa 92 include ACC resurfacing of the entire section completed in 1985.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are as follows:

	<u>1988 ADT/% TRKS</u>		<u>2008 ADT/% TRKS</u>	
Begin Section to WCL Columbus Junction (8.97 mi.)	2,630	19%	3,520	25%
WCL Columbus Junction to Iowa River Bridge (.58 mi.)	3,050	18%	4,170	23%

Highway Classification and Ratings - Iowa 92 is functionally classified 'arterial' and is a service level 'B' road. The 9.55± miles of roadway included in Section 4 currently carries sufficiency and matrix ratings as follows:

	<u>Sufficiency</u>	<u>Matrix</u>
Begin Section 4 to Louisa Co. Line (2.77 mi.)	25/Poor	4.85
Washington/Louisa Co. Line to WCL Columbus Junction (6.20 mi.)	34/Poor	4.31
WCL Columbus Junction to Iowa River Bridge (.50 mi.)	33/Poor to 90/Excellent	--

Accident History - No accident statistics were figured for Iowa 92 within Columbus Junction. The accident history for the remainder of Section 4, for the years 1979-83, shows a total of 41 accidents. This total includes no fatalities, 12 personal injury accidents, and 29 property damage accidents. The five-year accident rate of 114 accidents per HMVM is lower

than the statewide average rate for rural primary highways of 130/HMVM for the same time period.

Summary - This section of highway was resurfaced in 1985 and major structures in the rural areas were replaced in 1984. The bridge over Iowa 70 in Columbus Junction is programmed for replacement in 1989. The traffic in the rural area is 2,630 VPD for the year 1988 and 3,520 VPD for the year 2008. In town the traffic is 3,050 VPD for the year 1988 and 4,170 VPD for the year 2008. This indicates a two-lane facility will be adequate for the next 20 years. It should be noted, however, the rural section has 16 crest vertical curves with design speed less than 55 mph, of which 14 are below 50 mph design speed. Sufficiency ratings are 25 to 34, which is considered poor. The 1986 Project Improvement Program lists this section for shoulder widening beyond 1991. It is recommended, however, this section be programmed for reconstruction. A 31-foot urban section should be included with the bridge replacement over Iowa 70 in Columbus Junction.

Estimated Costs (Future Programming) -

1. Replace Bridge over Iowa 70 in Columbus Junction (Programmed for 1989)

Structures	\$ 849,000
Right of Way	255,000
Total	<u>\$1,104,000</u>

2. Reconstruct Urban Section in Town

Grade & Pave	\$803,000
Right of Way	<u>50,000</u>
Total	\$853,000

3. Reconstruct Rural Section (Future Programming)

Grade & Pave	\$5,672,000
Right of Way	<u>445,000</u>
Total	\$6,117,000

Section 5: Iowa River Bridge and approaches located just E of Columbus Junction.

Existing Facility - Section 5 consists of a newly constructed PPC Beam Bridge and approaches spanning the Iowa River just east of Columbus Junction. The new structure measures 1,447'x32'. The PCC pavement approaches extend approximately 0.35 mile west and 0.61 mile east of the river. This project was completed in 1984. The approaches have 24-foot pavement and 10-foot stabilized shoulders.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 2,770 and 3,700 VPD respectively with 19 percent and 25 percent trucks.

Highway Classification and Ratings - Iowa 92 is functionally classified 'arterial' and is a service level 'B' road.

Accident History - See Iowa 92, Section 6, Accident History.

Summary - This bridge and its approaches were constructed in 1984 and will require no further improvements in the next 20 years.

Section 6: From E end Iowa River Bridge approach E of Columbus Junction E to Jct. U.S. 61.

Existing Facility - With the exception of a .12-mile segment near the Jct. of U.S. 61 (24-foot), this section has a 24-foot pavement width and 4-foot shoulders. Major structures included in the section are outlined as follows:

<u>Structure Size and Type</u>	<u>Year Constructed</u>
73'x44' Concrete Slab	1976
70'x23.9' Steel Beam	1921
83'x44' Concrete Slab	1977

There are 4 crest vertical curves of 55 mph or under design speed located within this section, with none below 50 mph design speed. Improvements in this vicinity on Iowa 92 in recent years include ACC resurfacing of the entire section in 1985.

Traffic Estimate - The 1988 and 2008 average daily traffic volumes for this section are 2,770 and 3,700 VPD respectively with 19 percent and 25 percent trucks.

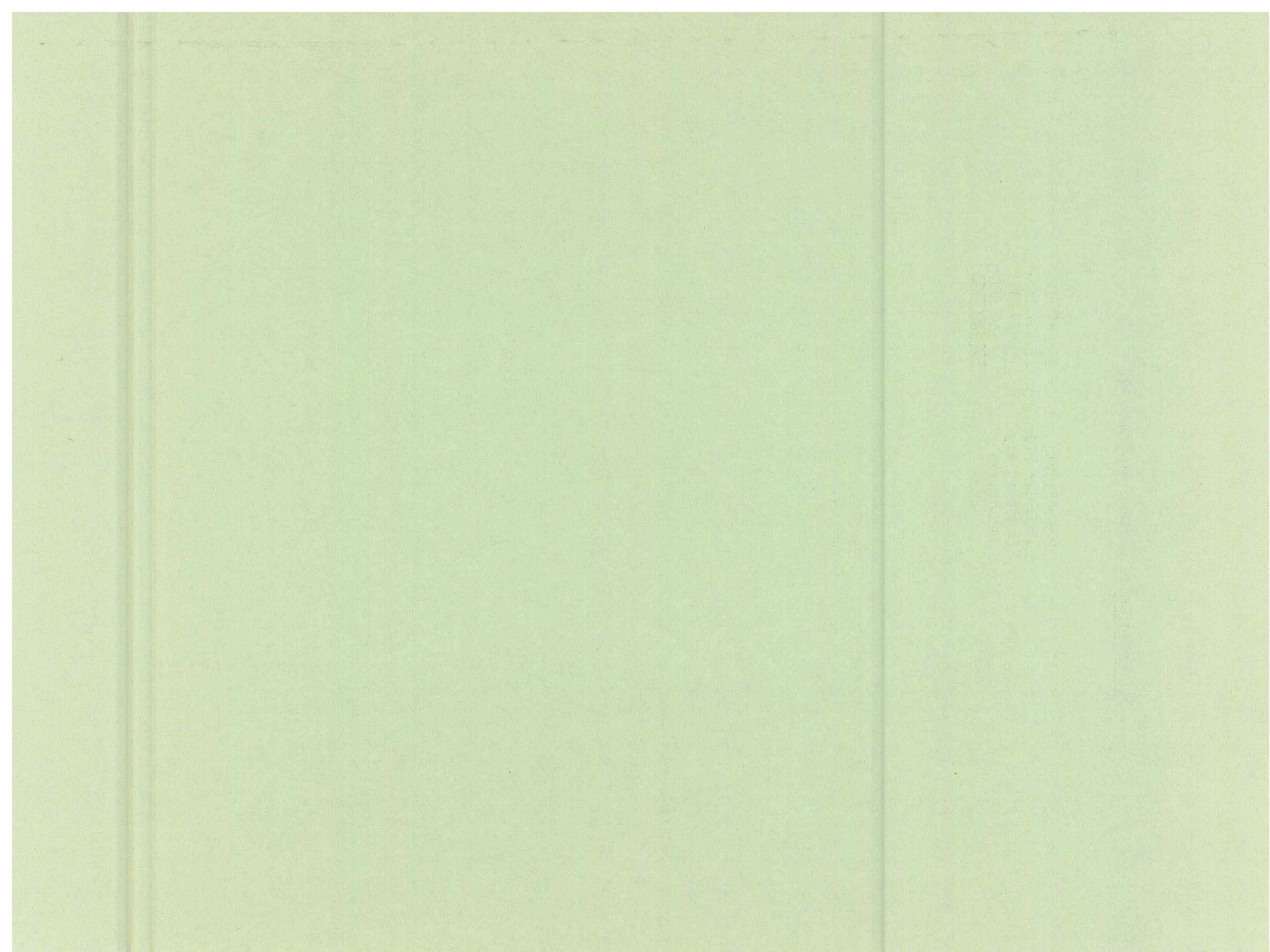
Highway Classification and Ratings - Iowa 92 is functionally classified 'arterial' and is a service level 'B' road. The 8.48± miles of roadway included in Section 6 currently carries a sufficiency rating of 34/Poor and a matrix rating of 3.93.

Accident History - The accident history discussed here covers that portion of Iowa 92 extending from the ECL Columbus Junction E to U.S. 61, incorporating both Sections 5 and 6 of this Iowa 92 study. This accident history, for the years 1979-83, shows a total of 48 accidents. This total includes no fatalities, 18 personal injury accidents, and 30 property damage accidents. The five-year accident rate of 119 accidents per HMVM is lower than the statewide average rate of 130/HMVM for rural primary highways for the same time period.

Summary - This section of highway was resurfaced in 1985. Two of the major structures were replaced in 1977 and a third is programmed for replacement in 1991. The 1988 traffic on this section is 2,770 VPD and the 2008 traffic is 3,700 VPD. A two-lane facility will provide adequate service on this section of roadway. It is noted that there are four crest vertical curves between 50 and 55 mph design speed, and the sufficiency rating is 34, which is considered poor. Reconstruction at the areas of poor sight distance, and resurfacing and shoulder widening and stabilization for the remainder of the project would improve the geometrics and sufficiency rating to acceptable levels. This work should be considered for future programming.

Estimated Costs (Future Programming) -

Resurfacing	\$ 564,000
Shoulder Widening	1,158,000
Right of Way	424,000
Structures	159,000
Total	<u>\$2,302,000</u>



POSSIBLE BYPASSES

In the review of future improvements of U.S. 34, U.S. 61, Iowa 92, and U.S. 218 in Southeast Iowa, it is apparent that bypasses of the following cities should be considered. Maps showing these proposals are included at the end of this section.

Cities on U.S. 34

1. Fairfield - The Fairfield bypass is shown on the approved Highway Systems Plan. Traffic volumes of 9,600 vpd for the year 1988 and 11,700 for the year 2008 indicate that traffic delays and operational problems will increase in the future and the purchase of additional right of way and access control through town is not feasible. Alignments both north and south of town were considered. The south alignment appears most feasible at this time due to water impoundments north of town. The south alignment has two alternates which should be compared during the location studies. A two-lane highway on four-lane right of way with access control should be considered as a first stage.
2. Mount Pleasant - The Mount Pleasant bypass is also shown on the approved Highway Systems Plan. Traffic volumes of 9,130 vpd for the year 1988 and 11,170 vpd for the year 2008 indicate that traffic delays and operational problems will increase in the future and the purchase of additional right of way and access control through town is not feasible. Alignments both north and south of town were considered.

The north alignment appears most feasible at this time due to the majority of the industrial development in this area. The portion of the proposed bypass west of U.S. 218 should be constructed as two-lane highway on a four-lane right of way. The portion east of U.S. 218 should be constructed as a four-lane facility. Interchanges should be considered at the junction of relocated U.S. 34 and U.S. 218 and at the east junction of relocated U.S. 34 and existing U.S. 34.

3. New London - The existing route of U.S. 34 currently passes through the Central Business District of New London. A four-lane facility with access control and no parking through this area would severely alter the commercial operations of the city. A bypass along the south edge of New London should be considered because of the Burlington Northern Railroad which is along the north side of U.S. 34.
4. Danville - The City of Danville does not have a Central Business District on U.S. 34 as there is in New London, however, the major commercial operations in Danville are located on the highway. During location studies, economic comparisons should be made for bypass Alternates 1, Alternate 2, and staying on the existing alignment through town.

Cities on U.S. 61

5. Fort Madison - U.S. 61 in Fort Madison passes through industrial, commercial, and residential areas. Development of the existing route into a four-lane facility with uninterrupted traffic flow, no parking,

and access control is not feasible. A bypass across the north edge of town should be considered with interchanges at the southwest and northeast corner of town. The alignment should pass north of the airport.

6. Weaver - The Weaver bypass is currently being designed and is scheduled for construction in 1989 and 1990.

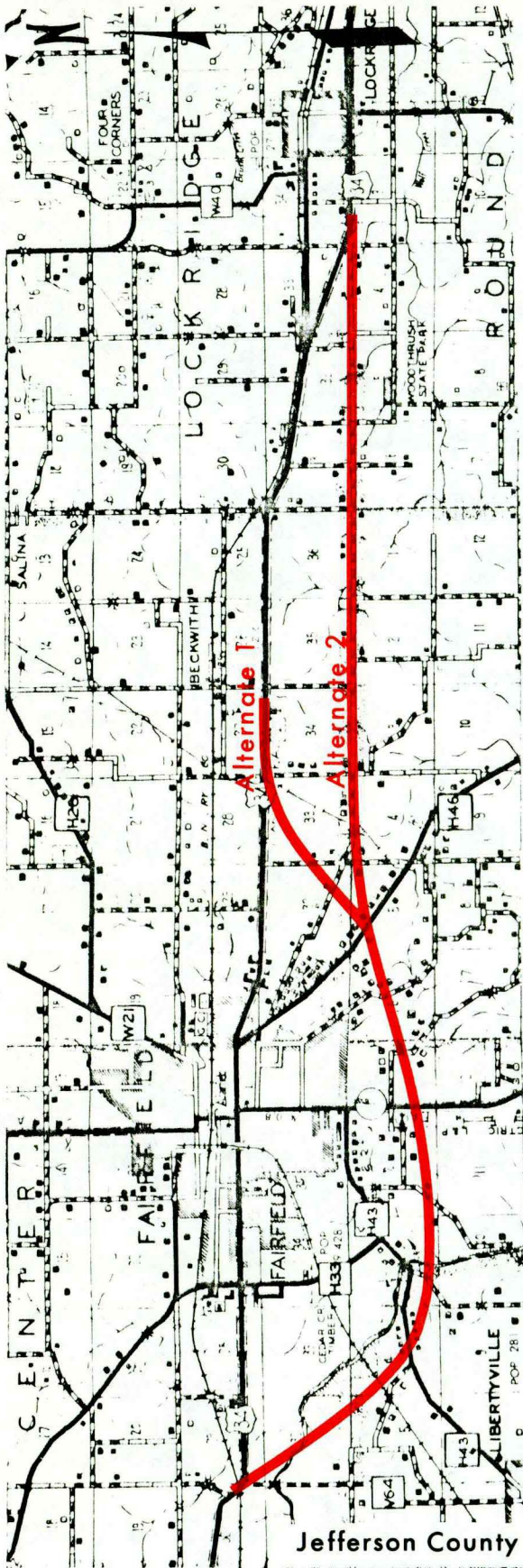
7. Wapello and Mediapolis - Both of these cities are on a section of U.S. 61 that will be adequately served by a two-lane facility for the next 15 to 20 years. This can be directed through both cities. Bypasses should be considered only as a part of a long-range four-lane development.

Cities on U.S. 218

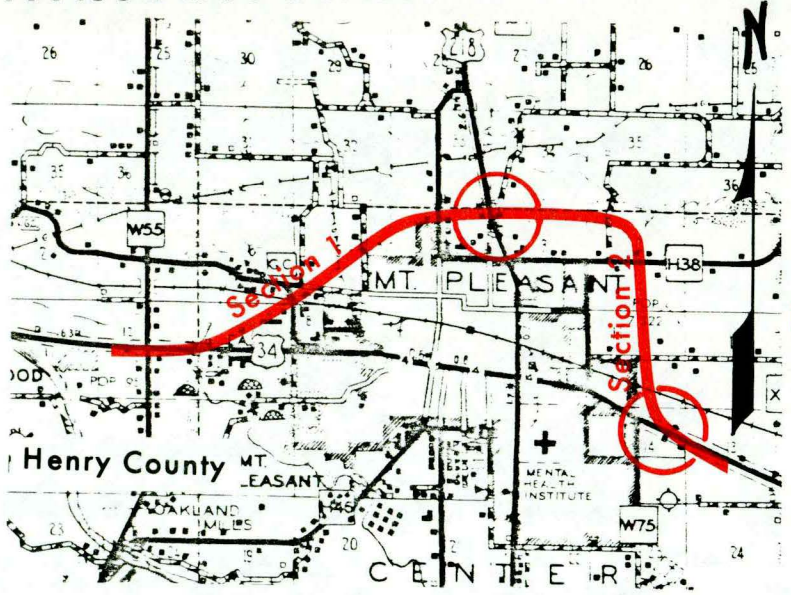
8. Olds and Swedesburg - U.S. 218 passes through the towns of Olds and Swedesburg and it will provide adequate service for a two-lane facility. When this section of highway is expanded to a four-lane facility a bypass of Olds and Swedesburg should be studied to avoid severe changes in their residential areas and commercial areas. One relocation for both towns should be considered in the location studies.

9. Crawfordsville - The existing route through Crawfordsville will also serve U.S. 218 as a two-lane facility. A bypass along the east edge of Crawfordsville should be considered when U.S. 218 is expanded to a four-lane facility.

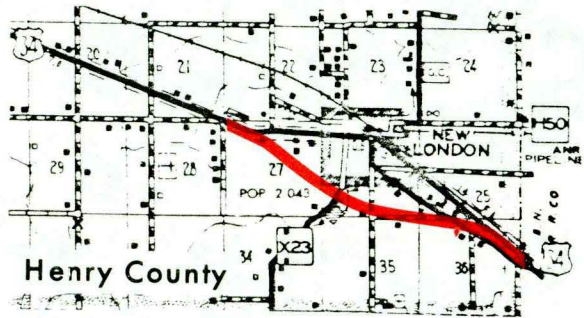
U.S.34 BYPASS PROPOSALS



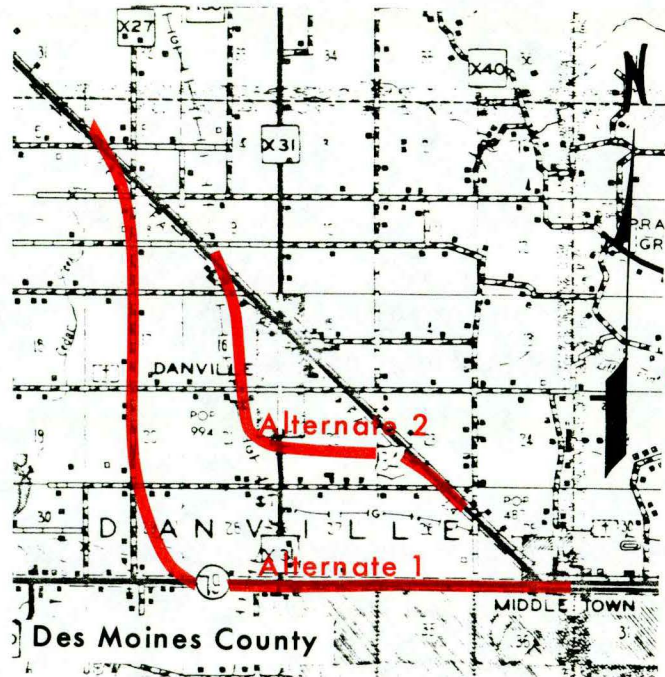
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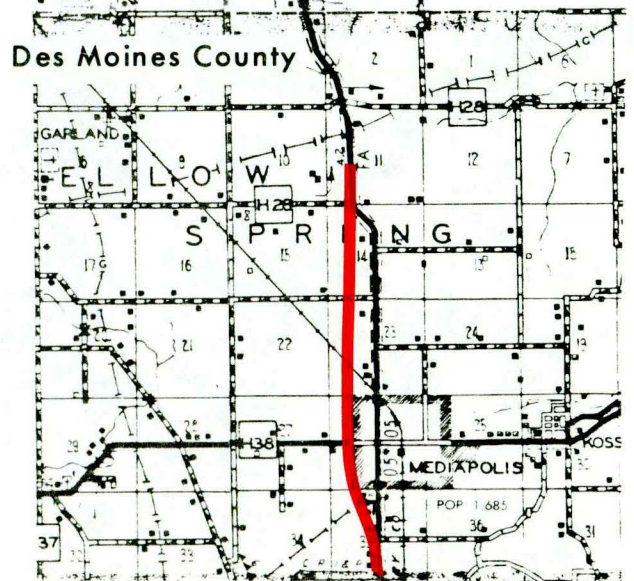
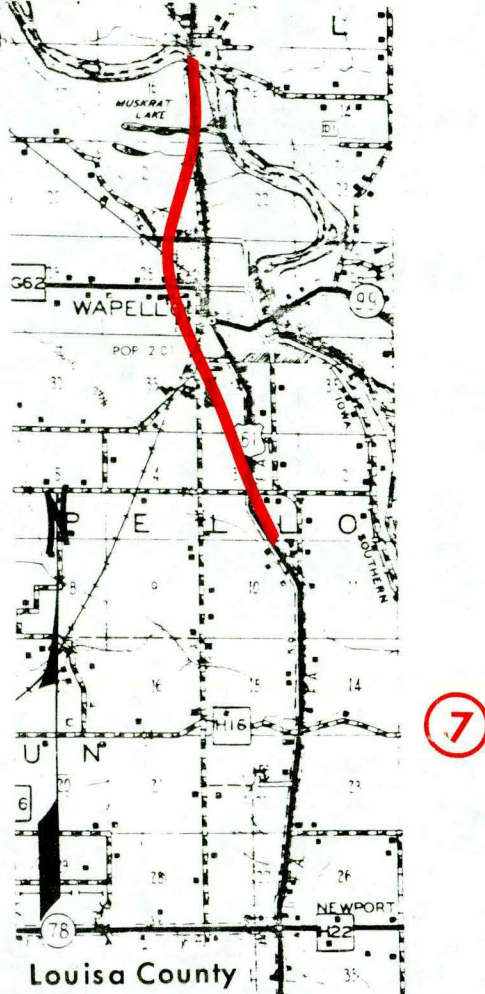
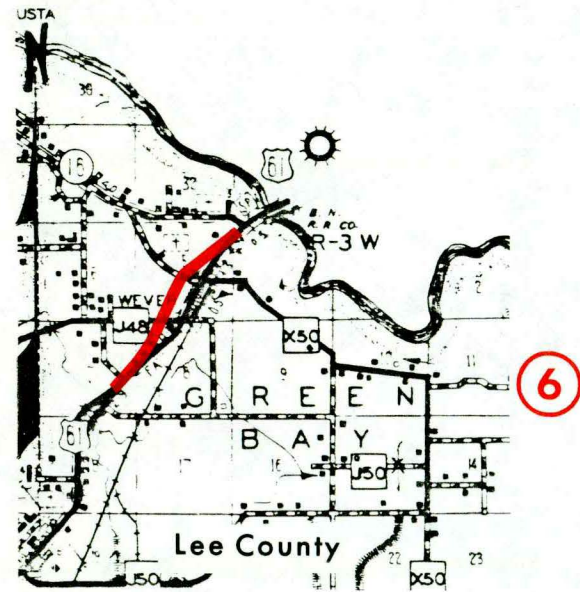
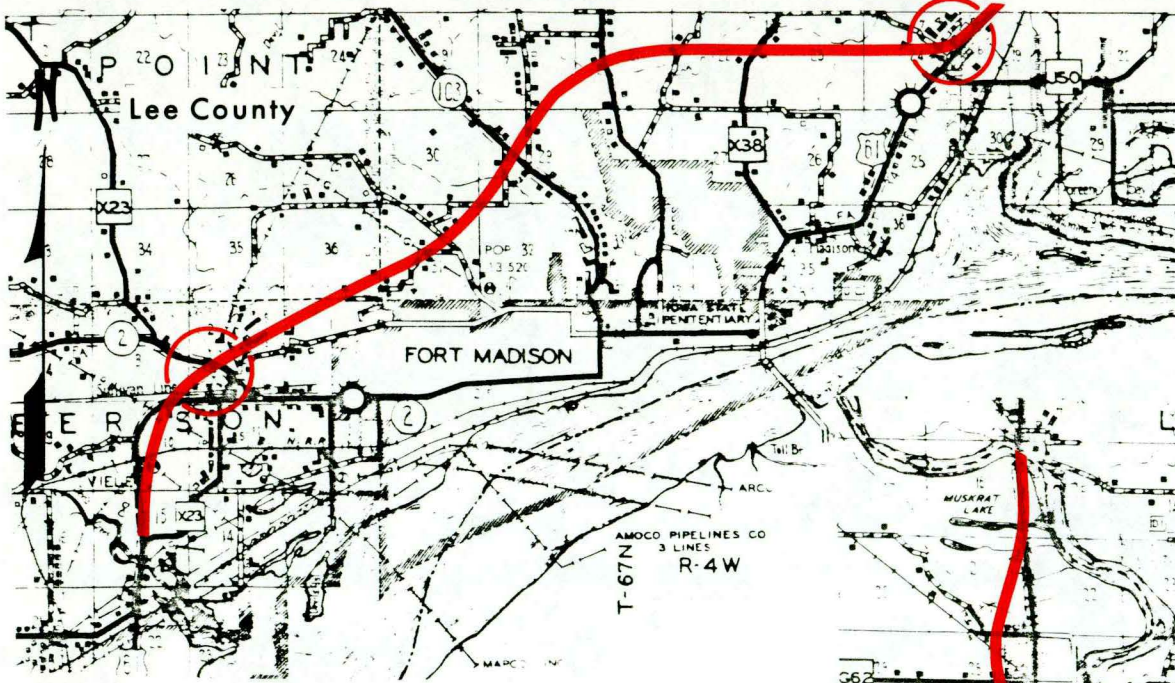


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LEGEND:

-  Bypass Route
-  Interchange

U.S. 01 BYPASS PROPOSALS

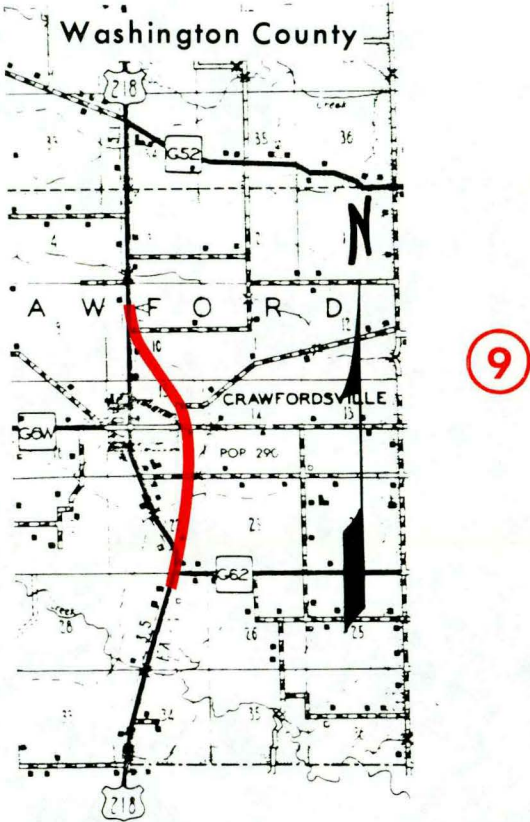
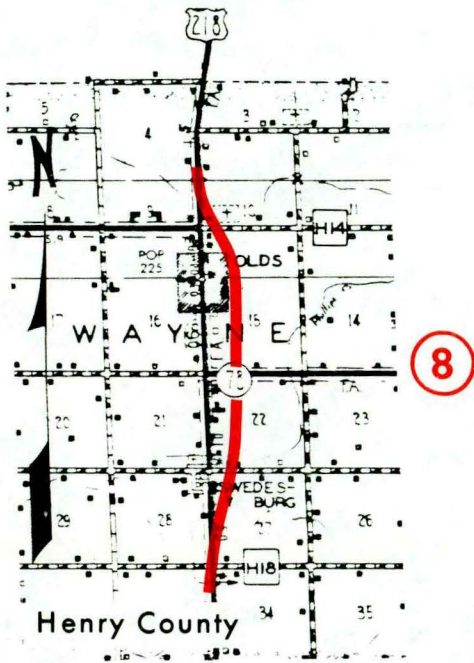


LEGEND:

 Bypass Route

 Interchange

U.S.218 BYPASS PROPOSALS



LEGEND:

 Bypass Route

 Interchange

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