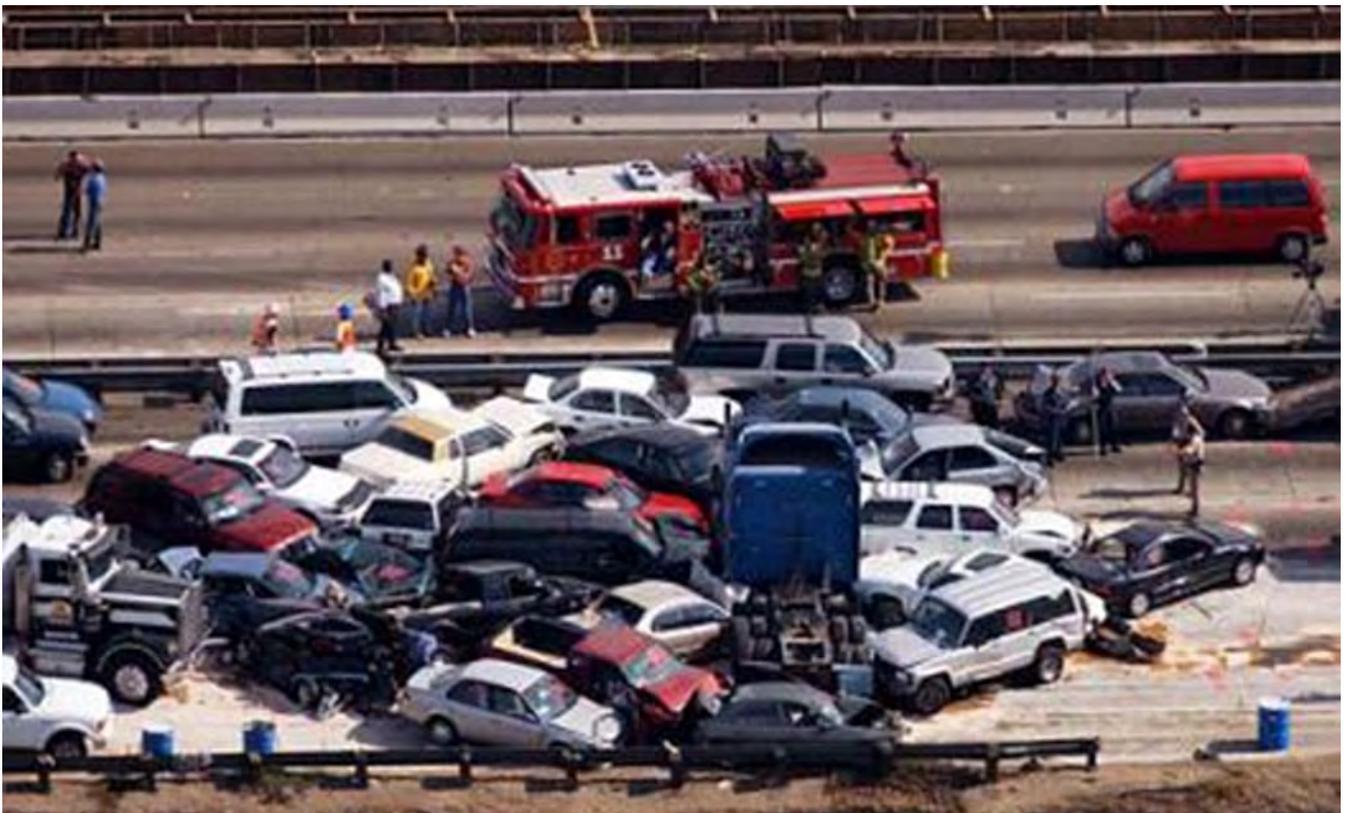


Traffic Safety Improvement Program

Applications for Site Specific

FY 2013



Received June 15, 2011

Applications for Site Specific FY 2012

Page No.	Requesting Agency	Description	\$\$\$	
			Project	Request
1	District #1	Pave 2' Shoulders and mill in Rumble Strips on both sides of IA 330 from North of U.S. 30 and West of Co. Rte. S-75 West of Marshalltown in Marshall County	\$36,750.00	\$36,750.00
9	District #1	Pave 4' Shoulders and Mill-in Rumble Strips on both sides of IA 210 at the curves west of Maxwell near 650th Ave. in Story County	\$62,512.50	\$62,512.50
17	District #1	Pave 4' Shoulders and Mill-in Rumble Strips on both sides of IA 415 North of Ankeny, near NW 44th Ave. in Polk County	\$87,512.50	\$87,512.50
25	City of Sioux City	Pave 4'-6' shoulders and mill-in Rumble Strips to both sides of the 5,280 feet of Outer Drive between Lewis Boulevard & U.S. Highway 75 on the northern boundary of Sioux City Iowa.	\$250,000.00	\$200,000.00
39	Marion County	Realign intersection to center of curve, add offset left turn, add rumbles to the curve, install destination light and install chevrons at the intersection of T-15 and G-46 North of Knoxville	\$398,477.00	\$398,477.00
75	Polk County	Install traffic signals and other intersection improvements at the Intersection of NW 26th & IA 415 West of Ankeny, Iowa	\$609,000.00	\$165,000.00
93	Polk County	Construction of Offset Right Turn Lane on SB IA 415 at the intersection of NW 84th Ave. and IA 415 West of Ankeny in Polk County	\$200,000.00	\$200,000.00
111	Pottawattamie County	Reconstruct the current "Y" intersection to a "T" intersection and install turn lanes at US 6 and County Route L-55 4 miles North of Treynor in Pottawattamie County	\$300,000.00	\$300,000.00
125	Audubon County	Install W4-4P signs at existing Stop Signs and add 3 sets of Transverse Rumbles at the North leg of the Intersection of F-24 and M-66 NW of Audubon, Iowa	\$22,656.00	\$22,656.00

Continued on next page

Applications for Site Specific (Continued)

Page No.	Requesting Agency	Description	\$\$\$	
			Project	Request
141	City of Ankeny	Widen North side of SE Oralabor Road to Provide Left Turn lanes and Raised Median, as well as Install traffic signals at the current stop controlled intersection of SE Oralabor Road and SE Peachtree Drive in Ankeny.	\$872,400.00	\$500,000.00
161	Dallas County	Install Guardrail or improve guardrail at 9 locations at bridges located in Dallas County	\$162,000.00	\$129,600.00
177	City of Des Moines	Remove existing traffic signalized intersection and construct a Modern Single-lane Roundabout at the intersection of Beaver Ave. & Urbandale Ave in the City of Des Moines	\$1,300,000.00	\$350,000.00
197	City of Des Moines	Restriping Hubbell Avenue between E 18th and E 33rd Streets from the existing 4-lane roadway to a 3-lane roadway, including bicycle lanes. Minor widening and median work would be required at the intersection with University Avenue, and a wider sidewalk would be needed on the north side of Hubbell near E. 18th Street.	\$390,000.00	\$330,000.00
215	City of Des Moines	Installation of two traffic signals, one at the intersection of East 4 th Street and Walnut Street, and another signal one block to the south at the intersection of East 4 th Street and Court Avenue. New mast arm-mounted traffic signals would be installed, with poles outside the 10-foot clear zone area. Combination poles would be used where possible. Signals with back plates would be installed on all overhead signals, along with pedestrian "countdown" signal indications for all approaches. Detection for semi-actuated operation would be installed.	\$280,000.00	\$230,000.00

Continued on next page

Applications for Site Specific (Continued)

Page No.	Requesting Agency	Description	\$\$\$	
			Project	Request
245	District #2	Narrow the current 12' lanes to 11' lanes and moving the centerline 1' to the west, allowing to move the northbound edge line 2' to the west, creating a wider shoulder. Install a rumble strip on the northbound shoulder, upgrade the existing warning signs to fluorescent yellow, and mill in reflective tape for the new centerline and edge lines at the curves on IA 76 in Allamakee County	\$61,400.00	\$61,400.00
273	District #2	Restriping IA 3 Between the intersection of Ia 150 and 9th ave east from and existing 4 - lane roadway to a 3 - lane roadway.	\$49,300.00	\$49,300.00
307	District #2	At the intersection of IA 122 and S-56 and California Avenue, provide dedicated left-turn storage thru the 4-3 lane conversion, and construct offset right hand turn lanes at the intersection for eastbound traffic on 122 that is turning south on S 56/California Avenue and westbound 122 traffic that is turning north on S 56/California Avenue. The four-three lane conversion will, by reallocation of existing pavement width, provide approximately 5-foot wide paved shoulders where none exist currently.	\$140,616.89	\$140,616.89
323	District #2	At the intersection of IA 122 and College Drive/Iowa Avenue, provide dedicated left-turn storage through the 4-3 lane conversion, and construct offset right hand turn lanes at the intersection for eastbound traffic on 122 that is turning south on Iowa Avenue and westbound 122 traffic that is turning north on College Drive. The four-three lane conversion will, by reallocation of existing pavement width, provide approximately 5-foot wide paved shoulders where none exist currently	\$124,364.00	\$124,364.00

Continued on next page

Applications for Site Specific (Continued)

Page No.	Requesting Agency	Description	\$\$\$	
			Project	Request
337	District #6	Remove 2 Existing 90 degree 716' radius curves and reconstruct 2 2000' radius curves with 28' pavement, 8' shoulder (4' paved, 4' Granular) and milled in Rumbles on the IA 150	\$4,250,000.00	\$500,000.00
355	Des Moines County	Flattening foreslopes, Flattening driveway side slopes and regarding two vertical curves on a 3/4 mile stretch of Mediapolis Road approximately 2 miles West of Mediapolis	\$515,187.00	\$500,000.00
369	City of Dakota City	Convert "Y" intersection to a Stop Controlled "T" intersection at the Intersection of 1st Ave North and Nevada Ave. east of Dakota City	\$419,832.00	\$419,832.00
393	City of Ames	Construct Intersection improvements to add East and West Bound turnlanes and convert a 2-way stop controlled to a 4 way signalized intersection at the intersection of Lincolnway and Dotson in the Western side of Ames.	\$1,013,680.00	\$798,173.00
Totals				
		22 Projects	\$11,545,687.89	\$5,606,193.89

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project IA 330/2' Paved Shoulders & Rumble StripsApplicant Iowa DOT - District 1Contact Person Kurt Shackelford Title D1 Traffic TechComplete Mailing Address 1020 S 4th St
Ames, IA 50010Phone 515-239-1199 E-Mail Kurtis.Shackelford@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____
_____Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 36,750.00Safety Funds Requested \$ 36,750.00

1. Existing Conditions

The proposed project is located on IA 330 north of US 30 west of the city of Marshalltown in Marshall County. Refer to Figure 1. The roadway is a rural highway with narrow granular shoulders. The roadway surface is ACC. The posted speed limit is 55 mph. The average traffic volume in 2009 was approximately 3,920 vpd.

2. Proposed Concept

The proposed concept is to replace the existing narrow granular shoulders with 2' Paved Shoulders and Milled Rumble Strips on both sides of the curve.

3. Justification

From 2006 to 2010 there were a total of 5 related crashes due to environmental conditions within the project limits. Refer to Figure 2.

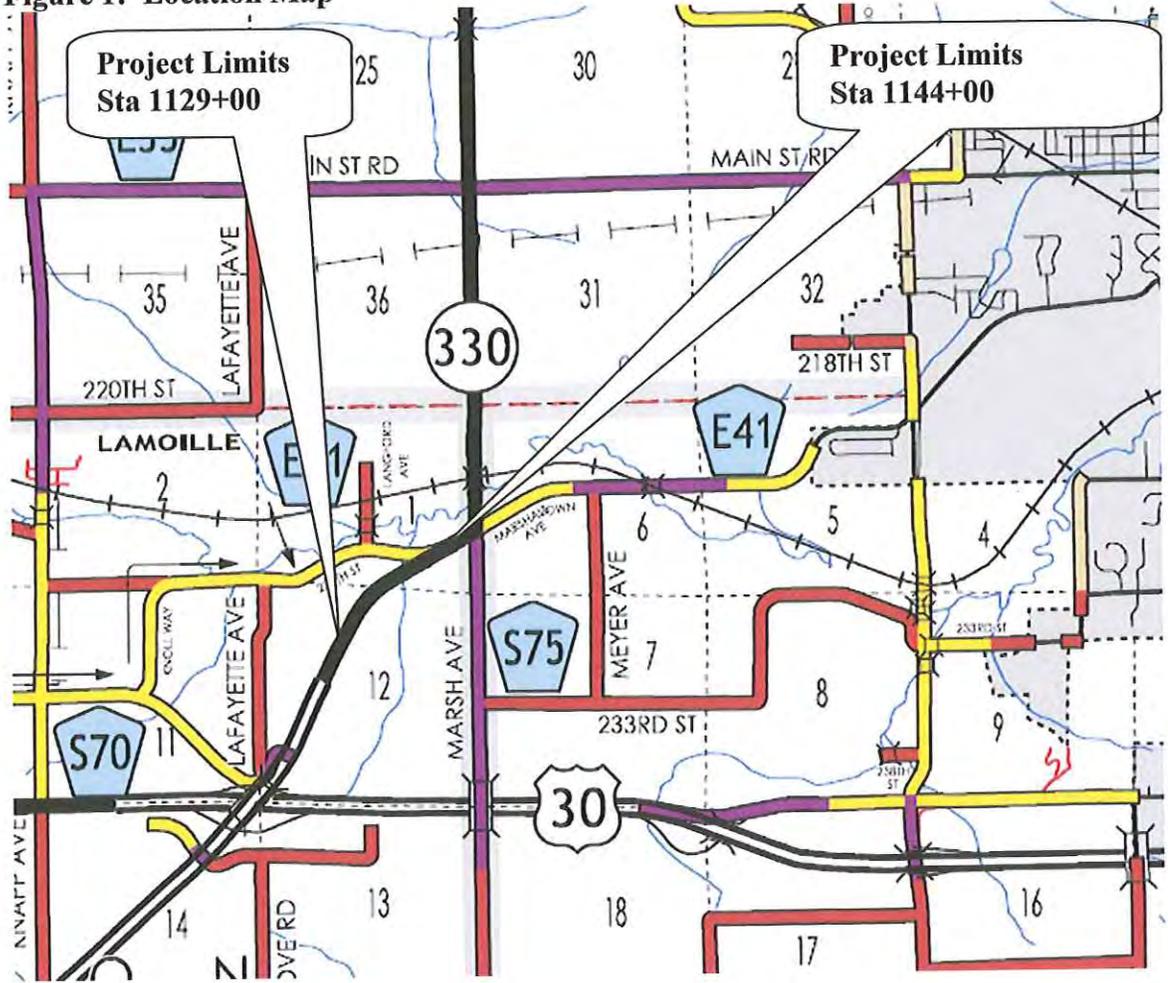
4. Cost Estimate and Proposed Funding Sources

The cost of the proposed improvements is estimated at \$36,750.00. Refer to Figure 3. It is proposed to fund 100% of the cost of the project with TSIP funds.

5. Proposed Schedule

The project is proposed for letting in July 2012 with construction to be completed by November 2012.

Figure 1: Location Map



IA330, Marshall County, TSF Application (2' Paved Shoulders & Rumble Strips)

Figure 2: 5-Year Crash Summary

2006-2010 Reported Crash History
 For the link between
 IA 330 west of S-75
 Marshall County Iowa

Year	County	Crashes					Injuries						
		Fatal	Major	Minor	Poss/Unk	PDO	Injuries	Fatalities	Major	Minor	Possible	Unknown	
2006	Marshall	3	0	0	2	0	1	2	0	0	2	0	0
2007	Marshall	0	0	0	0	0	0	0	0	0	0	0	0
2008	Marshall	2	0	0	0	0	2	0	0	0	0	0	0
2009	Marshall	3	0	0	0	1	2	2	0	0	0	2	0
2010	Marshall	3	0	1	0	0	2	1	0	1	0	0	0
Totals:		11	0	1	2	1	7	5	0	1	2	2	0

meeting the following criteria:
 (This feature currently not operational.)

Feature Count Report (Friday, April 15, 2011 1:34:09 PM Central Daylight Time)
 produced using: Iowa's Safety Analysis, Visualization, and Exploration Resource (SAVER)
 by:

Item Number	Cat	Description	Units	Quantity	Unit Price	Cost
1	01	HMA BASE COURSE	TONS	220	\$40.00	\$8,800.00
2	01	HMA BINDER	TONS	13.2	\$600.00	\$8,000.00
3	01	CLASS 13 EXC.	CY	111	\$15.00	\$1,700.00
4	01	MOBILIZATION	LS	1	\$10,000.00	\$10,000.00
5	01	MILLED RUMBLE STRIPS	STA	30	\$30.00	\$900.00
		SUBTOTAL				\$29,400.00
		MISC. & CONT.			25%	\$7,350.00
		TOTAL				\$36,750.00

Figure 3: Cost Estimate



Figure 4: Aerial View of Project Location

Figure 5: IA330 Looking South/West



Figure 6: IA330 Looking North/East



Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Marshall Prepared by: Kurtis Shackelford Date Prepared: Apr 15, 2011
 Location: IA 330 North of US 30 Interchange west of S-75

Improvement

Proposed Improvement(s): Paved 2' Paved Shoulders with Milled Rumble Strips
1,500 linear feet both shoulders from sta 1129+00 to Sta 1144+00

\$ <u>36,750</u> Estimated Improvement Cost, EC	<u>20</u> Est. Improvement Life, years, Y
\$ <u>-</u> Other Annual Cost (after initial year), AC	<u>20</u> Crash Reduction Factor (integer), CRF
\$ <u>-</u> Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	\$ <u>36,750</u> Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT Transportation Data 2009 Date of traffic count

Length (mi.)	veh/day	Description
0.30	3,920	Just west of S-75

0.30 miles total

1,176 Current Vehicle Miles / Day, **VM**
 2,577 End of Life Veh. Miles / Day
 429,240 Current Veh. Miles / Year, **AM**
 12,781,942 Total Projected Veh. Miles Over Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

4.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

<u>2006</u> First full year -->	<u>2010</u> Last full year				5.0 years, Time Period, T
<u>0</u> Additional months					values as of Dec. 2007
<u>0</u> Fatal Crashes	<u>0</u> Fatalities @			\$3,500,000	\$ -
	<u>1</u> Major Injuries @			\$240,000	\$ 240,000
<u>5</u> Injury Crashes	<u>2</u> Minor Injuries @			\$48,000	\$ 96,000
	<u>0</u> Possible Injuries @			\$25,000	\$ -
<u>0</u> Property Damage Only	(assumed cost per crash)			\$2,700	\$ -
<u>5</u> Total Crashes, TA	-OR- enter all Property Costs of all crashes:			\$ 29,700	\$ 29,700
		Total \$ Loss, LOSS		\$ 365,700	\$ 365,700

1.00 Current Crashes / Year, **AA = TA / T**
 \$ 73,140 Cost per Crash, **AVCR = LOSS / TA**
 29.8 Total Expected Crashes, **TCR = CR x TVMT/10^8**
 0.20 Crashes Avoided First Year **AAR = AA x CRF / 100**
 \$ 14,628 Crash Costs Avoided in First Year, **AAR x AVCR**
 6.0 Total Avoided Crashes, **TCR x CRF/ 100**

233.0 Crashes / HMVM, Crash Rate, **CR**
 $CR = TA \times 10^8 / (AM \times T)$
\$ 281,308 Present Value of Avoided Crashes, **BENEFIT**

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$281,308 : \$36,750 = 7.65 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project IA 210 Maxwell Curves/Paved Shoulders & Rumble StripsApplicant Iowa DOT - District 1Contact Person Kurt Shackelford Title D1 Traffic TechComplete Mailing Address 1020 S 4th St
Ames, IA 50010Phone 515-239-1199 E-Mail Kurtis.Shackelford@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____
_____Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 62,512.50Safety Funds Requested \$ 62,512.50

1. Existing Conditions

The proposed project is located on IA 210 near 650th Ave just west of the city of Maxwell in Story County Refer to Figure 1. The roadway is a rural highway with narrow granular shoulders. The roadway surface is ACC with some PCC. The posted speed limit is 55 mph. The average traffic volume in 2009 was approximately 1390 vpd. The curve near 650th Ave had Chevrons placed about 4 years ago.

2. Proposed Concept

The proposed concept is to replace the existing granular shoulders with 4' paved shoulders and Milled Rumble Strips on both sides of the curves.

3. Justification

From 2006 to 2010 there were a total of 6 related crashes due to environmental conditions within the project limits. Refer to Figure 2.

4. Cost Estimate and Proposed Funding Sources

The cost of the proposed improvements is estimated at \$62,512.50. Refer to Figure 3. It is proposed to fund 100% of the cost of the project with TSIP funds.

5. Proposed Schedule

The project is proposed for letting in July 2012 with construction to be completed by November 2012.

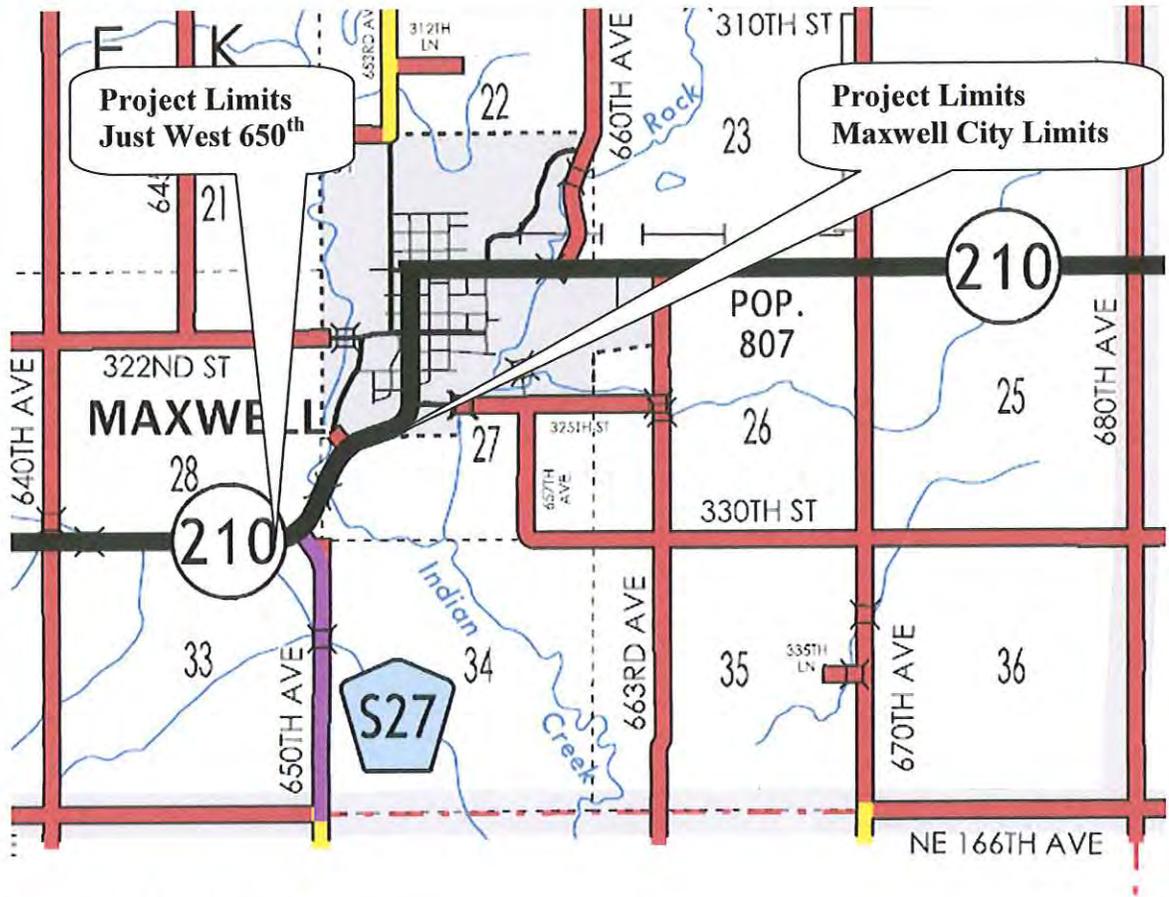


Figure 1: Location Map

IA210, Story County, TSF Application (Paved Shoulders & Rumble Strips)

2006-2010 Reported Crash History
 For the link between
 IA 210 @ 650th to Maxwell CL
 Story County Iowa

Year	County	Crashes					Injuries						
		Fatal	Major	Minor	Poss/Unk	PDO	Fatalities	Major	Minor	Possible	Unknown		
2006	Story	1	0	1	0	0	0	1	0	1	0	0	0
2007	Story	2	0	1	0	1	0	3	0	1	0	2	0
2008	Story	2	0	0	0	1	1	1	0	0	0	1	0
2009	Story	3	0	0	0	0	3	0	0	0	0	0	0
2010	Story	1	0	0	0	1	0	1	0	0	0	1	0
Totals:		9	0	2	0	3	4	6	0	2	0	4	0

meeting the following criteria:
 (This feature currently not operational.)

Feature Count Report (Friday, April 15, 2011 11:28:55 AM Central Daylight Time)
 produced using: Iowa's Safety Analysis, Visualization, and Exploration Resource (SAVER)
 by:

Figure 2: 5-Year Crash Summary

Item Number	Cat	Description	Units	Quantity	Unit Price	Cost
1	01	HMA BASE COURSE	TONS	406	\$40.00	\$16,240.00
2	01	HMA BINDER	TONS	24.4	\$600.00	\$14,700.00
3	01	CLASS 13 EXC.	CY	210	\$15.00	\$3,150.00
4	01	MOBILIZATION	LS	1	\$15,000.00	\$15,000.00
5	01	MILLED RUMBLE STRIPS	STA	28	\$30.00	\$840.00
		SUBTOTAL				\$50,010.00
		MISC. & CONT.			25%	\$12,502.50
		TOTAL				\$62,512.50

Figure 3: Cost Estimate



Figure 4: Aerial View of Project Location

IA210, Story County, TSF Application (Paved Shoulders & Rumble Strips)



Figure 5: IA210 Looking West towards 650th Ave



Figure 6: IA210 Looking West near the south city limits of Maxwell

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Story Prepared by: Kurtis Shackelford Date Prepared: Apr 15, 2011
 Location: IA 210 just west of Maxwell near 650th Ave

Improvement

Proposed Improvement(s): Paved 4' Shoulders with Milled Rumble Strips

1,400 linear feet both shoulders from Sta 830+24 to 844+24

\$ <u>62,513</u> Estimated Improvement Cost, EC	<u>20</u> Est. Improvement Life, years, Y
\$ <u>-</u> Other Annual Cost (after initial year), AC	<u>20</u> Crash Reduction Factor (integer), CRF
\$ <u>-</u> Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	\$ <u>62,513</u> Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT Transportation Data 2009 Date of traffic count

Two-way

Length (mi.)	veh/day	Description
0.27	1,390	IA 210 @ 650th Ave

0.27 miles total

375 Current Vehicle Miles / Day, **VM**
 822 End of Life Veh. Miles / Day
 136,985 Current Veh. Miles / Year, **AM**
 4,079,135 Total Projected Veh. Miles Over
 Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

4.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

<u>2006</u> First full year -->	<u>2010</u> Last full year	5.0 years, Time Period, T
<u>0</u> Additional months		values as of Dec. 2007
<u>0</u> Fatal Crashes	<u>0</u> Fatalities @	\$3,500,000 \$ -
	<u>2</u> Major Injuries @	\$240,000 \$ 480,000
<u>6</u> Injury Crashes	<u>0</u> Minor Injuries @	\$48,000 \$ -
	<u>4</u> Possible Injuries @	\$25,000 \$ 100,000
<u>0</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ -
	-OR- enter all Property Costs of all crashes:	\$ <u>39,000</u>
<u>6</u> Total Crashes, TA		Total \$ Loss, LOSS \$ <u>619,000</u>

1.20 Current Crashes / Year, AA = TA / T	876.0 Crashes / HMVM, Crash Rate, CR
\$ 103,167 Cost per Crash, AVCR = LOSS / TA	CR = TA x 10 ⁸ / (AM x T)
35.7 Total Expected Crashes, TCR = CR x TVMT/10⁸	\$ <u>476,154</u> Present Value of Avoided Crashes, BENEFIT
0.24 Crashes Avoided First Year AAR = AA x CRF / 100	
\$ 24,760 Crash Costs Avoided in First Year, AAR x AVCR	
7.1 Total Avoided Crashes, TCR x CRF/ 100	

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$476,154 : \$62,513 = 7.62 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project IA 415/4' Paved Shoulders & Rumble StripsApplicant Iowa DOT - District 1Contact Person Kurt Shackelford Title D1 Traffic TechComplete Mailing Address 1020 S 4th St
Ames, IA 50010Phone 515-239-1199 E-Mail Kurtis.Shackelford@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____
_____Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 87,512.50Safety Funds Requested \$ 87,512.50

1. Existing Conditions

The proposed project is located on IA 415 north Ankeny in Polk County. Refer to Figure 1. The roadway is a rural highway with narrow granular shoulders. The roadway surface is PCC. The posted speed limit is 55 mph. The average traffic volume in 2009 was approximately 12,400 vpd.

2. Proposed Concept

The proposed concept is to replace the existing granular shoulders with 4' Paved Shoulders and Milled Rumble Strips on both sides of the curve.

3. Justification

From 2006 to 2010 there were a total of 7 related crashes due to environmental conditions within the project limits. Refer to Figure 2.

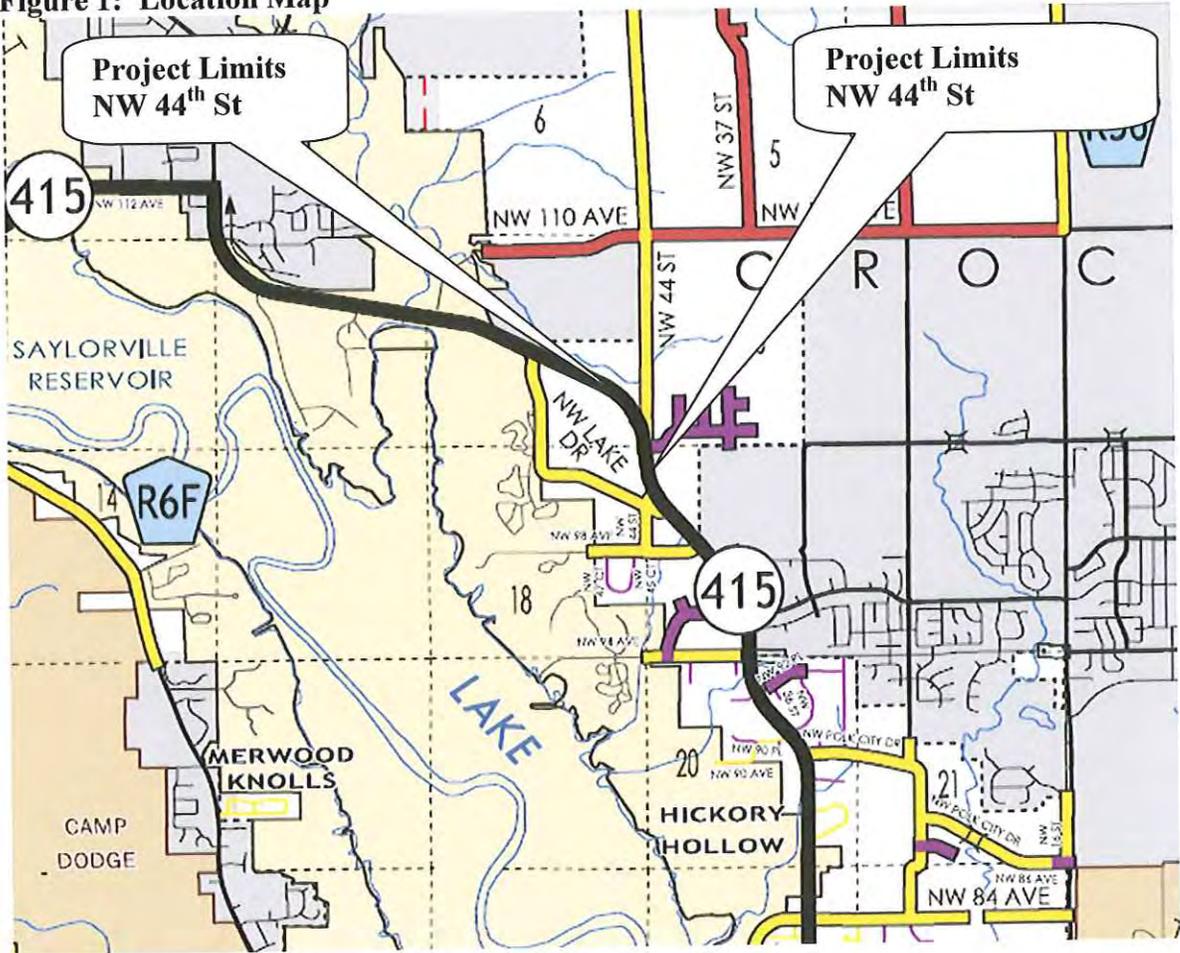
4. Cost Estimate and Proposed Funding Sources

The cost of the proposed improvements is estimated at \$87,512.50. Refer to Figure 3. It is proposed to fund 100% of the cost of the project with TSIP funds.

5. Proposed Schedule

The project is proposed for letting in July 2012 with construction to be completed by November 2012.

Figure 1: Location Map



IA415, Polk County, TSF Application (4' Paved Shoulders & Rumble Strips)

Figure 2: 5-Year Crash Summary

2006-2010 Reported Crash History
Intersection/curve
IA 415 @ NW44th St
Polk County Iowa

Year	County	Crashes					Injuries						
		Fatal	Major	Minor	Poss/Unk	PDO	Fatalities	Major	Minor	Possible	Unknown		
2006	Polk	2	0	0	1	0	1	1	0	0	1	0	0
2007	Polk	2	0	0	0	0	2	0	0	0	0	0	0
2008	Polk	4	0	0	0	2	2	2	0	0	0	2	0
2009	Polk	3	0	1	0	0	2	1	0	1	0	0	0
2010	Polk	1	0	0	0	0	1	0	0	0	0	0	0
Totals:		12	0	1	1	2	8	4	0	1	1	2	0

meeting the following criteria:
 (This feature currently not operational.)

Feature Count Report (Friday, April 15, 2011 1:42:03 PM Central Daylight Time)
 produced using: Iowa's Safety Analysis, Visualization, and Exploration Resource (SAVER)
 by:

Item Number	Cat	Description	Units	Quantity	Unit Price	Cost
1	01	HMA BASE COURSE	TONS	580	\$40.00	\$23,200.00
2	01	HMA BINDER	TONS	34.8	\$600.00	\$21,000.00
3	01	CLASS 13 EXC.	CY	300	\$15.00	\$4,500.00
4	01	MOBILIZATION	LS	1	\$20,000.00	\$20,000.00
5	01	MILLED RUMBLE STRIPS	STA	40	\$30.00	\$1,200.00
		SUBTOTAL				\$70,010.00
		MISC. & CONT.			25%	\$17,502.50
		TOTAL				\$87,512.50

Figure 3: Cost Estimate



Figure 4: Aerial View of Project Location

Figure 5: IA415 Looking North/West



Figure 6: IA210 Looking South/East



Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: Kurtis Shackelford Date Prepared: Apr 15, 2011
 Location: IA 415 near NW 44th intersection

Improvement

Proposed Improvement(s): Paved 4' Shoulders with Milled Rumble Strips

2,000 linear feet both shoulders from Sta 35+58 to Sta 55+58

\$ <u>87,513</u> Estimated Improvement Cost, EC	<u>20</u> Est. Improvement Life, years, Y
\$ <u>-</u> Other Annual Cost (after initial year), AC	<u>20</u> Crash Reduction Factor (integer), CRF
\$ <u>-</u> Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	\$ <u>87,513</u> Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT Transportation Data 2009 Date of traffic count

Two-way

Length (mi.)	veh/day	Description
0.38	6,400	Adjacent to NW 44th intersect

0.38 miles total

4.0% Projected Traffic Growth (0%-10%), **G**

2,432 Current Vehicle Miles / Day, **VM**
 5,329 End of Life Veh. Miles / Day
 887,680 Current Veh. Miles / Year, **AM**
 26,433,405 Total Projected Veh. Miles Over
 Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

Crash Data

<u>2006</u> First full year -->	<u>2010</u> Last full year	5.0 years, Time Period, T
<u>0</u> Additional months		values as of Dec. 2007
<u>0</u> Fatal Crashes	<u>0</u> Fatalities @	\$3,500,000 \$ -
	<u>3</u> Major Injuries @	\$240,000 \$ 720,000
<u>4</u> Injury Crashes	<u>3</u> Minor Injuries @	\$48,000 \$ 144,000
	<u>2</u> Possible Injuries @	\$25,000 \$ 50,000
<u>3</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ -
	-OR- enter all Property Costs of all crashes:	\$ <u>48,800</u>
<u>7</u> Total Crashes, TA		Total \$ Loss, LOSS \$ <u>962,800</u>

1.40 Current Crashes / Year, AA = TA / T	157.7 Crashes / HMVM, Crash Rate, CR
\$ 137,543 Cost per Crash, AVCR = LOSS / TA	CR = TA x 10 ⁸ / (AM x T)
41.7 Total Expected Crashes, TCR = CR x TVMT/10⁸	\$ <u>740,615</u> Present Value of Avoided Crashes, BENEFIT
0.28 Crashes Avoided First Year AAR = AA x CRF / 100	
\$ 38,512 Crash Costs Avoided in First Year, AAR x AVCR	
8.3 Total Avoided Crashes, TCR x CRF/ 100	

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$740,615 : \$87,513 = 8.46 : 1

Application for TRAFFIC SAFETY FUNDS**GENERAL INFORMATION**Location / Title of Project Outer Drive Shoulder Improvement ProjectApplicant City of Sioux CityContact Person Scott Logan, P.E., P.T.O.E. Title City EngineerComplete Mailing Address 405 6th StreetP.O. Box 447, Sioux City, IA 51102Phone 712-279-6221 E-Mail slogan@sioux-city.org
(Area Code)**If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).**

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)**PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:****Application Type**Site Specific
Traffic Control Device
Safety Study **Funding Amount**Total Project Cost \$ \$250,000**Safety Funds Requested** \$ \$200,000

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

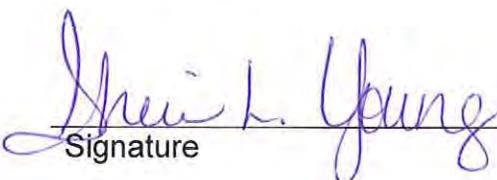
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Sioux City, Iowa

Signed:  5-12-2011
Signature Date Signed

Scott Logan
Typed Name

Attest:  5-12-2011
Signature Date Signed

Sheri L. Young
Typed Name

RESOLUTION NO. 2011 - 000356
with attachments

RESOLUTION AUTHORIZING THE CITY ENGINEERING DIVISION TO
SUBMIT AN APPLICATION TO THE IOWA DEPARTMENT OF
TRANSPORTATION FOR TRAFFIC SAFETY IMPROVEMENT FUNDS
(\$200,000) FOR THE OUTER DRIVE SHOULDER IMPROVEMENT PROJECT
(LEWIS-HWY 75).

WHEREAS, the Iowa Department of Transportation provides funding for certain street improvements through the Traffic Safety Improvement Funds; and

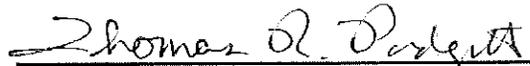
WHEREAS, the City of Sioux City has deemed it necessary and desirable to seek funds for shoulder improvements on Outer Drive (Lewis to Highway 75); and

WHEREAS, the City Engineering Division has prepared an application for traffic safety funding in the amount of \$200,000; and

WHEREAS, it would be in the best interests of the City of Sioux City to submit said application.

NOW THEREFORE BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SIOUX CITY, that the City Engineering Division is hereby authorized and directed to submit a application, a copy of which is attached hereto and by this reference made a part hereof, to the Iowa Department of Transportation in the amount of \$200,000 for Traffic Safety Improvement Funds for shoulder improvements on Outer Drive (Lewis to Highway 75).

PASSED AND APPROVED: May 16, 2011


Thomas R. Padgett, Mayor Pro Tem

ATTEST: 
Lisa L. McCardle, City Clerk

**City of Sioux City
TSIP Application – Outer Drive Shoulder Improvement (Lewis Blvd – Highway #75)
Project**

Narrative

The City of Sioux City seeks TSIP funding (\$200,000) for the Outer Drive Shoulder Improvement (Lewis Blvd – Highway #75) Project that will significantly improve traffic safety conditions along this corridor. Outer Drive is a east-west principal arterial that extends thru the City from Hamilton Blvd. to Highway #75. It is a heavily travelled corridor with an average of 7,000 vehicles per day along this 2 lane facility. Outer Drive is strategically important since it serves as one of the only east-west feeders across the north side of the City.

This Outer Drive shoulder improvement project would enhance traffic safety by reducing accidents involving motorists who would “catch” their tire on the pavement edge and/or lost control due to other extenuating circumstances. The Outer Drive corridor between Lewis Blvd. and Highway #75 is approximately 5,280 feet in length and has a 24’ travelling surface with an existing 4-6’ gravel shoulders. The gravel surface is well maintained by the City, however, it is in constant need of maintenance due to the constant rutting by traffic and frequent storm events. The Outer Drive corridor is designated with a 45 mile per hour speed limit and has a 24’ clear zone.

As part of this safety project, the City has conducted traffic flow and accident analysis to assess the traffic safety benefit of this proposed improvement. Of the 21 accidents reported in the past five years, six (6) involved motorists who had caught their tire on the pavement edge. The other reported accidents include collisions with deer (4) and crashes on icy/snowy pavements (3). Dispatch reports also include eight (8) incidents where vehicles were discovered in the ditches. With the proposed paving (6 feet) and rumble strip improvements, these accidents would be significantly reduced.

The proposed Outer Drive Shoulder Improvement Project consists of constructing a paved six foot shoulder improvement with rumble strips. The 4 foot paved shoulder will consist be constructed with either an A.C.C. or P.C.C. pavement. Project work will also include grading, traffic control, and traffic markings.

Estimated Costs

The total cost of this proposed project (\$200,000) is broken into four major components including the following:

Shoulder Paving (2000 HMA Tons @ \$100/Ton	\$ 200,000
Subgrade Preparation	\$ 30,000
Subgrade Materials (650 Tons @ \$20/Ton)	\$ 13,000
Traffic Control	\$ 5,000
Pavement Markings	\$ 2,000
 Total Project Cost	 \$ 250,000

Funding Sources

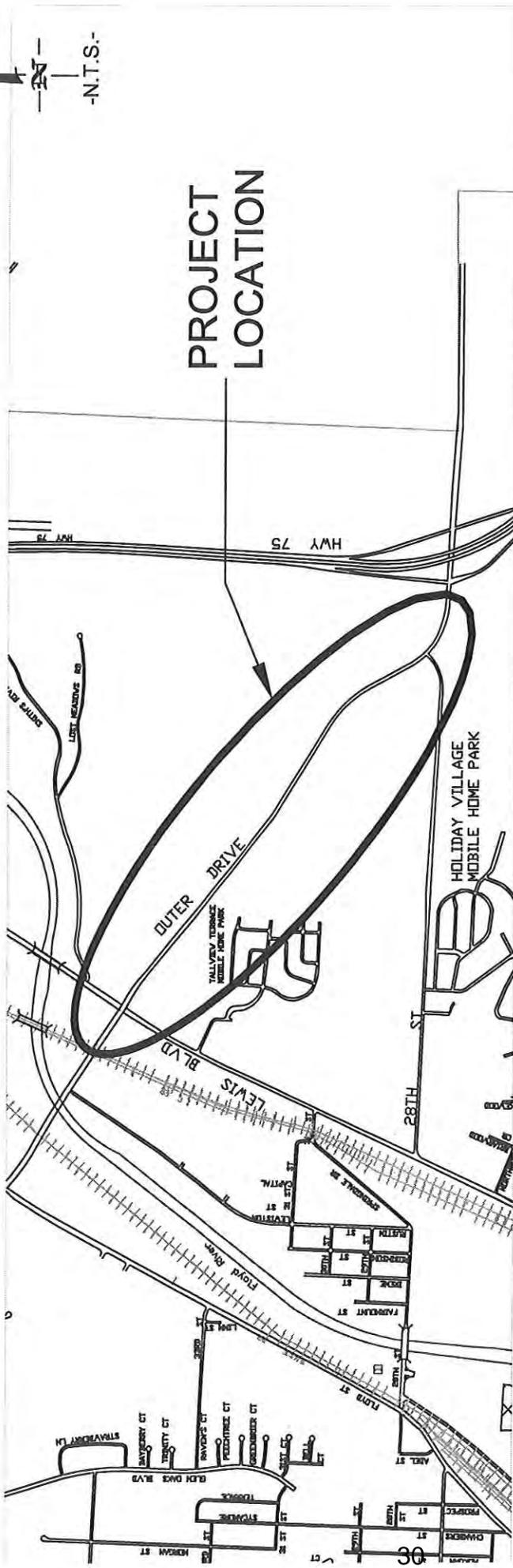
The City is seeking a \$200,000 TSIP grant to cover a portion of this \$250,000 project. The remainder will be funded by the City of Sioux City with G.O. bonds/

Anticipated Schedule

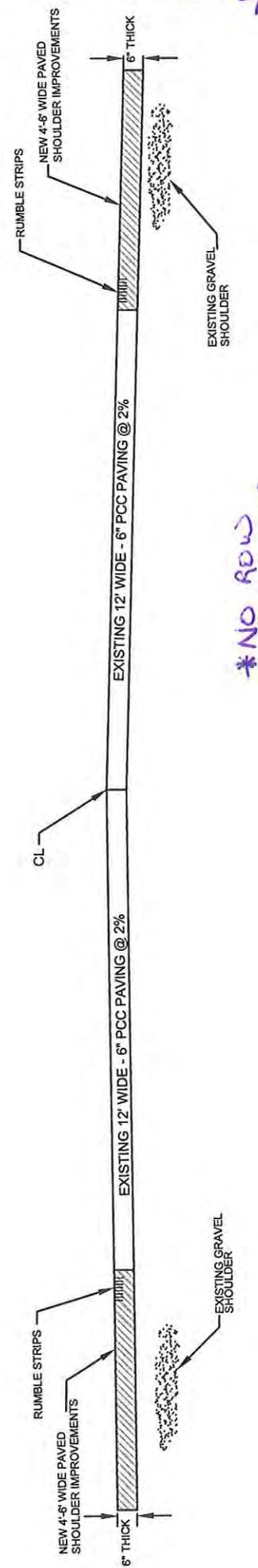
Schedules for planning, designing and installing this Outer Drive Shoulder Improvement Project calls for completion by August, 2012. This includes the project to design plans, bidding, and constructing the improvements. The implementation plan for the shoulder improvement project is given below:

- March/April, 2012 - Design "Outer Drive Shoulder Project" improvements.
- April/June 2012 - Submit Design Improvements to IDOT for comments.
- July 1, 2012 - Bid "Outer Drive Shoulder Project" improvements
- August 15-October 1, 2012 – Construct "Outer Drive Shoulder Project" improvements

OUTER DRIVE SHOULDER IMPROVEMENT PROJECT

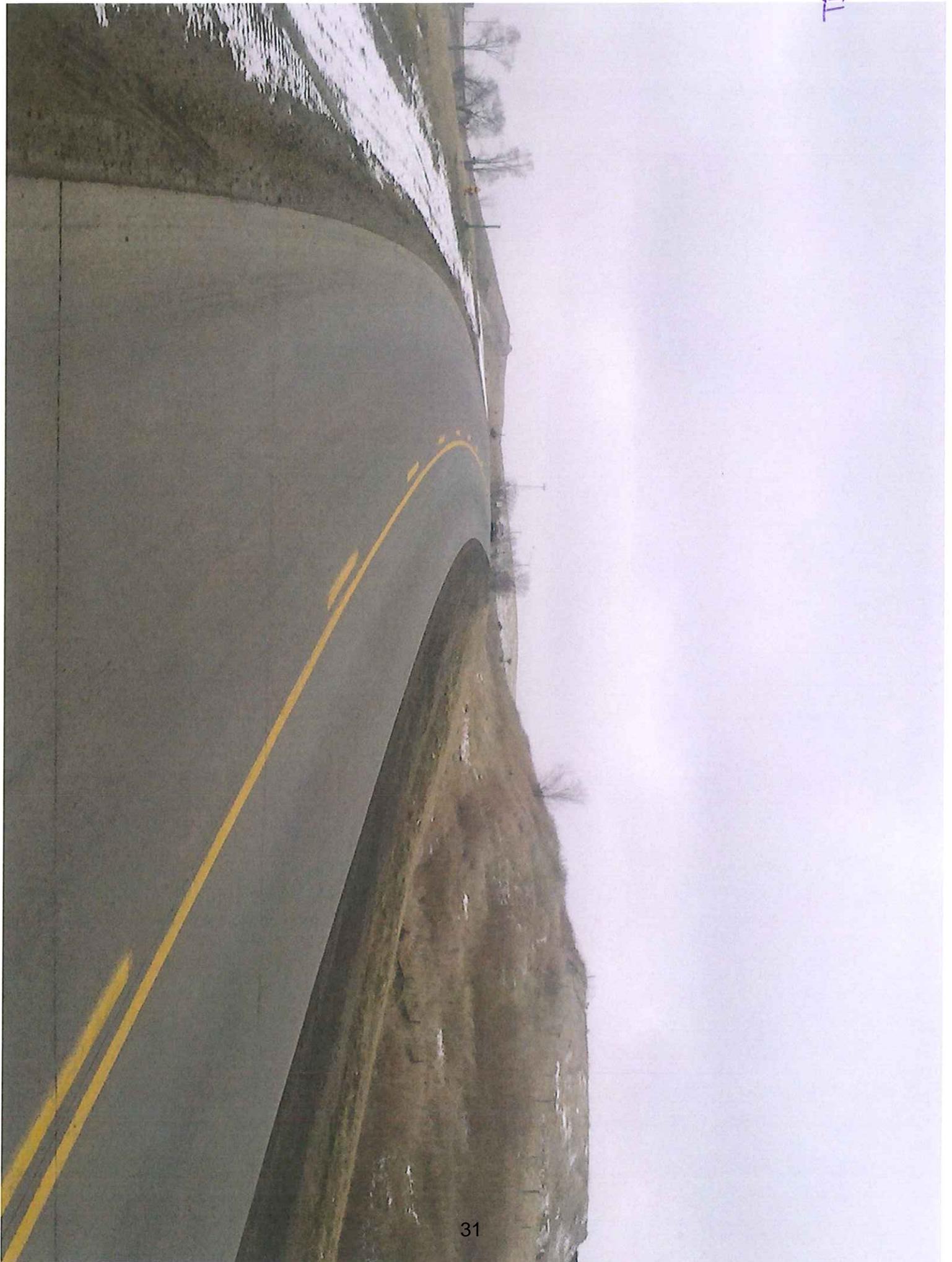


-N.T.S.-



**NO ROW REQUIRED*

K:\CIVIL 3D\OUTER DRIVE SHOULDER LEWIS 16 BYPASS



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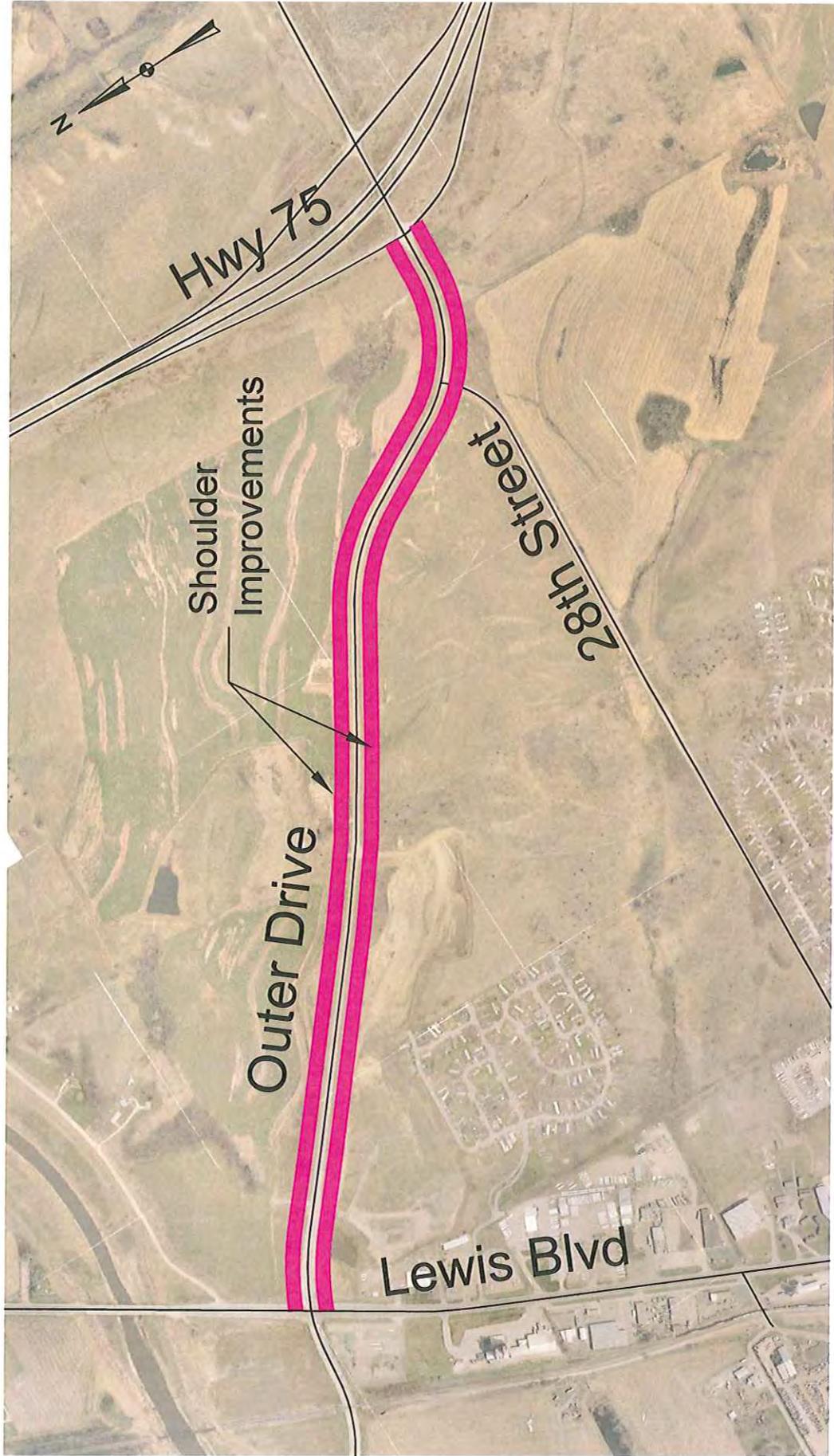


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Outer Drive Shoulder Improvements

(Lewis Blvd to Highway 75)



Site Code: OVIER 1 HALFWAY

Station ID:

Date Start: 18-Apr-11

Date End: 22-Apr-11

Date Printed: 25-Apr-11

Start Time	Mon 18-Apr-11	Tue 19-Apr-11	Wed 20-Apr-11	Thu 21-Apr-11	Fri 22-Apr-11	Average Day	Sat 23-Apr-11	Sun 24-Apr-11	Week Average
12:00 AM	29	29	11	27	30	25	*	*	25
01:00	12	9	20	17	10	14	*	*	14
02:00	9	12	8	6	16	10	*	*	10
03:00	12	15	15	12	12	13	*	*	13
04:00	36	31	29	33	48	35	*	*	35
05:00	92	68	75	68	63	73	*	*	73
06:00	233	174	256	214	185	212	*	*	212
07:00	565	502	574	430	336	481	*	*	481
08:00	406	409	529	412	376	426	*	*	426
09:00	372	336	394	399	387	378	*	*	378
10:00	401	341	389	451	453	407	*	*	407
11:00	410	363	511	476	507	453	*	*	453
12:00 PM	430	463	474	452	540	472	*	*	472
01:00	463	475	561	553	558	522	*	*	522
02:00	548	497	610	518	586	552	*	*	552
03:00	655	587	550	566	604	592	*	*	592
04:00	596	584	639	605	610	607	*	*	607
05:00	597	632	673	631	634	633	*	*	633
06:00	376	385	494	453	504	442	*	*	442
07:00	284	298	336	358	406	336	*	*	336
08:00	181	242	328	306	363	284	*	*	284
09:00	127	151	192	203	248	184	*	*	184
10:00	81	98	122	123	132	111	*	*	111
11:00	45	57	76	65	74	63	*	*	63
Day Total	6960	6758	7866	7378	7682	7325	0	0	7325
% Avg. WkDay	95.0%	92.3%	107.4%	100.7%	104.9%	100.0%	0.0%	0.0%	100.0%
% Avg. Week	95.0%	92.3%	107.4%	100.7%	104.9%	100.0%	0.0%	0.0%	100.0%
AM Peak	07:00	07:00	07:00	11:00	11:00	07:00	07:00	07:00	07:00
Vol.	565	502	574	476	507	481	481	481	481
PM Peak	15:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00	17:00
Vol.	655	632	673	631	634	633	633	633	633
Grand Total	6960	6758	7866	7378	7682	7325	0	0	7325

ADT 7,334

ADT 7,334

ADT

4

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Woodbury Prepared by: Scott Logan Date Prepared: May 11, 2011
 Location: Outer Drive (From Lewis to Highway 75 Interchange)

Improvement

Proposed Improvement(s): Pave 4'6" Shoulders with Rumble Strips

<u>\$ 200,000</u> Estimated Improvement Cost, EC	<u>20</u> Est. Improvement Life, years, Y
<u>\$ -</u> Other Annual Cost (after initial year), AC	<u>36</u> Crash Reduction Factor (integer), CRF
<u>\$ -</u> Present Value Other Annual Costs, OC	<u>4.0%</u> Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	\$ 200,000 Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: City of Sioux City Engineering Division April 18-22, 2011 Date of traffic count

Length (mi.)	Two-way veh/day	Description
1.00	7,334	
1.00 miles total		

7,334 Current Vehicle Miles / Day, **VM**
 16,070 End of Life Veh. Miles / Day
 2,676,910 Current Veh. Miles / Year, **AM**
 79,713,236 Total Projected Veh. Miles Over
 Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

4.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

<u>2006</u>	First full year -->	<u>2010</u>	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
	<u> </u> Fatal Crashes		<u> </u> Fatalities @	\$3,500,000 \$ -
			<u>1</u> Major Injuries @	\$240,000 \$ 240,000
	<u>2</u> Injury Crashes		<u> </u> Minor Injuries @	\$48,000 \$ -
			<u>1</u> Possible Injuries @	\$25,000 \$ 25,000
	<u>3</u> Property Damage Only		(assumed cost per crash)	\$2,700 \$ 13,500
			-OR- enter all Property Costs of all crashes:	\$ -
	<u>5</u> Total Crashes, TA		Total \$ Loss, LOSS	\$ 278,500

<p>1.00 Current Crashes / Year, AA = TA / T</p> <p>\$ 55,700 Cost per Crash, AVCR = LOSS / TA</p> <p>29.8 Total Expected Crashes, TCR = CR x TVMT / 10⁸</p> <p>0.36 Crashes Avoided First Year AAR = AA x CRF / 100</p> <p>\$ 20,300 Crash Costs Avoided in First Year, AAR x AVCR</p> <p>10.9 Total Avoided Crashes, TCR x CRF / 100</p>	<p>37.4 Crashes / HMVM, Crash Rate, CR</p> <p>CR = TA x 10⁸ / (AM x T)</p> <p>\$ 390,393 Present Value of Avoided Crashes, BENEFIT</p> $BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$
--	--

Benefit / Cost Ratio

Benefit : Cost = \$390,393 : \$200,000 = 1.95 : 1

ORIGINAL COPY

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project 4 MILES NORTHEAST OF KNOXVILLE (T-15/G-46 INTERSECTION)
Applicant MARION COUNTY SECONDARY ROADS
Contact Person ROGER SCHLETZBAUM Title ENGINEER
Complete Mailing Address 402 WILLETTS DR
KNOXVILLE, IA 50138
Phone (641) 828-2225 E-Mail RSCHLETZBAUM@CO.MARION.IA.US
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) N/A
Contact Person N/A Title N/A
Complete Mailing Address N/A
Phone N/A E-Mail N/A
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type
Site Specific
Traffic Control Device
Safety Study

Funding Amount

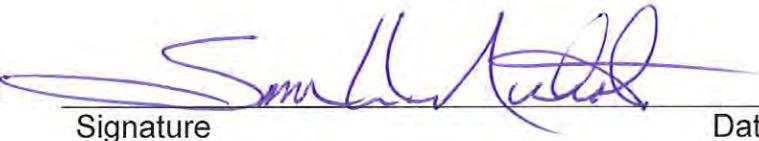
Total Project Cost \$ 398,477.00
Safety Funds Requested \$ 398,477.00

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Marion County Board of Supervisors

Signed:  05-31-11
Signature Date Signed

SAM L. NICHOLS
Typed Name

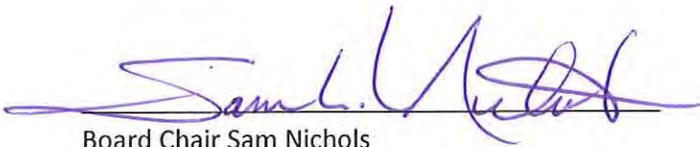
Attest:  5-31-11
Signature Date Signed

JAKE GRANDIA
Typed Name

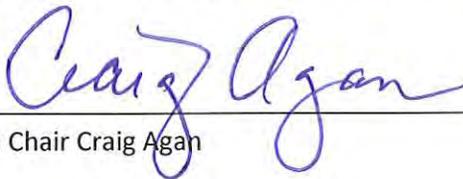
On May 31, 2011 the Marion County Board of Supervisors approved the submittal of an application to the Iowa Department of Transportation Traffic Safety Improvement program for improvements to the T-15/G46 curve and Intersection.



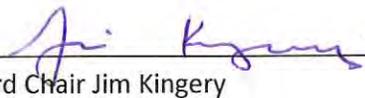
Attest: Jake Grandia Marion County Auditor



Board Chair Sam Nichols



Board Chair Craig Agan



Board Chair Jim Kingery

Narrative discussion of the T-15 S45 Intersection TSIP Application

Highway T-15 between the cities of Knoxville and Pella has been a major traffic corridor in Marion County since the construction of Red Rock Dam in the late 1960's. The latest traffic count on County Road T-15 (2006) indicates 4000 vehicles per day near the intersection with County Road S-45 (locally known as Metcalf Corner). The Traffic count in the same area on S-45 is recorded as 1030. (See Attached 2006 Traffic Count Map)

In 2002 the county replaced a one lane bridge over the Des Moines River on County Road T-17 that impacted the traffic patterns in the area significantly. This bridge allowed some commuter traffic that had previously utilized T-15 to divert to using the T-15, G-46, T-17 corridor. This change in traffic movement meant there were many more traffic movements through the T-15/G46 intersection.

The current configuration of the intersection at a 716 foot radius curve on T-15 is a 2 legged Y. (See attached aerial) Through traffic is allowed on the T-15 curve while stop conditions are required at westbound G-46 and the North bound portion of the y connection. The curve on T-15 has a design speed of 45 miles per hour and is posted with a 40 MPH advisory speed.

Each traffic movement through the existing intersection is unique. The through movements on T-15 through the curve are the least complicated movements. A view from each of 8 different movements is attached. The westbound movement onto G-46 from T-15 has good sight distance. The south bound T-15 onto east bound G-46 has limited approach sight distance toward the intersection and requires 2 left turns to accomplish the South to East movement. The East bound movement from T-15 onto G-46 is an uncontrolled nearly strait movement that encounters the North South leg of the intersection after leaving the main direction of travel. The West bound movement from G-46 onto T-15 is a blind approach to the intersection until getting within 750 feet of the stop sign and 450' of the North South Leg of the intersection. The angle of approach to T-15 at the stop sign is also requires a greater than 90 turn of the head to view oncoming traffic from T-15. The West bound G-46 to North bound T-15 movement requires 2 right hand turns. Sight distance is good for both, however the entrance onto T-15 requires a greater than 90 turn of the head as well. Due to the configuration of the Y intersection there is no room to place a series of chevrons on the existing curve

In Late 2010 the county requested a Road safety audit of the entire T-15 corridor including this intersection. The applicable information from that RSA is attached. Within the intersection 19 crashes were noted between 2001 and 2009, including one fatality and 2 major injuries. Since 2009 at least one additional fatality has occurred.

The improvements proposed for this intersection are briefly described here. Preliminary engineering work has begun however detailed survey information is needed to finalize the design. From the preliminary design it appears all the improvements can be made in the existing Right of Way. The proposal is to leave the through portion of the southbound/West bound movement in place, utilize a portion of the existing pavement for a left turn lane at the center of the curve and expand the curve to the Southeast to accommodate a new through lane and an offset right turn lane. An offset left turn lane is also incorporated into the realigned intersection. The design will incorporate rumble stripes on the curve where they do not interfere with turning movements. At least one destination light is proposed to improve the night time visibility of the intersection. The intersection realignment will allow for chevrons to be placed on both T-15 and G-46. The chevrons on G-46 will significantly improve the visibility of the intersection for westbound traffic. Upgraded curve and reduced speed signs will also be incorporated into the project.

EXCERPT FROM T-15 ROAD SAFETY AUDIT
PAGE 6 - B41

Many of the horizontal alignment warning signs throughout the entire County Road T15 length have fluorescent-yellow background sheeting.

Paved Lisbon Drive intersects from the west just beyond the Lucas Drive intersection and three property damage only (PDO) crashes have been noted at this location.

Proceeding to the north, a short radius horizontal curve, preceded from each direction with a downgrade vertical curve, exists at the paved County Road S71 T intersection. A double arrow warning sign is installed across from the T intersection. No chevrons are in place around this curve, but an approximate 4 ft wide paved shoulder was installed along the low side of the curve with a resurfacing project in about 1999. Fluorescent-yellow curve warning signs precede the curve with 40 mph advisory speed plaques. This intersection has been the site of more than 12 crashes throughout the nine-year analysis period, although none has resulted in fatalities or major injuries.

Segment 3. 180th Avenue to Jewell Drive

The team continued their review east and then northeast on County Road T15 between 180th Avenue and Jewell Drive, including the intersection of County Road G46 (Metcalf Corner). The total segment length is about 1.93 miles.

The Y intersection at G46 has been the location of about 19 crashes over the nine-year analysis period, including one fatal and two major injury crashes, almost all at the westerly connection of T15 and G46.

The team noted that as a westbound driver waits at the stop sign on G46, approaching vehicles on T15 may not signal a direction of travel intention, resulting in possible confusion for the stopped driver and potential contribution to failure to yield from a stop sign crashes. Other possible factors possibly impacting driver performance is the sharp approach angle for the G46 legs and the location of the stop bars, which may be too far from the preferred stop location to permit adequate visibility of approaching vehicles.

A vertical curve precedes the stop sign on G46 for westbound vehicles, obstructing the view to the intersection. Rumble strips have been installed to warn of the stop ahead.

Fluorescent-yellow curve warning signs with 45 mph advisory speed plaques precede the horizontal curve on T15 at this intersection.

Northerly from the G46 intersection, brush, tall grass, and small trees exist in the right of way, which could hamper visibility of deer. Deer warning signs are in place in this area. Several recreational signs with quite faded backgrounds are located throughout some of the reviewed segments.

CRASH RATES AND DENSITIES BY SEGMENT

Table 3 shows the crash rates and densities in each T15 road segment for the nine-year review period.

Table 3. 2001-2009 Crash rates and densities for County Road T15 by road segment

Road Segment	Length (miles)	Volume (vpd)	Crashes (#)	Rate (per HMVMT)	Density (crashes/mile)
1. Old Hwy 5 to Lucas	3.75	3512	70	162	2.07
2. Lucas to 180th	2.52	3127	35	135	1.54
3. 180th to Jewell	1.93	3733	45	194	2.59
4. Jewell to Idaho	2.00	3400	42	188	2.33
5. Idaho to G28	1.68	2480	22	160	1.45

vpd = vehicles per day

HMVMT = 100 million vehicle miles of travel

To compare these calculated rates and densities to average statewide rates and densities for similar roadways (as published by the Iowa DOT) see Table 4.

Table 4. 2001-2009 Average crash rate and density for Iowa secondary major collector roads

Rate (per HMVMT)	Density (crashes/mile)
167	0.39

HMVMT = 100 million vehicle miles of travel

SUPPLEMENTAL CRASH HISTORY REVIEW AT THE INTERSECTION OF COUNTY ROADS T15 AND G46

In recognition of the high number of crashes recorded at this intersection, the audit team undertook an in-depth review of crash reports for the years of 2007-2009 for this location. The Marion County Sheriff's Office and the Iowa State Patrol provided report data for all investigated crashes. The team reviewed 16 reports, paying particular attention to the narratives and diagrams. See Tables 5 and 6 for summaries of the pertinent data from these reports.

Table 5. 2007-2009 Summary of pertinent data for T15/G46 intersection crashes

Fatal	1
Injury	5
PDO	10
Nighttime	6
Snow/ice-related	8
SV ROR	10
Multi-vehicle	6
Stop sign violation	1
Rear-end	3
Sideswipe	2

PDO = property damage only
SV ROR = single-vehicle run-off-road

Of the 22 drivers involved in these 16 crashes, the driver-contributing circumstances that were noted are shown in Table 6.

Table 6. 2007-2009 Summary of driver-contributing circumstances for T15/G46 intersection crashes

Contributing Circumstance	Total
Lost control	9
Too fast for conditions	2
Other improper action	2
Ran stop sign	1
No improper action	6
Unknown	3

Note: For one of the drivers, two contributing factors were recorded

While the majority of crashes at this location were due to some degree of deficient performance by a driver, only two drivers were cited for improper actions.

CONCLUSIONS AND SUGGESTIONS FOR SAFETY IMPROVEMENTS

Based on the review of the crash history, comments by state and local agency meeting participants, and observations during the daylight and nighttime reviews, the audit team offers the following suggestions for safety improvements along the reviewed route.

1. Review all signing for needed improvements, including upgrading horizontal alignment signs with fluorescent-yellow background sheeting and plumbing all sign supports. Also, consider upgrading No Passing signs to fluorescent-yellow background sheeting.
2. Review Part 2 of the 2009 Manual on Uniform Traffic Control Devices (MUTCD) for new requirements and recommendations regarding horizontal alignment signing, especially size, placement, need for advisory speed plaques, and number and spacing of chevrons. For curves that don't require chevrons, consider installing delineators, as described in Chapter 3F of the 2009 MUTCD.
3. Discuss with the COE the need to upgrade all Red Rock recreational signs to improve faded background sheeting.
4. Relocate the stop bars at the T15/G46 intersections closer to the through-roadway to improve driver visibility of the approaching traffic when stopped at these intersections. Consider installing a painted island for westbound G46 traffic to improve the sight angle when stopped.
5. Study flattening of foreslopes along the horizontal curve of T15 at the G46 intersection to improve roadside safety for run-off-road (ROR) vehicles.
6. Given that a considerable percentage of crashes at the T15/G46 intersections have occurred during snow/ice weather conditions, a review of winter maintenance practices through this area might be beneficial.
7. Consider reconstructing the Y intersection at T15/G46 to a T intersection, as a long term improvement.
8. Remove brush and other vegetation from the clear-zone to improve visibility of deer and potentially reduce animal collisions.
9. Discuss replacing down guy wires in the clear-zone with the utility company.
10. Although excess speeding did not appear to be a major concern at this time, continue to monitor conditions and consult with the Marion County Sheriff's Office and/or the Iowa State Patrol if enhanced efforts in enforcement are warranted.

Segment 3. 180th Avenue to Jewell Drive



Figure A.9. Approaching County Road G46 intersection on County Road T15 eastbound



Figure A.10. Approaching County Road T15 intersection on County Road G46 westbound



Figure A.11. Northbound leg of County Road G46 Y intersection with County Road T15



Figure A.12. Westbound leg of County Road G46 Y intersection with County Road T15

Segment 3. 180th Avenue to Jewell Drive

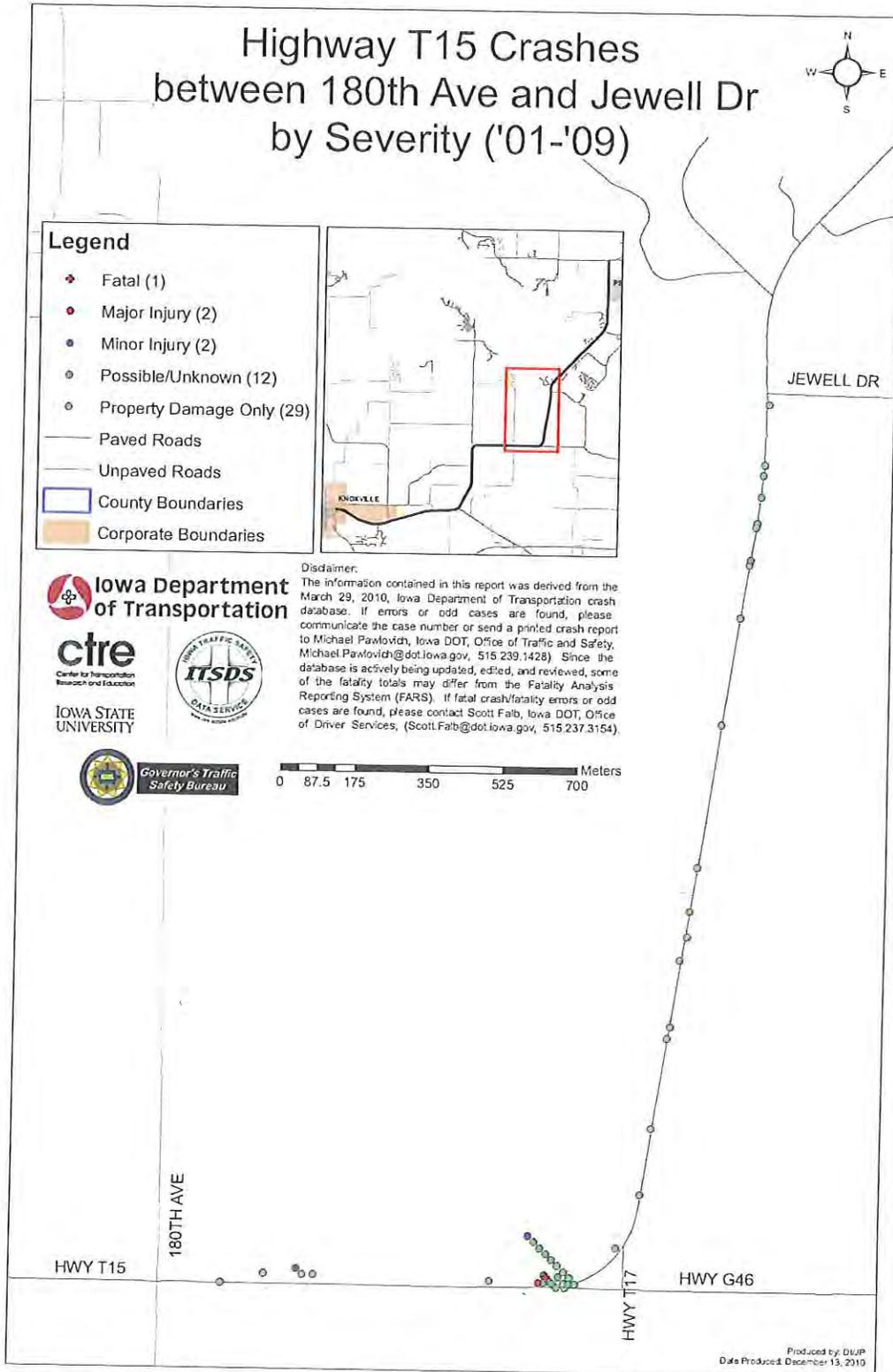


Figure B.6. 2001-2009 Marion County Road T15 between 180th Avenue and Jewell Drive crash map by severity

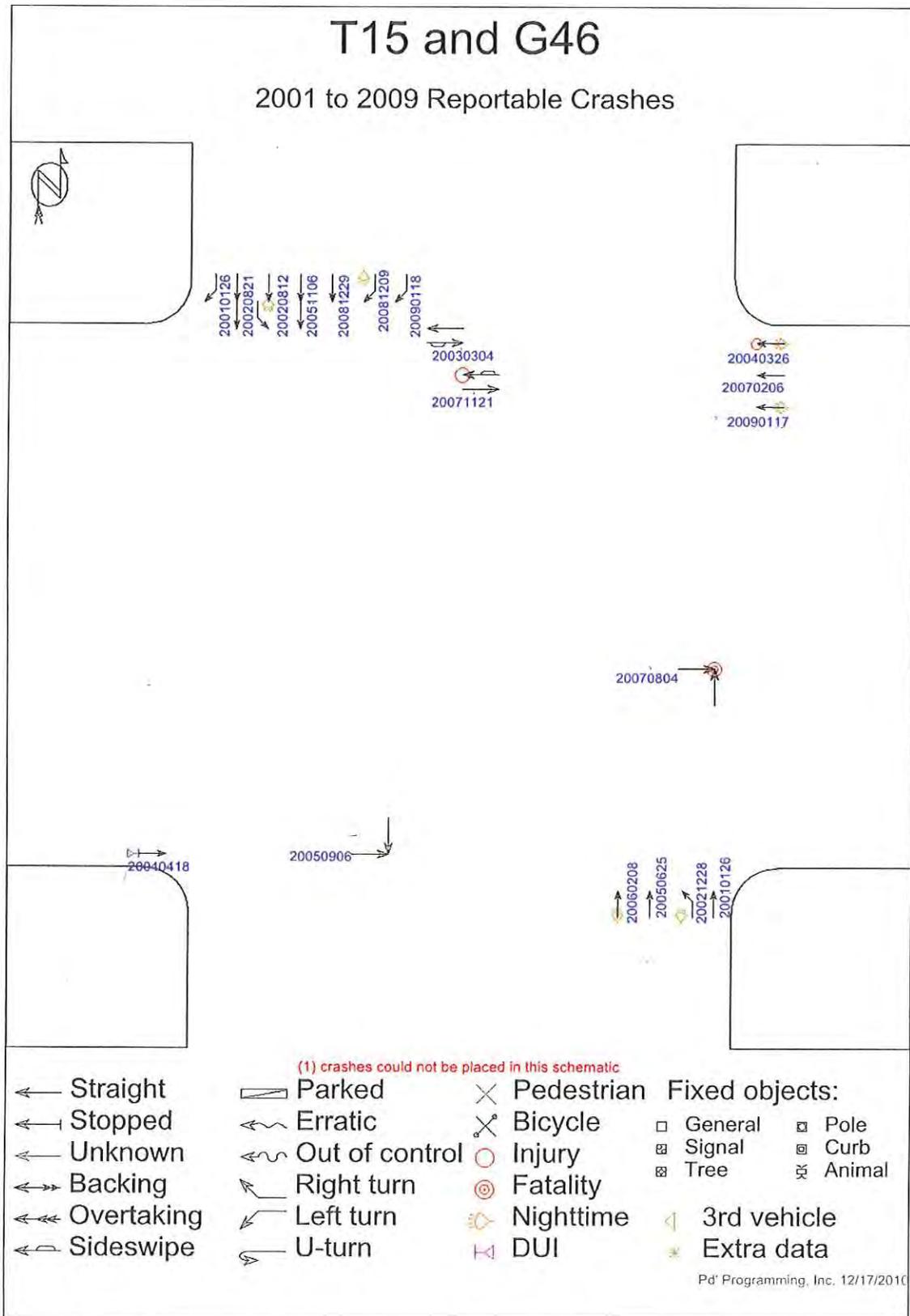
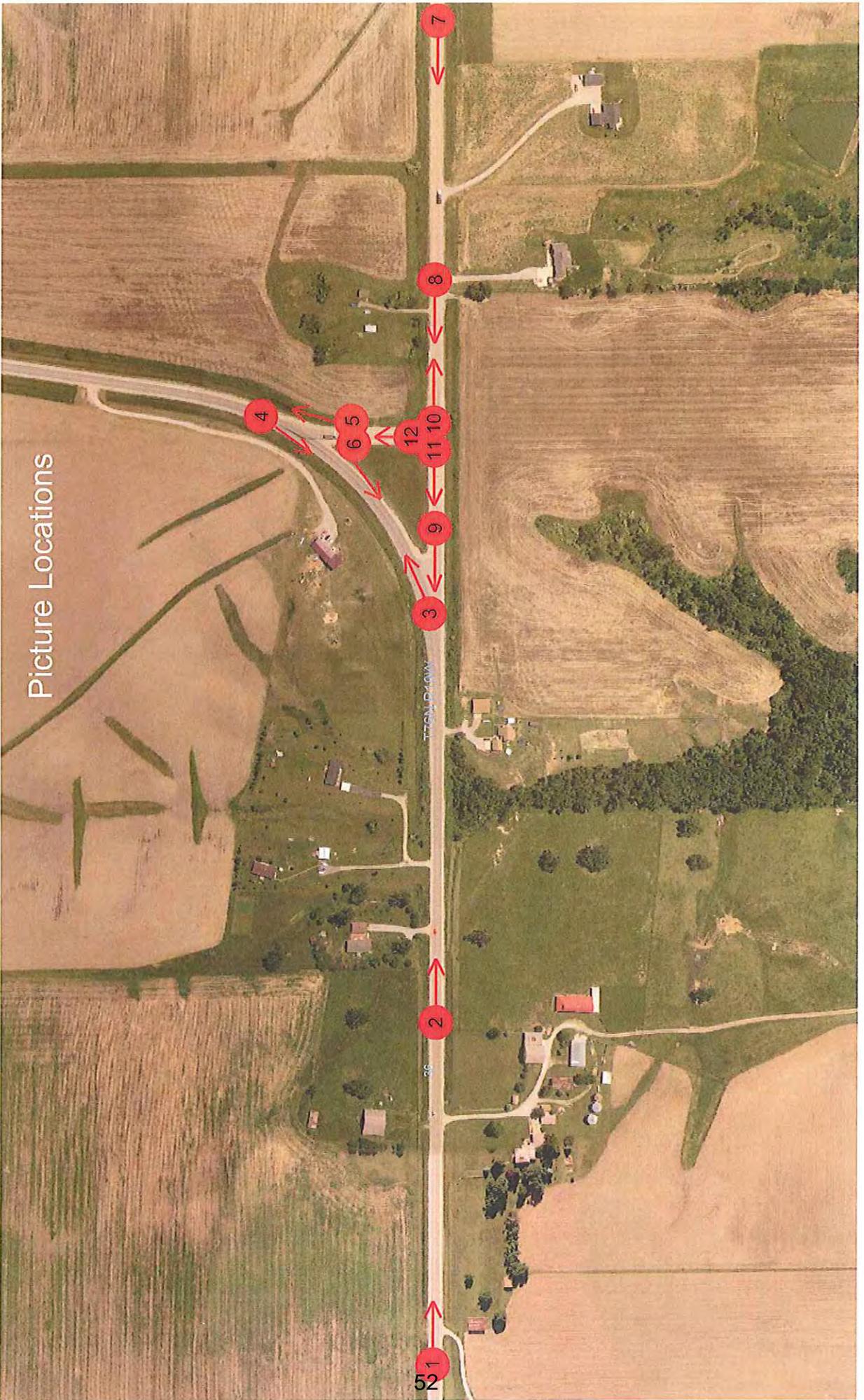
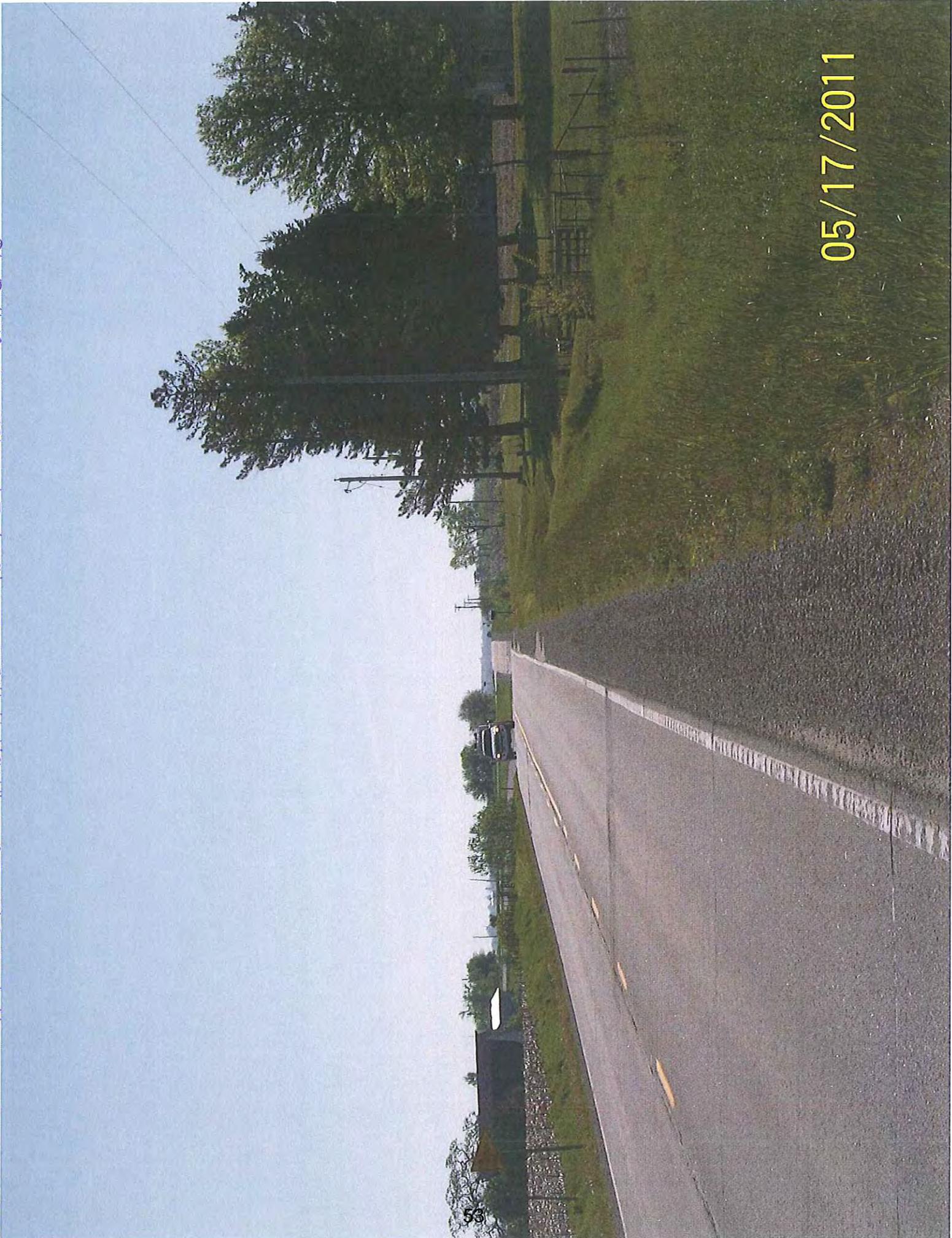


Figure B.7. 2001-2009 Marion County Roads T15 and G46 (Metcalf Corner) crash diagram

Picture Locations



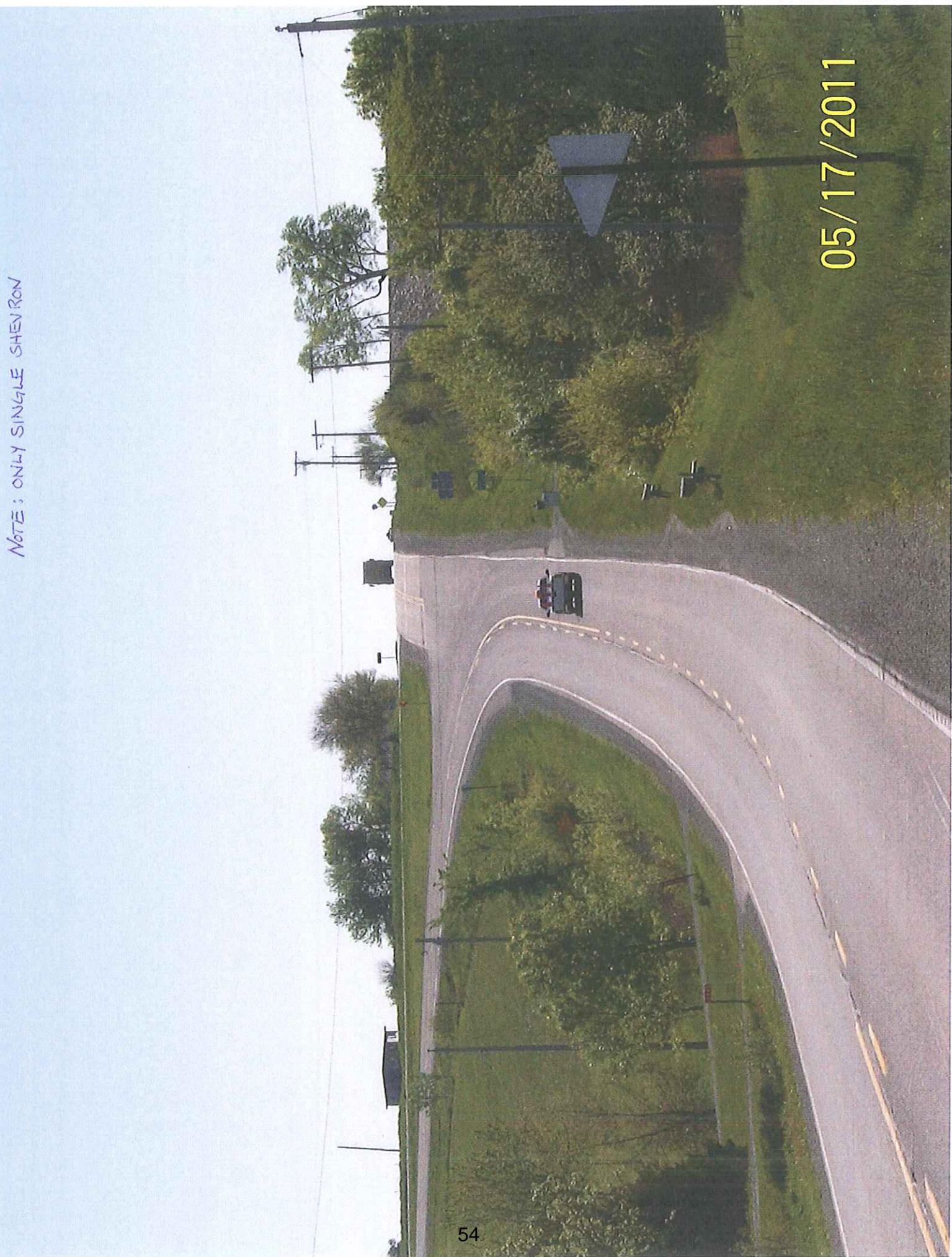
PICTURE # 1 ON T-15 EAST BOUND APPROX. A HALF MILE FROM THE INTERSECTION WITH G-96



05/17/2011

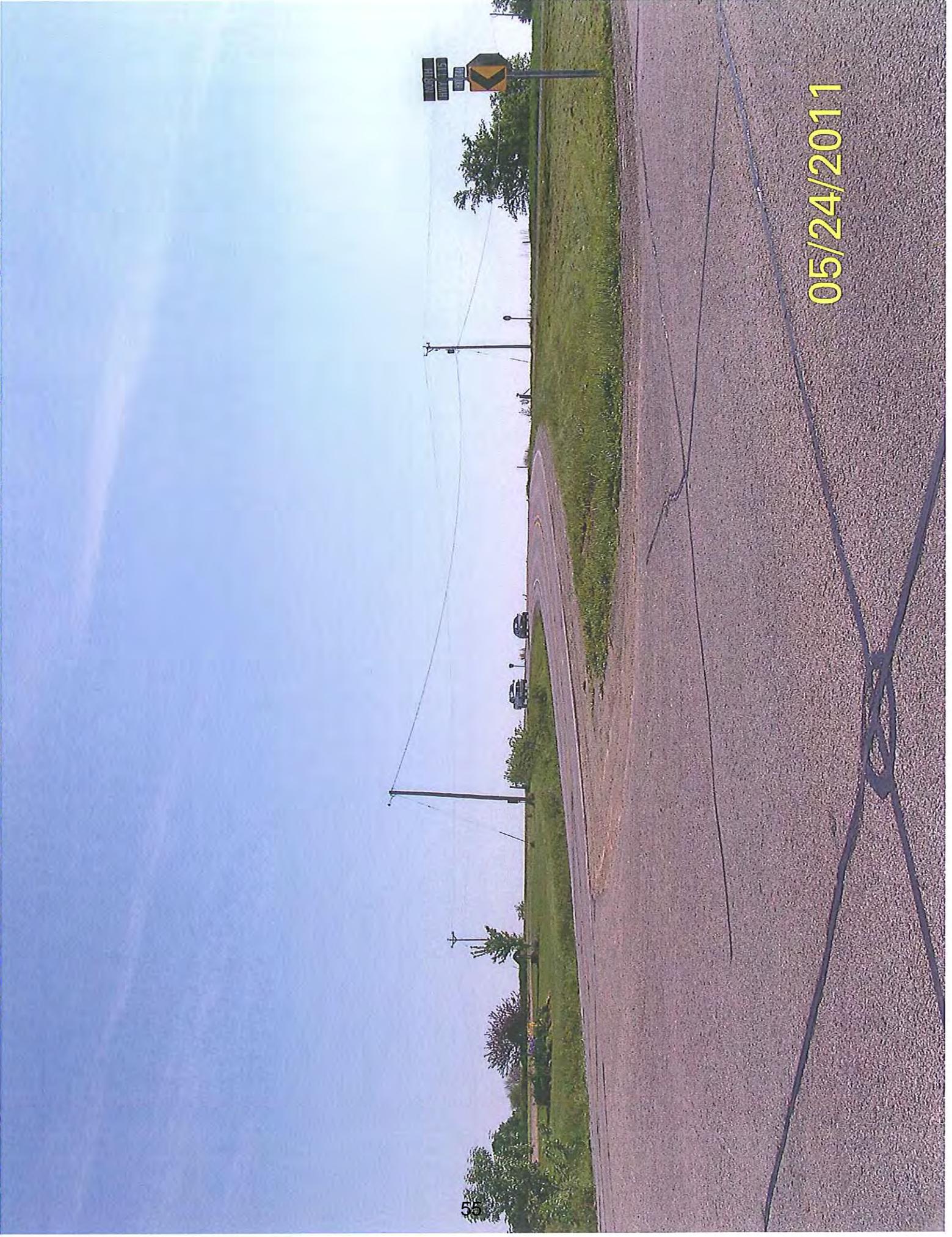
PICTURE #2 ON T-15 EASTBOUND. STRAIGHT THROUGH IS G-46. CAN SEE INTERSECTION FROM HOUSE 1834 (470)

NOTE: ONLY SINGLE SHEVRON



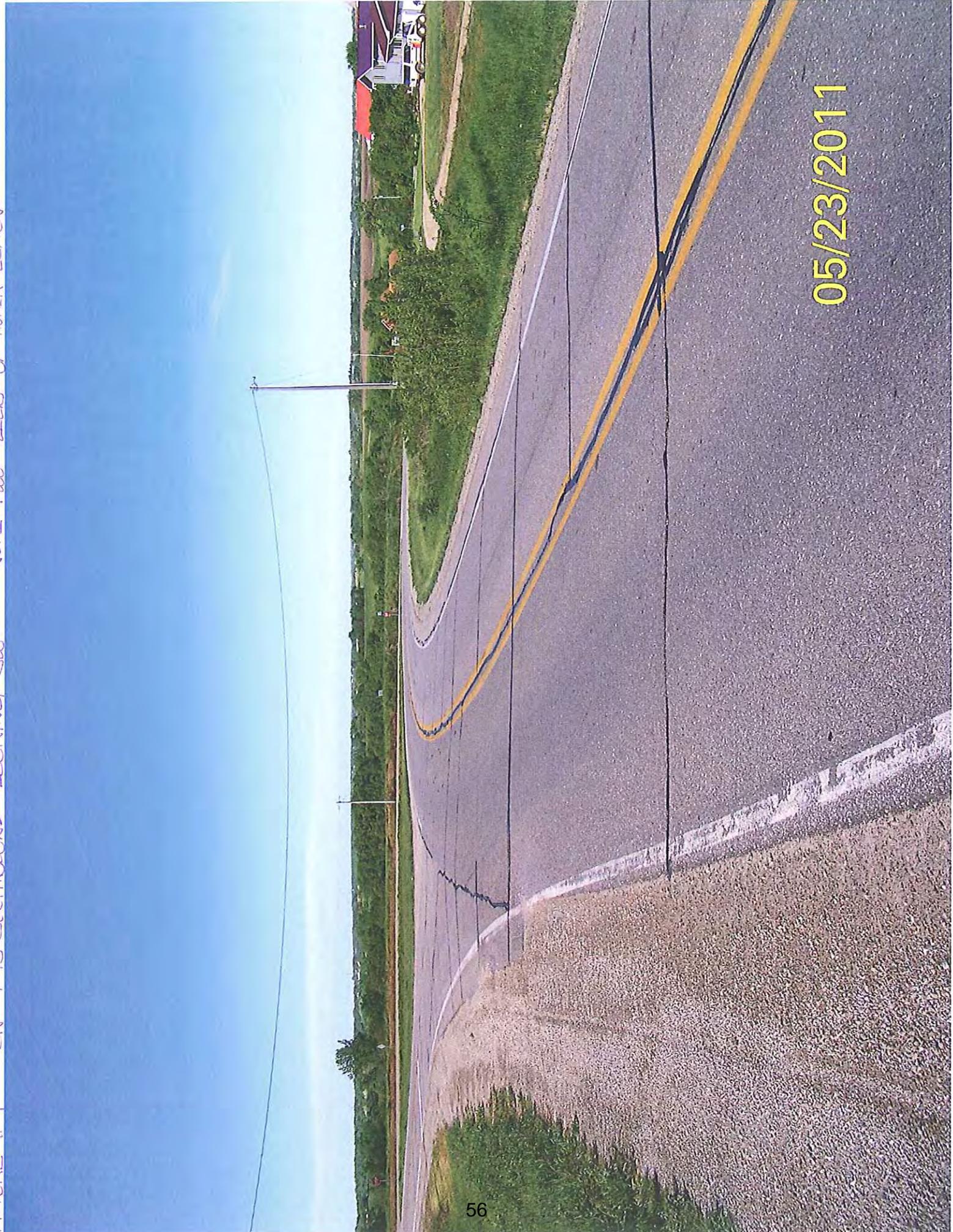
05/17/2011

FIGURE #3 EAST BOUND T-13 ON STRAIGHT THROUGH PORTION OF INTERSECTION LOOKING N/E.



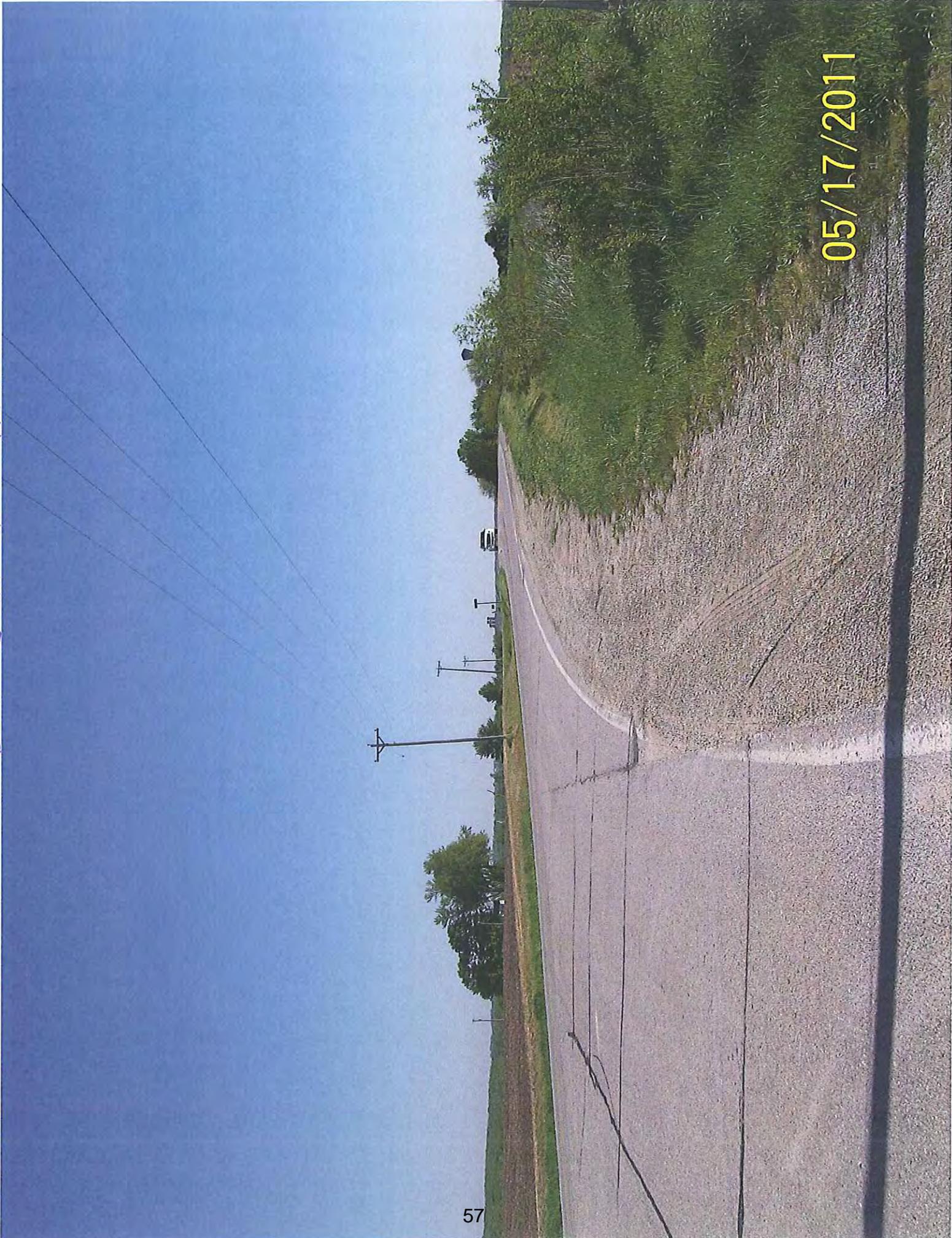
05/24/2011

PICTURE #4 CN T IS SOUTHBOUND LOOKING SW NOTE TWO LEGS OF INTERSECTION



05/23/2011

FIGURE # 5 ON N'S LEG OF INTERSECTION @ STOP SIGN LOOKING NORTH

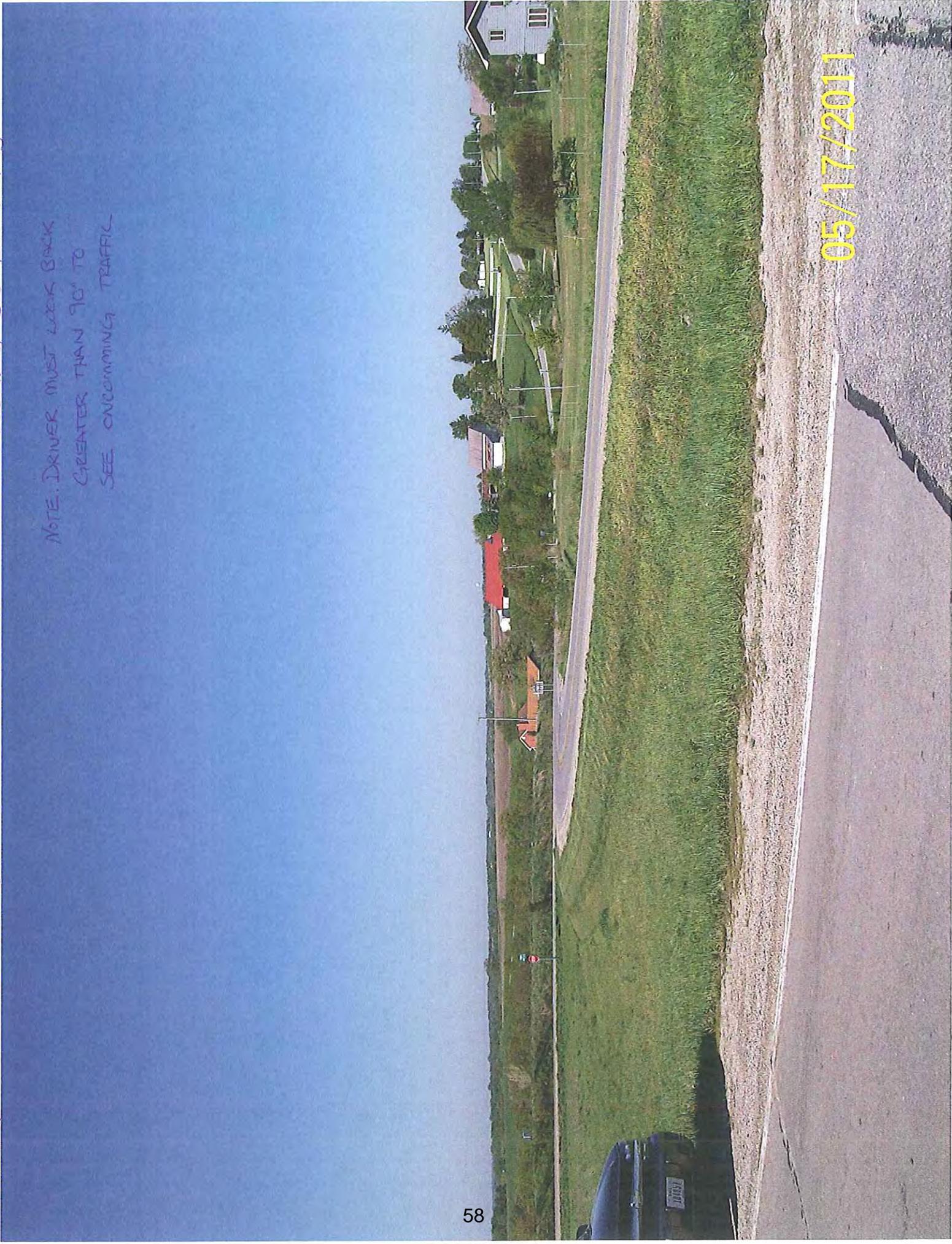


05/17/2011

PICTURE #6 AT THE STOP SIGN ON THE N'S LEG OF INTERSECTION. LOOKING SW DOWN T-15

NOTE: DRIVER MUST LOOK BACK
GREATER THAN 90° TO
SEE ONCOMING TRAFFIC

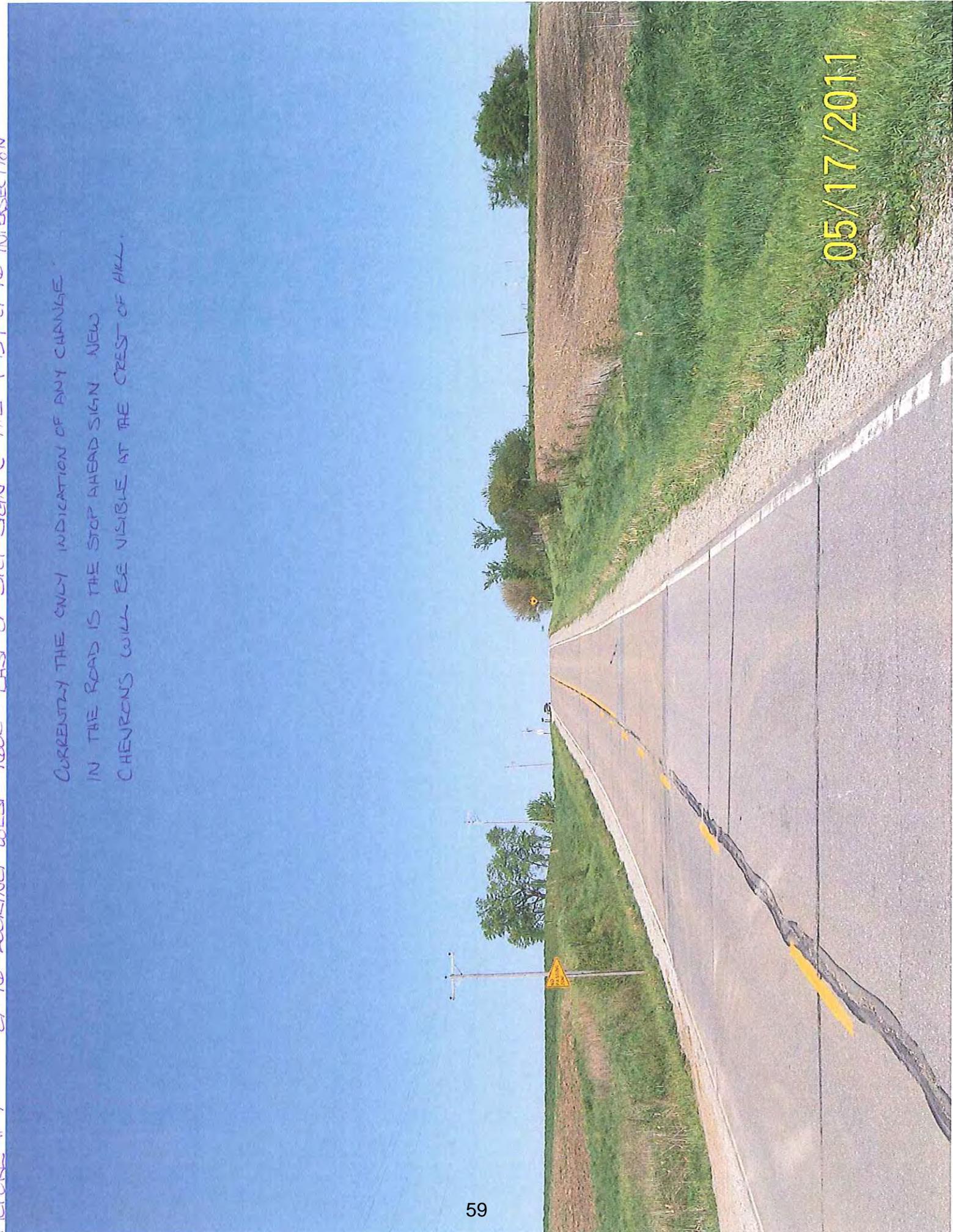
05/17/2011



PICTURE # 7 G-46 LOOKING WEST 1000' EAST OF STOP SIGN @ THE T-15 / G-46 INTERSECTION

CURRENTLY THE ONLY INDICATION OF ANY CHANGE IN THE ROAD IS THE STOP AHEAD SIGN. NEW CHEVRONS WILL BE VISIBLE AT THE CREST OF HILL.

05/17/2011

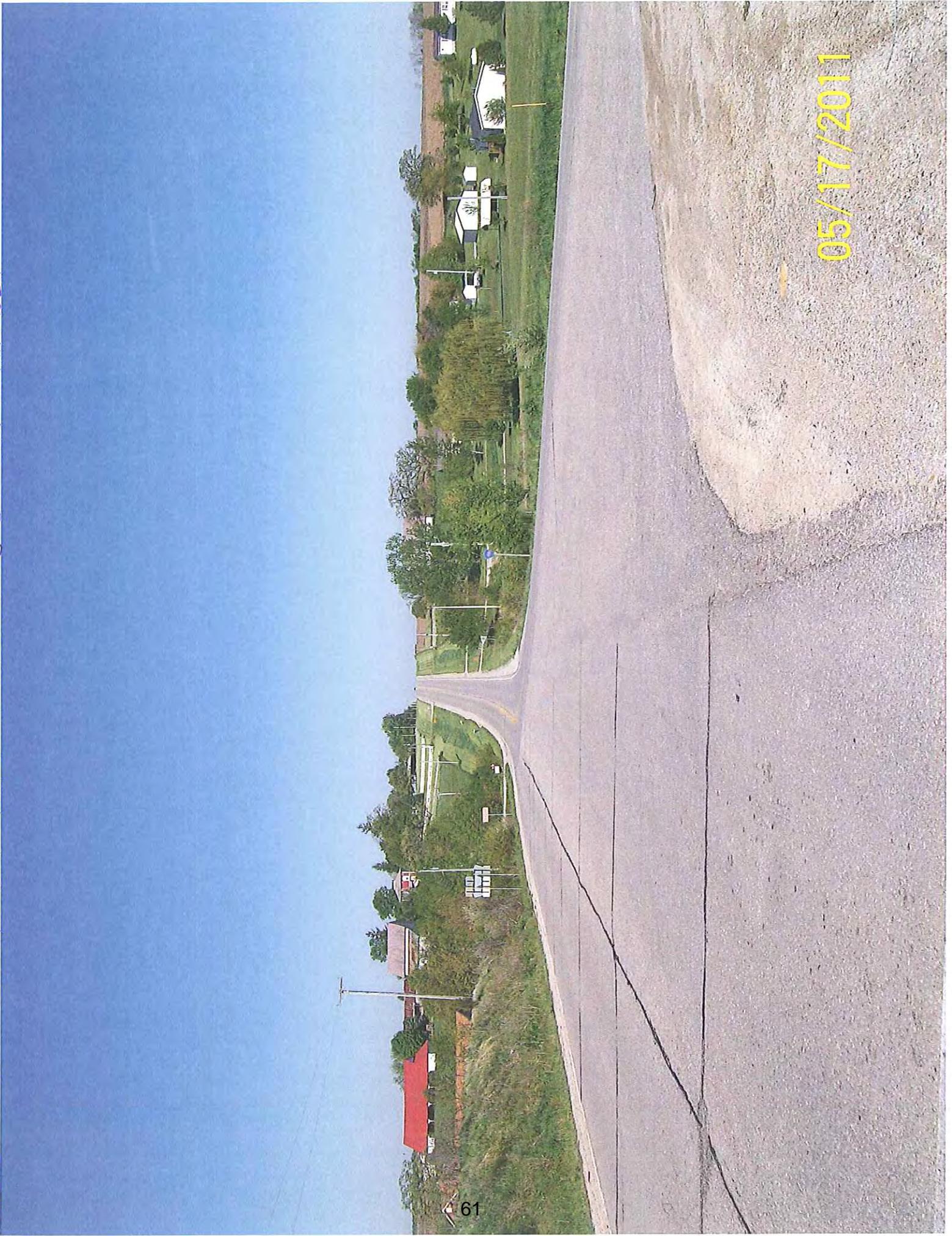


PICTURE # 8 69-460 LOOKING WEST 650' EAST OF STOP SIGN. FIRST VISIBLE INDICATION OF STOP SIGN
NOTE: INTERSECTION STILL NOT VISIBLE



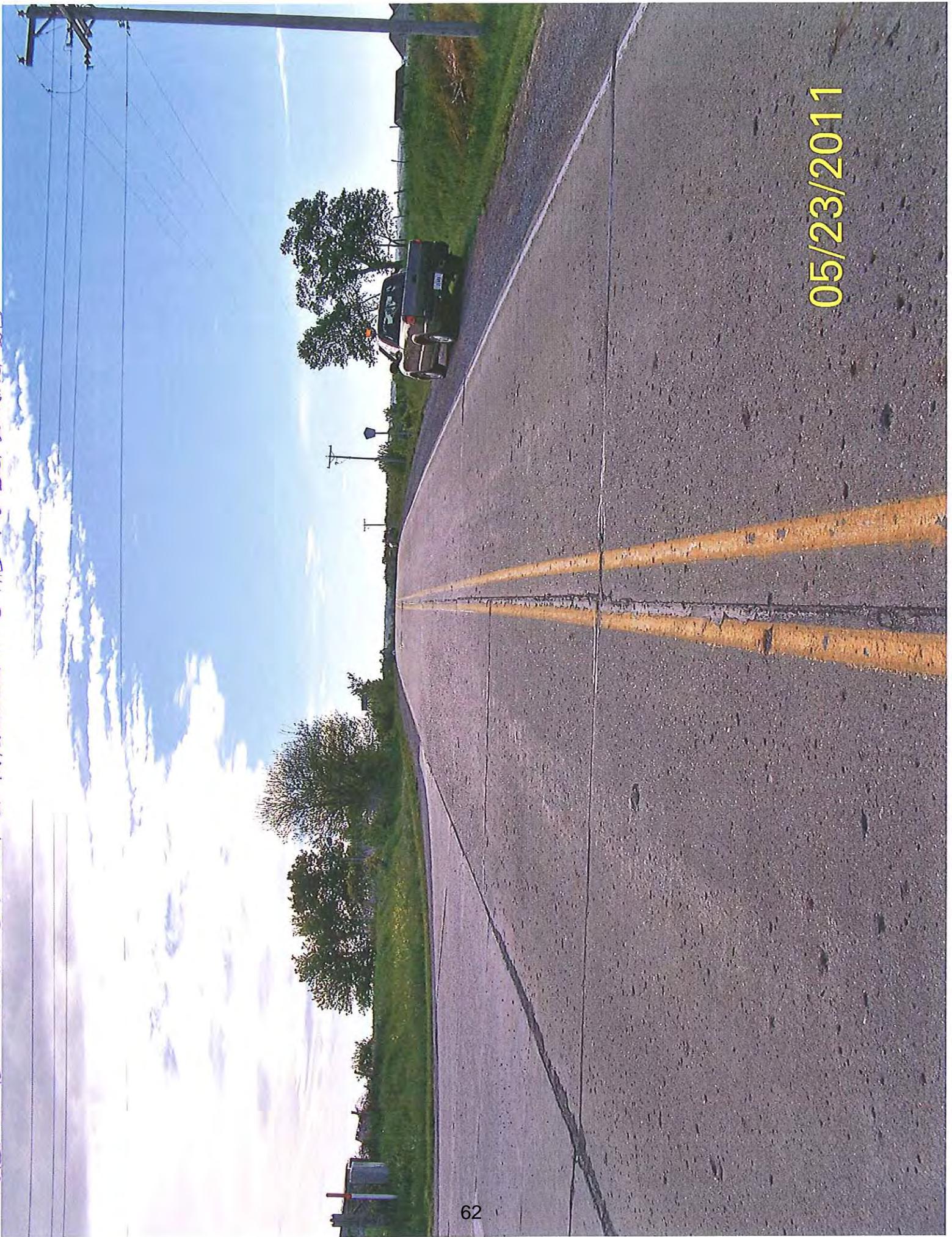
05/17/2011

PICTURE # 9 ON THE E-W LEG OF INTERSECTION @ STOP SIGN LOOKING WEST.



05/17/2011

FIGURE # 10 ON THE E-W LEG OF INTERSECTION @ THE N-W LEG LOOKING EAST



05/23/2011

PICTURE # 11 ON THE E-W LEG OF THE INTERSECTION LOOKING WEST.

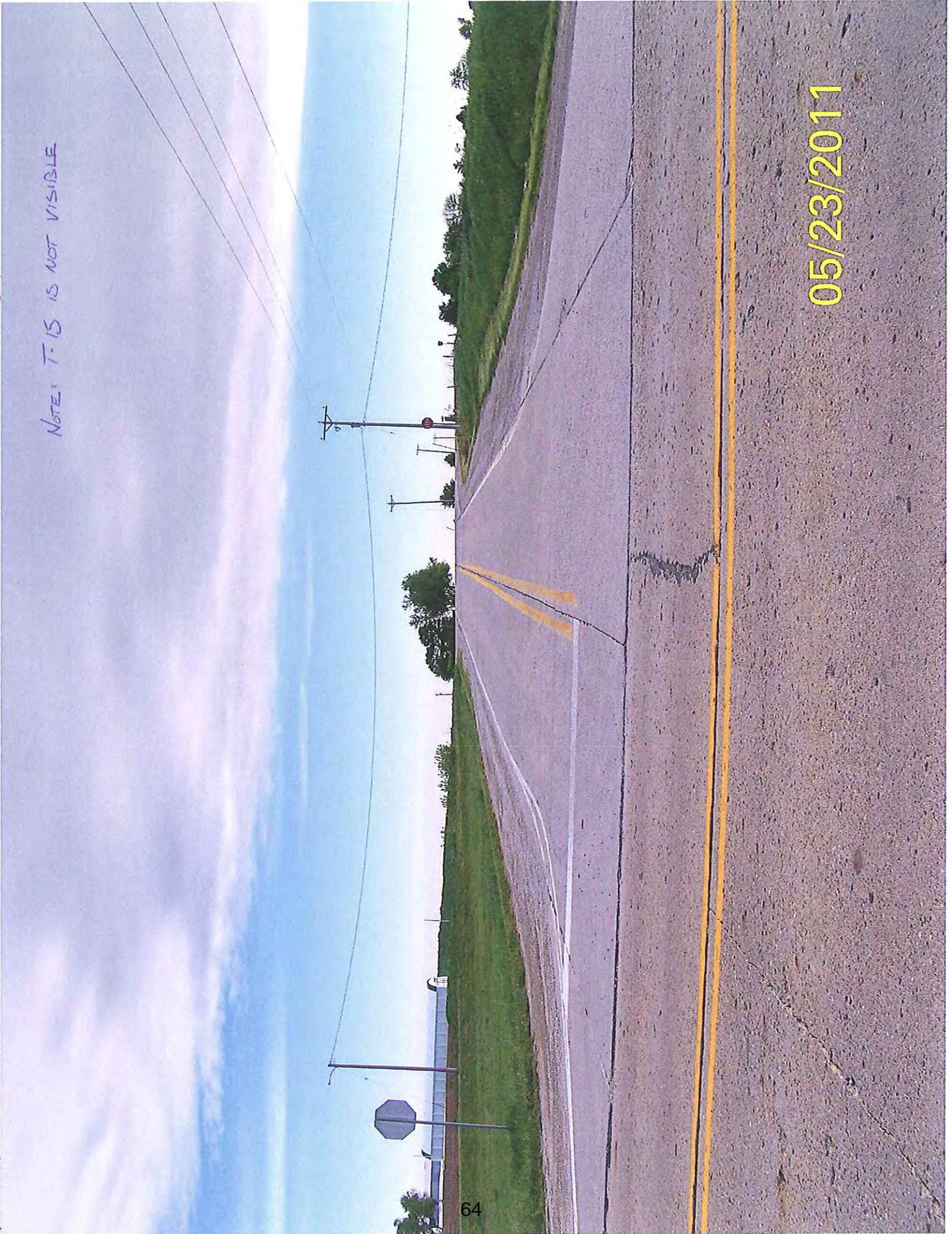
NEW ALIGNMENT WOULD CURVE TO
"T" INTERSECTION @ THIS POINT &
NEW CHEVRONS WOULD BE IN
FOREGROUND.



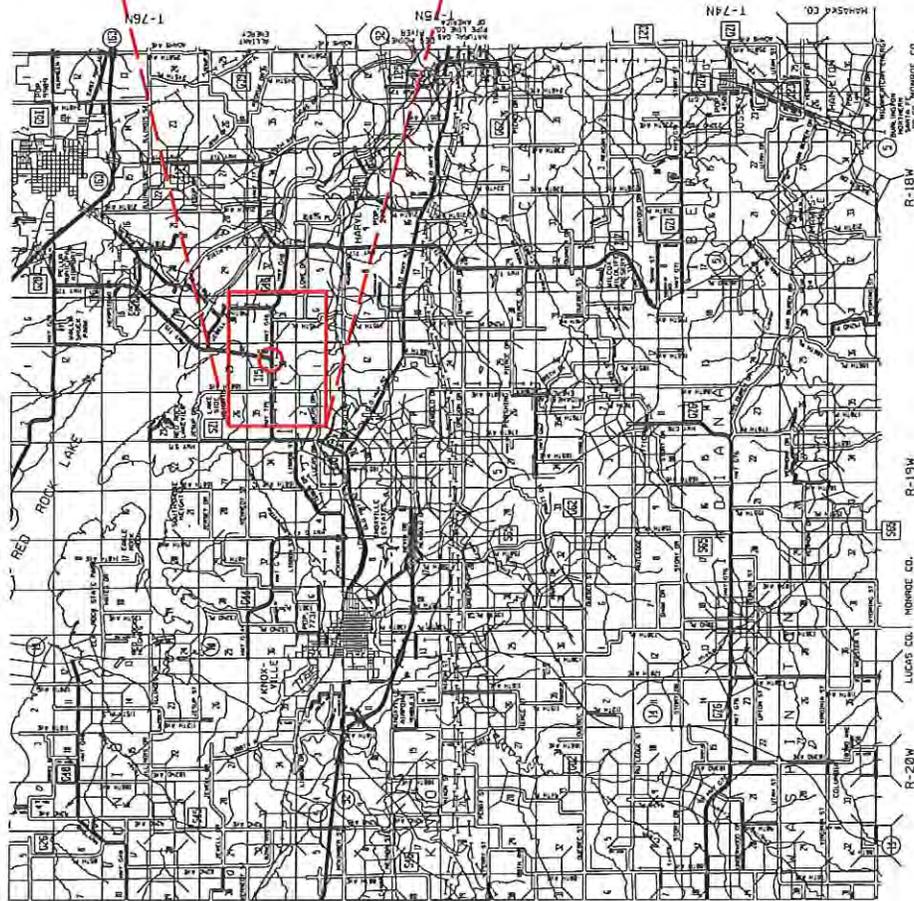
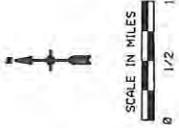
05/23/2011

PICTURE #12 ON THE E-W LEG OF INTERSECTION LOOKING NORTH @ THE N-S LEG

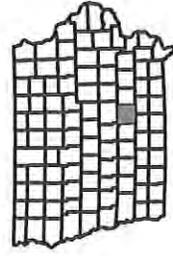
NOTE: T-15 IS NOT VISIBLE



05/23/2011

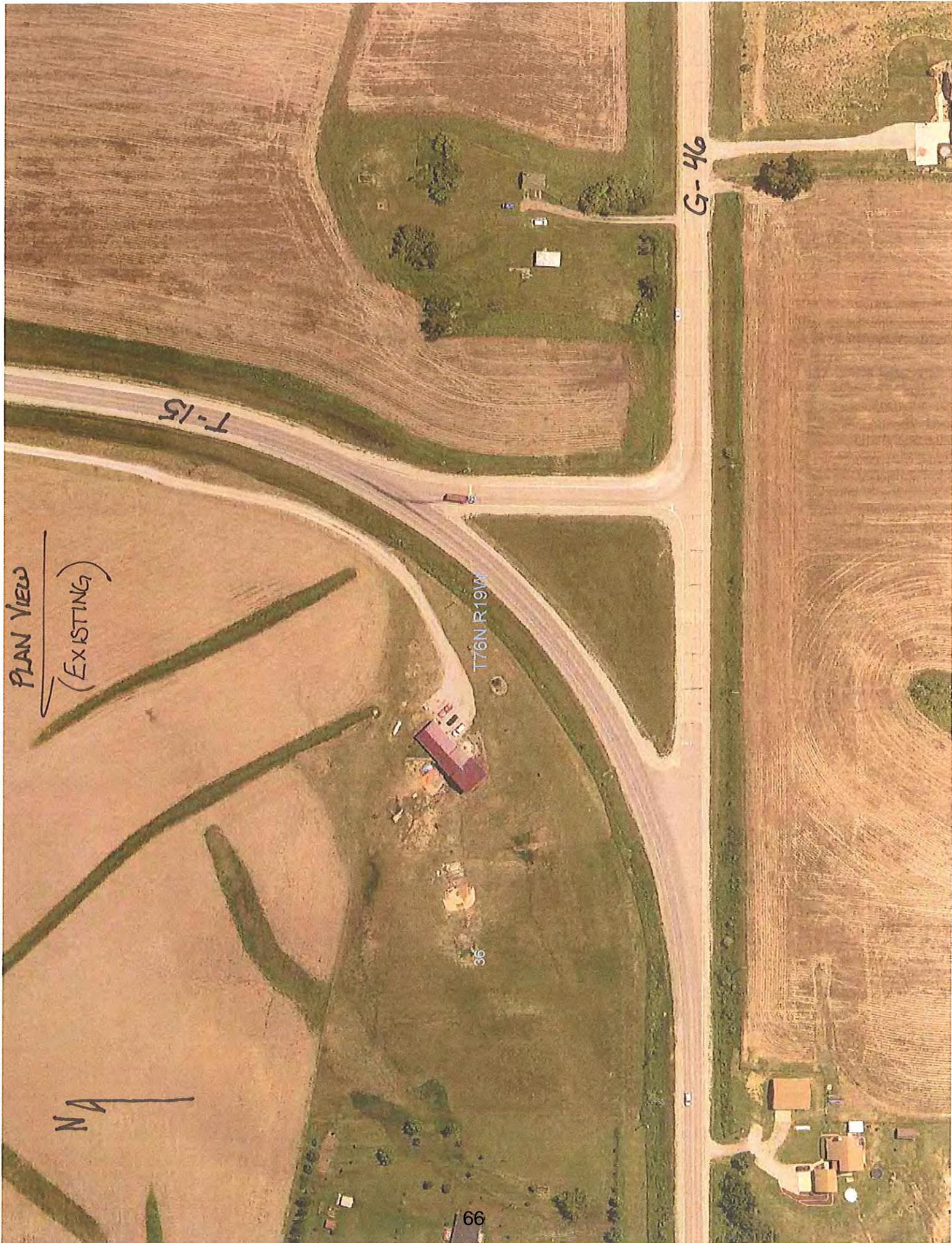


VICINITY MAP



MARION COUNTY

A.02



PLAN VIEW
(EXISTING)

T-15

T76N R19W

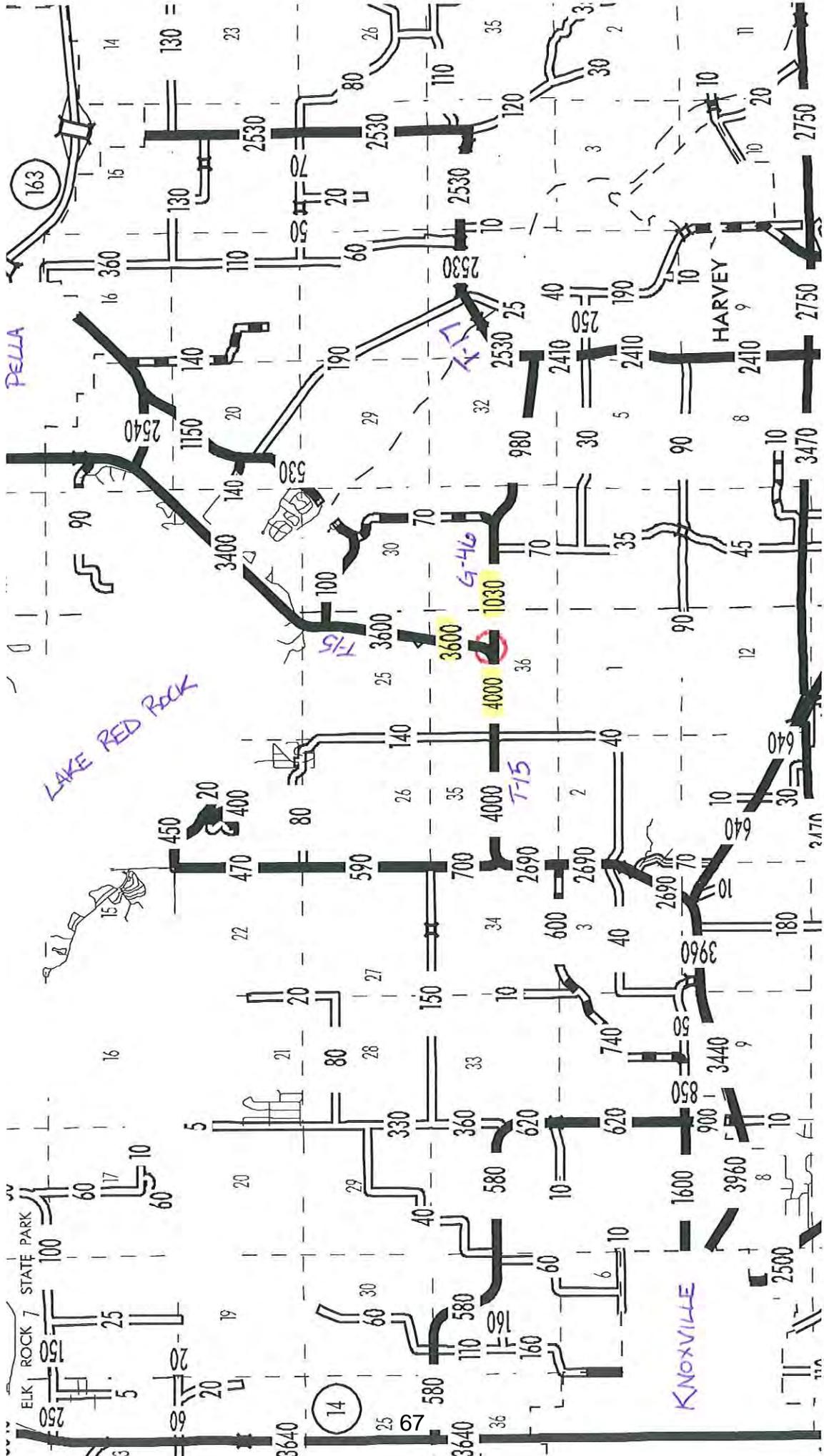
G-46

NA

36

66

2006 DOT TRAFFIC COUNT



Proposed Plan View

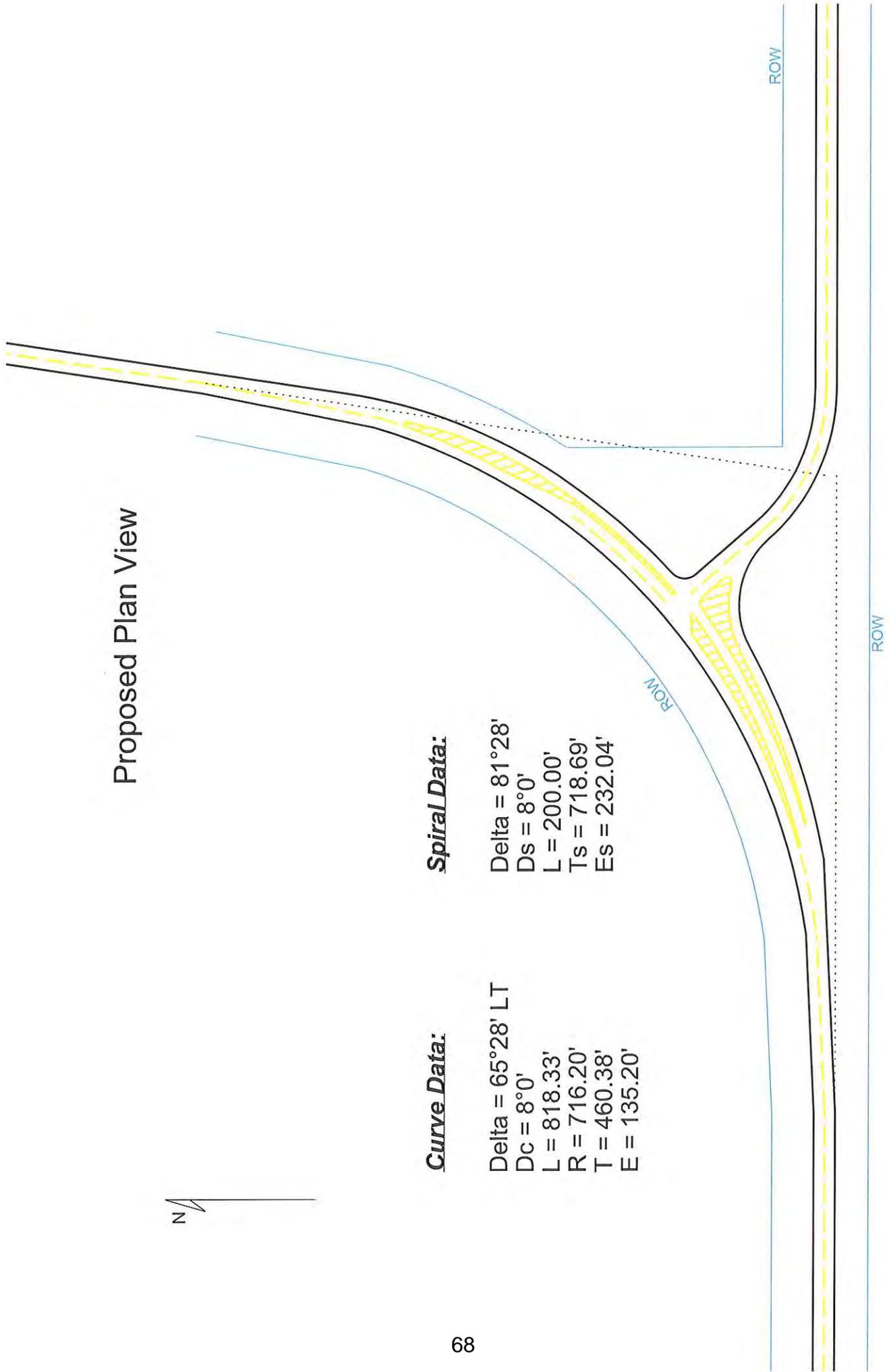


Curve Data:

Delta = 65°28' LT
Dc = 8°0'
L = 818.33'
R = 716.20'
T = 460.38'
E = 135.20'

Spiral Data:

Delta = 81°28'
Ds = 8°0'
L = 200.00'
Ts = 718.69'
Es = 232.04'



Proposed Plan View



Curve Data:

Delta = 65°28' LT
Dc = 8'0"
L = 818.33'
R = 716.20'
T = 460.38'
E = 135.20'

69

Spiral Data:

Delta = 81°28'
Ds = 8'0"
L = 200.00'
Ts = 718.69'
Es = 232.04'

T-15/G46 TSIP Proposed Project Schedule

No Right of Way, Historical significance or wetlands are anticipated on this project so a minor project schedule is projected.

Concept statement	March 2012
Preliminary Plans	April 2012
Check plans	May 2012
Final plans	June 2012
Contract turn in	July 2012
Letting Date	September 2012
Construction Completion	November 2012

Final Design will dictate a more exact schedule

Iowa Department of Transportation Request for Traffic Safety Funds

GENERAL INFORMATION

Location/Title of Project: Intersection Improvements including traffic signalization at Intersection of N.W. 26th Street and IA Hwy 415

Applicant: County of POLK

Contact Person: Kurt D. Bailey, P.E.

Title: Polk County Engineer

Complete Mailing Address: 5885 N.E. 14th Street
Des Moines, IA 50313

Daytime Telephone: (515) 286-3705 **Fax Number:** (515) 286-3437

If more than one highway authority is involved in this project, please indicate the contact person(s), mailing address(es), and telephone number(s) of the additional highway authority.

Mr. Tony Gustafson
Asst. District 1 Engineer
Iowa Department of Transportation
1020 S. 4th Street, Ames, IA 50010
515-239-1430
tony.gustafson@dot.iowa.gov

Mr. Paul Moritz
Public Works Director
City of Ankeny
220 W 1st Street, Ankeny, IA 50023
515-963-3522
pmortiz@Ankenyiowa.gov

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Nature of Application: ✓ Site Specific
Traffic Control Device
Safety Study

Funding: Total Cost of the Proposed Project \$609,000
Safety Funds Requested for the Project \$165,000

CERTIFICATION - NW 26th Street and IA Hwy 415 Application

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by Polk County. I understand the attached resolution binds Polk County to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between Polk County and the Department of Transportation is required prior to the authorization of funds.

Representing the **COUNTY OF POLK**

Signed: John F. Mauro 6-7-11
Signature in Ink Date Signed
John F. Mauro, Chairman
Polk County Board of Supervisors

Attested: Betsy Dewey 6-7-11
Signature in Ink Date Signed
2ND DEPUTY, Polk County Auditor

POLK COUNTY BOARD OF SUPERVISORS

Tuesday Agenda Memorandum

Item Type & Title: Resolution 80-11 to authorize Polk County Public Works Department to submit Traffic Safety Funds (TSF) application to IDOT for safety improvements at three intersections.

Agenda Date: June 7, 2011

Contact Individual: Kurt D. Bailey, P.E., Engineer, Polk County Public Works, 286-3705

Previous Action taken by the Board: None

Board/Commission Actions: None

Action Requested (Recommended): Requests the Polk County Board of Supervisors to endorse the intersection improvement projects, authorize maintenance of the improvements after construction is completed, authorize Chairperson to sign the applications, and direct the Public Works Department to submit the applications to the Iowa Department of Transportation for Traffic Safety Improvement Funding.

Comply with Policy: Yes

Background: The Iowa Department of Transportation has adopted Administrative Rule 761-Chapter 164, which created the Traffic Safety Improvement Program to allow funding to be provided to local jurisdictions for eligible traffic safety improvement projects. The Polk County Public Works Department conducted an engineering study at each project location and determined that accidents could potentially be reduced if the proposed improvements were constructed.

Action Impact: Allows Public Works to proceed with submittal of applications to the Iowa Department of Transportation.

Fiscal Note: None at this time

Fiscal Year	New Budget Item? (Y/N)	# of New Position(s) Required	Anticipated Expense	Anticipated Revenue	Budget Amendment Required? (Y/N)	If Amendment is Required,	
						Expense Account Code	Revenue Account Code
10/11	N	N/A	N	N			
11/12	N	N/A	N	N			

Additional Fiscal Note Information (optional):

NARRATIVE

The Polk County Public Works Department is aware of the need to maintain safe roadways for the traveling public in Polk County. In an effort to keep the facilities as safe as possible, this Department monitors accident and traffic trends.

One location of concern in Polk County is the intersection of NW 26th Street and IA Hwy 415. NW 26th Street is a main commuter route between the cities of Ankeny, Johnston, and the north side of Des Moines due to its connection to NW 66 Avenue which is has the only major roadway crossing of the Des Moines River between I-80 and the Mile Long Bridge at Saylorville Lake.

NW 26th Street is a two-lane roadway with an existing right-turn lane at this intersection and is classified as a "Minor Arterial" on the Urban Federal Functional Classification System with a posted speed limit of 45 mph, and current traffic count of 10,000 vpd.

Hwy 415 is a 4-lane roadway with a WB Left turn lane at this intersection and is classified as a "Other Principal Arterial". Hwy 415 transitions to two-lanes beginning just west of this intersection and has a posted speed limit of 55 mph, with a current traffic count of 13,000 vpd.

Three different agencies have jurisdiction at this intersection. The Iowa DOT maintains Hwy 415 and the City of Ankeny has annexed the SE quadrant of this intersection. Traffic volumes have remained rather steady over the last 4 years, but are expected to increase when Ankeny's large Prairie Trail development, a 1,000 acre mixed-use new urbanist development begins to take off.

The Iowa DOT District 1 office has checked the traffic signal warrants at this intersection and proposed all three jurisdictional parties enter into an agreement to install traffic signals and other improvements at this intersection. Upon review of the accident history, it is apparent that the addition of traffic signals is warranted as well as an off-set right turn lane.

As you can see, 31 of the 39 accidents in the last 5 years of data involved rear-end accidents between cars trying to turn right from NW 26 Street onto Hwy 415 and are obviously struggling to see the EB traffic due to changes in road grade, traffic speed, and intersection geometrics. As they move forward, they stop abruptly while the vehicle behind them is also concentrated on looking west at oncoming traffic.

We concur with the Iowa DOT that traffic signals are warranted and believe that the proposed intersection improvements shown in Section G will reduce the accident rate and justify the amount of funding for which we have requested with this application. Polk County thanks the Iowa Department of Transportation for their consideration of this project.

C

ENGINEER'S ESTIMATE					
NW 26 STREET AND IOWA HWY 415 INTERSECTION IMPROVEMENTS					
LINE NO.	ITEM DESCRIPTION	UNIT	QUANTIT Y	UNIT PRICE	TOTAL COST
1	CLEARING & GRUBBING	AC	1	\$ 2,000.00	\$ 2,000.00
2	SPECIAL BACKFILL	TON	1,343	\$ 30.00	\$ 40,290.00
3	EXCAVATION, CL 10, RDWY+BORROW	CY	4,200	\$ 10.00	\$ 42,000.00
4	TOPSOIL, STRIP, SALVAGE+SPREAD	CY	800	\$ 8.00	\$ 6,400.00
5	GRANULAR SHLD, TYPE B	TON	490	\$ 32.00	\$ 15,680.00
6	SHLD FINISH, EARTH	STA	17.6	\$ 320.00	\$ 5,632.00
7	CLEANING AND PREPARATION OF BASE	MILE	0.050	\$ 13,000.00	\$ 650.00
8	EXCAVATION, CLASS 13, WIDENING	CY	700	\$ 16.00	\$ 11,200.00
9	REMOVAL OF CURB	STA	3.50	\$ 3,200.00	\$ 11,200.00
10	PAVEMENT, SCARIFICATION	SY	133	\$ 10.00	\$ 1,330.00
11	PORTLAND CEMENT PAVEMENT SAMPLES	LS	1	\$ 600.00	\$ 600.00
12	PCC PAVEMENT WIDENING, 10 IN.	SY	1,100	\$ 66.00	\$ 72,600.00
13	HMA (3M ESAL) BASE, 3/4"	TON	495	\$ 60.00	\$ 29,700.00
14	HMA (3M ESAL) INTERMEDIATE, 1/2"	TON	160	\$ 60.00	\$ 9,600.00
15	HMA (3M ESAL) SURF, 1/2", FRIC L-4	TON	155	\$ 60.00	\$ 9,300.00
16	ASPH BINDER, PG 64-22	TON	49	\$ 600.00	\$ 29,400.00
17	HMA PAV'T SAMPLE	LS	1	\$ 1,500.00	\$ 1,500.00
18	REMOVAL OF SIGN	EA	6	\$ 75.00	\$ 450.00
19	APRON, CONC, 18"	EACH	2	\$ 1,300.00	\$ 2,600.00
20	CULV, CONC RDWY PIPE, 18"	LF	20	\$ 70.00	\$ 1,400.00
21	RMVL OF PAV'T	SY	610	\$ 6.00	\$ 3,660.00
22	RECREATIONAL TRAIL, PCC, 6"	SY	118	\$ 30.00	\$ 3,540.00
23	RMVL OF SIDEWALK	SY	118	\$ 5.00	\$ 590.00
24	DETECTABLE WARNINGS FOR CURB RAMPS	SF	10	\$ 40.00	\$ 400.00
25	CURB & GUTTER, PCC, 1.5 FT.	LF	350	\$ 30.00	\$ 10,500.00
26	RMV+REINSTALL SIGN	EACH	6	\$ 300.00	\$ 1,800.00
27	STEEL POST-2" x 2" SIGN	LF	120	\$ 12.00	\$ 1,440.00
28	TRAFFIC SIGNALIZATION	LS	1	\$ 200,000.00	\$ 200,000.00
29	CONSTRUCTION SURVEY	LS	1	\$ 7,500.00	\$ 7,500.00
30	PAVEMENT MARKINGS & SYMBOLS	LS	1	\$ 4,500.00	\$ 4,500.00
31	TRAFFIC CONTROL	LS	1	\$ 15,000.00	\$ 15,000.00
32	FLAGGER	DAY	4	\$ 295.00	\$ 1,180.00
33	MOBILIZATION	LS	1	\$ 30,000.00	\$ 30,000.00
34	MULCHING	ACRE	1	\$ 500.00	\$ 500.00
35	SEED+FERTILIZE (RURUL)	ACRE	1	\$ 3,500.00	\$ 3,500.00
36	SILT FENCE	LF	800	\$ 2.00	\$ 1,600.00
37	SILT FENCE FOR DITCH CHECKS	LF	200	\$ 2.00	\$ 400.00
SUBTOTAL CONSTRUCTION					\$ 579,642.00
5% Contingency					\$ 28,982.00
Total Estimated Construction Cost					\$ 608,624.00



PROPOSED PROJECT TIME SCHEDULE

IDOT Agreement Approval:	April, 2012
Check Plan Submittal:	July 31, 2012
Final Plan Submittal:	August 21, 2012
Bid Letting:	November 20, 2012
Construction Completion:	October 15, 2013



Figure 1 Hwy 415; looking East on approach to NW 26 Street.



Figure 2 Hwy 415; looking East on approach to NW 26 Street in vicinity of proposed off-set right turn lane.



Figure 3 Hwy 415; looking East at NW 26 Street intersection.



Figure 4 Hwy 415; looking East from NW 26 St. Stop sign.



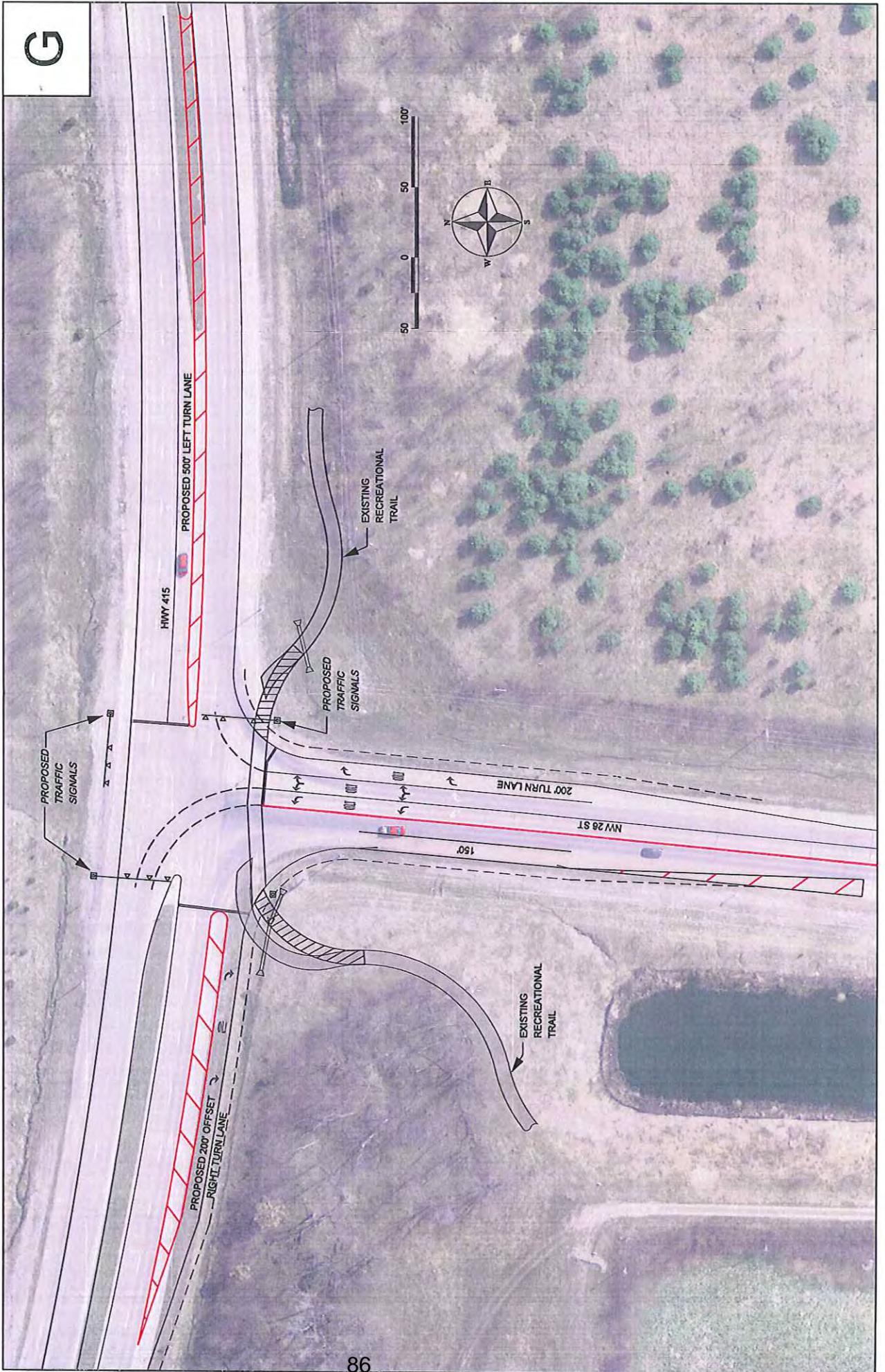
Figure 4 NW 26 St; looking North on approach to Hwy 415.



Figure 4 Hwy 415; looking West on approach to NW 26 St.



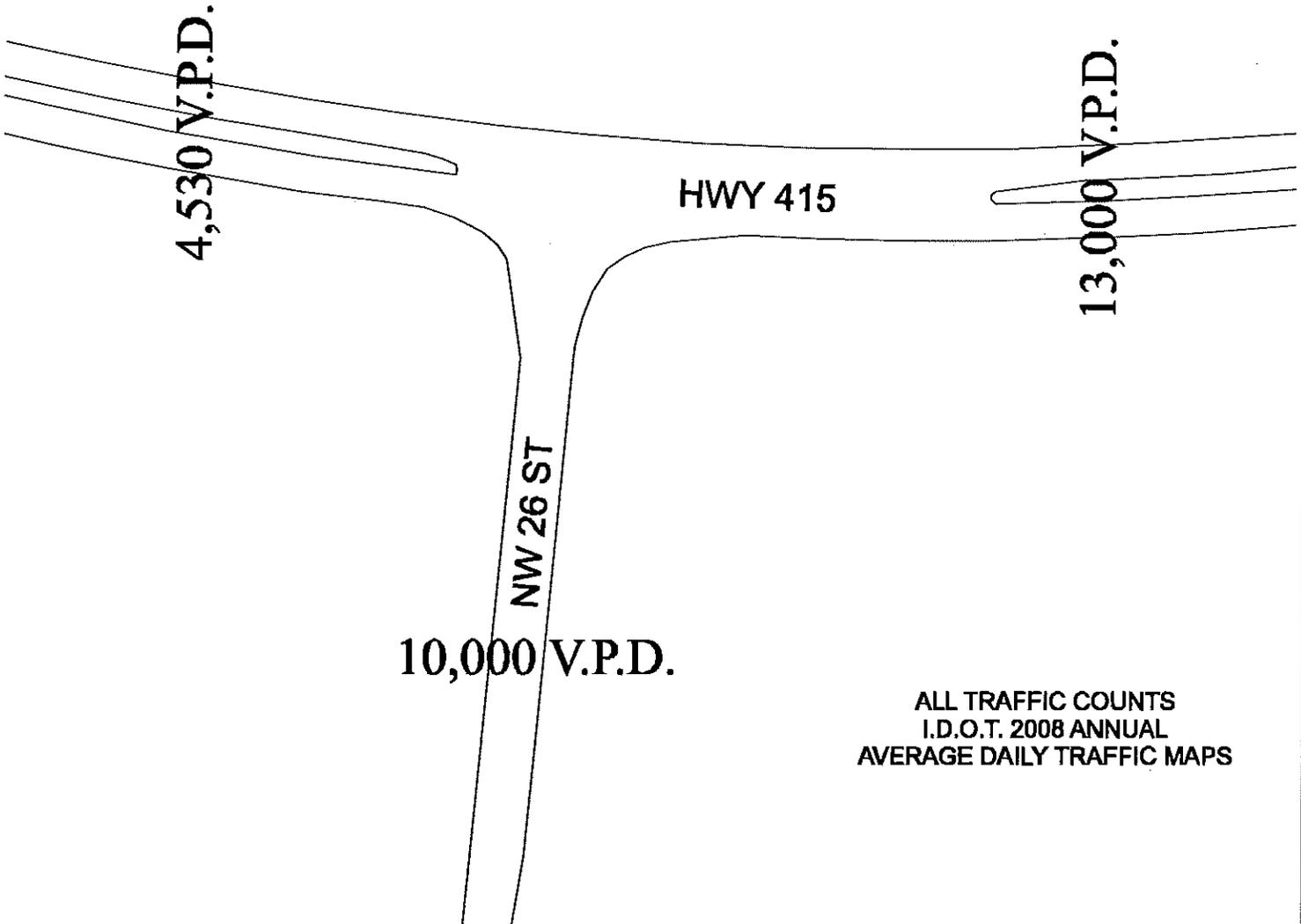
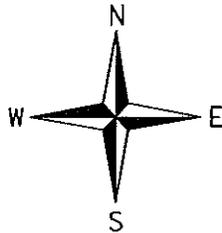
Figure 4 Hwy 415; looking West on approach to NW 26 St. in left turn lane.



TRAFFIC VOLUME INFORMATION

NW 26 ST. / IA HWY 415

H



ALL TRAFFIC COUNTS
I.D.O.T. 2008 ANNUAL
AVERAGE DAILY TRAFFIC MAPS

TRAFFIC COUNTS AT INTERSECTION OF NW 26 STREET AND IA HWY 415

TRAFFIC SIGNAL INFORMATION

The proposed traffic signals at this intersection are to be designed by a consulting engineer to conform to the requirements of the *Manual on Uniform Traffic Control Devices for Streets and Highways* and the Iowa Department of Transportation. The following is an approximate summary of the type of major traffic signal equipment or components to be used in the design.

- ④ One, fully actuated traffic signal controller, with cabinet and accessories and capable of future interconnect if warranted.
- ④ Solid state, digital, single channel or appropriate number of two-channel inductive loop type vehicle detector units capable of operating in the presence and impulse modes. Units to be provided with delay and extension timing. The delay shall be inhibited during the associated green phase unless otherwise indicated on the detector summary. The utilization of two-channel detector units is encouraged for the project.
- ④ One-way, three section, adjustable polycarbonate traffic signals, with 12-inch lenses of appropriate color, provided with tunnel visors and back plates. Signals are to be mast arm mounted utilizing a universally adjustable mast arm mount traffic signal bracket and/or side of pole mounted.
- ④ All signals will have LED traffic signal lamps.
- ④ Appropriate A.W.G. cables, wires and conductors in appropriate conduits will be specified.
- ④ Steel signal poles designed and equipped to support a straight cantilever type mast arm with signals at the designed lengths will be specified.
- ④ Appropriate traffic signs to be specified. Traffic signs to be mast arm mounted.

J



HWY 415

NW 26 ST

**ACCIDENT HISTORY
NW 26 STREET @ HWY 415**

Revised: 5/20/11

Acc. No.	Node No.	Date of Accident	Type of Accident	Type of Injury	Property Damage	Accident Description
1	32-1237	3/15/2005	PDO		\$ 4,500	UNSAFE TURN
2	32-1237	4/10/2005	PI	2 possible	\$ 6,000	FTY FROM STOP
3	32-1237	8/20/2005	PDO		\$ 1,500	FTY FROM STOP
4	32-1237	7/9/2005	PDO		\$ 900	FAIL TO STOP SAFELY - REAR END
5	32-1237	7/31/2005	PDO		\$ 999	FAIL TO STOP SAFELY - REAR END
6	32-1237	9/21/2005	PDO		\$ 100	FAIL TO STOP SAFELY - REAR END
7	32-1237	10/26/2005	PI	1 Possible	\$ 7,000	FTY MAKING LEFT TURN
8	32-1237	10/26/2005	PI	1 major	\$ 10,000	FAILURE TO MAINTAIN CONTROL
9	32-1237	12/20/2005	PDO		\$ 7,700	FTY MAKING LEFT TURN
10	32-1237	12/29/2005	PDO		\$ 16,000	FTY FROM STOP
11	32-1237	2/27/2006	PDO		\$ 2,700	FAIL TO STOP SAFELY - REAR END
12	32-1237	5/30/2006	PDO		\$ 500	FAIL TO STOP SAFELY - REAR END
13	32-1237	8/18/2006	PDO		\$ 600	FAIL TO STOP SAFELY - REAR END
14	32-1237	12/11/2006	PI	1 - poss.	\$ 30,000	FTY FROM STOP
15	32-1237	12/16/2006	PDO		\$ 2,200	FAIL TO STOP SAFELY - REAR END
16	32-1237	12/28/2006	PDO		\$ 12,000	FTY FROM STOP
17	32-1237	1/12/2007	PDO		\$ 6,000	FAIL TO STOP SAFELY - REAR END
18	32-1237	2/2/2007	PDO		\$ 2,000	FAIL TO STOP SAFELY - REAR END
19	32-1237	5/23/2007	PDO		\$ 1,000	FAIL TO STOP SAFELY - REAR END
20	32-1237	6/19/2007	PDO		\$ 4,000	FAIL TO STOP SAFELY - REAR END
21	32-1237	6/19/2007	PDO		\$ 1,200	FAIL TO STOP SAFELY - REAR END
22	32-1237	6/19/2007	PDO		\$ 4,000	FOLLOW TOO CLOSE - REAR END
23	32-1237	12/6/2007	PDO		\$ 3,500	FOLLOW TOO CLOSE - REAR END
24	32-1237	12/7/2007	PDO		\$ 4,700	FAIL TO STOP SAFELY - REAR END
25	32-1237	2/11/2008	PDO		\$ 4,800	FAIL TO STOP SAFELY - REAR END
26	32-1237	5/12/2008	PDO		\$ 6,000	FAIL TO STOP SAFELY - REAR END
27	32-1237	5/28/2008	PDO		\$ 1,000	FAIL TO STOP SAFELY - REAR END
28	32-1237	10/23/2008	PDO		\$ 500	FAIL TO STOP SAFELY - REAR END
29	32-1237	12/2/2008	PDO		\$ 6,000	FAIL TO STOP SAFELY - REAR END
30	32-1237	1/22/2009	PDO		\$ 2,750	FAIL TO STOP SAFELY - REAR END
31	32-1237	2/11/2009	PDO		\$ 550	FAIL TO STOP SAFELY - REAR END
32	32-1237	3/12/2009	PDO		\$ 5,000	FAIL TO STOP SAFELY - REAR END
33	32-1237	4/1/2009	PI	1 - minor	\$ 13,000	FTY FROM STOP
34	32-1237	4/20/2009	PI	1 - poss.	\$ 1,200	FAIL TO STOP SAFELY - REAR END
35	32-1237	6/12/2009	PDO		\$ 1,600	FAIL TO STOP SAFELY - REAR END
36	32-1237	9/5/2009	PDO		\$ 4,000	FTY FROM STOP
37	32-1237	10/5/2009	PDO		\$ 400	FAIL TO STOP SAFELY - REAR END
38	32-1237	11/19/2009	PDO		\$ 4,000	FTY FROM STOP
38		Total Accidents		0 fatality 1 major 1 minor 5 poss	\$ 179,899	Total Property Damage

SUMMARY

0	Fatalities @	\$ 3,500,000	\$ -
1	Major @	\$ 240,000	\$ 240,000
1	Minor @	\$ 48,000	\$ 48,000
5	Possible @	\$ 25,000	\$ 125,000
Property Damage			\$ 179,899

TOTAL DAMAGE \$ 592,899

Intersection or Spot Benefit / Cost Safety Analysis

Rev. 8/09

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: KDB Date Prepared: May 31, 2011
 Intersection: NW 26 Street & Hwy 415

Improvement

Proposed Improvement(s): Add Traffic Signals and Enhance Turn Lanes - Overall Project cost Est. at \$608,624 including intersection improvements

\$ 165,000 Estimated Improvement Cost, EC 15 Est. Improvement Life, years, Y
 \$ 500 Other Annual Cost (after initial year), AC 20 Crash Reduction Factor (integer), CRF
 \$ 5,559 Present Value Other Annual Costs, OC 4.0% Discount Rate (time value of \$), INT

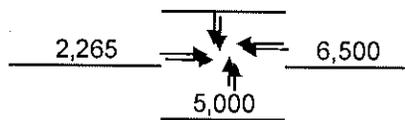
$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$

\$ 170,559 Present Value Cost, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT 2008 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



5,024,225 Current Annual Entering Veh., AEV = DEV * 365

18,526 veh / day, Final Year DEV, FDEV

86.89 MEV, Total Million Entering Veh. Over life of Project, TMEV

$$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$$

2.0% Projected Traffic Growth (0%-10%), G

13,765 Current Daily Entering Vehicles, DEV

Crash Data

<u>2005</u>	First full year -->	<u>2009</u>	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
<u>0</u>	Fatal Crashes	<u>0</u>	Fatalities @	\$3,500,000 \$ -
		<u>1</u>	Major Injuries @	\$240,000 \$ 240,000
<u>6</u>	Injury Crashes	<u>1</u>	Minor Injuries @	\$48,000 \$ 48,000
		<u>5</u>	Possible Injuries @	\$25,000 \$ 125,000
<u>32</u>	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ 201,299
<u>38</u>	Total Crashes, TA		Total \$ Loss, LOSS	\$ 614,299

7.60 Current Crashes / Year, AA = TA / T

\$ 16,166 Cost per Crash, AVC = LOSS / TA

131.4 Total Expected Crashes, TECR = CR x TMEV

1.52 Crashes Avoided First Year AAR = AA x CRF / 100

\$ 24,572 Crash Costs Avoided in First Year, AAR x AVC

26.3 Total Avoided Crashes, TECR x CRF / 100

1.51 Crashes / MEV, Crash Rate, CR

CR = TA x 10⁶ / (DEV x 365 x T)

\$ 310,451 Present Value of Avoided Crashes, BENEFIT

$$BEN. = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$310,451 : \$170,559 = 1.82 : 1

A

Iowa Department of Transportation Request for Traffic Safety Funds

GENERAL INFORMATION

Location/Title of Project: Intersection Improvements at NW 84th Avenue and IA Hwy 415.

Applicant: County of POLK

Contact Person: Kurt D. Bailey, P.E.

Title: Polk County Engineer

Complete Mailing Address: 5885 N.E. 14th Street
Des Moines, IA 50313

Daytime Telephone: (515) 286-3705 **Fax Number:** (515) 286-3437

If more than one highway authority is involved in this project, please indicate the contact person(s), mailing address(es), and telephone number(s) of the additional highway authority.

Mr. Tony Gustafson
Asst. District 1 Engineer
Iowa Department of Transportation
1020 S. 4th Street, Ames, IA 50010
515-239-1430
tony.gustafson@dot.iowa.gov

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Nature of Application: ✓ Site Specific
Traffic Control Device
Safety Study

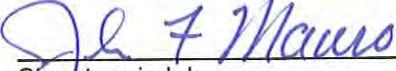
Funding: Total Cost of the Proposed Project \$200,000
Safety Funds Requested for the Project \$200,000

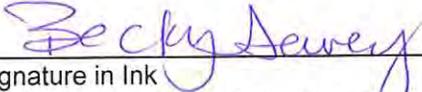
CERTIFICATION - NW 84th Avenue and IA Hwy 415 Application

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by Polk County. I understand the attached resolution binds Polk County to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between Polk County and the Department of Transportation is required prior to the authorization of funds.

Representing the **COUNTY OF POLK**

Signed:  6-7-11
Signature in Ink Date Signed
John F. Mauro, Chairman
Polk County Board of Supervisors

Attested:  6-7-11
Signature in Ink Date Signed
2ND DEPUTY, Polk County Auditor

POLK COUNTY BOARD OF SUPERVISORS

Tuesday Agenda Memorandum

Item Type & Title: Resolution 80-11 to authorize Polk County Public Works Department to submit Traffic Safety Funds (TSF) application to IDOT for safety improvements at three intersections.

Agenda Date: June 7, 2011

Contact Individual: Kurt D. Bailey, P.E., Engineer, Polk County Public Works, 286-3705

Previous Action taken by the Board: None

Board/Commission Actions: None

Action Requested (Recommended): Requests the Polk County Board of Supervisors to endorse the intersection improvement projects, authorize maintenance of the improvements after construction is completed, authorize Chairperson to sign the applications, and direct the Public Works Department to submit the applications to the Iowa Department of Transportation for Traffic Safety Improvement Funding.

Comply with Policy: Yes

Background: The Iowa Department of Transportation has adopted Administrative Rule 761-Chapter 164, which created the Traffic Safety Improvement Program to allow funding to be provided to local jurisdictions for eligible traffic safety improvement projects. The Polk County Public Works Department conducted an engineering study at each project location and determined that accidents could potentially be reduced if the proposed improvements were constructed.

Action Impact: Allows Public Works to proceed with submittal of applications to the Iowa Department of Transportation.

Fiscal Note: None at this time

Fiscal Year	New Budget Item? (Y/N)	# of New Position(s) Required	Anticipated Expense	Anticipated Revenue	Budget Amendment Required? (Y/N)	If Amendment is Required,	
						Expense Account Code	Revenue Account Code
10/11	N	N/A	N	N			
11/12	N	N/A	N	N			

Additional Fiscal Note Information (optional):

R E S O L U T I O N

Moved by Hockensmith, Seconded by Giovannetti that the following resolution be adopted:

WHEREAS, the Iowa Department of Transportation has adopted Administrative Rule 761-Chapter 164, which created the Traffic Safety Improvement Program to allow funding to be provided to local jurisdictions for eligible traffic safety improvement projects; and

WHEREAS, the Polk County Public Works Department regularly monitors traffic safety on roadways within its jurisdiction; and

WHEREAS, an engineering study has been completed which shows that the number of accidents could potentially be reduced if traffic signals were installed at the intersection of NW 26th Street and Iowa Highway 415; and

WHEREAS, an engineering study has been completed which shows that the number of accidents could potentially be reduced if intersection improvements were made at the intersection of NW 84 Avenue and Iowa Highway 415; and

WHEREAS, the Polk County Public Works Department recommends that an application be submitted to the Iowa Department of Transportation for possible Traffic Safety Funding for each of the above referenced projects.

NOW, THEREFORE, BE IT RESOLVED that the Polk County Board of Supervisors endorse these intersection improvement projects and will authorize maintenance of the improvements within the County's jurisdiction after construction is completed; and

BE IT FURTHER RESOLVED that the Chairperson of the Polk County Board of Supervisors be authorized to sign the said applications and direct the Polk County Public Works Department to submit the applications to the Iowa Department of Transportation for possible Traffic Safety Improvement Funding.

POLK COUNTY BOARD OF SUPERVISORS:

John F. Mauro
Chairperson

RECOMMENDED FOR APPROVAL:

Larry L. Land
Larry L. Land, Director
Polk County Public Works

FISCAL IMPACT: None at this time

ROLL CALL
FOR ALLOWANCE

E.J. Giovannetti ~~Yea~~ Nay
Robert Brownell ~~Yea~~ Nay
Angela Connolly ~~Yea~~ Nay
Tom Hockensmith ~~Yea~~ Nay
John F. Mauro ~~Yea~~ Nay

JUN -7 2011

ALLOWED BY VOTE
OF BOARD

Yea 5 Nay 0
Above tabulation made by ED

John F. Mauro
CHAIRPERSON

#13

NARRATIVE

The Polk County Public Works Department is aware of the need to maintain safe roadways for the traveling public in Polk County. In an effort to keep the facilities as safe as possible, the Engineering Division monitors accident and traffic trends.

One location of concern in Polk County is the intersection of NW 84th Avenue and IA Hwy 415. This intersection lies 1.25 miles south of the corporate limits of the City of Ankeny and approximately 1.75 miles northeast of the corporate limits of the City of Johnston. NW 84 Ave. serves as the primary access road from Hwy 415 to the U. S. Army Corp of Engineers Saylorville Lake Project, including the Saylorville dam, the Administrative Offices, Visitors Center, and Cottonwood Recreational Center. It also provides access to the Iowa Homeland Security & Emergency Management headquarters on NW 78 Ave.

NW 84th Avenue is a two-lane roadway with an existing right-turn lane at this intersection and is classified as a "Collector" on the Urban Federal Functional Classification System with a posted speed limit of 40 mph, and current traffic count of 2,300 vpd.

Hwy 415 is a 2-lane roadway with both right and left turn lanes for NB and SB traffic and is classified as a "Other Principal Arterial", with a posted speed limit of 55 mph, and a current traffic count of 7,100 vpd.

While traffic on NW 84 Ave appears to have remained steady at 2300 vpd, traffic on Hwy 415 has grown at about 7% per year from 2000 to 2008 to 7100 vpd. This increase in traffic on Hwy 415 has made it more difficult for left turning traffic on EB NW 84 Ave to safely enter traffic.

As you can see, 9 of the 11 accidents in the last 5 years of data involved an EB vehicle on NW 84 Ave. failing to yield the right-of-way while making a left turn to NB Hwy 415. A review of the accident reports and field surveillance of the site indicate that traffic on NW 84 Ave. appears to be losing visual contact with SB vehicles on Hwy 415 due to considerable right-turn traffic from Hwy 415.

We believe that the proposed construction of an offset right turn lane on SB Hwy 415 as shown in Section G will reduce the accident rate and justify the amount of funding for which we have requested with this application. Polk County thanks the Iowa Department of Transportation for their consideration of this project.

C

**Engineers Estimate for Off-set Right Turn Lane
on Hwy 415 at NW 84 Ave**

No.	Bid Item Description	Unit	Quantity	Unit Price	Total Cost
1	SPECIAL BACKFILL	TON	410.00	\$35.00	\$14,350.00
2	GRANULAR SHLD, TYPE B	TON	350.00	\$32.00	\$11,200.00
3	EMBANKMENT-IN-PLACE	CY	1754.00	\$12.00	\$21,048.00
4	EXCAVATION, CL 13, WIDEN	CY	385.00	\$23.00	\$8,855.00
5	PAV'T, SCARIFICATION	SY	88.00	\$13.00	\$1,144.00
6	HMA (10M ESAL) INTERMEDIATE, 1/2"	TON	450.00	\$70.00	\$31,500.00
7	HMA (10M ESAL) SURF, 1/2", FRIC L-3	TON	200.00	\$70.00	\$14,000.00
8	ASPH BINDER, PG 64-22	TON	30.00	\$650.00	\$19,500.00
9	HMA PAV'T SAMPLE	LS	1.00	\$2,000.00	\$2,000.00
10	CONSTRUCTION SURVEY	LS	1.00	\$6,500.00	\$6,500.00
11	PAINTED PAV'T MARK, WATERBORNE/SOLVENT	STA	105.00	\$20.00	\$2,100.00
12	PAV'T MARK RMVD	STA	18.00	\$25.00	\$450.00
13	TRAFFIC CONTROL	LS	1.00	\$12,000.00	\$12,000.00
14	FLAGGER	DAY	17.00	\$330.00	\$5,610.00
15	SEEDING & FERT	AC	2.00	\$3,500.00	\$7,000.00
16	MULCHING	AC	2.00	\$2,000.00	\$4,000.00
17	SILT FENCE	LF	1200.00	\$3.00	\$3,600.00
18	MOBILIZATION	LS	1.00	\$35,000.00	\$35,000.00
Total Estimated Project Cost:					\$199,857.00



PROPOSED PROJECT TIME SCHEDULE

IDOT Agreement Approval:	April, 2012
Check Plan Submittal:	July 31, 2012
Final Plan Submittal:	August 21, 2012
Bid Letting:	November 20, 2012
Construction Completion:	October 15, 2013



E

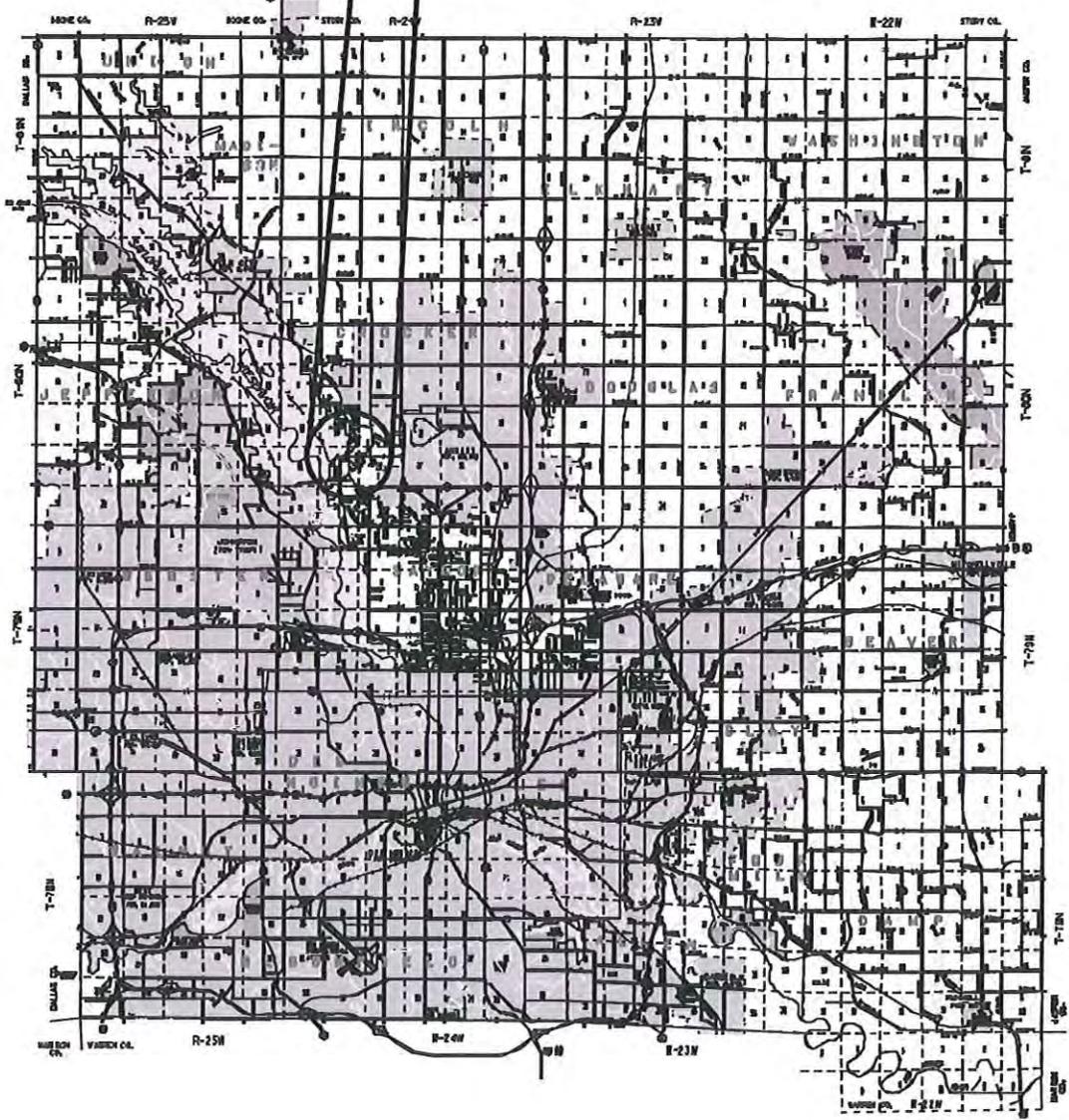
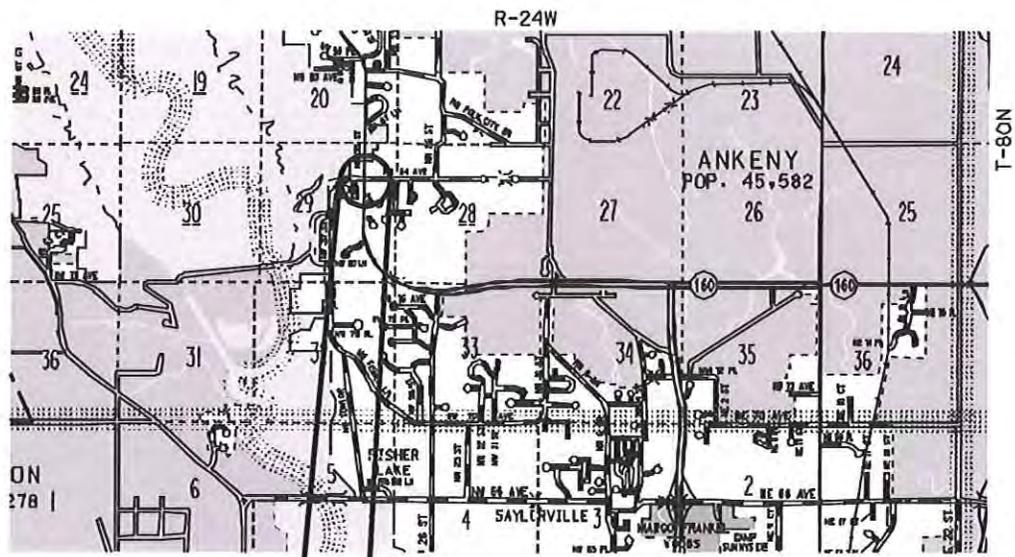




Figure 1 Hwy 415; looking North on approach to NW 84 Avenue.



Figure 2 Hwy 415; looking South at start of existing right-turn lane to NW 84 Ave.



Figure 3 Hwy 415; looking South in vicinity of offset right-turn lane to NW 84 Ave.



Figure 4 Hwy 415; looking South on approach to NW 84 Ave.



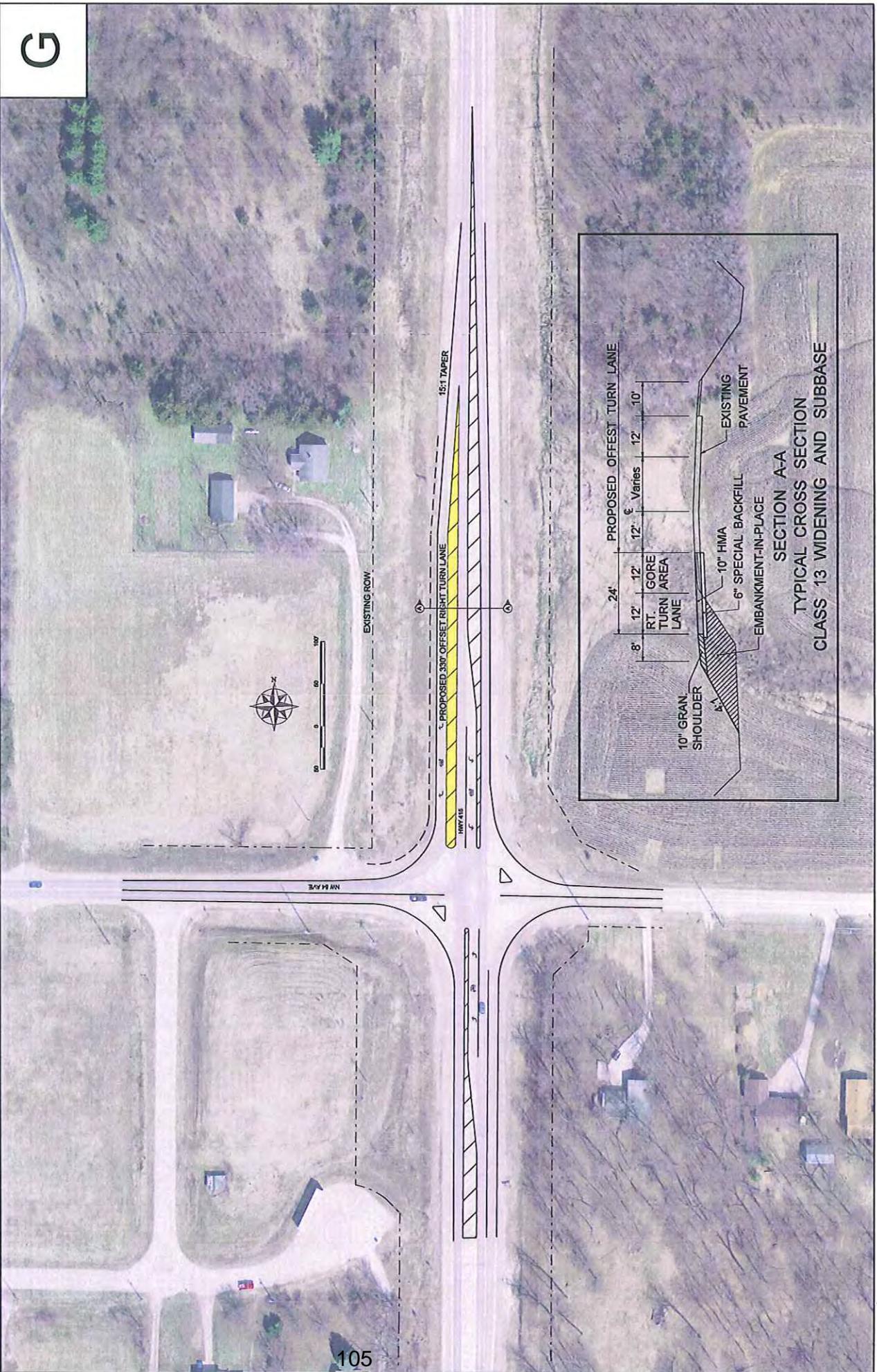
Figure 5 Hwy 415; looking South on approach to NW 84 Ave. in proposed offset right turn lane.



Figure 6 NW 84 Avenue; looking North stop bar at Hwy 415.



Figure 7 NW 84 Avenue; looking North stop bar at Hwy 415 with cars in both lanes.

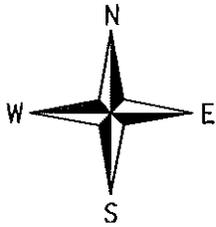


G

TRAFFIC VOLUME INFORMATION

H

NW 84 AVE. / IA HWY 415



7,100 V.P.D.

NW 84 AVE.

2,240 V.P.D.

700 V.P.D.

4,530 V.P.D.

IA HWY 415

ALL TRAFFIC COUNTS
I.D.O.T. 2008 ANNUAL
AVERAGE DAILY TRAFFIC MAPS

TRAFFIC COUNTS AT INTERSECTION OF NW 84 AVENUE AND IA HWY 415

J



K

ACCIDENT HISTORY NW 84th Avenue and Hwy 415

Acc. No.	Node No.	Date of Accident	Type of Accident	Type of Injury	Property Damage	Accident Description
1	32-2929	10/3/2006	PDO		\$ 18,000	Failure to yield from stop sign- EB
2	32-2929	10/22/2006	PI	1 Minor	\$ 7,500	Failure to Obey Stop Sign-EB
3	32-2929	7/26/2007	PDO		\$ 3,000	Failure to Obey Stop Sign-EB
4	32-2929	2/25/2008	PI	1 Minor	\$ 18,000	Failure to yield from stop sign-WB
5	32-2929	11/4/2008	PI	1 Minor	\$ 1,000	Lost Control- SB Right Turn
6	32-2929	3/23/2010	PDO		\$ 2,500	Failure to yield from stop sign-EB
7	32-2929	5/1/2010	PDO		\$ 2,500	Failure to yield from stop sign-EB
8	32-2929	6/19/2010	PDO		\$ 5,000	Failure to yield from stop sign-EB
9	32-2929	6/26/2010	PI	1 Possible	\$ 10,000	Failure to yield from stop sign-EB
10	32-2929	9/20/2010	PI	1 Major	\$ 20,000	Failure to yield from stop sign-EB
11	32-2929	10/1/2010	PDO		\$ 11,000	Failure to yield from stop sign-EB
11		Total Accidents		0 fatality 1 major 1 minor 1 possible	\$ 79,500	Total Property Damage

SUMMARY

0	Fatalities @	\$ 3,500,000		\$ -
1	Major @	\$ 240,000		\$ 240,000
3	Minor @	\$ 48,000		\$ 144,000
1	Possible @	\$ 25,000		\$ 25,000
Property Damage				\$ 79,500

TOTAL DAMAGE \$ 488,500

Intersection or Spot Benefit / Cost Safety Analysis

Rev. 8/09

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: KDB Date Prepared: May 31, 2011
 Intersection: NW 84 Ave. and Hwy 415

Improvement

Proposed Improvement(s): Construct Offset Right Turn Lane

\$ <u>200,000</u> Estimated Improvement Cost, EC	20 Est. Improvement Life, years, Y
\$ <u>500</u> Other Annual Cost (after initial year), AC	30 Crash Reduction Factor (integer), CRF
\$ <u>6,795</u> Present Value Other Annual Costs, OC	4.0% Discount Rate (time value of \$), INT

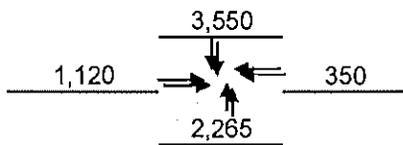
$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$

\$ 206,795 Present Value Cost, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT 2008 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



2,659,025 Current Annual Entering Veh., AEV = DEV * 365

10,825 veh / day, Final Year DEV, FDEV

64.61 MEV, Total Million Entering Veh. Over life of Project, TMEV

$$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$$

2.0% Projected Traffic Growth (0%-10%), G

7,285 Current Daily Entering Vehicles, DEV

Crash Data

<u>2006</u>	First full year -->	<u>2010</u>	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
<u>0</u>	Fatal Crashes		Fatalities @	\$3,500,000 \$ -
			<u>1</u> Major Injuries @	\$240,000 \$ 240,000
<u>5</u>	Injury Crashes		<u>3</u> Minor Injuries @	\$48,000 \$ 144,000
			<u>1</u> Possible Injuries @	\$25,000 \$ 25,000
<u>6</u>	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ 79,500
<u>11</u>	Total Crashes, TA		Total \$ Loss, LOSS	\$ 488,500

2.20 Current Crashes / Year, AA = TA / T	0.83 Crashes / MEV, Crash Rate, CR
\$ <u>44,409</u> Cost per Crash, AVC = LOSS / TA	CR = TA x 10^6 / (DEV x 365 x T)
53.5 Total Expected Crashes, TECR = CR x TMEV	\$ 471,646 Present Value of Avoided Crashes, BENEFIT
0.66 Crashes Avoided First Year AAR = AA x CRF / 100	
\$ <u>29,310</u> Crash Costs Avoided in First Year, AAR x AVC	
16.0 Total Avoided Crashes, TECR x CRF / 100	

$$BEN. = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$471,646 : \$206,795 = 2.28 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 Location / Title of Project US 6 and L-55 Pottawattamie County

 Applicant Iowa Department of Transportation District 4 Office

 Contact Person Scott M. Suhr Title District Planner

 Complete Mailing Address 2210 East 7th Street
Atlantic, Iowa 50022

 Phone 712-243-7627 E-Mail scott.suhr@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

 Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

 Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

 Total Project Cost \$ \$300,000.00

 Safety Funds Requested \$ \$300,000.00

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Iowa Deptment of Transportation

Signed: _____
Signature Date Signed
Scott M. Suhr
Typed Name

Attest: _____
Signature Date Signed

Typed Name

Pottawattamie County US 6/ L55

Traffic Safety Improvement Program Application

The Iowa department of Transportation is partnering with Pottawattamie County to improve the "Y" Intersection at US 6 and L 55 in Pottawattamie County. The "Y" intersection is located 4 miles North of Treynor, Iowa. The plan is to work with Pottawattamie County to change the intersection from a "Y" into a "T" intersection and add turn lanes to US 6 at that location.

Over the past several years many "Y" intersections have been eliminated because they are not as safe as "T" intersections. When a motorist approaches a "Y" interchange they must decide what leg they need to use based on the direction they want to travel. Once that decision has been made motorists must look over their shoulder to view oncoming traffic. That is the same situation at this location. Over the past 9 years there have been 9 accidents at this location with one fatality.

A copy of the accident history is located in section (I) of this application. According to the major cause summary, in addition to the fatality, there have been 3 other injuries at this location. Eight of the nine accidents occurred in dry pavement conditions. There has been a total of \$63,100 in property damage averaging \$7,011 per accident.

Because of the geometry of this intersection the Iowa DOT is working with Pottawattamie County to make this area safer for motorists. Pottawattamie County will be grading and constructing the new "T" interchange which includes some grading to the South. One of the other issues at this location is there is a large hill to the South of this interchange which motorists pick up speed coming down the hill before the interchange. Pottawattamie County will be grading at this location to make the grade more gradual. The Iowa DOT will construct East and West bound turning lanes on US 6 to eliminate rear end collisions at this location. This project is an excellent opportunity for both the County and the State to work together for one common goal which is to make this area safer for everyone. The goal is to complete this project in either the 2012 or 2013 construction season.

The current traffic counts from 2008 indicate 3190 vehicles per day on US 6 with 900 vehicles per day at this intersection.

Concept for L-55 and US 6

The concept for the Safety project located at US 6 and L-55 in Pottawattamie County will install turn lanes, remove the "Y" intersection, grade and repave a "T" intersection. The project is a joint project with Pottawattamie County and the Iowa Department of Transportation.

As part of the DOT's portion of the project we will be installing turn lanes at the intersection of L-55 on US 6. No additional Right of Way is needed. The DOT will grade and widen the area, install pavement for the turning lanes and repaint the area. The DOT will construct the turn lanes in accordance with the MUTCD manual.

The cost estimate for this project is \$300,000.

COST ESTIMATE

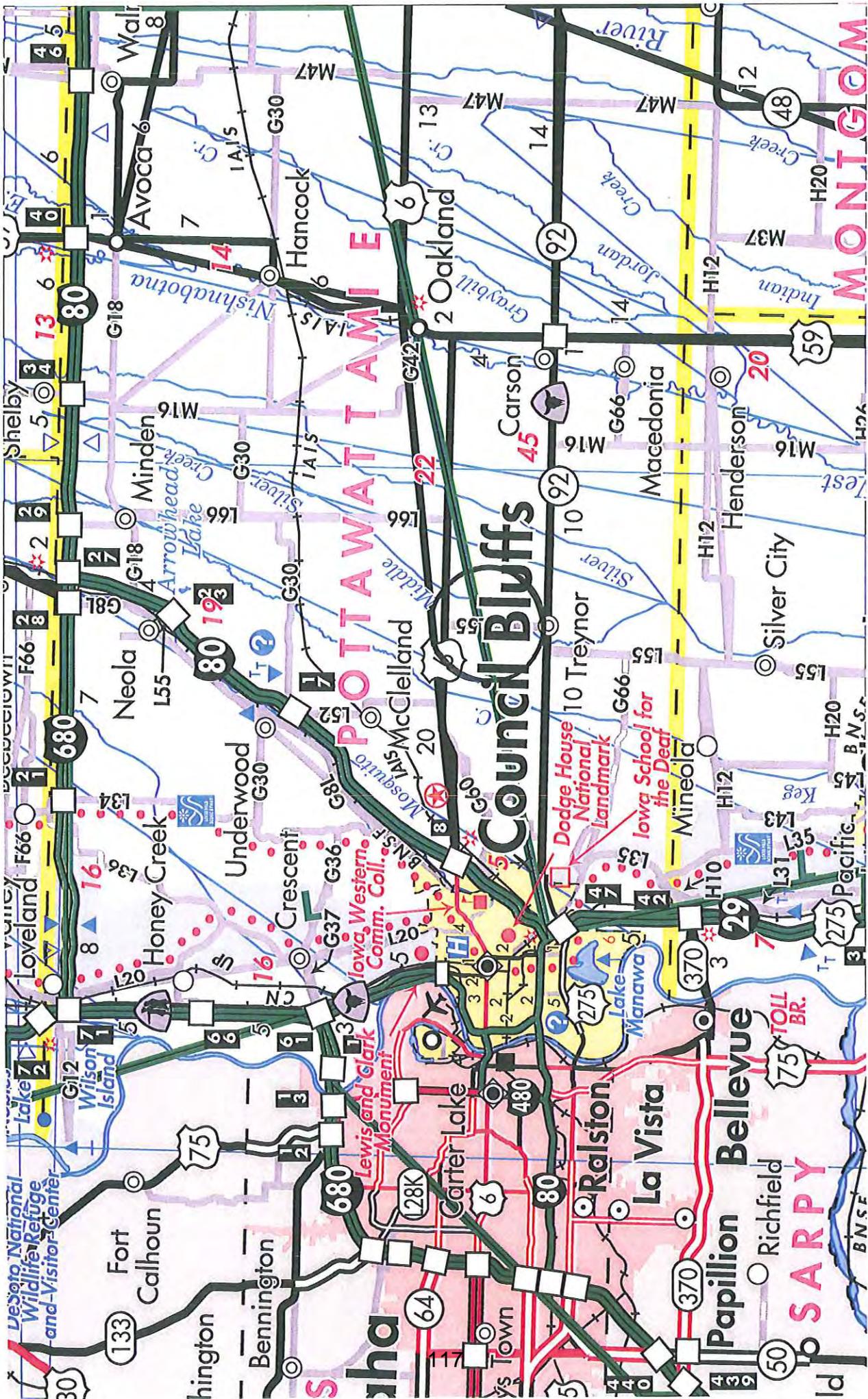
Embankment in Place	\$60,000
Paving	\$115,000
Shoulders	\$25,000
Pavement Markings	\$6,000
Mobilization/Traffic Control	\$55,000
Contingency	\$30,000

Total	\$291,000

This assumes minimum length (150 ft) for the left turn lane based on traffic count and does not include any right of way costs.

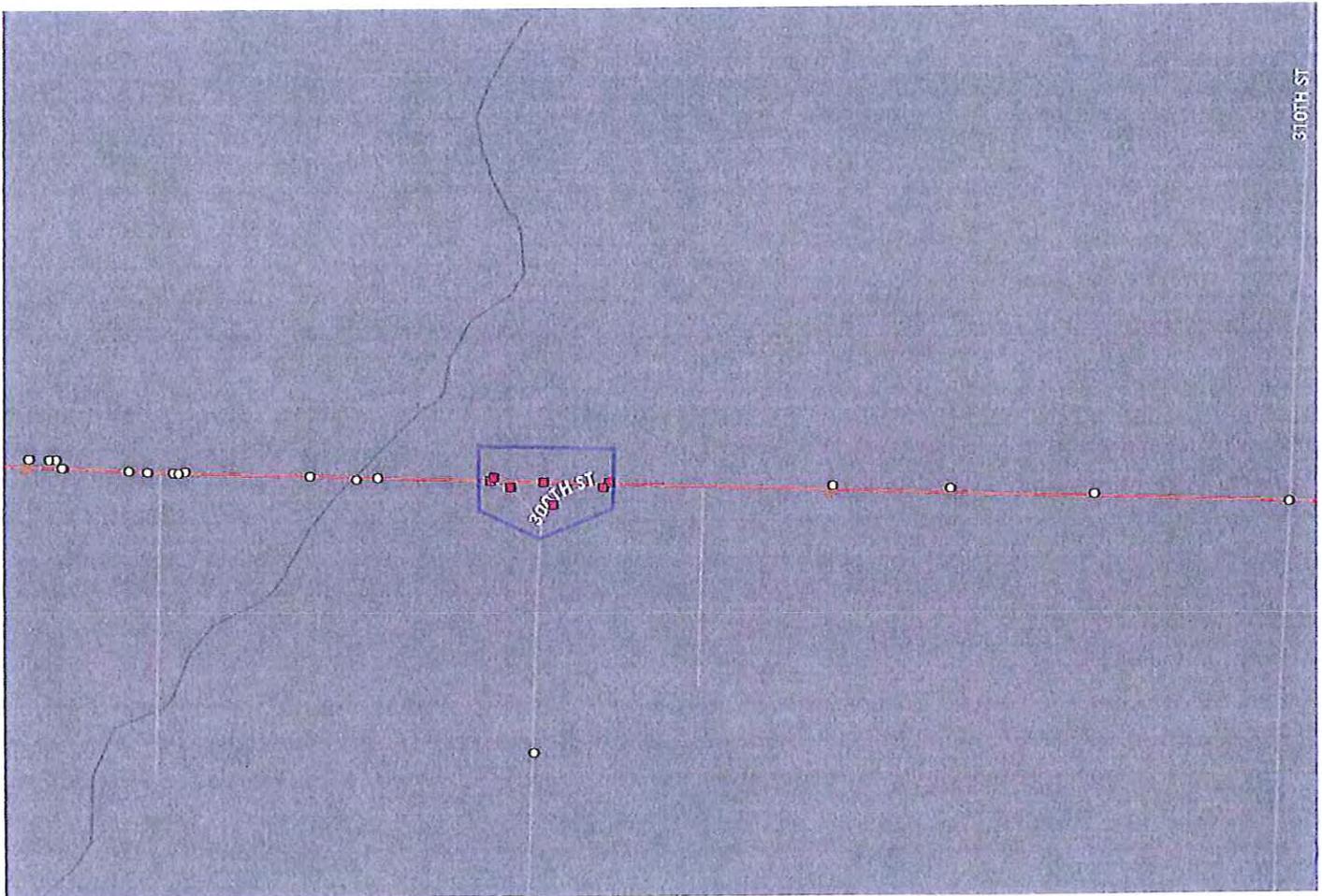
TIME SCHEDULE

<i>Project Approval:</i>	<i>December 2011</i>
<i>Agreement Signed:</i>	<i>March 2012</i>
<i>Project bid:</i>	<i>December 2012</i>
<i>Construction completed:</i>	<i>June 2013</i>
<i>Project Closeout:</i>	<i>July 2013</i>





2001-2009 Accident History for the Intersection of US 6 and Pott. Co L55



Rex Allen

1/5/11



Major Cause Summary

2001-2009 Crashes - Intersection of US 6 and Polt. Co

#001VCS01 1 Jun 2011

Analysis Years: 2002 [1], 2003 [2], 2004 [1], 2006 [1], 2008 [1], 2009 [3]

Crash Summary:	Injury Summary:	Surface Condition Summary:
Fatal	Fatal	Dry
Major Injury	Major Injury	Wet
Minor Injury	Minor Injury	Ice
Possible/Unknown	Possible	Snow
PDO	Unknown	Slush
Total Crashes	Total Injuries	Sand/Dir/Oil/Gravel
9	4	Water
		Other
		Unknown
		Not Reported
		Total Crashes
		9

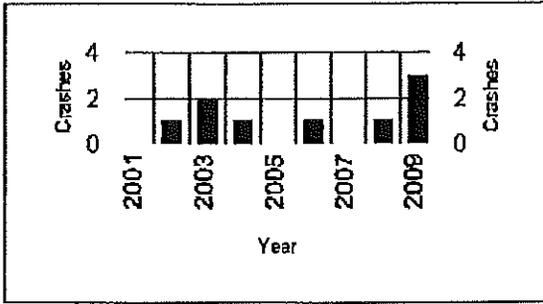
TOT Property Damage: \$63,100
AVG Property Damage: \$7,011

Major Cause Summary:	
<ul style="list-style-type: none"> 1 Animal Ran Traffic Signal Ran Stop Sign Crossed Centerline FTYROW: At Uncontrolled Intersection FTYROW: Making Right Turn on Red Signal 1 FTYROW: From Stop Sign FTYROW: From Yield Sign 1 FTYROW: Making Left Turn FTYROW: From Driveway FTYROW: From Parked Position FTYROW: To Pedestrian FTYROW: Other (explain in narrative) Traveling Wrong Way or on Wrong Side of Rd Driving Too Fast for Conditions Exceeded Authorized Speed 2 Made Improper Turn Improper Lane Change Followed Too Close Disregarded Railroad Signal Disregarded Warning Sign Operating Vehicle In Reckless/Aggressive Manner 	<ul style="list-style-type: none"> Improper Backing Illegally Parked/Unattended 2 Swerving/Evasive Action Over-Correcting/Over-Steering Downhill Runaway Equipment Failure Separation of Units 2 Ran Off Road - Right Ran Off Road - Straight Ran Off Road - Left Lost Control Inattentive/Distracted By: Passenger Inattentive/Distracted By: Use of Phone or Other Inattentive/Distracted By: Fallen Object Inattentive/Distracted By: Fatigued/Asleep Other: Vision Obstructed Oversized Load/ Oversized Vehicle Cargo/Equipment Loss or Shift Other: Other Improper Action Unknown Other: No Improper Action None Indicated

Selection Filter:
None

Analyst: Rex Allen **Notes:**

2001-2009 Accident History at intersection
of US 6 and Pott. Co. L55



1/5/2011

Incidents: 9

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

Rev. 8/09

County: Pottawattamie Prepared by: Scott Suhr Date Prepared: Jun 9, 2011
 Location: On US 6 at L-55

Improvement

Proposed Improvement(s): The plan is to install turn lanes at this location and convert the "Y" interchange into a "T"

<u>\$ 300,000</u> Estimated Improvement Cost, EC	<u>25</u> Est. Improvement Life, years, Y
<u>\$ -</u> Other Annual Cost (after initial year), AC	<u>58</u> Crash Reduction Factor (integer), CRF
<u>\$ -</u> Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
<u>\$ 300,000</u> Present Value All Costs, COST = EC + OC	

Traffic Volume Data

Source: Iowa department of Transportation 2008 Date of traffic count

Two-way

Length (mi.)	veh/day	Description
1.00	3,190	Us 6
1.00	890	L-55
2.00 miles total		

4,080 Current Vehicle Miles / Day, **VM**
 10,877 End of Life Veh. Miles / Day
 1,489,200 Current Veh. Miles / Year, **AM**
 62,019,087 Total Projected Veh. Miles Over
 Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

4.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

<u>2002</u> First full year -->	<u>2009</u> Last full year				8.0 years, Time Period, T
Additional months			values as of Dec. 2007		
<u>1</u> Fatal Crashes	_____	<u>1</u> Fatalities @	\$3,500,000	\$	3,500,000
		<u>0</u> Major Injuries @	\$240,000	\$	-
<u>2</u> Injury Crashes	_____	<u>1</u> Minor Injuries @	\$48,000	\$	48,000
		<u>2</u> Possible Injuries @	\$25,000	\$	50,000
<u>7</u> Property Damage Only		(assumed cost per crash)	\$2,700	\$	27,000
<u>10</u> Total Crashes, TA		-OR- enter all Property Costs of all crashes:			Total \$ Loss, LOSS \$ 3,625,000

1.25 Current Crashes / Year, **AA = TA / T**
 \$ 362,500 Cost per Crash, **AVCR = LOSS / TA**
 52.1 Total Expected Crashes, **TCR = CR x TVMT/10^8**
 0.73 Crashes Avoided First Year **AAR = AA x CRF / 100**
 \$ 262,813 Crash Costs Avoided in First Year, **AAR x AVCR**
 30.2 Total Avoided Crashes, **TCR x CRF / 100**

83.9 Crashes / HMVM, Crash Rate, **CR**
CR = TA x 10^8 / (AM x T)
\$ 6,317,607 Present Value of Avoided
 Crashes, **BENEFIT**

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$6,317,607 : \$300,000 = 21.06 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 Location / Title of Project Junction of F24-M66 in Audubon County

 Applicant Audubon County

 Contact Person Mitch Rydl Title County Engineer

 Complete Mailing Address 2147 Highway 71
Audubon, Iowa, 50025

 Phone 712-563-4286 E-Mail mrydlaudcoeng@iowatelecom.net
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

 Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type	Site Specific <input checked="" type="checkbox"/> Traffic Control Device <input type="checkbox"/> Safety Study <input type="checkbox"/>
-------------------------	---

Funding Amount

 Total Project Cost \$ 22,656

 Safety Funds Requested \$ 22,656

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

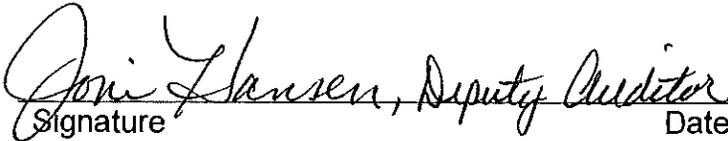
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Audubon County Board of Supervisors

Signed:  6-13-11
Signature Date Signed

Todd M. Nelsen, Chairman
Typed Name

Attest:  6/13/11
Signature Date Signed

Joni Hansen, Deputy Auditor
Typed Name

RESOLUTION 2011- 12
FOR FUNDING APPLICATION FOR ROADWAY SAFETY IMPROVEMENTS

WHEREAS, the County Engineer has recommended that an application for grant funding of additional signing and replacement of rumble strips near the intersection of F24 and M66 be submitted to the Iowa DOT for consideration under their Transportation Safety Improvement Program, and

WHEREAS, said application form must be certified by the Board of Supervisors, binding the County to assume responsibility for erecting any and all signage provided under this grant within the time frame submitted,

BE IT HEREBY RESOLVED that the Audubon County Board of Supervisors do hereby agree to those terms and authorize it's chairman to sign the application form for the potential funding of sign materials.

Dated at Audubon this 13th day of June, 2011.

AUDUBON COUNTY BOARD OF SUPERVISORS



Chairperson

ATTEST:



Joni Hansen, Deputy
Audubon County Auditor

NARRATIVE

The intersection of F24 and M66 in Audubon County has been consistently problematic with crashes in the past several years. Following a fatal crash in November 2010, the county has elected to add additional and oversize warning stop and stop ahead signs at the NB and SB stops. This was completed shortly after the review was conducted by Mr. Sperry in March of 2011. However, other recommendations were not able to be made and this application is being made to assist the safety improvements already made, namely the addition of the W4-4P signs at the stop signs, the Crossroad sign east of the intersection for WB traffic and rumble strips to the north for southbound

**COST ESTIMATE for M66 & F24 Intersection
Rumble strips and Signing**

Audubon County
6/5/2011

Number of signs requested:	3	
Sign sheeting requested:	Florescent Yellow	
Sign backing requested:	Aluminum	
Sign size requested:	36 x 36 Std size	1-W2-1 2- W4-4P
Average cost	\$52.00	\$156.00
Set of 3 PCC Rumble Strips		\$22,500
Total Grant request:		\$22,656

**Audubon County
TSIP Grant Application
M66 & F24 Intersection**

TIME SCHEDULE

Audubon County proposes to begin erecting the new signs within six months and have the rumble strip panel installed (by contract) not later than eight months after the award of this grant.

#

Google Earth

File Edit View Tools Add Help

Search

Fly To Find Businesses Directions

Fly to e.g., 1600 Pennsylvania Ave, 20006

audubon county

audubon county (1 - 10)

- Audubon County Audubon, IA 50025 (712) 563-2710
- Audubon County Economic 800 South Market Street, Audubon, IA 50025-1050
- Audubon County Election 318 Leroy St # 4, Audubon, IA 50025-1255
- Audubon County Veterans 318 Leroy St # 1, Audubon, IA 50025-1255
- Audubon County Conservat 2672 Littlefield Drive, Exira, IA 50076-7400
- Audubon County Landfill

Places

- My Places
- Sightseeing Tour Make sure 3D Buildings have a character

Layers

- Earth Gallery
- Primary Database
- Borders and Labels
- Places

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©2011 Google Image USDA Farm Service Agency

Eye alt: 12316 ft

10:52 PM 6/6/2011

41°49'00.62" N 95°03'11.22" W elev 1390 ft

Imagery Date: 6/19/2009 1994

F24 & M66 Intersection



Major Cause Summary

Audubon County Major Cause Summary -2005 -2010

Report Version 1.1 Jan 2005

Analysis Years: 2007 [1], 2009 [1]

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	1	Fatal	1	Dry	1
Major Injury	-	Major Injury	-	Wet	1
Minor Injury	-	Minor Injury	-	Ice	-
Possible/Unknown	-	Possible	-	Snow	-
PDO	1	Unknown	-	Slush	-
Total Crashes	2	Total Injuries	1	Sand/Dirt/Oil/Gravel	-
				Water	-
				Other	-
				Unknown	-
				Not Reported	-
				Total Crashes	2

TOT Property Damage: \$68,000

AVG Property Damage: \$34,000

Major Cause Summary:	
Animal	Improper Backing
Ran Traffic Signal	Illegally Parked/Unattended
1 Ran Stop Sign	Swerving/Evasive Action
Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
1 FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
FTYROW: Making Left Turn	Ran Off Road - Straight
FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
Followed Too Close	Other: Other Improper Action
Disregarded Railroad Signal	Unknown
Disregarded Warning Sign	Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

Selection Filter:

((YEAR <> 2001 and YEAR <> 2002 and YEAR <> 2003 and YEAR <> 2004))

Analyst: Sperry

Notes: All rural crashes



Driver and Time Summary

Audubon County Time & Driver Summary -2005 -2010

Report Version 1.0 Aug 2006

Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	1	-	-	-	-	-	-	-	1	50
MON	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TUE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WED	-	-	-	-	-	1	-	-	-	-	-	-	-	1	50
THU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRI	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SAT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tot.													2		
%														100	

Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	-	-	-		
16	-	-	-		
17	-	-	-		
18	-	-	-		
19	-	-	-		
20	-	-	-		
21 to 24	-	-	-		
25 to 29	1	-	-	1	25
30 to 34	-	-	-		
35 to 39	-	-	-		
40 to 44	-	-	-		
45 to 49	1	-	-	1	25
50 to 54	-	-	-		
55 to 59	-	-	-		
60 to 64	-	-	-		
65 to 69	-	1	-	1	25
70 to 74	1	-	-	1	25
75 to 79	-	-	-		
80 to 84	-	-	-		
85 to 89	-	-	-		
90 to 94	-	-	-		
95 plus	-	-	-		
NR	-	-	-		
Drivers	3	1	0	4	
%	75	25	0		100

Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	2	100
Total Crashes	2	100

Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment	2	50
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	2	50
Total Vehicles	4	100

Selection Filter:

((YEAR <> 2001 and YEAR <> 2002 and YEAR <> 2003 and YEAR <> 2004))

Analyst: Sperry

Notes: All rural crashes

Audubon County Intersection of Routes F24 and M66
(150th Street and Bluebird Avenue)
Crash Review

On March 16th, I looked at this intersection, after being requested to do so by the County Engineer, Mitch Rydl, during a visit to his office. I photographed all approaches to the intersection and copies of those photos are included in this summary. Engineer Rydl mentioned that due to the latest crash, which happened in November of 2010, he has already ordered additional stop, stop ahead and marker flag signs for the north and south intersection legs which currently are controlled with stops. He plans to have those erected ASAP after they arrive, and I commented that this was an excellent plan.

While on site, I noted that a significant amount of truck traffic passes through this intersection, especially during the time I was there (~11 AM). Some of the vehicles that were north bound seemed to “roll thru” the stop, presumably to keep up some speed for faster clearance across the roadway. In this case, their visibility to the north and west was good and to the east was probably adequate for 600-700’. Visibility for southbound vehicles is definitely hampered by a knoll in the NE quadrant of the intersection and the need for a vehicle to stop near the stop bar was definitely noted.

Back in the office, I was able to review three of the four crashes with CMAT (Crash Mapping Analysis Tool), and through Iowa Traffic Safety Data Services (ITSDS), I was able to acquire detailed information from the latest (November 2010) crash. Information regarding all of the reported crashes is also included with this report.

Three of these crashes (one major injury and two fatal crashes) involved a run stop sign and the 4th (a property damage only crash) was the result of a failure to yield the right of way from the stop. Three of the four crashes reported involved a west bound vehicle, so providing an additional intersection warning sign (W2-1) for west bound traffic would be an excellent yet inexpensive addition to the proposed sign changes that are already planned. There were two crashes each involving northbound and southbound vehicles. I find it a very interesting coincidence (?) that all four crashes (in 2003, 2007, 2009 and 2010) happened in a two hour time span - all between 9:58 AM and 11:45 AM. Although I personally did not notice any especially bright or “light blinded” spots when I did the field review, it would be wise to conduct another with that specific point in mind.

Although these proposed changes should resolve the crash frequency at this location, two other two other steps could be taken if reports of “near misses” or if crashes continue to persist. Adding a “Cross Traffic Does Not Stop” sign, (W4-4P) under the stop sign for both NB & SB would provide one additional warning to assist the FTY ROW possibility. Installing more permanent PCC panels with rumble strips in the HMA surface to the north and re-milling the existing ones to the south would add significant warning to those that might otherwise run the stop.

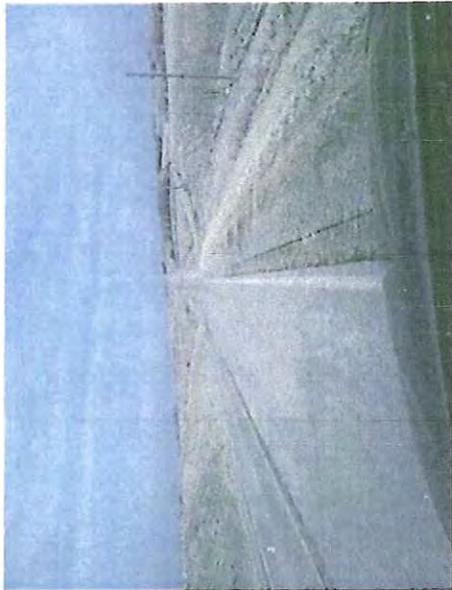
All the signing (and even possible rumble strip improvement work) should qualify to be paid for by Traffic Safety Improvement Program (TSIP) funds, and I will provide assistance in filling out the required forms if and when you desire to participate.

Thank you for the opportunity to review this site.

Bob Sperry
Local Roads Safety Liaison
Iowa LTAP, Institute for Transportation
2711 South Loop Dr
Ames, IA 50010



3



6 Looking East



9 Looking NE



2



5 Looking NE



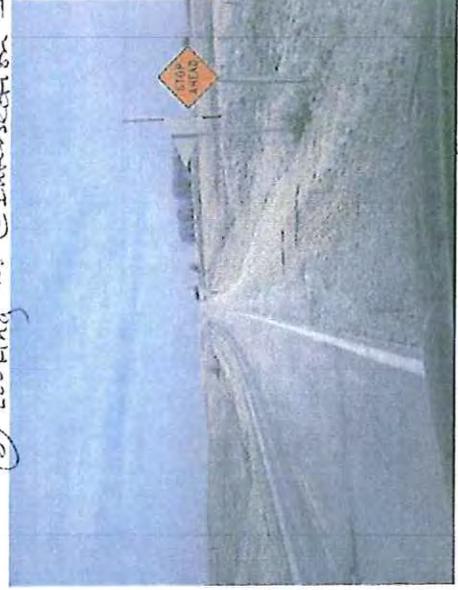
8 Looking N. @ Intersection



1

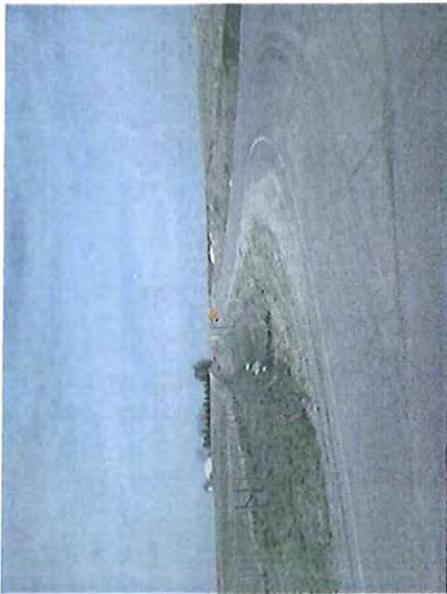


4 Looking E-SE



7 Approaching from South

Approaching from West



(12) Looking W-NW from Intersection



(11) Looking NW thru Int.



(10) Looking N thru Int.



(15) Near top of NW E of Int.



(14) WB E of Int.



(13) WB Approaching Intersection



(18) Approaching from North



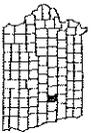
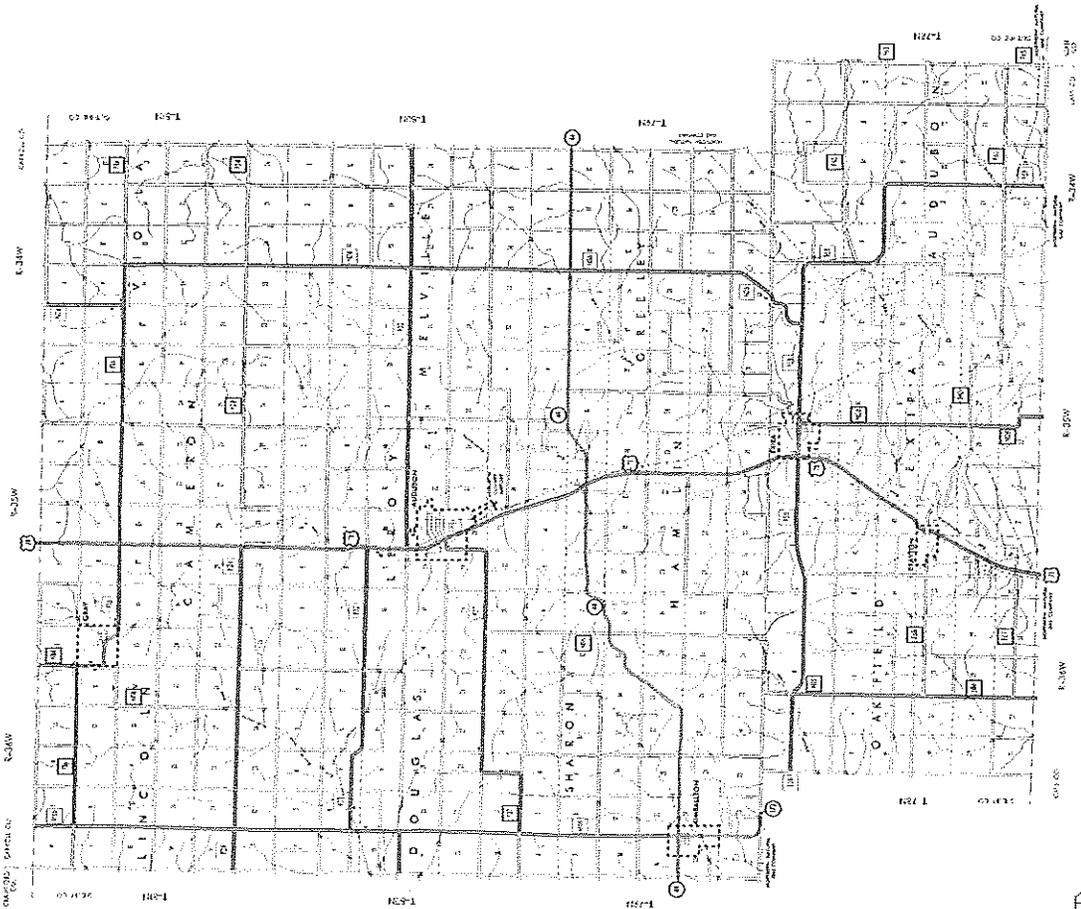
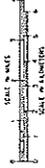
(17) WB toward Int.



(16) Looking W thru Int. Approaching from East

Federal Functional Classification Map Audubon County IOWA

Prepared by
**IOWA DEPARTMENT
 OF TRANSPORTATION**
 Phone (515) 281-3469
 In Cooperation With
**United States
 Department of Transportation**
 FEDERAL HIGHWAY ADMINISTRATION
 DECEMBER 31, 1992

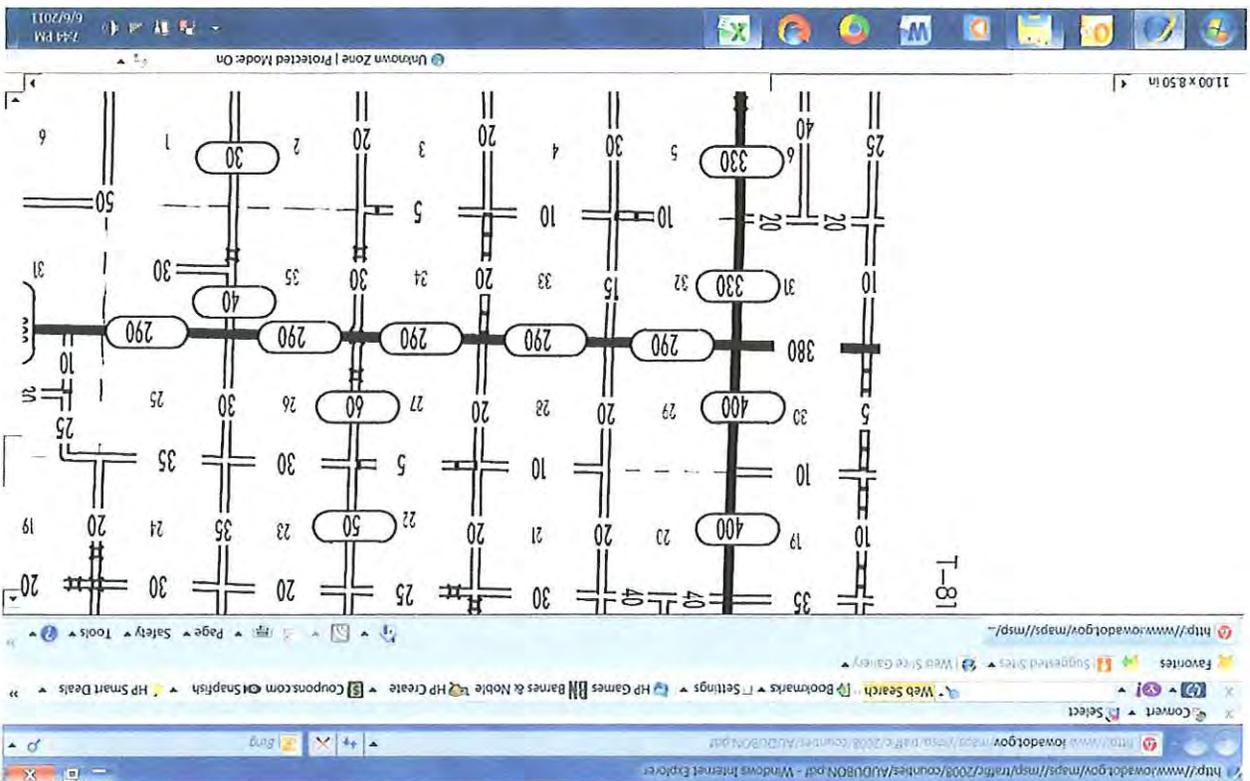
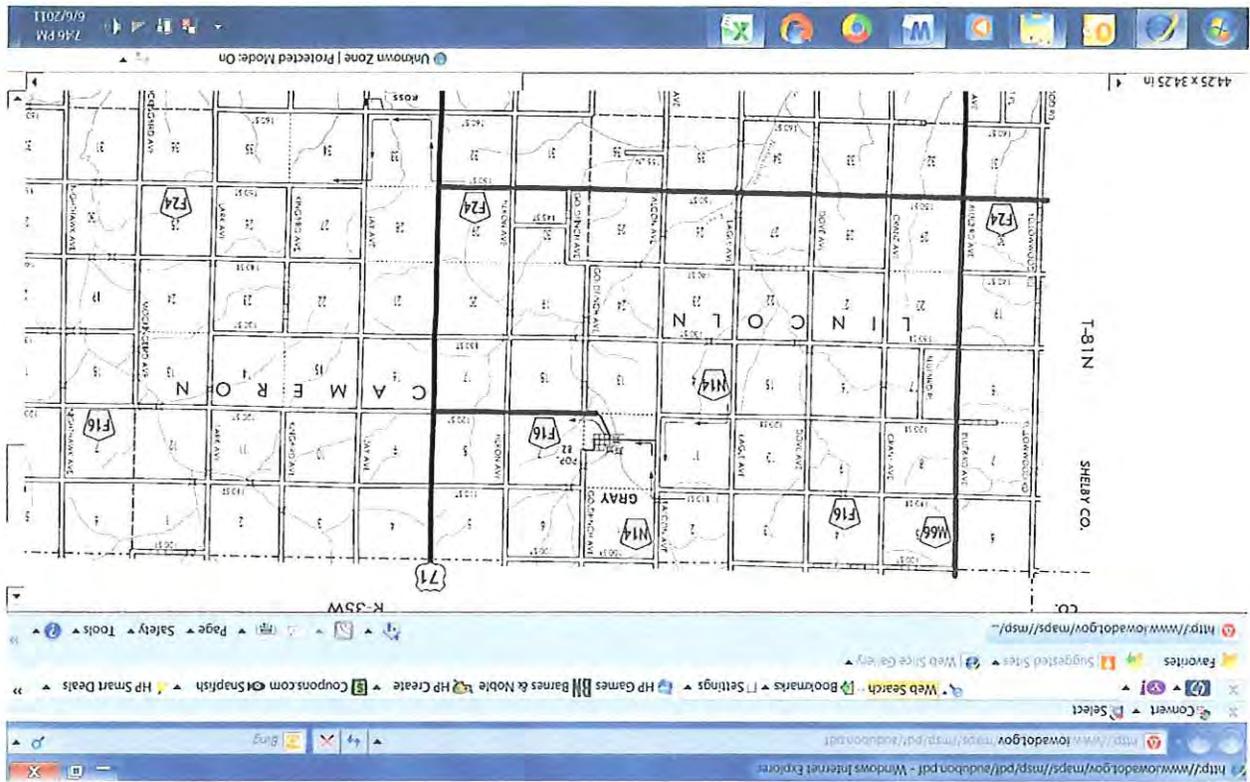


RURAL FEDERAL FUNCTIONAL CLASSIFICATIONS

- Other Principal Arterial
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local

Future classified routes shown as dashed lines.
 County line roads on the south and east are classified by the adjacent county.





L

Intersection or Spot Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Audubon Prepared by: RBS Date Prepared: Jun 5, 2011

Intersection: F24 - M66 Intersection NW of Audubon

Improvement

Proposed Improvement(s): Install Cross Traffic Does Not Stop" (W4-4P) signs for NB & SB traffic; Install Cross Road (W2-1) sign east on F24 for WB traffic; Install set of 3 rumble strips north on M66 for SB traffic

\$ 25,000 Estimated Improvement Cost, **EC** 10 Est. Improvement Life, years, **Y**
 _____ Other Annual Cost (after initial year), **AC** 10 Crash Reduction Factor (integer), **CRF**
 \$ - Present Value Other Annual Costs, **OC** 4.0% Discount Rate (time value of \$), **INT**

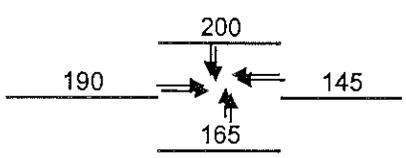
$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$

\$ 25,000 Present Value Cost, **COST** = EC + OC

Traffic Volume Data

Source: DOT H & T Map 2008 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



255,500 Current Annual Entering Veh., **AEV** = DEV * 365
 853 veh / day, Final Year DEV, **FDEV**
 2.80 MEV, Total Million Entering Veh. Over life of Project, **TMEV**

2.0% Projected Traffic Growth (0%-10%), **G**
700 Current Daily Entering Vehicles, **DEV**

$$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$$

Crash Data

<u>2005</u>	First full year -->	<u>2009</u>	Last full year	5.8 years, Time Period, T
<u>9</u>	Additional months			values as of Dec. 2007
<u>2</u>	Fatal Crashes	<u>1</u>	Fatalities @	\$3,500,000 \$ 3,500,000
<u>1</u>	Injury Crashes	<u>1</u>	Major Injuries @	\$240,000 \$ 240,000
			Minor Injuries @	\$48,000 \$ -
<u>1</u>	Property Damage Only		Possible Injuries @	\$25,000 \$ -
			(assumed cost per crash)	\$2,700 \$ 10,800
<u>4</u>	Total Crashes, TA		-OR- enter all Property Costs of all crashes:	Total \$ Loss, LOSS \$ <u>3,750,800</u>

0.70 Current Crashes / Year, **AA** = TA / T 2.72 Crashes / MEV, Crash Rate, **CR**
 \$ 937,700 Cost per Crash, **AVC** = LOSS / TA CR = TA x 10^6 / (DEV x 365 x T)
 7.6 Total Expected Crashes, **TECR** = CR x TMEV \$ 575,637 Present Value of Avoided Crashes, **BENEFIT**
 0.07 Crashes Avoided First Year **AAR** = AA x CRF / 100
 \$ 65,231 Crash Costs Avoided in First Year, **AAR** x AVC
 0.8 Total Avoided Crashes, **TECR** x CRF / 100

$$BEN. = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$575,637 : \$25,000 = 23.03 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 Location / Title of Project SE Oralabor Road & SE Peachtree Drive Improvements

 Applicant City of Ankeny, Iowa

 Contact Person Paul Moritz, P.E. Title Director of Public Works

 Complete Mailing Address 220 W 1st Street
Ankeny, IA 50023

 Phone 515-963-3522 E-Mail pmoritz@ankenyiowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

 Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type	Site Specific <input checked="" type="checkbox"/> Traffic Control Device <input type="checkbox"/> Safety Study <input type="checkbox"/>
-------------------------	---

Funding Amount

 Total Project Cost \$ \$872,400.00

 Safety Funds Requested \$ \$500,000.00

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Ankeny, IA

Signed:  6/20/11
Signature Date Signed

Steven D. Van Oort, Mayor
Typed Name

Attest:  6/20/11
Signature Date Signed

Pamela DeMouth, City Clerk
Typed Name

COPY

RESOLUTION 2011-202

A RESOLUTION AUTHORIZING THE CITY OF ANKENY, IOWA, TO MAKE AN APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION TRAFFIC SAFETY IMPROVEMENT PROGRAM (TSIP) FOR THE PARTIAL FUNDING OF A PROJECT FOR SITE SPECIFIC IMPROVEMENTS AT THE INTERSECTION OF HIGHWAY 160 (SE ORALABOR ROAD) AND SE PEACHTREE DRIVE WITHIN THE CITY LIMITS OF ANKENY.

WHEREAS, the Traffic Safety Improvement Program is established by the Iowa Department of Transportation; and

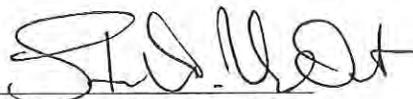
WHEREAS, said program allows for funding to be provided to states, counties, or cities for eligible projects or programs that will contribute to improving safe travel; and

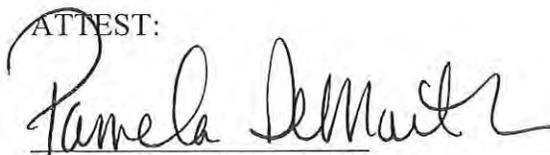
WHEREAS, THE City of Ankeny has determined that improvements at the intersection of U.S. Highway 160 & SE Peachtree Drive will help reduce vehicle accidents. The proposed improvements include traffic signals and the addition of left turn lanes.

NOW, THEREFORE, BE IT RESOLVED, by the Council of the City of Ankeny, Iowa, that:

1. The City Council supports and approves the application for Traffic Safety Improvement Program funding.
2. The City Council hereby commits the additional City funds necessary for construction of the project beyond any Traffic Safety Improvement Program funding.
3. The City Council hereby commits to accepting and maintaining these improvements in accordance with the Iowa DOT Agreement for Maintenance and Repair of Primary Roads in Municipalities.
4. The Mayor is hereby authorized to sign and execute the application on behalf of the City.

DATED at Ankeny, Iowa, this 20th day of June, 2011.


Steven D. Van Oort, Mayor

ATTEST:

Pamela DeMouth, City Clerk

NARRATIVE

Existing Conditions

The intersection of SE Oralabor Road & SE Peachtree Drive is in the southeastern portion of the City of Ankeny. SE Oralabor Road is also designated as IA Hwy 160, serving both local traffic and through traffic to I-35 to the east and IA Hwy 415 and Saylorville Lake to the west. In the proposed project area, SE Oralabor Rd has a four-lane, undivided 53 ft urban cross-section. To the west, at S Ankeny Boulevard (U.S. Hwy 69), raised medians and left turn lanes are provided. The posted speed limit is 45 mph. The south leg of the SE Peachtree Drive intersection is a local street serving primarily commercial and residential traffic. The north leg of this intersection is a private street serving the Four Seasons Mobile Home Park. SE Peachtree Drive geometry at the intersection currently includes a single southbound lane and two northbound approach lanes. The posted speed limit is 25 mph. The intersection is currently controlled by two-way STOP control for northbound and southbound SE Peachtree Drive traffic.

The land use to the north of the intersection is primarily residential mobile homes. The land uses to south include commercial, multi-family and single-family residential. Current right of way of 100-150 ft along SE Oralabor Road is expected to be sufficient for proposed improvements.

Traffic Counts

Traffic counts were collected by the Iowa DOT in 2004 and were also collected by the City of Ankeny in 2009. SE Oralabor Road 24-hour City road tube counts indicated an annual average daily traffic (AADT) volume of 24,175 vehicles per day (vpd). On SE Peachtree Drive, 2009 12-hr manual turning movement counts collected by the City and multiplied by Iowa DOT expansion factors ('Municipal Street') indicate AADT of 1,750 vpd (south leg – SE Peachtree Dr) and 890 vpd (north leg – Four Seasons Drive). These volumes are consistent with the 2004 Iowa DOT turning movement counts. The traffic count records are provided in Section J of this application.

Crash History

Crash data for the intersection of SE Oralabor Road (IA Hwy 160) & SE Peachtree Drive were obtained from the Iowa DOT CMAT and SAVER software. Crash reports were also obtained from the City of Ankeny Police Department. The crash data covers the period from January 2006 through December 2010, as well as January-May 2011.

During this five year and five month period, 52 crashes occurred, including 28 personal injury crashes and 24 property damage only (PDO) crashes. The injury crashes resulted in 3 major injuries, 24 minor injuries and 26 possible injuries.

The primary types of collisions were rear end crashes (33), broadside crashes (8) and angle/left turn crashes (8). Many of these crashes are likely due to the lack of turn lanes, where a vehicle rear ends a vehicle waiting to turn. In a number of cases, multiple vehicles were queued behind a turning vehicle, causing a multi-car crash. The data also indicates that traffic turning from SE Peachtree Drive and from SE Oralabor Road had difficulty selecting gaps in traffic, leading to broadside and angle crashes. Crash reports indicate 46 of the 52 crashes reported may be correctable by the installation of turn lanes (to remove turning vehicles from through traffic) and installation of a traffic signal (to assign right-of-way). Please see section I of this application for a crash summary, a collision diagram and detailed injury crash reports.

Traffic Signal Warrants

A traffic signal warrant analysis conducted in 2009 concluded the intersection satisfied the criteria for Warrant 1: Eight Hour Vehicular Volume, as specified in the *Manual on Uniform Traffic Control Devices*

(MUTCD). Specifically, Warrant 1-Condition B was satisfied, which is “intended for application at locations where the traffic volume on a major street is so heavy that traffic on a minor intersecting street suffers excessive delay or conflict in entering or crossing the major street”. The Iowa DOT (District 1 and the Office of Traffic and Safety) subsequently indicated that they have no objections to a traffic signal at this intersection.

Proposed Improvement Plan

Based on the intersection crash history, safety performance and traffic signal warrants, the City of Ankeny proposes to widen SE Oralabor Road to provide raised medians, left turn lanes and a traffic signal at the intersection of SE Oralabor Road & SE Peachtree Drive. The turn lanes would remove turning traffic from the through movements, and the signal would allocate right of way more efficiently during peak hours and provide drivers turning from SE Oralabor Road or SE Peachtree Drive with a safer environment to cross the intersection.

The proposed widening of SE Oralabor Road will extend west from the Peachtree Drive intersection far enough to provide raised medians and left turn lanes for two existing access points. These driveways access commercial uses to the south, including a grocery store and movie theater. Rural residential land to the north will likely be developed in future years. As seen in Section G of this application, the entire widening is proposed for the north side of SE Oralabor Road due to the close proximity of the recreational trail and other features on the south side of the highway. Per correspondence with the Union Pacific Railroad, the existing SE Oralabor Road railroad crossing east of SE Peachtree Drive has been abandoned, and is to be removed in 2011.

At the proposed signalized intersection at SE Peachtree Drive, protected-only left turn phasing is proposed for the eastbound and westbound traffic on SE Oralabor Road due to corridor speeds and traffic volumes, and for consistency with adjacent signalized intersections. Northbound and southbound traffic on SE Peachtree Drive (Four Seasons Drive) would have permissive left turns, with mast arms designed to offer protected phasing if necessary in the future. The signal would be interconnected (via existing fiber optic interconnect) with existing signals along SE Oralabor Road. A more detailed layout of the proposed intersection geometry can be viewed in Section G of this application. The proposed signal layout and phasing details can be seen in Section K of this application.

Financing

The proposed improvements for the intersection of SE Oralabor Road (IA Hwy 160) & SE Peachtree Drive are estimated to cost approximately \$872,400. This includes costs for the pavement widening, construction of raised medians and the proposed traffic signal installation. The Iowa DOT is planning to resurface the west portion of the project area in 2011. The City has discussed this proposed project with District 1 staff. With proper construction staging, the proposed widening and medians should be able to be constructed with new asphalt overlay in place. An itemized breakdown of project costs can be found in Section C of this application. The City is requesting \$500,000 in Traffic Safety Improvement Program (TSIP) funds to support this effort.

Agency Support

The City has coordinated with Iowa DOT District 1 in developing the proposed improvements, and the District is in support of the proposed signalization and SE Oralabor Road improvements. The proposed improvements are also consistent with Des Moines Area Metropolitan Planning Organization (DMAMPO) classification of SE Oralabor Road (IA Hwy 160) as an arterial corridor.

ITEMIZED PROJECT COST BREAKDOWN
SE ORALABOR RD & SE PEACHTREE DR IMPROVEMENTS
ANKENY, IA

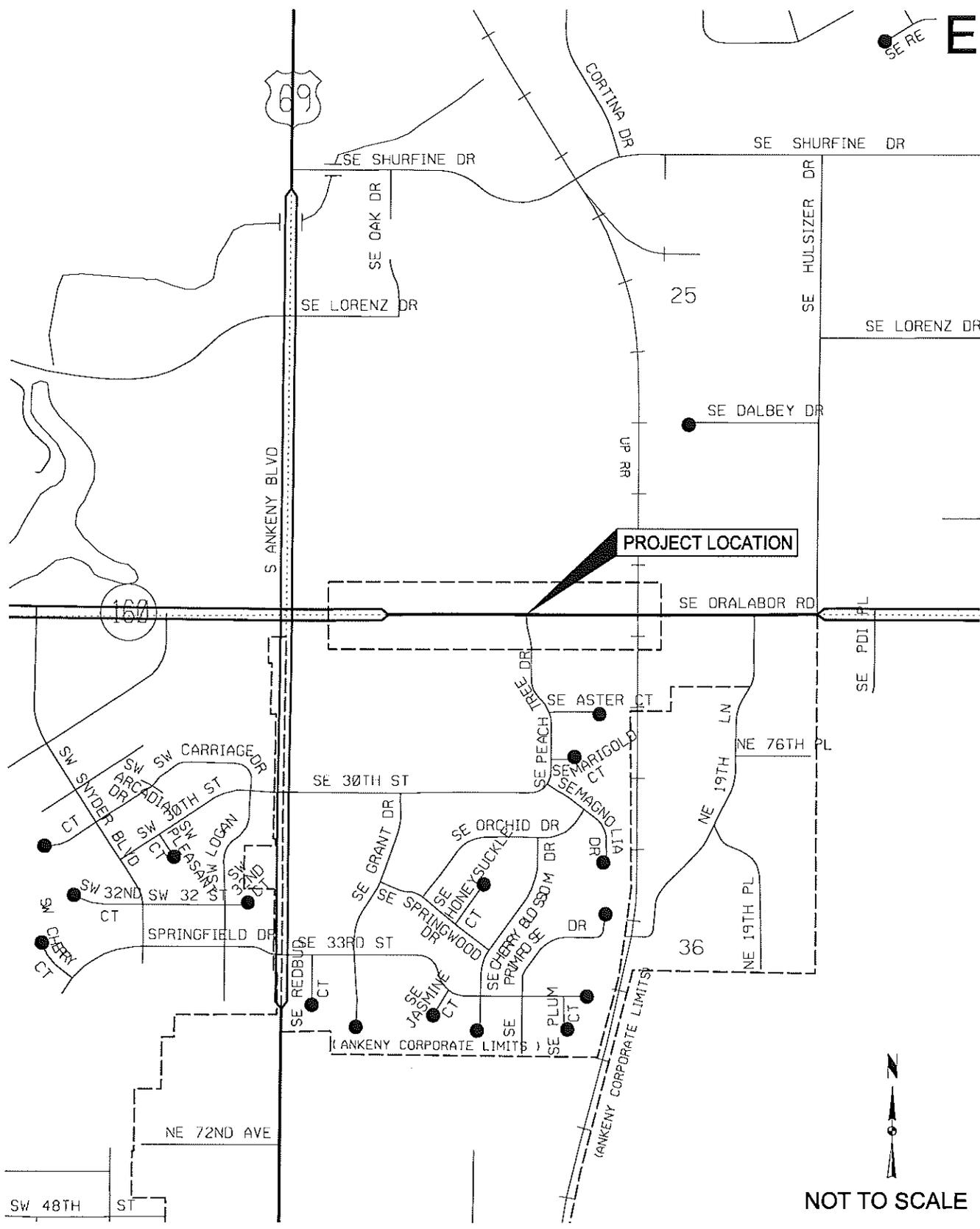
ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
GENERAL PROVISIONS					
1.1	Mobilization	1	LS	\$ 20,000.00	\$ 20,000.00
EARTHWORK					
2.1	Curb Removal, 3'	2,720	LF	\$ 5.00	\$ 13,600.00
2.2	Pavement Median Removal	510	SY	\$ 10.00	\$ 5,100.00
2.3	Class 10 Excavation	2,920	CY	\$ 5.00	\$ 14,600.00
2.4	Subgrade Preparation	5,000	SY	\$ 2.50	\$ 12,500.00
STORM SEWER					
3.1	Subdrain, Perforated Type 1, 6"	2,720	LF	\$ 15.00	\$ 40,800.00
3.2	Subdrain, Outlet, Type C	16	EA	\$ 300.00	\$ 4,800.00
3.3	Intake Removal	8	EA	\$ 500.00	\$ 4,000.00
3.4	Intake, SW-507	4	EA	\$ 3,000.00	\$ 12,000.00
3.5	Intake, SW-509	4	EA	\$ 4,000.00	\$ 16,000.00
3.6	Storm Sewer, 2000D, RCP, 15"	128	LF	\$ 40.00	\$ 5,120.00
PAVING					
4.1	PCC Pavement, 9" Depth	4,535	SY	\$ 45.00	\$ 204,075.00
4.2	PCC Pavement, 8" Depth	650	SY	\$ 42.00	\$ 27,300.00
4.3	Modified Subbase, 12" Depth	1,670	CY	\$ 35.00	\$ 58,450.00
4.4	Pavement Marking Removal	7	STA	\$ 250.00	\$ 1,750.00
4.5	Painted Pavement Marking, Durable	45	STA	\$ 200.00	\$ 9,000.00
4.6	Painted Pavement Marking Symbols, Durable	18	EA	\$ 350.00	\$ 6,300.00
4.7	Dowel Median, 6"	1,100	SY	\$ 55.00	\$ 60,500.00
SITE WORK AND LANDSCAPING					
5.1	Seeding, Fertilizing and Mulching (Urban)	3	AC	\$ 4,000.00	\$ 12,000.00
TRAFFIC SIGNALIZATION					
6.1	Traffic Signal	1	LS	\$ 170,000.00	\$ 170,000.00
				SUBTOTAL =	\$ 697,895.00
				Construction Contengency (10%) =	\$ 69,800.00
				Administration, Engineering, and Construction Services (15%) =	\$ 104,700.00
				TOTAL =	\$ 872,400.00

PROPOSED FUNDING SOURCES
SE ORALABOR RD & SE PEACHTREE DR IMPROVEMENTS
ANKENY, IA

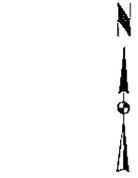
SOURCE	AMOUNT
Traffic Safety Improvement Program Funding (TSIP - Site Specific)	\$500,000
Local Funds	\$372,400
PROJECT TOTAL	\$872,400

PROPOSED PROJECT SCHEDULE
SE ORALABOR RD & SE PEACHTREE DR IMPROVEMENTS
ANKENY, IA

June 2011	TSIP Application
December 2011	Iowa DOT Approval
Jan. 2012	TSIP Agreement
Jan. 2012 – April 2012	Project Engineering
May 2012	Project Letting
June 2012 – Nov. 2012	Project Construction



PROJECT LOCATION



NOT TO SCALE

LOCATION MAP
SE ORALABOR ROAD & SE PEACHTREE DRIVE
ANKENY, IOWA



Photo 1: Intersection of SE Oralabor Rd & SE Peachtree Dr Looking North



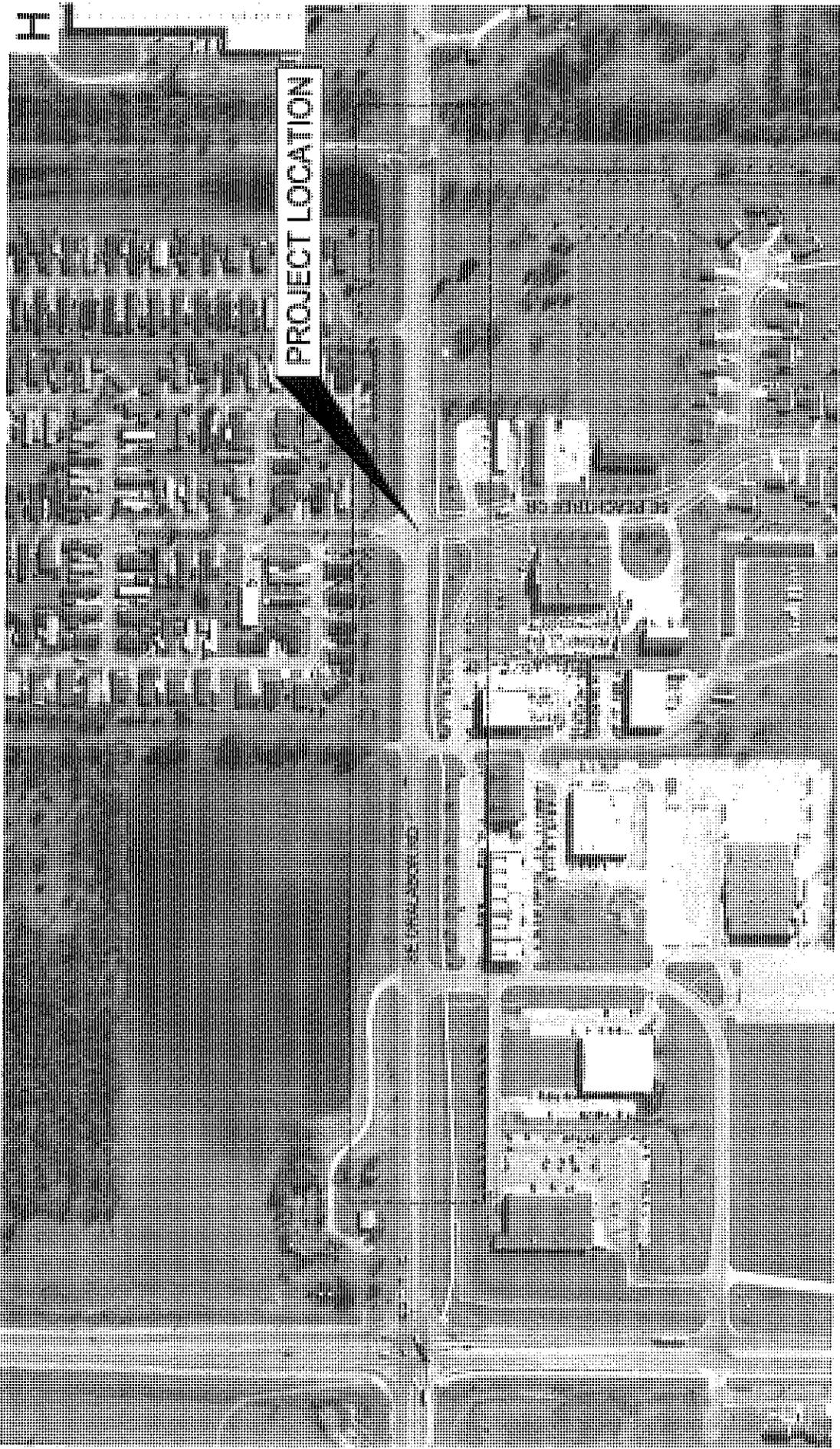
Photo 2: Intersection of SE Oralabor Rd & SE Peachtree Dr Looking South



Photo 3: Intersection of SE Oralabor Rd & SE Peachtree Dr Looking West



Photo 4 & 5: SE Oralabor Rd Looking East; Showing Queue Behind WB Turning Vehicle



PROJECT LOCATION

PROPOSED IMPROVEMENT AREA
SE ORALABOR ROAD & SE PEACHTREE DRIVE
ANKENY, IA

CRASH DATA SUMMARY
SE ORALABOR RD & SE PEACHTREE DR IMPROVEMENTS
ANKENY, IA

Crash data for the intersection of SE Oralabor Road (IA Hwy 160) & SE Peachtree Drive were obtained from the Iowa DOT CMAT and SAVER software. Crash reports were also obtained from the City of Ankeny Police Department. The crash data covers the period from January 2006 through December 2010, as well as January-May 2011.

During this five year and five month period, 52 crashes occurred, including 28 personal injury crashes and 24 property damage only (PDO) crashes. The injury crashes resulted in 3 major injuries, 24 minor injuries and 26 possible injuries.

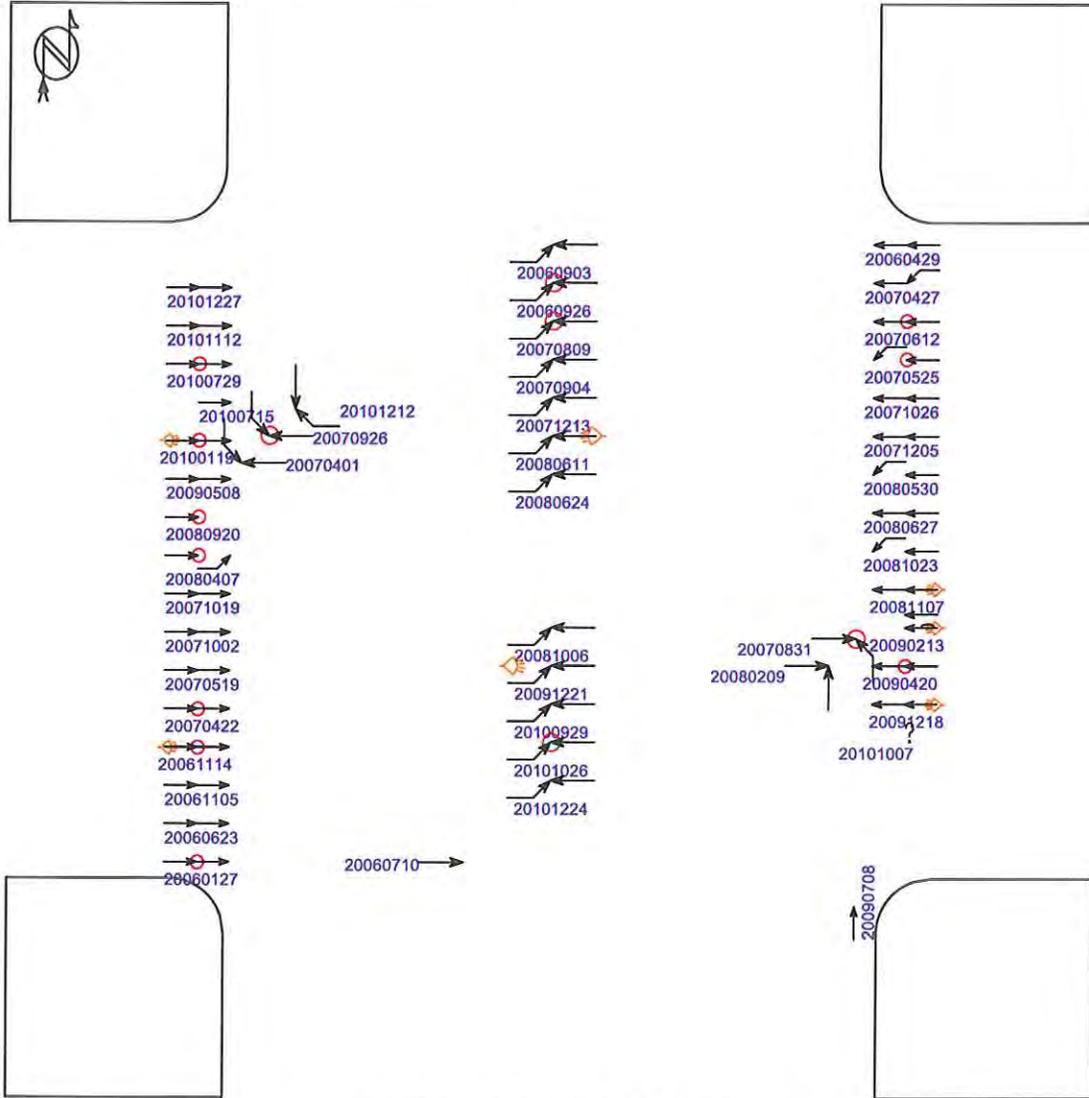
The primary types of collisions were rear end crashes (33), broadside crashes (8) and angle/left turn crashes (8). Many of these crashes are likely due to the lack of turn lanes, where a vehicle rear ends a vehicle waiting to turn. In a number of cases, multiple vehicles were queued behind a turning vehicle, causing a multi-car crash. The data also indicates that traffic turning from SE Peachtree Drive and from SE Oralabor Road had difficulty selecting gaps in traffic, leading to broadside and angle crashes. Crash reports indicate 46 of the 52 crashes reported may be correctable by the installation of turn lanes (to remove turning vehicles from through traffic) and installation of a traffic signal (to assign right-of-way).

**MAJOR CAUSE SUMMARY - 2006-2011
SE ORALABOR RD & SE PEACHTREE DR IMPROVEMENTS
ANKENY, IA**

Location:	<u>SE Oralabor Road & SE Peachtree Drive</u>		
City/County:	<u>Ankeny, IA (Polk County)</u>		
Time Period:	<u>2006-2011 (May)</u>		
Prepared by:	<u>Ankeny/S&A</u>		
NUMBER OF COLLISIONS			
	<u>0</u>	Fatal Collisions, (F)	<u>0</u> fatalities
	<u>28</u>	Personal Injury Collisions, (PI)	<u>53</u> injuries
	<u>24</u>	Property Damage Only Collisions, (PDO)	
Totals:	<u>52</u>	Collisions	<u>0</u> fatalities <u>53</u> injuries
COLLISION RATE =			
	1.03	Collisions per Million Entering Vehicles (MEV)	
Collision Rate =	<u>52</u>	Total Collisions:	<u>50.25</u> MEV
TRAFFIC ASSIGNMENT			
Average Annual Daily Traffic (AADT)			
North Approach =	<u>890</u>	Collision Period (years) =	<u>5.4</u>
South Approach =	<u>1750</u>		
East Approach =	<u>24175</u>	Million Entering Vehicles (MEV)	<u>50.25</u>
West Approach =	<u>24175</u>		
MAJOR CONTRIBUTING CAUSES			
None apparent	FTYROW other	1 Failure to have control	
Ran Traffic Signal	Wrong way on one way road	Headlights not on	
1 Ran Stop Sign	6 Speed too fast for conditions	1 Inattentive or distracted	
Passed stopped school bus	Exceeding speed limit	Driver confused	
Passing where prohibited	Drag racing	1 Swerving/Evasive Action	
Passing, interfered with other	Improper turn	Oversized vehicle	
Left of center, not passing	Improper lane change	Overloaded, passengers/cargo	
Failed to yield ROW(FTYROW)	12 Following too close	Inexperienced driver	
4 FTYROW from stop sign	No signal or improper signal	11 Other	
FTYROW from yield sign	Disregarded railroad signal	Driver asleep	
13 FTYROW making left turn	Disregarded warning signal	Drinking driver	
FTYROW from driveway	Reckless driving	Mechanical failure	
FTYROW from parked position	Improper backing	2 Unknown	
FTYROW to pedestrian	Illegal or improper parking		
COLLISION TYPES			
Out of control vehicle	8 Left turn collision	Fixed object	
33 Rear end collision	Backing vehicle collision	Overturned vehicle	
1 Head on collision	2 Sideswipe same	Pedestrian	
8 Right angle collision	Sideswipe opposite	Bicycle	

COLLISION DIAGRAM SE ORALABOR ROAD & SE PEACHTREE DR ANKENY, IA

2006 - 2010 Reportable Crashes



(0) crashes could not be placed in this schematic

- | | | | |
|--------------|------------------|--------------|----------------|
| ← Straight | ▭ Parked | ⊗ Pedestrian | Fixed objects: |
| ← Stopped | ⚡ Erratic | ⊗ Bicycle | □ General |
| ← Unknown | ⚡ Out of control | ○ Injury | ▣ Signal |
| ↔ Backing | ↘ Right turn | ⊙ Fatality | ▣ Tree |
| ↔ Overtaking | ↙ Left turn | 👁 Nighttime | ▣ Pole |
| ↔ Sideswipe | ↪ U-turn | 🚔 DUI | ▣ Curb |
| | | | ▣ Animal |
| | | | ◁ 3rd vehicle |
| | | | * Extra data |

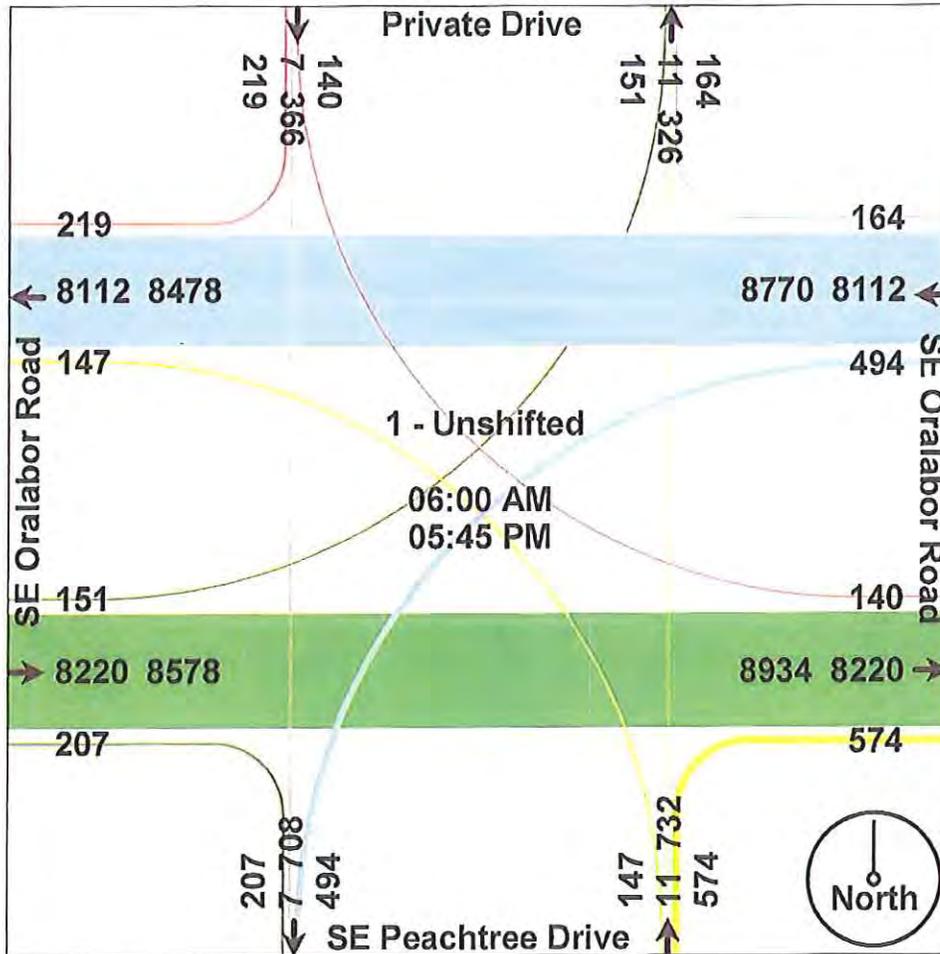
Pd' Programming, Inc. 06/09/2011

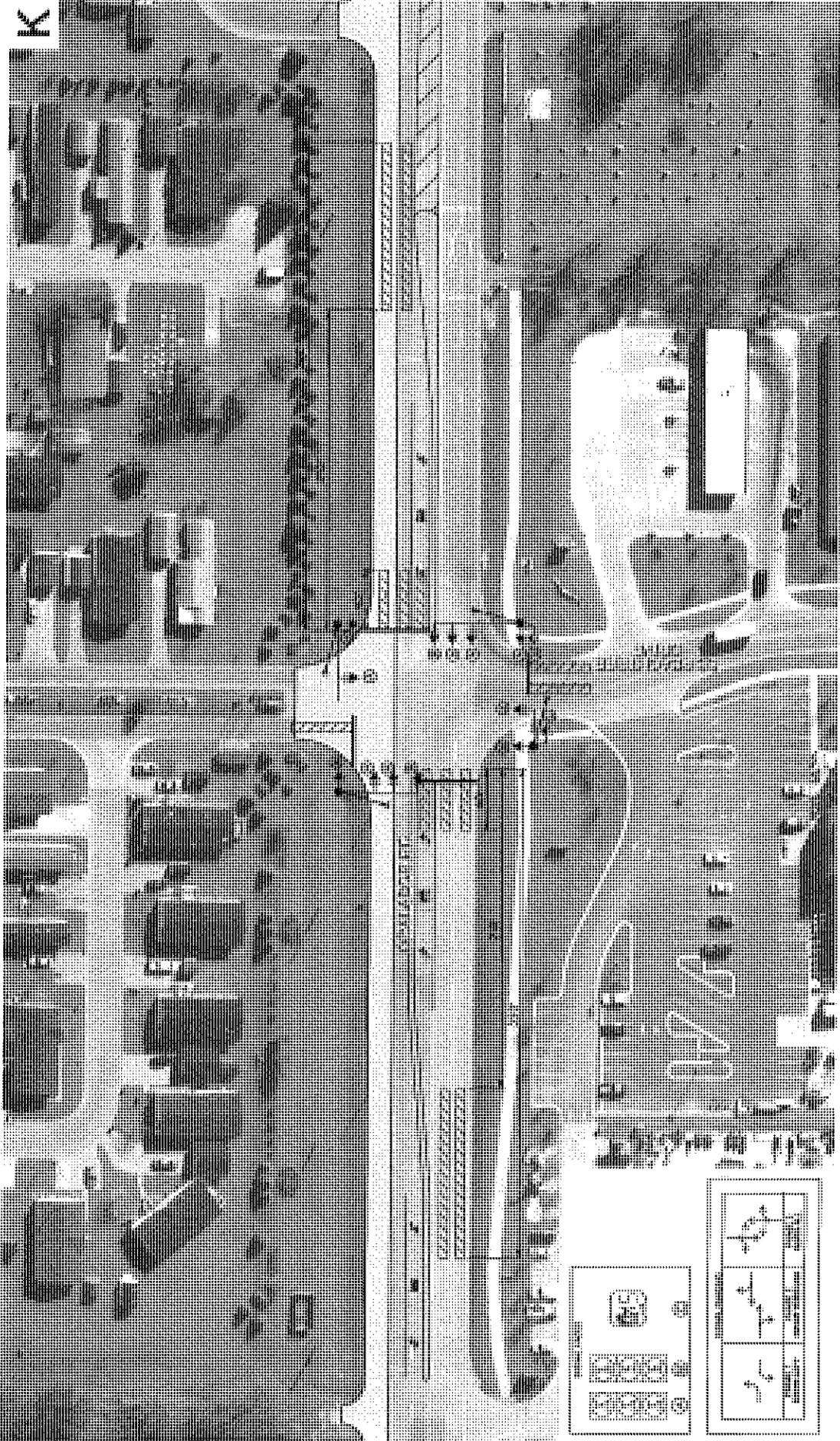
Turning Movements
 City of Ankeny Public Works Department
 Engineering Division File Name : Peachtree and Oralabor
 Ankeny, Iowa (515) 963-3580 File Code : 00000000
 Start Date : 07/08/2009
 Page No : 1

Groups Printed- Unshifted

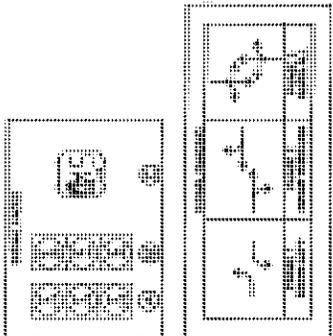
Start Time	Private Drive From North					SE Oralabor Road From East					SE Peachtree Drive From South					SE Oralabor Road From West					Int. Total
	Rig ht	Thr u	Left	Pe ds	App. Total	Rig ht	Thr u	Left	Pe ds	App. Total	Rig ht	Thr u	Left	Pe ds	App. Total	Rig ht	Thr u	Left	Pe ds	App. Total	
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
06:00 AM	3	0	2	0	5	2	36	2	0	40	8	0	0	0	8	1	41	0	0	42	95
06:15 AM	3	0	9	0	12	0	55	1	0	56	10	0	0	0	10	0	71	1	0	72	150
06:30 AM	3	0	4	0	7	1	66	3	0	90	13	0	3	0	16	0	100	0	0	100	213
06:45 AM	5	0	5	0	10	1	99	4	0	104	15	0	2	0	17	0	142	2	0	144	275
Total	14	0	20	0	34	4	276	10	0	290	46	0	5	0	51	1	354	3	0	358	733
07:00 AM	7	0	4	0	11	3	95	5	0	103	13	1	0	0	14	2	123	1	0	126	254
07:15 AM	11	0	4	0	15	1	133	5	0	139	15	0	1	0	16	0	164	1	0	165	335
07:30 AM	11	0	5	0	16	3	150	2	0	155	21	0	1	0	22	0	191	2	0	193	386
07:45 AM	8	0	4	0	12	0	190	6	0	196	22	0	0	0	22	2	192	2	0	196	426
Total	37	0	17	0	54	7	568	18	0	593	71	1	2	0	74	4	670	6	0	680	1401
08:00 AM	5	1	2	0	8	0	120	5	0	125	16	0	2	0	18	2	157	1	0	160	311
08:15 AM	5	0	3	0	8	1	112	8	0	121	10	0	0	0	10	1	125	0	0	126	285
08:30 AM	2	1	3	0	6	3	106	6	0	115	11	1	4	0	16	2	130	1	0	133	270
08:45 AM	6	0	2	0	8	3	119	6	0	128	9	1	1	0	11	0	115	4	0	119	266
Total	18	2	10	0	30	7	457	25	0	489	46	2	7	0	55	5	527	6	0	538	1112
09:00 AM	3	0	3	0	6	2	121	3	0	126	11	0	1	0	12	2	104	1	0	107	251
09:15 AM	1	0	6	0	7	5	128	4	0	137	8	0	0	0	8	1	128	3	0	132	284
09:30 AM	7	0	3	0	10	0	117	7	0	124	7	0	1	0	8	5	143	0	0	148	290
09:45 AM	4	0	0	0	4	2	122	8	0	132	9	1	3	0	13	1	129	5	0	135	284
Total	15	0	12	0	27	9	488	22	0	519	35	1	5	0	41	9	504	9	0	522	1109
10:00 AM	8	0	2	0	10	3	112	7	0	122	9	0	5	0	14	3	127	0	0	130	276
10:15 AM	5	0	3	0	8	2	125	7	0	134	6	0	1	0	7	4	150	1	0	155	304
10:30 AM	0	0	2	0	2	2	139	13	0	154	7	0	0	0	7	2	155	1	0	158	321
10:45 AM	6	0	1	0	7	3	147	6	0	156	10	0	2	0	12	3	159	1	0	163	338
Total	19	0	8	0	27	10	523	33	0	566	32	0	8	0	40	12	591	3	0	606	1239
11:00 AM	1	0	2	0	3	4	169	10	0	183	11	0	3	0	14	2	198	2	0	202	402
11:15 AM	5	0	2	0	7	2	168	13	0	183	12	0	3	0	15	7	167	4	0	178	383
11:30 AM	8	0	4	0	12	1	186	10	0	197	14	1	6	0	21	1	215	5	0	221	451
11:45 AM	1	1	4	0	6	4	172	10	0	186	15	0	3	0	18	3	198	5	0	206	416
Total	15	1	12	0	28	11	695	43	0	749	52	1	15	0	68	13	778	16	0	807	1652
12:00 PM	3	0	3	0	6	2	214	18	0	234	5	0	7	0	12	7	215	3	0	225	477
12:15 PM	5	0	1	0	6	2	175	12	0	189	12	0	2	0	14	9	205	1	0	215	424
12:30 PM	5	0	2	0	7	5	230	8	0	243	12	0	2	0	14	3	208	4	0	215	479
12:45 PM	2	0	5	0	7	3	236	12	0	251	14	0	2	0	16	3	249	7	0	259	533
Total	15	0	11	0	26	12	855	50	0	917	43	0	13	0	56	22	877	15	0	914	1913
01:00 PM	0	0	2	0	2	0	213	11	0	224	11	1	4	0	16	13	166	2	0	181	423
01:15 PM	2	1	1	0	4	0	193	10	0	203	13	0	7	0	20	6	185	1	0	192	419
01:30 PM	2	0	2	0	4	1	160	12	0	173	9	0	5	0	14	7	197	4	0	208	399
01:45 PM	6	0	3	0	9	5	164	12	0	181	11	0	9	0	20	10	163	3	0	176	386
Total	10	1	8	0	19	6	730	45	0	781	44	1	25	0	70	36	711	10	0	757	1627
02:00 PM	4	0	2	0	6	5	165	15	0	185	11	0	1	0	12	3	174	2	0	179	382
02:15 PM	4	0	6	0	10	2	164	10	0	178	12	0	8	0	20	4	189	5	0	198	404
02:30 PM	3	0	3	0	6	4	152	14	0	170	12	1	8	0	21	8	163	4	0	175	372
02:45 PM	7	0	4	0	11	8	165	8	0	181	11	0	4	0	15	3	189	4	0	196	403
Total	18	0	15	0	33	19	646	47	0	712	46	1	21	0	68	18	715	15	0	748	1561
03:00 PM	4	0	3	0	7	4	184	8	0	196	10	0	1	0	11	4	202	5	0	211	425
03:15 PM	9	0	3	0	12	7	165	8	0	180	10	1	5	0	16	5	179	5	0	189	397
03:30 PM	2	0	4	0	6	4	212	15	0	231	14	0	4	0	18	7	203	0	0	210	465
03:45 PM	9	1	0	0	10	4	228	14	0	246	11	1	1	0	13	9	215	6	0	230	499
Total	24	1	10	0	35	19	789	45	0	853	45	2	11	0	58	25	799	16	0	840	1786
04:00 PM	4	1	2	0	7	7	244	15	0	266	8	0	6	0	14	7	234	3	0	244	531
04:15 PM	1	0	3	0	4	7	237	18	0	262	11	0	3	0	14	7	194	4	0	205	485
04:30 PM	4	1	0	0	5	7	266	19	0	292	12	0	8	0	20	9	191	6	0	206	523
04:45 PM	3	0	2	0	5	3	274	19	0	296	15	1	4	0	16	6	239	7	0	252	569

Total	12	2	7	0	21	24	¹⁰² / ₁	71	0	1116	42	1	21	0	64	29	858	20	0	907	2108
05:00 PM	6	0	1	0	7	6	276	13	0	295	20	0	4	0	24	13	257	7	0	277	603
05:15 PM	5	0	5	0	10	11	250	29	0	290	13	0	4	0	17	11	184	6	0	201	518
05:30 PM	6	0	3	0	9	12	270	25	0	307	17	0	2	0	19	4	202	12	0	218	553
05:45 PM	5	0	1	0	6	7	268	18	0	293	22	1	4	0	27	5	193	7	0	205	531
Total	22	0	10	0	32	36	¹⁰⁶ / ₄	85	0	1185	72	1	14	0	87	33	836	32	0	901	2205
Grand Total	219	7	140	0	366	164	⁸¹¹ / ₂	494	0	8770	574	11	147	0	732	207	⁸²² / ₀	151	0	8578	¹⁸⁴⁴ / ₆
Apprch %	59.8	1.9	38.3	0.0		1.9	^{92.5} / ₅	5.6	0.0		78.4	1.5	20.1	0.0		2.4	^{95.8} / ₈	1.8	0.0		
Total %	1.2	0.0	0.8	0.0	2.0	0.9	^{44.0} / ₀	2.7	0.0	47.5	3.1	0.1	0.8	0.0	4.0	1.1	^{44.6} / ₆	0.8	0.0	46.5	





PROPOSED TRAFFIC SIGNAL LAYOUT
 SE ORALABOR ROAD & SE PEACHTREE DRIVE
 ANKENY, IA



BENEFIT/COST ANALYSIS
SE ORALABOR RD & SE PEACHTREE DR IMPROVEMENTS
ANKENY, IA

For the purposes of the benefit/ cost analysis, an estimated improvement life of 15 years was selected for the traffic signal as per the Iowa DOT TSIP B/C Analysis instructions. This is also the approximate improvement service life recommended for the addition of turn lanes, as proposed for SE Oralabor Rd (IA Hwy 160).

Based on a review of the *Crash Modification Factors Clearinghouse website*, a crash reduction factor (CRF) of 40 (40% reduction) was applied for the proposed improvements. Applicable crash reduction factors include:

- 42%, for adding left turn lanes (Harwood, 2002)
- 17%, for installing signals at a urban intersection (Pemia, 2002)

These two crash reduction factors result in a cumulative CRF of 52. In addition, crash review indicates approximately 85% of the crashes that occurred over the 2006-May 2011 analysis period were correctable with the installation of a traffic signal and left turn lanes.

However, a CRF of 40 is used for calculations. This is more conservative and recognizes that installation of a traffic signal may reintroduce some SE Oralabor Road rear end crashes. While the currently occurring rear end crashes are due to vehicles on SE Oralabor Rd through lanes waiting to turn left, future rear end crashes may occur due to through lane traffic stopping for the signal.

Although not considered as part of the benefit/ cost analysis, the proposed raised medians and left turn lanes at the commercial entrances west of the SE Peachtree Drive intersection are expected to also improve safety at these intersections.

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Various sites / Bridge Guardrail Improvement
Applicant Dallas County Road Department
Contact Person Jim George Title County Engineer
Complete Mailing Address 415 River Street
Adel, IA 50003
Phone (515) 993-4289 E-Mail jim.george@co.dallas.ia.us
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) N/A
Contact Person _____ Title _____
Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type
Site Specific
Traffic Control Device
Safety Study

Funding Amount

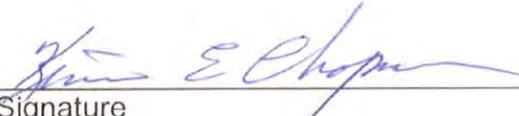
Total Project Cost \$ 162,000
Safety Funds Requested \$ 129,600

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Dallas County

Signed:  6/14/11
Signature Date Signed

Kim Chapman
Typed Name

Attest: 
Signature Date Signed

Gene Krumm
Typed Name

A

Motion by Supervisor Golightly and seconded by Supervisor Hanson to approve the following Resolution:

RESOLUTION 2011-0055

WHEREAS, population growth within the county (+37%/2000 & +62%/2010 census') has increased traffic volumes on the secondary road system; and

WHEREAS, the Road Department has invested in crash-worthy attenuators on bridge guardrail for the past 15 years; and

WHEREAS, recent accidents as well as analysis on the Major and Minor Collectors verify the need to continue upgrading bridge guardrail;

NOW THEREFORE BE IT RESOLVED that the Dallas County Board of Supervisors directs the Road Department to pursue a Traffic Safety Improvement Program grant to continue with upgrading bridge guardrails and assures that any funded improvements will be adequately maintained.

AYE

NAY

Kim E. Chapman
Kim Chapman, Chairman

Kim Chapman, Chairman

Mark A. Hanson
Mark A. Hanson, Member

Mark A. Hanson, Member

Brad Golightly
Brad Golightly, Member

Brad Golightly, Member

Dated June 14th, 2011

ATTEST: Gene Krumm
Gene Krumm, Dallas County Auditor

B.

MEMO

TO: TSIP Site Specific Application **FROM:** Dallas County Road Department
RE: Narrative **DATE:** 6/13/11

This grant proposal requires a little explanation. Although Site Specific, the analysis considered the county road system and identified nine locations where bridge guardrail improvements will improve safety.

Background. Dallas County has experienced considerable growth in recent years (Census data: 1990@29,513; 2010@66,135). This rapid influx has brought considerable numbers of younger drivers that are unfamiliar with county roads.

Recent studies have shown that run-off-the-road single vehicle accidents are the common problem on county roads (Safety Analysis of Low Volume Rural Roads in Iowa, Souleyrette). This trend has been evident on our roads with an increased pattern of those accidents that involve younger drivers. This proposal identifies problems with several documented accident locations and proactively considers several additional sites.

Analysis. The Road Department has made good progress flattening fore-slopes and driveway entrances. However, bridge approaches remain a serious concern for errant run off the road vehicles. Since there have been no recent recorded bridge accidents on the local system, the analysis has concentrated on both the Major and Minor Collectors.

Nine of the thirty-one structures considered have had crash-worthy guardrail that has been retrofitted or installed as the bridge was replaced. The remaining structures were reviewed for accident history, traffic volume, bridge width, road approach geometry and existing guardrail. Documented serious injuries and lack of existing guardrail was given the most significance during the analysis.

Benefit / Cost. Selection of a Crash Reduction Factor was difficult. Admittedly, this proposal is somewhat unique, but the CMF Clearinghouse did not offer much guidance. The CRF impacts the Benefit / Cost Ratio significantly – conservative values (2 or 3) were chosen and both included.

C.

MEMO

TO: TSIP Site Specific Application **FROM:** Dallas County Road Department
RE: Itemized Breakdown of Costs **DATE:** 6/13/11

Estimate per bridge corner:

1. Mobilization	200
2. Connection to existing structure	500
3. Transition guardrail & posts	1,800
4. Impact head - attenuator	<u>2,000</u>
Subtotal	\$4,500

Four corners per bridge @ 9 bridges:

Total = \$4,500 X 4 X 9 = \$162,000

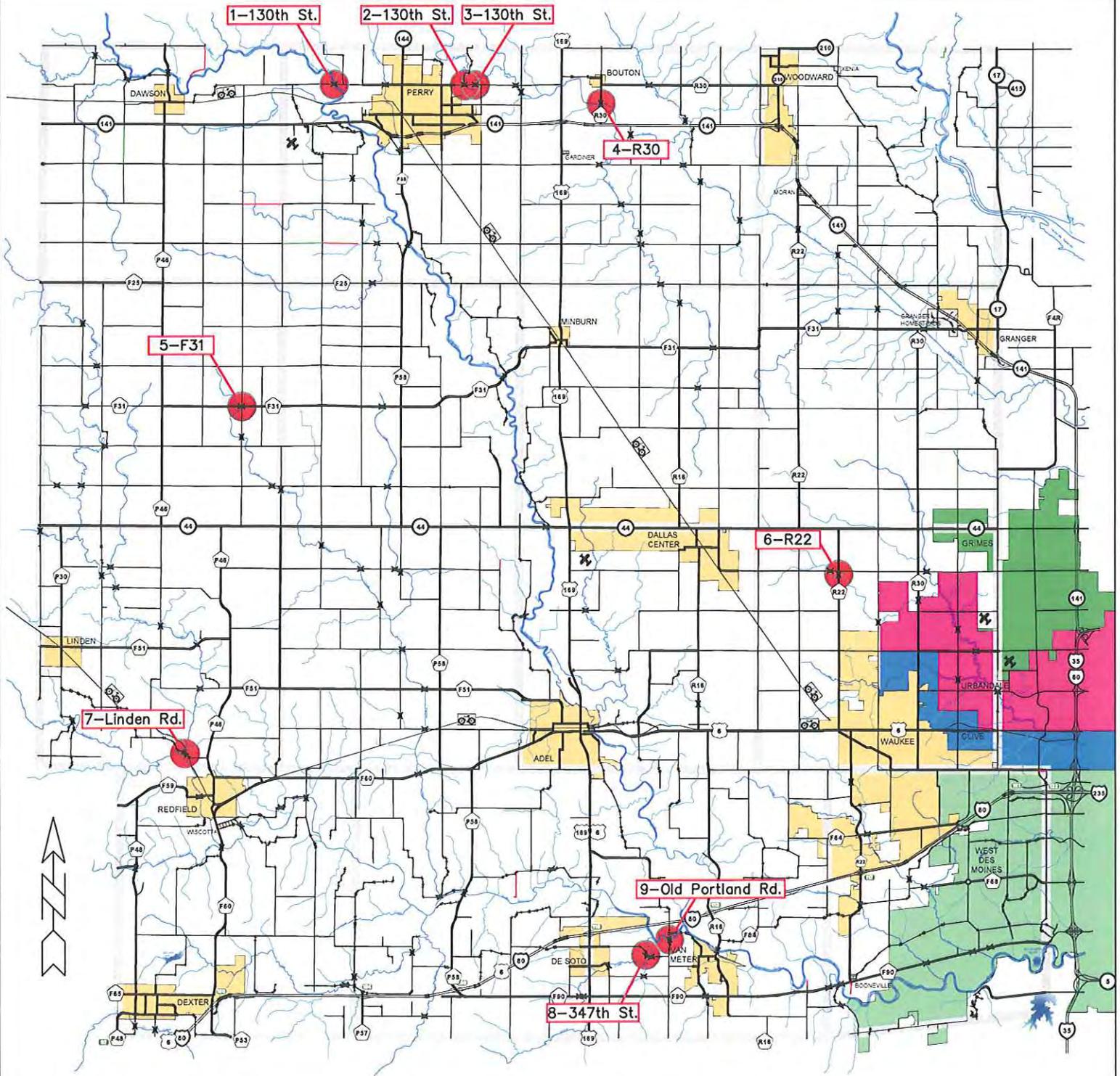
D.

MEMO

TO: TSIP Site Specific Application **FROM:** Dallas County Road Department
RE: Time Schedule **DATE:** 6/13/11

Installation requires 3 days per bridge or 36 days for nine bridges. Allow 45 working days for completion. Work will commence within 30 days after contract is signed.

DALLAS COUNTY - BRIDGE GUARDRAIL IMPROVEMENTS





2-130th St.
168



6-R22
169



9-Old Portland Rd.
170

G. & H.

MEMO

TO: TSIP Site Specific Application **FROM:** Dallas County Road Department
RE: Plan View – Aerial Photo **DATE:** 6/13/11

Guardrail will be installed according to Standard Road Plans BA-200, BA-201, BA-202, BA-204 and BA-205 (attached). Aerial photographs of the sites are included.



Provide the following:

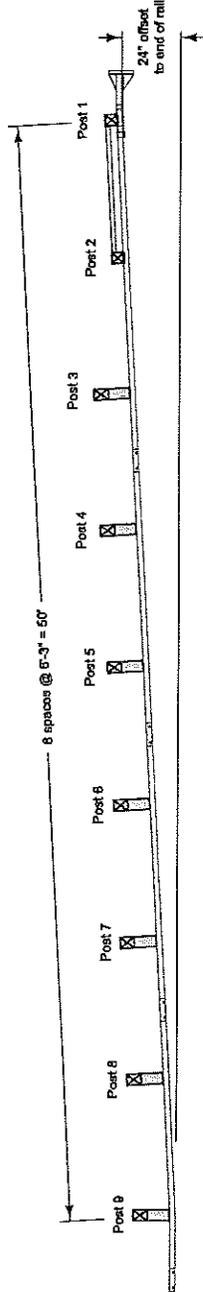
SKT by Road Systems, Inc.
OR
ET-Plus by Trinity Highway Products, LLC.

Use materials meeting the respective manufacturer's specifications. Install end terminals in accordance with the manufacturer's recommendations.

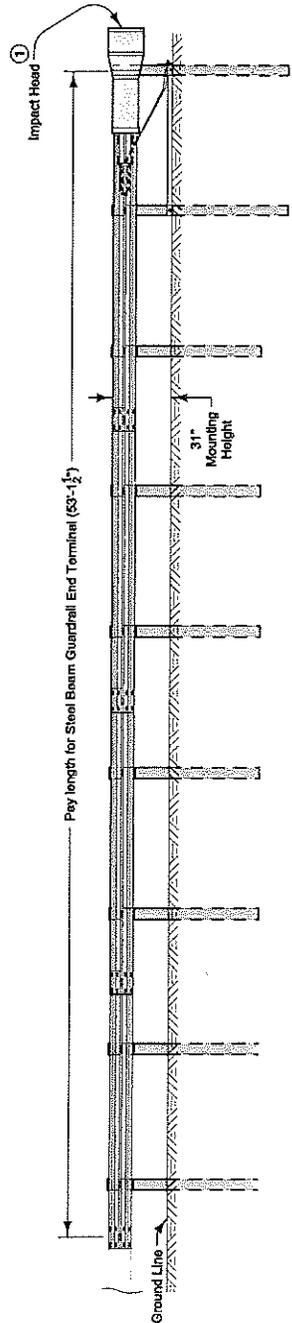
Notes: at the Contractor's option, and at no additional cost to the Contracting Authority, alternate post designs developed by the manufacturer and accepted by the FHWA for use within the end terminal may be substituted for the wood post design shown. When such a substitution is made, provide the Engineer with three copies of the most current installation and maintenance manual for the alternate design.

① Cover entire face of impact head with alternating black and yellow striped adhesive sheeting that meets the following requirements:

- Stripes are approximately 3 inches wide and slope down at a 45 degree angle toward the side on which traffic is to pass the impact head.
- Yellow stripes meet the retroreflectivity requirements for Type III or Type IV reflective sheeting.



PLAN



ELEVATION



LAPPING PROCEDURE

- Possible Contract Items:
Steel Beam Guardrail End Terminal
- Possible Materials included in the Contract Item:
W-Beam Guardrail Sections totaling 53'-1 1/2"
- (1) Impact Head
 - (1) Cable Anchor Bracket
 - (1) Pipe Sleeve 2" Standard Pipe x 5 1/2"
 - (2) Foundation Soil Tubes
 - (1) Bearing Plate 8" x 8" x 3/4"
 - (1) BCT Cable Anchor Assembly
 - (1) Ground Strut
 - (2) 5 1/2" x 7 1/2" Wood Posts
 - (6) 6" x 8" x 6'-0" Wood CRT Posts
 - (1) 6" x 8" x 6'-0" Wood Standard Line Post
 - (7) 6" x 12" x 14" Wood Blockouts
- Approved Bolts, Nuts, Washers, and Screws

	REVISION	DA-20-10
	New	04-20-10
STANDARD ROAD PLAN		BA-205
Iowa Department of Transportation		SHEET 1 of 1
REVISIONS: New, Replace NE-76.		
APPROVED BY DESIGN METHOD ENGINEER <i>Deanna M. Smith</i>		
STEEL BEAM GUARDRAIL END TERMINAL		

I.

MEMO

TO: TSIP Site Specific Application **FROM:** Dallas County Road Department
RE: Officer's Report **DATE:** 6/13/11

The investigating officer's report of the accident is included for the two fatalities (2-130th Street and 9-Old Portland Road) as well as the major injury (6-R22). Note that bridges 5-F31 and 7-Linden Road do not have an accident history but qualify with criteria evaluated and described in B – Narrative.

Traffic Counts as per IDOT

FHWA	T R S	ACCIDENT HISTORY PDO=10, Minor=20 Major=30, Fatality=40	2008 AADT 1=5/>500=10 >1000=15 >2000=20	WIDTH >30'=0 30'=10 <30'=20	GEOMETRY Flat/Straight=0 Horiz/ Vert=10 Horiz&Vert=20	GUARDRAIL None = 30 2 corners = 20 4 corners = 10	TOTAL POINTS
021791	782909		1480	26'		Good	----
021800	782805		2290	30'		Good	----
022000	782836		630 ₁₀	28' ₂₀	Vertical ₁₀	4 ₁₀	50
022011	782836		630 ₁₀	32' ₀	Vertical ₁₀	4 ₁₀	30
022041	782630	8/23/07 PDO ₁₀	2330 ₂₀	44' ₀	Flat/Straight ₀	4 ₁₀	40
022051	782630	3/24/06 Poss. ₁₀ 9/21/07 PDO ₁₀	2330 ₂₀	44' ₀	Flat/Straight ₀	4 ₁₀	50
131230	782720	6/14/08 PDO ₁₀ <i>Wk</i>	130 ₅	24' ₂₀	Horiz. & Vert. ₂₀	None ₃₀	75 <<<
131241	782721	5/7/09 Fatality ₄₀ <i>*</i>	160 ₅	30' ₁₀	Vertical ₁₀	None ₃₀	95 <<<
131251	782722		2230	32'		Good	----
131261	782729		70	Culvert		4	----
131321	782816	12/29/01 PDO ₁₀	1220 ₁₅	30' ₁₀	Vertical ₁₀	4 ₁₀	55
131330	782830		260	19'		Good	----
131401	782902		180 ₅	30' ₁₀	Horizontal ₁₀	None ₃₀	55
131451	782907		590	30'		Good	----
131480	782925		200 ₅	24' ₂₀	Flat/Straight ₀	None ₃₀	55
131540	792609	5/12/06 Major ₃₀ <i>J</i> <i>*</i>	1070 ₁₅	28' ₂₀	Flat/Straight ₀	None ₃₀	95 <<<
131750	792822		70	19'		Good	----
131860	792915		320 ₅	30' ₁₀	Horiz. & Vert. ₂₀	4 ₁₀	45
131891	792934		120 ₅	28' ₂₀	Horiz. & Vert. ₂₀	2 ₂₀	65 <<<
131920	802611		1430	28'		Good	----
131990	802711		700	28'		Good	----
132050	802804		120 ₅	31' ₀	Flat/Straight ₀	None ₃₀	35
132080	802813		340 ₅	31' ₀	Horiz. & Vert. ₂₀	4 ₁₀	35
132180	802923		230 ₅	28' ₂₀	Horizontal ₁₀	None ₃₀	65 <<<
132401	812707		60	31'		Good	----
132410	812709	12/29/01 Minor ₂₀ <i>*</i>	600 ₁₀	25' ₂₀	Flat/Straight ₀	2 ₂₀	70 <<<
132421	812710		370 ₅	28' ₂₀	Flat/Straight ₀	None ₃₀	55
132531	812812		220 ₅	30' ₁₀	Flat/Straight ₀	2 ₂₀	35
132535	812808	11/17/01 Minor ₂₀ <i>Wk</i> 11/14/02 PDO ₁₀	360 ₅	28' ₂₀	Flat/Straight ₀	None ₃₀	85 <<<
132581	812811	3/13/03 Fatality ₄₀ <i>*</i>	260 ₅	28' ₂₀	Vertical ₁₀	None ₃₀	105 <<<
132591	812811	6/22/08 PDO ₁₀ <i>P</i>	260 ₅	28' ₂₀	Vertical ₁₀	None ₃₀	75 <<<

8-347th St.

9-Old Portland

6-R22

7-Linden Rd

5-F31

4-R30

1-130th St.

2-130th St.

3-130th St.



Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Dallas Prepared by: Jim George Date Prepared: Jun 13, 2011
 Location: Varies - see map.

Improvement

Proposed Improvement(s): Bridge guardrail at 9 sites

\$ 162,000 Estimated Improvement Cost, EC 20 Est. Improvement Life, years, Y
 \$ - Other Annual Cost (after initial year), AC 3 Crash Reduction Factor (integer), CRF
 \$ - Present Value Other Annual Costs, OC 4.0% Discount Rate, INT

\$ 162,000 Present Value All Costs, **COST = EC + OC**

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$

Traffic Volume Data

Source: _____ Varies Date of traffic count

Two-way

Length (mi.)	veh/day	Description

0.00 miles total

- Current Vehicle Miles / Day, VM
- End of Life Veh. Miles / Day
- Current Veh. Miles / Year, AM
- Total Projected Veh. Miles Over Life of Project, TVMT

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

4.0% Projected Traffic Growth (0%-10%), G

Crash Data

<u>2001</u> First full year -->	<u>2009</u> Last full year	<u>9.0</u> years, Time Period, T
<u> </u> Additional months		values as of Dec. 2007
<u>2</u> Fatal Crashes	<u>2</u> Fatalities @	\$3,500,000 \$ 7,000,000
	<u>1</u> Major Injuries @	\$240,000 \$ 240,000
<u>3</u> Injury Crashes	<u>2</u> Minor Injuries @	\$48,000 \$ 96,000
	<u>3</u> Possible Injuries @	\$25,000 \$ 75,000
<u>3</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ 21,600
<u>8</u> Total Crashes, TA	-OR- enter all Property Costs of all crashes:	Total \$ Loss, LOSS \$ <u>7,432,600</u>

0.89 Current Crashes / Year, AA = TA / T
 \$ 929,075 Cost per Crash, AVCR = LOSS / TA
 - Total Expected Crashes, TCR = CR x TVMT/10⁸ **\$ 476,449** Present Value of Avoided Crashes, **BENEFIT**
0.03 Crashes Avoided First Year AAR = AA x CRF / 100
 \$ 24,775 Crash Costs Avoided in First Year, AAR x AVCR
 - Total Avoided Crashes, TCR x CRF / 100

- Crashes / HMVM, Crash Rate, CR
 CR = TA x 10⁸ / (AM x T)

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$476,449 : \$162,000 = 2.94 : 1

L

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Dallas Prepared by: Jim George Date Prepared: Jun 13, 2011
 Location: Varies - see map.

Improvement

Proposed Improvement(s): Bridge guardrail at 9 sites

\$ 162,000 Estimated Improvement Cost, **EC** 20 Est. Improvement Life, years, **Y**
\$ - Other Annual Cost (after initial year), **AC** 2 Crash Reduction Factor (integer), **CRF**
\$ - Present Value Other Annual Costs, **OC** 4.0% Discount Rate, **INT**

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$
\$ 162,000 Present Value All Costs, **COST = EC + OC**

Traffic Volume Data

Source: _____ Varies Date of traffic count

Two-way

Length (mi.)	veh/day	Description

0.00 miles total

4.0% Projected Traffic Growth (0%-10%), **G**

- Current Vehicle Miles / Day, **VM**
- End of Life Veh. Miles / Day
- Current Veh. Miles / Year, **AM**
- Total Projected Veh. Miles Over Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

Crash Data

<u>2001</u> First full year -->	<u>2009</u> Last full year	<u>9.0</u> years, Time Period, T
<u>2</u> Additional months		values as of Dec. 2007
<u>2</u> Fatal Crashes	<u>2</u> Fatalities @	\$3,500,000 \$ 7,000,000
	<u>1</u> Major Injuries @	\$240,000 \$ 240,000
<u>3</u> Injury Crashes	<u>2</u> Minor Injuries @	\$48,000 \$ 96,000
	<u>3</u> Possible Injuries @	\$25,000 \$ 75,000
<u>3</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ 21,600
<u>8</u> Total Crashes, TA	-OR- enter all Property Costs of all crashes:	Total \$ Loss, LOSS \$ 7,432,600

0.89 Current Crashes / Year, **AA = TA / T** - Crashes / HMVM, Crash Rate, **CR**
\$ 929,075 Cost per Crash, **AVCR = LOSS / TA** CR = TA x 10^8 / (AM x T)
 - Total Expected Crashes, **TCR = CR x TVMT/10^8** \$ 317,632 Present Value of Avoided Crashes, **BENEFIT**
0.02 Crashes Avoided First Year **AAR = AA x CRF / 100**
\$ 16,517 Crash Costs Avoided in First Year, **AAR x AVCR**
 - Total Avoided Crashes, **TCR x CRF / 100**

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$317,632 : \$162,000 = 1.96 : 1

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the _____

Signed:  JUN 13 2011
Signature Date Signed

T. M. Franklin Cownie, Mayor
Typed Name

Attest:  JUN 13 2011
Signature Date Signed

Diane Rauh, City Clerk
Typed Name

★ Roll Call Number
11-0863

Agenda Item Number
9

Date May 23, 2011

APPROVING FY2013 TRAFFIC SAFETY FUND APPLICATIONS TO THE IOWA DEPARTMENT OF TRANSPORTATION

BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF DES MOINES, IOWA:

That the City Manager is hereby directed to submit applications to the Iowa Department of Transportation for Traffic Safety Funds to cover a portion of the construction costs for the following projects:

1. Beaver and Urbandale Intersection Roundabout
2. East 4th Street Traffic Signals at Court Avenue/ Walnut Street
3. Citywide School Flasher System Upgrade

(Council Communication Number 11-307 Attached)

Moved by Hensley to adopt.

APPROVED AS TO FORM:

Kathleen Vanderpool
 Kathleen Vanderpool
 Deputy City Attorney

COUNCIL ACTION	YEAS	NAYS	PASS	ABSENT
COWME	✓			
COLEMAN	✓			
GRISS	✓			
HENSLEY	✓			
MARAFPEY	✓			
MEYER	✓			
MOORE	✓			
TOTAL	7			

T. M. Franklin Mayor

CERTIFICATE

I, DIANE RAUH, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

Diane Rauh City Clerk

PROJECT DESCRIPTION

BEAVER AVENUE AND URBANDALE AVENUE INTERSECTION ROUNDABOUT

Project Description:

The proposed project consists of an intersection improvement at Beaver Avenue and Urbandale Avenue. The existing standard four-way intersection would be replaced with a modern single-lane roundabout. The existing traffic signal installation would be removed. On all approaches to the roundabout, the lanes will be reduced to a single point of entry. Traffic entering the roundabout will yield on their approach, first to any pedestrians that are crossing through the designated crosswalk, and second to any vehicles that are already within the circular roadway. See Exhibit "E" for the project location map, and Exhibits "G-1" and "G-2" for a schematic drawing and an artist's rendering of the proposed improvement.

The total project cost is estimated to be \$1.3 million, of which \$350,000 is being requested from State Traffic Safety funds. The Iowa DOT has previously approved \$600,000 of Iowa Clean Air Attainment Program (ICAAP) funds toward this project.

Existing Conditions:

The intersection of Beaver Avenue and Urbandale Avenue is currently a 4-legged, signalized intersection. It is located in the northern part of the Beaverdale business area. Beaver Avenue is a 3-lane, 40-foot wide pavement on both approaches to the intersection, and Urbandale Avenue is a "boulevard" type roadway providing one through lane and auxiliary left and right-turn lanes at the Urbandale Avenue intersection. Bike lanes are provided on the north, east, and west legs of the intersection.

Beaver Avenue is designated as a "Minor Arterial" on the Federal Functional Classification System, and has a speed limit of 30 mph to the north of Urbandale and 25 mph south of Urbandale. Urbandale Avenue is classified as a Collector roadway, with a speed limit of 30 mph through the project area. Traffic volumes on Beaver Avenue range from 14,000 to 15,000 vehicles per day, with volumes on Urbandale Avenue ranging from 3,600 to 6,900 vehicles per day.

The proposed roundabout at this location is part of a larger-scale streetscape improvement that is proposed for the Beaverdale Shopping district. The focus area for this streetscape project is Beaver Avenue from Adams Avenue to Beavercrest Drive (which includes the Urbandale Avenue intersection), a distance of approximately 1/3 mile. The cost estimate for this larger project is \$2.7 million. However, the intersection roundabout can also be considered as a "stand-alone" project, and could be constructed as such.

The streetscape project has been through a comprehensive process that included considerable public involvement. The most prominent sources of input and direction included the project "Steering Committee" and the residents and businesses at several public forums. Two alternative designs were presented through this public process: (1) a traditional narrowed intersection with traffic signals, and (2) a single-lane modern roundabout. At meetings with the Beaverdale Business Association and the

Beaverdale Neighborhood Association, the roundabout design was identified as the preferred design by a very large majority of those present.

Project Justification:

There were a total of 21 crashes at this intersection over the 5-year period between January 2006 and December 2010,. A more detailed review of these crashes is shown in the following table:

<u>Accident Type</u>	<u>No. of Crashes</u>
Left turning	4
Sideswipe	4
Right-Angle	5
Rear End	4
Fixed Object	3
Car/Bicycle	1
Total	21
Average per year:	4.2

The crash rate is 0.58 crashes/MEV (million entering vehicles). Of the 21 reported accidents, there were 6 personal injury crashes involving 7 injuries. Nine of the reported crashes involved left-turning and right-angle accidents, which are the type that should be virtually eliminated with the construction of a modern roundabout. The remaining types of crashes should also be reduced as part of the project, with the exception of the "rear-end" type crashes.

Roundabouts have been shown to provide significant crash reduction benefits over the traditional signalized intersection. Several of the safety advantages are listed below:

- Roundabouts have fewer conflict points for vehicles, pedestrians, and bicyclists. The potential for many hazardous conflicts, such as right-angle crashes and conflicting left turn/head-on crashes, are eliminated with modern roundabouts.
- Speeds at roundabouts are significantly lower than other types of crossings, which allow drivers more time to react to potential conflicts.
- There is a lower speed *differential* between the users of roundabouts (e.g. vehicles to pedestrians to bicyclists) since the road users travel at similar speeds through the roundabout.
- Lower speeds and speed differentials between users of roundabouts significantly reduces the crash severity if one does occur.
- Pedestrian crossings at roundabouts are much shorter in distance and involve interruption in only one direction of the traffic stream at a time. Since conflicting vehicles arrive in one direction only to the pedestrians, the pedestrians need only to check in one direction for conflicting vehicles. In addition, the speeds of the vehicles in the roundabout at entry and exit are reduced with a proper roundabout design.

Based on current IDOT value factors, the total estimated loss from crashes during the described five-year period is \$865,757 (See Exhibit "L"). Assuming a crash reduction of 48 percent of the correctible crashes and an estimated project life of 20 years, the request for \$350,000 of Traffic Safety Funds relates to a benefit-cost factor of **3.51:1**.

Exhibit "C"

Beaver Avenue Streetscape Roundabout (Beaver Avenue and Urbandale Avenue Intersection)		Unit	Qty	Unit Cost	Total	Subtotal
Updated: August 2010						
AREA 3: NORTH PL OF 2714 TO FAGEN - 370 LF. / URBANDALE AVE - 760 Linear Ft						
DEMOLITION						
(S) Curb and Gutter	LF	3,085	\$3.00		\$9,255.00	
(S) Street Pavement	SY	7,170	\$10.00		\$71,700.00	
(S) Sidewalk	SY	1,282	\$9.00		\$11,538.00	
(U) Storm Pipe	LF	266	\$15.00		\$3,990.00	
(U) Storm Intake	EA	4	\$500.00		\$2,000.00	
(S) Safety Fencing	LF	1,500	\$1.50		\$2,250.00	
(S) Traffic Control	LS	1	\$15,000.00		\$15,000.00	
(S) Miscellaneous	LS	1	\$25,000.00		\$25,000.00	
					Subtotal	\$140,733.00
EARTHWORK						
(SE) / (PR) Export of Poor Soils	CY	400	\$9.00		\$3,600.00	
(SE) / (PR) Topsoil (24" Depth)	CY	520	\$16.00		\$8,320.00	
(S) Subgrade Preparation	SY	9,290	\$2.50		\$23,225.00	
(S) Erosion Control	LS	1	\$7,000.00		\$7,000.00	
					Subtotal	\$42,145.00
UTILITIES						
(U) RCP Storm Pipe	LF	850	\$100.00		\$85,000.00	
(U) Storm Inlet	EA	9	\$3,000.00		\$27,000.00	
(U) Adjustment of Valves / Castings	EA	9	\$400.00		\$3,600.00	
(U) Subdrain	LF	1,300	\$12.00		\$15,600.00	
					Subtotal	\$131,200.00
PAVEMENT						
(S) 4" P.C.C. Walk with Tooled Joints	SY	2,150	\$35.00		\$75,250.00	
(SE) / (PR) Planter Curb	LF	1,150	\$20.00		\$23,000.00	
(S) 7" P.C.C. Drive Aprons	SY	520	\$60.00		\$31,200.00	
(SE) / (PR) Pavers on Concrete Base	SF	6,166	\$20.00		\$123,320.00	
(S) P.C.C. Curb and Gutter	LF	1,960	\$22.00		\$43,120.00	
(S) H.M.A. Pavement	SY	5,500	\$30.00		\$165,000.00	
					Subtotal	\$460,890.00
LANDSCAPING						
(SE) / (PR) Sod	SF	11,500	\$0.65		\$7,475.00	
					Subtotal	\$7,475.00
					SUBTOTAL	\$782,443.00
					MOBILIZATION / GENERAL CONDITIONS	\$39,122.15
					CONTINGENCY (10%)	\$78,244.30
					RIGHT-OF-WAY COSTS	\$100,000.00
					PUBLIC IMPROVEMENTS	\$999,809.45

TIME SCHEDULE

Beaver and Urbandale Intersection
Roundabout

Project Approval:	December 2011
Agreement Signed:	March 2012
Project bid:	March 2013
Construction completed:	October 2013
Project Closeout:	June 2014

Beaver Avenue & Urbandale Avenue



On Urbandale Avenue, looking northwesterly toward Beaver Avenue



On Urbandale Avenue, looking southeasterly toward Beaver Avenue

Beaver Avenue & Urbandale Avenue



On Beaver Avenue, looking northerly to Urbandale Avenue



On Beaver Avenue, looking southerly toward Urbandale Avenue

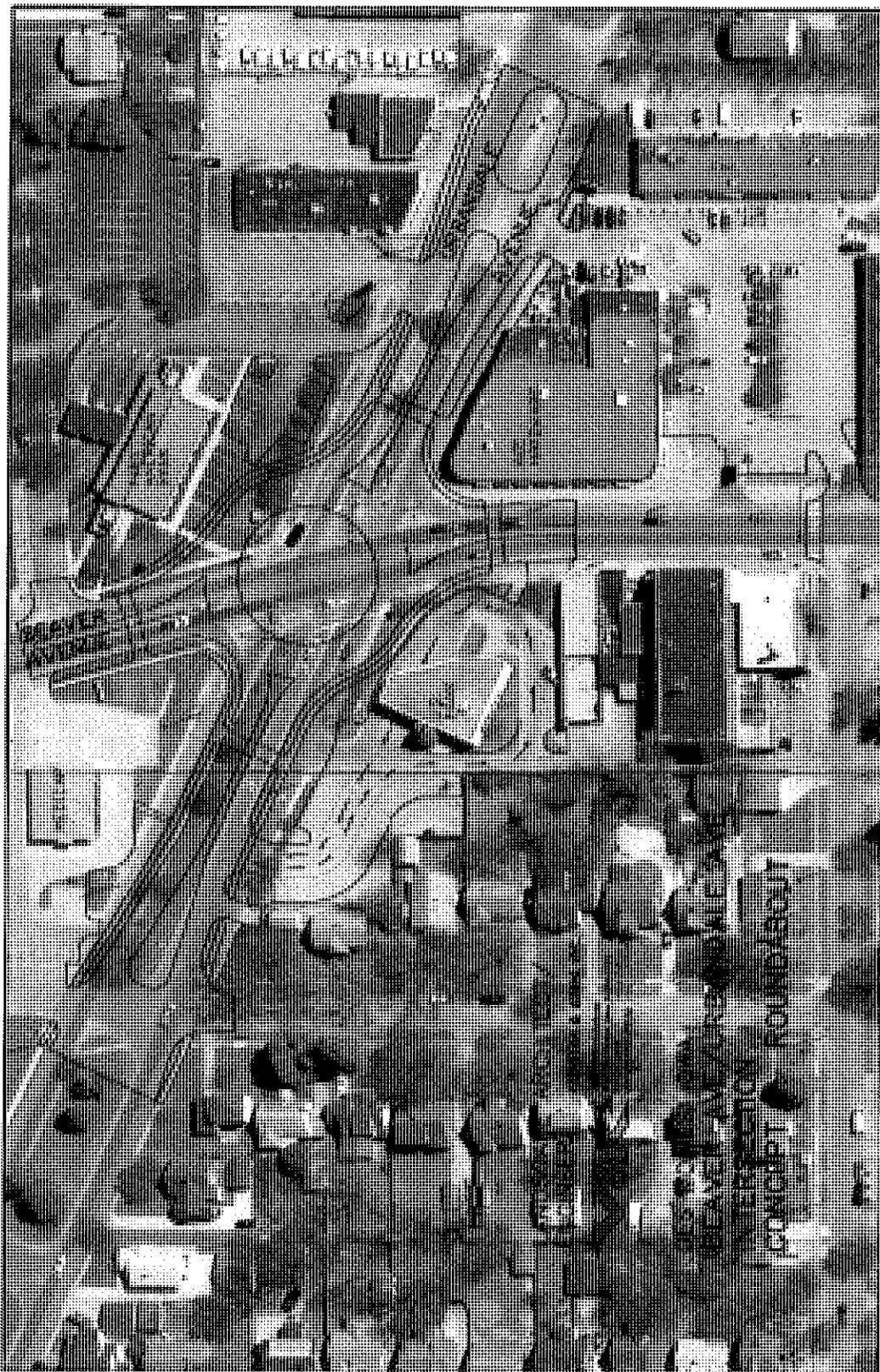


Exhibit "G-2"



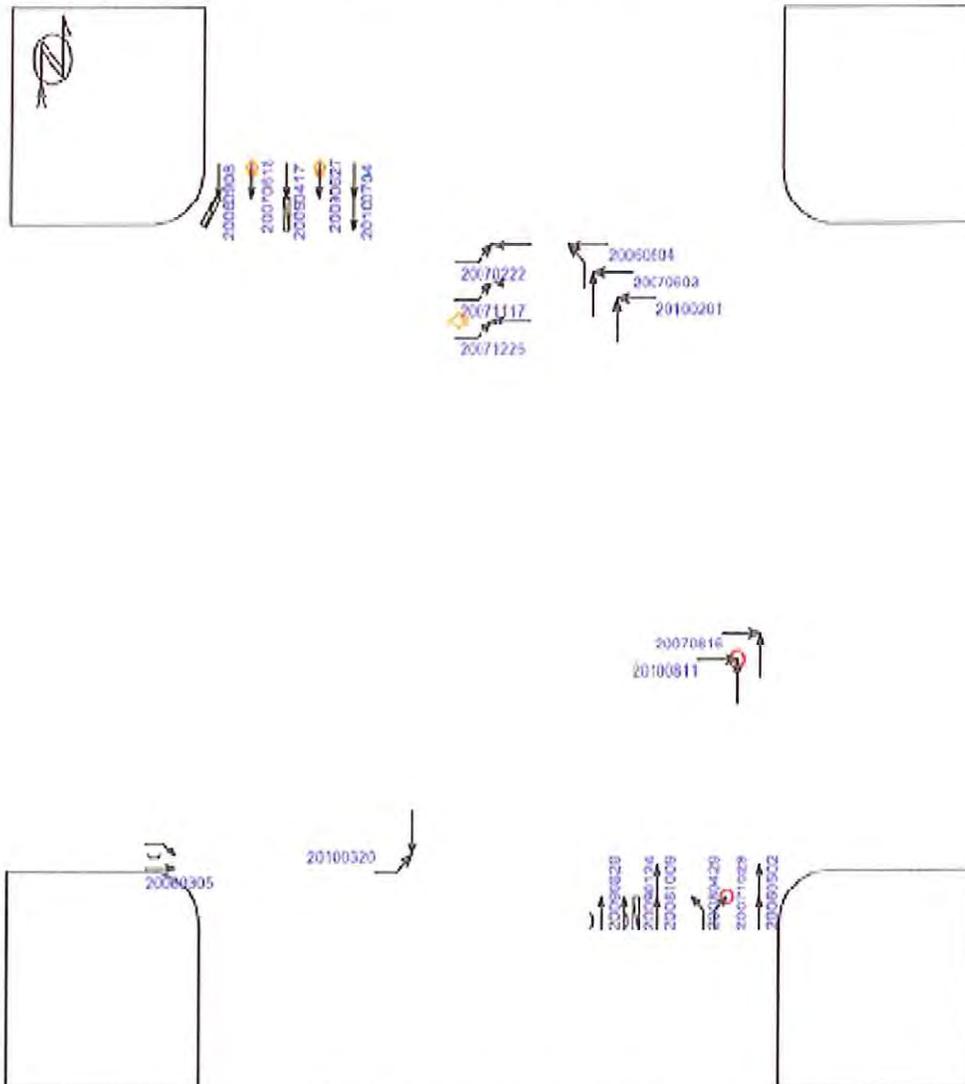
Beaver Ave & Urbandale Ave Intersection Roundabout Project

Revised Date : June 6 2011 Exhibit H



Beaver and Urbandale

2006-2010 Crash data



(0) crashes could not be placed in this schematic

- ← Straight
- ←→ Stopped
- ← Unknown
- ←→ Backing
- ←→ Overtaking
- ←→ Sideswipe

- ⊞ Parked
- ⊞ Erratic
- ⊞ Out of control
- ↘ Right turn
- ↙ Left turn
- ↔ U-turn

- ⊞ Pedestrian
- ⊞ Bicycle
- ⊞ Injury
- ⊞ Fatality
- ⊞ Nighttime
- ⊞ DUI

- Fixed objects:
- ⊞ General
 - ⊞ Signal
 - ⊞ Tree
 - ⊞ Pole
 - ⊞ Curb
 - ⊞ Animal
 - ⊞ 3rd vehicle
 - ⊞ Extra data

PG Programming, Inc. 05/18/2011

Site Code:
 Station ID:
 Beaver Avenue
 S. of Urbandale Ave
 Latitude: 0' 0.000 Undefined

Start Time	Mon 13-Jul-09	Tue 14-Jul-09	Wed 15-Jul-09	Thu 16-Jul-09	Fri 17-Jul-09	Average Day	Sat 18-Jul-09	Sun 19-Jul-09	Week Average
12:00 AM				58		48			48
01:00			37	38		37			37
02:00			36	21		23			23
03:00			25	14		17			17
04:00			20	17		18			18
05:00			20	62		60			60
06:00			58	118		118			118
07:00			118	240		240			240
08:00			240	298		293			293
09:00			288	314		292			292
10:00			270	214		260			260
11:00			306			396			396
12:00 PM			406			464			464
01:00			467			408			408
02:00			405			412			412
03:00			404			484			484
04:00			500			593			593
05:00			568			642			642
06:00			653			466			466
07:00			462			384			384
08:00			371			341			341
09:00			328			286			286
10:00			292			178			178
11:00			158			104			104
11:00			102						
Day Total	0	5116	6622	1394	0	6564	0	0	6564
% Avg. WkDay	0.0%	77.9%	100.9%	21.2%	0.0%	100.0%	0.0%	0.0%	100.0%
% Avg. Week AM Peak	0.0%	77.9%	100.9%	21.2%	0.0%	100.0%	0.0%	0.0%	100.0%
Vcl.		11:00	11:00	08:00		11:00			11:00
PM Peak		406	385	314		396			396
Vcl.		17:00	17:00			17:00			17:00
Grand Total	0	5116	6622	1394	0	6564	0	0	6564
ADT		ADT 6.622	ADT 6.622	ADT 6.622		ADT 6.622			ADT 6.622

City of Des Moines, Iowa

600 E. Court Avenue, Suite 200
Des Moines, IA 50309
515-283-4973

Site Code:
Station ID:
Urmandale Avenue
E. of Beaver Ave
Latitude: 0° 0' 0.000" Undefined

Start Time	Mon 13-Jul-09	Tue 14-Jul-09	Wed 15-Jul-09	Thu 16-Jul-09	Fri 17-Jul-09	Sat 18-Jul-09	Sun 19-Jul-09	Week Average
12:00 AM			21	22				21
01:00			12	16				14
02:00			16	5				10
03:00			8	8				8
04:00			7	5				6
05:00			33	45				39
06:00			80	74				67
07:00			189	182				186
08:00			176	166				171
09:00			184	245				214
10:00			209					205
11:00		254	201					228
12:00 PM		243	234					238
01:00		240	270					255
02:00		218	227					222
03:00		274	267					270
04:00		333	323					328
05:00		325	308					316
06:00		287	286					286
07:00		155	167					161
08:00		151	111					131
09:00		82	97					90
10:00		44	62					53
11:00		35	25					31
Day Total	0	2592	3423	740	0	0	0	3404
% Avg. WkDay	0.0%	74.4%	98.2%	21.5%	0.0%	0.0%	0.0%	100.0%
% Avg. Week AM Peak	0.0%	74.4%	98.2%	21.3%	0.0%	0.0%	0.0%	100.0%
Vcl.		11:00	16:00	09:00				11:00
		254	209	245				228
PM Peak Vcl.		16:00	16:00					16:00
		333	323					328
Grand Total	0	2592	3423	748	0	0	0	3484
ADT		ADT 3.423		ADT 3.423				ADT 3.423

City of Des Moines, Iowa

500 E. Court Avenue, Suite 200
Des Moines, IA 50309
515-283-4973

Site Code: 000000000000
Station ID:
Urbandale Avenue
w. of Beaver Avenue
Latitude: 0 0.000 Undefined

Start Time	Mon 03-Aug-09	Tue 04-Aug-09	Wed 05-Aug-09	Thu 06-Aug-09	Fri 07-Aug-09	Average Day	Sat 08-Aug-09	Sun 09-Aug-09	Week Average
12:00 AM	*	*	24	16	*	20	*	*	20
01:00	*	*	14	18	*	16	*	*	16
02:00	*	*	8	7	*	8	*	*	8
03:00	*	*	2	6	*	4	*	*	4
04:00	*	*	10	13	*	12	*	*	12
05:00	*	*	32	35	*	34	*	*	34
06:00	*	*	111	109	*	110	*	*	110
07:00	*	*	260	255	*	258	*	*	258
08:00	*	*	195	219	*	207	*	*	207
09:00	*	*	152	195	*	174	*	*	174
10:00	*	177	168	204	*	183	*	*	183
11:00	*	144	178	208	*	177	*	*	177
12:00 PM	*	188	225	*	*	206	*	*	206
01:00	*	215	185	*	*	200	*	*	200
02:00	*	211	169	*	*	190	*	*	190
03:00	*	205	226	*	*	216	*	*	216
04:00	*	255	264	*	*	260	*	*	260
05:00	*	270	307	*	*	288	*	*	288
06:00	*	211	229	*	*	220	*	*	220
07:00	*	176	163	*	*	172	*	*	172
08:00	*	146	155	*	*	150	*	*	150
09:00	*	120	101	*	*	110	*	*	110
10:00	*	70	70	*	*	70	*	*	70
11:00	*	32	31	*	*	32	*	*	32
Day Total	0	2420	3284	1285	0	3317	0	0	3317
% Avg. WkDay	0.0%	73.0%	98.0%	38.7%	0.0%				
% Avg. Week	0.0%	73.0%	98.0%	38.7%	0.0%	100.0%	0.0%	0.0%	
AM Peak Vol.		177	260	255		258			258
PM Peak Vol.		270	307	1285		288			288
Grand Total	0	2420	3284	1285	0	3317	0	0	3317
ADT		ADT 3.284	ADT 3.284	ADT 3.264					

City of Des Moines, Iowa

600 E. Court Avenue, Suite 200
Des Moines, IA 50309
515-283-4973

Site Code:
Station ID:
Beaver Avenue
N. of Urbandale Ave
Latitude: 0' 0.000 Undefined

Start Time	Mon 13-Jul-09	Tue 14-Jul-09	Wed 15-Jul-09	Thu 16-Jul-09	Fri 17-Jul-09	Average Day	Sat 18-Jul-09	Sun 19-Jul-09	Week Average
12:00 AM			61	63		62			62
01:00			25	32		28			28
02:00			28	28		28			28
03:00			35	9		22			22
04:00			18	15		16			16
05:00			66	65		66			66
06:00			161	182		172			172
07:00			379	384		382			382
08:00			408	437		422			422
09:00			328	315		322			322
10:00			328			328			328
11:00			328			329			329
12:00 PM		411	422			416			416
01:00		378	456			416			416
02:00		366	378			372			372
03:00		362	389			376			376
04:00		543	534			538			538
05:00		541	579			560			560
06:00		457	488			472			472
07:00		388	397			392			392
08:00		307	361			334			334
09:00		244	286			265			265
10:00		174	188			181			181
11:00		84	112			96			96
Day Total	0	4253	6756	1531	0	6597	0	0	6597
% Avg. WkDay	0.0%	64.5%	102.4%	23.2%	0.0%	100.0%	0.0%	0.0%	0.0%
% Avg. Week AM Peak	0.0%	64.5%	102.4%	23.2%	0.0%	100.0%	0.0%	0.0%	0.0%
Vol			408	437		422			422
PM Peak	16:00	17:00				17:00			17:00
Vol	543	579				560			560
Grand Total	0	4253	6756	1531	0	6597	0	0	6597
ADT		ADT 6,756		ADT 6,756		ADT 6,756			ADT 6,597

Intersection or Spot Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: Mike Ring Date Prepared: May 18, 2011

Intersection: Beaver and Urbandale

Improvement

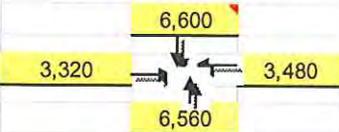
Proposed Improvement(s): Replace existing traffic signal with modern single-lane roundabout

\$ <u>350,000</u> Estimated Improvement Cost, EC	20 Est. Improvement Life, years, Y
\$ - Other Annual Cost (after initial year), AC	48 Crash Reduction Factor (integer), CRF
\$ - Present Value Other Annual Costs, OC	4.0% Discount Rate (time value of \$), INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
\$ <u>350,000</u> Present Value Cost, COST = EC + OC	

Traffic Volume Data

Source: City traffic counts 2009 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



7,285,400 Current Annual Entering Veh., **AEV = DEV * 365**

24,355 veh / day, Final Year DEV, **FDEV**

160.42 MEV, Total Million Entering Veh. Over life of Project, **TMEV**

1.0% Projected Traffic Growth (0%-10%), **G**

$$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$$

19,960 Current Daily Entering Vehicles, **DEV**

Crash Data

2006	First full year -->	2010	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
0	Fatal Crashes	0	Fatalities @	\$3,500,000 \$ -
		1	Major Injuries @	\$240,000 \$ 240,000
6	Injury Crashes	1	Minor Injuries @	\$48,000 \$ 48,000
		5	Possible Injuries @	\$25,000 \$ 125,000
15	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ 452,757
21	Total Crashes, TA		Total \$ Loss, LOSS	\$ 865,757

4.20 Current Crashes / Year, AA = TA / T	0.58 Crashes / MEV, Crash Rate, CR
\$ 41,227 Cost per Crash, AVC = LOSS / TA	CR = TA x 10 ⁶ / (DEV x 365 x T)
92.5 Total Expected Crashes, TECR = CR x TMEV	\$ <u>1,227,633</u> Present Value of Avoided Crashes, BENEFIT
2.02 Crashes Avoided First Year AAR = AA x CRF / 100	
\$ 83,113 Crash Costs Avoided in First Year, AAR x AVC	
44.4 Total Avoided Crashes, TECR x CRF / 100	
$BEN = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$	

Benefit / Cost Ratio

Benefit : Cost = \$1,227,633 : \$350,000 = 3.51 : 1

★ Roll Call Number
11-0974

Agenda Item Number
11

Date June 13, 2011

APPROVING AN ADDITIONAL FY2013 TRAFFIC SAFETY FUND APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION

BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF DES MOINES, IOWA:

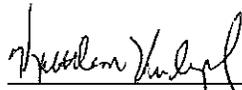
That the City Manager is hereby directed to submit an application to the Iowa Department of Transportation for Traffic Safety Funds for the following project:

1. Hubbell Avenue "Four-Lane to Three-Lane Conversion" Project, including bicycle lanes

(Council Communication Number 11-358 Attached)

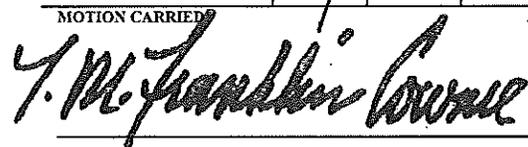
Moved by Moore to adopt.

APPROVED AS TO FORM:


Kathleen Vanderpool
Deputy City Attorney



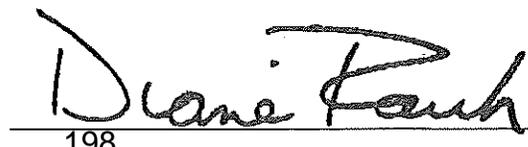
COUNCIL ACTION	YEAS	NAYS	PASS	ABSENT
COWNIE	✓			
COLEMAN	✓			
GRIESS	✓			
HENSLEY	✓			
MAHAFFEY	✓			
MEYER	✓			
MOORE	✓			
TOTAL	7			
MOTION CARRIED				


Mayor

CERTIFICATE

I, DIANE RAUH, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.


City Clerk

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Des Moines

Signed: T. M. Franklin Cownie 6/21/11
Signature Date Signed

T. M. Franklin Cownie, Mayor
Typed Name

Attest: Diane Rauh 6/21/11
Signature Date Signed

Diane Rauh, City Clerk
Typed Name

PROJECT DESCRIPTION

HUBBELL AVENUE “4-LANE TO 3-LANE CONVERSION” PROJECT E 18TH STREET TO E 33RD STREET

Project Description:

This project would consist of restriping Hubbell Avenue between E 18th and E 33rd Streets from the existing 4-lane roadway (2 lanes in each direction) to a 3-lane roadway (1-lane in each direction along with a center left-turning lane), including bicycle lanes. Minor widening and median work would be required at the intersection with University Avenue, and a wider sidewalk would be needed on the north side of Hubbell near E. 18th Street.

The existing utility poles are approximately 3-4' behind the curb line, and would not be changed as part of this project. However, by shifting the traffic lanes approximately 6' away from the curb, the effective clear zone is increased to 10-11' from the edge of the travelled way.

The estimated project cost is \$390,000. Traffic Safety funds in the amount of \$330,000, representing the construction costs, are requested from the Iowa DOT.

Existing Conditions:

Hubbell Avenue between E 18th Street and E 33rd Street is generally a 4-lane roadway, which widens to 5-lanes to accommodate left turning lanes at several locations within this segment. The pavement width is 50' except where turn lanes are developed, where it widens to 63'-65'. Traffic signals are located at E 18th Street, E University Avenue, Easton Boulevard, Guthrie Avenue, E 29th Street, and E 33rd Street. The speed limit is 30 MPH between E 18th St. and E University Ave., and is 35 MPH between E University and E 33rd St. It is designated as a “Minor Arterial” in the Des Moines Metropolitan Planning Agency Functional Classification map.

Based on city counts taken in April 2011, volumes along Hubbell Avenue range from 11,200 vehicles/day south of University to 13,600 vehicles/day near E 29th Street (see Exhibit J-1, J-2). Counts taken by the Iowa DOT in 2008 indicate volumes of slightly under 10,000 vehicles per day (Exhibit J-3).

Project Justification:

By converting this roadway to a 3-lane facility, improved safety would result along this corridor. A 2006 study by Iowa State University of twelve 3-lane conversions showed a 29% reduction in crashes. (http://www.ctre.iastate.edu/pubs/t2summaries/4-3_lane.pdf). A number of other national studies indicated similar crash reductions.

There were a total of 188 crashes within this corridor over the 3-year period between January 2008 and December 2010. A review of these crashes indicated the following patterns:

Accident Type	No. of Crashes
Left turning	28
Sideswipe	25
Right-Angle	57
Rear End	44
Fixed Object	26
Head-on	7
Unknown	1
Total	188
Average per year:	62.7

The crash rate for this section of Hubbell Avenue is **709 crashes per 100 million vehicle-miles travelled**. The statewide average for an urban arterial roadway is approximately 471 crashes/100MVM travelled.

Of the 188 reported accidents, there was 1 fatal crash involving 1 fatality, and 56 personal injury crashes involving 72 injuries. 130 of the reported crashes involved left-turning, sideswipe, rear end, head-on, and fixed-object, all of which would be expected to be reduced by the proposed project.

Based on current IDOT value factors, and treating the "fatality" as a "major injury", the total estimated loss from crashes during the described five-year period is \$732,309 (See Exhibit "L"). Assuming a crash reduction of 29 percent and an estimated project life of 10 years, the request for \$330,000 of Traffic Safety Funds relates to a benefit-cost factor of **9.49:1**.

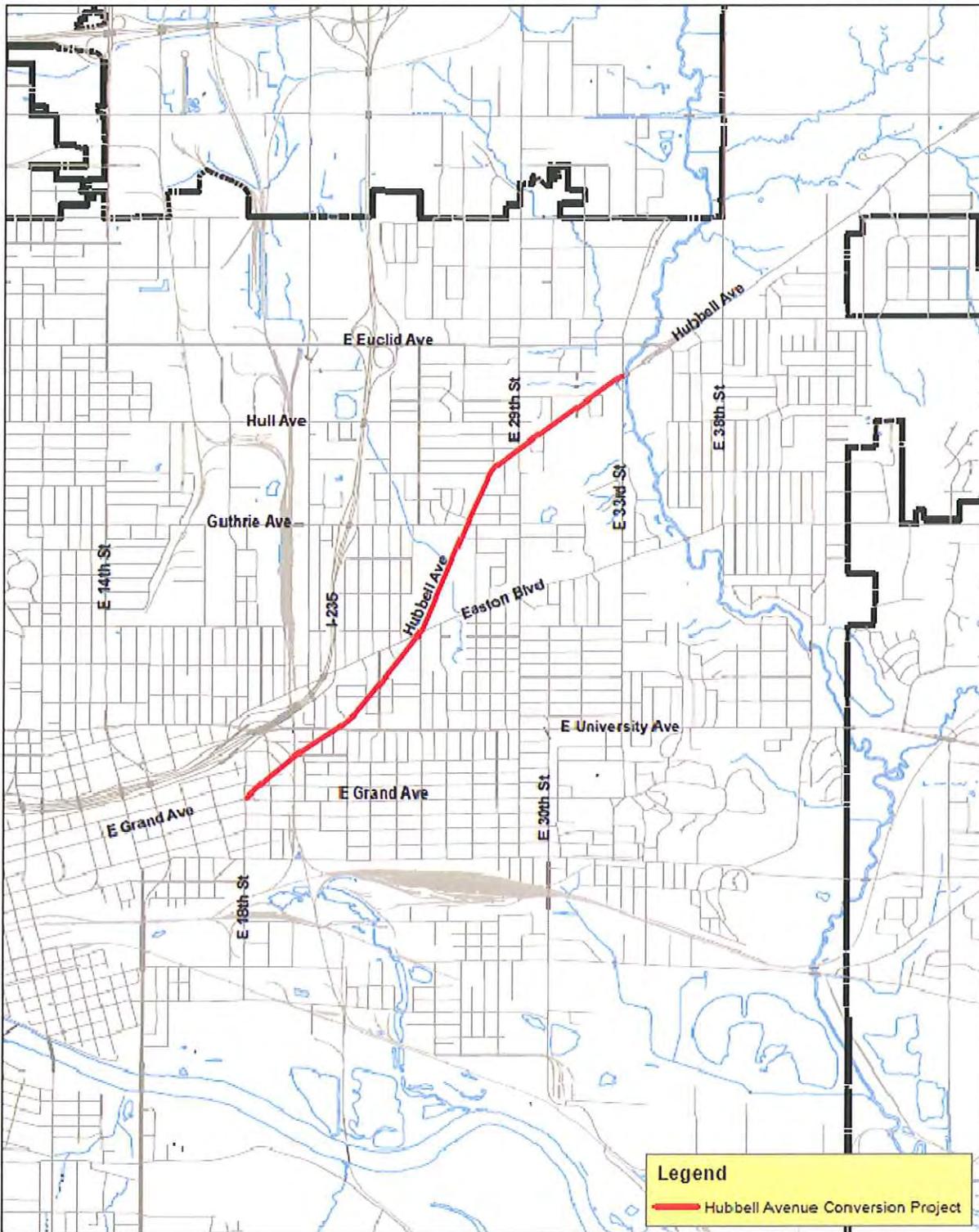
TIME SCHEDULE

**HUBBELL AVENUE "4-LANE TO 3-LANE
CONVERSION" PROJECT**

Project Approval:	December 2011
Agreement Signed:	March 2012
Project bid:	July 2012
Construction completed:	October 2012
Project Closeout:	June 2013

Hubbell Avenue "4-Lane to 3-Lane Conversion including Bike Lanes"

Exhibit E
Revised June 1, 2011



Hubbell Avenue

4-Lane to 3-Lane Conversion including Bike Lanes



On Hubbell Avenue, looking northeasterly toward Des Moines St



On Hubbell Avenue, looking southwesterly toward E Grand Avenue

Hubbell Avenue

4-Lane to 3-Lane Conversion including Bike Lanes



On Hubbell Avenue, looking northeasterly toward Easton Blvd.



On Hubbell Ave, looking southwesterly toward E 24th Street

Hubbell Avenue

4-Lane to 3-Lane Conversion including Bike Lanes



On Hubbell Avenue, looking northeasterly toward John Patterson Road



On Hubbell Ave, looking southwesterly toward Easton Blvd.

Hubbell Avenue

4-Lane to 3-Lane Conversion including Bike Lanes



On Hubbell Avenue, looking northeasterly toward Arthur Avenue



On Hubbell Ave, looking southwesterly toward Guthrie Avenue

Hubbell Avenue

4-Lane to 3-Lane Conversion including Bike Lanes

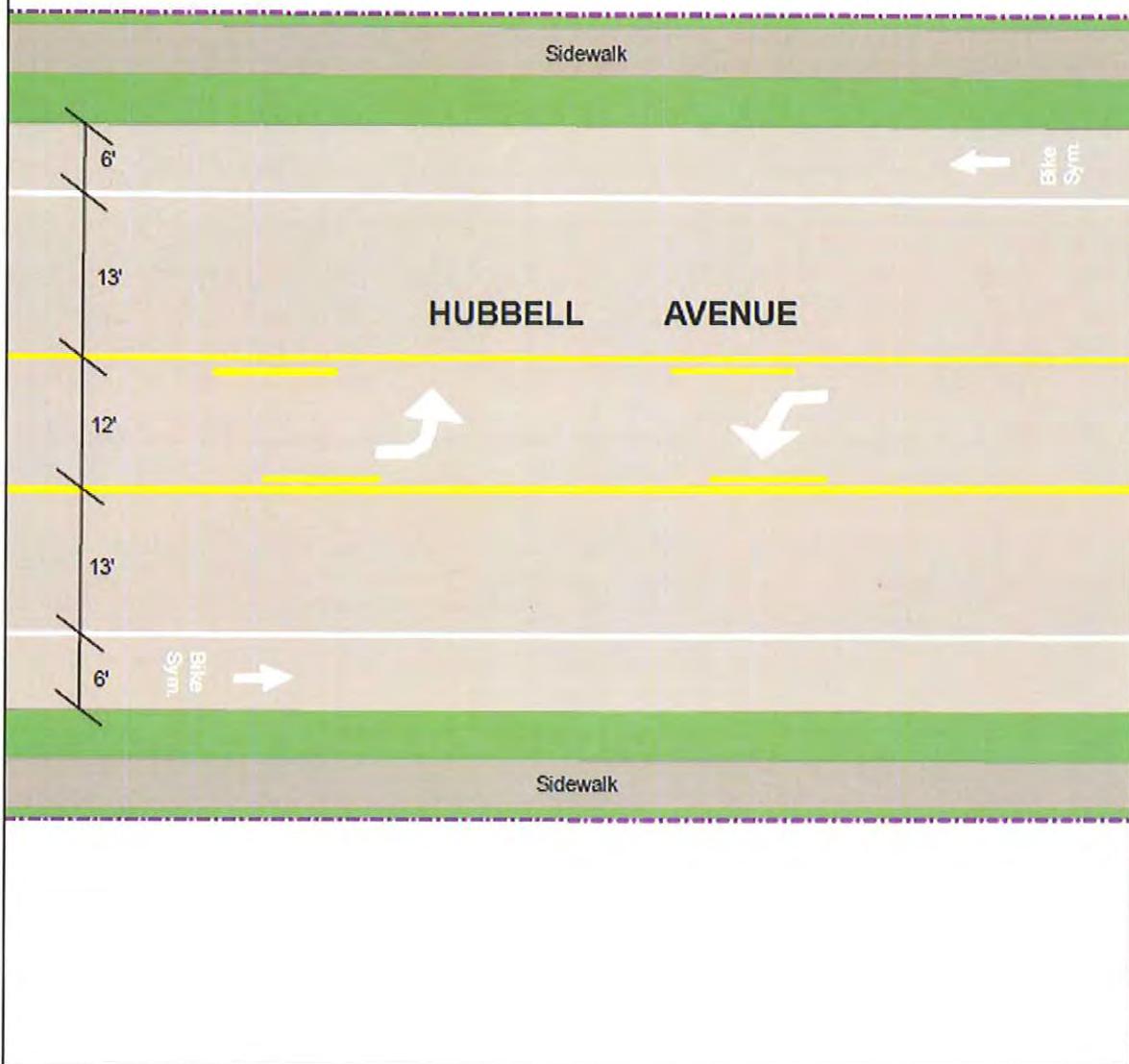


On Hubbell Avenue, looking northeasterly toward Tiffin Avenue



On Hubbell Ave, looking southwesterly toward E 29th Street

TYPICAL LAYOUT
(NOT TO SCALE)



City Of Des Moines
 600 E. Court Avenue, Suite 200A
 Des Moines, IA 50309
 Tube Count

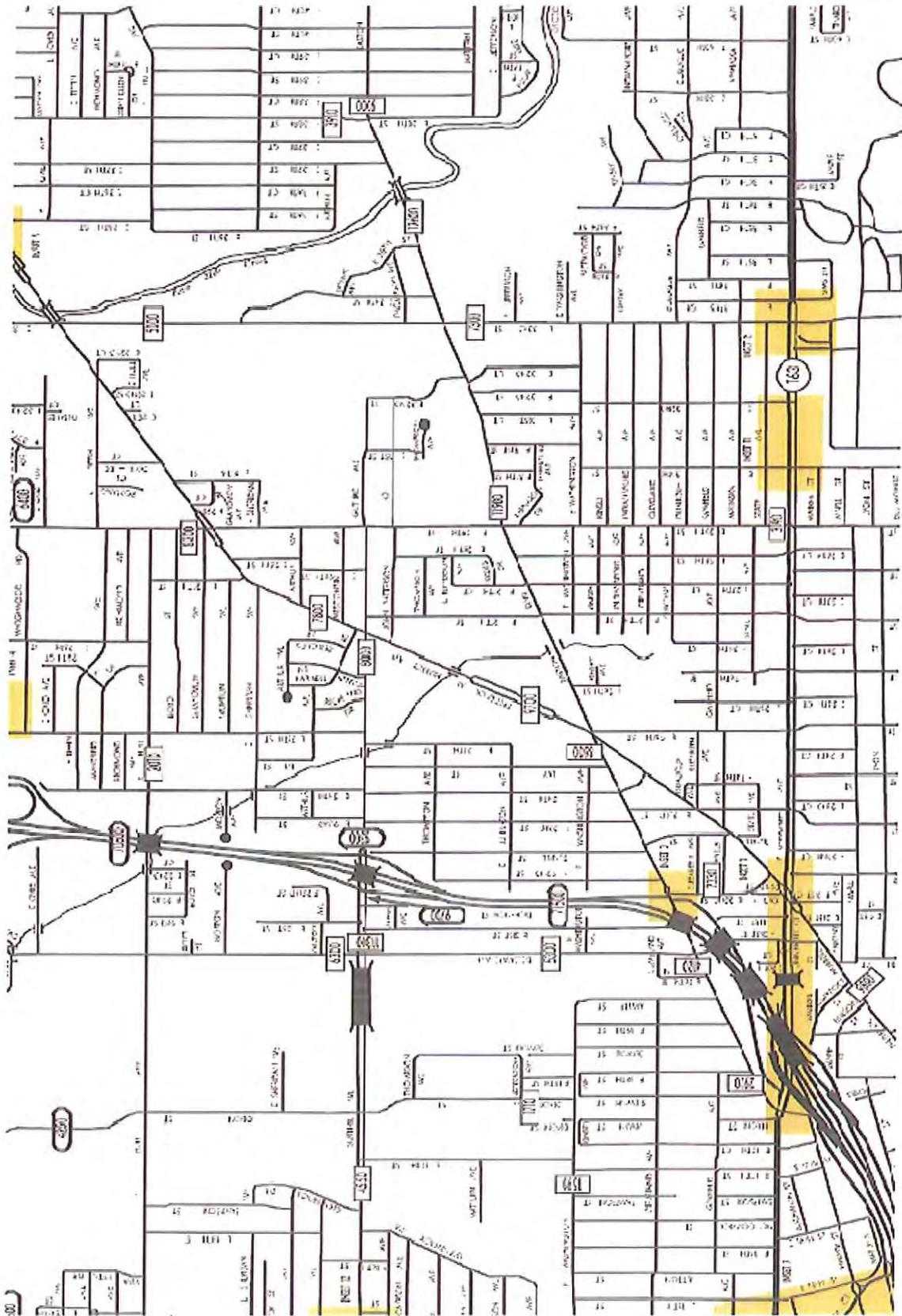
Site Code: 00030500000
 Station ID:
 Hubbell Avenue
 s. of University Avenue
 Latitude: 0 0.000 Undefined

Start Time	25-Apr-11		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	NR	SB	NR	SB	NR	SB	NR	SB	NR	SB	NR	SB	NR	SB	NR	SB
12:00 AM																
01:00			41	20	29	19	48	21								40
02:00			12	22	23	17	35	27								23
03:00			18	20	12	20	18	21								17
04:00			14	44	15	42	16	45								15
05:00			17	77	22	04	21	89								20
06:00			59	280	60	333	64	239								61
07:00			156	516	184	467	177	466								156
08:00			270	347	209	417	280	364								286
09:00			240	303	224	315	237	325								234
10:00			282	316	247	358	326	376								250
11:00			340	347	318	371	330	363								328
12:00 PM			382	399	427	447	338	348								357
01:00			414	477	427	447										406
02:00			452	441	322	485										377
03:00			538	441	520	404										383
04:00			569	362	559	393										449
05:00			490	270	447	273										510
06:00			314	53	278	258										574
07:00			217	268	210	197										478
08:00			172	130	142	134										292
09:00			135	113	132	108										200
10:00			84	33	96	58										181
11:00			52	24	43	21										154
Lane	4467	3781	5282	5477	5840	5881	2814									97
Day	8248		10759		11621		4423									41
AM Peak	11:00	11:30	11:00	06:00	11:30	09:00	06:00									5510
Vol	347	417	343	516	398	467	456									11214
PM Peak	16:00	13:30	16:00	14:00	16:00	12:00										1100
Vol	589	477	598	485	594	447										357
Comb. Total			8248	10759	11621		4423									1600
ADT			ADT 11,150	ADT 11,150	ADT 11,150		ADT 11,150									574
																449

City Of Des Moines
 600 E. Court Avenue, Suite 200A
 Des Moines, IA 50309
 Tube Count

Site Code: 000000000000
 Station ID:
 Hubbell Avenue
 n. of Gamme Avenue
 Latitude: 0.000 Undefined

Start Time	25-Apr-11	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Week Average
Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1	Channel 1
12:00 AM	37	30	20	32	37	28	41				34
01:00	20	19	36	25	32	19	21				27
02:00	22	10	24	19	18	14	14				22
03:00	11	33	9	18	18	24	24				21
04:00	23	57	23	56	23	54	22				20
05:00	41	121	31	126	45	124	38				22
06:00	143	384	188	381	182	381	38				38
07:00	206	700	288	746	302	764	198				174
08:00	280	454	308	364	370	370	381				198
09:00	280	214	288	300	287	300	279				295
10:00	308	306	331	368	336	338	346				317
11:00	399	332	428	376	394	361	415				339
12:00 PM	413	435	441	343	463		453				360
01:00	425	370	428	343	523		460				402
02:00	597	481	509	482	446		527				446
03:00	721	367	728	404	672		730				470
04:00	819	478	857	431	871		882				430
05:00	788	384	793	473	773		769				406
06:00	481	333	454	314	503		473				399
07:00	300	221	328	277	300		316				267
08:00	214	165	263	204	200		259				222
09:00	211	118	178	157	272		220				153
10:00	97	93	102	110	113		111				111
11:00	58	54	54	73	58		58				58
Day	5633	3856	7021	6223	7351	13619	2831	0	0	0	7182
AM Peak	13:00	11:00	07:00	11:00	07:00	11:00	07:00	0	0	0	13:00
Vol	438	388	730	428	746	384	764				415
PM Peak	16:00	16:00	14:00	16:00	13:00						16:00
Vol	919	461	857	871	493		882				882
Comb. Total	9489	13249	13919	4819	13867						
ADT	ADT 13.584										



Average Daily Traffic – from IDOT 2008 Traffic Count Map

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: Michael Ring Date Prepared: May 31, 2011
 Location: Hubbell Avenue between E. 18th Street and E. 33rd Street

Improvement

Proposed Improvement(s): Convert 4-lane to 3-lane roadway, including left turning lane, bicycle lanes.

\$ 330,000	Estimated Improvement Cost, EC	10	Est. Improvement Life, years, Y
\$ -	Other Annual Cost (after initial year), AC	29	Crash Reduction Factor (integer), CRF
\$ -	Present Value Other Annual Costs, OC	4.0%	Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$		\$ 330,000	Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT Date of traffic count

Two-way			
Length (mi.)	veh/day	Description	
2.20	11,000		24,200 Current Vehicle Miles / Day, VM
			35,822 End of Life Veh. Miles / Day
			8,833,000 Current Veh. Miles / Year, AM
			106,049,944 Total Projected Veh. Miles Over Life of Project, TVMT
2.20	miles total		
4.0%	Projected Traffic Growth (0%-10%), G		

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

Crash Data

2008	First full year →	2010	Last full year	3.0 years, Time Period, T
	Additional months			values as of Dec. 2007
1	Fatal Crashes		Fatalities @	\$3,500,000 \$ -
			1 Major Injuries @	\$240,000 \$ 240,000
56	Injury Crashes		26 Minor Injuries @	\$48,000 \$ 1,248,000
			46 Possible Injuries @	\$25,000 \$ 1,150,000
131	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
188	Total Crashes, TA		-OR- enter all Property Costs of all crashes:	\$ 732,309
			Total \$ Loss, LOSS	\$ 3,370,309

62.67	Current Crashes / Year, AA = TA / T	709.5	Crashes / HMVM, Crash Rate, CR
\$ 17,927	Cost per Crash, AVCR = LOSS / TA		CR = TA x 10 ⁸ / (AM x T)
752.4	Total Expected Crashes, TCR = CR x TVMT/10 ⁸	\$ 3,132,658	Present Value of Avoided Crashes, BENEFIT
18.17	Crashes Avoided First Year AAR = AA x CRF / 100		
\$ 325,797	Crash Costs Avoided in First Year, AAR x AVCR		
218.2	Total Avoided Crashes, TCR x CRF / 100		

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$3,132,658 : \$330,000 = 9.49 : 1



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project E 4th Street Traffic Signals at Court/Walnut Streets

Applicant City of Des Moines

Contact Person Michael P. Ring, P.E. Title Principal Traffic Engineer

Complete Mailing Address 600 East Court Avenue, Suite 200
Des Moines, IA 50309

Phone 515-283-4070 E-Mail mpring@dmgov.org
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) N/A

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 280,000

Safety Funds Requested \$ 230,000

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

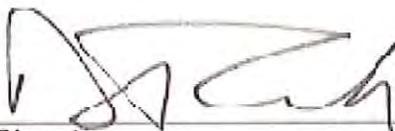
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the _____

Signed:  JUN 13 2011
 Signature Date Signed

T. M. Franklin Cownie, Mayor
Typed Name

Attest:  JUN 13 2011
 Signature Date Signed

Diane Rauh, City Clerk
Typed Name

★ Roll Call Number
11-0863

Agenda Item Number
9

Date May 23, 2011

APPROVING FY2013 TRAFFIC SAFETY FUND APPLICATIONS TO THE IOWA DEPARTMENT OF TRANSPORTATION

BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF DES MOINES, IOWA:

That the City Manager is hereby directed to submit applications to the Iowa Department of Transportation for Traffic Safety Funds to cover a portion of the construction costs for the following projects:

1. Beaver and Urbandale Intersection Roundabout
2. East 4th Street Traffic Signals at Court Avenue/ Walnut Street
3. Citywide School Flasher System Upgrade

(Council Communication Number 11-307 Attached)

Moved by Hensley to adopt.

APPROVED AS TO FORM:

Kathleen Vanderpool
 Kathleen Vanderpool
 Deputy City Attorney

COUNCIL ACTION	YEAS	NAYS	PASS	ABSENT
COWNIE	✓			
COLEMAN	✓			
GRISS	✓			
HENSLEY	✓			
MAHAFFEY	✓			
MEYER	✓			
MOORE	✓			
TOTAL	7			

MOTION CARRIED APPROVED
T. M. Franklin Cowie Mayor

CERTIFICATE

I, DIANE RAUH, City Clerk of said City hereby certify that at a meeting of the City Council of said City of Des Moines, held on the above date, among other proceedings the above was adopted.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal the day and year first above written.

Diane Rauh City Clerk

PROJECT DESCRIPTION**EAST 4TH STREET AT WALNUT STREET AND COURT AVENUE
TRAFFIC SIGNAL INSTALLATIONS****Project Description:**

The proposed improvement consists of the installation of two traffic signals, one at the intersection of East 4th Street and Walnut Street, and another signal one block to the south at the intersection of East 4th Street and Court Avenue. New mast arm-mounted traffic signals would be installed, with poles outside the 10-foot clear zone area. Combination poles would be used where possible. Signals with backplates would be installed on all overhead signals, along with pedestrian "countdown" signal indications for all approaches. Detection for semi-actuated operation would be installed. The traffic signals would be interconnected to the existing eastside traffic signal system. Minor street widening would be done on the northeast corner of E 4th and Walnut to eliminate an existing jog in the north curb line (see Exhibit "G"). The total project cost is estimated to be \$280,000, including design and inspection costs. The construction cost is \$230,000, which is being requested from State Traffic Safety funds.

Existing Conditions:

The intersections of East 4th Street at Walnut Street and at Court Avenue are located in the "Historic East Village" area on the near east side of Des Moines, approximately 4 blocks from the Des Moines River. Both Court Avenue and Walnut Street serve as major roadways entering and leaving the downtown area from the east, also servicing the East Village and the Iowa State Capitol complex. Court Avenue provides 2 eastbound lanes and 1 westbound lane along with parking, and has a speed limit of 30 mph. Walnut Street provides 1-lane of traffic in each direction along with bicycle lanes and parking, and has a speed limit of 25 mph. East 4th Street serves as a collector street, connecting Grand Avenue on the north with the new East M.L. King Jr. Parkway on the south, and has a speed limit of 25 mph. It provides 1-lane traffic in each direction along with parking.

As the east side of downtown Des Moines has redeveloped over the past 25 years, East 4th Street has been identified as an important collector street servicing this area. In the early 1980's, E 5th Street between Walnut and Court was closed for redevelopment. A few years later, traffic signals at E 5th/Grand were removed, and new signals were installed at E 4th/Grand and E 4th/Locust. Farther south, as part of the ML King extension over the Des Moines River in 2010, signals were installed at E 4th/ML King. It was anticipated that at some point in time, both E 4th/Court and E 4th/Walnut would be signalized as well.

Until the spring of 2011, both E 4th/Court and E 4th/Walnut were controlled as 2-way stop locations, with Walnut Street and Court Avenue having the right-of-way over East 4th Street. In May 2011, temporary traffic signals, operating in "fixed-time" mode, were installed at both intersections, primarily due a sewer construction project in the downtown area that utilizes East 4th Street as a diversion route. These temporary signals are planned to remain in place until permanent signals can be funded and installed.

Traffic counts were taken in May of 2011 at these two locations. The counts on E. 4th Street are reflective of normal traffic flows, and were utilized. However, at the time of these counts, Court Avenue was closed to traffic at the Des Moines River Bridge, and on-going construction was also affecting traffic flows on Walnut Street. Previous counts from 2004 were then reviewed, and adjustments made to reflect more current traffic patterns. These volumes indicate counts on Court Avenue of approximately 6,600 vehicles/day, volumes on Walnut of 4,400 vehicles/day, and volumes on E. 4th Street of 2,500 vehicles/day.

Traffic signals are currently warranted for 6 of the required 8 hours at the E. 4th/Court Avenue intersection based on Warrant No. 7 (Crash Experience), and are within 6% of fully meeting the volume requirements. There were a total of 16 correctable crashes (right-angle) in the 5-year analysis period.

At the intersection of E. 4th/Walnut, staff reviewed the signal warrants based on current traffic volumes and crash experience. None of the warrants are fully met. However, there are additional circumstances that merit signals at this location, as follows;

- Twice within the past 5 year period, there were 4 crashes within a 12-month timeframe. The crash warrant (No. 7) identifies 5 or more correctable events as meeting this warrant.
- Traffic volumes are within 25% of meeting the warrants
- There are currently temporary traffic signals installed at this location
- Since this is within the downtown area, buildings are constructed at the right-of-way line and create sight difficulties. This is especially true for the buildings on the southwest and southeast quadrants of the intersection.
- East Walnut Street has designated bicycle lanes through this area, and is the major bicycle corridor into the downtown from the east side of Des Moines.
- The E. 4th Street corridor already has traffic signals at the two adjacent intersections to the north (at Grand Avenue and at Locust Street). If signals are installed at E. 4th/Court, this would be the only remaining intersection between Grand and Court without signals.
- The intersection is within the "Historic East Village" area, which generates a considerable number of pedestrians who visit the nearby neighborhood businesses.

Based on the above information, traffic and transportation staff recommends that a signal be installed at the intersection of E 4th/Walnut at the same time that one is installed at E 4th/Court.

Project Justification:

The review of the crash history at the intersection of E 4th Street and Court Avenue during the 5-year period between 2006 and 2010 indicated a total of 24 crashes at the intersection. The analysis of these crashes indicates the following:

<u>Crash Type</u>	<u>Number</u>
Right-Angle	16
Rear End	2
Left turning	3
Sideswipe	3
Other	0
Total	24
Average per year:	4.8

Of the 24 reported accidents, there were 9 personal injury crashes involving 12 injuries. Right angle crashes accounted for 16 or the 24 crashes (67%). This type would generally be considered correctible by installing traffic signals.

At E 4th Street and Walnut Street, a review of the crash history for the 5-year period between 2006 and 2010 indicated a total of 12 crashes at the intersection. The analysis of these crashes indicates the following:

<u>Crash Type</u>	<u>Number</u>
Right-Angle	11
Rear End	0
Left turning	0
Sideswipe	0
Fixed Object	1
Total	12
Average per year:	2.4

Of the 12 reported crashes, there were 6 personal injury crashes involving 7 injuries. Right angle crashes accounted for 11 of the 12 crashes (92%) This type would generally be considered to be correctible by installing traffic signals.

This location does not have a significant crash history, but is located along the E. 4th Corridor that currently has traffic signals at the two adjacent intersections to the north (Grand and Locust), and has temporary signals at the south adjacent intersection (Court). It is our opinion that if the E 4th/Court Ave intersection were signalized without traffic signals at Walnut, the crash rate at E 4th/Walnut would increase to the point where signals would be required.

A "Benefit-Cost" analysis was conducted for each intersection separately, along with an analysis for both intersections combined as one project. For the E 4th/Court location, based on current IDOT value factors, the total estimated loss from crashes during the described five-year period is \$526,400 (See Exhibit "L-1"). Assuming an overall accident reduction of 20 percent and an estimated project life of 15 years, a

project cost of \$90,000 relates to a benefit-cost factor of **2.77:1**. For the E 4th/Walnut location, the total estimated loss from crashes during the described five-year period is \$325,400 (See Exhibit "L-2"). Assuming an overall accident reduction of 20 percent and an estimated project life of 15 years, a project cost of \$140,000 relates to a benefit-cost factor of **1.10:1**.

For the combined project improving both E 4th/Court and E 4th/Walnut, the total estimated loss from crashes during the described five-year period is \$851,800 (See Exhibit "L-3"). Assuming an overall accident reduction of 20 percent and an estimated project life of 15 years, the \$230,000 request in Traffic Safety Funding relates to a benefit-cost factor of 1.75:1.

COST ESTIMATE***East 4th Street Traffic Signals
at
Court Avenue/ Walnut Street***

TRAFFIC SIGNAL INSTALLATION:	
E 4 TH AND COURT:	\$90,000
E 4 TH AND WALNUT:	\$90,000
CURB MODIFICATIONS – NE CORNER	
E 4 TH AND WALNUT:	\$50,000
TOTAL CONSTRUCTION COST:	<u>\$230,000</u>
DESIGN / INSPECTION:	<u>\$50,000</u>
TOTAL PROJECT COST:	<u>\$280,000</u>
<u>TSF FUNDS REQUESTED:</u>	<u>\$230,000</u>

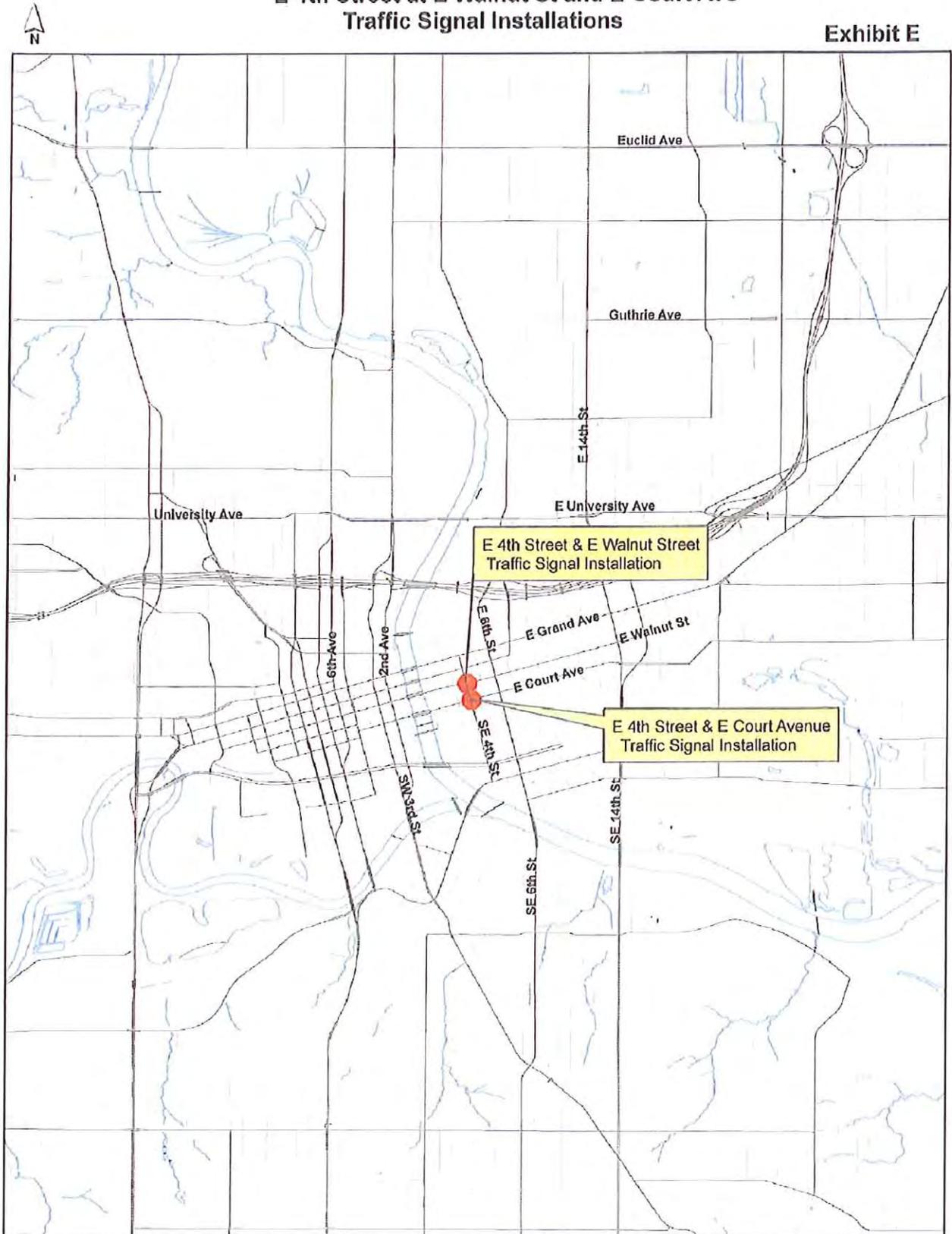
TIME SCHEDULE

***East 4th Street Traffic Signals
at
Court Avenue/ Walnut Street***

Project Approval:	December 2011
Agreement Signed:	March 2012
Project bid:	March 2013
Construction completed:	September 2013
Project Closeout:	June 2014

E 4th Street at E Walnut St and E Court Ave Traffic Signal Installations

Exhibit E



E 4th Street & E Court Avenue



On E Court Avenue, looking westerly toward E 4th Street.



On E 4th Street, looking southerly toward E Court Avenue

E 4th Street & E Court Avenue



On E 4th Street, looking northerly to E Court Avenue



On E Court Avenue, looking easterly toward E 4th Street

E 4th Street & E Walnut Street



On E 4th Street , looking north to E Walnut Street



On E Walnut Street , looking west to E 4th Street

E 4th Street & E Walnut Street



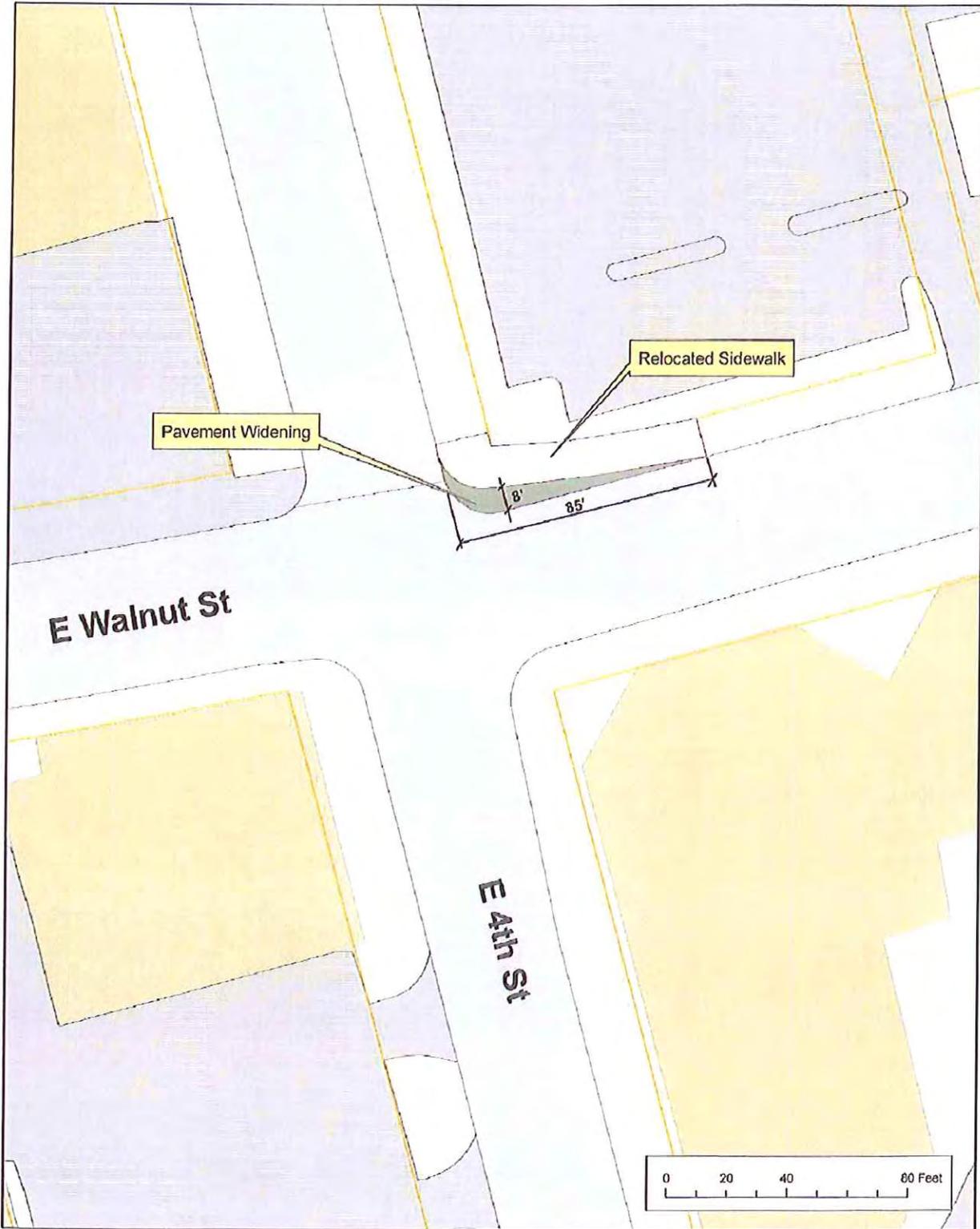
On E 4th Street , looking south to E Walnut Street



On E Walnut Street , looking east to E 4th Street

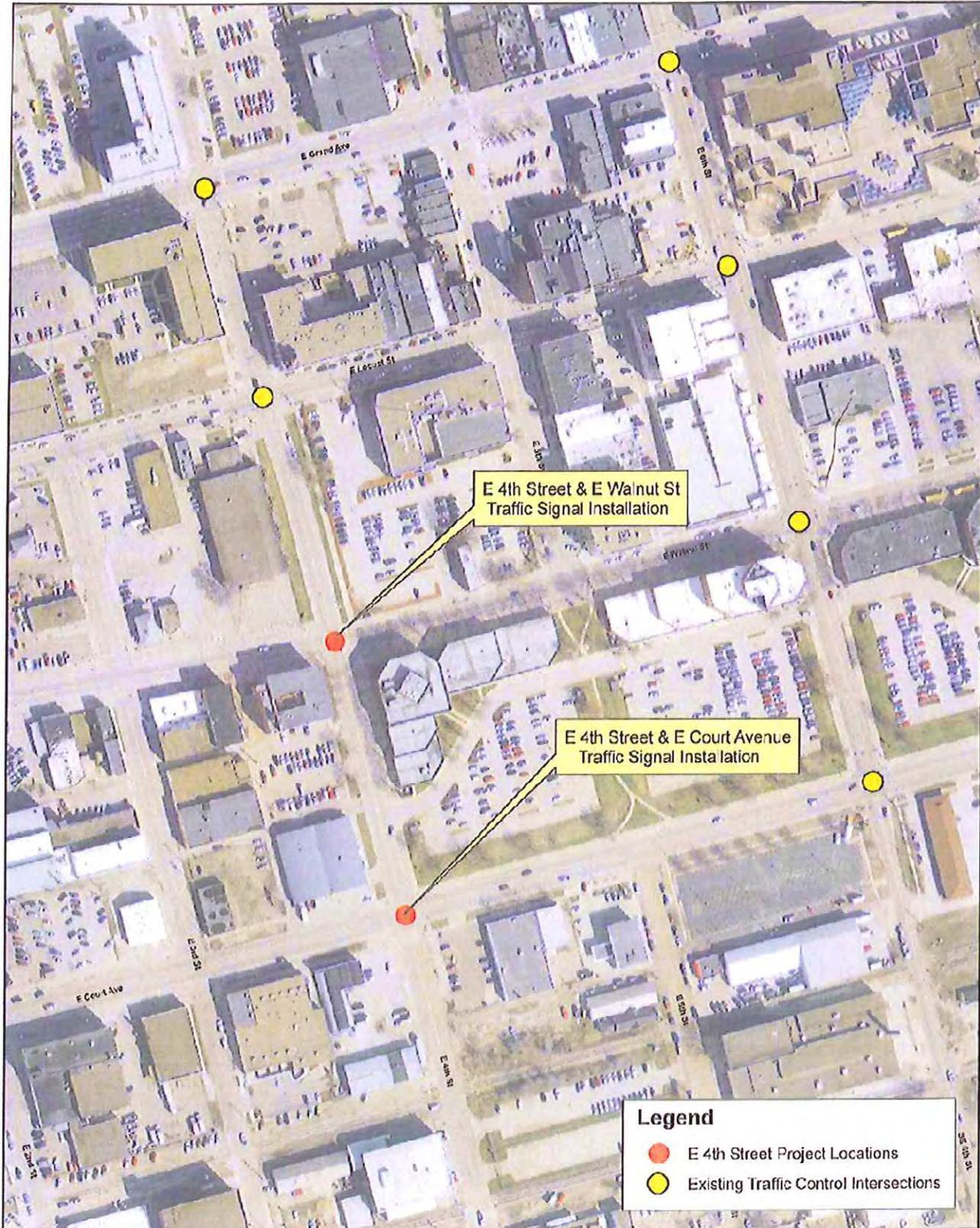
E 4th Street at E Walnut St
Northwest Corner Widening Detail

Exhibit G



E 4th Street at E Walnut St and E Court Ave Traffic Signal Installations

Exhibit H



Major Cause Summary

Analysis Years : Polk [2006 (2),2007 (3),2008 (4),2009 (1),2010 (14)]

Crash Summary:

Fatal	0
Major Injury	1
Minor Injury	2
Possible/Unknown	6
PDO	15
<hr/>	
Total Crashes	24

TOT Property Damage:	\$113,400.00
AVG Property Damage:	4725

Injury Summary:

Fatal	0
In -Capacitating	1
Non -Capacitating	2
Possible	8
Uninjured	0
Unknown	1
Not Reported	0
<hr/>	
Total Injuries	12

Surface Condition Summary:

Dry	17
Wet	6
Ice	1
Snow	0
Slush	0
Sand/Dirt/Oil/Gravel	0
Water	0
Other	0
Unknown	0
Not Reported	0
<hr/>	
Total Crashes	24

Major Cause Summary:

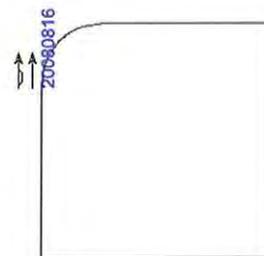
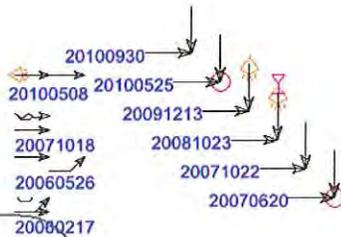
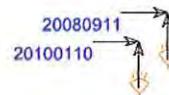
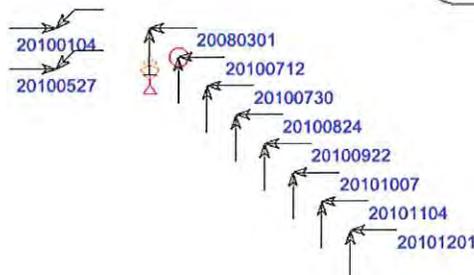
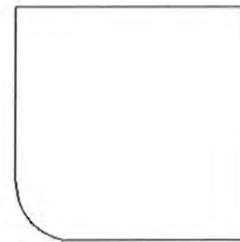
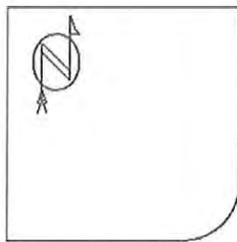
<ul style="list-style-type: none"> 0 Animal 0 Cargo/Equipment Loss or Shift 0 Crossed Centerline 0 Disregarded Railroad Signal 0 Disregarded Warning Sign 0 Downhill Runway 0 Driving too Fast for Conditions 0 Equipment Failure 0 Exceeded Authorized Speed 0 Followed Too Close 0 FTYROW: At Uncontrolled Intersection 0 FTYROW: From Driveway 0 FTYROW: From Parked Position 10 FTYROW: From Stop Sign 0 FTYROW: From Yield Sign 3 FTYROW: Making Left Turn 0 FTYROW: Making Right Turn on Red Signal 1 FTYROW: Other (explain in narrative) 0 FTYROW: To Pedestrian 0 Illegally Parked/Unattended 0 Improper Backing 0 Improper Lane Change 	<ul style="list-style-type: none"> 0 Inattentive/Distracted By: Fallen Object 0 Inattentive/Distracted By: Fatigued/Asleep 0 Inattentive/Distracted By: Passenger 0 Inattentive/Distracted By: Use of Phone or Other 0 Lost Control 0 Made Improper Turn 0 None Indicated 1 Operating Vehicle In Reckless/Agressive Manner 1 Other: No Improper Action 2 Other: Other Improper Action 1 Other: Vision Obstructed 0 Over-Correcting/Over-Steering 0 Oversized Load/ Oversized Vehicle 0 Ran Off Road - Left 0 Ran Off Road - Right 0 Ran Off Road - Straight 4 Ran Stop Sign 0 Ran Traffic Signal 0 Separation of Units 0 Swerving/Evasive Action 0 Traveling Wrong Way or on Wrong Side of Road 1 Unknown
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Analyst: mpr

Notes: E. 4th and Court 2006-2010 crash data

E 4th and Court

5-year crash summary (2006-2010)



(0) crashes could not be placed in this schematic

- ← Straight
- ← Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- ▭ Parked
- ↪ Erratic
- ⚡ Out of control
- ↘ Right turn
- ↙ Left turn
- ↻ U-turn

- ⊗ Pedestrian
- ⊗ Bicycle
- Injury
- ⊙ Fatality
- 💡 Nighttime
- ⚠️ DUI

- Fixed objects:
- General
 - ▣ Signal
 - ▣ Tree
 - ▣ Pole
 - ▣ Curb
 - ⊗ Animal
 - ◁ 3rd vehicle
 - * Extra data

Major Cause Summary

Analysis Years : Poik [2006 (3),2007 (4),2009 (1),2010 (4)]

<p>Crash Summary:</p> <table style="width: 100%;"> <tr><td style="text-align: right;">Fatal</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Major Injury</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Minor Injury</td><td style="text-align: right;">3</td></tr> <tr><td style="text-align: right;">Possible/Unknown</td><td style="text-align: right;">3</td></tr> <tr><td style="text-align: right;">PDO</td><td style="text-align: right;">6</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td style="text-align: right;">Total Crashes</td><td style="text-align: right;">12</td></tr> </table>	Fatal	0	Major Injury	0	Minor Injury	3	Possible/Unknown	3	PDO	6	<hr/>		Total Crashes	12	<p>Injury Summary:</p> <table style="width: 100%;"> <tr><td style="text-align: right;">Fatal</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">In Capacitating</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Non - Capacitating</td><td style="text-align: right;">4</td></tr> <tr><td style="text-align: right;">Possible</td><td style="text-align: right;">3</td></tr> <tr><td style="text-align: right;">Uninjured</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Unknown</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Not Reported</td><td style="text-align: right;">0</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td style="text-align: right;">Total Injuries</td><td style="text-align: right;">7</td></tr> </table>	Fatal	0	In Capacitating	0	Non - Capacitating	4	Possible	3	Uninjured	0	Unknown	0	Not Reported	0	<hr/>		Total Injuries	7	<p>Surface Condition Summary:</p> <table style="width: 100%;"> <tr><td style="text-align: right;">Dry</td><td style="text-align: right;">8</td></tr> <tr><td style="text-align: right;">Wet</td><td style="text-align: right;">4</td></tr> <tr><td style="text-align: right;">Ice</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Snow</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Slush</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Sand/Dirt/Oil/Gravel</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Water</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Other</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Unknown</td><td style="text-align: right;">0</td></tr> <tr><td style="text-align: right;">Not Reported</td><td style="text-align: right;">0</td></tr> <tr><td colspan="2"><hr/></td></tr> <tr><td style="text-align: right;">Total Crashes</td><td style="text-align: right;">12</td></tr> </table>	Dry	8	Wet	4	Ice	0	Snow	0	Slush	0	Sand/Dirt/Oil/Gravel	0	Water	0	Other	0	Unknown	0	Not Reported	0	<hr/>		Total Crashes	12
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Other	0																																																									
Unknown	0																																																									
Not Reported	0																																																									
<hr/>																																																										
Total Crashes	12																																																									
<p>TOT Property Damage: \$57,400.00</p> <p>AVG Property Damage: 4783.33</p>																																																										

Major Cause Summary:

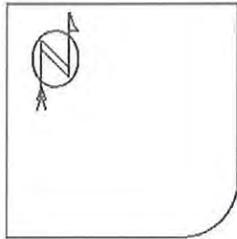
<ul style="list-style-type: none"> 0 Animal 0 Cargo/Equipment Loss or Shift 0 Crossed Centerline 0 Disregarded Railroad Signal 0 Disregarded Warning Sign 0 Downhill Runway 0 Driving too Fast for Conditions 0 Equipment Failure 0 Exceeded Authorized Speed 0 Followed Too Close 0 FTYROW: At Uncontrolled Intersection 0 FTYROW: From Driveway 0 FTYROW: From Parked Position 5 FTYROW: From Stop Sign 0 FTYROW: From Yield Sign 0 FTYROW: Making Left Turn 0 FTYROW: Making Right Turn on Red Signal 0 FTYROW: Other (explain in narrative) 0 FTYROW: To Pedestrian 0 Illegally Parked/Unattended 0 Improper Backing 0 Improper Lane Change 	<ul style="list-style-type: none"> 0 Inattentive/Distracted By: Fallen Object 0 Inattentive/Distracted By: Fatigued/Asleep 0 Inattentive/Distracted By: Passenger 0 Inattentive/Distracted By: Use of Phone or Other 0 Lost Control 0 Made Improper Turn 0 None Indicated 1 Operating Vehicle in Reckless/Aggressive Manner 1 Other: No Improper Action 0 Other: Other Improper Action 0 Other: Vision Obstructed 0 Over-Correcting/Over-Steering 0 Oversized Load/ Oversized Vehicle 0 Ran Off Road - Left 0 Ran Off Road - Right 0 Ran Off Road - Straight 5 Ran Stop Sign 0 Ran Traffic Signal 0 Separation of Units 0 Swerving/Evasive Action 0 Travelling Wrong Way or on Wrong Side of Road 0 Unknown
---	---

Analyst: mpr

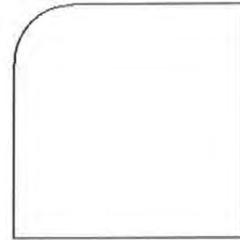
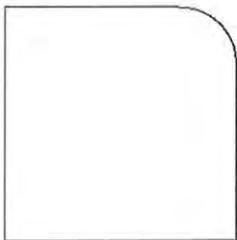
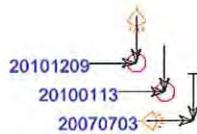
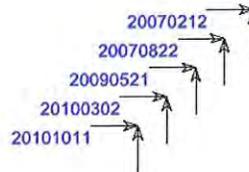
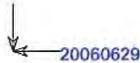
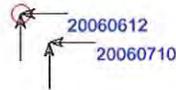
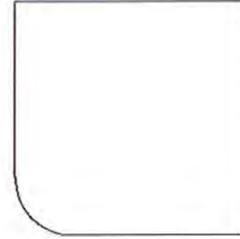
Notes: E. 4th and Walnut 2006-2010 crash data

E 4th and Walnut

5-year crash summary (2006-2010)



20070510



(0) crashes could not be placed in this schematic

- ← Straight
- ← Stopped
- ← Unknown
- ↔ Backing
- ↔ Overtaking
- ↔ Sideswipe

- Parked
- Erratic
- Out of control
- Right turn
- Left turn
- U-turn

- Pedestrian
- Bicycle
- Injury
- Fatality
- Nighttime
- DUI

Fixed objects:

- General
- Signal
- Tree
- Pole
- Curb
- Animal
- 3rd vehicle
- Extra data

City Of Des Moines
 600 E. Court Avenue, Suite 200A
 Des Moines, IA 50319
Tube Count

Site Code: 0000000000
 Station ID:
 E. 4th Street
 n. of Walnut Street
 Latitude: 0.000 Undefined

Start Time	Mon 18-May-11	Tue 17-May-11	Wed 18-May-11	Thu 19-May-11	Fri 20-May-11	Average Day	Sat 21-May-11	Sun 22-May-11	Week Average
12:00 AM			5	7	7	6			6
01:00			6	8	6	7			7
02:00			2	5	4	4			4
03:00			2	3	1	2			2
04:00			1	1	4	2			2
05:00			12	6	8	9			9
06:00			34	33	23	30			30
07:00			49	54	61	55			55
08:00			56	52	58	55			55
09:00			51	59	60	57			57
10:00			73	59	*	71			71
11:00		69	86	77	*	77			77
12:00 PM		81	103	75	*	87			87
01:00		95	74	97	*	89			89
02:00		87	74	84	*	82			82
03:00		65	92	84	*	74			74
04:00		93	94	82	*	90			90
05:00		60	53	62	*	58			58
06:00		26	38	39	*	34			34
07:00		28	31	25	*	28			28
08:00		20	18	25	*	21			21
09:00		19	23	11	*	18			18
10:00		7	16	21	*	15			15
11:00		4	10	13	*	9			9
Day Total	0	654	1003	973	232	980	0	0	980
% Avg. WkDay	0.0%	66.7%	102.3%	99.3%	23.7%				
% Avg. Week AM Peak	0.0%	66.7%	102.3%	99.3%	23.7%	100.0%	0.0%	0.0%	
Vcl.		69	86	77	61	11:00			11:00
FM Peak		13:00	12:00	13:00		77			77
Vcl.		95	103	97		16:00			16:00
Grand Total	0	554	1003	573	232	980	0	0	980
ADT		ADT 568	ADT 988	ADT 933					

City Of Des Moines
 600 E. Court Avenue, Suite 200A
 Des Moines, IA 50309
 Tube Count

Site Code:
 Station ID:
 E. 4th Street
 s. of Court Avenue
 Latitude: 0 0.000 Undefined

Start Time	Mon 23-May-11	Tue 24-May-11	Wed 25-May-11	Thu 26-May-11	Fri 27-May-11	Average Day	Sat 28-May-11	Sun 29-May-11	Week Average
12:00 AM						9			9
01:00	*	*	5	8	13	7	*	*	7
02:00	*	*	4	11	7	5	*	*	5
03:00	*	*	2	6	8	3	*	*	3
04:00	*	*	2	2	5	4	*	*	4
05:00	*	*	2	5	5	9	*	*	9
06:00	*	*	6	9	12	59	*	*	59
07:00	*	*	66	61	49	147	*	*	147
08:00	*	*	149	163	129	139	*	*	139
09:00	*	*	144	132	140	85	*	*	85
10:00	*	93	89	87	70	96	*	*	96
11:00	*	103	78	97	104	114	*	*	114
12:00 PM	*	127	105	106	116	132	*	*	132
01:00	*	127	134	136	*	147	*	*	147
02:00	*	153	134	153	*	127	*	*	127
03:00	*	126	123	131	*	188	*	*	188
04:00	*	167	160	238	*	127	*	*	127
05:00	*	114	128	138	*	107	*	*	107
06:00	*	115	108	97	*	52	*	*	52
07:00	*	42	58	56	*	33	*	*	33
08:00	*	36	33	30	*	28	*	*	28
09:00	*	25	28	30	*	31	*	*	31
10:00	*	37	30	26	*	18	*	*	18
11:00	*	20	20	14	*	21	*	*	21
Day Total	0	1304	1628	1760	658	1688	0	0	1688
% Avg. WkDay	0.0%	77.3%	96.4%	104.3%	39.0%				
% Avg. Week AM Peak	0.0%	77.3%	96.4%	104.3%	39.0%	100.0%	0.0%	0.0%	
Vol.		11:00	07:00	07:00	08:00	07:00			07:00
PM Peak		127	149	163	140	147			147
Vol.		15:00	15:00	15:00	15:00	15:00			15:00
Grand Total	0	1304	1628	1760	658	1688	0	0	1688

ADT	ADT 1,694	AADT 1,694
ADT	ADT 1,694	AADT 1,694

City Of Des Moines
 600 E. Court Avenue, Suite 200A
 Des Moines, IA 50309
 Tube Count

Site Code:
 Station ID:
 E. 4th Street
 Walnut to Court
 Latitude: 0' 0.000 Undefined

Start Time	16-May-11		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	SB	NB	SB	NB	SB	NB	SB	NB	S3	NB	SP	NR	SB	NB	SB	NB
12:00 AM	*	*	6	15	6	9	8	7							7	10
01:00	*	*	8	12	10	16	9	9							9	12
02:00	*	*	5	5	7	8	3	3							5	5
03:00	*	*	5	1	3	7	3	4							4	4
04:00	*	*	2	3	5	1	3	3							3	3
05:00	*	*	13	14	13	9	12	13							13	12
06:00	*	*	46	51	44	44	31	42							41	46
07:00	*	*	63	114	62	123	67	118							64	118
08:00	*	*	60	101	64	97	75	97							66	98
09:00	*	*	60	77	61	68	64	100							62	82
10:00	*	*	82	92	72	76	16	30							57	66
11:00	*	*	95	105	87	100	*	*							91	94
12:00 PM	*	*	122	102	82	102	*	*							103	103
01:00	*	*	81	126	102	54	*	*							93	111
02:00	*	*	82	107	92	107	*	*							93	110
03:00	*	*	107	136	91	132	*	*							99	129
04:00	*	*	119	91	104	105	*	*							108	98
05:00	*	*	73	89	77	92	*	*							76	95
06:00	*	*	51	44	47	37	*	*							45	39
07:00	*	*	36	34	27	27	*	*							31	26
08:00	*	*	24	28	19	24	*	*							27	24
09:00	*	*	21	26	14	32	*	*							20	26
10:00	*	*	15	18	26	25	*	*							17	19
11:00	*	*	17	16	12	24	*	*							12	18
Lane	0	0	1202	1402	1137	1359	291	429							1145	1348
Day			2604		2496		2494		720		0	0	0	0	2494	
AM Peak	11:00	11:00	11:00	07:00	11:00	07:00	08:00	07:00							11:00	07:00
Vol.	90	76	95	114	87	123	75	118							91	118
PM Peak	14:00	15:00	12:00	15:00	16:00	15:00									16:00	15:00
Vol.	106	120	122	136	104	132									108	129

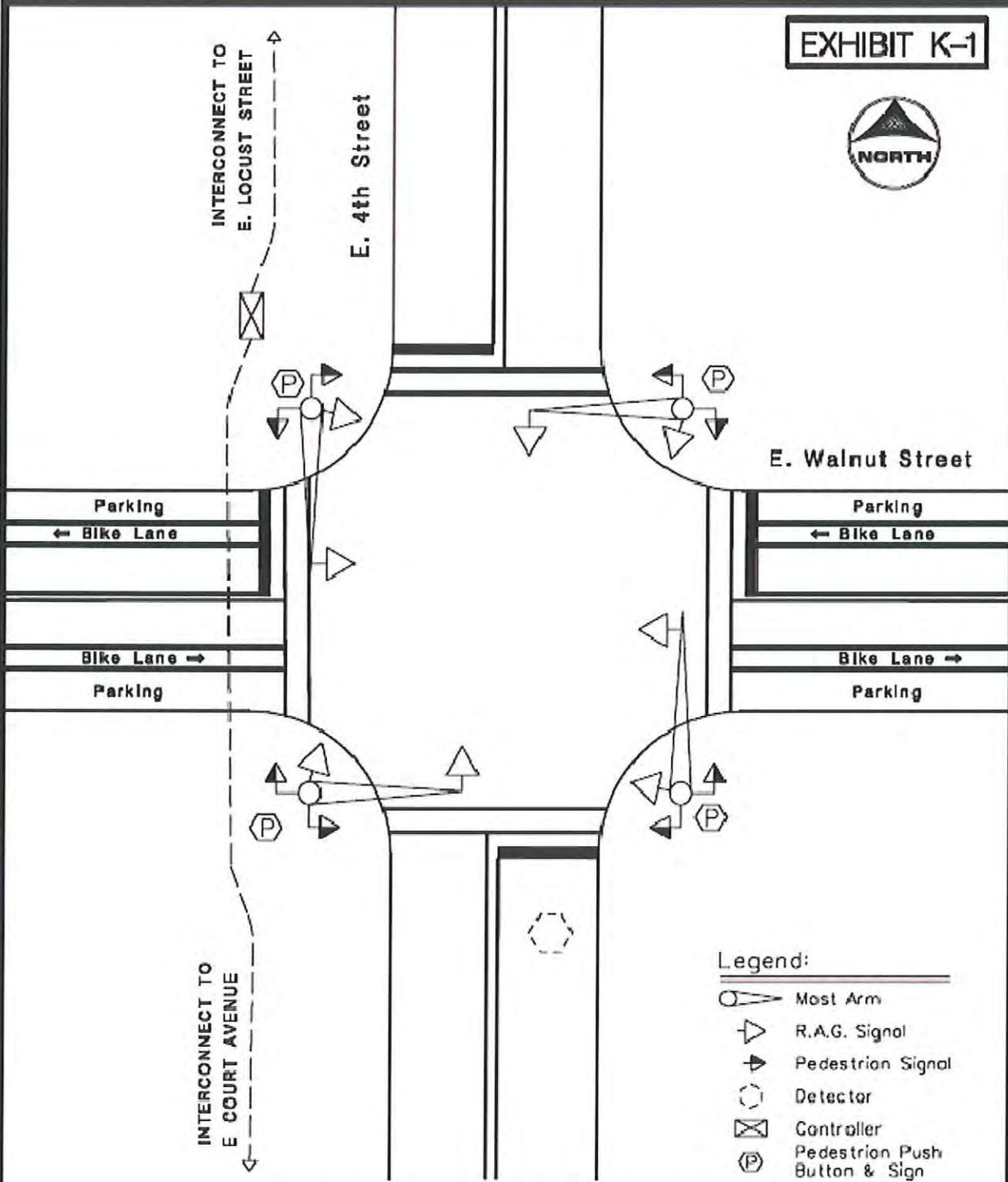
Comb. Total 0 1006 2604 2496 720 2494
 ADT ADT 2.550 ADT 2.550 AADT 2.550



Source: Iowa DOT 2004 traffic counts

Note: These counts are the most current ones taken prior to major construction occurring in the spring of 2011. At the time, Court Avenue was one-way, eastbound, and Walnut Street was one-way, westbound. In 2009, both streets were converted to 2-way traffic. Traffic flows generally did not divert outside of these two streets due to the conversion, but the 11,000 vehicles/day that travelled through the Walnut/Court corridor were redistributed between the two streets. For our analysis purposes, we assumed that Court Avenue carries 60% of these flows and Walnut carries 40%. (Court ADT = 6,600 veh/day; Walnut ADT = 4,400 veh/day).

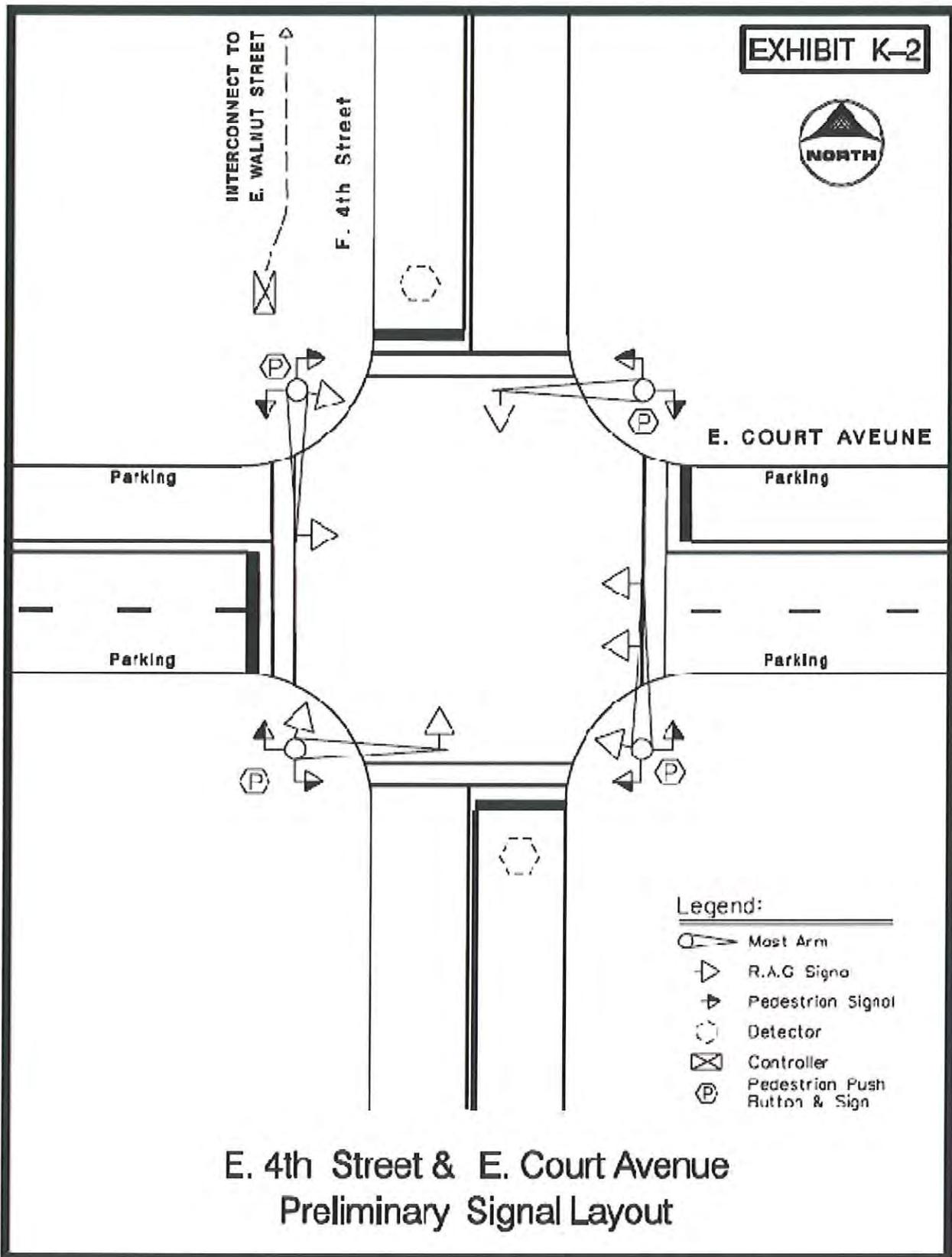
EXHIBIT K-1



- Legend:
- Most Arm
 - R.A.G. Signal
 - Pedestrian Signal
 - Detector
 - Controller
 - Pedestrian Push Button & Sign

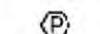
E. 4th Street & E. Walnut Street
Preliminary Signal Layout

EXHIBIT K-2



E. 4th Street & E. Court Avenue
Preliminary Signal Layout

Legend:

-  Mast Arm
-  R.A.G. Sign
-  Pedestrian Signal
-  Detector
-  Controller
-  Pedestrian Push Button & Sign

Intersection or Spot Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: **Polk** Prepared by: **Mike Ring** Date Prepared: **Jun 9, 2011**
 Intersection: **E. 4th and Walnut/Court Combined**

Improvement

Proposed Improvement(s): **Install Traffic Signals, modify curb in NE quadrant at Walnut**

\$ 230,000	Estimated Improvement Cost, EC	15	Est. Improvement Life, years, Y
\$ -	Other Annual Cost (after initial year), AC	20	Crash Reduction Factor (integer), CRF
\$ -	Present Value Other Annual Costs, OC	4.0%	Discount Rate (time value of \$), INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$		\$ 230,000	Present Value Cost, COST = EC + OC

Traffic Volume Data

Source: **City traffic counts** Date of traffic count: **2011 (adjusted)**

Daily Entering Vehicles by Approach (or AADT / 2)

	2,463,750	Current Annual Entering Veh., AEV = DEV * 365
	7,837	veh / day, Final Year DEV, FDEV
	39.66	MEV, Total Million Entering Veh. Over life of Project, TMEV
1.0%	Projected Traffic Growth (0%-10%), G	$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$
6,750	Current Daily Entering Vehicles, DEV	

Crash Data

2006	First full year →	2010	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
0	Fatal Crashes	0	Fatalities @	\$3,500,000 \$ -
		1	Major Injuries @	\$240,000 \$ 240,000
12	Injury Crashes	5	Minor Injuries @	\$48,000 \$ 240,000
		8	Possible Injuries @	\$25,000 \$ 200,000
21	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ 171,800
33	Total Crashes, TA		Total \$ Loss, LOSS	\$ 851,800

6.60	Current Crashes / Year, AA = TA / T	2.68	Crashes / MEV, Crash Rate, CR
\$ 25,812	Cost per Crash, AVC = LOSS / TA		CR = TA x 10 ⁶ / (DEV x 365 x T)
106.2	Total Expected Crashes, TECR = CR x TMEV	\$ 403,589	Present Value of Avoided Crashes, BENEFIT
1.32	Crashes Avoided First Year AAR = AA x CRF / 100		
\$ 34,072	Crash Costs Avoided in First Year, AAR x AVC		
21.2	Total Avoided Crashes, TECR x CRF / 100		
			$BEN. = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$

Benefit / Cost Ratio

Benefit : Cost = \$403,589 : \$230,000 = **1.75** : 1

Intersection or Spot Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: Mike Ring Date Prepared: May 18, 2011
 Intersection: E. 4th and Court

Improvement

Proposed Improvement(s): Install Traffic Signals

\$ 90,000 Estimated Improvement Cost, **EC** 15 Est. Improvement Life, years, **Y**
 \$ - Other Annual Cost (after initial year), **AC** 20 Crash Reduction Factor (integer), **CRF**
 \$ - Present Value Other Annual Costs, **OC** 4.0% Discount Rate (time value of \$), **INT**

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$
 \$ 90,000 Present Value Cost, **COST** = EC + OC

Traffic Volume Data

Source: City traffic counts 2011 (Adjusted) Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)

	<p>3,449,250 Current Annual Entering Veh., AEV = DEV * 365 10,971 veh / day, Final Year DEV, FDEV 55.52 MEV, Total Million Entering Veh. Over life of Project, TMEV</p>
--	--

1.0% Projected Traffic Growth (0%-10%), **G**
 9,450 Current Daily Entering Vehicles, **DEV**

$$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$$

Crash Data

<u>2006</u>	First full year -->	<u>2010</u>	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
<u>0</u>	Fatal Crashes	<u>0</u>	Fatalities @	\$3,500,000 \$ -
		<u>1</u>	Major Injuries @	\$240,000 \$ 240,000
<u>6</u>	Injury Crashes	<u>1</u>	Minor Injuries @	\$48,000 \$ 48,000
		<u>5</u>	Possible Injuries @	\$25,000 \$ 125,000
<u>15</u>	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ <u>113,400</u>
<u>21</u>	Total Crashes, TA		Total \$ Loss, LOSS	\$ <u>526,400</u>

4.20 Current Crashes / Year, **AA** = TA / T 1.22 Crashes / MEV, Crash Rate, **CR**
 \$ 25,067 Cost per Crash, **AVC** = LOSS / TA CR = TA x 10⁶ / (DEV x 365 x T)
 67.6 Total Expected Crashes, **TECR** = CR x TMEV \$ 249,412 Present Value of Avoided Crashes, **BENEFIT**
 0.84 Crashes Avoided First Year **AAR** = AA x CRF / 100
 \$ 21,056 Crash Costs Avoided in First Year, **AAR** x AVC
 13.5 Total Avoided Crashes, **TECR** x CRF / 100

$$BEN. = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$249,412 : \$90,000 = 2.77 : 1

Intersection or Spot Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: Mike Ring Date Prepared: Jun 9, 2011
 Intersection: E. 4th and Walnut

Improvement

Proposed Improvement(s): Install Traffic Signals, modify curb in NE quadrant

\$ 140,000	Estimated Improvement Cost, EC	15	Est. Improvement Life, years, Y
\$ -	Other Annual Cost (after initial year), AC	20	Crash Reduction Factor (integer), CRF
\$ -	Present Value Other Annual Costs, OC	4.0%	Discount Rate (time value of \$), INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$		\$ 140,000	Present Value Cost, COST = EC + OC

Traffic Volume Data

Source: City traffic counts 2011 (adjusted) Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)

	2,463,750 Current Annual Entering Veh., AEV = DEV * 365 7,837 veh / day, Final Year DEV, FDEV 39.66 MEV, Total Million Entering Veh. Over life of Project, TMEV
--	--

1.0% Projected Traffic Growth (0%-10%), **G**
 6,750 Current Daily Entering Vehicles, **DEV**

$$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$$

Crash Data

<u>2006</u>	First full year →	<u>2010</u>	Last full year	5.0 years, Time Period, T
	Additional months			values as of Dec. 2007
0	Fatal Crashes	0	Fatalities @	\$3,500,000 \$ -
		0	Major Injuries @	\$240,000 \$ -
6	Injury Crashes	4	Minor Injuries @	\$48,000 \$ 192,000
6	Property Damage Only	3	Possible Injuries @	\$25,000 \$ 75,000
			(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ 58,400
12	Total Crashes, TA		Total \$ Loss, LOSS	\$ 325,400

2.40	Current Crashes / Year, AA = TA / T	0.97	Crashes / MEV, Crash Rate, CR
\$ 27,117	Cost per Crash, AVC = LOSS / TA		CR = TA x 10 ⁶ / (DEV x 365 x T)
38.6	Total Expected Crashes, TECR = CR x TMEV	\$ 154,177	Present Value of Avoided Crashes, BENEFIT
0.48	Crashes Avoided First Year AAR = AA x CRF / 100		
\$ 13,016	Crash Costs Avoided in First Year, AAR x AVC		
7.7	Total Avoided Crashes, TECR x CRF / 100		

$$BEN = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$154,177 : \$140,000 = 1.10 : 1



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project IA 76/Milepost 9.25 to 10.90 in Allamakee County

Applicant District 2 Office

Contact Person Dave Little Title Assist. District Engineer

Complete Mailing Address 1420 Fourth Street SE
Mason City, IA 50401

Phone 641-423-7584 E-Mail david.little@dot.iowa.gov
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s)

Contact Person Title

Complete Mailing Address

Phone E-Mail
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

- Site Specific [X]
Traffic Control Device []
Safety Study []

Funding Amount

Total Project Cost \$ 61,400

Safety Funds Requested \$ 61,400

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

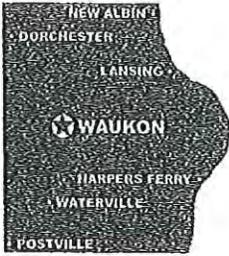
Representing the District 2 Office

Signed: David L. Little July 9, 2011
Signature Date Signed

David L. Little, P.E.
Typed Name

Attest: Vicki L. Dumdei June 10-2011
Signature Date Signed

Vicki L. Dumdei, P.E.
Typed Name



OFFICE OF
ALLAMAKEE COUNTY
BOARD OF SUPERVISORS

110 ALLAMAKEE STREET

WAUKON, IOWA 52172

PHONE: 563-568-3522

FAX: 563-568-4978

MEMBERS

CLOY KUHSE

SHERRY HARTONG

LARRY SCHELLHAMMER

boardofsupervisors@co.allamakee.ia.us

DOCUMENT A

June 6, 2011

Vicki Dumdei
I.D.O.T. District 2 Engineer
1420 Fourth Street SE
Mason City IA 50401

RE: Letter of Support for Safety Funds on IA Hwy 76 - Sunshine Hill

Dear Ms. Dumdei:

This letter serves as a Letter of Support of Safety Improvements on IA Highway 76, Sunshine Hill, between mile posts 9.25 and 10.90.

This segment of IA 76 is designated as the National Scenic Byway and the Great River Road, which creates new tourist traffic that may be unfamiliar to the roadway geometrics in this area.

We will support and welcome any Iowa Department of Transportation Safety Improvements to IA 76 which assists our travelling public to enable a safer journey within Allamakee County.

Sincerely,

Larry Schellhammer
Chairperson, Board of Supervisors

Narrative

IA 76-Allamakee County

Existing Conditions

The stretch of IA 76 District 2 would like considered for TSIP funds runs from milepost 9.25 to 10.90 in Allamakee County. This stretch of roadway is also referred to as "Sunshine Hill" by the locals. The portion in question starts about five miles north of the Marquette/McGregor area along the Mississippi River Bluffs area. Those attractions, as well as Effigy Mounds National Monument, Pikes Peak State Park and Spook Cave, all draw many tourists to this part of the state.

This 1.65 long corridor of IA 76 is on a vertical grade and includes several horizontal curves. Two of those curves can be seen in Document F that is included in this application. The posted speed limit in this corridor is 50 mph and the 2009 AADT is 2230. Signs indicating "No Shoulder/Next 6 Mi." are also in place at each end of the corridor. In addition, "No Shoulder" signs, as well as several other warning signs, are in place along this stretch of IA 76. The shoulders along this part of IA 76 are approximately 2' wide at best. The roadway itself is 24' wide ACC pavement. There are several steep vertical ditch grades along this corridor, mainly on the east side, the west side is bordered for much of the stretch by a bluff. The roadway does have delineators in place with 2 crystal reflectors on each. The delineators are spaced 75' on center along the steep vertical grade sections on each side of this corridor. Those steep grades are the reasons District 2 is applying for this safety funding.

The 2005-2009 crash history for this stretch of IA 76 shows 9 reportable crashes. Those crashes include 3 animal, 1 driving too fast for conditions, 3 ran off road-right, 1 ran off road-left and 1 unknown major crash causes. Those crashes resulted in 1 minor injury, 2 possible injuries and 6 property damage only. The crash rate for this corridor is 134.0 crashes per hundred million vehicle miles.

That compares to a statewide average crash rate of 99.0 crashes per hundred million vehicle miles along a rural primary Iowa route. Due to this high rate, the District feels this location is a candidate for safety funds and proposes improvements be designed and constructed with TSIP funds.

Concept

The District is proposing narrowing the current 12' lanes to 11' lanes and moving the centerline 1' to the west. That would give us room to move the northbound edge line 2' to the west, creating a wider shoulder. The District would also like to install a rumble strip on the northbound shoulder, upgrade the existing warning signs to fluorescent yellow, and mill in reflective tape for the new centerline and edge lines.

Justification

Three of the nine crashes in this corridor from 2005-2009 involved animals. Of the remaining six, two involved northbound drivers running off the right side of the road. The District feels the wider northbound shoulder, as well as the rumble strips, could have possibly prevented those two crashes. According to the Iowa Department of Transportation's website, the physical vibrations of rumble strips, along with the audible vibrations from these traffic safety devices, provide a drowsy, distracted or impaired driver a chance to correct his behavior. Upon going over the rumble strips the driver will hopefully return the vehicle to the travel lane and avoid a crash. Iowa DOT engineers have so much confidence in the effectiveness of shoulder rumble strips they have designated milled in rumble strips as a design standard for all new paved shoulder construction in rural areas since 2004.

Also, InTrans at Iowa State University is doing a study on edge line rumble strips on county roads without shoulders. While IA 76 will have a wider shoulder with the District's suggested improvements, the conclusions of that study are worth noting. According to the study, the narrow rumble strip did make enough noise to effectively alert the driver and allow them to return to the travelled portion of the roadway.

Five of the six major-cause crashes that didn't involve animals also took place after dark. The District feels updating the existing warning signs with fluorescent yellow warning signs will give drivers a more visible cue that they need to pay attention to this narrow corridor. The milled in reflective tape for the new edge and center lines will also give drivers a more visible guideline when driving in dark and/or low light conditions. As noted at the start of this Document, many of the drivers using this corridor are quite possibly tourists who are driving this stretch of IA 76. The District feels these safety improvements become even more important with new-to-the-area drivers on this roadway.

Document C

Estimated Cost of Improvements

Estimated cost of the project is as follows:

- Signs/Posts, Pavement Marking Removal, Pavement Marking Grooving, Durable Pavement Markings and Symbols: \$26,800
 - Rumble Strips \$ 1,600
 - Traffic Control and Mobilization: \$33,000
- Total: \$61,400**

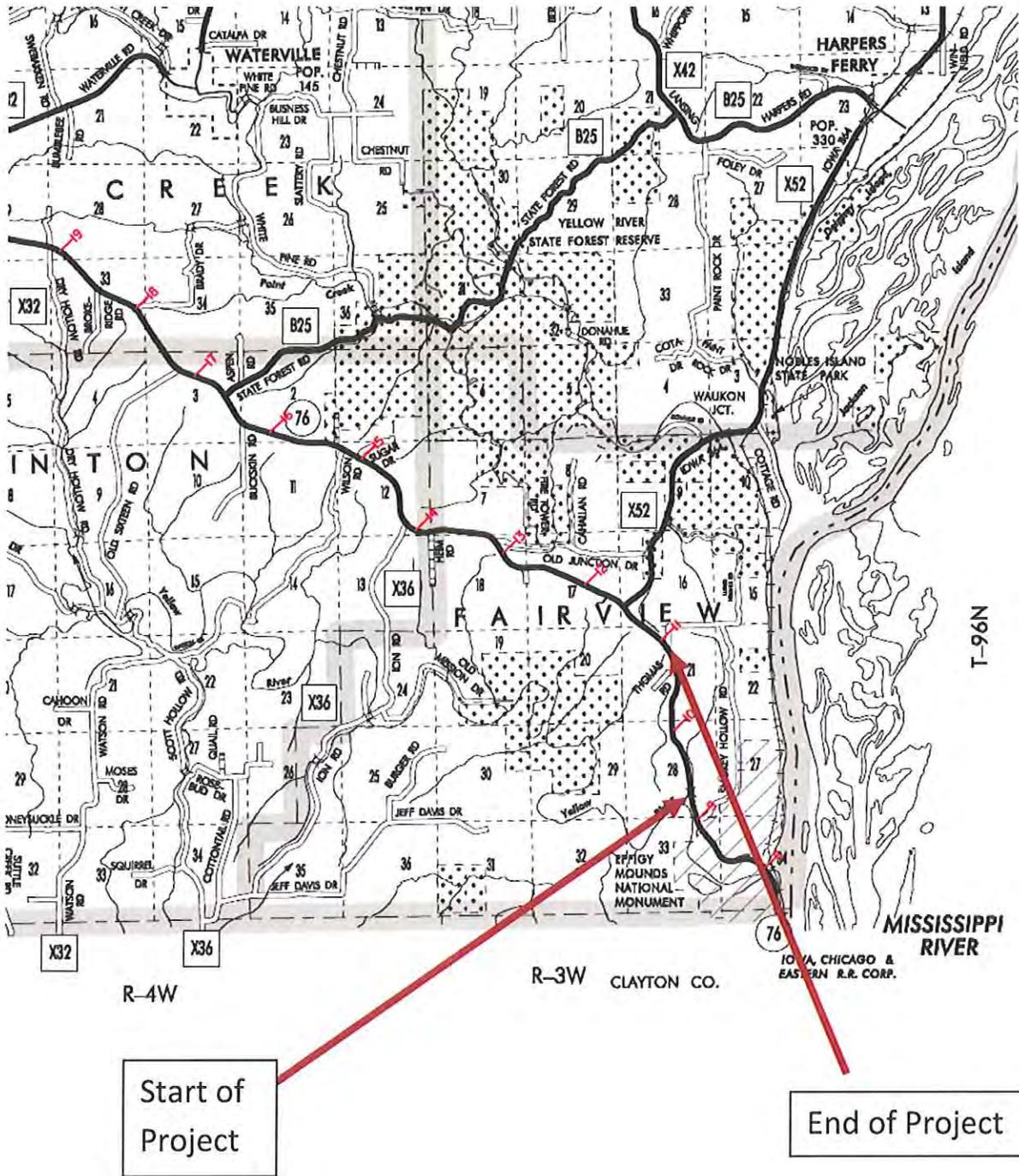
Document D

Proposed Schedule:

Grant Approval	February 2012
Project Development	May 2012
Project Letting	August 2012
Project Completion	October 2012

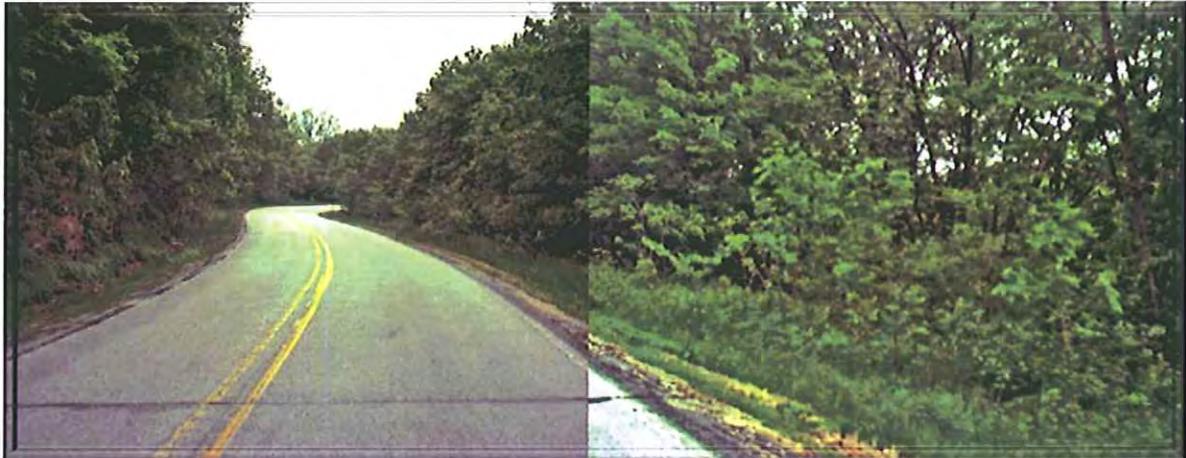
Location Map

Location of Proposed Project-IA 76 in Allamakee County



Document F

Color Pictures of Project Site



SHEET NO.	1	TOTAL SHEETS	34
PROJECT NUMBER	FN-76-2(18)--21-03		
R.O.M. PROJECT NUMBER	ROW		
ROW NUMBER	90-03030-1		

NO.	DESCRIPTION
1	TITLE SHEET
2A-2C	TYPICAL CROSS SECTION
3A-3E	ESTIMATE OF QUANTITIES & GENERAL INFORMATION
4-8	DETAIL SHEETS 520-17A, 520-17C, 520-50, 520-51B, 522-1
	CROSS-SECTIONS

NO.	DATE	NUMBER	DATE
RF-1	09-03-76	RF-30A	10-09-90
RF-2	04-05-77	RF-30B	10-02-90
RF-3	04-15-77	RF-31	10-11-88
RF-4	01-04-90	RF-2	11-19-88
RF-5	03-10-88	RH-50	10-02-90
RF-6	10-02-88	RH-50	11-19-88
RF-7	10-02-88	RH-50	11-19-88

NO.	DATE	NUMBER	DATE
RF-1	09-03-76	RF-30A	10-09-90
RF-2	04-05-77	RF-30B	10-02-90
RF-3	04-15-77	RF-31	10-11-88
RF-4	01-04-90	RF-2	11-19-88
RF-5	03-10-88	RH-50	10-02-90
RF-6	10-02-88	RH-50	11-19-88
RF-7	10-02-88	RH-50	11-19-88

NO.	DATE	NUMBER	DATE
RF-1	09-03-76	RF-30A	10-09-90
RF-2	04-05-77	RF-30B	10-02-90
RF-3	04-15-77	RF-31	10-11-88
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RF-5	03-10-88	RH-50	10-02-90
RF-6	10-02-88	RH-50	11-19-88
RF-7	10-02-88	RH-50	11-19-88

NO.	DATE	NUMBER	DATE
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RF-3	04-15-77	RF-31	10-11-88
RF-4	01-04-90	RF-2	11-19-88
RF-5	03-10-88	RH-50	10-02-90
RF-6	10-02-88	RH-50	11-19-88
RF-7	10-02-88	RH-50	11-19-88

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RF-2	04-05-77	RF-30B	10-02-90
RF-3	04-15-77	RF-31	10-11-88
RF-4	01-04-90	RF-2	11-19-88
RF-5	03-10-88	RH-50	10-02-90
RF-6	10-02-88	RH-50	11-19-88
RF-7	10-02-88	RH-50	11-19-88

IOWA
DEPARTMENT OF TRANSPORTATION
Highway Division
 PLANS OF PROPOSED IMPROVEMENTS ON THE
PRIMARY ROAD SYSTEM
ALLAMAKEE COUNTY
A.C.C. RESURFACING & SUGGARINGS
 IA 76 FROM CLAYTON CO. LINE TO JCT IA 364

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
 Plan Prepared and Supervised by: *Robert Bortle*
 Date: *Jan. 22, 1992*
 IOWA Reg. No. *6715*
 REVIEWED AND FORW. ADDED TO AMES
 Date: *264.24.1992*
 One 50% Reduced and Two 1/4 Scale Plans To Be Made and Returned To
ROBERT BORTLE
 David Bortle
 AFTER MICROFILMING RETURN ORIGINAL
 TO DISTRICT NO. **2**

THIS AS BUILT PLAN INCLUDES
 CONTRACTOR'S WORK
 YEAR: _____
 A.C.C. RESURFACING: _____
 SUGGARINGS: _____
 CONTRACTOR: _____
 DESIGNED BY: _____
 CHECKED BY: _____
 DATE: _____

LETTING DATE: *January 5, 1991*

INDEX OF SHEETS

NO.	DESCRIPTION
1	TITLE SHEET
2A-2C	TYPICAL CROSS SECTION
3A-3E	ESTIMATE OF QUANTITIES & GENERAL INFORMATION
4-8	DETAIL SHEETS 520-17A, 520-17C, 520-50, 520-51B, 522-1
	CROSS-SECTIONS

MILEAGE SUMMARY

DIV.	LOCATION	LINE FT.	MILES
105-1	STA. 202+36 TO STA. 403+63	20127	3.72
105-2	OMIT FOR BRIDGE STA. 222+99	-500	
	TOTAL NET LENGTH OF PROJECT	19627	3.72

DESIGN DATA RURAL

1989 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
TRUCKS	1/4" D.	1/4" D.

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

REVISIONS

DESIGN DATA RURAL

1989 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
TRUCKS	1/4" D.	1/4" D.

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

REVISIONS

DESIGN DATA RURAL

1989 640T	1/4" D.	1/4" D.
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2000 640T	1/4" D.	1/4" D.
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STANDARD ROAD PLANS

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105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

REVISIONS

DESIGN DATA RURAL

1989 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
TRUCKS	1/4" D.	1/4" D.

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

REVISIONS

DESIGN DATA RURAL

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2000 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
TRUCKS	1/4" D.	1/4" D.

STANDARD ROAD PLANS

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105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

REVISIONS

DESIGN DATA RURAL

1989 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
TRUCKS	1/4" D.	1/4" D.

STANDARD ROAD PLANS

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105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

REVISIONS

DESIGN DATA RURAL

1989 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
2000 640T	1/4" D.	1/4" D.
TRUCKS	1/4" D.	1/4" D.

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

STANDARD ROAD PLANS

NO.	DATE	NUMBER	DATE
105-3	10-02-90	105-3	10-02-90
105-4	10-02-90	105-4	10-02-90

Iowa Department of Transportation
Highway Division
 AUTHORIZED FOR SETTING
George V. Johnson
 DEPUTY CHIEF ENGINEER

U.S. DEPARTMENT OF TRANSPORTATION
 FEDERAL HIGHWAY ADMINISTRATION
 APPROVED

I hereby certify that this plan was prepared under my supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.
Donald J. Eddy
 ROAD DESIGN ENGINEER DATE: *1/17/92*

PROJECT NO. FN-76-2(18)--21-03
 SHEET NO. 1 of 8

ALLAMAKEE COUNTY

STATIONING: STA. 403+63 End Project M.P. 11.35
 STA. 202+36 Beg. Project M.P. 7.54

LOCATION M.P. SCALE
 0 1 2 3
 MILES

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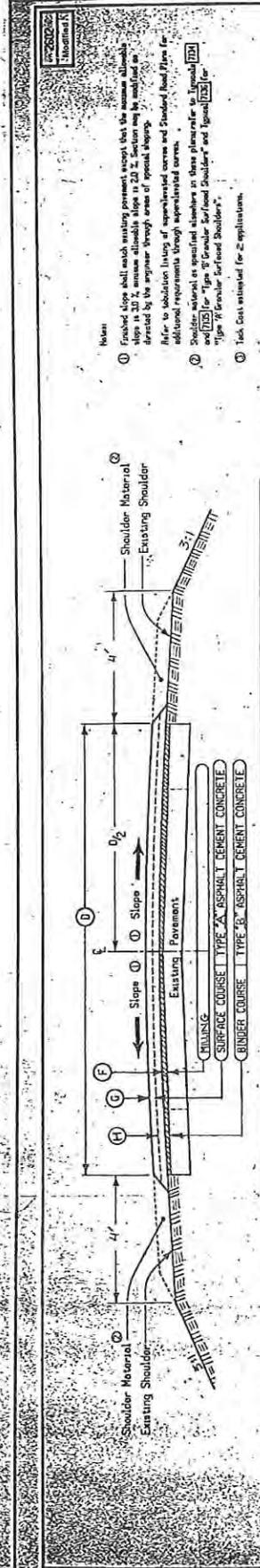
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DESIGN RATES

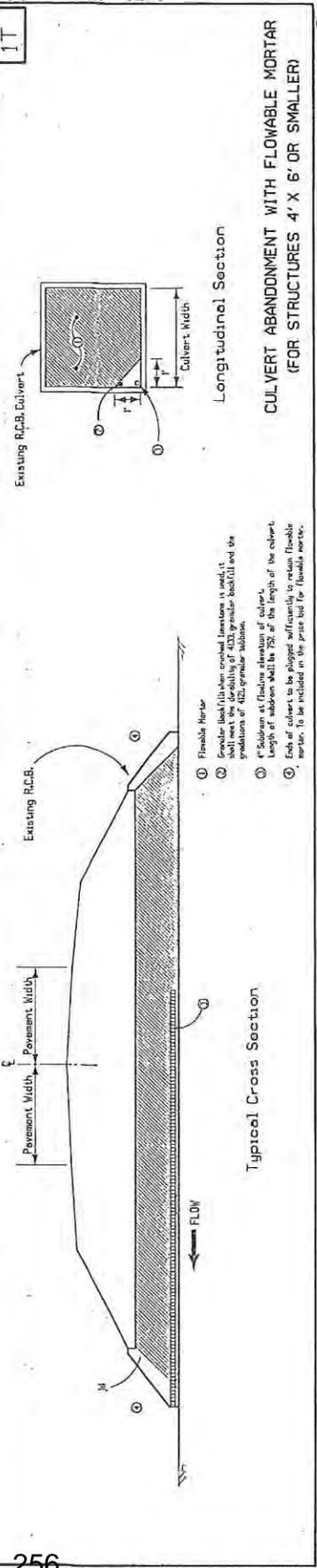
ITEM	RATE
Surface Course	14¢/sq. yd.
Binder Course	14¢/sq. yd.
Subgrade	10¢/sq. yd.
Milling	1.5¢/sq. yd.

TABLE OF DESIGN QUANTITIES Per Section

ROAD IDENTIFICATION	LOCATION	STATION TO STATION	(A) (B) (C) (D) (E) (F) (G) (H)	ASPHALT CEMENT SURFACE BINDER	ASPHALT CEMENT BINDER	Milling
100A 76	200+00	200+00	2	2.5	26.85	16.00
100B 76	200+00	200+00	2	2.5	21.20	10.50
100C 76	200+00	200+00	2	2.5	40.18	21.00
100D 76	200+00	200+00	2	2.5	57.50	28.00
100E 76	200+00	200+00	2	2.5	10.18	21.00
100F 76	200+00	200+00	2	2.5	26.85	16.00

TYPICAL CROSS SECTION
ASPHALT CEMENT CONCRETE RESURFACING

- Notes:
- Finish slope shall match existing pavement except that the maximum allowable slope is 3:1 on areas adjacent to existing slopes. Section may be modified as directed by the engineer through areas of present slope.
 - Refer to subdivision listing of super-elevated curves and Standard Road Plan for additional requirements through super-elevated curves.
 - Shoulder material as specified elsewhere in these plans refer to "Type 1" for "Type 1 Granular Sub-base" and "Type 2" for "Type 2 Granular Sub-base".
 - See Cost estimate for applications.



CULVERT ABANDONMENT WITH FLOWABLE MORTAR
(FOR STRUCTURES 4' X 6' OR SMALLER)

- Flowable Mortar
- Flowable Mortar shall be placed in the culvert to a depth of 4:1 granular sub-base and the projections of 4:1 granular sub-base.
- Sub-base at flowing elevation of culvert.
- Length of abandonment shall be 75% of the length of the culvert.
- Each of culvert to be placed sufficiently to reduce flowable mortar. To be included in the price bid for flowable mortar.

7139
10-02-80

Notes:
Full thickness fillets of asphalt cement concrete shall be constructed at non-paved entrances to farm driveways and other entrances where practical, and at commercial entrances.
Fillet sizes as listed in the table are recommended and shall be used for design and estimating purposes. The fillet shall be constructed under normal conditions at the site.
Special bases of existing surface prior to placement of fillet may be required by the engineer and shall be considered incidental to other work on the project.
① Extended at 15 lbs/cu ft.
② Extended for 2 applications at 100 gal/yard. The work cost for entrance fillets may be allowed when so directed by the engineer.

FILLET FOR NON-PAVED ENTRANCES for ACC Resurfacing

SECTION A-A

NOTE: 3 Entrances are adequate to calculate the quantities.

1301
08-20-80

Notes:
E shall be $\frac{1}{2}$ of roadway slope survey, or others as detailed on plans.
Extension shall be on line of existing structure to L.L. fill or back as specified. Sidings may be required, see Standard Road Plan R-2. Refer to submittal listing and other plans for additional information.
① See Standard Road Plan R-3 for concrete, R-5 for metal.
② Standard type 12" section only when specified in submittal.
③ Existing structure.

PIPE EXTENSION

Notes:
E shall be $\frac{1}{2}$ of roadway slope survey, or others as detailed on plans.
Slope angle is the angle which one end of the pipe is placed by the stationing of line perpendicular to the E. Example size 18" stand 20".
Refer to submittal listing and other plans for additional information.
① See Standard Road Plan R-3 for concrete, R-5 for metal.

PIPE CULVERT

TABLE OF DESIGN QUANTITIES

SURFACE COURSE		PRIME BINDER COURSE		TACK COAT	
Area	Yds	Area	Yds	Area	Yds
0.0482	0.0500	0.0500	0.0482	0.0482	0.0482

NORMAL FILLET SIZE

Type	Size
Res. Entrance	40
Farm Entrance	60
Commercial Ent.	80

1301
08-20-80

Notes:
E Stop Edge Line 75' min. from Center Line of Gravel Road
H Carry Center Line through intersection, carry No-Passing Zone Line through intersection.
① or ② BROKEN CENTERLINE (Yellow)
④ or ⑤ NO PASSING ZONE LINE (Yellow)
⑦ EDGE LINE RIGHT (White)
For location details see Typical Detail 9001

PAVEMENT MARKINGS Typical Intersection (With Gravel Side Road)

101
07-21-87

Notes:
E shall be $\frac{1}{2}$ of roadway slope survey, or others as detailed on plans.
Slope angle is the angle which one end of the pipe is placed by the stationing of line perpendicular to the E. Example size 18" stand 20".
Refer to submittal listing and other plans for additional information.
① See Standard Road Plan R-3 for concrete, R-5 for metal.

PIPE CULVERT

TABLE OF DESIGN QUANTITIES

SURFACE COURSE		PRIME BINDER COURSE		TACK COAT	
Area	Yds	Area	Yds	Area	Yds
0.0482	0.0500	0.0500	0.0482	0.0482	0.0482

NORMAL FILLET SIZE

Type	Size
Res. Entrance	40
Farm Entrance	60
Commercial Ent.	80

7134
05-10-80

Notes:
Dimensions have been determined on the basis of a design depth of 14 lbs. per cubic foot.
E = Thickness of resurfacing in inches x 12.

TYPICAL FILLET SECTION FOR TYPE 'B' GRANULAR SURFACED SHOULDER ADJACENT TO ASPHALT CEMENT CONCRETE RESURFACING

101
07-21-87

Notes:
E shall be $\frac{1}{2}$ of roadway slope survey, or others as detailed on plans.
Slope angle is the angle which one end of the pipe is placed by the stationing of line perpendicular to the E. Example size 18" stand 20".
Refer to submittal listing and other plans for additional information.
① See Standard Road Plan R-3 for concrete, R-5 for metal.

PIPE CULVERT

TABLE OF DESIGN QUANTITIES

SURFACE COURSE		PRIME BINDER COURSE		TACK COAT	
Area	Yds	Area	Yds	Area	Yds
0.0482	0.0500	0.0500	0.0482	0.0482	0.0482

NORMAL FILLET SIZE

Type	Size
Res. Entrance	40
Farm Entrance	60
Commercial Ent.	80

1301
08-20-80

Notes:
E Stop Edge Line 75' min. from Center Line of Gravel Road
H Carry Center Line through intersection, carry No-Passing Zone Line through intersection.
① or ② BROKEN CENTERLINE (Yellow)
④ or ⑤ NO PASSING ZONE LINE (Yellow)
⑦ EDGE LINE RIGHT (White)
For location details see Typical Detail 9001

PAVEMENT MARKINGS Typical Intersection (With Gravel Side Road)

101
07-21-87

Notes:
E shall be $\frac{1}{2}$ of roadway slope survey, or others as detailed on plans.
Slope angle is the angle which one end of the pipe is placed by the stationing of line perpendicular to the E. Example size 18" stand 20".
Refer to submittal listing and other plans for additional information.
① See Standard Road Plan R-3 for concrete, R-5 for metal.

PIPE CULVERT

TABLE OF DESIGN QUANTITIES

SURFACE COURSE		PRIME BINDER COURSE		TACK COAT	
Area	Yds	Area	Yds	Area	Yds
0.0482	0.0500	0.0500	0.0482	0.0482	0.0482

NORMAL FILLET SIZE

Type	Size
Res. Entrance	40
Farm Entrance	60
Commercial Ent.	80

7134
05-10-80

Notes:
Dimensions have been determined on the basis of a design depth of 14 lbs. per cubic foot.
E = Thickness of resurfacing in inches x 12.

TYPICAL FILLET SECTION FOR TYPE 'B' GRANULAR SURFACED SHOULDER ADJACENT TO ASPHALT CEMENT CONCRETE RESURFACING

101
07-21-87

Notes:
E shall be $\frac{1}{2}$ of roadway slope survey, or others as detailed on plans.
Slope angle is the angle which one end of the pipe is placed by the stationing of line perpendicular to the E. Example size 18" stand 20".
Refer to submittal listing and other plans for additional information.
① See Standard Road Plan R-3 for concrete, R-5 for metal.

PIPE CULVERT

TABLE OF DESIGN QUANTITIES

SURFACE COURSE		PRIME BINDER COURSE		TACK COAT	
Area	Yds	Area	Yds	Area	Yds
0.0482	0.0500	0.0500	0.0482	0.0482	0.0482

NORMAL FILLET SIZE

Type	Size
Res. Entrance	40
Farm Entrance	60
Commercial Ent.	80

ALLAMAKEE COUNTY

FN-76-2(18)-21-03

DATE: _____ TIME: _____

SCALE: _____

BY: _____

CHECKED: _____

APPROVED: _____

2B

203-1
1-20-84

Plan and profiles included in the project are for the purpose of alignment, location and specific directions for the work to be performed under this contract. Irrelevant data on these sheets is not to be considered a part of this contract.

204-1
1-20-84

All holes resulting from operations of the contractor, including removal of guardrail posts, fence posts, utility poles, or foundation studies, shall be filled and consolidated to finished grade as directed by the engineer to prevent future settlement. The voids shall be filled as soon as practical—preferably the day created and not later than the following day. Any portion of the right-of-way or project limits (including borrow areas and operation sites) disturbed by any such operations shall be restored to an acceptable condition. This operation shall be considered incidental to other bid items in project.

204-2
1-20-84

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The contractor shall reconstruct the existing shoulders on the project prior to commencing the resurfacing operation. The shoulders shall be constructed to the section shown on the plans. After the final course of resurfacing has been laid, a layer of granular material meeting standard specifications shall be placed at a uniform thickness equal to the resurfacing for the full width of the shoulder.

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The contractor shall be responsible to maintain access to individual properties during construction. Relocated access shall be completed to individual properties prior to removal of existing access. If the permanent access cannot be completed prior to removal of the existing access, the contractor shall provide and maintain an alternate access. Temporary Granular Surfacing will be paid for as a contract item or by extra work.

206-2
6-22-84

The contractor is hereby notified that removal of any existing traffic markers, warning devices or guardrail barriers shall be scheduled subject to the approval of the engineer. The contractor may be required to place temporary warning devices at certain locations where replacement features are not installed the same day during which any such removals take place.

206-3
4-20-84

When the two-line marking system is being used, the centerline may always be placed on one side of the roadway except where a "no passing zone" line is used, at which point it is placed on the opposite side of the roadway.

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ITEM NO.	DESCRIPTION
108-23 10-93B	TRAFFIC CONTROL PLAN
1.	Through traffic will be maintained on the project at all times.
2.	Traffic control on this project shall be in accordance with the 1984 series of Standard Road Plans found in Tab. 105-4 on the project. The contractor shall be responsible for providing all additional complementary information, refer to current "Supplemental Specification for Traffic Control".
3.	The roadway shall be returned to "2-way" traffic during non-working hours.
4.	Where possible, all post mounted signs shall be placed a minimum of 2 feet clear of the shoulder.
5.	All traffic control devices shall be furnished, erected, maintained and removed by the contractor.
6.	The location for storage of equipment by the contractor during non-working hours will be as approved by the engineer in charge of construction.
7.	Proposed sign spacing may be modified as approved by the engineer, to meet existing field restrictions or to prevent obstructions of the motorist's view of permanent signing.
8.	The engineer may require modifications to the pavement marking details shown. Conflicting permanent edgelines, centerlines, or lane lines shall be removed and appropriate temporary lines placed. As applicable, permanent pavement markings shall be in place before the roadway is returned to normal traffic. The standard specifications series of 1984 and current supplemental specifications shall apply.
9.	Proposed changes in the traffic control plan shall be reviewed with the Office of Construction before changes are made.
10.	Individual intersections that must be closed for the paving train (back application through final rolling) to pass through will have a flagger stationed at each approach.
11.	The bid item "Traffic Control" shall include the cost for all traffic control measures required of the contractor except for those which are separate bid items or are incidental to other bid items.
12.	"ROUGH ROAD" signs shall be erected in advance of scarified areas in accordance with section 2214.05 of the General Supplemental Specifications.
13.	Trench shall be closed each night, except in case of emergency.

ROADWAY DESIGN

I hereby certify that this plan was prepared under the supervision and that engineering discipline with regard to the design was made by me or by a duly licensed Professional Engineer under the laws of the State of Iowa.

Name: *Scott E. Hagan* Seal: 1978

Date Registration No. 17578

ITEM NO.	DESCRIPTION
100-4 10-93B	ESTIMATE REFERENCE INFORMATION
1.	Item is for milling as per Plan. It is intended to recycle oil millied material. No payment for overhead will be allowed.
2.	Includes 30 tons for fillets. Includes 5% for irregularities. Use 50 Marshall Blows.
3.	Includes 30 tons for fillets. Includes 5% for irregularities. Use 50 Marshall Blows.
4.	Estimate of 2 emulsions. Quantity includes prime and tack for entrance fillets.
5.	Estimates at 5.75¢ for 3/4" type #4 binder course, 6¢ for 1 1/2" type #4 surface course, and 5.75¢ for strength course. The millied asphalt is estimated to contain 5% of asphalt cement. The estimate is based on recycled mixture with 15% salvaged material. Calculations of the asphalt cement bid are as follows: Surface Course 631 tons @ 6¢ = 360 tons Binder Course 7950 tons @ 5.75¢ = 457 tons Strength Course 2825 tons @ 5.75¢ = 163 tons TOTAL AC REQUIRED = 1 000 tons (17,083,151.05) = 128.3 tons TOTAL AC TO BID 872
6.	See Tab. 108-22 & Typical 9801.
7.	Includes 90 cu. yds for drainage structure. Includes 2367 cu. yds. for safety dikes. Approved material shall be obtained from subdrain trench excavation.
8,9.	See Tab. 104-5, 2303 e.v. TO BE USED AS EMBANKMENT-IN-PLACE. THE REMAINING SUBDRAIN TRENCH EXCAVATION MATERIAL TO BE DISPOSED OF OFF SITE AS PER 213-1. NO PAYMENT FOR OVERHAUL WILL BE ALLOWED.
10-12.	See Tab. 804-3 & 110-5.
13,14.	See Tab. 102-1A.
16.	See Tab. 100-1.
17,18.	See Tab. 102-6C for locations. Includes 15¢ for discretionary patches.
19.	To be placed at the direction of the engineer.
20-25.	See 104-5.
26.	Included for oil disturbed areas following the final construction as designated by the engineer.
27.	Seed Mixture, 31 or Fern 65 lbs. per acre Reseed, Perennial 35 lbs. per acre Birdproof Trefoil (tampr) 5 lbs. per acre
28.	Fertilizer: Rate—750 lbs. of 13-23-13 chemically combined commercial fertilizer per acre. 25. Mulch Rate—1 1/2 tons of dry cereal straw per acre. All mulch to be consolidated into the soil which mulch tiller.
29.	See Typical 712A

NO.	ITEM	UNIT	TOTAL
1.	Emulsion Scarification	TONS	2-824-24870
2.	3/4" Type #4 A.C.C. Binder Course	TONS	6-320-26246
3.	1 1/2" Type #4 A.C.C. Surface Course	TONS	7-253-26246
4.	Prime or Tack Coat Bitumen	TONS	5-274-7466
5.	Asphalt Cement	TONS	877-26246
6.	Emulsion Mixture	TONS	3-707-26246
7.	Emulsion-In-Place	TONS	3-707-26246
8.	Emulsion Subdrain (Shovelbar)	TONS	2-824-26246
9.	Emulsion Seal	TONS	2-824-26246
10.	Emulsion Seal	TONS	2-824-26246
11.	Flowable Bitumen	TONS	2-824-26246
12.	1 1/2" Fin Gravel	TONS	97-4-4
13.	18" Unclassified Entrance Pipe Culvert	LINEAL FEET	2-824-26246
14.	18" Unclassified Apron	LINEAL FEET	2-824-26246
15.	Clean-up and Preparation of Base	LINEAL FEET	2-824-26246
16.	1/2" Type #4 Wdg. Level of A.C.C. Strength	LINEAL FEET	3-707-26246
17.	Full Depth Patching by Area	SQ. YDS.	2-824-26246
18.	Full Depth Patching by Count	SQ. YDS.	2-824-26246
19.	Surface Patch	TONS	2-824-26246
20.	30" Concrete Roadway Pipe Culvert	LINEAL FEET	2-824-26246
21.	4" A.C.C. Pre-Cast Concrete Stack Pipe 18"-8	LINEAL FEET	2-824-26246
22.	30" Concrete Aprons	TONS	2-824-26246
23.	4" A.C.C. Pre-Cast Concrete Apron 18"-8	LINEAL FEET	2-824-26246
24.	Seed and Fertilizer	ACRES	2-824-26246
25.	TRAFFIC CONTROL	ACRES	2-824-26246
26.	Stamp	LUMPS	2-824-26246
27.	Price Adjustment - Filler-Bitumen Ratio	TONS	2-824-26246
28.	Price Adjustment - Filler-Bitumen Ratio	TONS	2-824-26246
29.	Price Adjustment - Filler-Bitumen Ratio	TONS	2-824-26246
3000.	Synthetic	Lump Sum	2-824-26246
3001.	Price Adjustment - Filler-Bitumen Ratio	Lump Sum	2-824-26246
3002.	Price Adjustment - Filler-Bitumen Ratio	Lump Sum	2-824-26246
3003.	Price Adjustment - Filler-Bitumen Ratio	Lump Sum	2-824-26246
3004.	Price Adjustment - Filler-Bitumen Ratio	Lump Sum	2-824-26246

TABULATION OF UTILITIES

The following information is for utility identification on project. FN-76-2(18)-21-03

Alliwaukee-Clayton County R.L.C.
238 W. Greene Street
P.O. Box 715
Pestville, IA 52102

ACE Telephone Co.
207 East Cedar
Houston, MN 55943

U.S. West Communications
615 Third Ave., S.E.
Cedar Rapids, IA 52401

Northwestern Bell Telephone Co.
403 Syracuse
Iowa City, IA 52202

Interstate Power Co.
1000 N. 3rd
Dubuque, IA 52001

K Not a bid item										R Not a bid item										
TERRACE TO STANDARD ROAD PLAN RP-19C										TERRACE TO STANDARD ROAD PLAN RP-19C										
SHOULDER AND BRICK SLIPE										SHOULDER AND BRICK SLIPE										
No.	DESCRIPTION	IN 76	DEPTH	BACKSLOPE	SHOULDER	OUTLET	CLASS	PER UNIT	UNIT PRICE	No.	DESCRIPTION	IN 76	DEPTH	BACKSLOPE	SHOULDER	OUTLET	CLASS	PER UNIT	UNIT PRICE	
91	1876	495.00	470.00	RT 42'	4"	540-528	54	495.00	470.00	130	1876	694.00	699.00	RT 36'	4"	540-528	54	694.00	699.00	
92	1876	470.00	475.00	RT 42'	4"	540-528	54	470.00	475.00	131	1876	706.00	710.00	RT 36'	4"	540-528	54	706.00	710.00	
93	1876	475.00	480.00	RT 42'	4"	540-528	54	475.00	480.00	132	1876	710.00	714.00	RT 42'	4"	540-528	54	710.00	714.00	
94	1876	480.00	485.00	RT 42'	4"	540-528	54	480.00	485.00	133	1876	714.00	718.00	RT 42'	4"	540-528	54	714.00	718.00	
95	1876	485.00	490.00	RT 42'	4"	540-528	54	485.00	490.00	134	1876	718.00	722.00	RT 42'	4"	540-528	54	718.00	722.00	
96	1876	490.00	495.00	RT 42'	4"	540-528	54	490.00	495.00	135	1876	722.00	726.00	RT 42'	4"	540-528	54	722.00	726.00	
97	1876	495.00	500.00	LT 42'	4"	540-528	54	495.00	500.00	136	1876	726.00	730.00	RT 42'	4"	540-528	54	726.00	730.00	
98	1876	500.00	505.00	LT 42'	4"	540-528	54	500.00	505.00	137	1876	730.00	734.00	RT 42'	4"	540-528	54	730.00	734.00	
99	1876	505.00	510.00	LT 42'	4"	540-528	54	505.00	510.00	138	1876	734.00	738.00	RT 42'	4"	540-528	54	734.00	738.00	
100	1876	510.00	515.00	LT 42'	4"	540-528	54	510.00	515.00	139	1876	738.00	742.00	LT 42'	4"	540-528	54	738.00	742.00	
101	1876	515.00	520.00	LT 42'	4"	540-528	54	515.00	520.00	140	1876	742.00	746.00	LT 42'	4"	540-528	54	742.00	746.00	
102	1876	520.00	525.00	LT 42'	4"	540-528	54	520.00	525.00	141	1876	746.00	750.00	LT 42'	4"	540-528	54	746.00	750.00	
103	1876	525.00	530.00	LT 42'	4"	540-528	54	525.00	530.00	142	1876	750.00	754.00	LT 42'	4"	540-528	54	750.00	754.00	
104	1876	530.00	535.00	LT 42'	4"	540-528	54	530.00	535.00	143	1876	754.00	758.00	LT 42'	4"	540-528	54	754.00	758.00	
105	1876	535.00	540.00	LT 42'	4"	540-528	54	535.00	540.00	144	1876	758.00	762.00	LT 42'	4"	540-528	54	758.00	762.00	
106	1876	540.00	545.00	LT 42'	4"	540-528	54	540.00	545.00	145	1876	762.00	766.00	LT 42'	4"	540-528	54	762.00	766.00	
107	1876	545.00	550.00	LT 42'	4"	540-528	54	545.00	550.00	146	1876	766.00	770.00	LT 42'	4"	540-528	54	766.00	770.00	
108	1876	550.00	555.00	LT 42'	4"	540-528	54	550.00	555.00	147	1876	770.00	774.00	LT 42'	4"	540-528	54	770.00	774.00	
109	1876	555.00	560.00	LT 42'	4"	540-528	54	555.00	560.00	148	1876	774.00	778.00	LT 42'	4"	540-528	54	774.00	778.00	
110	1876	560.00	565.00	LT 42'	4"	540-528	54	560.00	565.00	149	1876	778.00	782.00	LT 42'	4"	540-528	54	778.00	782.00	
111	1876	565.00	570.00	LT 42'	4"	540-528	54	565.00	570.00	150	1876	782.00	786.00	LT 42'	4"	540-528	54	782.00	786.00	
112	1876	570.00	575.00	LT 42'	4"	540-528	54	570.00	575.00	151	1876	786.00	790.00	LT 42'	4"	540-528	54	786.00	790.00	
113	1876	575.00	580.00	LT 42'	4"	540-528	54	575.00	580.00	152	1876	790.00	794.00	LT 42'	4"	540-528	54	790.00	794.00	
114	1876	580.00	585.00	LT 42'	4"	540-528	54	580.00	585.00	153	1876	794.00	798.00	LT 42'	4"	540-528	54	794.00	798.00	
115	1876	585.00	590.00	LT 42'	4"	540-528	54	585.00	590.00	154	1876	798.00	802.00	LT 42'	4"	540-528	54	798.00	802.00	
116	1876	590.00	595.00	LT 42'	4"	540-528	54	590.00	595.00	155	1876	802.00	806.00	LT 42'	4"	540-528	54	802.00	806.00	
117	1876	595.00	600.00	LT 42'	4"	540-528	54	595.00	600.00	156	1876	806.00	810.00	LT 42'	4"	540-528	54	806.00	810.00	
118	1876	600.00	605.00	LT 36'	4"	540-512	54	600.00	605.00	157	1876	810.00	815.00	LT 42'	4"	540-528	54	810.00	815.00	
119	1876	605.00	610.00	LT 36'	4"	540-512	54	605.00	610.00	158	1876	815.00	820.00	LT 42'	4"	540-528	54	815.00	820.00	
120	1876	610.00	615.00	LT 42'	4"	540-528	54	610.00	615.00	159	1876	820.00	825.00	LT 42'	4"	540-528	54	820.00	825.00	
121	1876	615.00	620.00	LT 42'	4"	540-528	54	615.00	620.00	160	1876	825.00	830.00	LT 42'	4"	540-528	54	825.00	830.00	
122	1876	620.00	625.00	LT 42'	4"	540-528	54	620.00	625.00	161	1876	830.00	835.00	LT 42'	4"	540-528	54	830.00	835.00	
123	1876	625.00	630.00	LT 42'	4"	540-528	54	625.00	630.00	162	1876	835.00	840.00	LT 42'	4"	540-528	54	835.00	840.00	
124	1876	630.00	635.00	LT 42'	4"	540-528	54	630.00	635.00	163	1876	840.00	845.00	LT 42'	4"	540-528	54	840.00	845.00	
125	1876	635.00	640.00	LT 42'	4"	540-528	54	635.00	640.00	164	1876	845.00	850.00	LT 42'	4"	540-528	54	845.00	850.00	
126	1876	640.00	645.00	LT 42'	4"	540-528	54	640.00	645.00	165	1876	850.00	855.00	LT 42'	4"	540-528	54	850.00	855.00	
127	1876	645.00	650.00	LT 42'	4"	540-528	54	645.00	650.00	166	1876	855.00	860.00	LT 42'	4"	540-528	54	855.00	860.00	
128	1876	650.00	655.00	LT 42'	4"	540-528	54	650.00	655.00	167	1876	860.00	865.00	LT 42'	4"	540-528	54	860.00	865.00	
129	1876	655.00	660.00	LT 42'	4"	540-528	54	655.00	660.00	168	1876	865.00	870.00	LT 42'	4"	540-528	54	865.00	870.00	
130	1876	660.00	665.00	LT 42'	4"	540-528	54	660.00	665.00	169	1876	870.00	875.00	LT 42'	4"	540-528	54	870.00	875.00	
131	1876	665.00	670.00	LT 42'	4"	540-528	54	665.00	670.00	170	1876	875.00	880.00	LT 42'	4"	540-528	54	875.00	880.00	
132	1876	670.00	675.00	LT 42'	4"	540-528	54	670.00	675.00	171	1876	880.00	885.00	LT 42'	4"	540-528	54	880.00	885.00	
133	1876	675.00	680.00	LT 42'	4"	540-528	54	675.00	680.00	172	1876	885.00	890.00	LT 42'	4"	540-528	54	885.00	890.00	
134	1876	680.00	685.00	LT 42'	4"	540-528	54	680.00	685.00	173	1876	890.00	895.00	LT 42'	4"	540-528	54	890.00	895.00	
135	1876	685.00	690.00	LT 42'	4"	540-528	54	685.00	690.00	174	1876	895.00	900.00	LT 42'	4"	540-528	54	895.00	900.00	
136	1876	690.00	695.00	LT 42'	4"	540-528	54	690.00	695.00	175	1876	900.00	905.00	LT 42'	4"	540-528	54	900.00	905.00	
137	1876	695.00	700.00	LT 42'	4"	540-528	54	695.00	700.00	176	1876	905.00	910.00	LT 42'	4"	540-528	54	905.00	910.00	
138	1876	700.00	705.00	LT 42'	4"	540-528	54	700.00	705.00	177	1876	910.00	915.00	LT 42'	4"	540-528	54	910.00	915.00	

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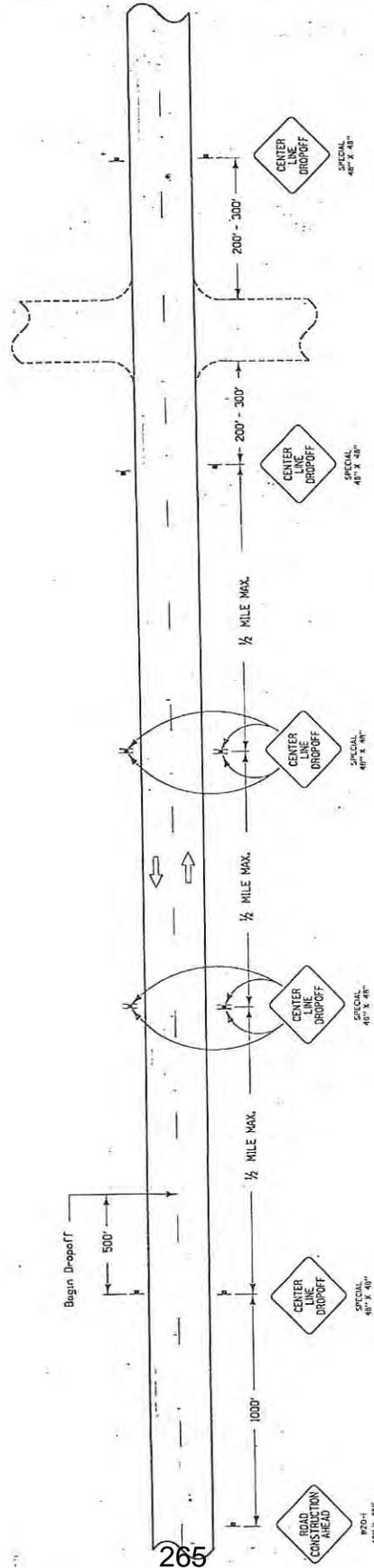
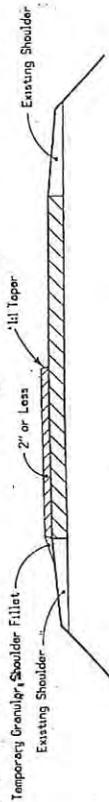
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TWO LANE ROADWAY



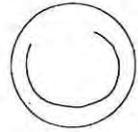
GENERAL NOTES

- Centerlines, edgelines and "No Passing Zone" lines shall be replaced according to specification 2527.03C.
- If design thickness exceeds two inches, refer to Detail Sheets 520-17B and 520-17C.

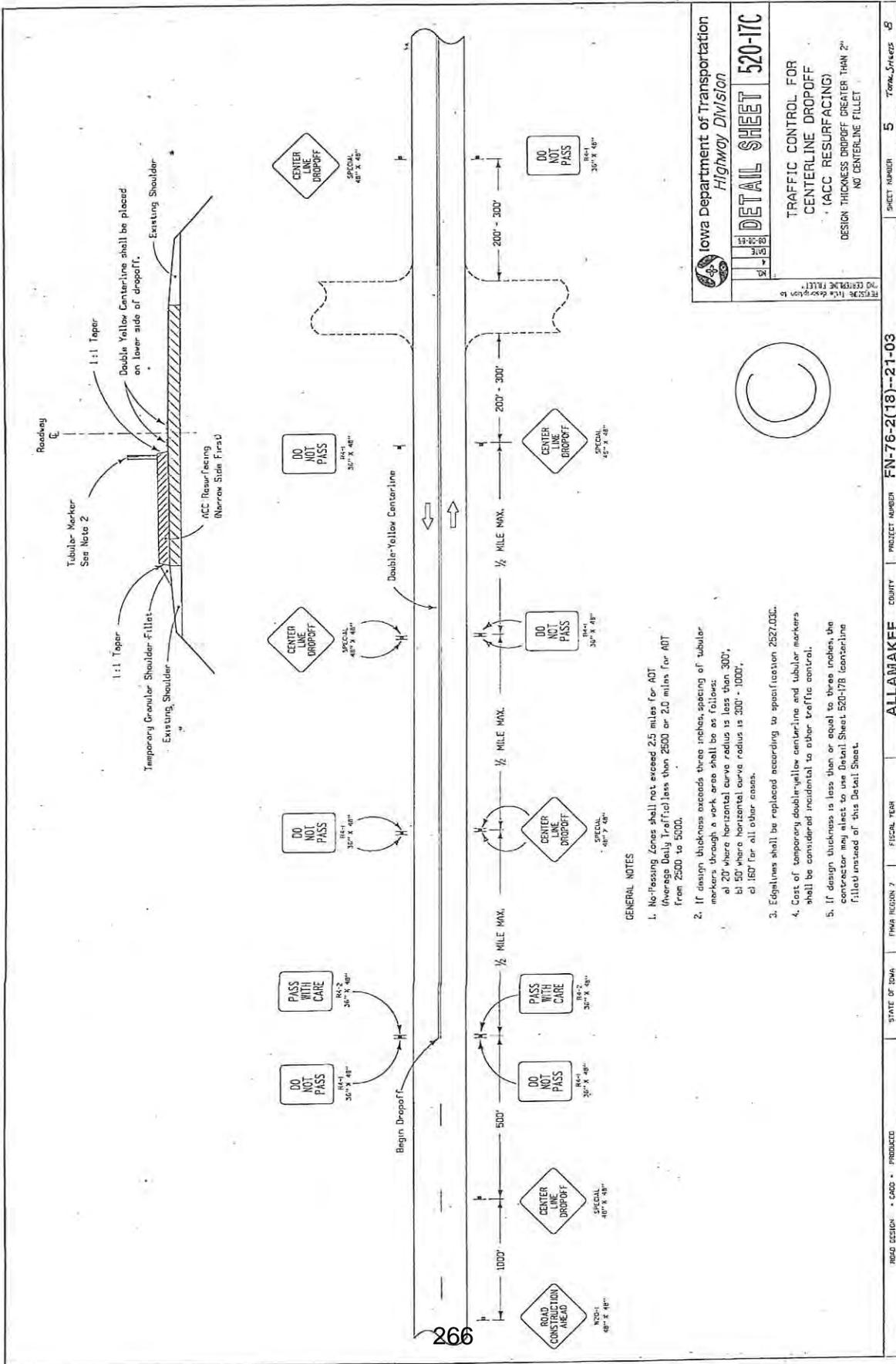
Iowa Department of Transportation
Highway Division

DETAIL SHEET 520-17A

TRAFFIC CONTROL FOR
CENTERLINE DROPOFF
(ACC RESURFACING)
DESIGN THICKNESS DROPOFF - 2" AND LESS
NO CENTERLINE FILLET



STATE OF IOWA	FHA REGION 7	FISCAL YEAR	COUNTY	PROJECT NUMBER	SHEET NUMBER	TOTAL SHEETS
			ALLAMAKEE	FN-76-2(18)--21-03	4	8



GENERAL NOTES

1. No-passing Zones shall not exceed 2.5 miles for ADT (Average Daily Traffic) less than 2500 or 2.0 miles for ADT from 2500 to 5000.
2. If design thickness exceeds three inches, spacing of tubular markers through a work area shall be as follows:
 - a) 20' where horizontal curve radius is less than 300'
 - b) 50' where horizontal curve radius is 300' - 1000'
 - c) 100' for all other cases.
3. Edgelines shall be replaced according to specification 2527.00C.
4. Cost of temporary double-yellow centerline and tubular markers shall be considered incidental to other traffic control.
5. If design thickness is less than or equal to three inches, the contractor may elect to use Detail Sheet 520-178 Centerline Filled instead of this Detail Sheet.

Iowa Department of Transportation
 Highway Division

DETAIL SHEET 520-17C

TRAFFIC CONTROL FOR
 CENTERLINE DROPOFF
 (ACC RESURFACING)
 DESIGN THICKNESS DROPOFF GREATER THAN 2"
 NO CENTERLINE FILLET

SCALE: 1" = 40'

DATE: 12/22/00

BY: [Signature]

PROJECT NUMBER: FN-76-2(18)--21-03

COUNTY: ALLAMAKEE

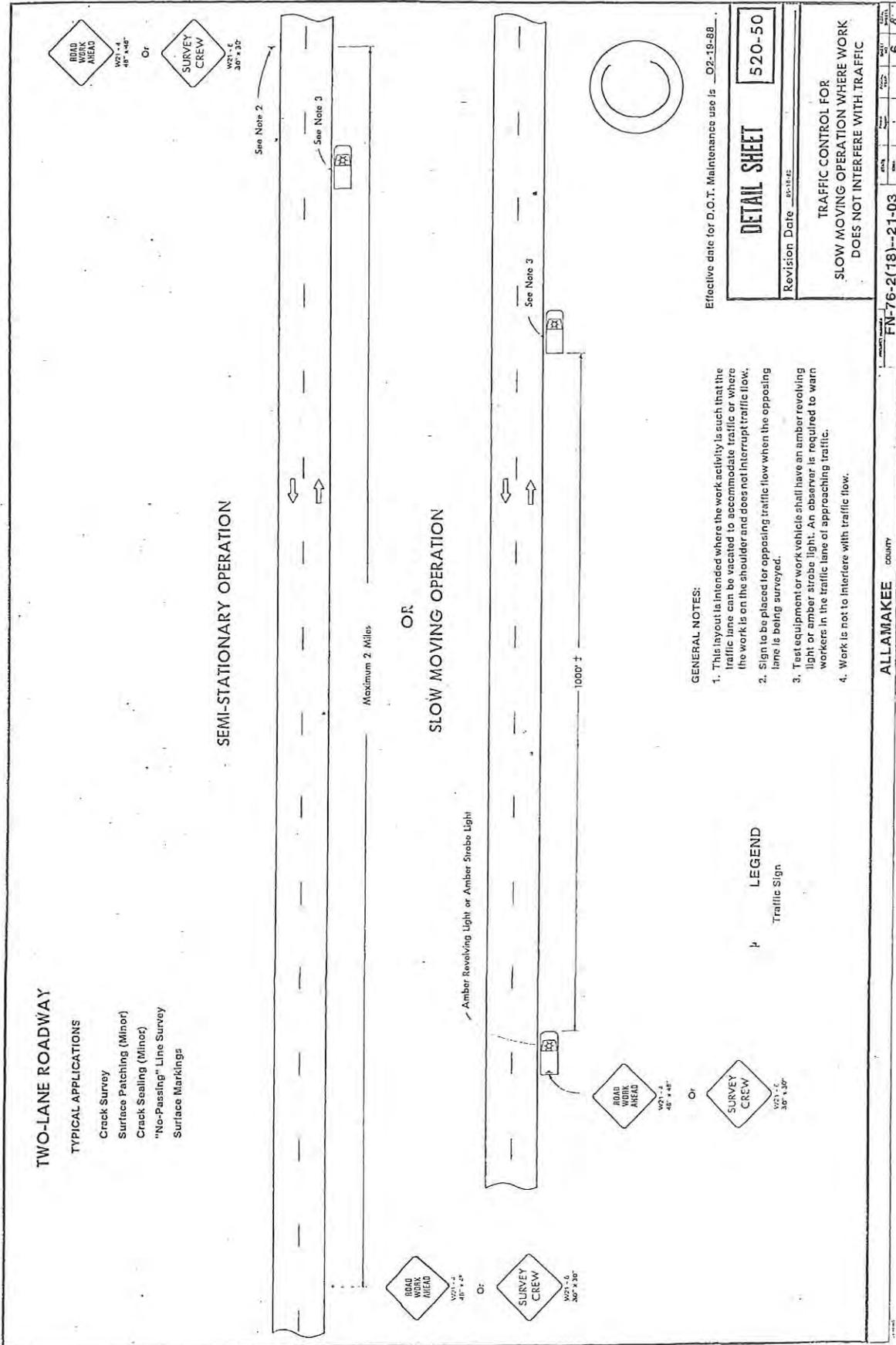
FISCAL YEAR: 2007

STATE OF IOWA

PRODUCED BY: [Signature]

SHEET NUMBER: 5

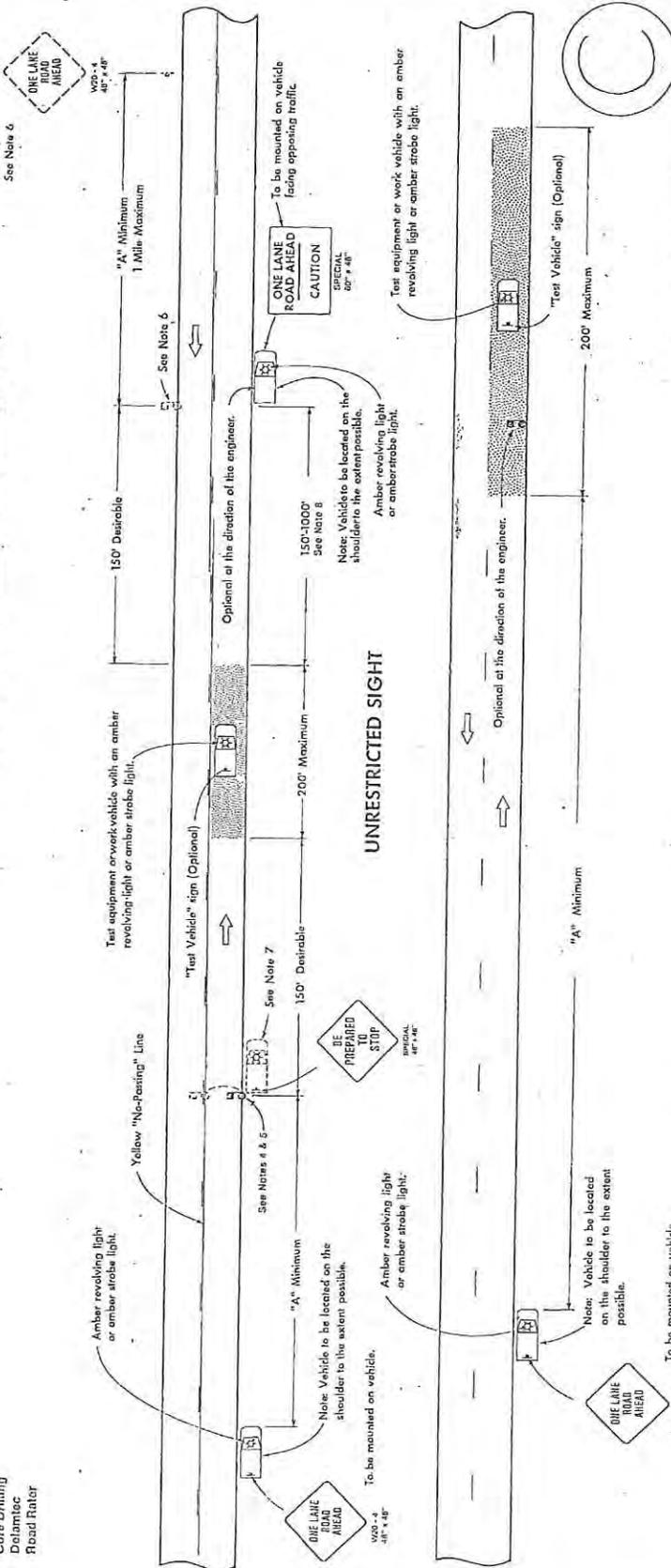
TOTAL SHEETS: 8



**TWO-LANE ROADWAY
TYPICAL APPLICATIONS**

Prolometer
Core Drilling
Delmatic
Road Rater

RESTRICTED SIGHT (Typically a "No-Passing" Zone)



Effective date for D.O.T. Maintenance use is 05-01-89

Iowa Department of Transportation
Highway Division
DETAIL SHEET 520-51B
TRAFFIC CONTROL FOR MOVING OPERATIONS
IN THE TRAFFIC LANE
WHERE STOPS ARE ANTICIPATED

When a stop is made or work proceeds in an area where sight distance is restricted from either direction, and is anticipated to be more than 5 minutes, a second flagger and "One Lane Road Ahead" sign shall be required. In the event visual contact cannot be maintained, radio contact shall be required between the flaggers.

This vehicle and sign may be used in lieu of a flagger for Road Rater tests.

Minimum distance preferred. Distance may be increased up to the maximum to provide adequate sight distance for opposing traffic.

The slow-moving vehicle should pull aside, as necessary, to prevent traffic backup.

- GENERAL NOTES:**
- Conditions represented are for work which requires closing the traffic lane during daylight hours only.
 - Amber revolving light to be visible to traffic at all times.
 - This layout is intended for use with slow-moving operations (25 mph or less) with a maximum of 30 minutes of heavy traffic situations. Road Standard RS-3 shall replace this layout.
 - Traffic in the open lanes shall be allowed to flow freely. The flagger shall stop the traffic lane in the closed lane in the position shown, then cross the traffic lane to stop other vehicles.
 - When a stop is made for less than 5 minutes in an area of restricted sight distance, traffic in the closed lane shall be held by a flagger and allowed to pass when conditions are safe.

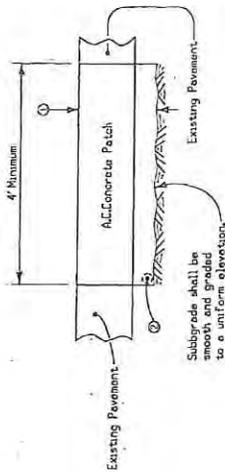
- LEGEND**
- Traffic Sign
 - Work Area
 - Flagger

Legal Speed Limit	Approximate Sign Spacing 'A'
0-25	200'
25-35	300'
35-50	500'
Over 50	1000'

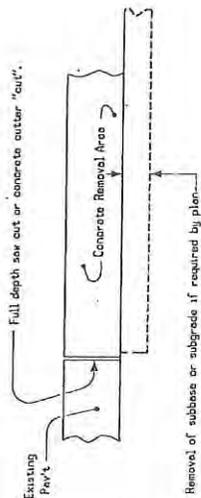
STATE OF IOWA
PADA WELSH 7
FISSEL, 1924
COUNTY
PROJECT NUMBER
ALLAMAKEE
FN-76-2(1B)--21-03
SHEET NUMBER 7
TOTAL SHEETS 8

NOTES:

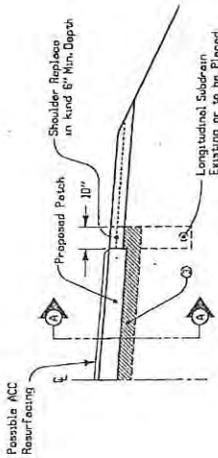
- ① INTERSTATE- Thickness of existing pavement but not less than 12" shall be removed and replaced with concrete. If excavation exceeds 12 inches contractor may fill with Class "A" road stone or additional patch material. The class "A" road stone or additional patch material is incidental to patch. No granular sub-base is required by plan.
- ② OTHER - The thickness for ACC shall be greater than Interstate and Primary will be designated on the plan.
- ③ If longitudinal subdrain (shoulder) is not to be placed or if not present on side of roadway, then place proposed 3 inch slotted corrugated pipe at low end of patch.
- ④ 6 inches granular subbase is required by plan. When placed, granular subbase should extend over longitudinal subdrain, if present.



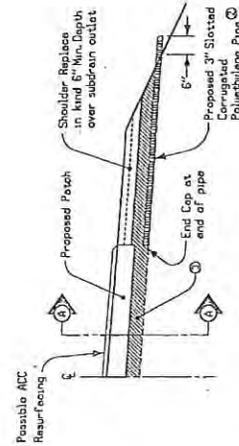
SECTION A-A



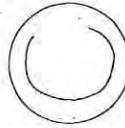
PAVEMENT REMOVAL DETAILS
LONGITUDINAL SECTION



GRANULAR SUBBASE AND SUBDRAIN
(WHEN REQUIRED BY PLAN)
IF LONGITUDINAL SUBDRAIN IS PRESENT OR IS TO BE PLACED



GRANULAR SUBBASE AND SUBDRAIN
(WHEN REQUIRED BY PLAN)
WITHOUT LONGITUDINAL SUBDRAIN



Iowa Department of Transportation
Highway Division

DETAIL SHEET 532-1

FULL DEPTH PATCH
A. C. CONCRETE

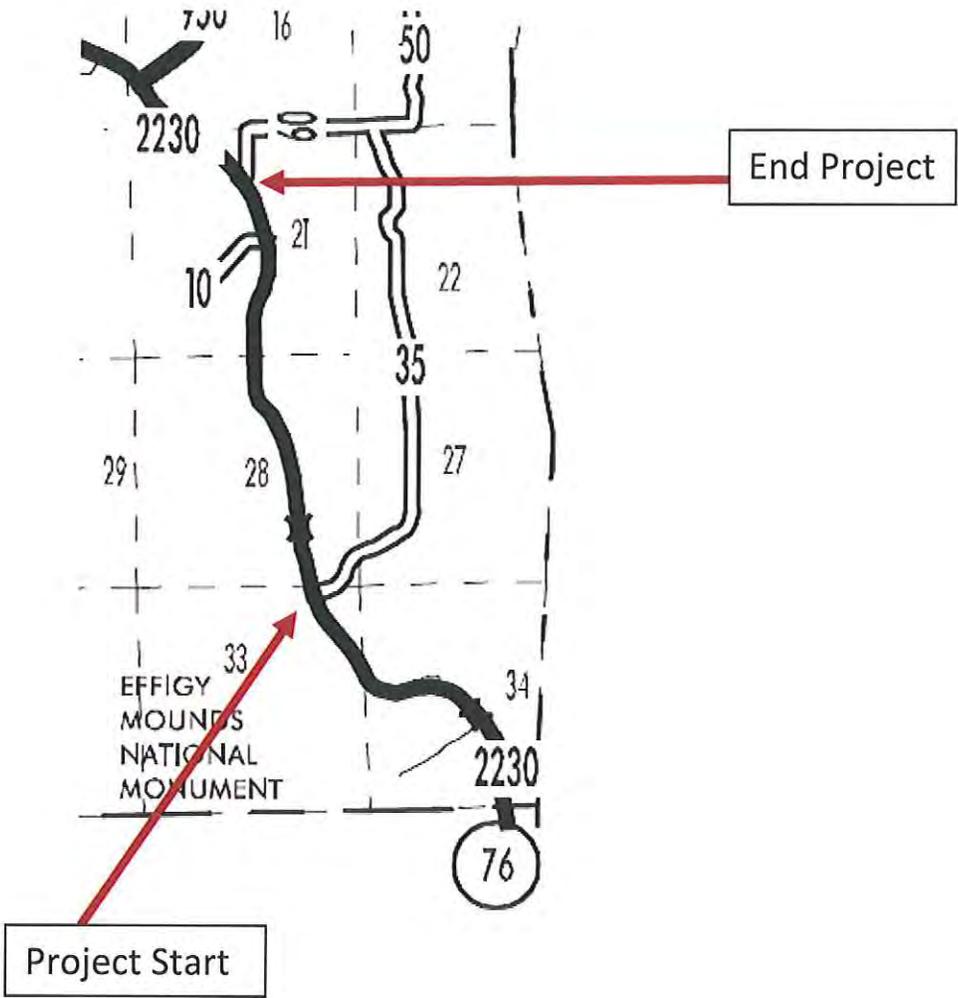
Aerial Photograph



Project Start

End Project

Traffic Volumes



Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

DOCUMENT L

County: Allamakee Prepared by: Dave Little Date Prepared: Jun 10, 2011
 Location: IA 76@Milepost 9.25 to Milepost 10.90, North of Marquette

Improvement

Proposed Improvement(s): Upgrade Signing, Adjust Traffic Lanes, Place Shoulder Rumble Strips

\$ 61,423 Estimated Improvement Cost, EC	20 Est. Improvement Life, years, Y
\$ - Other Annual Cost (after initial year), AC	28 Crash Reduction Factor (integer), CRF
\$ - Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	\$ 61,423 Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT Date of traffic count: 2009

Two-way

Length (mi.)	veh/day	Description
1.65	2,330	
1.65 miles total		

3,845 Current Vehicle Miles / Day, **VM**
 4,466 End of Life Veh. Miles / Day
 1,403,243 Current Veh. Miles / Year, **AM**
 9,447,880 Total Projected Veh. Miles Over
 Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

2.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

<u>2005</u> First full year -->	<u>2009</u> Last full year				5.0 years, Time Period, T
<u>0</u> Additional months					<u>values as of Dec. 2007</u>
<u>0</u> Fatal Crashes	<u>0</u>	Fatalities @	\$3,500,000	\$	-
	<u>0</u>	Major Injuries @	\$240,000	\$	-
<u>3</u> Injury Crashes	<u>1</u>	Minor Injuries @	\$48,000	\$	48,000
	<u>2</u>	Possible Injuries @	\$25,000	\$	50,000
<u>6</u> Property Damage Only		(assumed cost per crash)	\$2,700	\$	18,900
<u>9</u> Total Crashes, TA		-OR- enter all Property Costs of all crashes:			<u>Total \$ Loss, LOSS \$ 283,900</u>

1.80 Current Crashes / Year, **AA = TA / T**
 \$ 31,544 Cost per Crash, **AVCR = LOSS / TA**
 12.1 Total Expected Crashes, **TCR = CR x TVMT / 10^8**
 0.50 Crashes Avoided First Year **AAR = AA x CRF / 100**
 \$ 15,898 Crash Costs Avoided in First Year, **AAR x AVCR**
 3.4 Total Avoided Crashes, **TCR x CRF / 100**

128.3 Crashes / HMVM, Crash Rate, **CR**
 CR = TA x 10^8 / (AM x T)
\$ 255,831 Present Value of Avoided
 Crashes, **BENEFIT**

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$255,831 : \$61,423 = 4.17 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 Location / Title of Project Oelwein 4-3 Lane Conversion

 Applicant District 2 Office

 Contact Person Dave Little Title Assist. District Engineer

 Complete Mailing Address 1420 Fourth Street SE
Mason City, IA 50401

 Phone 641-423-7584 E-Mail david.little@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

 Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific
 Traffic Control Device
 Safety Study
Funding Amount

 Total Project Cost \$ 49,300

 Safety Funds Requested \$ 49,300

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the District 2 Office

Signed: *David L. Little* *Jun 9, 2011*
Signature Date Signed

David L. Little, P.E.
Typed Name

Attest: *Vicki L. Dumdei* *June 10 2011*
Signature Date Signed

Vicki L. Dumdei, P.E.
Typed Name

DOCUMENT A

City of Oelwein, Iowa



City Hall
20 - 2nd Avenue Southwest
Oelwein, Iowa 50662
(819) 288-5440

April 12, 2011

Vicki Dumdei, District Engineer
Iowa Department of Transportation
1420 4th Street SE
Mason City, Iowa 50401

Dear Ms. Dumdei:

RE: Highway 3

The Oelwein City Council is supportive of efforts to acquire Traffic Safety Funds for Highway 3 in Oelwein. The East Charles Street portion (from Highway 150 to approximately 9th Avenue SE) would lend itself to being converted from a 4-lane road into a 3-lane with trail.

We support your efforts to accomplish this goal.

Sincerely,

Steven H. Kendall,
City Administrator

IOWA DEPARTMENT OF TRANSPORTATION
District 2

APR 13 2011

MASON CITY, IA

Document B(1)

Application Narrative:

Characteristics of Existing Corridor:

The City of Oelwein is located in Fayette County and has a population of 6,415 according to the 2010 Census.

IA 3 is a 4-lane undivided corridor at the intersection with IA 150 and transitions to a 2-lane corridor east of the intersection with 9th Avenue East. This is the section District 2 would like TSIP funding to convert this 0.54 mile section from a four lane undivided corridor to a 3-lane highway with a continuous center turn lane.

The corridor contains two signalized intersections, one at the intersection of IA 3 and IA 150, the other at the intersection of IA 3 and 8th Avenue East. Along eastbound and westbound IA 3 at this location, the city has 2 – 3-section signal heads in place on each traffic signal mast arm. There are no protected turns for eastbound or westbound traffic at this location and there are no turn lanes in place. There are “8th Ave E” street name signs in place on each of these traffic signal mast arms. District 2 Traffic Technician Bob Clark believes as long as there are no protected turn movements at this location for eastbound or westbound traffic, the 2 – 3-section signal heads meet the MUTCD Standard and Support guidelines for this intersection, whether it is a 4-lane undivided corridor or a 3-lane corridor.

Along westbound IA 3, at the signalized intersection with IA 150, the city has 2 – 3-section signal heads in place on the traffic signal mast arm. We have a right lane drop at this intersection and motorists in the left lane can make either a straight thru or left turn movement. There are no protected turns for eastbound or westbound traffic at this location. There is a “1st Ave E” sign and a “Lane Use Arrow-Right Only” sign in place on the traffic signal mast arm facing westbound approaching traffic. According to the 2009 Annual Average Daily Traffic Volumes for this intersection, 590 vehicles daily make a westbound to northbound right turn movement and 907 vehicles daily make a westbound to southbound left turn movement. Also, 1,099 vehicles daily make a westbound straight thru movement at this intersection. Two accesses that may have a bearing on changes we implement at this intersection in conjunction with a 3-lane conversion may be the access for the Subway business, which is in place on the north side of IA 3, and the access for a church, which is in place on the south side of IA 3. Each of these accesses is in place approximately 50’ in advance of the stop bar east of the intersection.

Document B(2)

The lane configuration at IA 3 and IA 150 may need to be modified with a westbound center left turn lane, and westbound combination straight thru and right turn movement in conjunction with this 3-lane conversion. Also, as long as there is no protected turn movement phasing in place on the traffic signals at this location for westbound traffic, District 2 Traffic Technician Bob Clark believes the 2 – 3-section signal heads that are in place meet the 2009 MUTCD Standard and Support guidelines contained in Section 4D.17, Paragraph 10 for this intersection, if the east IA 3 leg is converted to a 3-lane corridor with a center left turn lane at the intersection.

Crash History:

The crash history for this segment of IA 3 in the corporate limits of the City of Oelwein was studied for the period from January 1st, 2005 through December 31st, 2009 (5 years). A total of 25 crashes were found in this time period.

Of the 25 crashes, 1 included a possible injury, the other 24 resulted in property damage only. Total property damage in all crashes in this corridor totaled \$81,622. The total cost of crashes in the corridor, including property damage costs and costs associated with personal injuries, added up to \$106,622 for the studied 5 years. This translates into a crash rate of 505.3 crashes per hundred million vehicle miles of travel (HMVM). That is 55% higher than the statewide average of 325 crashes per HMVM.

The IA 3 corridor in Oelwein shows a history of crash types that are commonly associated with four-lane undivided roadways. Of the 25 crashes:

- 6 of the crashes involved a driver failing to yield right of way while making a left turn. The four-lane cross-section creates a sightline blockage for opposing left-turning vehicles.
- 8 were rear-end crashes
- 3 were sideswipe same-direction crashes
- 1 was opposite direction sideswipe.

Anticipated Benefits of Proposed Improvements:

The IA Highway 3 Corridor in Oelwein has developed a crash history that is typical for a four-lane undivided roadway and is well above the statewide average for municipal highway facilities. The proposed improvements associated with the four-lane to three-lane conversion project will reduce the potential for crashes associated with a four-lane undivided facility while supporting the efficient flow of through traffic on the highway.

Document B(3)

- Left turn crashes from IA 3 to minor streets and driveways will potentially be reduced as the three-lane cross-section positions opposing left-turning vehicles “head to head”, maintaining the sightline to through traffic. Left-turning drivers will have a clear view of oncoming vehicles, simplifying the task of selecting an adequate gap to complete the turning maneuver.
- Rear-end crashes involving left-turning vehicles will potentially be reduced. The difference in travel speed between through vehicles and left-turning vehicles contributes to the potential for rear-end crashes in shared-use lanes. With the proposed improvements, left-turning vehicles are removed from the through traffic at all potential turning points in the corridor.
- Right-angle crashes involving vehicles entering from an unsignalized side street or driveway show a mixed potential for crash reduction with the recommended improvements. The potential for crashes is reduced by several factors:
 - The situation where the side-street driver’s view of on-coming traffic in the far through lane is blocked by a vehicle in the near lane is removed.
 - The process of selecting an appropriate gap in the major street traffic is simplified by the reduced number of travel lanes.
 - The center left-turn lane can serve as a ‘buffer zone’ in case the side-street driver does pull out at the wrong time.
 - However, because through traffic is confined to one lane in each direction, instead of the current two lanes, the total number of acceptable gaps is typically reduced during peak hour traffic flows.
- Side-swipe crashes involving lane change maneuvers should be reduced as the only lane changes on the proposed cross-section will be from the through lane into a turn lane. Maneuvering around a slower, or stopped, vehicle will no longer be necessary or possible.
- Though fixed-object crashes were not evident in the crash history, the three-lane conversion will position thru traffic lanes several feet toward the center of the roadway, and further away from any fixed objects that may exist, thereby reducing the potential for this type of crash.

Crash Reduction Factor:

The crash reduction factor for a four to three-lane conversion was determined by using data from the Crash Modifications Factors Clearinghouse website. (www.cmfclearinghouse.com) According to the website, this type of highway improvement yields a crash reduction factor of

29%. The high amount of property damage in these IA 3 crashes in Oelwein results in a Benefit/Cost ratio of 2.02:1.

Document C

Estimated Cost of Improvements

Estimated cost of the project is as follows:

- Signs/Posts, Pavement Marking Removal, Pavement Marking Grooving, Durable Pavement Markings and Symbols: \$18,300
 - Traffic Control and Mobilization: \$31,000
- | | |
|---------------|-----------------|
| Total: | \$49,300 |
|---------------|-----------------|

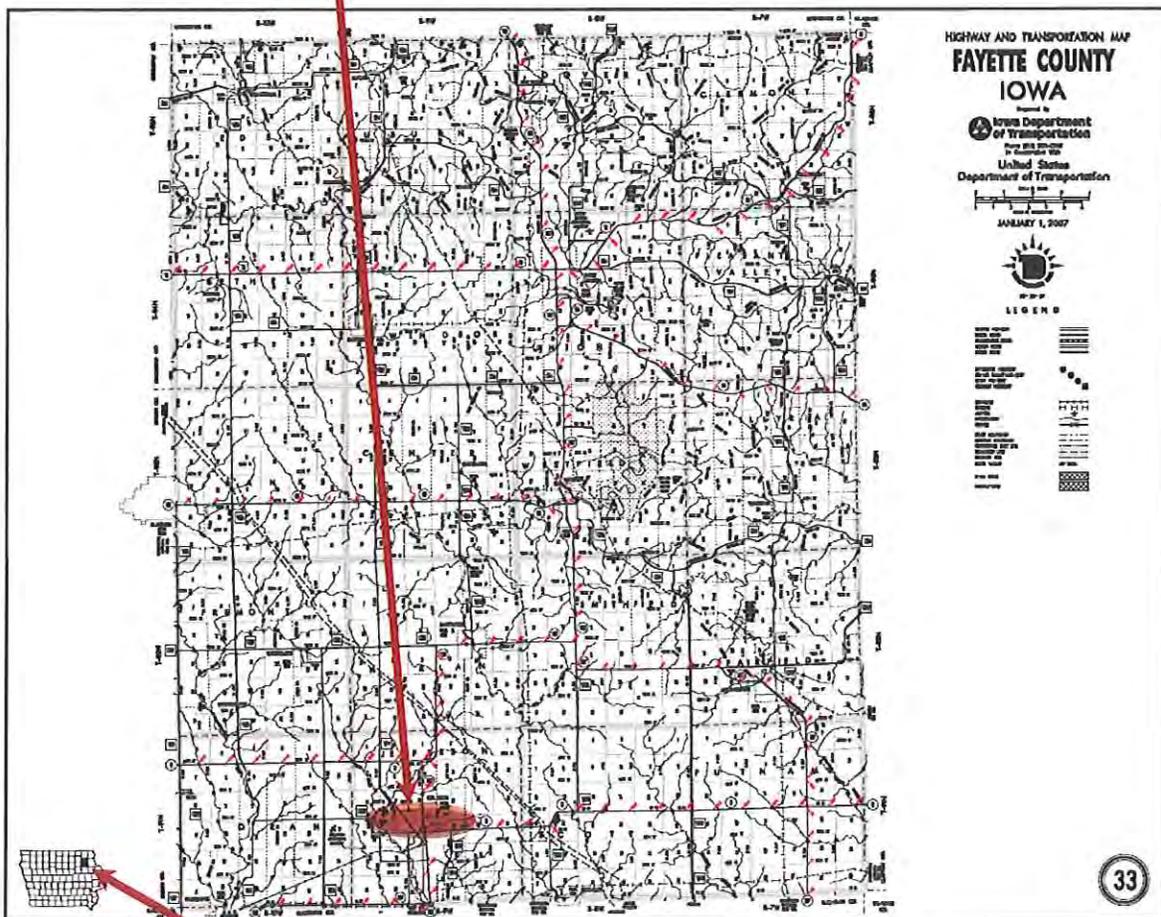
Document D

Proposed Schedule:

Grant Approval	February 2012
Project Development	May 2012
Project Letting	August 2012
Project Completion	October 2012

Location Map

Location of Proposed Project-IA 3 in Oelwein



Location of Fayette County

Site Photos:



Looking East at IA 150/3 Intersection



Looking West at IA 3/9th Ave. East Intersection

STATE OF IOWA
 PROJECT NO. UN-3-7(1) * 33-2
 SHEET NO. 1 OF 1

STATE OF IOWA
 PROJECT NO. UN-3-7(1) * 33-2
 SHEET NO. 1 OF 1

STATE HIGHWAY COMMISSION
PLAN & PROFILE OF PROPOSED IMPROVEMENT

ON THE
 PRIMARY ROAD SYSTEM
 FAYETTE COUNTY
 GRADING, DRAINAGE AND P.C.C. PAVING
 PROJECT NO. UN-3-7(1) * 33-2
 ON IOWA NO. 3 IN THE CITY OF OELWEIN FROM FIRST AVE EAST TO
 NEAR NINTH AVE.

SCALES: PLAN 1 INCH = 50 FT.
 PROFILE 1 INCH = 5 FT.

INDEX OF SHEETS

SHEET NO.	TITLE PAGE
1	TYPICAL SECTIONS & DETAILS OF 6" INTEGRAL CURB
2	REFERENCE INFORMATION DETAILS STANDARD METHOD OF DOWELING CURB TO PERMIT A SIDEWALK EXPANSION DETAILS
3	PLAN AND PROFILE STA. 77+38.33 TO STA. 85+50.0
4	TO 10 INCLUSIVE, PLANS FOR ENTRANCE LOCATIONS & R.O.W. SHEETS
5	DETAILS OF R.H. 2 P.C. CONCRETE PAVEMENT JOINTS
6	DETAILS OF R.H. 2 APPROVED CONCL. SUPPORT CHAIRS
7	SOILS SURVEY
8	SURFACE TREATMENT (MULCHING), SURGRADE TREATMENT TYPICAL SECTION
9	DETAILS OF R.H. 2 SPECIAL SUBURBAN INSTALLATIONS
10	DETAILS OF COMBINED SIDEWALK & RETAINING WALL
11	DETAILS OF R.H. 2 CONCRETE STEPS WITH RETAINING WALL
12	DETAILS OF R.H. 2 CONCRETE STEPS WITH RETAINING WALL
13	DETAILS OF R.H. 2 HEAVY DUTY BOX MANHOLES
14	DETAILS OF R.H. 2 CURB INTRUSIONS
15	DETAILS OF R.H. 2 INTRUSION PATTERNS
16	DETAILS OF R.H. 2 COB MANHOLE COVERS
17	DETAILS OF R.H. 2 CONCRETE CURBPIPE
18	DETAILS OF R.H. 2 CONCRETE PIPE APPROX
19	DETAILS OF R.H. 2 GULLY PIPES
20	DETAILS OF R.H. 2 RAILROAD CROSSING (RIGID PAVEMENT)
21	DETAILS OF R.H. 2 CONCRETE DRIVES AND ALLEYS
22	DETAILS OF R.H. 2 PROJECT SIGNS
23	TO 12 INCLUSIVE, CROSS SECTIONS

THE IOWA STATE HIGHWAY COMMISSION STANDARD SPECIFICATIONS FOR CONSTRUCTION WORK, SERIES OF 1984, SHALL APPLY TO WORK ON THIS PROJECT

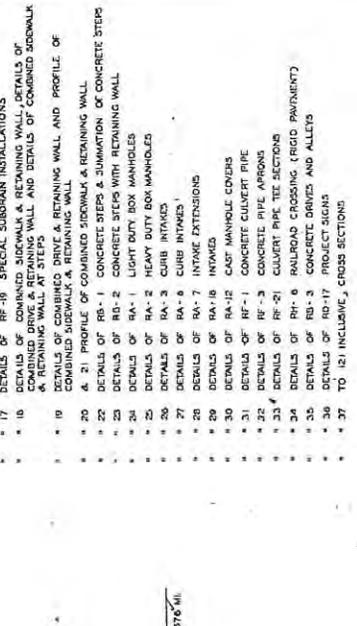
MILEAGE SUMMARY

STA.	TO STA.	PROJ.	NET LENGTH
77+38.33	TO STA. 100+00.00	---	2266.67 FT.
DEDUCT FOR RAILROAD	STA. 78+88.85	---	6.50 "
DEDUCT STA. 100+00.00	STA. 80+10.00	---	6.50 "
STA. 0+00.00	STA. 0+00.00	---	800.00 "
TOTAL NET LENGTH OF PROJ.			3157.17 FT. = 0.5976 MI.

DESIGN DESIGNATION

1966 ADT	-----	3,500
1966 ADT	-----	5,000
1966 DIV	-----	630
DIRECTIONAL	-----	5.1%
TRUCKS	-----	4%
DESIGN V	-----	40 M.P.H.

PARTIAL ACCESS CONTROL



WASTE AREAS A, B, C, D
 WASTE DIRT AND CONCRETE MAY BE PLACED IN THESE AREAS OR IN OTHER WASTE AREAS OR MAY BE DISPOSED OF AT THE OPTION OF THE CONTRACTOR

CONSTRUCTION PLANS SHOWING PROJECT AS BUILT
 One Copy Prepared by *[Signature]* Date 12/1/77
 One Copy Prepared and Forwarded to *[Signature]* Date 12/1/77
 District Construction Engineer
 Two Copies Made and Returned to:
[Signature] District Engineer
 Res. Manual Engineer

CONSTRUCTION

A DETOUR WILL BE PROVIDED ON THIS PROJECT DURING CONSTRUCTION

AVERAGE CORE DEPTHS
 RT 932
 LT 931

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED UNDER MY SUPERVISION AND THAT I AM A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF IOWA. DESIGN WAS MADE BY ME OR BY OTHER DULY REGISTERED PROFESSIONAL ENGINEERS UNDER THE LAWS OF THE STATE OF IOWA.

DATE *April 28, 1966* IOWA REG. NO. *3668*

APPROVED: *[Signature]*
 DIRECTOR OF ENGINEERING
 IOWA HIGHWAY COMMISSION

DATE: *4-28-66*

DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS

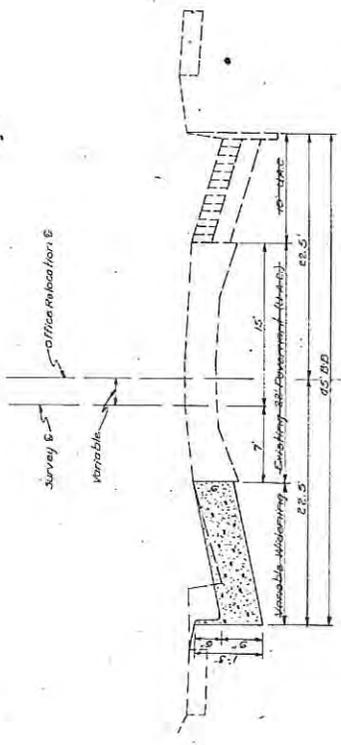
APPROVED: *[Signature]*
 DIVISION ENGINEER

DATE: *4-28-66*

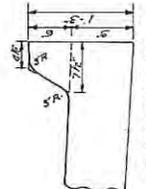
STATE OF IOWA
 PROJECT NO. UN-3-7(1) * 33-2
 SHEET NO. 1 OF 1

Fayette Co. UN-3-7(1) * 33-2 Grading Drainage And P.C.C. Paving Let May 24, 1966

DATE	BY	PROJECT NO.	SHEET NO.
10/1/57	WJL	UN-3710** 33-2	2

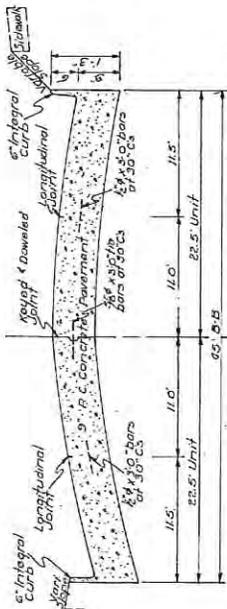


USE STA. 77+36.3 TO 57+77+00.0



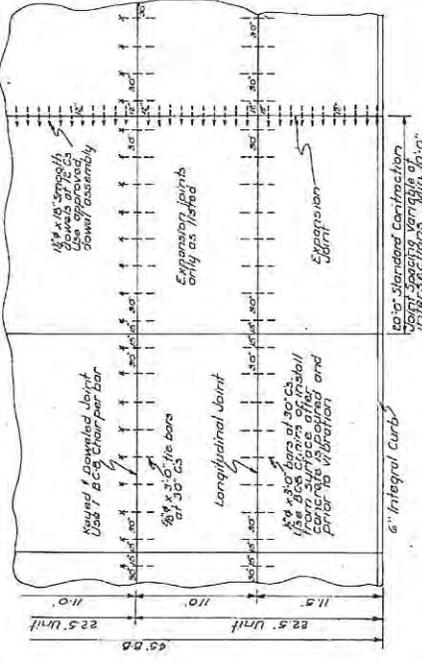
6" INTEGRAL CURB

Drawn 1/4" in 20' and reduced of 1/8" for form grade. Not for



USE STA. 78+00.0 TO STA. 100+00.0 - STA. 0+00.0 TO STA. 6+29.5
 NOTE: STA. 6+29.5 TO STA. 6+00.0 (PANEL 44 TO 24)
 USE STA. 77+36.3 TO STA. 79+00.0 (EXTRA WORK REQUESTED BY C77)

REINFORCING HALF PLAN



TYPICAL SECTIONS

Change or Extra Work Order #1
 1. Debit Contract Item No. 33, Seeding, by 332 sq.

Change or Extra Work Order #2

1. Increase Contract Item No. 3, Removal of Old Pavement, by 580.3 sq.
2. Increase Contract Item No. 4, Removal of Old Drives, by 122 sq.
3. Increase Contract Item No. 5, Removal of Sidewalk, by 579.5 sq.
4. Increase Contract Item No. 7, P.C. Conc. Class C 9" St. Pavt., by 598.3 sq.
5. Increase Contract Item No. 8, P.C. Conc. 6" Drives, by 1677.5 sq.
6. Increase Contract Item No. 12, P.C. Conc. 8" Sidewalk, by 1580.5 sq.
7. Increase Contract Item No. 16, RA-6 Inlets, by 1 only
8. Increase Contract Item No. 31, Earth Shoulder Finishing, by 158 Stk.

Change or Extra Work Order #3

1. Decrease Contract Item No. 1, Excav. Class 10, Earth of Bottom, by 302 cu.
2. Increase Contract Item No. 18, Manhole RA-1, by 1 only
3. Increase Contract Item No. 23, Manhole RA-2, by 1 only
4. Increase Contract Item No. 21, Sewer 15000 Storm 15", by 122.6 sq.
5. Decrease Contract Item No. 22, Sewer 15000 Storm 30", by 50 ft.
6. Increase Contract Item No. 23, Sewer 2000 D Storm 15", by 190.8 sq.
7. Increase Contract Item No. 24, Sewer 2000 D Storm 18", by 30.0 sq.
8. Decrease Contract Item No. 25, Sewer 2000 D Storm 24", by 45.6 sq.
9. Increase Contract Item No. 26, Sewer 2000 Storm 30", by 13.7 sq.
10. Debit Contract Item No. 29, Appans, Concrete 15", by 1 only
11. Furnish & place 24" Concrete Apron, 1 only

Change or Extra Work Order #4

1. Provide payment for removal and disposal of 2 x 2 x 9 ft. Reinforced Concrete Box Culvert at Station 4+82 - Agreed Price = \$402.00

Final Quantities for Extra Work Requested by the City of Johnson

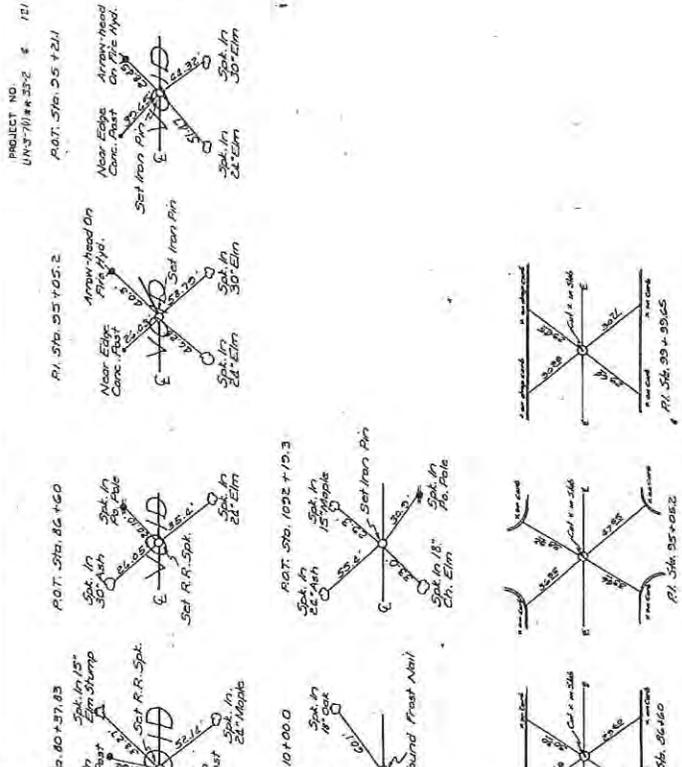
1. Removal of Old Pavement	580.3 sq. @ 1.20	=	708.36
2. Removal of Old Drives	122 sq. @ 1.10	=	134.20
3. Removal of Sidewalk	579.5 sq. @ 0.90	=	521.55
4. P.C. Conc. 9" St. Pavt.	598.3 sq. @ 2.07	=	1,238.59
5. P.C. Conc. 6" Drive	1677.5 sq. @ 0.60	=	1,006.50
6. P.C. Conc. 8" Sidewalk	1580.5 sq. @ 0.65	=	1,027.33
7. RA-6 Inlets	1 only @ 95.00	=	95.00
8. Earth Shoulder Finishing	158 Stk. @ 60.00	=	9,480.00
Extra Item 15" x 2000 Storm Sewer 47.4 @ 5.90		=	277.74
		Total	\$ 21,989.17
		City Share (2)	\$ 2,989.17

DATUM INFORMATION:
 The datum plane for this survey is on the Fayette Co. F53-1558 survey datum
 6' on an equation in U.S.G.S. datum was made & is as follows:
 B.M. No. 3 this survey Elev. 1074.56 = B.M. No. 3 Fayette Co. F53 survey Elev. 1074.56
 This survey Elev. 1065.56 = U.S.G.S. Sta. D. D. G. 1066 Elev. 1065.56

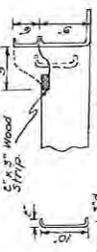
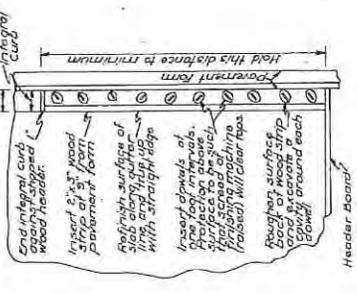
BRANCH MARKS:

No. 24	Sta. 73+78	221.7	Arrow-head On Top of Peg Nod.	1065.02
No. 25	Sta. 74+00	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 26	Sta. 74+20	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 27	Sta. 74+40	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 28	Sta. 74+60	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 29	Sta. 74+80	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 30	Sta. 75+00	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 31	Sta. 75+20	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 32	Sta. 75+40	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 33	Sta. 75+60	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 34	Sta. 75+80	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 35	Sta. 76+00	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 36	Sta. 76+20	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 37	Sta. 76+40	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 38	Sta. 76+60	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 39	Sta. 76+80	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 40	Sta. 77+00	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 41	Sta. 77+20	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 42	Sta. 77+40	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 43	Sta. 77+60	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 44	Sta. 77+80	184.4	Arrow-head On Top of Peg Nod.	1065.46
No. 45	Sta. 78+00	184.4	Arrow-head On Top of Peg Nod.	1065.46

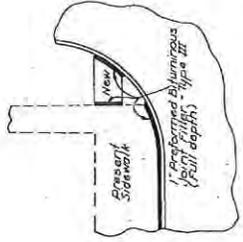
All References Plumb Distances



STANDARD METHOD OF DOWELING CURB TO PAVEMENT
 To be used in all cases where curb cannot be built integral.



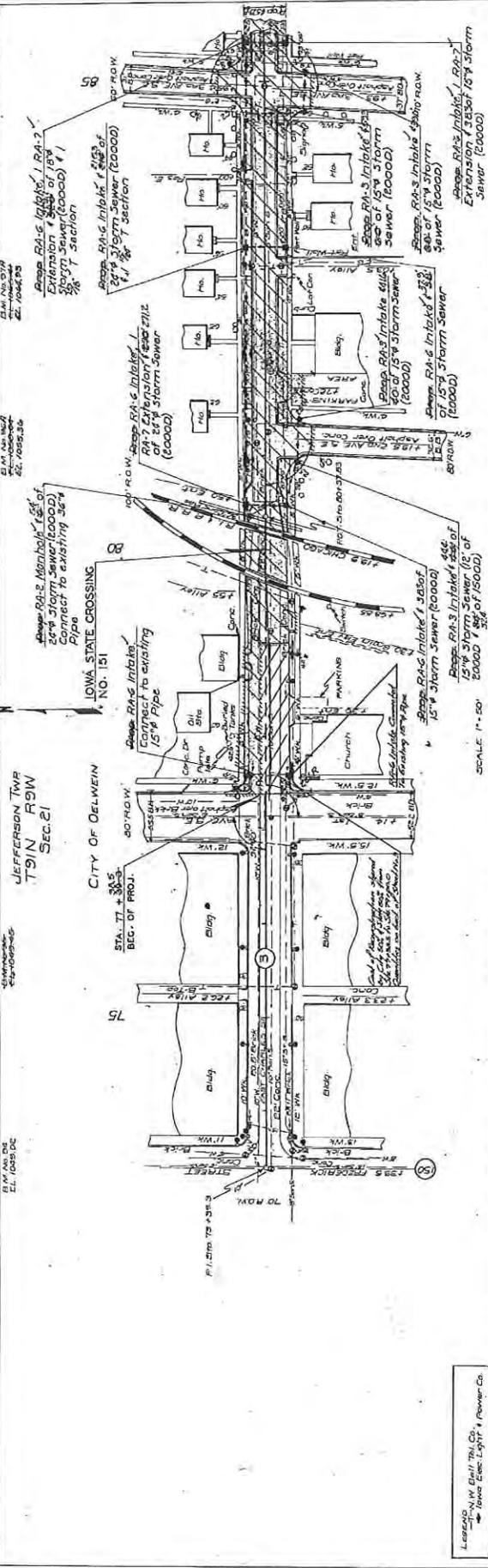
CROSS SECTION OF DOWEL DETAILS



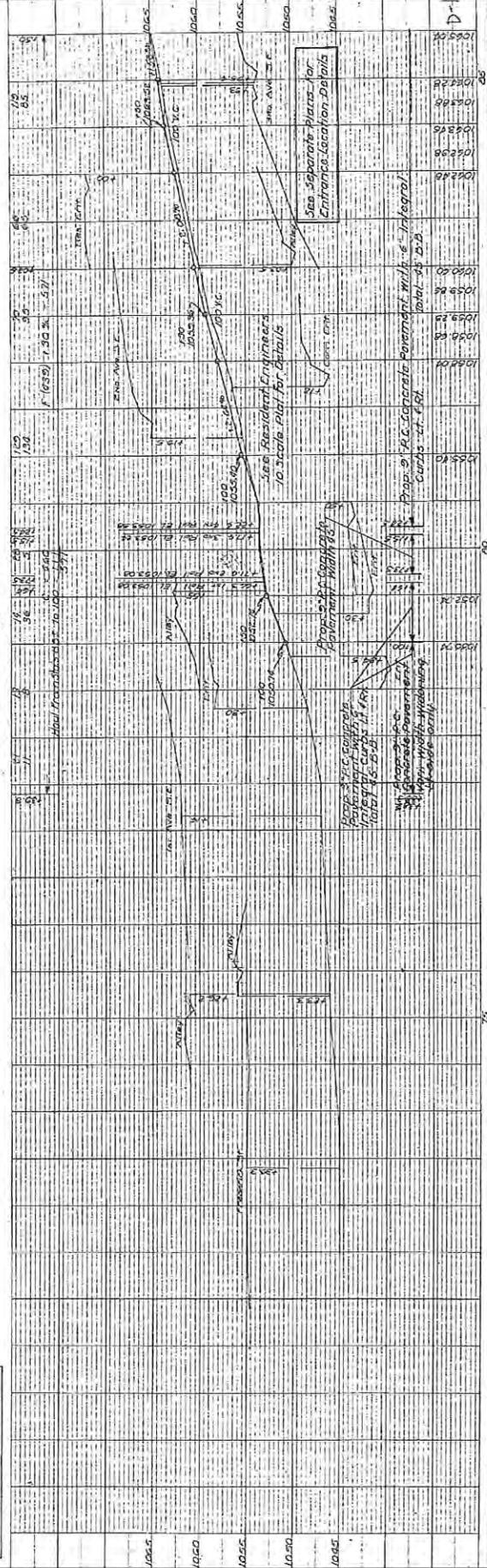
SIDEWALK EXPANSION DETAILS

REFERENCE INFORMATION
 DETAILS

PROJECT NO.	UN-3-7 (1) 5-2
DATE	10/23/20
SCALE	1" = 50'
DESIGNER	RAYETTE CO.
CHECKER	
APPROVER	
DATE	
NO.	5
REV.	
DATE	
BY	
CHK	
APP	

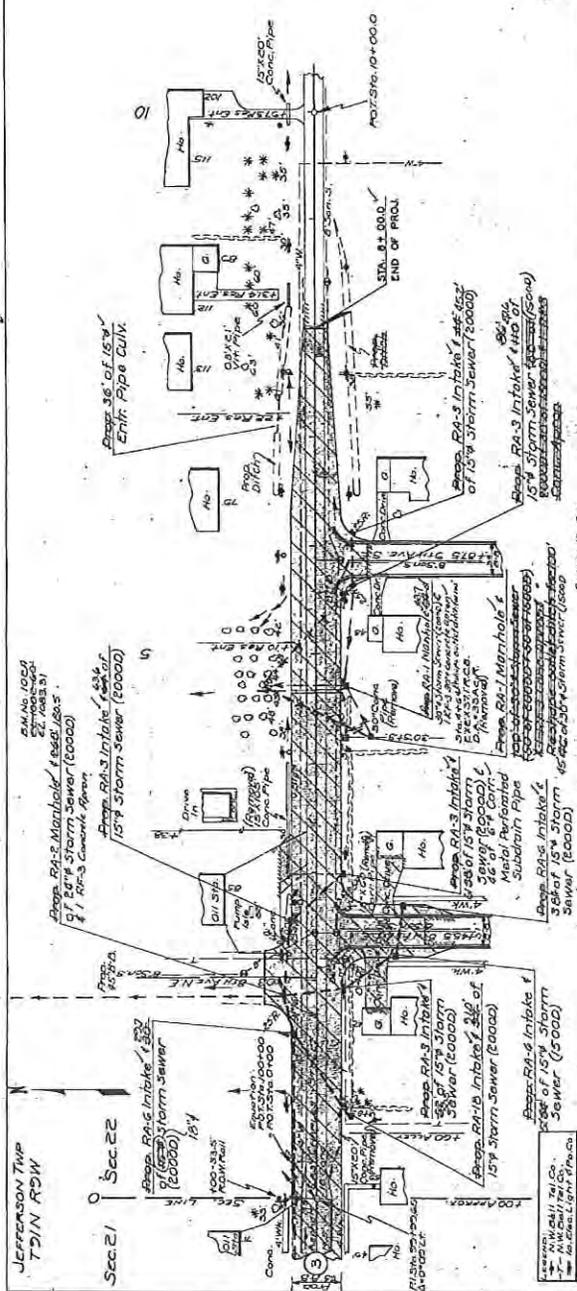


Legend
 - Sewer Line
 - Manhole
 - Inlet
 - Utility Line
 - Building
 - Street



STATION	ELEVATION	REMARKS
75+00	1050.00	Start of Profile
75+10	1051.50	Ground Surface
75+20	1052.50	Ground Surface
75+30	1053.50	Ground Surface
75+40	1054.50	Ground Surface
75+50	1055.50	Ground Surface
75+60	1056.50	Ground Surface
75+70	1057.50	Ground Surface
75+80	1058.50	Ground Surface
75+90	1059.50	Ground Surface
76+00	1060.50	Ground Surface
76+10	1061.50	Ground Surface
76+20	1062.50	Ground Surface
76+30	1063.50	Ground Surface
76+40	1064.50	Ground Surface
76+50	1065.50	Ground Surface

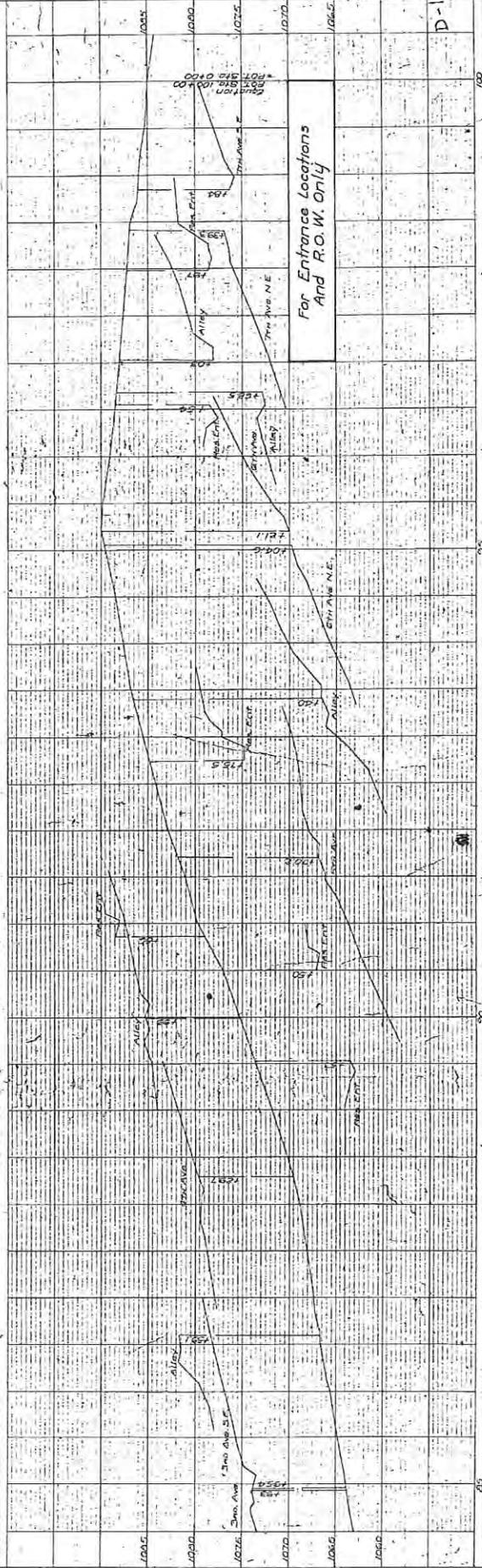
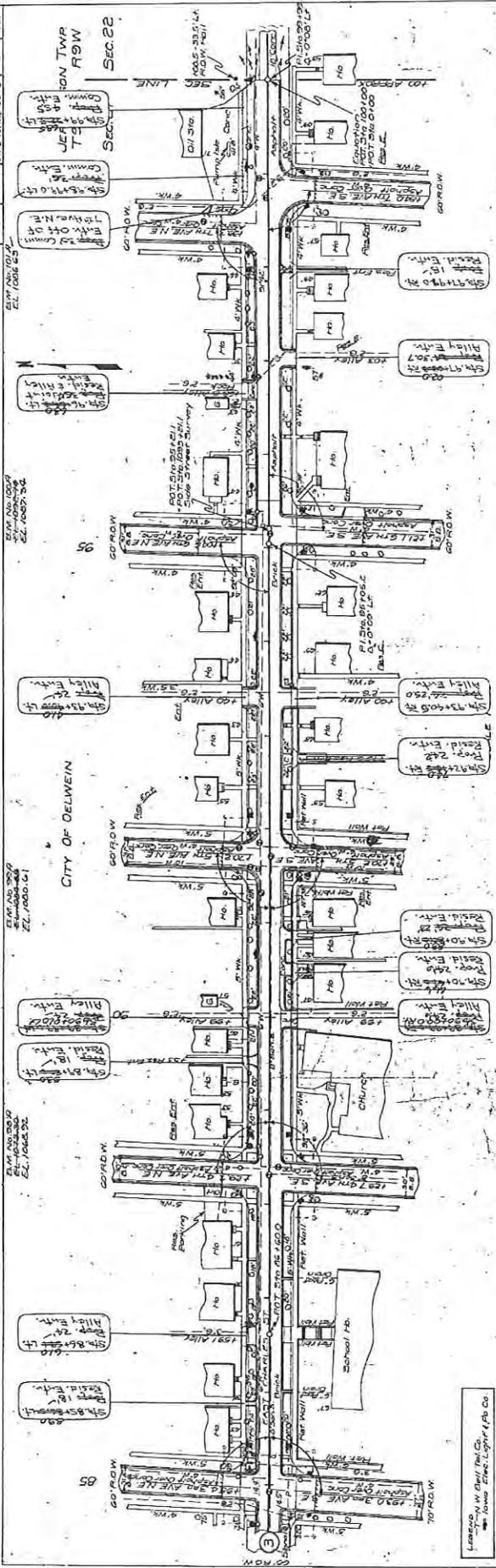
PL No. 3
 EL. 1074.56



STATION	INVERT	OUTLET	DIAMETER	LENGTH	REMARKS
1073.36	1073.36	1073.36	18"	100'	Prop. 9" p.c. concrete manhole with integral catch basin & RT
1073.50	1073.50	1073.50	18"	100'	
1073.64	1073.64	1073.64	18"	100'	
1073.78	1073.78	1073.78	18"	100'	
1073.92	1073.92	1073.92	18"	100'	
1074.06	1074.06	1074.06	18"	100'	
1074.20	1074.20	1074.20	18"	100'	
1074.34	1074.34	1074.34	18"	100'	
1074.48	1074.48	1074.48	18"	100'	
1074.62	1074.62	1074.62	18"	100'	
1074.76	1074.76	1074.76	18"	100'	
1074.90	1074.90	1074.90	18"	100'	
1075.04	1075.04	1075.04	18"	100'	
1075.18	1075.18	1075.18	18"	100'	
1075.32	1075.32	1075.32	18"	100'	
1075.46	1075.46	1075.46	18"	100'	
1075.60	1075.60	1075.60	18"	100'	
1075.74	1075.74	1075.74	18"	100'	
1075.88	1075.88	1075.88	18"	100'	
1076.02	1076.02	1076.02	18"	100'	
1076.16	1076.16	1076.16	18"	100'	
1076.30	1076.30	1076.30	18"	100'	
1076.44	1076.44	1076.44	18"	100'	
1076.58	1076.58	1076.58	18"	100'	
1076.72	1076.72	1076.72	18"	100'	
1076.86	1076.86	1076.86	18"	100'	
1077.00	1077.00	1077.00	18"	100'	
1077.14	1077.14	1077.14	18"	100'	
1077.28	1077.28	1077.28	18"	100'	
1077.42	1077.42	1077.42	18"	100'	
1077.56	1077.56	1077.56	18"	100'	
1077.70	1077.70	1077.70	18"	100'	
1077.84	1077.84	1077.84	18"	100'	
1077.98	1077.98	1077.98	18"	100'	
1078.12	1078.12	1078.12	18"	100'	
1078.26	1078.26	1078.26	18"	100'	
1078.40	1078.40	1078.40	18"	100'	
1078.54	1078.54	1078.54	18"	100'	
1078.68	1078.68	1078.68	18"	100'	
1078.82	1078.82	1078.82	18"	100'	
1078.96	1078.96	1078.96	18"	100'	
1079.10	1079.10	1079.10	18"	100'	
1079.24	1079.24	1079.24	18"	100'	
1079.38	1079.38	1079.38	18"	100'	
1079.52	1079.52	1079.52	18"	100'	
1079.66	1079.66	1079.66	18"	100'	
1079.80	1079.80	1079.80	18"	100'	
1079.94	1079.94	1079.94	18"	100'	
1080.08	1080.08	1080.08	18"	100'	
1080.22	1080.22	1080.22	18"	100'	
1080.36	1080.36	1080.36	18"	100'	
1080.50	1080.50	1080.50	18"	100'	
1080.64	1080.64	1080.64	18"	100'	
1080.78	1080.78	1080.78	18"	100'	
1080.92	1080.92	1080.92	18"	100'	
1081.06	1081.06	1081.06	18"	100'	
1081.20	1081.20	1081.20	18"	100'	
1081.34	1081.34	1081.34	18"	100'	
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1082.18	1082.18	1082.18	18"	100'	
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1082.74	1082.74	1082.74	18"	100'	
1082.88	1082.88	1082.88	18"	100'	
1083.02	1083.02	1083.02	18"	100'	
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1084.28	1084.28	1084.28	18"	100'	
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1097.16	1097.16	1097.16	18"	100'	
1097.30	1097.30	1097.30	18"	100'	
1097.44	1097.44	1097.44	18"	100'	
1097.58	1097.58	1097.58	18"	100'	
1097.72	1097.72	1097.72	18"	100'	
1097.86	1097.86	1097.86	18"	100'	
1098.00	1098.00	1098.00	18"	100'	
1098.14	1098.14				

PROJECT NO. UN-3770# 33-2
 SHEET NO. 151

DATE: 10/10/50
 ELEVATION: 1000.00



PLAN

DATE: 10/10/50
 ELEVATION: 1000.00

PROFILE

DATE: 10/10/50
 ELEVATION: 1000.00

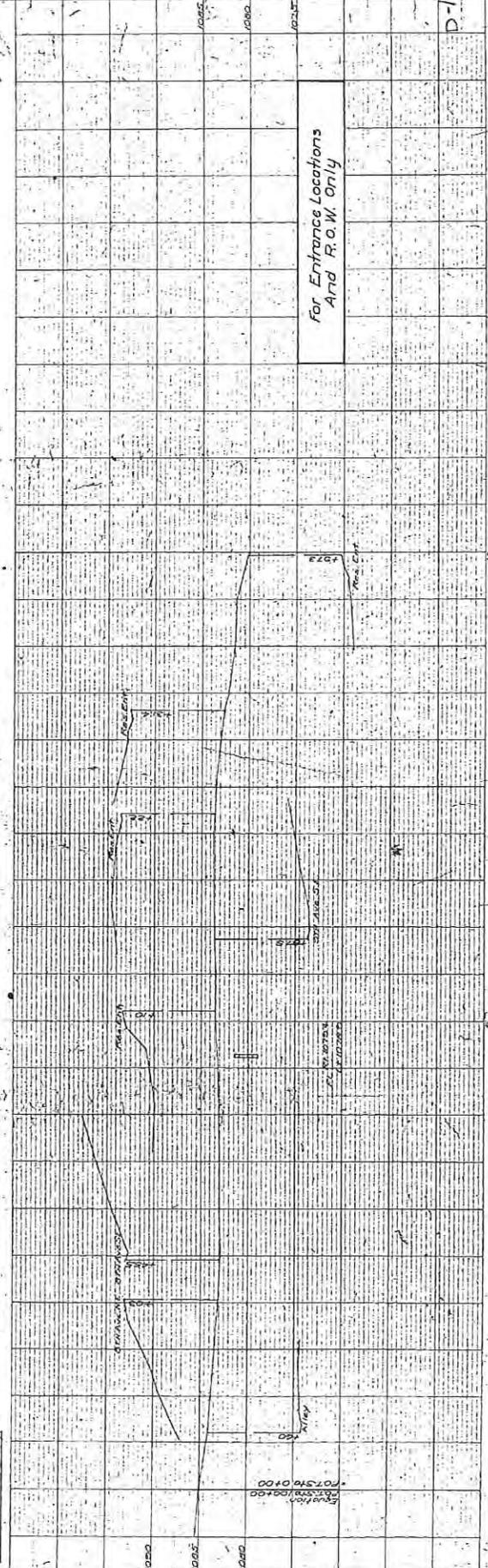
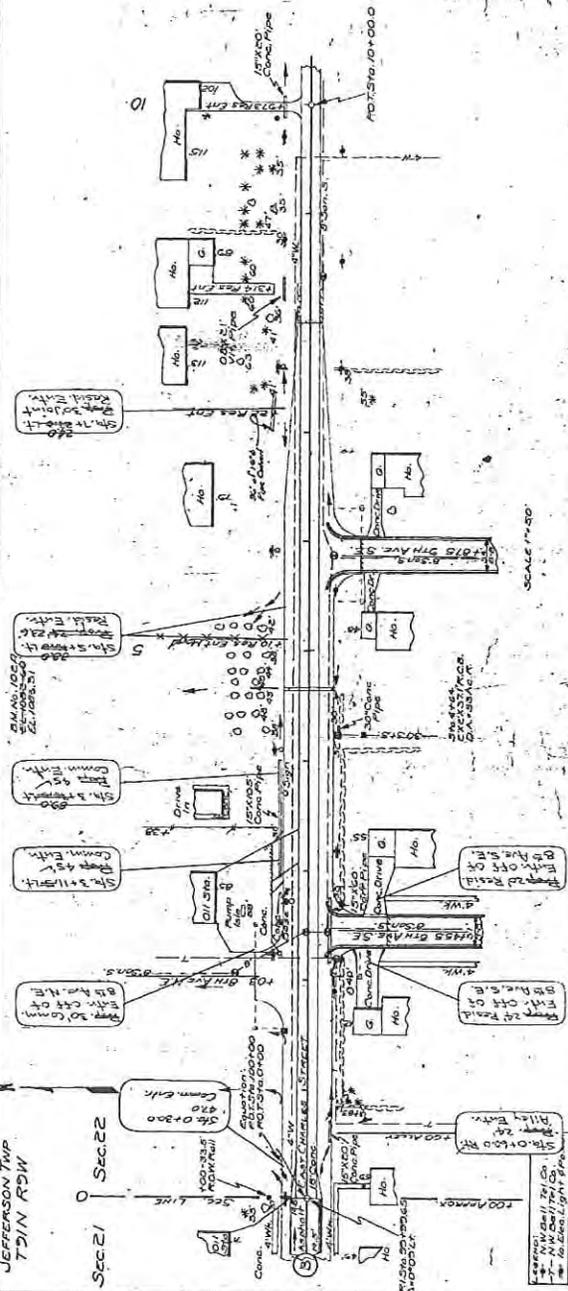
DATE: 10/10/50
 ELEVATION: 1000.00

DATE: 10/10/50
 ELEVATION: 1000.00

DATE: 10/10/50
 ELEVATION: 1000.00

DATE	PROJECT NO.	DATE	DATE
10/1/52	UN-3-70** 33-2	10	1/51

DM No. 3
EL. 1074.56

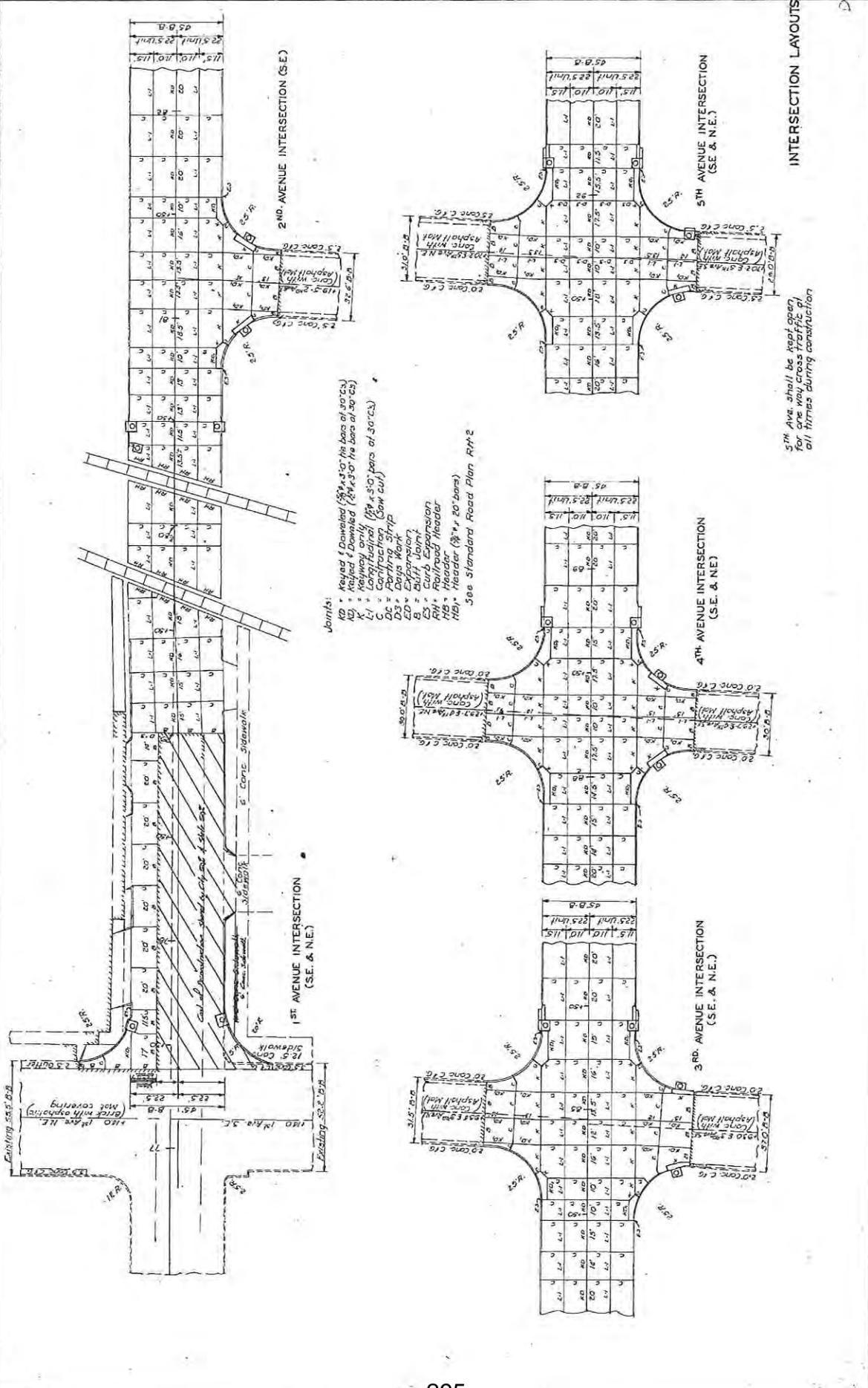


For Entrance Locations
And R.O.W. Only

Sheet No. 10
Foyelpha Co., Proj. No. UN-3-70** 33-2

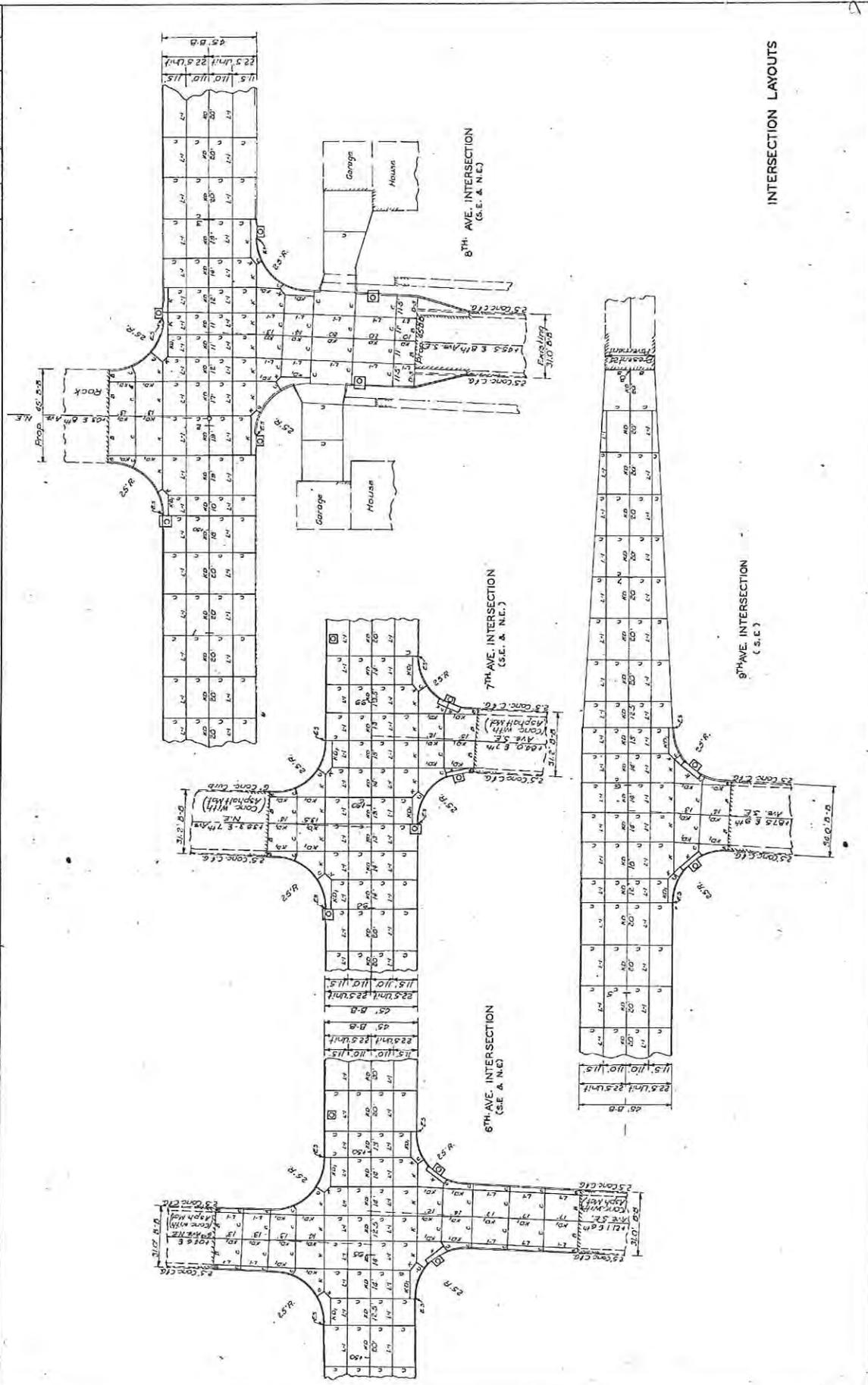
DATE	PROJECT NO.	DATE	DATE
10/1/52	UN-3-70** 33-2	10	1/51

DATE	PROJECT NO.	DATE	DATE
10/1/52	UN-3-70** 33-2	10	1/51



- Joints:**
- RD = Reveal & Dowelled (30" x 30" tie bars at 30°C.C.)
 - LD = Reveal & Dowelled (24" x 30" tie bars at 30°C.C.)
 - X = Reveal only (24" x 30" tie bars at 30°C.C.)
 - L1 = Longitudinal (24" x 30" tie bars at 30°C.C.)
 - C = Construction (Saw cut)
 - DS = Parting Strip
 - ED = Expansion
 - B = Built Joint
 - ES = Curb Expansion
 - AP = Railroad Header
 - HS = Header (30" x 20" bars)
- See Standard Road Plan R442

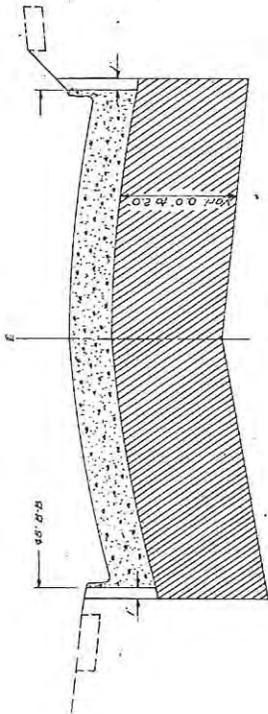
5th Ave. shall be kept open for one way cross traffic at all times during construction



INTERSECTION LAYOUTS

PROPOSED SUBGRADE TREATMENT
FOR ADDITIONAL DETAILS REFER TO SOILS SURVEY SHEET NO. 15

NO.	LOCATION	DESCRIPTION	SIDE	DEPTH	WIDTH	MATERIAL	+ SHRINK. %	TYPE	VOLUME	CU. YDS.	TONS	AVAILABLE FROM	REMARKS
1	STATION TO STATION 297500 TO 297600	WRTT	BT	3	12	SPACIAL			4600	4600	4600		See Section 1105, 1110 with reference to subgrade treatment table and slope.

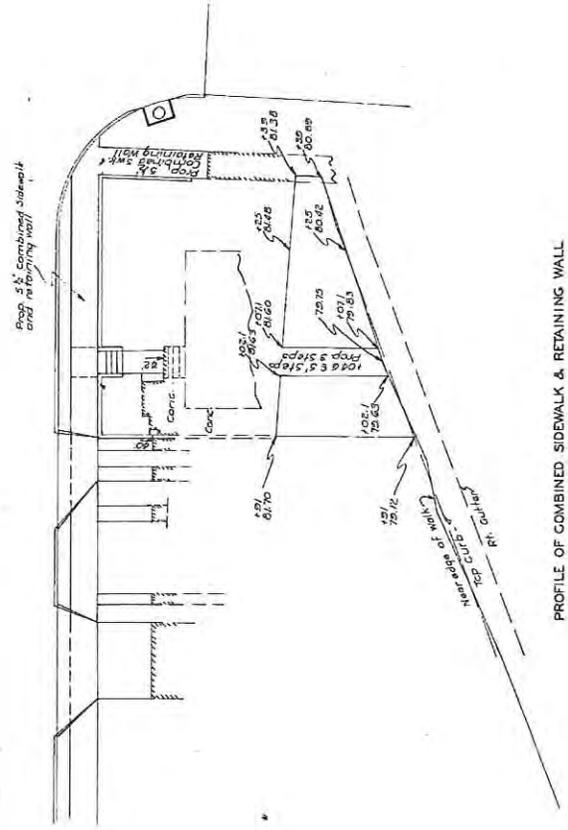


TYPICAL SECTION FOR LIMITS OF SUBGRADE TREATMENT
For further details see Form sections and Subgrade treatment table this sheet.

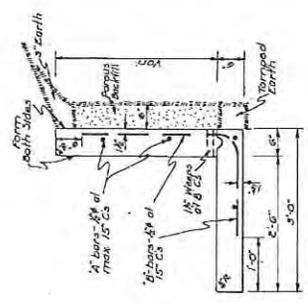
LISTING OF SUBDRAIN WORK
SEE STANDARD ROAD PLAN RP-10

LINE NO.	LOCATION	STATION	TYPE	SIZE	SUBDRAIN		REMARKS
					METAL LINING	BACKFILL	
1	See Remarks	15	15	15	PERFORATED	POROUS	Outlet into Intake Area Approx. 27+33.7 Rt.

PROJECT NO.
UN-2-701** 33-E 10 121

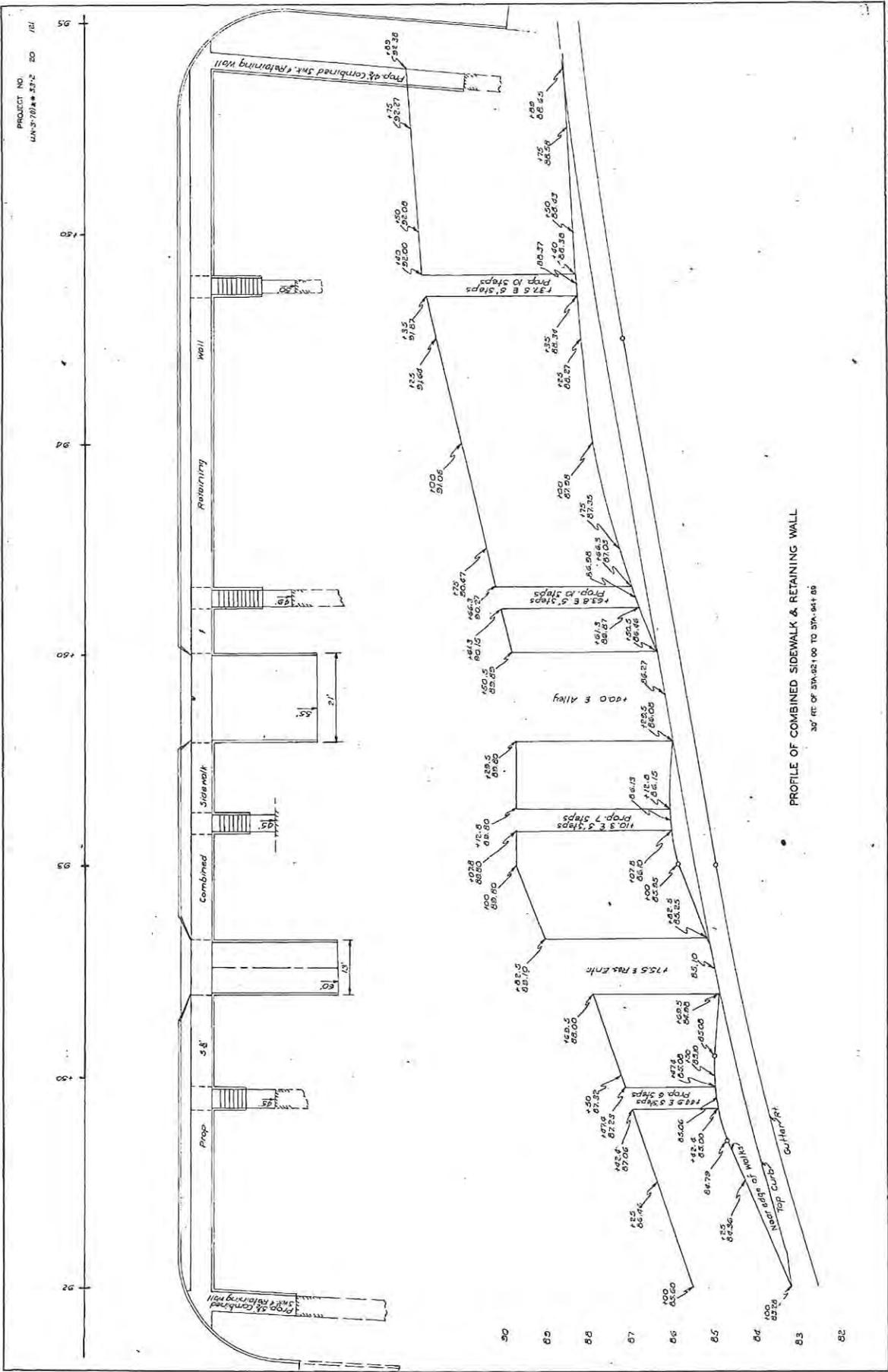


PROFILE OF COMBINED SIDEWALK & RETAINING WALL
30' RT. OF STA. 80+10 TO STA. 81+30



DETAILS OF
COMBINED DRIVE & RETAINING WALL
30' RT. OF STA. 80+10

Payette Co. Proj. No. UN-2-701** 33-E Sheet No. 10



PROJECT NO. 5-12-80 / 161
 UN-5-70-1-53-2

PROFILE OF COMBINED SIDEWALK & RETAINING WALL
 30' FEET OF STA. 52+00 TO STA. 54+00

Payette Co. Proj. No. UN-5-70-1-53-2 Sheet No. 80

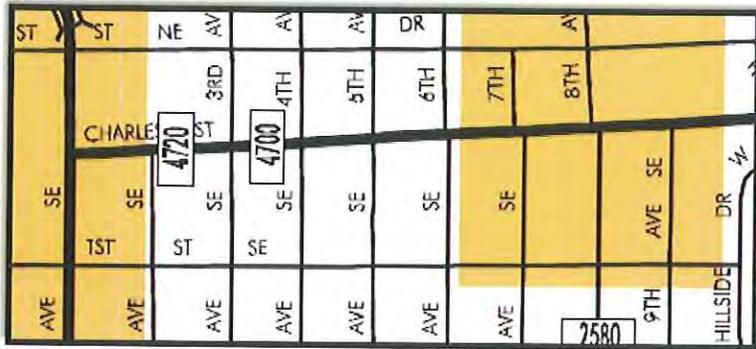
Aerial Photo of Project Location

Approximate Project Limits

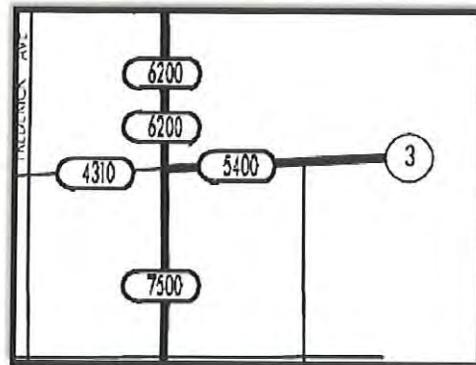


IA 3 Corridor in City of Oelwein

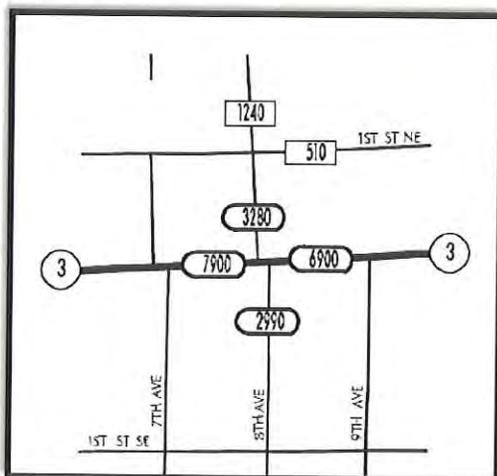
IA 3 Corridor-Oelwein



IA 3 & IA 150 Intersection-Oelwein



IA 3 & 8TH Avenue East-Oelwein



Road Segment Benefit / Cost Safety Analysis

Rev. 8/09

Iowa DOT Office of Traffic & Safety

DOCUMENT L

County: Fayette Prepared by: David Little Date Prepared: Jun 8, 2011
 Location: IA 3 in Oelwein, from IA 150 to 9th Avenue E

Improvement

Proposed Improvement(s): Four Lane to Three Lane Conversion

\$ 49,323 Estimated Improvement Cost, EC	20 Est. Improvement Life, years, Y
\$ - Other Annual Cost (after initial year), AC	29 Crash Reduction Factor (integer), CRF
\$ - Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	\$ 49,323 Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: Iowa DOT 2009 Date of traffic count

Length (mi.)	veh/day	Description
0.54	5,000	At 3rd Avnue E

0.54 miles total

2,700 Current Vehicle Miles / Day, **VM**
 4,012 End of Life Veh. Miles / Day
 985,500 Current Veh. Miles / Year, **AM**
 23,945,058 Total Projected Veh. Miles Over
 Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

2.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

<u>2005</u> First full year -->	<u>2009</u> Last full year	5.0 years, Time Period, T
<u>0</u> Additional months		values as of Dec. 2007
<u>0</u> Fatal Crashes	<u>0</u> Fatalities @	\$3,500,000 \$ -
	<u>0</u> Major Injuries @	\$240,000 \$ -
<u>2</u> Injury Crashes	<u>0</u> Minor Injuries @	\$48,000 \$ -
	<u>1</u> Possible Injuries @	\$25,000 \$ 25,000
<u>23</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ -
<u>25</u> Total Crashes, TA	-OR- enter all Property Costs of all crashes:	\$ 81,622
	Total \$ Loss, LOSS	\$ 106,622

5.00 Current Crashes / Year, **AA = TA / T**
\$ 4,265 Cost per Crash, **AVCR = LOSS / TA**
 121.5 Total Expected Crashes, **TCR = CR x TVMT/10^8**
 1.45 Crashes Avoided First Year **AAR = AA x CRF / 100**
\$ 6,184 Crash Costs Avoided in First Year, **AAR x AVCR**
 35.2 Total Avoided Crashes, **TCR x CRF / 100**

507.4 Crashes / HMVM, Crash Rate, **CR**
 CR = TA x 10^8 / (AM x T)
\$ 99,512 Present Value of Avoided
 Crashes, **BENEFIT**

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$99,512 : \$49,323 = 2.02 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 Location / Title of Project IA 122 & California Avenue (Cerro Gordo County)

 Applicant District 2 Office

 Contact Person Dave Little Title Assist. District Engineer

 Complete Mailing Address 1420 Fourth Street SE, Mason City, IA 50401

 Phone 641-423-7584 E-Mail david.little@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

 Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type	Site Specific	<input checked="" type="checkbox"/>
	Traffic Control Device	<input type="checkbox"/>
	Safety Study	<input type="checkbox"/>

Funding Amount

 Total Project Cost \$ 140,616.89

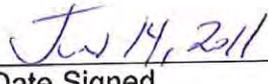
 Safety Funds Requested \$ 140,616.89

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

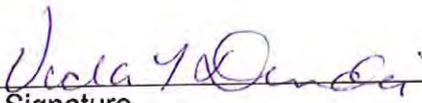
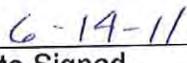
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the District 2 Office

Signed:  
Signature Date Signed

David L. Little, P.E.
Typed Name

Attest:  
Signature Date Signed

Vicki L. Dumdei, P.E.
Typed Name

NARRATIVE

IA 122 and S 56/California Avenue

Existing Conditions

The intersection of IA 122 and S 56/California Avenue is located in Cerro Gordo County, on the eastern edge of the county seat of Mason City. North Iowa Area Community College is located just west of this intersection. S 56/California Avenue and IA 122 is also just over two miles north of the interchange with US 18/IA 27 (Avenue of the Saints). Many motorists driving to and from Mason City use S 56/California Avenue to access/exit the Avenue. This intersection is listed in Iowa's Severe Safety Needs Report.

At this location, the IA 122 and S 56/California Avenue is a 2-way stop controlled intersection with S 56/California Avenue traffic being required to stop. IA 122 is a 4-lane undivided corridor at this location with a 55 mph posted speed limit. There are no turn lanes in place on IA 122. IA 122 transitions to a 2-lane corridor approximately 1,000' east of the S 56/California Avenue centerline. IA 122 transitions to a 4-lane corridor, with a series of painted left turn lanes at intersections and accesses, approximately 4,500' west of the S 56/California Avenue centerline.

S 56/California Avenue is a 2-lane corridor with a 55 mph posted speed limit. The south leg of S 56/California Avenue intersects with IA 122 at a skew angle. There are right turn lanes in place on each leg of S 56/California Avenue that follow the radius of the intersection. There are "Stop" signs in place in the raised islands and combination back to

back “Stop”, and “Do Not Enter” sign installations in place for the right turn lanes on each S 56/California Avenue leg. There are “Stop Ahead” Sign installations in place along northbound and southbound S 56/California Avenue in advance of the intersection. There are no rumble strips in place. There is a residence in place within the northeast quadrant of the intersection, approximately 930’ east of the S 56/California Avenue centerline. There is intersection lighting in place within the northwest and southeast quadrants of the intersection.

The AADT for eastbound IA 122 traffic was 2,462, with 658 vehicles making a right turn and 358 vehicles making a left turn daily. The AADT for westbound IA 122 traffic was 1,689, with 175 vehicles making a right turn and 62 vehicles making a left turn daily. The AADT for northbound S 56/California Avenue traffic was 1,263, with 72 vehicles turning right and 934 vehicles turning left daily. The AADT for southbound S 56/California Avenue traffic was 876, with 399 vehicles turning right and 195 vehicles turning left daily.

According to the Saver Crash History Program, the 2005-2009 crash history for this intersection includes a total of 12 reportable crashes. The major causes of these crashes were 2 ran stop sign, 3 failure to yield right of way from stop sign, 2 failure to yield right of way making left turn, 2 made improper turn, 2 followed too close and 1 other improper action major cause crashes.

One of these crashes was a fatal injury crash, 3 were major injury crashes, 2 were minor injury crashes, 4 were possible injury crashes and 2 were PDO.

The 2005-2009 crash rate for this intersection was 1.05 Crashes per million entering vehicles which compares with a statewide average

crash rate of 0.9 crashes per million entering vehicles, where a municipal primary intersects with a city street. While the crash rate is not significantly above the statewide average, the average severity of these crashes is high.

Concept

The intersection of IA 122 and S 56/California Avenue will be included in a resurfacing project being designed by District 2 for construction during the summer/fall of 2012. As part of that project, the District intends to convert the existing four-lane section of IA 122 to a three-lane configuration including intersection modifications at an adjacent intersection addressed in a separate TSIP application being submitted. At the intersection of IA 122 and S-56 and California Avenue, District 2 intends to provide dedicated left-turn storage thru the 4-3 lane conversion, and construct offset right hand turn lanes at the intersection for eastbound traffic on 122 that is turning south on S 56/California Avenue and westbound 122 traffic that is turning north on S 56/California Avenue. The four-three lane conversion will, by reallocation of existing pavement width, provide approximately 5-foot wide paved shoulders where none exist currently.

Justification

The District believes the proposed offset right hand turn lanes will address the crash problems that have put this intersection on the 5% list.

District 2 Traffic Technician Bob Clark believes some motorists stopped at the "Stop" signs may perceive that all approaching eastbound

motorists who are in the right lane approaching this intersection are going to turn right, which is not always the case.

The accident report narratives also indicate that in 3 and possibly 4 of the 5 ran stop sign, and failure to yield right of way from stop sign major cause crashes, the eastbound vehicles that were involved were in the right lane. According to the United States Department of Transportation, an offset right turn lane benefits left turning traffic by increasing sight distance for trailing vehicles as well as getting a commitment from turning vehicles.

With this being the case, the District believes installing offset right turn lanes, and other proposed improvements, for IA 122 traffic at this intersection would improve the safety.

Though separate applications are being prepared for this intersection and the one at IA 122 and College Drive, District 2 feels that these two applications should be viewed as a package. The key element of the proposed improvements is the four-lane to three-lane conversion, which partially address shadowing concerns at the California Avenue intersection by eliminating the second through lane. The three-lane conversion provides an opportunity to reallocate the existing paved surface, embankment, and right-of-way; through this reallocation of space, District 2 will be able to construct offset mainline right-turn lanes at both intersections at minimal cost and within existing right-of-way, provide for dedicated left-turn storage at this intersection, provide for a right-turn acceleration lane for a heavy SB to WB movement out of the community college at the College Drive intersection, and provide paved shoulders throughout.

These two intersections are only a half-mile apart. The improvements at College Drive are perhaps not tied clearly to the underlying crash history as we would prefer. However, without making the improvements at College Drive, we would be unable to make the low-cost and highly-promising improvements at the California Avenue intersection which are clearly tied to the severe crash history at this intersection.

If we treated these intersections separately, without undertaking the four-to-three lane conversion, then we would have an undivided four lane section and we would continue to have shadowing issues at both intersections associated with having multiple through lanes. We would have difficulty providing traditional dedicated left-turn lane channelization at both intersections due to their close proximity, and widening to provide offset right turn lanes beyond the existing four-lane sections would likely require additional right-of-way.

DOCUMENT C

Offset right turn lanes at Co Rd S 56 / California Ave.

(estimate for 2 turn lanes)

Items	Quantity	Unit Cost	Total
Special Backfill	825 Ton	15.51	\$12,795.75
Class 10 Excavation, Roadway and Borrow	840 CY	3.76	\$3,158.40
Granular Surface Material	110 Ton	16.17	\$1,778.70
HMA	1510 Ton	33	\$49,830.00
Binder	91 Ton	550	\$50,050.00
Pavement Markings	100 Sta.	10	\$1,000.00
Symbols	6 Ea.	86	\$516.00
remove and reinstall apron	3 Ea.	612	\$1,836.00
Conc. Arch pipe 48" x 66"	16 LF	210	\$3,360.00
42" conc pipe	12 LF	123	\$1,476.00
Island Pavement removal	28 SY	20	\$560.00
Island Patch	28 SY	100	\$2,800.00
Proposed Island	28 SY	150	\$4,200.00
Pavement removal	28 SY	20	\$560.00
			\$133,920.85
		add 5%	\$140,616.89

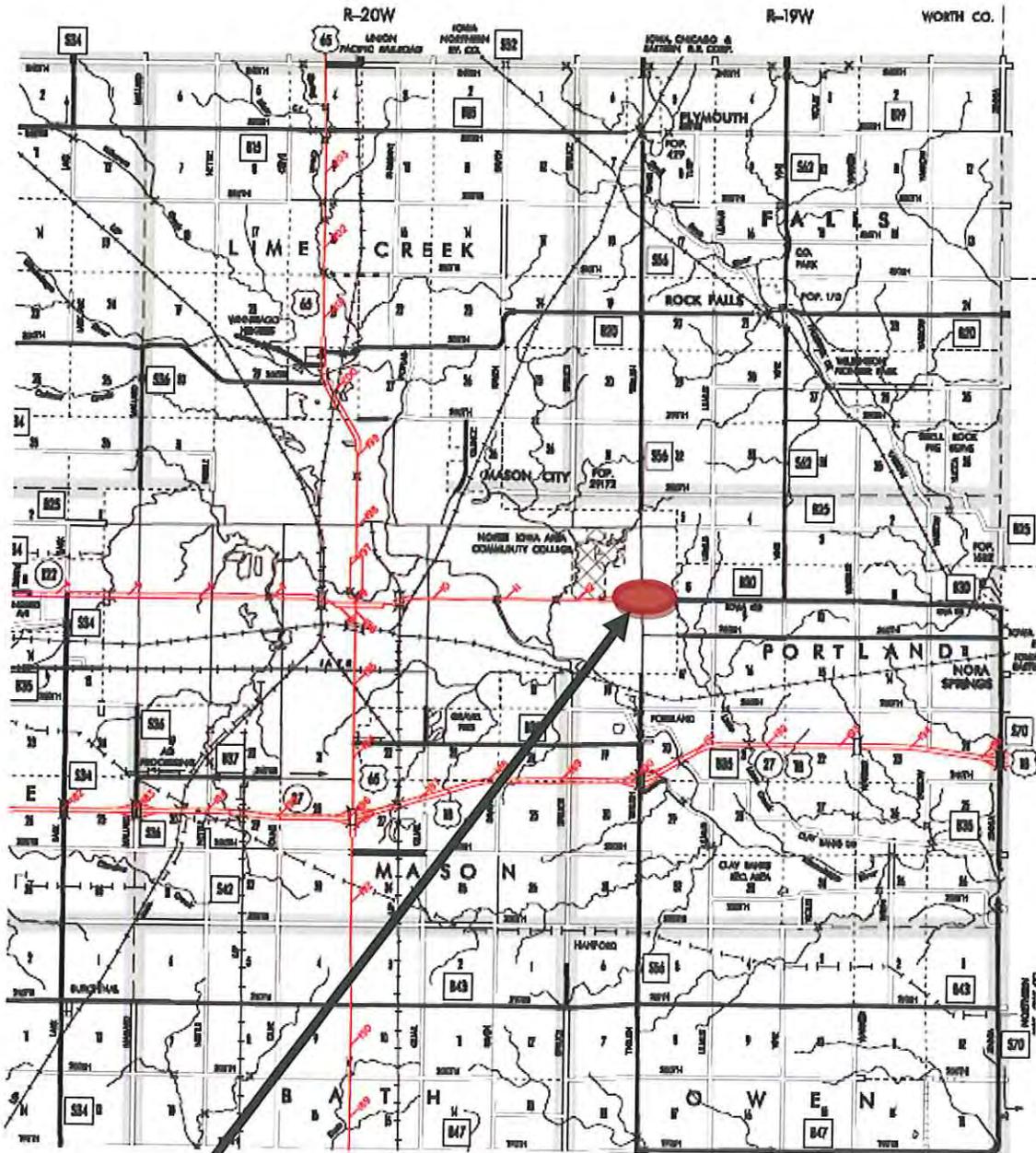
Document D

Proposed Schedule:

Grant Approval	December 2011
Project Development	Winter 2011-12
Project Letting	Spring 2012
Project Completion	Summer/Fall 2012

DOCUMENT E

Location of IA 122 & S 56/California Avenue-Cerro Gordo County



Project Location

ATTACHMENT F

Color Pictures of Project Site



IA 122 Looking East



IA 122 Looking West

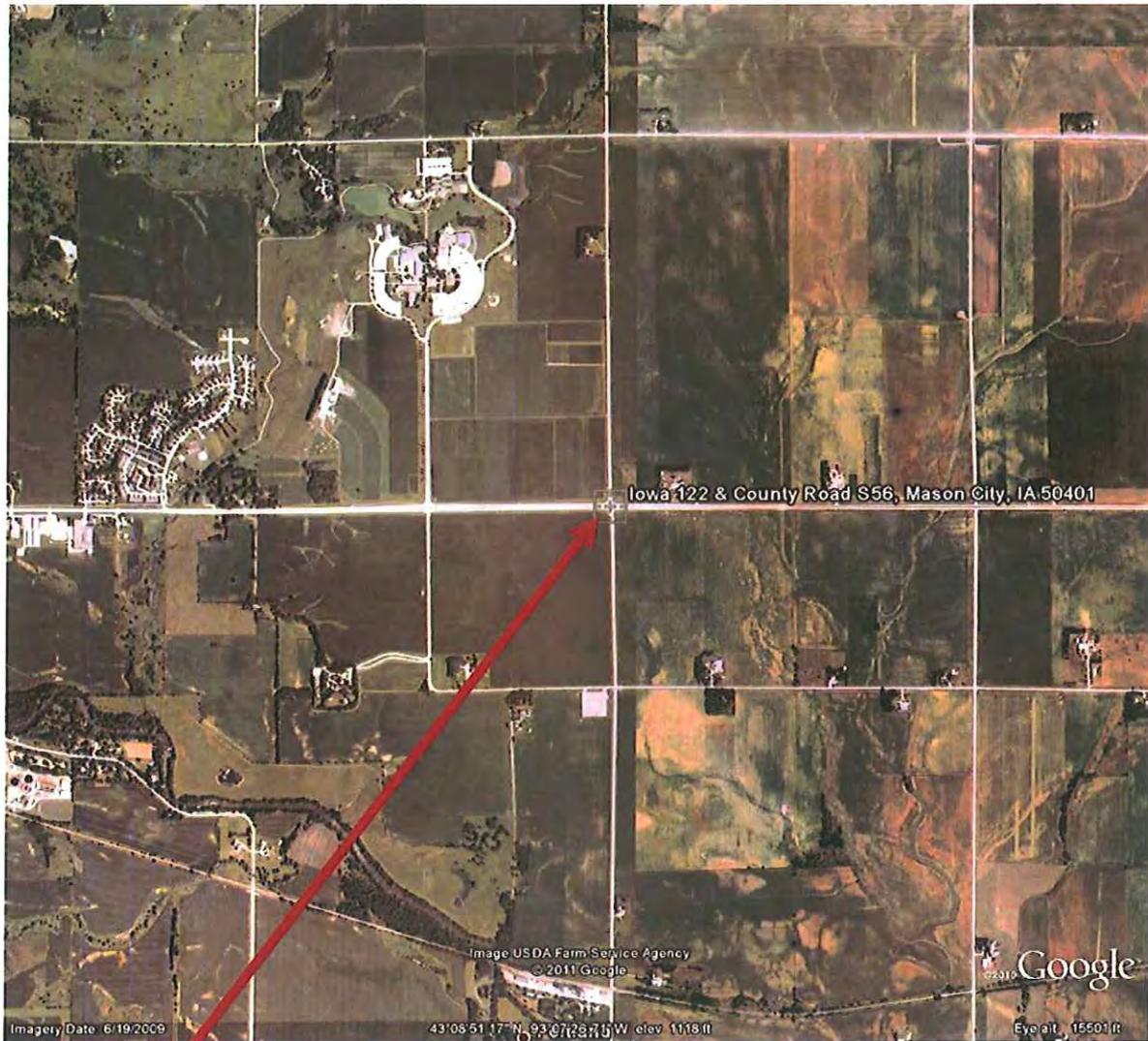


S 56/California looking north



S 56/California looking south

Aerial view of project site



Project Location

ICWA DEPARTMENT OF TRANSPORTATION
VEHICULAR TURNING MOVEMENTS
ANNUAL AVERAGE DAILY TRAFFIC - YEAR 2009
IN MASON CITY

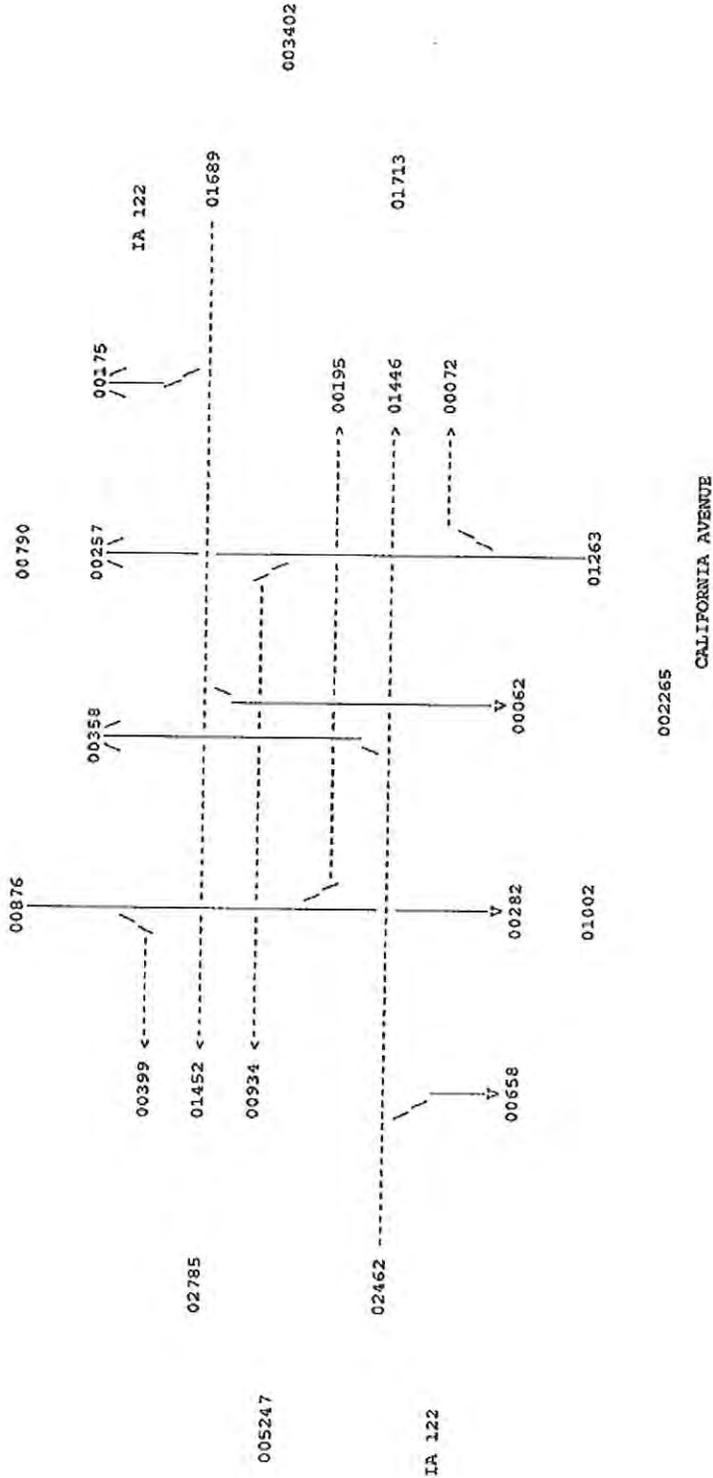
DATE: 07-27-2010

COUNTY: CERRO GORDO
IA 122 & CALIFORNIA AVE

STATION NO. 17 34 7317 0991

CALIFORNIA AVENUE

001666





Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project IA 122 & College Drive/Iowa Ave. (Cerro Gordo County)

Applicant District 2 Office

Contact Person Dave Little Title Assist. District Engineer

Complete Mailing Address 1420 Fourth Street SE, Mason City, IA 50401

Phone 641-423-7584 (Area Code) E-Mail david.little@dot.iowa.gov

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s)

Contact Person Title

Complete Mailing Address

Phone (Area Code) E-Mail

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

- Site Specific [checked]
Traffic Control Device []
Safety Study []

Funding Amount

Total Project Cost \$ 124,364

Safety Funds Requested \$ 124,364

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the District 2 Office

Signed: *David L. Little* *Jun 14, 2011*
Signature Date Signed

David L. Little, P.E.
Typed Name

Attest: *Vicki L. Dumdei* *6-14-11*
Signature Date Signed

Vicki L. Dumdei, P.E.
Typed Name

NARRATIVE

IA 122 and College Drive/Iowa Avenue

Existing Conditions

The intersection of IA 122 and College Drive/Iowa Avenue is located in Cerro Gordo County, on the eastern edge of the county seat of Mason City. College Drive is the southern and main exit to North Iowa Area Community College. The school had a record enrollment of 3,729 students in the fall of 2010. At the south side of the intersection College Drive becomes Iowa Avenue.

At this location, IA 122 and College Drive/Iowa Avenue is a 2-way stop controlled intersection with College Drive/Iowa Avenue traffic being required to stop. There is a right turn lane for southbound to westbound traffic leaving the college. There is a concrete island dividing right turning traffic from through and left turning traffic.

IA 122 is a 4-lane undivided corridor at this location with a 55 mph posted speed limit. There is raised channelization for left turn lane for eastbound traffic turning north into the college. There is also a left hand turn lane for westbound traffic turning south on Iowa Avenue. Just west of the intersection with College Drive/Iowa Avenue, IA 122 has an AADT of 7700 vehicles. Just east of the intersection that number drops to 5200.

South of the intersection with IA 122, Iowa Avenue has an AADT of 360 vehicles. Just north of the intersection the number jumps to 3970 vehicles on College Drive.

According to the Saver Crash History Program, the 2005-2009 crash history for this intersection includes a total of 10 reportable crashes. The major causes of these crashes were 2 failure to yield right of way from stop sign, 1 driving too fast for conditions, 1 made improper turn, 1 followed too close, 1 ran off road right, 2 because of other improper action and 2 unknown. These ten crashes resulted in 6 possible injuries for a crash rate of 0.64 crashes per hundred million vehicle miles. That compares with a statewide average crash rate of 0.9 crashes per million entering vehicles, where a municipal primary intersects with a city street.

Concept

The intersection of IA 122 and College Drive/Iowa Avenue will be included in a resurfacing project being designed by District 2 for construction during the summer/fall of -2012. As part of that project, the District intends to convert the existing four-lane section of IA 122 to a three-lane configuration including intersection modifications at an adjacent intersection addressed in a separate TSIP application being submitted. At the intersection of IA 122 and College Drive/Iowa Avenue, District 2 intends to provide dedicated left-turn storage through the 4-3 lane conversion, and construct offset right hand turn lanes at the intersection for eastbound traffic on 122 that is turning south on Iowa Avenue and westbound 122 traffic that is turning north on College Drive. The four-three lane conversion will, by reallocation of existing pavement width, provide approximately 5-foot wide paved shoulders where none exist currently. The mainline IA 122 pavement is wide at this intersection due to the existing left-turn channelization. When reconfigured to a three-lane section, the additional width on the north side provides an opportunity using existing pavement width for a

free SB to WB right turn into a RT acceleration lane. This is a relatively high volume turning movement at this intersection, and we believe provision of this right-turn improvement will address the numerous rear-end crashes on the College Drive approach.

Justification

With record enrollment at the community college the amount of traffic using the College Drive/IA 122 intersection is also increasing. With that in mind, the District feels on offset right hand turn lane for vehicles turning into the college from the west would greatly increase safety. This offset right would decrease the chance of shadowing causing a crash at this intersection. According to the United States Department of Transportation, an offset right turn lane benefits left turning traffic by increasing sight distance for trailing vehicles as well as getting a commitment from turning vehicles.

Though separate applications are being prepared for this intersection and the one at IA 122 and C-56/California Avenue, District 2 feels that these two applications should be viewed as a package. The key element of the proposed improvements is the four-lane to three-lane conversion, which partially addresses shadowing concerns at the California Avenue intersection by eliminating the second through lane. The three-lane conversion provides an opportunity to reallocate the existing paved surface, embankment, and right-of-way; through this reallocation of space, District 2 will be able to construct offset mainline right-turn lanes at both intersections at minimal cost and within existing right-of-way, maintain dedicated left-turn storage at this intersection and provide it at California Avenue, provide for a right-turn acceleration lane for a heavy SB to WB movement out of the

community college at this intersection, and provide paved shoulders throughout.

These two intersections are only a half-mile apart. The improvements at College Drive are perhaps not tied as clearly to the underlying crash history as we would prefer. However, without making the improvements at College Drive, we would be unable to make the low-cost and highly-promising improvements at the California Avenue intersection which are clearly tied to the severe crash history at that intersection.

If we treated these intersections separately, without undertaking the four-to-three lane conversion, then we would have an undivided four lane section where capacity probably doesn't justify it and we would continue to have shadowing issues at both intersections associated with having multiple through lanes. We would have difficulty providing traditional dedicated left-turn lane channelization at both intersections due to their close proximity, and widening to provide offset right turn lanes beyond the existing four-lane sections would likely require additional right-of-way.

Document C

Improvements at College Drive / Iowa Ave.

Items	Quantity	Unit Cost	Total
(estimate for 2 turn lanes)			
Special Backfill (incl. accel lane)	650 Ton	15.51	\$10,081.50
Class 10 Excavation, Roadway and Borrow	400 CY	3.76	\$1,504.00
Granular Surface Material (incl accel lane)	170 Ton	16.17	\$2,748.90
HMA	680 Ton	33	\$22,440.00
HMA (Additional pavement for accel lane)	310 Ton	33	\$10,230.00
Binder (incl accel lane and partial depth pmedian patch)	67 Ton	550	\$36,850.00
Pavement Markings (incl four lane section, 1 mile)	285 Sta.	10	\$2,850.00
Symbols (incl four lane section, 1 mile)	30 Ea.	86	\$2,580.00
Removal of doweled median	1038 SY	10	\$10,380.00
Median repair, 2" partial depth HMA patch	113 Ton	26	\$2,938.00
Pavement Removal (extra pavement north of accel lane)	161 SY	20	\$3,220.00
Island Pavement removal	26 SY	20	\$520.00
Island Patch	13 SY	100	\$1,300.00
Proposed Island	72 SY	150	\$10,800.00
			\$118,442.40
		add 5%	\$124,364.52

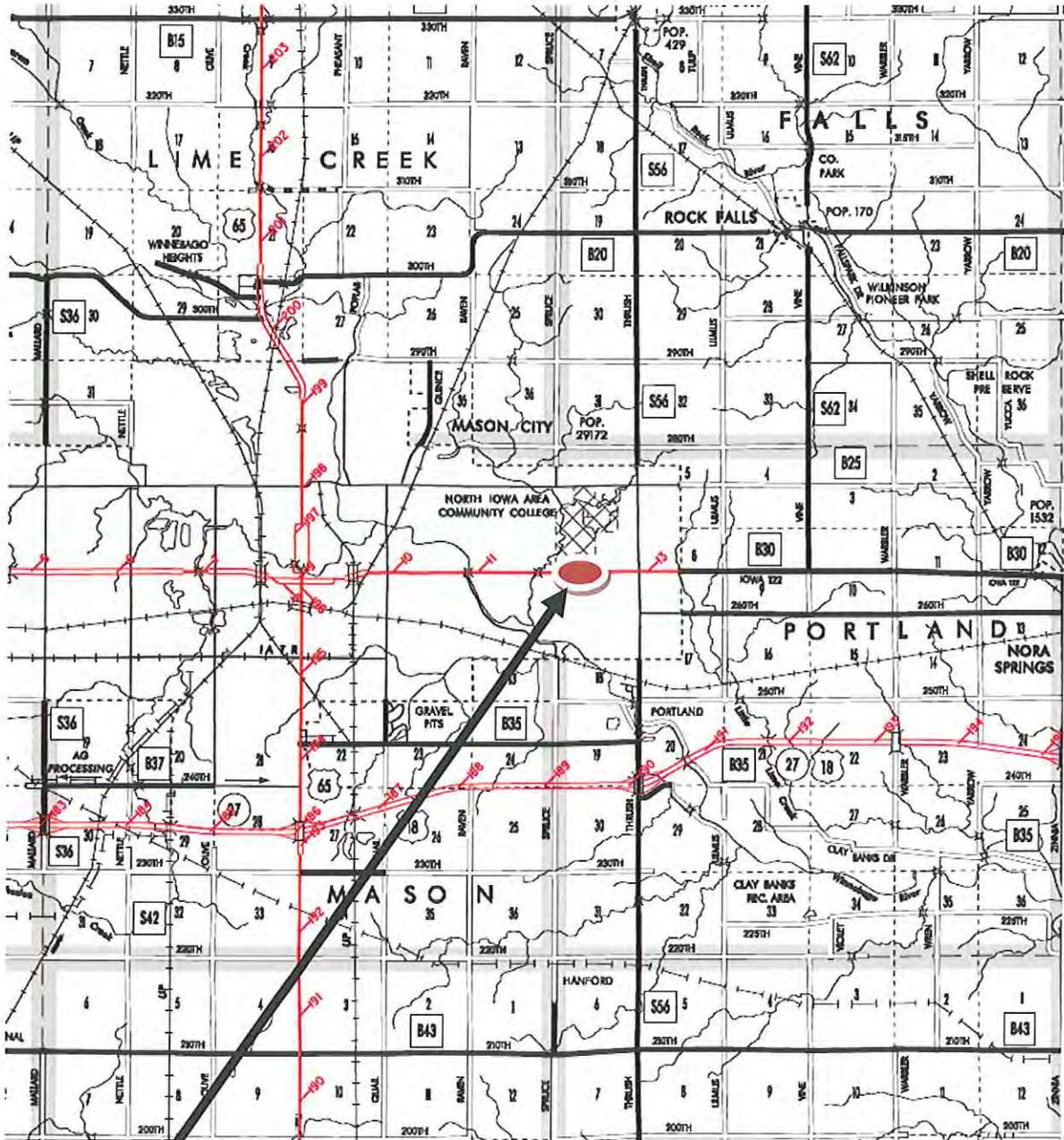
Document D

Proposed Schedule:

Grant Approval	December 2011
Project Development	Winter 2011-12
Project Letting	Spring 2012
Project Completion	Summer/Fall 2012

DOCUMENT E

Location of IA 122 & College Drive/Iowa Avenue-Cerro Gordo County



Project Location

Color Pictures of Project Site



IA 122 LOOKING WEST



IA 122 LOOKING EAST

Aerial View of Project Site



Project Location

TRAFFIC VOLUMES AND TURNING MOVEMENTS

IOWA DEPARTMENT OF TRANSPORTATION
VEHICULAR TURNING MOVEMENTS
ANNUAL AVERAGE DAILY TRAFFIC - YEAR 2009
IN MASON CITY

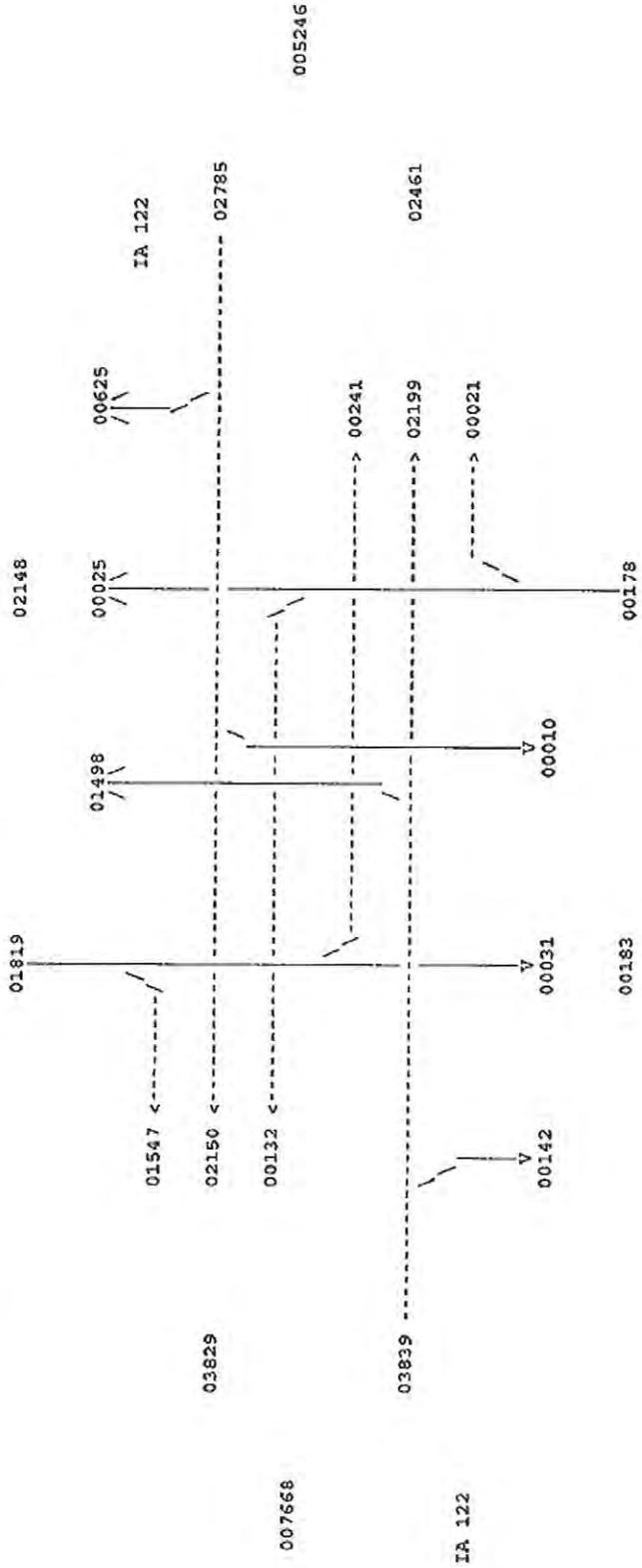
DATE: 07-27-2010

COUNTY: CERRO GORDO
IA 122, IOWA AVE & COLLEGE DR

STATION NO. 17 34 7309 0991

COLLEGE DRIVE

003967



000361

COLLEGE DRIVE

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Iowa 150 Buchanan County
170th Street
4.5 miles No. of Independence
 Location / Title of Project Realign Curves [HSIPX-150-3(65)--3L-10]

Applicant Iowa DOT

Contact Person Art Gourley Title Area Engineer

Complete Mailing Address Iowa Department of Transportation
P.O. Box 325, Dyersville, Iowa 52040

Phone 563-875-2375 E-Mail arthur.gourley@dot.iowa.gov
 (Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) Not Applicable

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
 Traffic Control Device
 Safety Study

Funding Amount

Total Project Cost	\$ <u>4,266,200.00</u>
Safety Funds Requested	\$ <u>500,000.00</u>

B.

NARRATIVE

This reconstruction project is proposed to correct the existing horizontal alignment of IA 150. Motorists have experienced problems negotiating the tight curvature on this roadway contributing to a number of accidents. The alignment of the IA 150 corridor consists of two 90-degree curves separated by approximately ½ mile of tangent section. The existing curves have 716 ft. radii with approximately 8% super-elevation and 45 mph advisory speed signs. Each curve has intersecting gravel roads with approximately 4,000 ft. between the gravel road intersections.

In 2002 a TEAP study was completed recommending both short and long term safety improvements on this segment of roadway. The short term improvements were implemented on a project in 2005; including installation of chevrons, flattening foreslopes, partially paved shoulders, addition of shoulder rumble strips, and placement of durable pavement markings.

The intent of this project is to address the longer term recommendations as follows:

Remove and replace approximately 6,600 ft. of IA 150 to improve the existing horizontal geometry which includes two substandard 90 degree curves. These existing 716 ft. radius curves will be replaced with 2,000 ft. radius curves utilizing spiral curves. The new pavement will be 28 ft. wide with 8 ft. shoulders (4 ft. paved and 4 ft. granular) with 6:1/3:1 foreslopes. Paved fillets will be constructed at each of the two new side road connections and minor right turn lanes will be constructed. Rumble strips will be milled in the paved shoulders.

Federal safety funds are being used to help fund this project {HSIPX-150-3(65)—3L-10}. Former State Transportation Safety Engineer Tom Welch suggested in a 4/20/2009 e-mail to Ken Yanna and Yanxiao Jia that this project should qualify for some level of TSF funding with a b/c ration of between 1.0 and 1.5. The b/c ratio calculated for the purposes of this application is 1.66.

Project Costs (\$4,266,200)

Buchanan Co. (65) 2011 Cost Estimate

Unit Prices from BidX 6 Months (Jul 2010 - Dec 2010) and BidX 12 Months (Jan 2010 - Dec 2010) Editions.

Current Program Cost: xxxx
Units: English
Run Date: 1/7/2011

Total Project Costs (includes all sections): \$3,867,100
Total PSS Base Costs (includes all sections, no M&C): \$2,478,900
4.50% Inflation, Calculated to Section Letting Dates: \$4,041,100

No	Code	Item Description	Unit	Quan.	BidX 6 Months		BidX 12 Months	
					Unit Price	Est. Cost	Unit Price	Est. Cost
1	2301-1033095	STD/S-F PCC PAVT, CL C CL 3, 9.5"	SY	21,758.0	\$38.38	\$835,100	\$40.81	\$887,900
2	2111-8174100	GRANULAR SUBBASE	SY	26,186.0	\$5.20	\$136,200	\$5.78	\$151,400
3	2102-2710070	EXCAVATION, CL 10, RDWY+BORROW	CY	100,000.0	\$2.85	\$285,000	\$3.28	\$328,000
4	2122-5500060	PAVED SHLD, HMA, 6"	SY	5,435.0	\$23.55	\$128,000	\$23.49	\$127,700
5	2102-0425071	SPECIAL BACKFILL	CY	3,167.0	\$25.36	\$80,300	\$30.71	\$97,300
6	2121-7425010	GRANULAR SHLD, TYPE A	TON	6,050.0	\$18.34	\$111,000	\$17.13	\$103,600
7	2123-7450000	SHLD CONSTRUCTION, EARTH	STA	200.0	\$63.49	\$12,700	\$90.40	\$18,100
8	2304-0100000	DETOUR PAVT	SY	7,808.0	\$41.56	\$324,500	\$38.18	\$298,100
9	2502-8212034	SUBDRAIN, LONGITUDINAL, (SHLD) 4"	LF	9,600.0	\$4.95	\$47,500	\$5.29	\$50,800
10	2502-8220190	SUBDRAIN OUTLET, RF-19E	EACH	38.0	\$178.79	\$6,800	\$171.82	\$6,500
11	2301-9091000	RUMBLE STRIP PANEL (PCC SURF)	EACH	131.0	\$21.56	\$2,800	\$21.56	\$2,800
12	2416-0100018	APRON, CONC, 18"	EACH	2.0	\$712.86	\$1,400	\$541.49	\$1,100
13	2416-0100030	APRON, CONC, 30"	EACH	2.0	\$667.83	\$1,300	\$753.62	\$1,500
14	2416-0100036	APRON, CONC, 36"	EACH	2.0	\$910.20	\$1,800	\$963.18	\$1,900
15	2416-1180018	CULV, CONC RDWY PIPE, 18"	LF	120.0	\$52.73	\$6,300	\$49.74	\$6,000
16	2416-1180030	CULV, CONC RDWY PIPE, 30"	LF	120.0	\$71.90	\$8,600	\$80.78	\$9,700
17	2416-1180036	CULV, CONC RDWY PIPE, 36"	LF	120.0	\$112.56	\$13,500	\$116.85	\$14,000
18	2510-6745850	RMVL OF PAVT	SY	38,100.0	\$4.10	\$156,200	\$4.44	\$169,200
19	2312-8260051	GRANULAR SURF ON RD, CL A CR STONE	TON	5,192.0	\$18.21	\$94,500	\$19.91	\$103,400
Sub-Total						\$2,253,500		\$2,379,000
20	2528-8445110	% TRAFFIC CONTROL	LS	5.0%	% of Sub-Total	\$112,700	% of Sub-Total	\$119,000
21	2533-4980005	% MOBILIZATION	LS	5.0%	% of Sub-Total	\$112,700	% of Sub-Total	\$119,000
PSS Base						\$2,478,900		\$2,617,000
22	0000-0000100	% STAGING	LS	30.0%	% of Sub-Total	\$743,700	% of Sub-Total	\$785,100

C.

No	Code	Item Description	Unit	Quan.	BidX 6 Months		BidX 12 Months		
					Unit Price	Est. Cost	Unit Price	Est. Cost	
23	0000-000010c	% Miscellaneous and Contingency	LS	20.0%		\$3,222,600	\$644,500	\$3,402,100	\$680,400
					% of Sub-Total			% of Sub-Total	

Total		\$3,867,100	\$4,082,500
Inflation to Date:	02/21/12	\$4,041,100	\$4,266,200

D.

TIME SCHEDULE

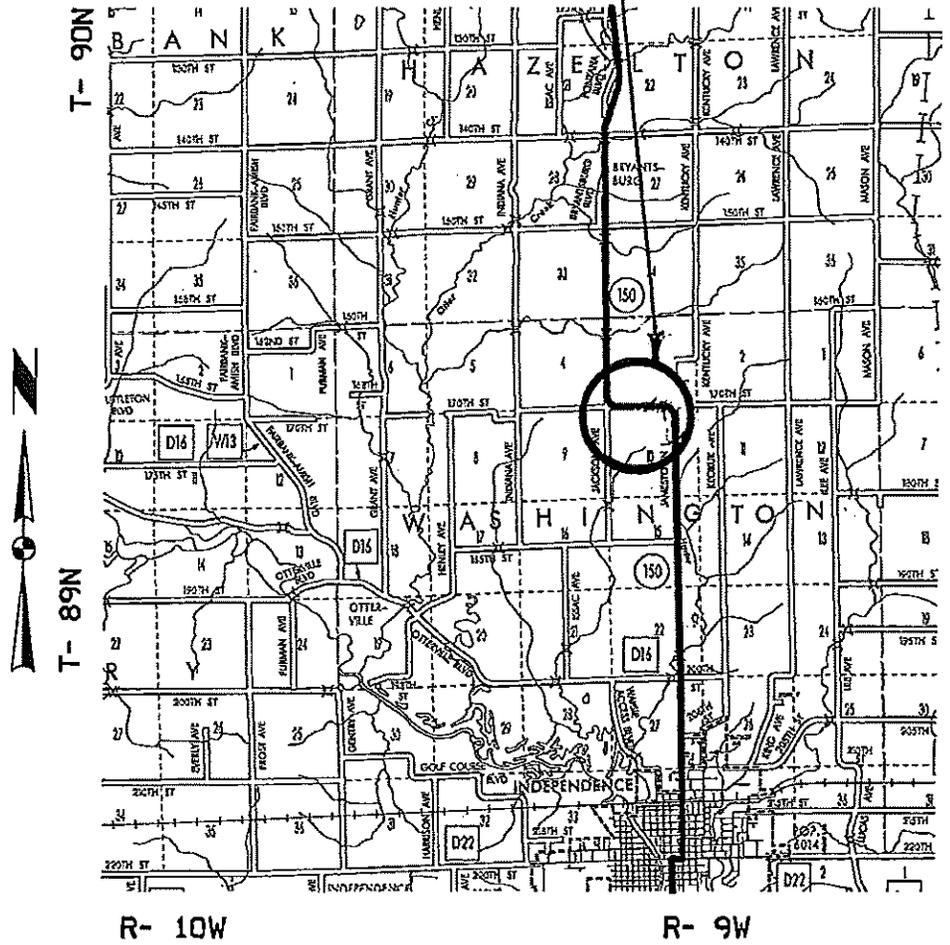
IA 150: Realign curves 4.5 miles north of Independence

	<u>Date</u>
D08 -- Final grade & pave plans	12/06/11
L02 -- Letting	02/21/12
C02 -- Construction Period	Calendar year 2012

E.

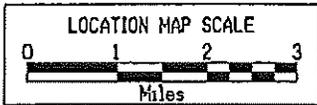
Location Map

PROJECT LOCATION



R- 10W

R- 9W





Address 1730 Jamestown Avenue

Address is approximate

NB IA 150 south of south curve

F.



F.



Address Iowa 150

Address is approximate

NB IA 150 within south curve





Address Iowa 150

Address is approximate

NB IA 150 near end of south curve

F.





Address **1915 170th Street**

Address is approximate

NB IA 150 near beginning of north curve

F.





Address Iowa 150

Address is approximate

NB IA 150 within north curve

F.





Address Iowa 150

Address is approximate

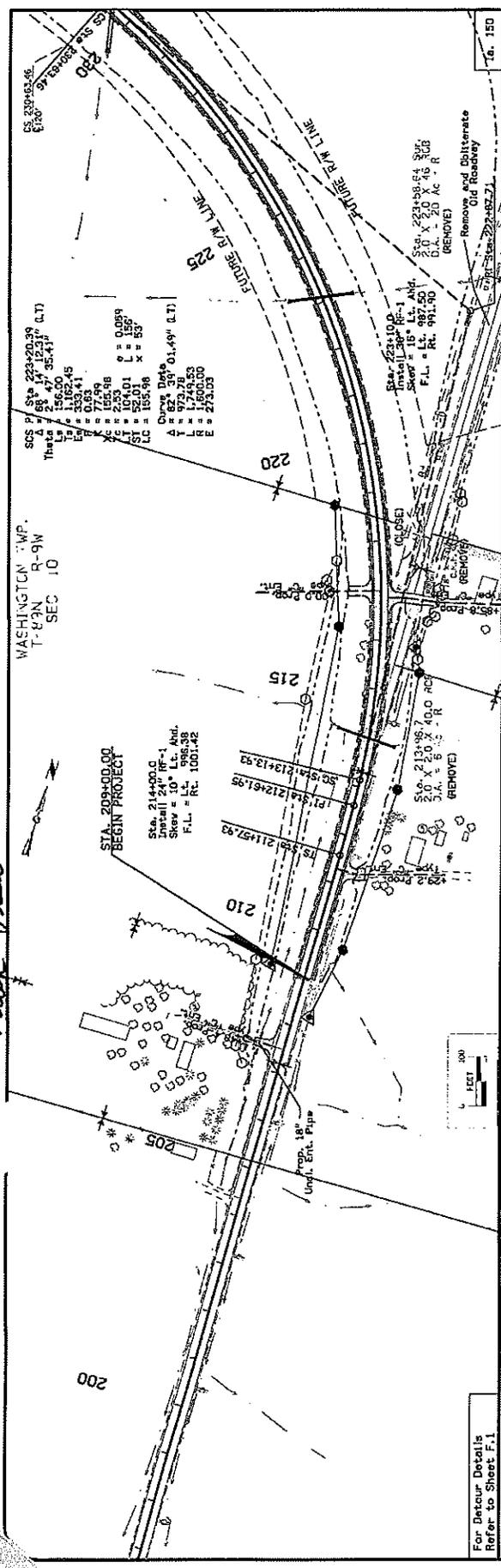
NB IA 150 near end of north curve

F.

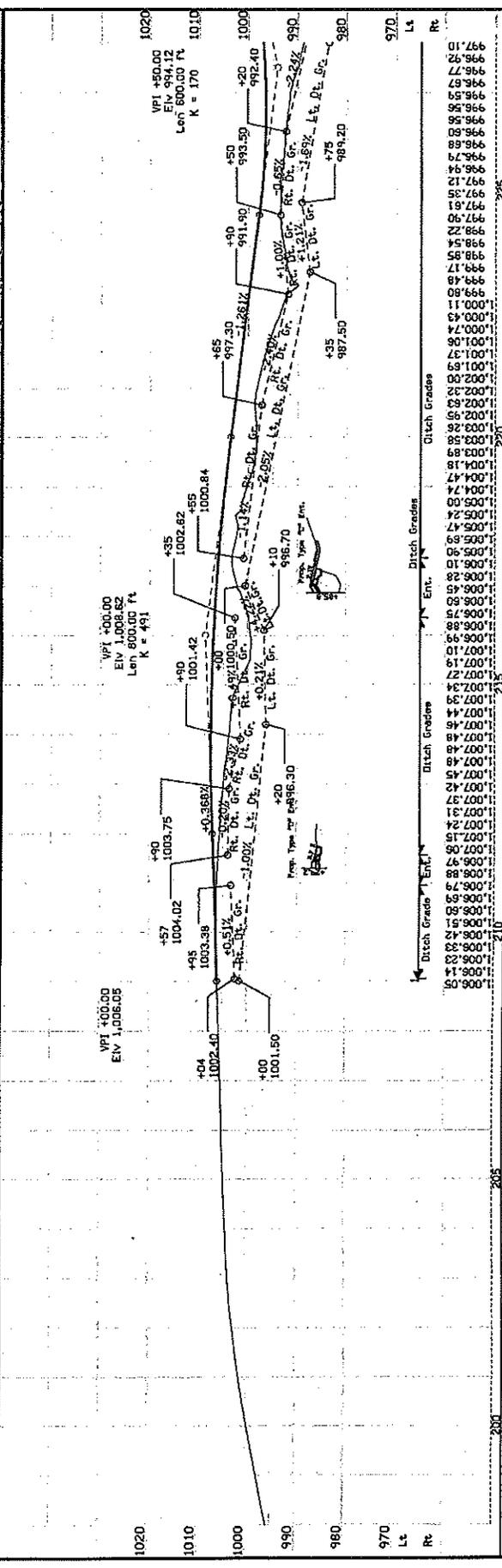


G.

Plan View



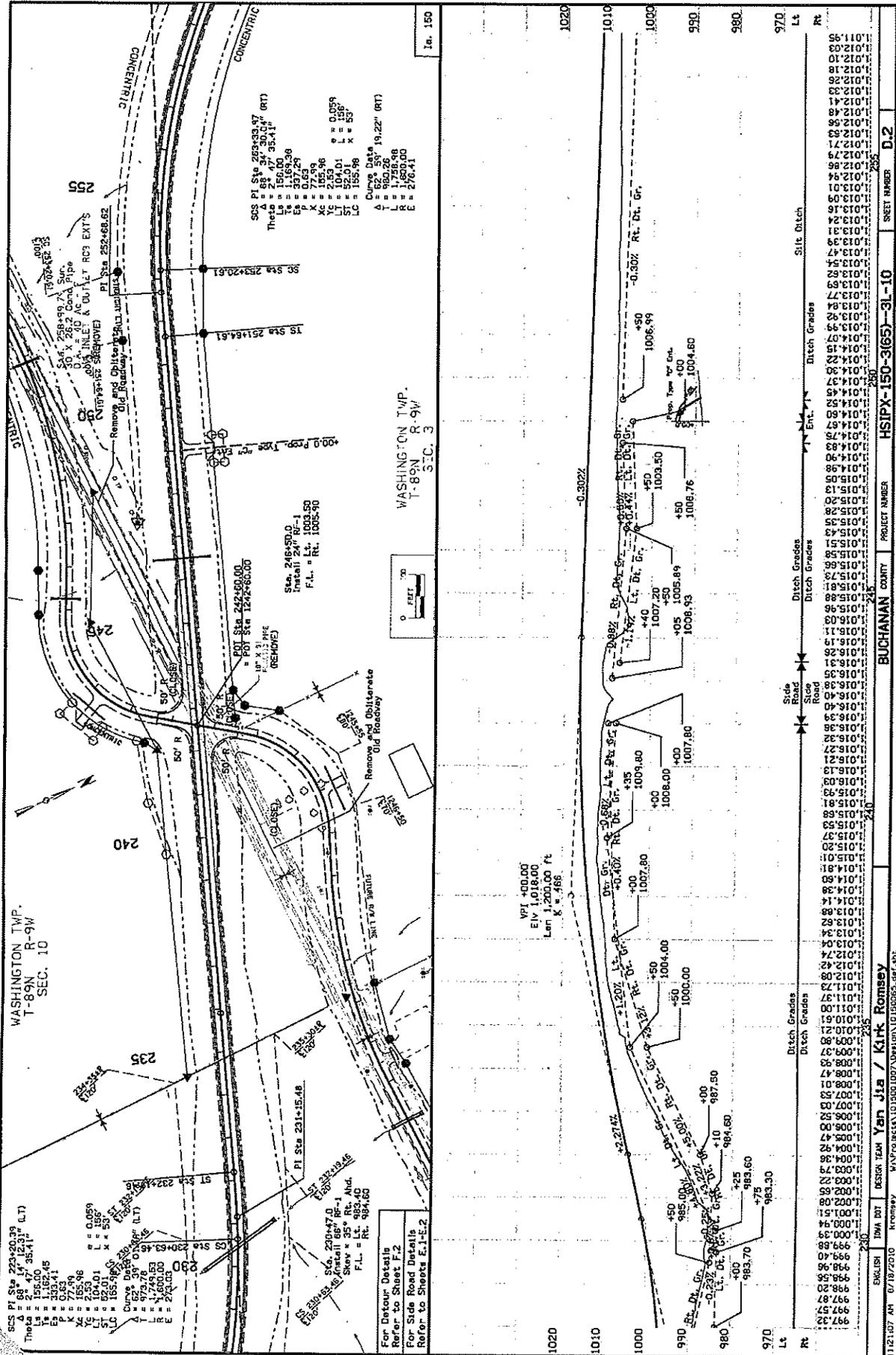
For Detail Details Refer to Sheet F.1



Station	Elevation	Grade	Notes
997.10	997.10		
998.00	998.00		
999.00	999.00		
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1001.00	1001.00		
1002.00	1002.00		
1003.00	1003.00		
1004.00	1004.00		
1005.00	1005.00		
1006.00	1006.00		
1007.00	1007.00		
1008.00	1008.00		
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1018.00	1018.00		
1019.00	1019.00		
1020.00	1020.00		

PROJECT NUMBER: HSPFX-150-3(65)-3L-10
 COUNTY: BUCHANAN
 DESIGN TEAM: Yan Jia / Kirk Remsey
 DATE: 8/16/2010
 SHEET NUMBER: D.1

G.



WASHINGTON TWP.
T-89N R-9W
SEC. 10

50' R
50' R
50' R

Curve Data
Sta. 230+00.00
PVI Sta. 232+45.45
L = 245.00
T = 160.00
E = 274.00
K = 1.745
Yc = 1.745
Yt = 1.745
X = 1.745
Z = 1.745
E = 0.059
L = 136'
X = 53'

Curve Data
Sta. 242+60.00
PVI Sta. 247+50.00
L = 245.00
T = 160.00
E = 274.00
K = 1.745
Yc = 1.745
Yt = 1.745
X = 1.745
Z = 1.745
E = 0.059
L = 136'
X = 53'

Curve Data
Sta. 252+68.62
PVI Sta. 259+34.31
L = 245.00
T = 160.00
E = 274.00
K = 1.745
Yc = 1.745
Yt = 1.745
X = 1.745
Z = 1.745
E = 0.059
L = 136'
X = 53'

Curve Data
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PVI Sta. 258+41.22
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T = 160.00
E = 274.00
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Yc = 1.745
Yt = 1.745
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L = 136'
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PVI Sta. 258+41.22
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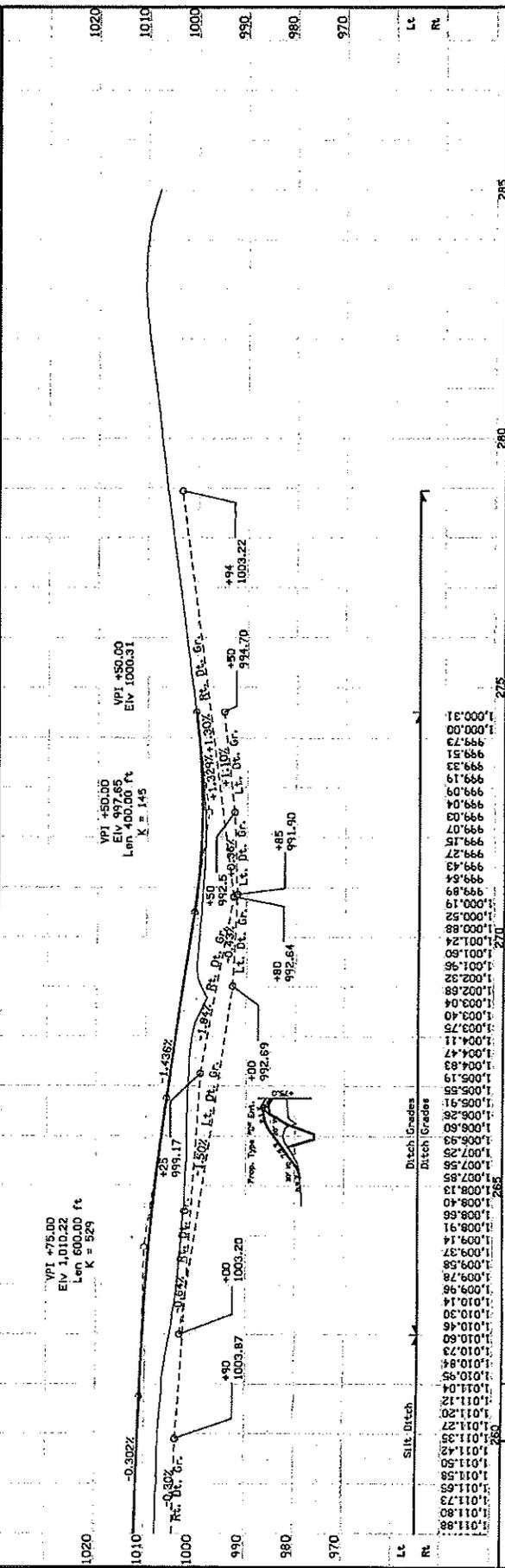
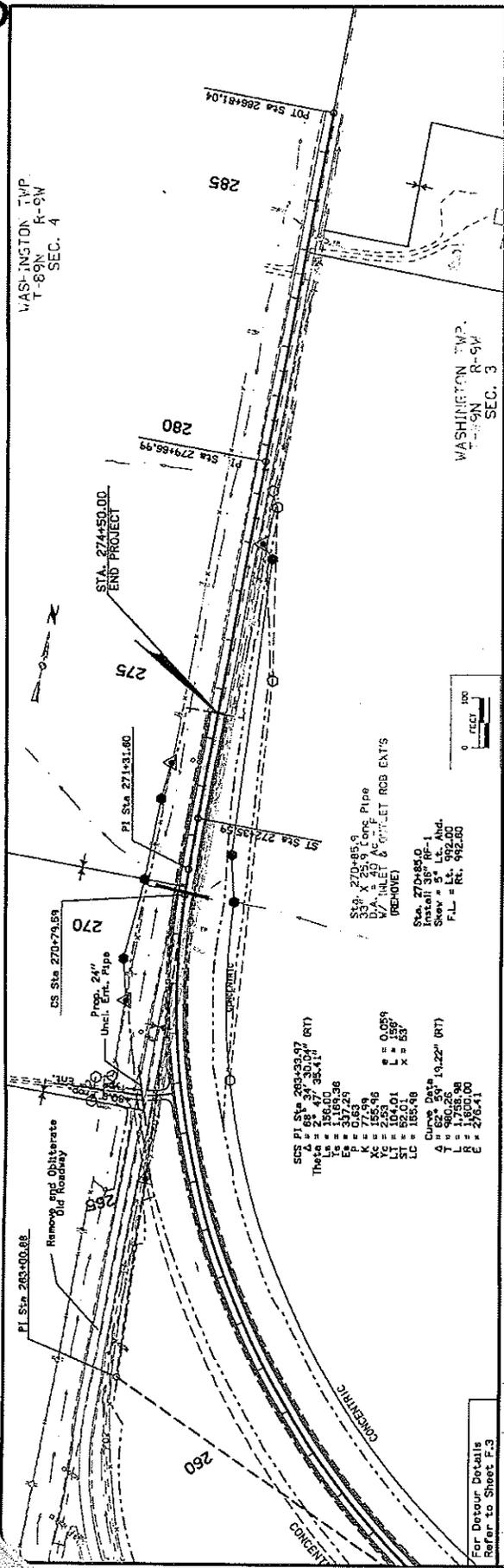
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K = 1.745
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Yt = 1.745
X = 1.745
Z = 1.745
E = 0.059
L = 136'
X = 53'

For Detail Details
Refer to Sheet F.2
For Side Road Details
Refer to Sheets E.1-E.2

11/21/2010 AM 9/18/2010
ENGLISH DINA DOT
DESIGN TEAM Yan Jia / Kirk Romsey
W:\Project\101558100\Washington\101558100.dwg

BUCHANAN COUNTY PROJECT NUMBER HSPX-150-3(65)-3I-10 SHEET NUMBER D.2

G.

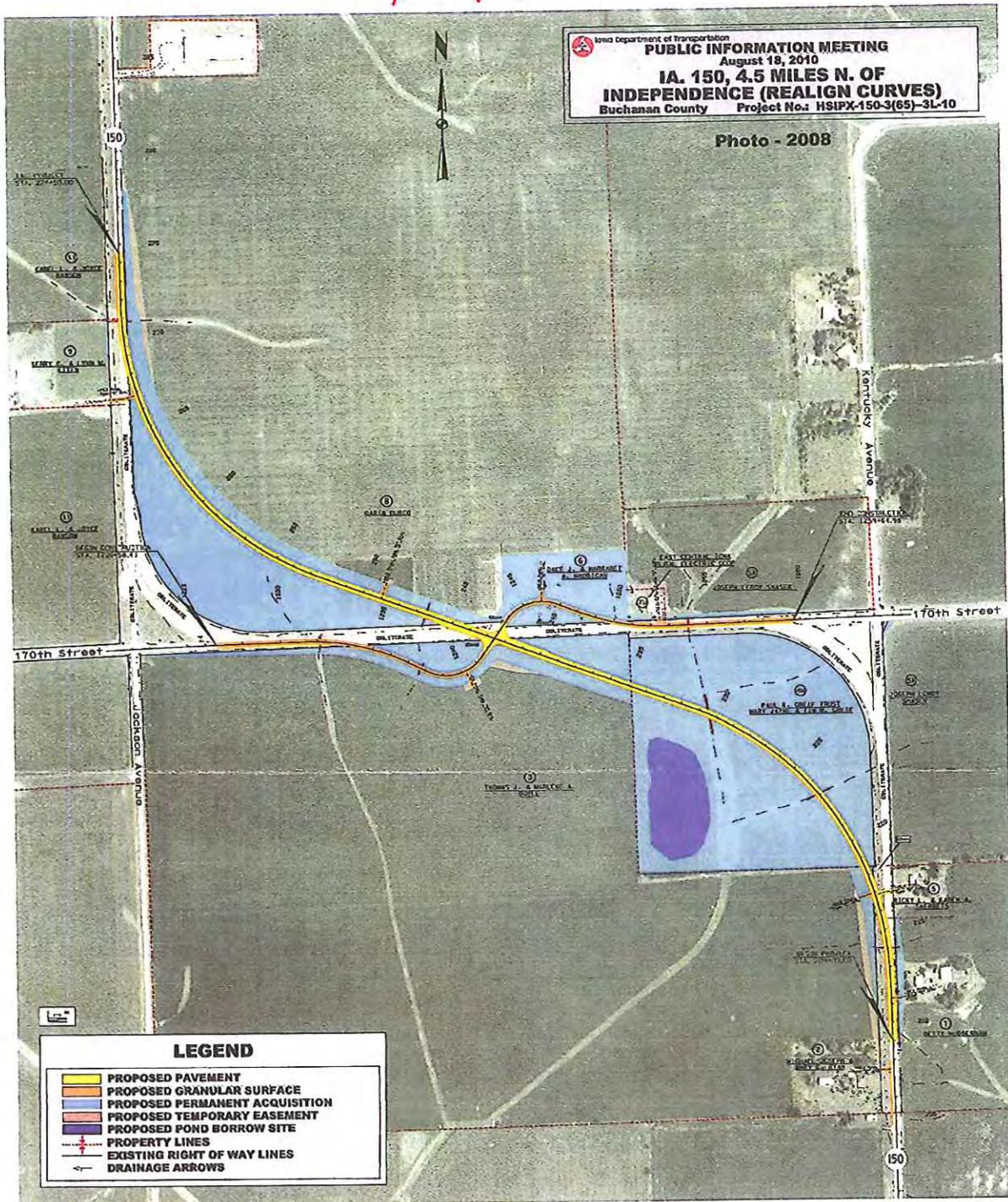


Station	Elevation	Notes
1020		
1010		
1000		
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WASHINGTON TWP T-89N R-9W SEC. 4
 WASHINGTON TWP T-89N R-9W SEC. 3
 PROJECT NUMBER: HSIPX-150-3(65)-3L-10
 SHEET NUMBER: D.3
 COUNTY: BUCHANAN
 DESIGN TEAM: Yan Jia / Kirk Romsey
 DATE: 8/18/2010
 PROJECT: N:\Projects\101501027\Design\10150055.dwg

airial photograph

H.



Route	2009 Primary Route Section Description	Rural/Municipal	Section Length (miles)	Annual Average Daily Traffic	Vehicle Classification Distribution of Annual Average Daily Traffic											Average Daily Vehicle Miles		
					Motorcycles	Cars, Vans and Pickups	Total Trucks and Buses	Single Unit Trucks				Combination Trucks			All Vehicles	Trucks and Buses		
								Buses	2 Axle	3 Axle	4 or more Axles	4 or less Axles	5 Axle	6 or more Axles			Multiple Trailer	
150	10 BUCHANAN COUNTY																	
150	INTERSECTION 330TH STREET	R	0.937	3600	38	3006	555	20	83	30	6	96	290	22	9		3589	553
150	INTERSECTION CO RD D47	R	3.995	3600	38	3006	555	20	83	30	6	96	290	22	9		14382	2217
150	SOUTH LIMITS OF INDEPENDENCE	R	5.044	4330	46	3623	661	35	147	54	8	96	290	22	9		21841	3334
150	NORTH LIMITS OF INDEPENDENCE	M	0.119	5300	58	4580	661	35	147	54	8	96	290	22	9		631	79
150	SOUTH LIMITS OF INDEPENDENCE	R	0.048	5300	58	4580	661	35	147	54	8	96	290	22	9		254	32
150	NORTH LIMITS OF INDEPENDENCE	M	0.100	5300	58	4580	661	35	147	54	8	96	290	22	9		530	66
150	US 20 INTERCHANGE	R	0.078	5300	58	4580	661	35	147	54	8	96	290	22	9		413	62
150	SOUTH LIMITS OF INDEPENDENCE	R	0.070	9800	96	9031	673	39	204	106	11	54	235	17	7		686	47
150	INTERSECTION 6TH STREET SOUTH	M	1.031	10900	107	10116	673	39	204	106	11	54	235	17	7		11238	694
150	JCT 1ST STREET & 3RD AVENUE EAST	M	0.293	10100	99	9327	673	39	204	106	11	54	235	17	7		2959	197
150	JCT 1ST STREET & 5TH AVENUE EAST	M	0.123	11500	114	10713	673	39	204	106	11	54	235	17	7		1416	83
150	INTERSECTION 6TH STREET NORTH	M	0.334	6600	76	5989	534	32	133	49	8	72	218	16	6		2204	176
150	NORTH LIMITS OF INDEPENDENCE	M	0.420	6600	76	5989	534	32	133	49	8	72	218	16	6		2772	224
150	SOUTH LIMITS OF INDEPENDENCE	R	0.125	5700	65	5101	534	32	133	49	8	72	218	16	6		713	67
150	NORTH LIMITS OF INDEPENDENCE	M	0.074	5700	65	5101	534	32	133	49	8	72	218	16	6		422	40
150	JUNCTION CO RD D16	R	1.055	5500	62	4903	534	32	133	49	8	72	218	16	6		5803	563
150	SOUTH LIMITS OF HAZLETON	R	8.429	4730	62	4143	534	32	133	49	8	72	218	16	6		39869	4501
150	INTERSECTION HAYES STREET	M	0.516	5000	56	4428	514	29	121	44	7	72	218	16	6		2550	265
150	NORTH LIMITS OF HAZLETON	M	0.540	5900	67	5319	514	29	121	44	7	72	218	16	6		3185	278
150	JUNCTION IA 281 AT SOUTH LIMITS OF OELWEIN & SOUTH LINE OF FAYETTE COUNTY	R	1.213	6300	72	5713	514	29	121	44	7	72	218	16	6		7642	623
	ROUTE SUMMARY - RURAL		21.054	4521													95192	11989
	ROUTE SUMMARY - MUNICIPAL		3.550	7859													27937	2104

For questions about this web site contact [Ron Bunting](#).

The curves to be realigned are approximately halfway between Independence and Hazelton. 2009 ADT through the curve area = 5200 VPD

L.

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Buchanan Prepared by: Terry O Date Prepared: Jun 7, 2011

Location: On Iowa 150 4.5 miles north of Independence

Improvement

Proposed Improvement(s): Curve Re-alignment

\$ 500,000 Estimated Improvement Cost, EC 20 Est. Improvement Life, years, Y
 \$ - Other Annual Cost (after initial year), AC 49 Crash Reduction Factor (integer), CRF
 \$ - Present Value Other Annual Costs, OC 4.0% Discount Rate, INT

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$

\$ 500,000 Present Value All Costs,
COST = EC + OC

Traffic Volume Data

Source: Iowa Dot 2009 Date of traffic count

Two-way

Length (mi.)	veh/day	Description
1.50	5,200	Ia 150

7,800 Current Vehicle Miles / Day, VM
 17,091 End of Life Veh. Miles / Day
 2,847,000 Current Veh. Miles / Year, AM
 84,778,190 Total Projected Veh. Miles Over
 Life of Project, TVMT

1.50 miles total

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

4.0% Projected Traffic Growth (0%-10%), G

Crash Data

2006	First full year -->	2010	Last full year	5.3 years, Time Period, T
<u>4</u>	Additional months			values as of Dec. 2007
	Fatal Crashes	→	<u>1</u> Fatalities @	\$3,500,000 \$ -
			<u>1</u> Major Injuries @	\$240,000 \$ 240,000
<u>3</u>	Injury Crashes	→	<u>1</u> Minor Injuries @	\$48,000 \$ 48,000
			<u>1</u> Possible Injuries @	\$25,000 \$ 25,000
<u>7</u>	Property Damage Only		(assumed cost per crash)	\$2,700 \$ -
			-OR- enter all Property Costs of all crashes:	\$ <u>155,600</u>
<u>10</u>	Total Crashes, TA		Total \$ Loss, LOSS	\$ <u>468,600</u>

1.88 Current Crashes / Year, AA = TA / T
 \$ 46,860 Cost per Crash, AVCR = LOSS / TA
 55.8 Total Expected Crashes, TCR = CR x TVMT/10^8
 0.92 Crashes Avoided First Year AAR = AA x CRF / 100
 \$ 43,053 Crash Costs Avoided in First Year, AAR x AVCR
 27.4 Total Avoided Crashes, TCR x CRF/ 100

65.9 Crashes / HMVM, Crash Rate, CR
 CR = TA x 10^8 / (AM x T)
\$ 827,935 Present Value of Avoided
 Crashes, BENEFIT

$$BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$827,935 : \$500,000 = 1.66 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Mediapolis Road

Applicant Des Moines County Secondary Road Department

Contact Person Brian J. Carter, P.E. Title County Engineer

Complete Mailing Address 13522 Washington Road
West Burlington, IA 52655

Phone (319)753-8241 E-Mail dmcsecrd@mchsi.com
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific

Traffic Control Device

Safety Study

Funding Amount

Total Project Cost \$ 515,187

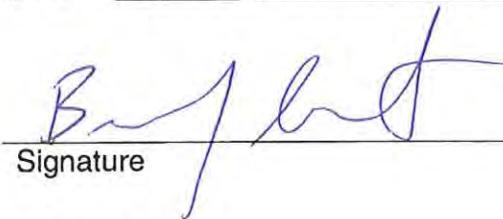
Safety Funds Requested \$ 500,000

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

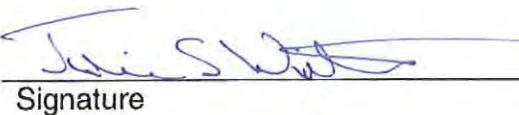
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the Des Moines County Secondary Road Department

Signed:  6-15-11
Signature Date Signed

Brian J. Carter
Typed Name

Attest:  6-15-11
Signature Date Signed

Julie S. Winter
Typed Name

RESOLUTION

A

WHEREAS The Traffic Safety Improvement Program (TSIP) allocates Traffic Safety Funds (TSF) for eligible routes, and

WHEREAS Mediapolis Road from the intersection with Iowa City Road west to the intersection with 160th Avenue in Des Moines County is an eligible route, and

WHEREAS the local jurisdiction must assure that any funded improvements will be adequately maintained;

NOW, THEREFORE BE IT RESOLVED that the Des Moines County Board of Supervisors approves the application for monies from the TSIP/TSF program for safety improvements on Mediapolis Road, and

NOW, THEREFORE BE IT ALSO RESOLVED that Des Moines County agrees to maintain the improved roadway in accordance with county policy and procedure.

ADOPTED this 14th day of June, 2011.

DES MOINES COUNTY BOARD OF SUPERVISORS

Robert W. Beck
Robert W. Beck, Chair

Daniel E. Cahill
Daniel E. Cahill, ~~Vice Chair~~

Tom Broeker
Tom Broeker, ~~Member~~ - Vice Chair

APPROVED
RIS JUN 14 2011
BOARD OF SUPERVISORS

ATTEST:

Carol S. Copeland
Carol S. Copeland, Auditor

Mediapolis Road TSIP Application
Narrative

B

This project is proposed on Mediapolis Road, approximately two miles west of Mediapolis. Mediapolis Road is a 24' wide asphalt pavement with 4-5 foot wide shoulders. This project corridor is approximately 0.75 miles long and is posted for 55 miles per hour. The horizontal curve on the east end of the project is signed for 50 MPH.

By utilizing accident history, we plan to utilize various types of safety improvements to improve this site. This project will include flattening foreslopes, flattening driveway side slopes, and regrading two vertical curves. Also, there are two bridges located in this area. Both bridges were replaced in 2006 with new bridges. During that project, new guardrail blisters were built and new guardrail installed. During the bridge project, the west bridge was significantly vertically realigned to accommodate the future regrading of the crest vertical curve that is located immediately west of the bridge.

For the east horizontal curve, vertical grade is not an issue. A common accident at this location is a run-off-the-road accident for traffic traveling west. In this location, we plan to flatten the north foreslope (westbound traffic) to a 4:1 slope. Also, two driveways are located on the 'outside' of the curve. During construction, the side slopes will be constructed to 6:1 slopes. With these flatter slopes, it will give a driver better opportunity to correct the vehicles path, lessen the likelihood of a rollover or airborne situation, and minimize the violence of a run-off-the-road accident.

A vertical curve is located west of the west bridge. Between the bridge and the crest, 154th Avenue intersects with Mediapolis Road on the south side. 154th Avenue is a short dead end gravel road that serves one residence and agricultural ground. The sight distance between the crest of the curve and the intersection is poor. When we regraded the new bridge, it was with the intention that in the future, safety funds might be available to lower the vertical curve to improve sight distance and safety at this intersection. Following this project, the stopping sight distance for east bound traffic (traveling towards the 154th intersection) will improve from 416 feet to 475 feet. The sight distance at the 154th intersection looking to the west (towards the crest) will improve from 530 feet to 580 feet.

A sag vertical curve is located to the west of the aforementioned crest vertical curve. The low point of the curve will be raised approximately three feet during the regrading. The existing 10-foot diameter CMP will be replaced with a longer 10-foot x 10-foot precast concrete box culvert. The regraded section and new culvert will allow for 6-foot wide shoulders and 3:1 foreslopes. The existing foreslopes are approximately 1:1.

Utilizing the above described improvements, we will improve the safety in multiple locations within this project corridor. Since the existing right of way is fairly wide, the amount of new right of way will be minimal. Most of the new right of way will likely be near the new, longer box culvert. This project is estimated to cost \$515,187.20. A detailed cost estimate is included with the application paperwork. Des Moines County is applying for \$500,000 of TSIP funds. The balance will be funded with Farm to Market funds.

C

ESTIMATE OF QUANTITIES

PROJECT MEDIAPOLIS WEST RECONSTRUCTION PREPARED BY TPS DATE
 TYPE ROAD RECONSTRUCTION CHECKED BY DATE

ITEM NO.	ITEMS	CONTRACT QUANTITY	UNIT PRICE	UNIT	TOTAL TO DATE	
					QUANTITY	AMOUNT
1	Excavation, Class 10, Roadway & Borrow 2102-2710070	15,700	\$5.00	CY	15,700	\$78,500.00
2	Topsoil, Strip, Salvage & Spread 2105-8425015	2,000	\$5.00	CY	2,000.00	\$10,000.00
	Granular Subbase 2111-8174100	7,020	\$5.00	SY	7,020.00	\$35,100.00
3	Granular Shoulders, Type "B" 2121-7425020	1,310	\$18.00	TON	1,310	\$23,580.00
4	Shoulder Finishing, Earth 2123-7450020	39.4	\$150.00	STA	39.4	\$5,910.00
5	Standard or Slip Form PCC Pavement, Class C, Class 3 Durability, 8" 2301-1033080	7,020	\$28.00	SY	7,020	\$196,560.00
6	PCC Pavement Samples 2301-6911722	1	\$2,000.00	LS	1	\$2,000.00
7	Surfacing, Driveway, Class A Crushed Stone 2315-8275025	117	\$18.00	TON	117	\$2,106.00
8	Precast Concrete Box Culvert, 10' x 10' 2415-2111010	90	\$800.00	LF	90	\$72,000.00
9	Precast Concrete Box Flared Apron 2415-2300000	2	\$9,000.00	EACH	2	\$18,000.00
10	Aprons, Metal, 15" Dia. 2417-0225015	2	\$200.00	EACH	2	\$400.00
11	Culvert, Corrugated Metal Ent. Pipe, 15" Dia. 2417-1040015	80	\$15.00	LF	80.00	\$1,200.00
12	Aprons, Metal, 24" Dia. 2417-0225024	2	\$250.00	EACH	2	\$500.00
13	Culvert, Corrugated Metal Ent. Pipe, 24" Dia. 2417-1040024	90	\$25.00	LF	90.00	\$2,250.00
14	Removal of Pavement 2510-6745640	7,020	\$5.00	SY	7,020.00	\$35,100.00
15	Safety Closure 2518-6910000	2	\$125.00	EACH	2	\$250.00
16	Painted Pavement Markings, Waterborne or Solvent-Based 2527-9263109	68.40	\$18.00	STA	68.40	\$1,231.20
17	Traffic Control 2528-8445110	1	\$2,500.00	LS	1	\$2,500.00
18	Flaggers 2528-8445112	30	\$150.00	DAY	30	\$4,500.00
19	Pilot Cars 2528-8445114	10	\$350.00	DAY	10	\$3,500.00
20	Mobilization 2533-4980005	1	\$20,000.00	LS	1	\$20,000.00
					TOTAL	\$515,187.20

6/15/2011 1:13 PM

I:\Land Projects 2008\Mediapolis Road reconstruction\Mepo West Reconstruction Estimates.xls

Time Schedule

December 2011 – Submit Concept Statement for review

June 2012 – Submit Preliminary Plans to IDOT for review

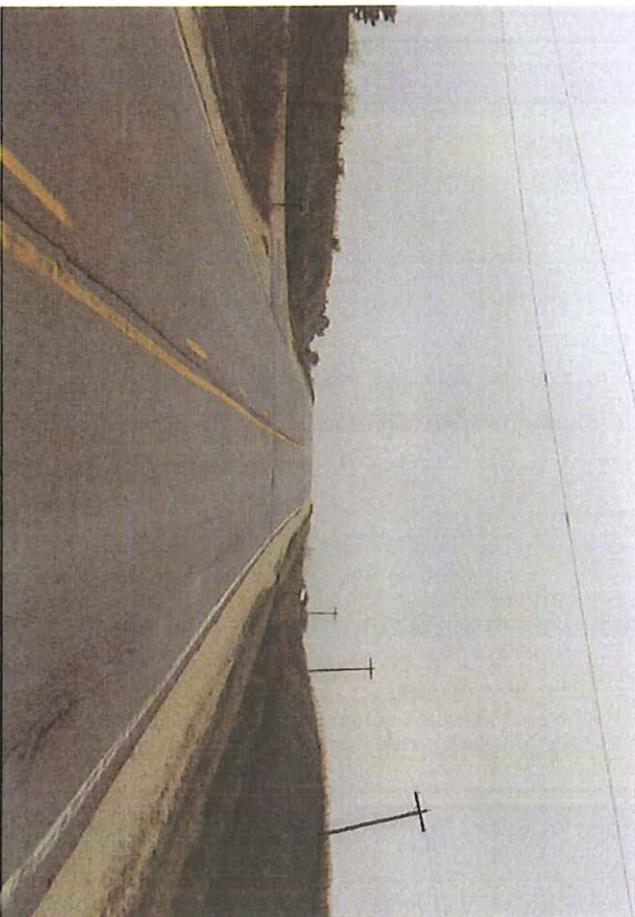
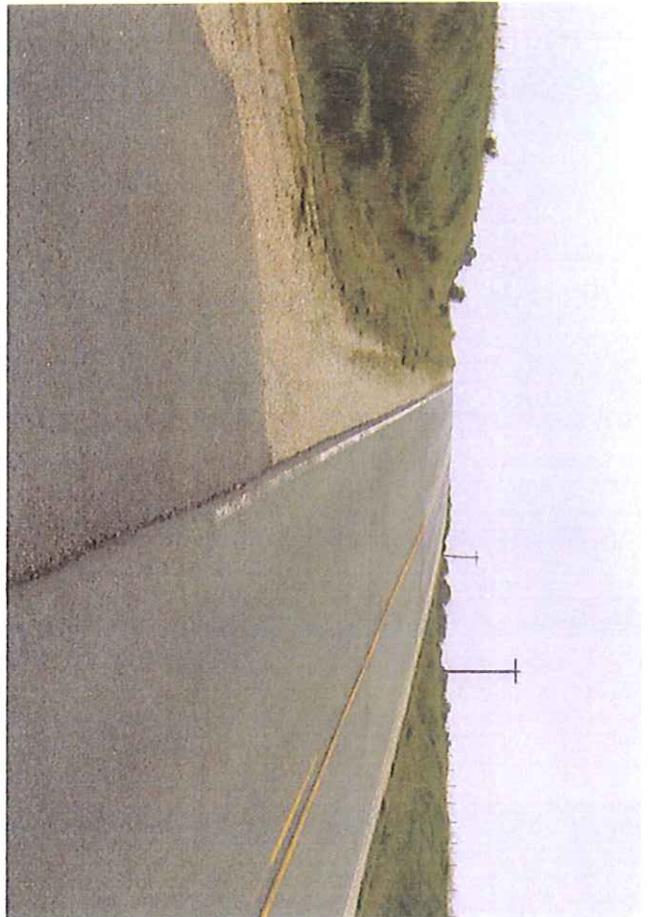
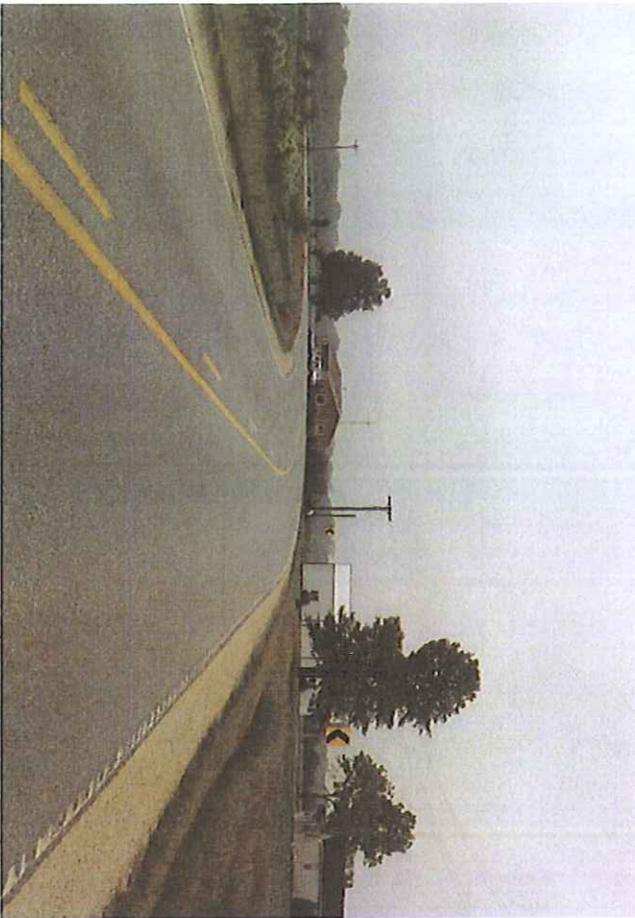
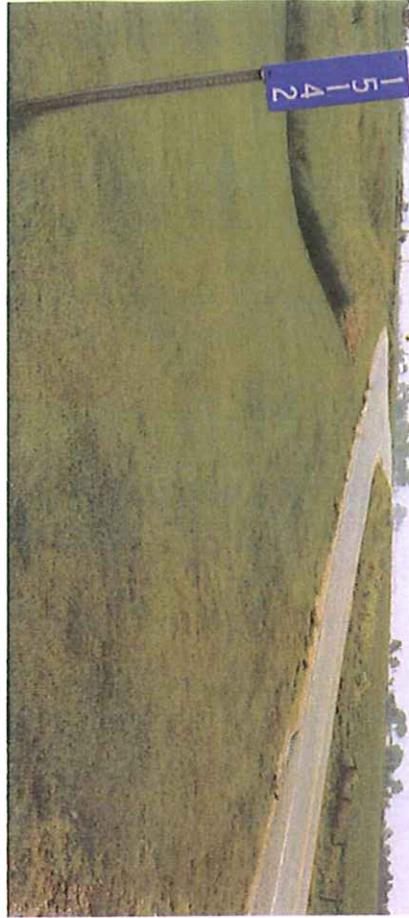
August 2012 – Submit Check Plans to IDOT for review

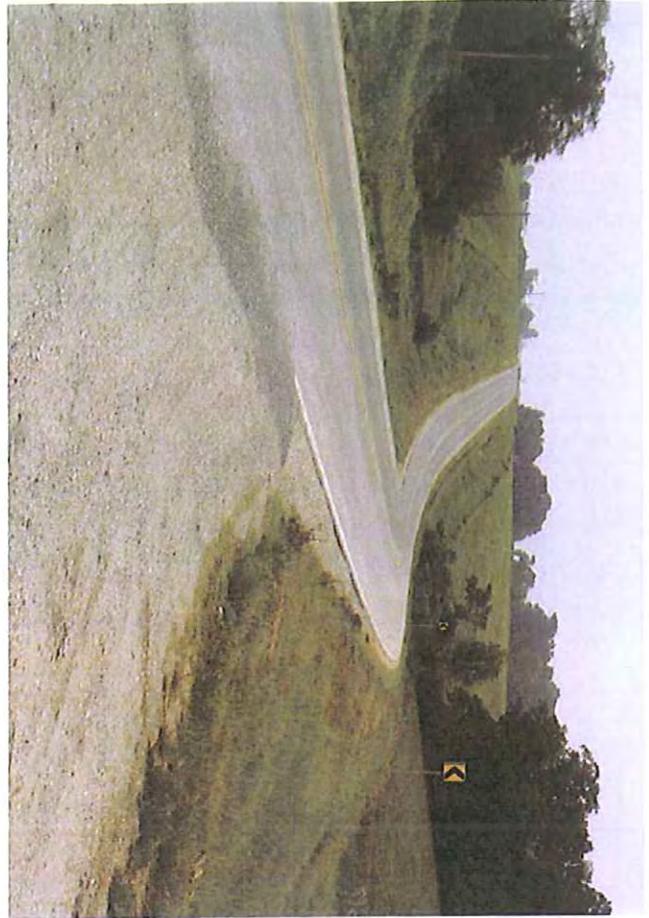
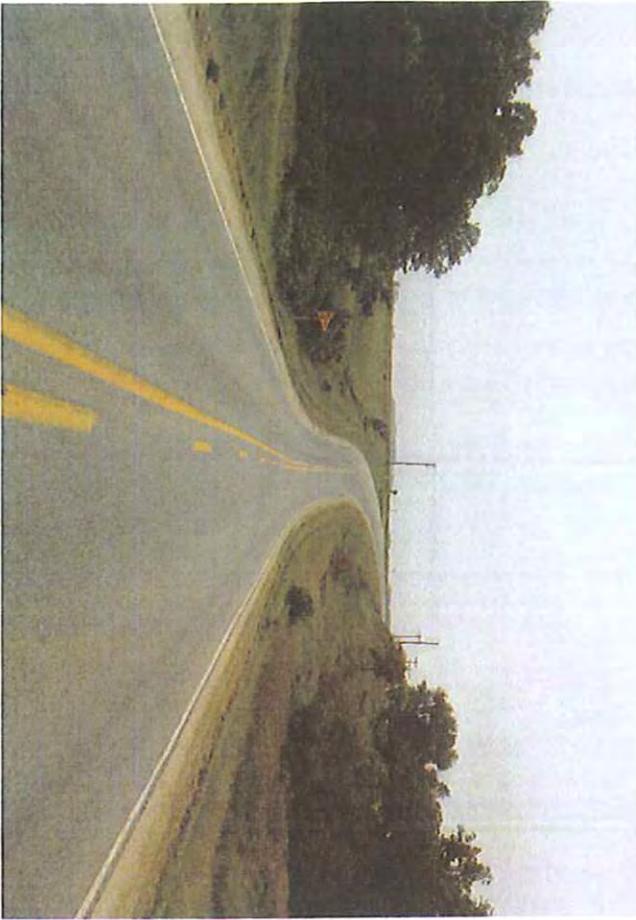
September 2012 – Submit Final Plans and Project Development Certificate to IDOT

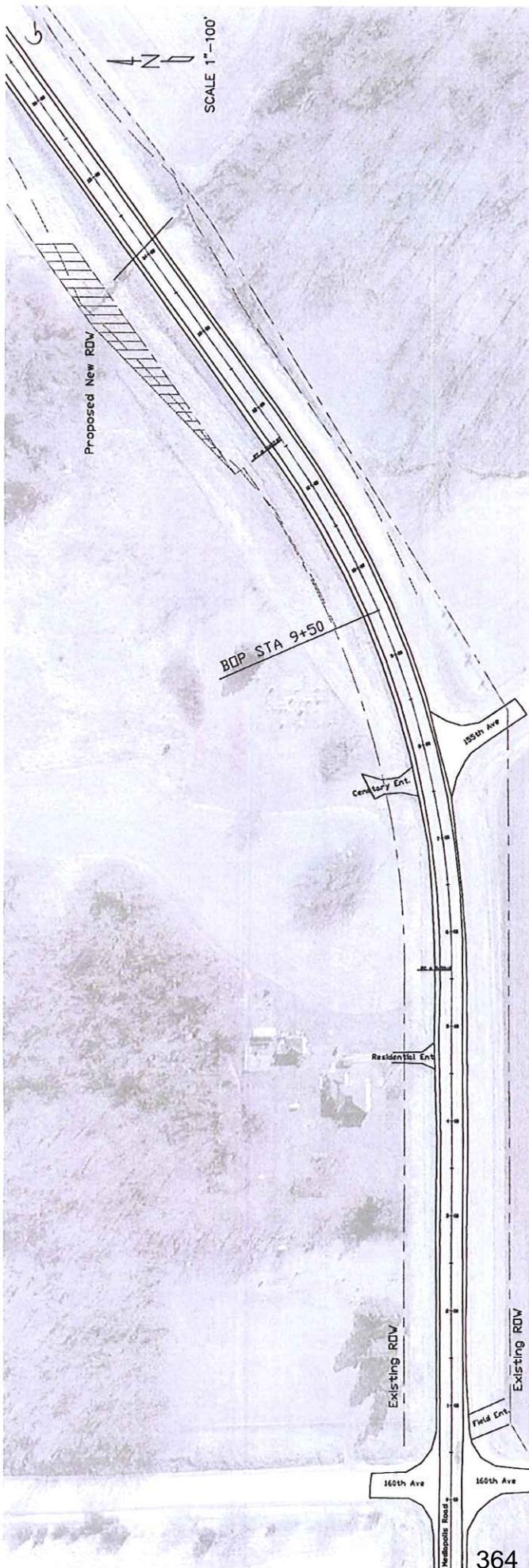
December 2012 – Let project through IDOT

April 2013 – Late start date for construction

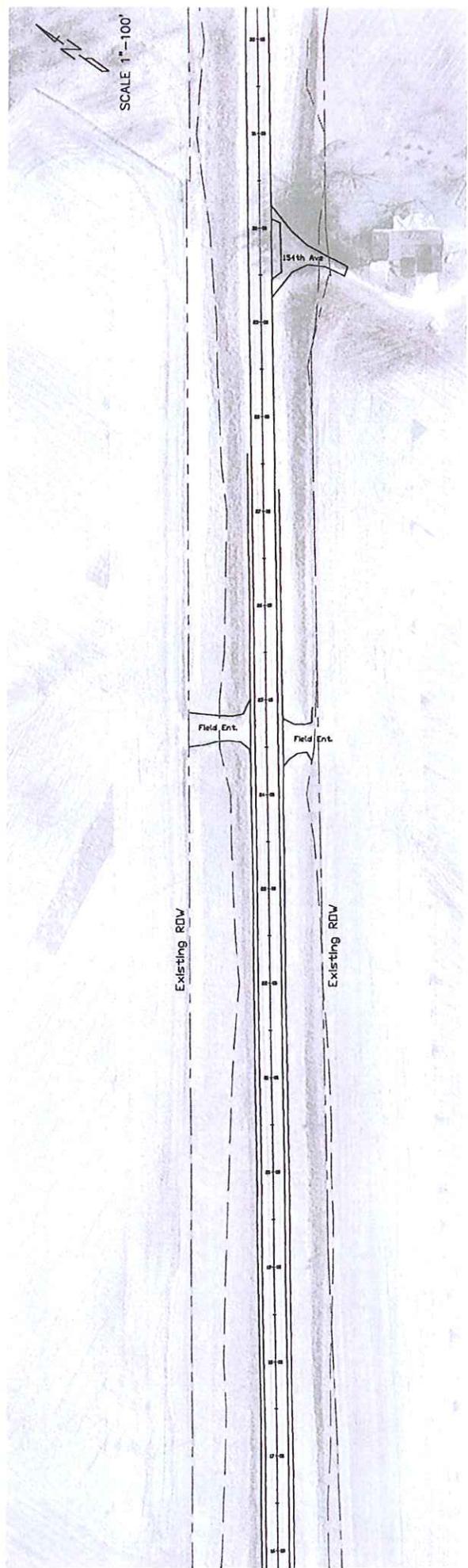
Construction should be complete prior to September 2013

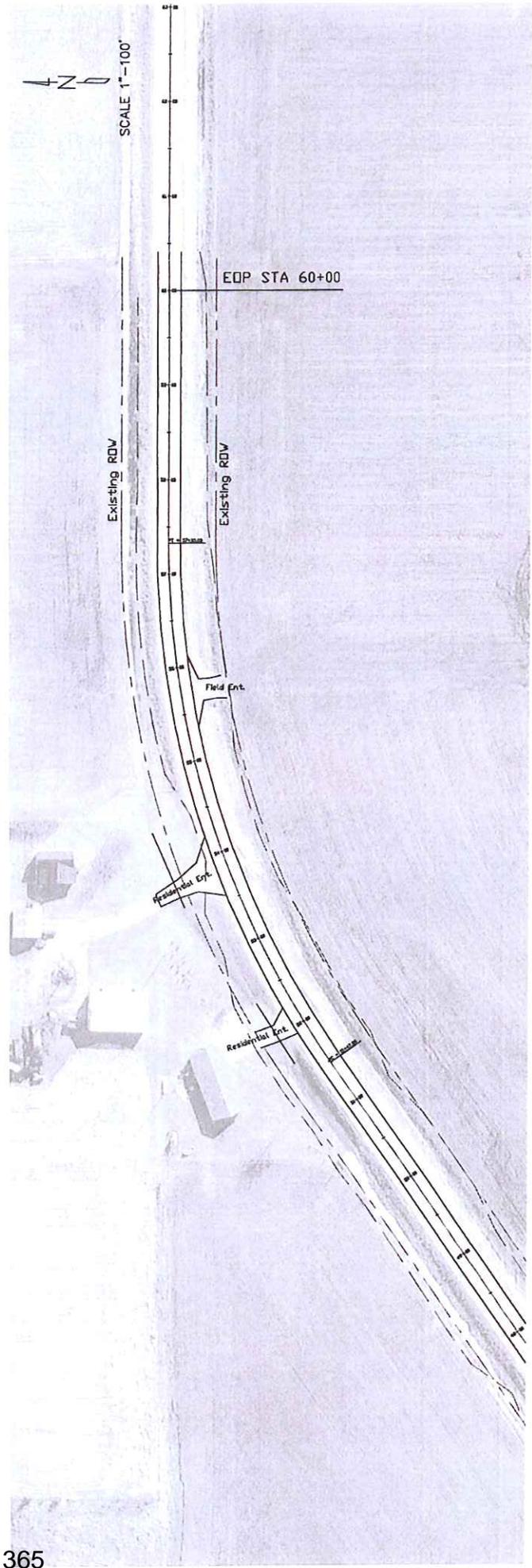
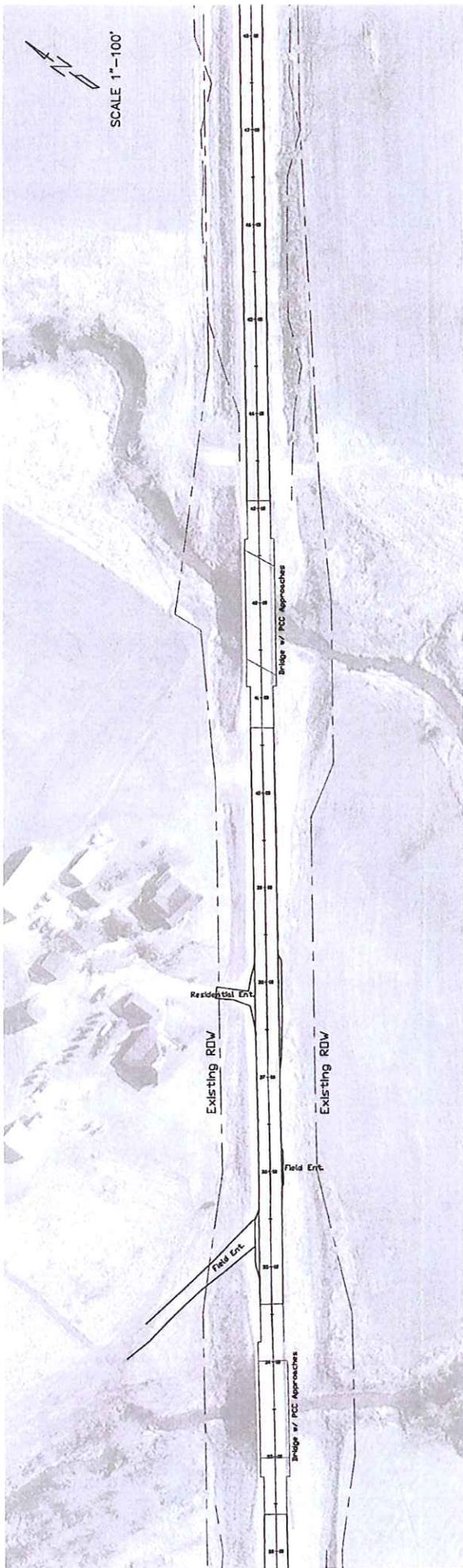






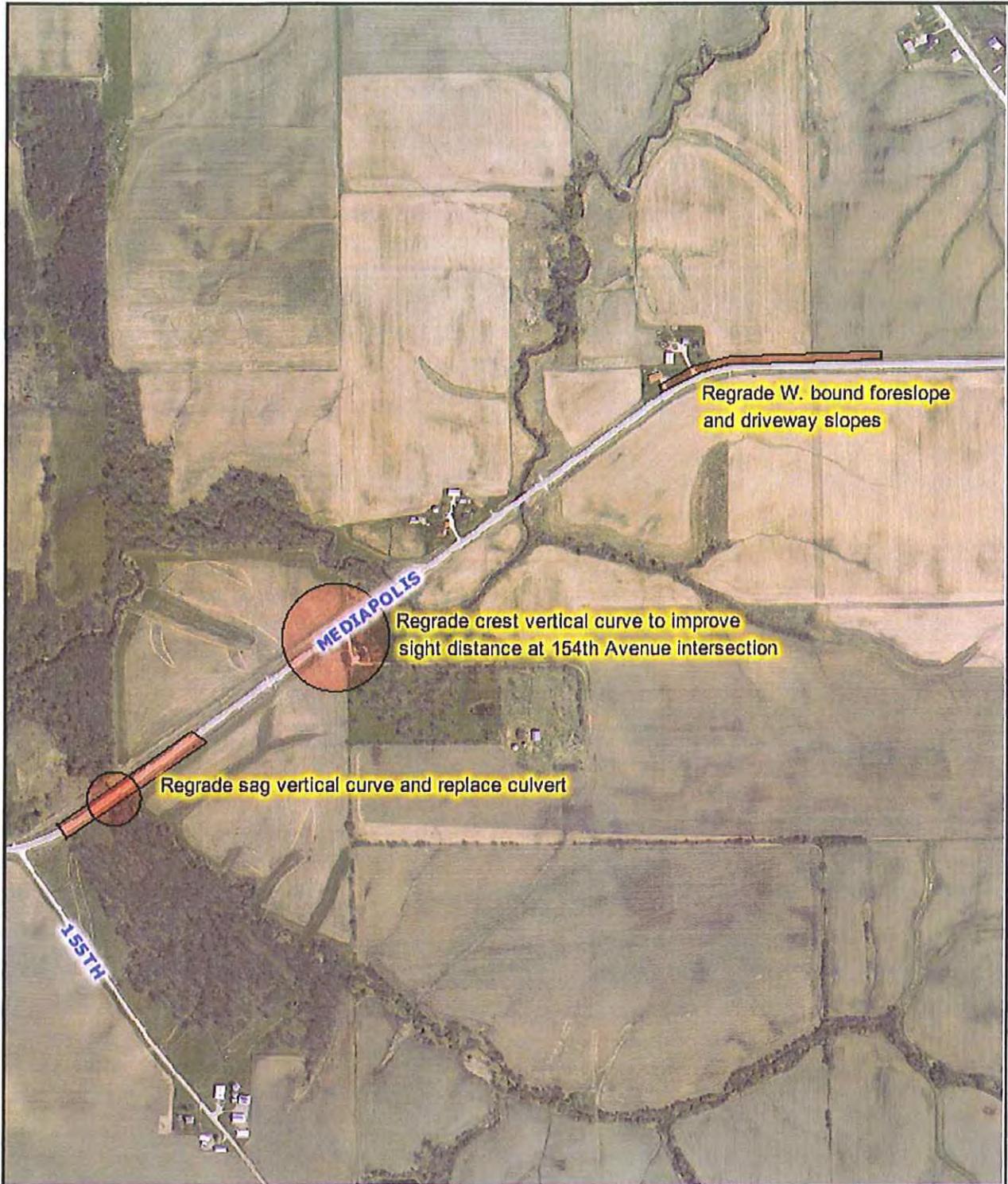
364





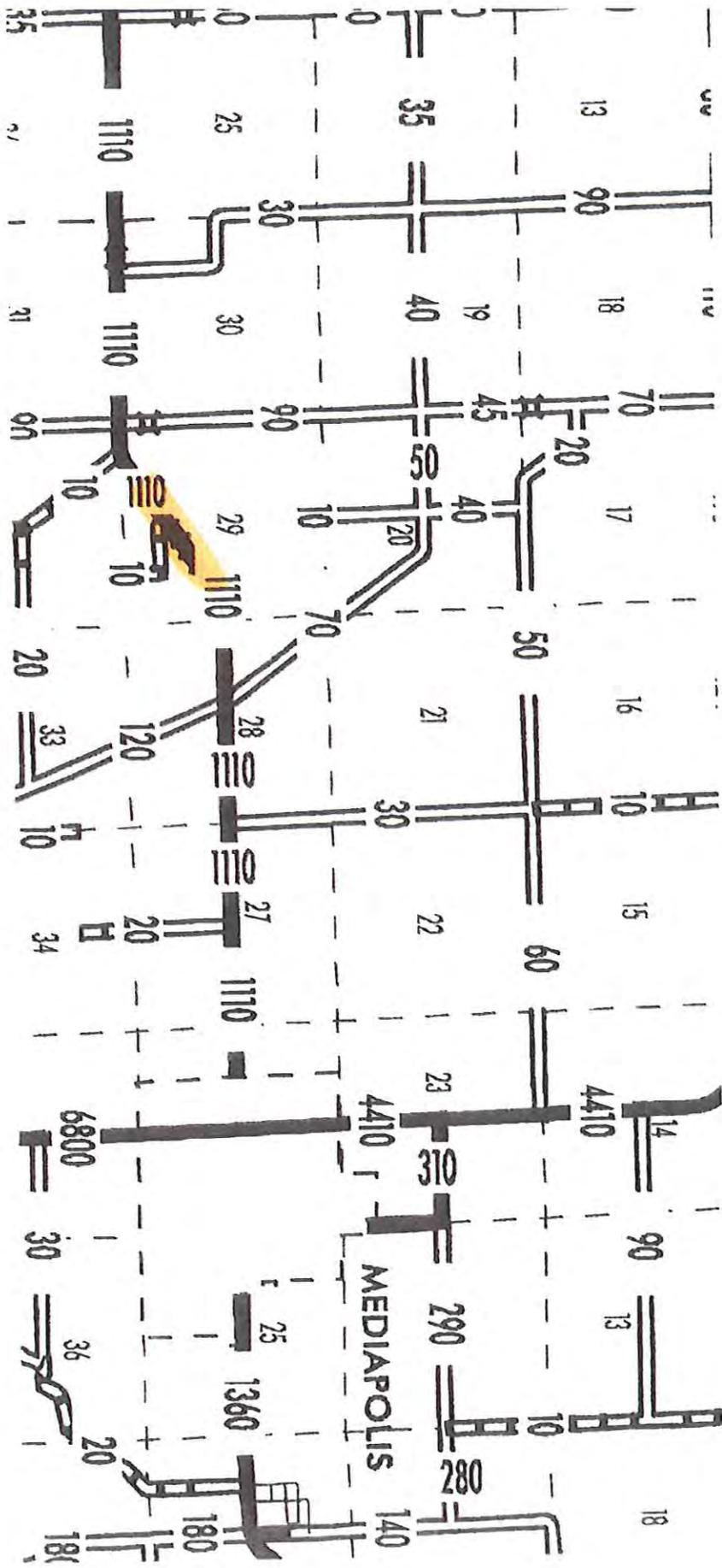
H

Des Moines County TSIP Aerial



Disclaimer: Map and parcel data are believed to be accurate, but accuracy is not guaranteed. This is not a legal document and should not be substituted for a title search, appraisal, survey, or for zoning verification.

Map Scale
1 inch = 809 feet



Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

Rev. 8/09

County: Des Moines Cour Prepared by: Brian J. Carter Date Prepared: Jun 10, 2011
 Location: Mediapolis Road between Iowa City Road and 160th Avenue

Improvement

Proposed Improvement(s): Combination of shoulder improvements, foreslope flattening, and vertical grade improvements to improve sight distances

<p>✗ <u>\$ 658,076</u> Estimated Improvement Cost, EC</p> <p><u>\$ -</u> Other Annual Cost (after initial year), AC</p> <p><u>\$ -</u> Present Value Other Annual Costs, OC</p> $OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	<p><u>20</u> Est. Improvement Life, years, Y</p> <p>✗ <u>12</u> Crash Reduction Factor (integer), CRF</p> <p><u>4.0%</u> Discount Rate, INT</p> <p><u>\$ 658,076</u> Present Value All Costs, COST = EC + OC</p>
---	--

Traffic Volume Data

Source: Iowa DOT 1110 Date of traffic count

Two-way
 Length (mi.) veh/day Description

0.00 miles total

- Current Vehicle Miles / Day, **VM**
- End of Life Veh. Miles / Day
- Current Veh. Miles / Year, **AM**
- Total Projected Veh. Miles Over Life of Project, **TVMT**

$$TVMT = \frac{AM}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right)$$

✗ 2.0% Projected Traffic Growth (0%-10%), **G**

Crash Data

✗ <u>2005</u>	First full year -->	<u>2009</u>	Last full year	5.0 years, Time Period, T
<u> </u>	Additional months	<u> </u>	<u> </u>	values as of Dec. 2007
<u>1</u>	Fatal Crashes	<u>1</u>	Fatalities @	\$3,500,000 \$ 3,500,000
<u> </u>	<u> </u>	<u>0</u>	Major Injuries @	\$240,000 \$ -
<u>5</u>	Injury Crashes	<u>2</u>	Minor Injuries @	\$48,000 \$ 96,000
<u>2</u>	Property Damage Only	<u>3</u>	Possible Injuries @	\$25,000 \$ 75,000
<u> </u>	<u> </u>	<u> </u>	(assumed cost per crash)	\$2,700 \$ 21,600
<u>8</u>	Total Crashes, TA	-OR- enter all Property Costs of all crashes:		Total \$ Loss, LOSS \$ 3,692,600

<p>1.60 Current Crashes / Year, AA = TA / T</p> <p><u>\$ 461,575</u> Cost per Crash, AVCR = LOSS / TA</p> <p>- Total Expected Crashes, TCR = CR x TVMT/10^8</p> <p>0.19 Crashes Avoided First Year AAR = AA x CRF / 100</p> <p><u>\$ 88,622</u> Crash Costs Avoided in First Year, AAR x AVCR</p> <p>- Total Avoided Crashes, TCR x CRF/ 100</p>	<p>- Crashes / HMVM, Crash Rate, CR</p> <p>CR = TA x 10^8 / (AM x T)</p> <p><u>\$ 1,426,081</u> Present Value of Avoided Crashes, BENEFIT</p> $BEN. = \frac{AVCR \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$
--	---

Benefit / Cost Ratio

Benefit : Cost = \$1,426,081 : \$658,076 = 2.17 : 1

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Dakota City, Iowa/1st Avenue North ExtensionApplicant City of Dakota CityContact Person David Lee Title MayorComplete Mailing Address 26 5th Street SouthDakota City, IA 50529Phone 515-332-3083 E-Mail dcity@goldfieldaccess.net
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) Humboldt County Engineers OfficeContact Person Paul Jacobson Title County EngineerComplete Mailing Address 2221 220th StreetHumboldt, Iowa 50548Phone 515-332-2366 E-Mail engineer@goldfieldaccess.net
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific
Traffic Control Device
Safety Study

Funding Amount

Total Project Cost \$ 419,832.00Safety Funds Requested \$ 419,832.00

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

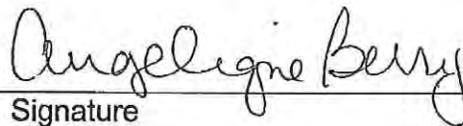
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Dakota City, Iowa

Signed:  6-14-11
Signature Date Signed

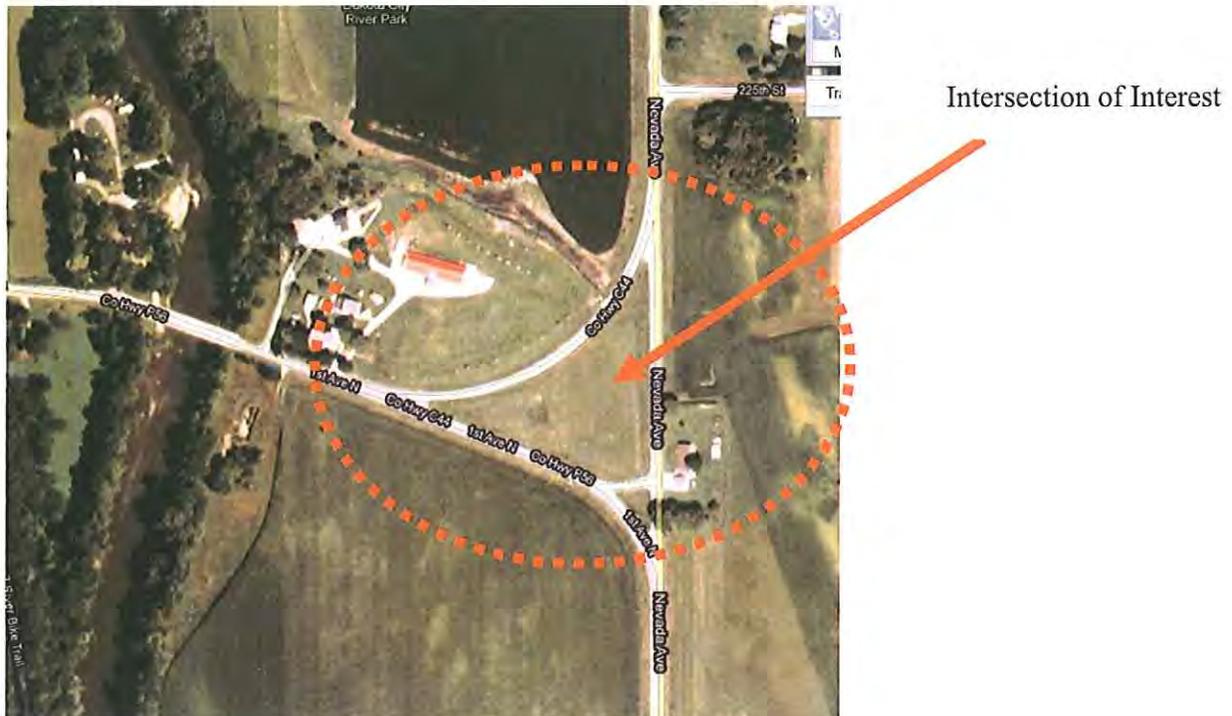
David Lee, Mayor of Dakota City
Typed Name

Attest:  6-14-11
Signature Date Signed

Angelique Berry, Dakota City Clerk
Typed Name

B. Narrative

The City of Dakota City, supported by Humboldt County Engineering, is requesting Transportation Safety Improvement Program funding to increase the safety, by reducing the number of potential conflict/collision points, at the intersection of 1st Avenue North and Nevada Ave. just east of the Humboldt County Historical Museum in Dakota City. The intersection is just south of State HWY 3 and one of the primary entrances into the City.



The City, with support from the County, would like to create simple T-Intersection with a stop sign to control traffic access from 1st Avenue North onto Nevada Ave., the North/South thoroughfare. The existing 1930's geometry/designed intersection(s) consist of three small Y-intersections with two-lane/two-way traffic movement in all directions; these make a large Y-Intersection that facilitates two-way traffic in all directions. There is also a short access road/lane in the interior of the intersections that accesses two of the two-way traffic lanes. Sight lines around the intersection(s), none of which are 90 degree angled intersections, are obstructed by the layout and provide for many conflict points where traffic collisions could easily occur. Because of the dated design the current alignment is less safe than the proposed T-Intersection, which would replace the entire, larger, Y-intersection. The current alignment has speed limits of 55 & 45 mph.

The removal of the Y-Intersection alignment and realignment to a T-Intersection will drastically improve the safety of the intersection by reducing the number of conflict points to 11 and will drastically improve poor line-of-sight issues that are abundant in the current design.

C. Itemized Breakdown of All Costs

1st Ave N Extension
City of Dakota City

Item No.	Description	Quantity	Unit	Unit Price	Total
			Quantity		
1	Remove Existing Paving	4650	SY	\$ 8.00	\$ 37,200.00
2	Grading	1	LS	\$10,000.00	\$ 10,000.00
3	Class 10 Roadway Embankment	3000	CY	\$ 12.00	\$ 36,000.00
4	Furnish & Install Granular Subbase	900	TN	\$ 30.00	\$ 27,000.00
5	Furnish & Install 8" PCC Paving	2900	SY	\$ 60.00	\$174,000.00
6	Furnish & Install Granular Shoulders	150	TN	\$ 30.00	\$ 4,500.00
7	Furnish & Install RCP	150	LF	\$ 50.00	\$ 7,500.00
8	Strip, Salvage and Spread Topsoil	700	CY	\$ 10.00	\$ 7,000.00
9	Erosion Control	1	LS	\$10,000.00	\$ 10,000.00
10	Seed, Fertilize, and Mulch	1	LS	\$ 5,000.00	\$ 5,000.00
11	Traffic Control	1	LS	\$15,000.00	\$ 15,000.00
CONSTRUCTION TOTAL					\$ 333,200.00
CONTINGENCY					\$ 33,320.00
DESIGN					\$ 53,312.00
PROJECT TOTAL					\$ 419,832.00

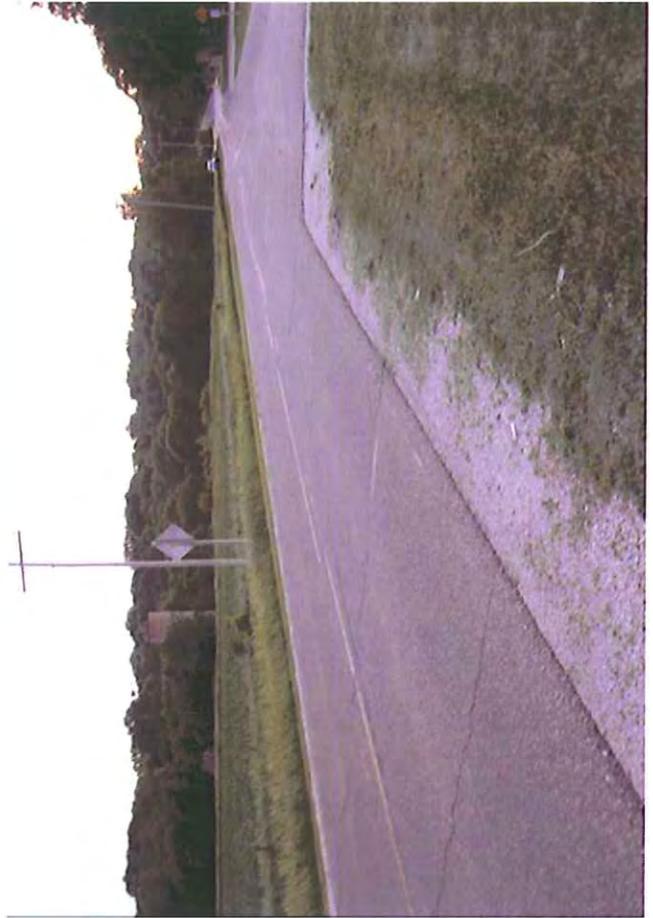
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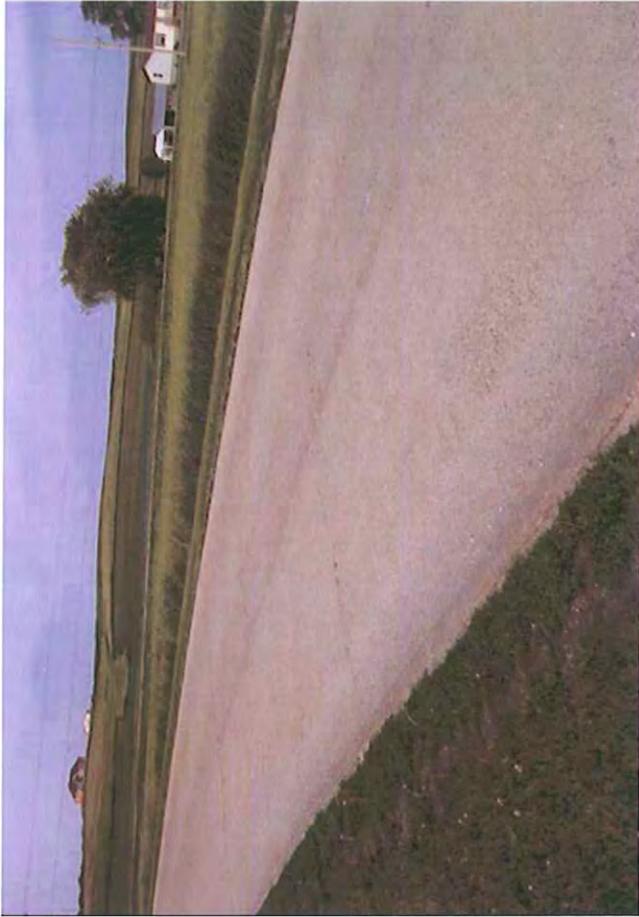
\$ 364,520

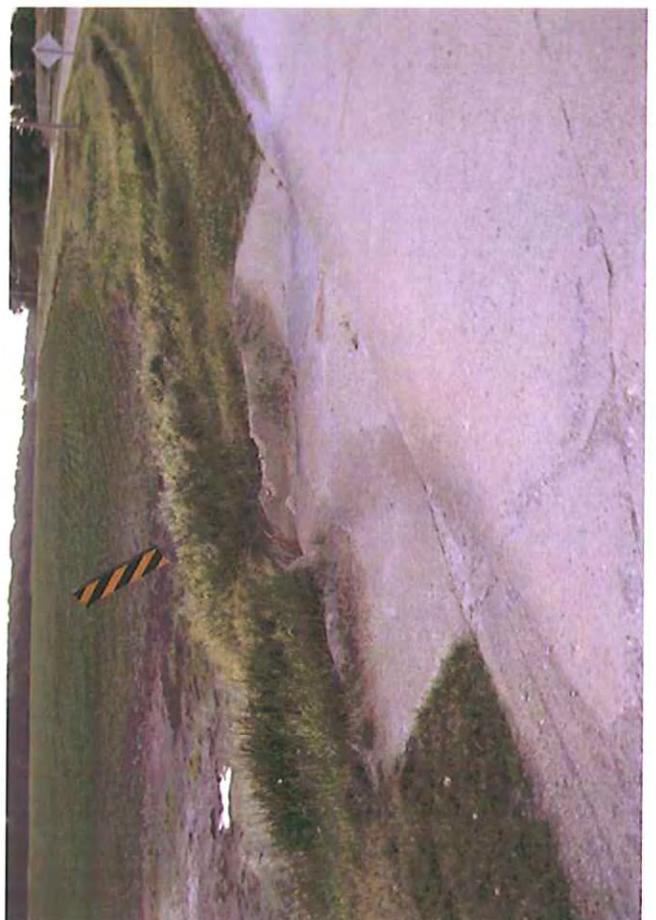
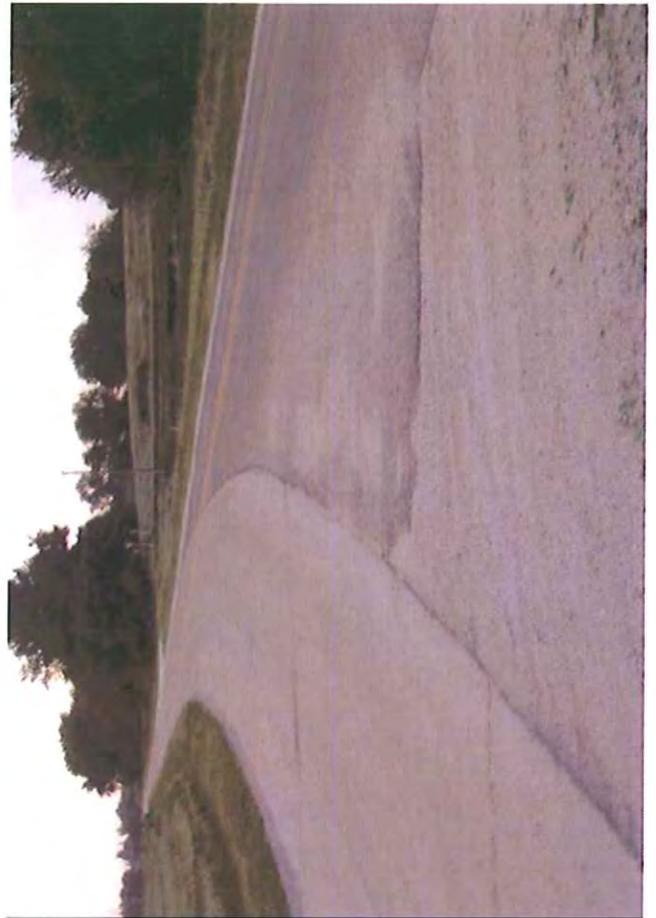
D. Time Schedule

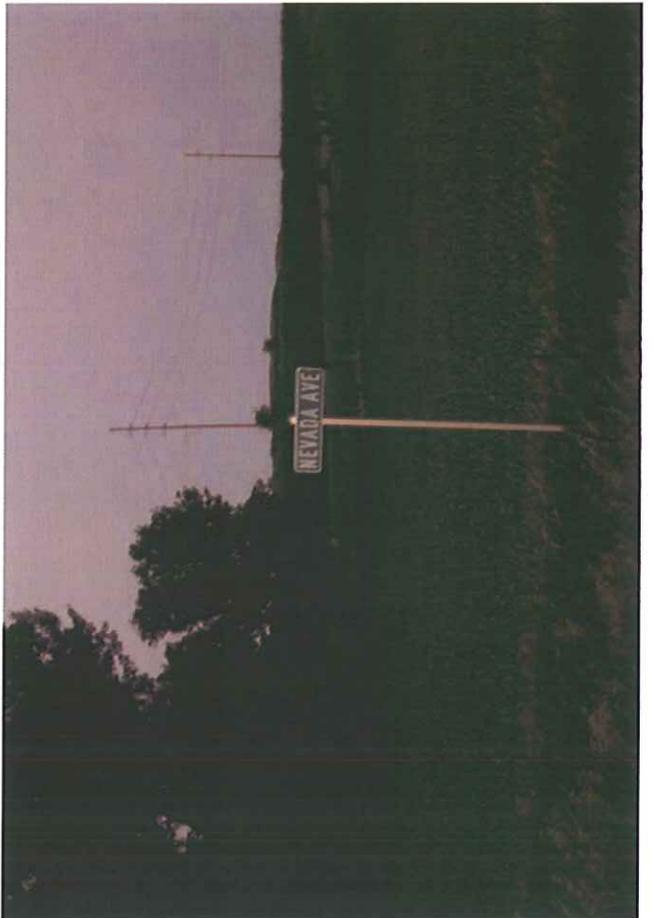
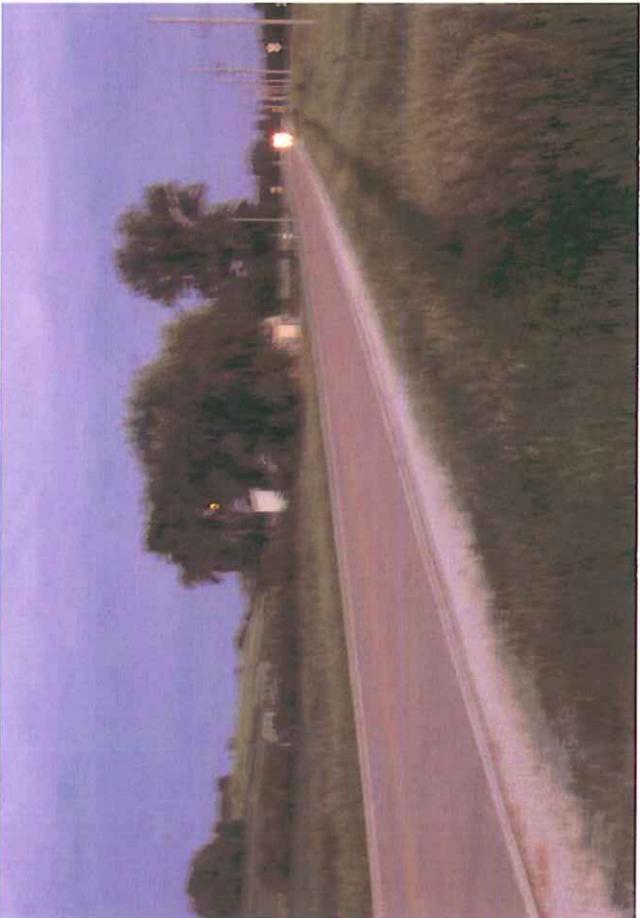
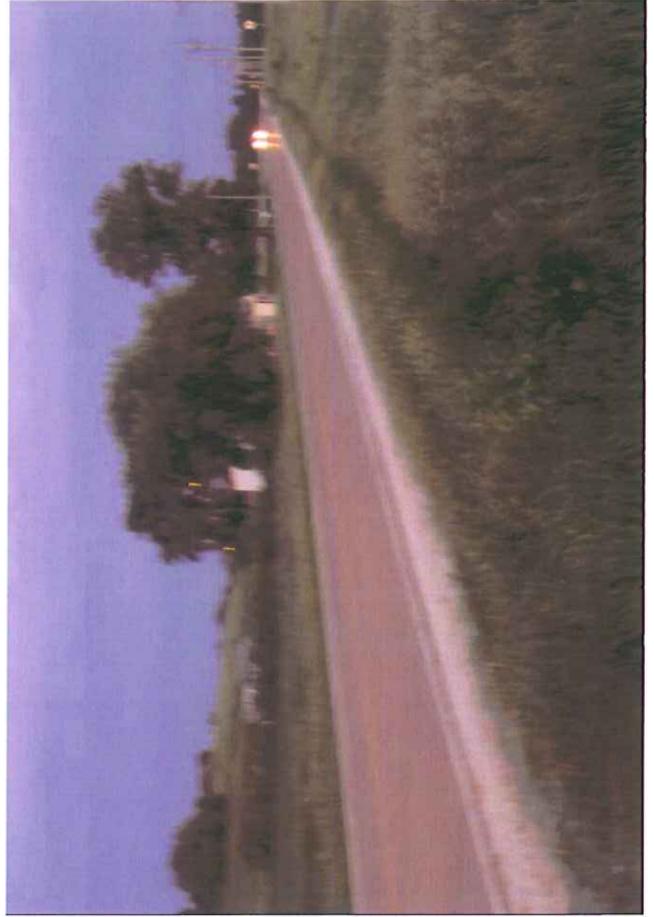
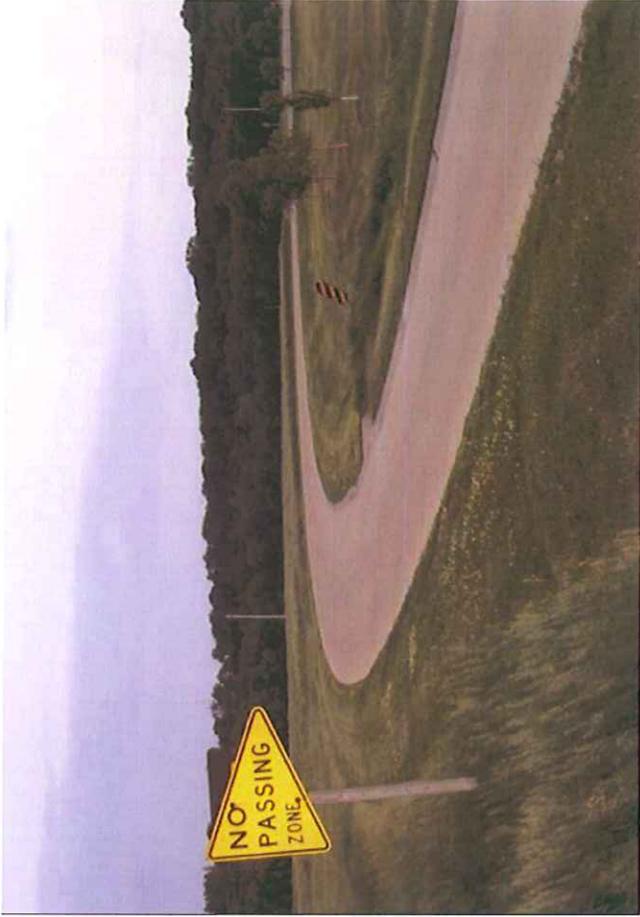
Project Schedule

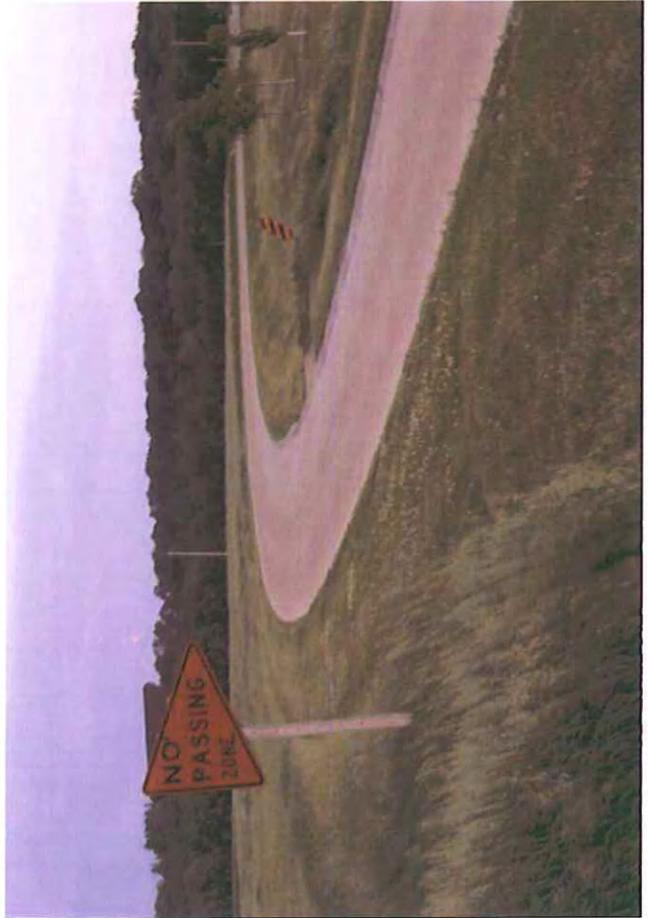
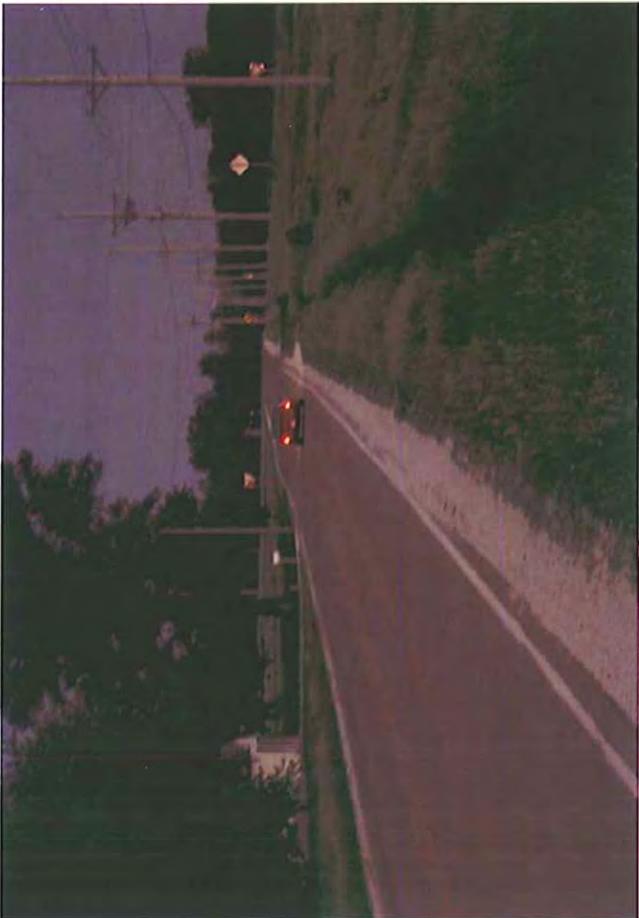
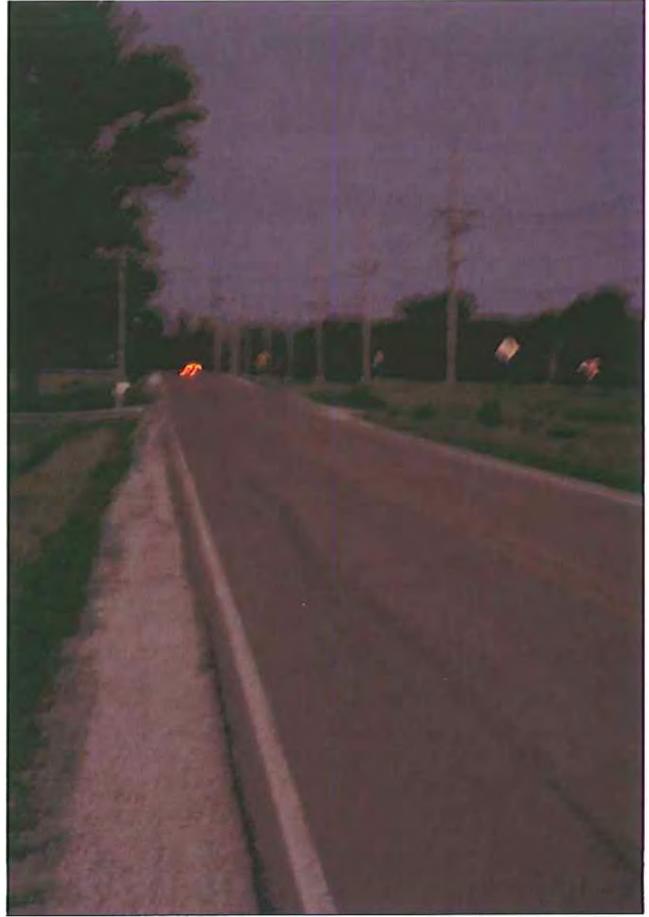
TSIP Funding Award	November 2011
Design Improvements	December 2012 - February 2012
Permitting and Bidding	March 2012
Bid Award and Contract Processing	April 2012
Begin Construction	May 2012
Construction Complete	October 2012

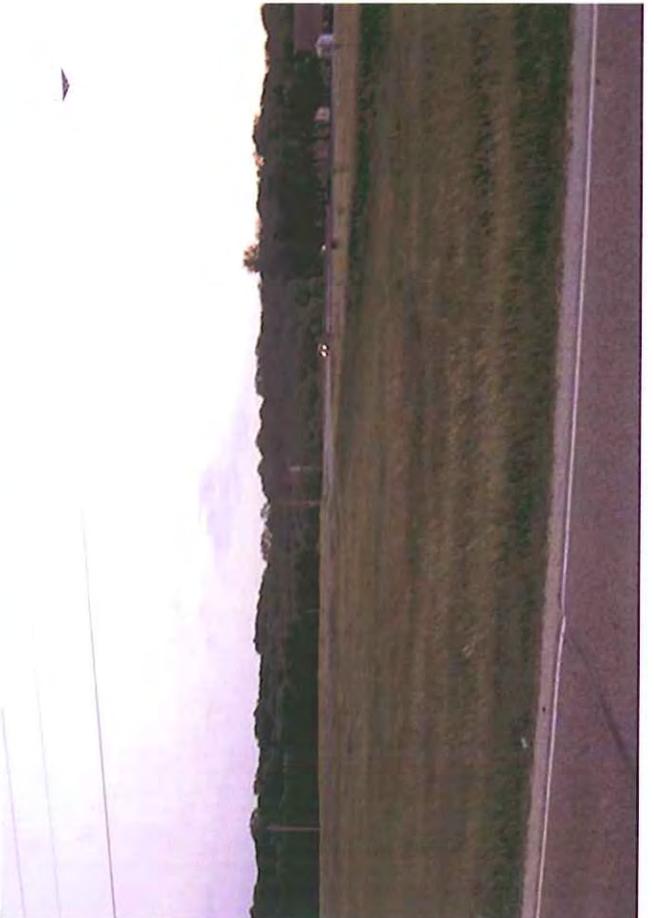


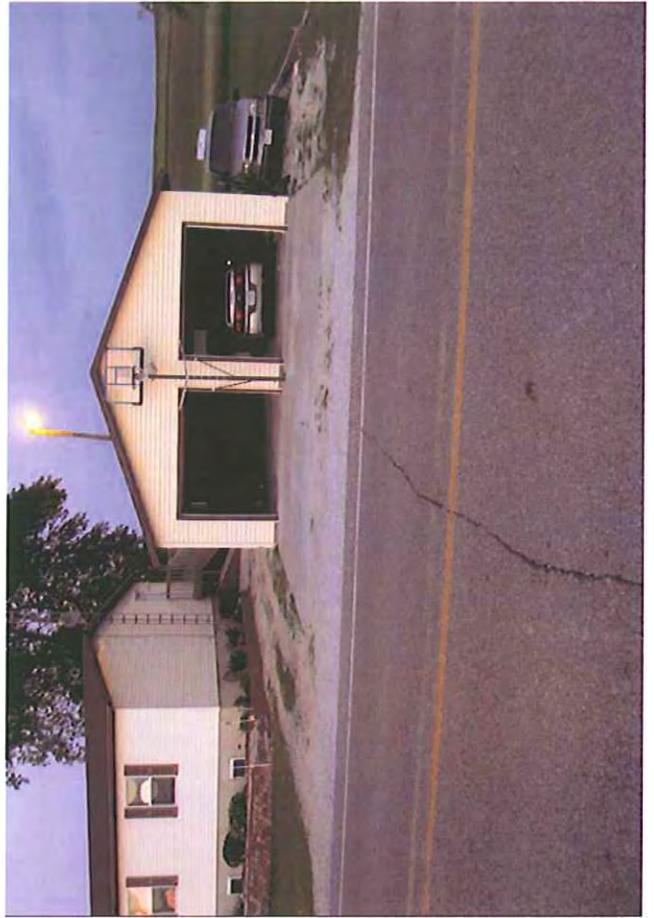
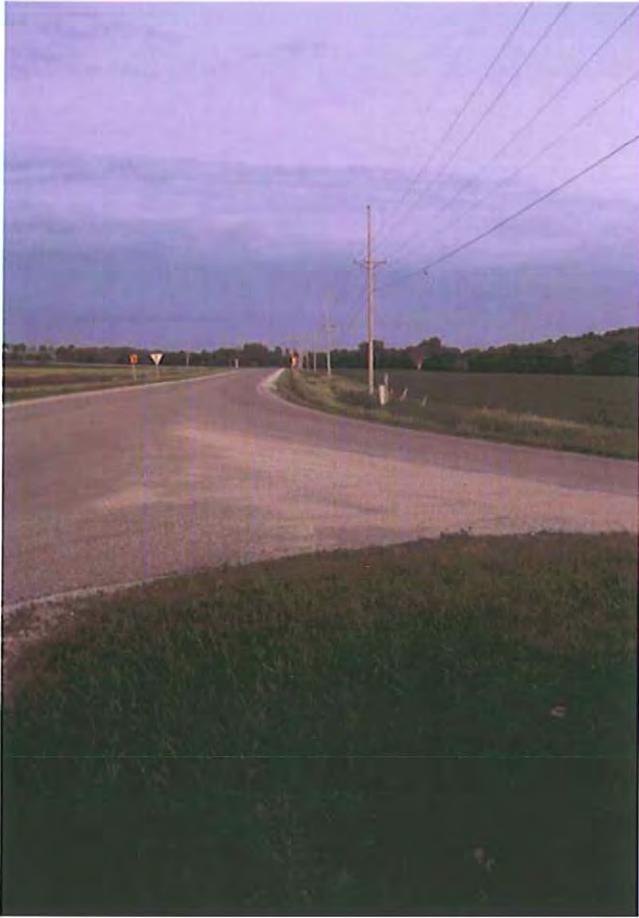


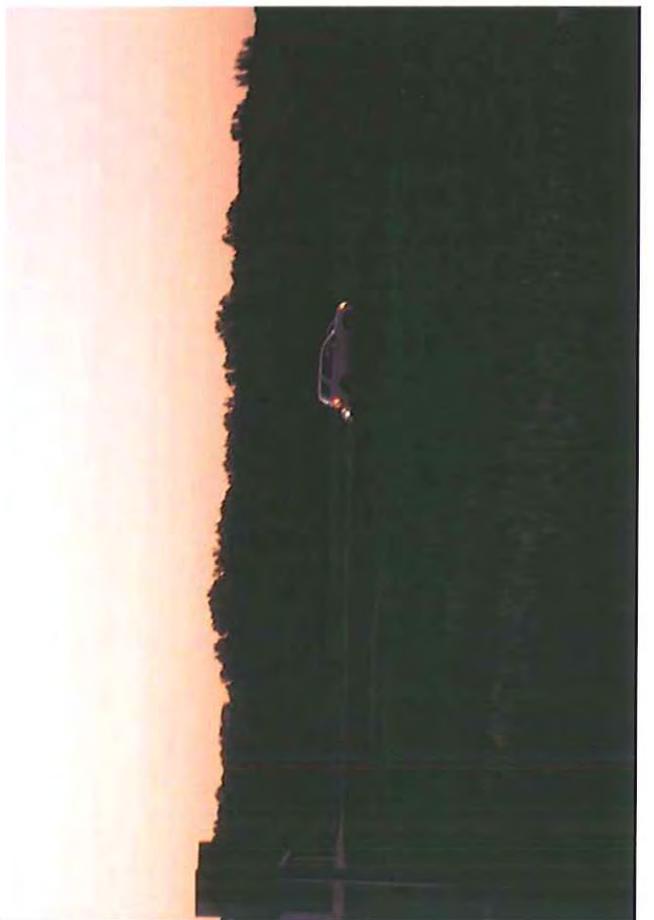


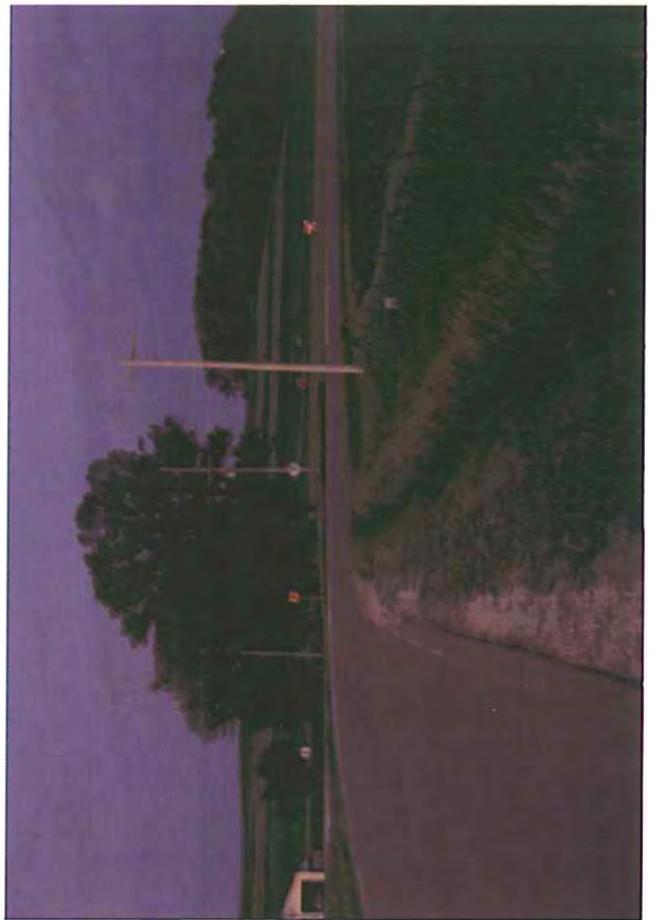


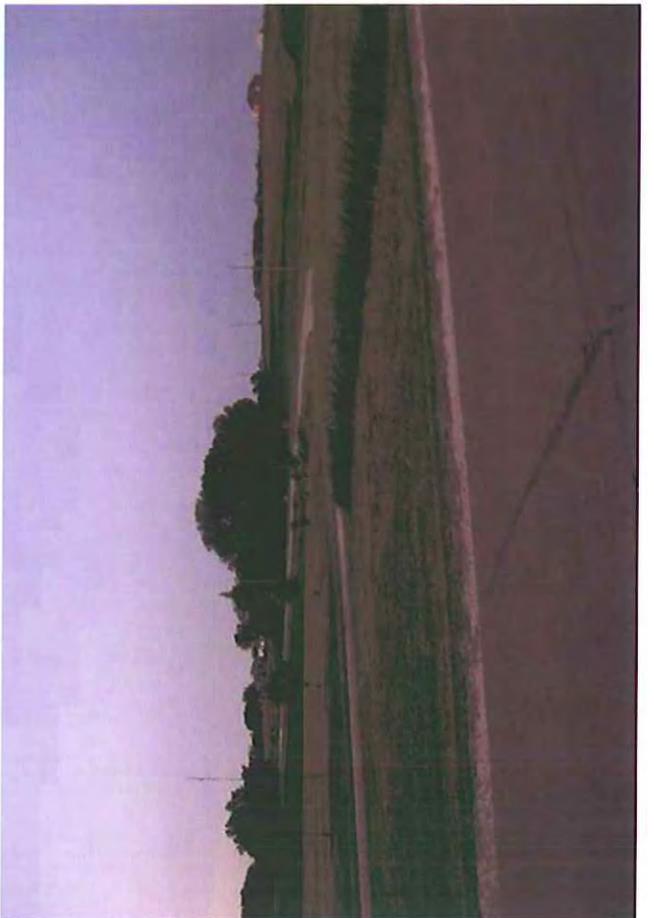




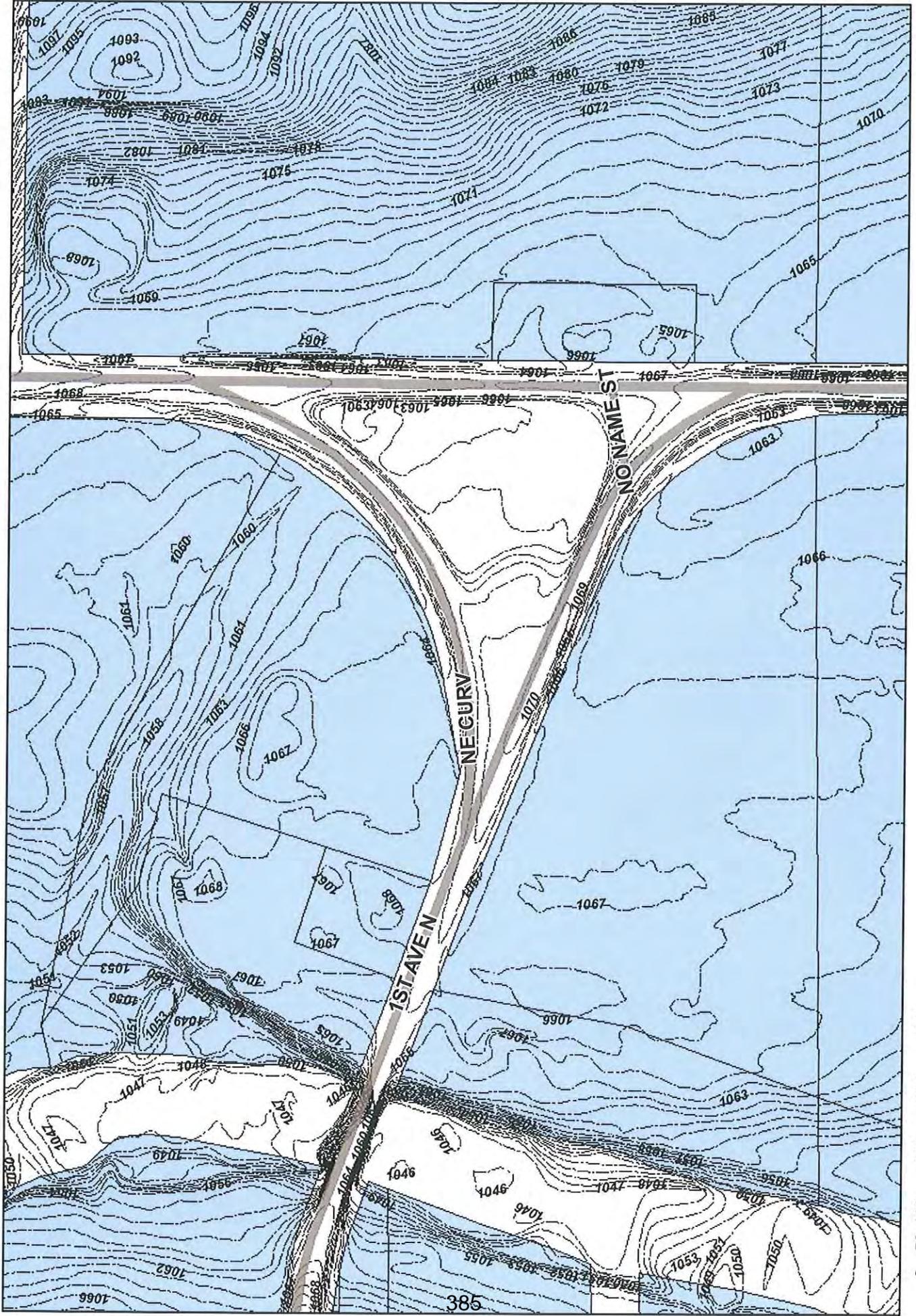








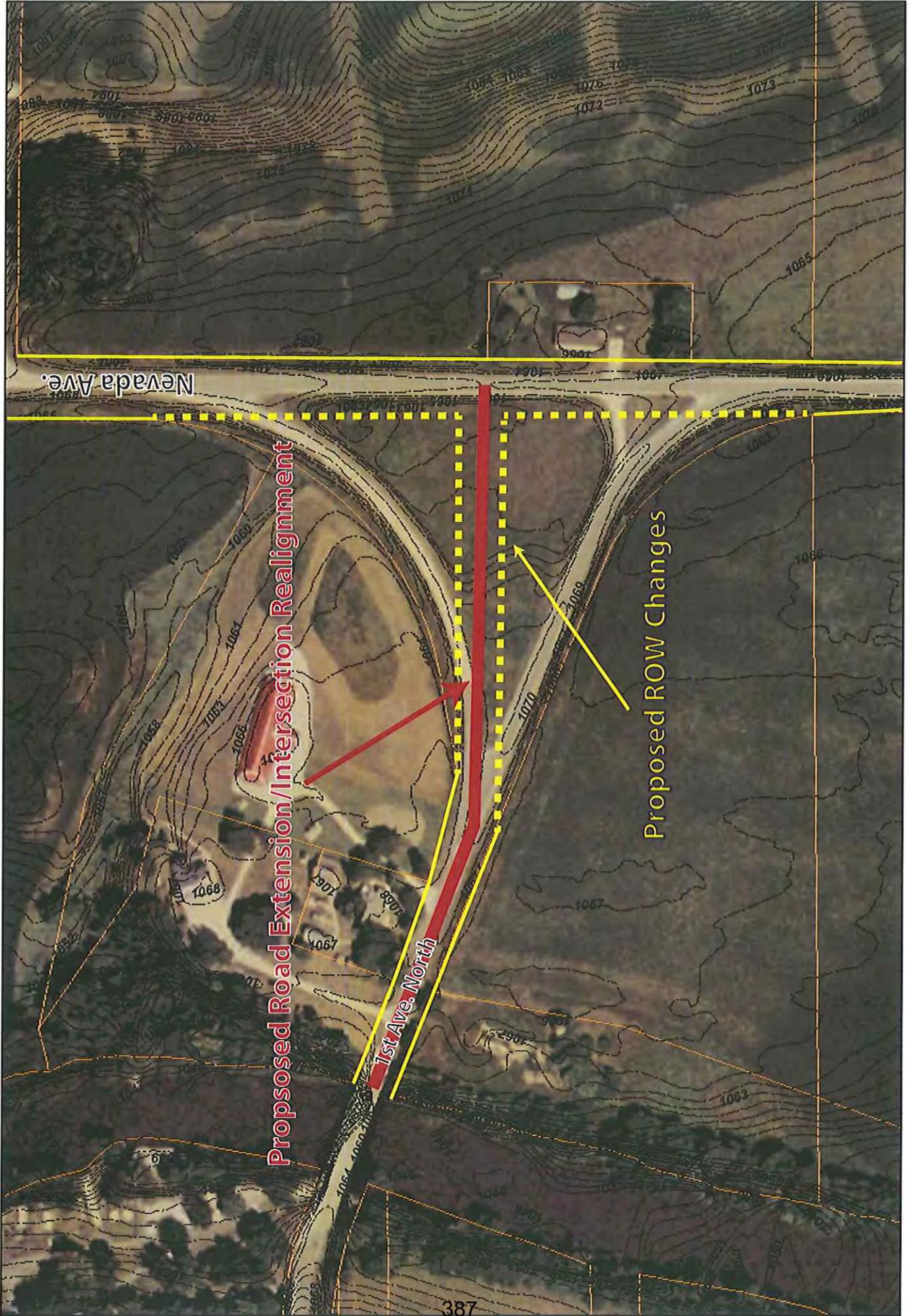
G: Plan View - Existing Conditions and ROW - No Aerial



G: Plan View - Existing Conditions and ROW



G: Plan View - Proposed Improvements



HUMBOLDT COUNTY SHERIFF'S OFFICE



"To Serve and Protect"

Sheriff
Dean A. Kruger
Humboldt County Sheriff's Office
430 Sumner Avenue
Humboldt, Iowa 50548-1757

Office (515) 332-2471
Fax (515) 332-9040

June 14, 2011

Terry Ostendorf
Office of Traffic and Safety
Iowa DOT
Ames, IA 50010

Re: Letter of Support of Application to Iowa DOT Transportation Safety Improvement Program: Site Specific Project.

Dear Mr. Terry Ostendorf:

The City of Dakota City in Humboldt County is applying for a Transportation Safety Improvement Grant, for funding in 2011-2012, for a Site Specific Project. The project entails the removal of a dangerous Y-intersection and replacing the removed intersection with a safer, controlled (stop sign), T-intersection.

The two roads involved, 1st Avenue North and Nevada Street are also Humboldt County Highways P56 and P44. These roads are patrolled regularly by the Humboldt County Sheriff's Office. Fortunately, this intersection and the associated roadways, which support mostly local but some visiting traffic, has seen few reportable collisions over the past several years. However, the current Y-intersection alignment is of concern to us all as law enforcement officials as it is an unsafe alignment and has the potential to facilitate deadly accidents with just minor signal and/or lane violations.

The Humboldt County Sheriff's Office Staff supports the proposed improvement to this intersection by the City and hope to see the intersection improved for the safety of all users.

If you have any questions please feel free to contact the Humboldt County Sheriff's Offices at 515-332-2471.

Sincerely,

A handwritten signature in black ink that reads "Dean A. Kruger".

Dean A. Kruger, Sheriff
Humboldt County Sheriff's Office

Terry E. Branstad
Governor
Kim Reynolds
Lt. Governor



Established
in 1935

June 14, 2011

Terry Ostendorf
Office of Traffic and Safety
Iowa DOT
Ames, IA 50010

Re: Letter of Support of Application to Iowa DOT Transportation Safety Improvement Program: Site Specific Project.

Dear Mr. Terry Ostendorf:

The City of Dakota City in Humboldt County is applying for a Transportation Safety Improvement Grant, for funding in 2011-2012, for a Site Specific Project. The project entails the removal of a dangerous Y-intersection and replacing the removed intersection with a safer, controlled (stop sign), T-intersection.

The two roads involved, 1st Ave. North and Nevada Ave., are also Humboldt County Highways P56 and P44. These roads are patrolled regularly by Troopers from District #7 of the Iowa State Patrol along with State Highway 3, which is just north of this intersection. Fortunately, this intersection and the associated roadways, have seen few reportable collisions over the past several years. However, the current Y-intersection alignment is of great concern as a law enforcement official. I am a former resident of Humboldt and have traveled this roadway extensively both privately and as a member of the Iowa State Patrol. It is an unsafe alignment and has the potential to facilitate deadly accidents with just minor signal and/or lane violations. For many motorists, this odd traffic interchange is confusing and difficult to navigate. Those under my command have referenced this dangerous situation on many occasions.

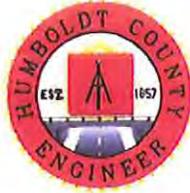
District #7 of the Iowa State Patrol supports the proposed changes to this intersection by the City and hopes to see the intersection improved for the safety of all users.

If you have any questions please feel free to contact the District #7 Office of the Iowa State Patrol at 515-972-4213.

Sincerely,

A handwritten signature in black ink, appearing to read "Lt. Kelly Hindman".

Lieutenant Kelly Hindman #204, District Commander
District #7 - Iowa State Patrol



Humboldt County Engineer's Office

2221 220th Street
Humboldt, Iowa 50548
Ph. (515)332-2366 Fax (515)332-5142

Ben Loots, PE, Assistant
David Powell, Assistant

Paul D. Jacobson, PE
Humboldt County Engineer

Sue Jennings
Office Manager

June 15, 2011

Mr. Terry Ostendorf
Office of Traffic and Safety
Iowa Department of Transportation
Ames, Iowa 50010

RE: City of Dakota City TSIP Grant Application

Dear Mr. Ostendorf:

The City of Dakota City is applying for a Transportation Safety Improvement Grant to remove a "Y" intersection and replace it with a "T" stop condition.

Although most of the project is within the Incorporated Limits of Dakota City, the top of the tee intersection is the corporate boundary along County Road P-56, thus the county would be directly involved. The "Y" legs removed are eastern portions of the City of Dakota City First Avenue North.

Even though accident history for this intersection is limited, replacement would greatly improve traffic safety because of improved geometry, removal and replacement of 1930's pavement and driver confusion. The north leg of the "Y" includes original state constructed pavement complete with curbs and drainage chutes.

Therefore not only does Humboldt County support this project, Humboldt County Engineering would, upon request of the City of Dakota City, take the lead on the awarded project and provide engineering support from plan development through construction.

If you have any questions or comments please call me at 515-332-2366.

Sincerely,

A handwritten signature in blue ink, appearing to read "Paul Jacobson", is written over a rectangular stamp area.

Paul Jacobson, PE
Humboldt County Engineer

CC: Harley Hett



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Lincoln Way & Dotson Drive Intersection Improvements

Applicant City of Ames

Contact Person Damion Pregitzer, PE, PTOE Title Traffic Engineer II

Complete Mailing Address 515 Clark Avenue, Ames, IA 50010

Phone (515) 239 - 5275 E-Mail dpregitzer@city.ames.ia.us
(Area Code)

If more than one highway authority is involved in this project, please indicate and fill in the information below (use additional sheets if necessary).

Co-Applicant(s)

Contact Person Title

Complete Mailing Address

Phone E-Mail
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

- Site Specific [checked]
Traffic Control Device []
Safety Study []

Funding Amount

Total Project Cost \$ 1,013,679

Safety Funds Requested \$ 798,173

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds the participating local government(s) to assume responsibility if any additional funds are committed, and to ensure maintenance of any new or improved city streets or secondary roads.

I understand that, although this information is sufficient to secure a commitment of funds, a firm contract between the applicant and the Department of Transportation is required prior to the authorization of funds.

Representing the City of Ames

Signed:  June 14, 2011
Signature Date Signed

Damion Pregitzer
Typed Name

Attest:  June 14, 2011
Signature Date Signed

Diane Voss, City Clerk
Typed Name



Office of the Mayor

515 Clark Avenue
P.O. Box 811
Ames, IA 50010
Phone: 515-239-5105
Fax: 515-239-5142

June 14, 2011

Terry Ostendorf
Iowa Department of Transportation
Office of Traffic and Safety
800 Lincoln Way
Ames, Iowa 50010

Dear Mr. Ostendorf:

Please consider this letter as an official endorsement from the City of Ames for the maintenance and operation of the **Lincoln Way and Dotson Drive Intersection Improvements**. The City of Ames assures the Iowa Department of Transportation that it will adequately maintain these improvements for their intended use, and will maintain the entire intersection and traffic control devices for a minimum of 20 years following project completion.

Please contact the City Manager's Office at (515) 239-5101 if you have any questions concerning this official endorsement. Thank you for your consideration.

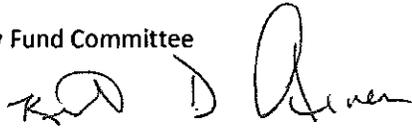
Sincerely yours,

Ann H. Campbell

Ann Campbell
Mayor

To: Iowa DOT Traffic Safety Fund Committee

From: Keith D. Arneson

Handwritten signature of Keith D. Arneson in black ink, consisting of a stylized 'K', 'D', and 'A' followed by the name 'Arneson'.

Date: July 29, 2011

Re: Intersection Improvements on Dotson and Lincoln Way

My name is Keith Arneson and I own a subdivision in southwest Ames called Nature's Crossing. This subdivision connects the Lincoln Way/Dotson neighborhood with the Ames Middle School ground. Nature's Crossing consists of approximately 50 lots with homes ranging from \$159,000 to over \$2 million dollars each. As part of this development I paid for a shared use path to connect from a local park to the rear of the Ames Middle School to enhance safety for our citizens and especially our children.

The intersection at Dotson and Lincoln Way is becoming ever more dangerous with the increases in development in the area. Hy-Vee just opened a new, and very busy, gas station at this intersection. Hy-Vee will be completely remodeling its existing store to make it more attractive to customers. The largest medical provider in the area, with over 100 physician specialists has a large office next to Hy-Vee. The local grade school is located on the opposite side of Lincoln Way from all this business and residential development.

I am asking that you fully fund the grant request for a stoplight at Dotson and Lincoln Way. This intersection is becoming increasingly dangerous for all concerned.

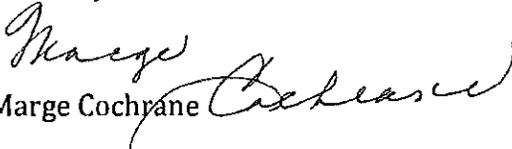
Thank you in advance for your understanding and support.

7-21-2011

To whom it may concern,

It is my understanding that you are currently considering whether or not to install a light at the Dotson intersection with Lincoln Way. That is indeed a very busy intersection and there is no doubt that a light or median would help matters. Please consider this my vote in favor of installing a light.

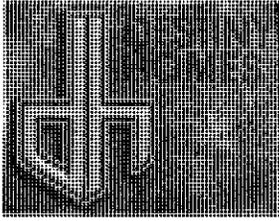
Sincerely,


Marge Cochran

3908 Marigold

Ames, IA 50014

515-292-2444



Iowa DOT Traffic Safety Fund Committee

RE: Stoplight at Lincoln Way and Dotson

7-13-11

To Whom It May Concern:

I am writing in support of the proposed addition of a stoplight at the intersection of Lincoln Way and Dotson. As we continue to build in this area it becomes vitally important to protect this intersection with a traffic light. Children walk through this area regularly going to and from school and are currently crossing at an unprotected intersection. As this area continues to grow, a traffic signal at the intersection will greatly improve the safety of both pedestrians and the traffic moving in all directions at this intersection. I would ask that the DOT fully fund this Site Specific Grant.

Sincerely,

Alan Sprinkle
President
Destiny Homes

August 15, 2011

Keith D. Arneson
Pinnacle Properties Ames, LLC

Re: Proposed stoplight at Lincoln Way and Dotson Drive

Mr. Arneson:

Thanks for your proposal and know that you have the full support of the Ames Community Schools in your pursuit of the installation of a stoplight at the intersection of Dotson Drive and Lincoln Way in Ames.

As you may know, the south extension of Dotson Drive will soon pass immediately to the west side of the Ames Middle School property and provide valuable northern access to the Middle School parking and athletic facilities. Currently, all middle school traffic must exit south onto Mortenson Road which has created tremendous traffic and safety issues for our parents and children as well as extremely heavy traffic on an already busy street.

The completion of Dotson Drive will soon alleviate some of that traffic but it will no doubt create issues as parents, students, and busses exit north to Lincoln Way. For safety sake, a traffic control system including stoplights will be essential. Good luck.

Sincerely,

Tim E. Taylor, Ph.D.
Supt.
Ames Community Schools



A Helpful Smile In Every Aisle

August 31, 2011

Iowa Department of Transportation Safety Fund Committee
Ames Complex
800 Lincoln Way
Ames, IA 50010

RE: Lincoln Way at Dotson Drive Site Specific Grant Request

Dear Iowa DOT Traffic Safety Fund Committee:

We write today in support of the City of Ames' request for the Department of Transportation to fully fund this site specific grant. This improvement is a vital project for the overall safety of the intersection at Lincoln Way and Dotson Drive.

We operate a 73,000 square foot grocery store along Lincoln Way just east of this intersection. In its current state, the intersection of Lincoln Way and Dotson is congested and at times and can be very difficult for pedestrians and vehicles to navigate safely. We know this safety issue is extremely important to our customers and our company.

As you know, the city of Ames has long-endavored to improve the street system throughout the community. We believe this project is critically needed to maintain the vehicular and pedestrian safety of this area. We urge you to give this application your strong consideration as Ames' officials endeavor to improve transportation safety along this corridor.

Thank you again for your continued support of transportation projects in Iowa. Please contact us if we can be of any assistance at dausenhus@hy-vee.com or (515) 267-2837.

Sincerely,

HY-VEE, INC.

Dennis Aussenhus
Sr. Vice President, Real Estate/Engineering

DA/tm

cc: Paula Correy
Jeff Markey

Hy-Vee, Inc.
Making lives easier, healthier, happier.
5820 Westown Parkway, West Des Moines, Iowa 50266
Phone: (515) 267-2800

B. Narrative:

The intersection of Lincoln Way and Dotson Drive is located in the west part of Ames, west of the main Iowa State University campus and east of South Dakota Avenue (County Hwy R38). The surrounding land uses a mixture of low to medium density residential on the north side of the intersection and highway oriented commercial to the south; businesses directly adjacent to the site are Hy-Vee Grocery Store, Hy-Vee Gas Station, and Wells Fargo Bank. Notably, the intersection is also located directly north of the new Ames Middle School located adjacent to Mortensen Road.

The project is planned to add dedicated East-West Left-Turn lanes and to signalize the intersection that is currently two-way Stop Controlled; the signal phasing will include protected/permissive operation for the left-turns, as well as be coordinated with other signals along Lincoln Way to achieve the desired progression of traffic. Other planned safety improvements will include high visibility crosswalks ("international"), countdown pedestrian timers, and radar based detection so as to also detect cyclists.

Along with all LED lamps being used for the vehicle and pedestrian indications, the City of Ames plans to install White LED street lamps atop the signal poles to provide intersection lighting that is not only brighter than traditional street lamps, but white light to facilitate better acquisition time of people and objects at night compared to "yellow" high-pressure sodium lighting.

Ames city staff utilized the most recently published traffic counts from the Iowa DOT Transportation Data and GIS Data; Lincoln Way sees around 13,500 ADT (west of Dotson), and 18,200 ADT (east of Dotson), Dotson Drive currently sees around 600-800 ADT. Turning movements were taken in May 2011 by City of Ames staff and have been provided in part H of this application.

It should be noted that at this time Dotson Drive dead ends approximately 0.3 miles south of Lincoln Way in the South Fork Subdivision. Currently, there is an agreement between the owners of the subdivision, City of Ames, and the Ames Community School District to connect the north and south sections of Dotson Drive. In doing so, it will connect Lincoln Way to Mortensen Road and act as the Collector Street for the area. In response to this anticipated change City of Ames and Ames Area MPO staff has already initiated the process of reclassifying the Federal Functional Classification with the Office of System Planning at the Iowa DOT.

The Ames Community School District has been in contact with City of Ames staff throughout the planning of Lincoln Way and Dotson Drive improvement project as well as coordination for their construction of the road. Not only is it anticipated to function as the Collector Street for vehicle travel in the area it will also serve as a significant improvement for younger students walking or biking to the Middle School.

Ultimately, Dotson Drive will have a trail connection that runs contiguous to the road linking the shared-use path on the north side of Mortensen Road to the one on the south side of Lincoln Way. The School District also began discussions with the School Board to budget for a traffic signal at the intersection of Mortensen Road and Dotson Drive (southern end) in response to traffic impact analysis that shows that future need.

Provided in the following pages are summary crash reports taken from the most recent update to the CMAT software, version 4.0.1 (2001-2009). As shown by the data a majority of the accidents are caused by failure to yield from a Stop and left-turning vehicles, which are some of the main safety focuses this project plans to correct; there is also a fair amount of crashes where vehicles are traveling too close, along with other noted crashes related to operational issues that exist at the intersection to be improved with better intersection controls.

Sixty-nine percent (69%) of crashes involved drivers that were between the ages of 15 to 29; this illustrates the importance of this project as there is anticipated to be a large number of younger, less experienced drivers, who will use this facility in combination with those children traveling to the Ames Middle School. These factors will weigh heavily in those decisions made during the design phase and be reflected in the types and placement of traffic control devices, signs, and pavement markings.

With this project the City of Ames staff will utilize some of the Crash Reduction Factors taken from the "Crash Modification Factors ClearingHouse" website (<http://www.cmfclearinghouse.org>). The three main factors used were; 1) "Add left-turn lanes to major road approaches at intersections", CRF = 47, 2) "Convert stop-control to signal", CRF = 34, and 3) "Implement Safe Routes to School Program", CRF = 13 (For All Crash Types). These factors are reflected in the Benefit/Cost sheet under Section L of this application.

The proposed project at the intersection of Lincoln Way and Dotson Drive represents an important safety opportunity for several stakeholders in the Ames community. This includes the staff and students of the Ames Community School District, Iowa State University, and Ames residents at large. As the area develops and traffic volumes continue to increase, it will be crucial that this intersection has the needed safety improvements to protect the motoring and non-motoring alike. It is anticipated that the intersection will see much higher growth than similar projects given the connectivity of the surround transportation network, as it will represent a major improvement to mobility and reduction in trip lengths; especially by bikes and pedestrians. With an estimated B/C of ~2.55:1 this project will act as a considerable safety investment now and into the future.



**Iowa Department
of Transportation**

Driver and Time Summary

Lincoln Way / Dotson Drive

Report Version 1.0 Aug 2009

Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	-	-	1	1	-	-	-	2	8
MON	-	-	-	-	-	-	-	-	5	-	-	-	-	5	20
TUE	-	-	-	-	-	1	1	1	2	-	1	-	-	5	20
WED	-	-	-	-	1	1	-	-	1	-	2	-	-	5	20
THU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FRI	-	-	-	-	2	1	1	-	1	1	-	-	-	6	24
SAT	-	-	-	-	-	-	1	-	-	-	1	-	-	2	8
Tot.					3	3	2	1	10	2	4			25	
%					12	12	8	4	40	8	16				100

Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-	-	-
14	-	-	-	-	-
15	1	-	-	1	2
16	1	1	-	2	4
17	1	1	-	2	4
18	-	1	-	1	2
19	-	2	-	2	4
20	3	-	-	3	6
21 to 24	10	7	-	17	33
25 to 29	3	3	1	7	14
30 to 34	1	3	-	4	8
35 to 39	1	2	-	3	6
40 to 44	1	-	-	1	2
45 to 49	1	1	-	2	4
50 to 54	3	-	-	3	6
55 to 59	1	-	-	1	2
60 to 64	-	-	-	-	-
65 to 69	1	-	-	1	2
70 to 74	-	-	-	-	-
75 to 79	-	-	-	-	-
80 to 84	-	-	-	-	-
85 to 89	-	-	-	-	-
90 to 94	-	-	-	-	-
95 plus	-	-	-	-	-
NR	-	-	1	1	2
Drivers	28	21	2	51	
%	55	41	4		100

Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory	1	4
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	24	96
Total Crashes	25	100

Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	51	100
Total Vehicles	51	100

Selection Filter:
 ((YEAR <> 2001 and YEAR <> 2002 and YEAR <> 2003 and YEAR <> 2004))

Analyst: DNP

Notes: 5-Year Summary (2005 - 2009)

 Iowa Department of Transportation	<h2 style="margin: 0;">Major Cause Summary</h2> <p style="margin: 0;">Lincoln Way / Dotson Drive</p>	Report Version 1.1 Jan 2005
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Analysis Years: 2005 [5], 2006 [3], 2007 [7], 2008 [5], 2009 [5]

<p>Crash Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: right;">Fatal</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Major Injury</td><td style="text-align: right;">1</td></tr> <tr><td style="text-align: right;">Minor Injury</td><td style="text-align: right;">3</td></tr> <tr><td style="text-align: right;">Possible/Unknown</td><td style="text-align: right;">3</td></tr> <tr><td style="text-align: right;">PDO</td><td style="text-align: right;">18</td></tr> <tr style="border-top: 1px solid black;"><td style="text-align: right;">Total Crashes</td><td style="text-align: right;">25</td></tr> </table>	Fatal	-	Major Injury	1	Minor Injury	3	Possible/Unknown	3	PDO	18	Total Crashes	25	<p>Injury Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: right;">Fatal</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Major Injury</td><td style="text-align: right;">1</td></tr> <tr><td style="text-align: right;">Minor Injury</td><td style="text-align: right;">3</td></tr> <tr><td style="text-align: right;">Possible</td><td style="text-align: right;">2</td></tr> <tr><td style="text-align: right;">Unknown</td><td style="text-align: right;">1</td></tr> <tr style="border-top: 1px solid black;"><td style="text-align: right;">Total Injuries</td><td style="text-align: right;">7</td></tr> </table>	Fatal	-	Major Injury	1	Minor Injury	3	Possible	2	Unknown	1	Total Injuries	7	<p>Surface Condition Summary:</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: right;">Dry</td><td style="text-align: right;">18</td></tr> <tr><td style="text-align: right;">Wet</td><td style="text-align: right;">4</td></tr> <tr><td style="text-align: right;">Ice</td><td style="text-align: right;">2</td></tr> <tr><td style="text-align: right;">Snow</td><td style="text-align: right;">1</td></tr> <tr><td style="text-align: right;">Slush</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Sand/Dirt/Oil/Gravel</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Water</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Other</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Unknown</td><td style="text-align: right;">-</td></tr> <tr><td style="text-align: right;">Not Reported</td><td style="text-align: right;">-</td></tr> <tr style="border-top: 1px solid black;"><td style="text-align: right;">Total Crashes</td><td style="text-align: right;">25</td></tr> </table>	Dry	18	Wet	4	Ice	2	Snow	1	Slush	-	Sand/Dirt/Oil/Gravel	-	Water	-	Other	-	Unknown	-	Not Reported	-	Total Crashes	25
Fatal	-																																															
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Snow	1																																															
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Sand/Dirt/Oil/Gravel	-																																															
Water	-																																															
Other	-																																															
Unknown	-																																															
Not Reported	-																																															
Total Crashes	25																																															

TOT Property Damage: \$135,150
AVG Property Damage: \$5,406

Major Cause Summary:

<ul style="list-style-type: none"> Animal Ran Traffic Signal Ran Stop Sign Crossed Centerline FTYROW: At Uncontrolled Intersection FTYROW: Making Right Turn on Red Signal 7 FTYROW: From Stop Sign FTYROW: From Yield Sign 4 FTYROW: Making Left Turn FTYROW: From Driveway FTYROW: From Parked Position FTYROW: To Pedestrian 1 FTYROW: Other (explain in narrative) Traveling Wrong Way or on Wrong Side of Rd 2 Driving Too Fast for Conditions Exceeded Authorized Speed 2 Made Improper Turn Improper Lane Change 6 Followed Too Close Disregarded Railroad Signal Disregarded Warning Sign Operating Vehicle in Reckless/Aggressive Manner 	<ul style="list-style-type: none"> Improper Backing Illegally Parked/Unattended Swerving/Evasive Action Over-Correcting/Over-Steering Downhill Runaway Equipment Failure Separation of Units Ran Off Road - Right Ran Off Road - Straight Ran Off Road - Left 1 Lost Control Inattentive/Distracted By: Passenger 1 Inattentive/Distracted By: Use of Phone or Other Inattentive/Distracted By: Fallen Object Inattentive/Distracted By: Fatigued/Asleep Other: Vision Obstructed Oversized Load/ Oversized Vehicle Cargo/Equipment Loss or Shift Other: Other Improper Action 1 Unknown Other: No Improper Action None Indicated
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Selection Filter:
 ((YEAR <> 2001 and YEAR <> 2002 and YEAR <> 2003 and YEAR <> 2004))

Analyst: DNP	Notes: 5-Year Summary (2005 - 2009)
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C. Itemized Breakdown of Costs:

ENGINEER'S ESTIMATE

LEFT TURN LANES ON DOTSON @ LINCOLN WAY

PUBLIC WORKS DEPT.- ENGINEERING DIV.

CITY OF AMES, IA

06/09/2011

<u>Item</u>	<u>Description</u>	<u>Est Qty</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
<i>Division 1 - General</i>					
1.1	Traffic Control	1	ls	15,000.00	15,000.00
1.2	Mobilization	1	ls	30,000.00	30,000.00
<i>Division 2 - Earthwork</i>					
2.1	Pavement Removal, Full-Depth	652	sy	12.00	7,824.00
2.2	Excavation, Class 10	500	cy	12.50	6,250.00
2.3	Subgrade Prep, 8" Depth	1182	sy	3.00	3,546.00
2.4	Sawcut Curb & Gutter	1370	lf	2.50	3,425.00
2.5	Removal of Curb & Gutter	1550	lf	10.00	15,500.00
2.6	Removal of Driveway	40	sy	10.00	400.00
2.7	Removal of Sidewalk	560	sy	10.00	5,600.00
2.8	Removal of Bikepath	400	sf	10.00	4,000.00
2.9	Adjustment of Fixtures	4	ea	1,500.00	6,000.00
<i>Division 3 - Trench, Backfill and Tunnelling (Not Used)</i>					
<i>Division 4 - Sewers and Drains</i>					
4.1	Storm Sewer Pipe, 24" RCP	100	lf	80.00	8,000.00
4.2	Subdrain Pipe, 4" dia	1000	lf	11.00	11,000.00
<i>Division 5 - Water Mains and Appurtenances</i>					
5.1	Remove Fire Hydrant	1	ea	1,000.00	1,000.00
5.2	Fire Hydrant Assembly	1	ea	3,500.00	3,500.00
<i>Division 6 - Structures for Sanitary and Storm Sewer</i>					
6.1	Intake, Type M-C	4	ea	3,000.00	12,000.00
<i>Division 7 - Streets and Related Work</i>					
7.1	Pavement Scarification	7015	sy	2.50	17,537.50
7.2	PCC Pavement, 8" Depth	1470	sy	45.00	66,150.00
7.3	HMA Surface, 2" Depth	849	ton	80.00	67,920.00
7.4	HMA Bikepath, 8' wide, 4" Depth	10	ton	80.00	800.00
7.5	PCC Drive, 6" Depth	40	sy	60.00	2,400.00
7.6	PCC Walk, 4" Depth	3720	sy	60.00	223,200.00
<i>Division 8 - Traffic Signals</i>					
8.1	Install Traffic Signals	1	ls	200,000.00	200,000.00

9.1	<i>Division 9 - Sitework and Landscaping</i> Seeding & Sod	435.6	sq	200.00	87,120.00
	<i>Street Lights</i> (Not Used)				
	SUBTOTAL ESTIMATED COST			-	\$798,172.50
	ENGINEERING (15%)				119,725.88
	CONTINGENCY (12%)				95,780.70
	TOTAL ESTIMATED CONSTRUCTION COST			-	\$1,013,679.08
	TOTAL ESTIMATED PROJECT COST			-	\$1,013,679.08

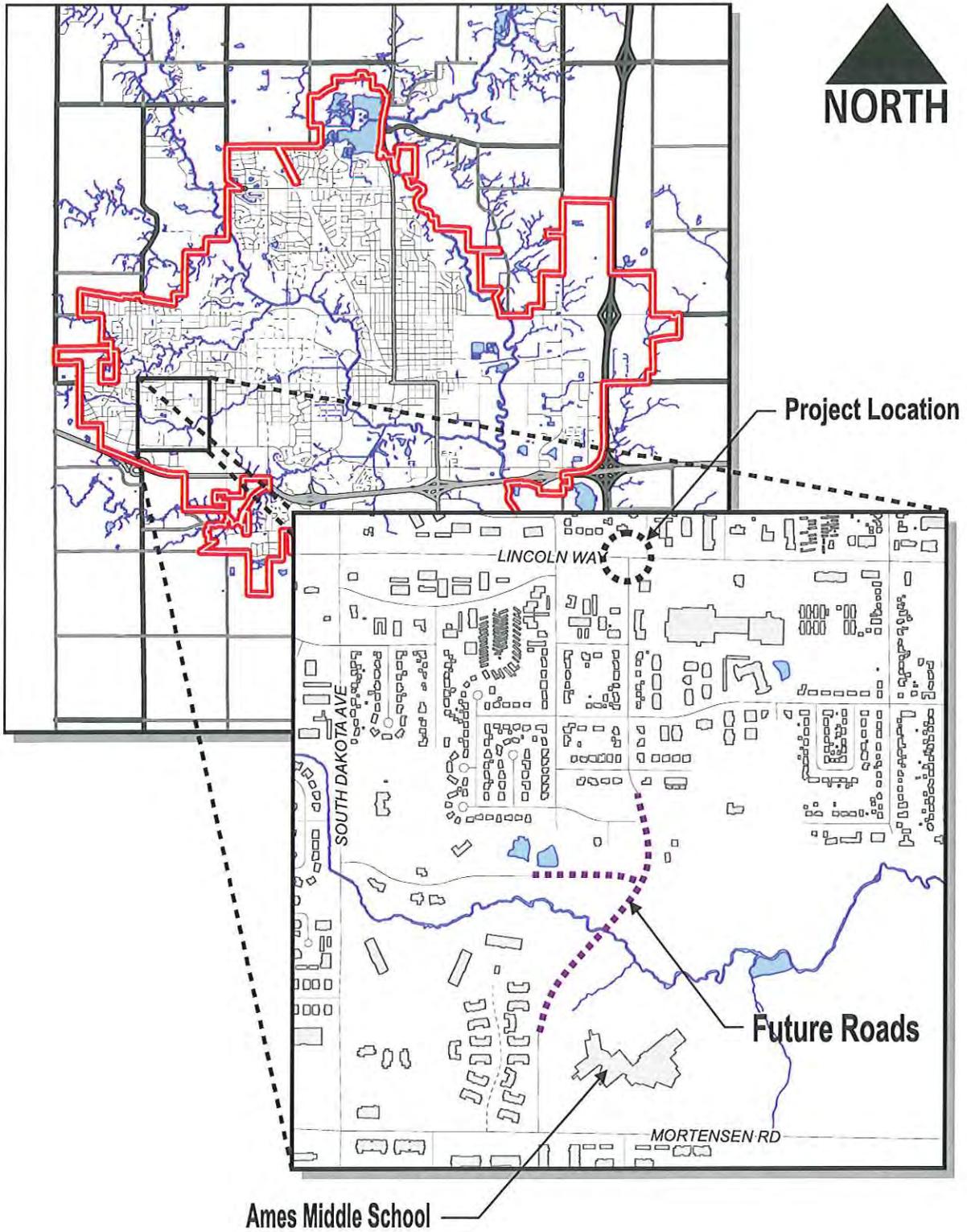
D. Time Schedule:**Dates:**

June 2011
July 2011
August 2011
October 2011
December 2011
November 2012
January 2013
March 2013
May 2013
September 2013

Activity:

Submit TSIP Grant Application
Hire Engineering Consultant
Planning/Public Input/Design
Prepare Plans and Specifications
Grant Approval from Commission
Iowa DOT Plan Review
Final Plan Revisions
Bid Letting
Begin Construction
Project Completion

E. Project Location Map:



F. Pictures of Project Location:



Northbound Approach (Dotson Drive)



Southbound Approach (Dotson Drive)

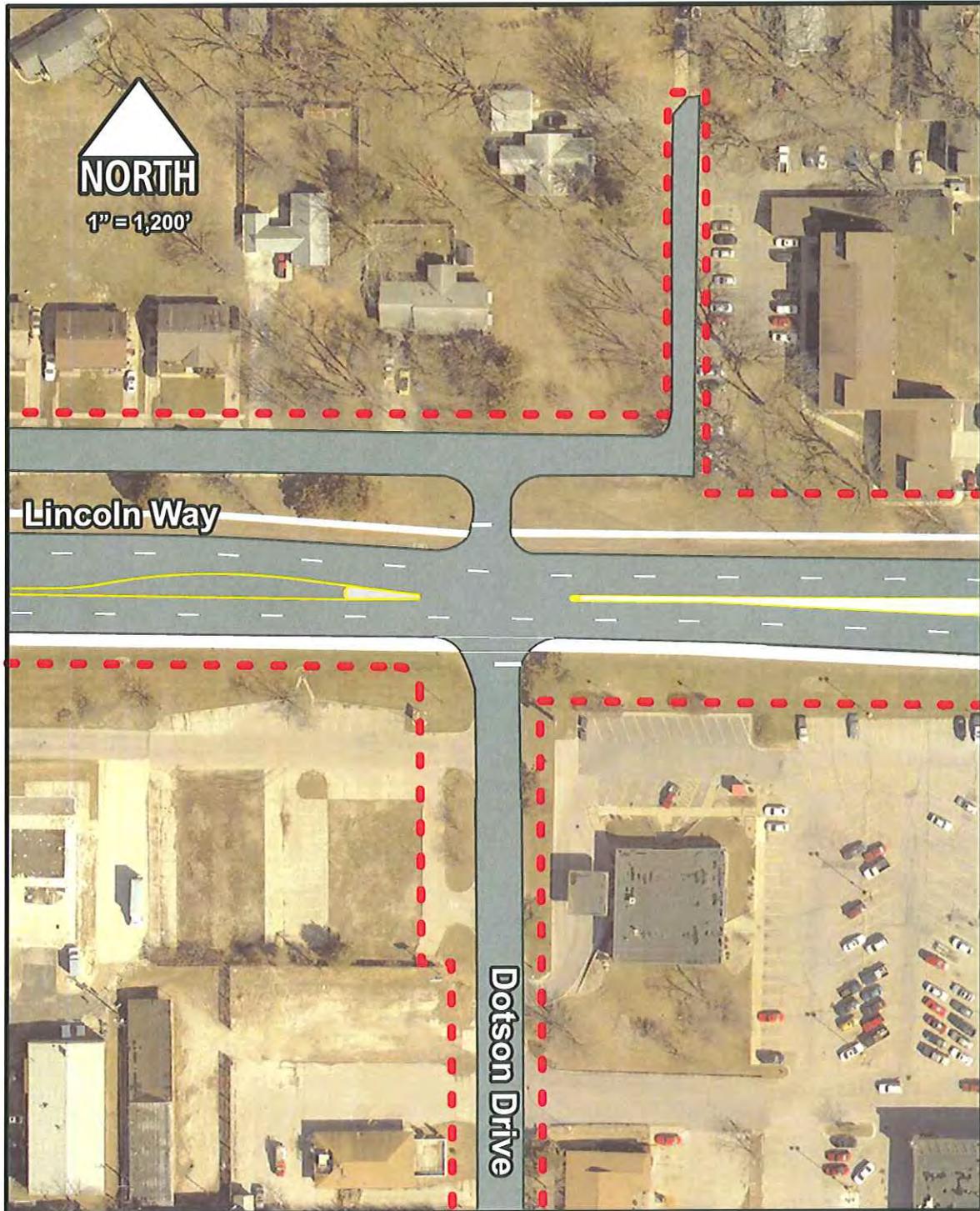


Eastbound Approach (Lincoln Way)



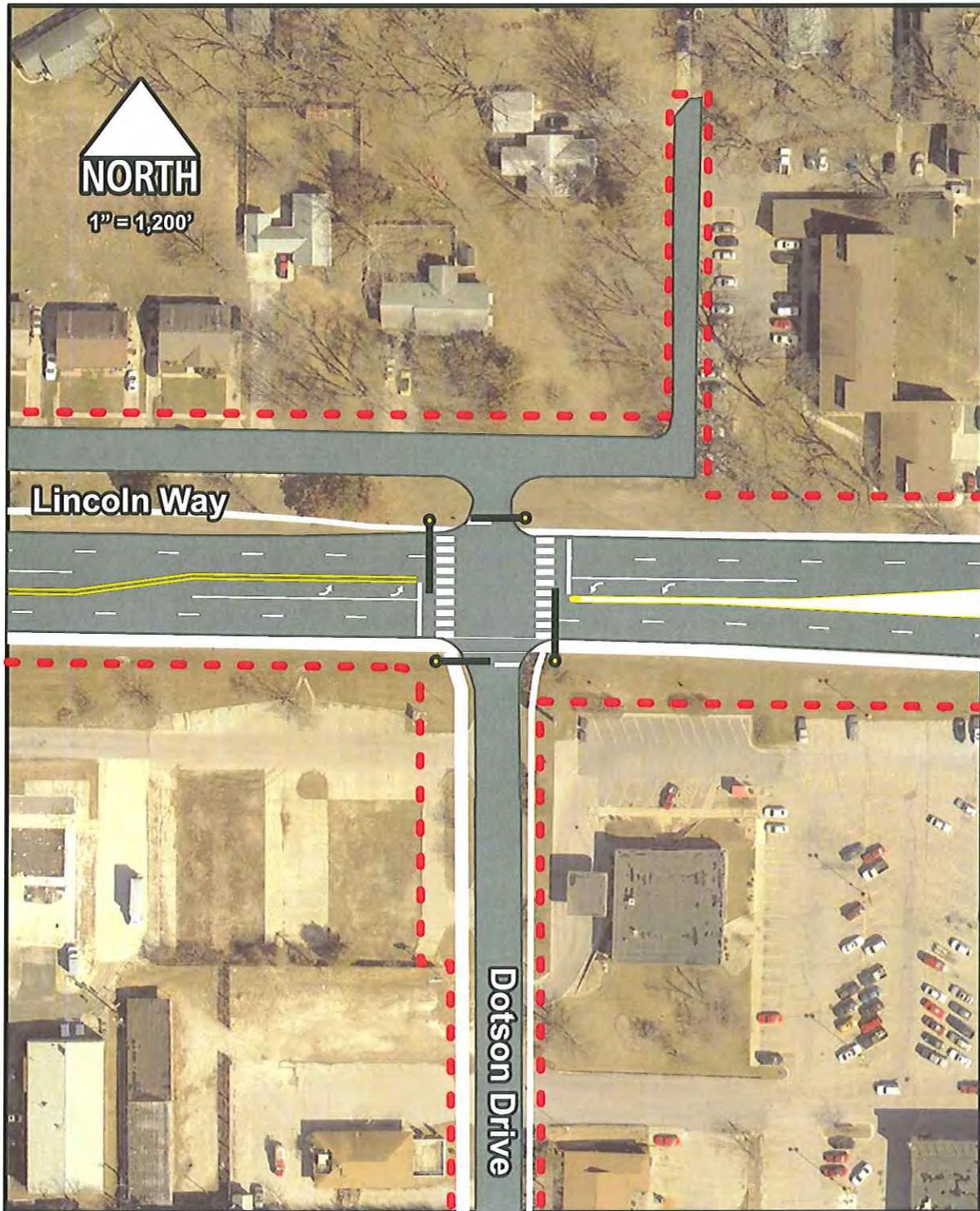
Westbound Approach (Lincoln Way)

G. Plan View – Existing Roadway and ROW:

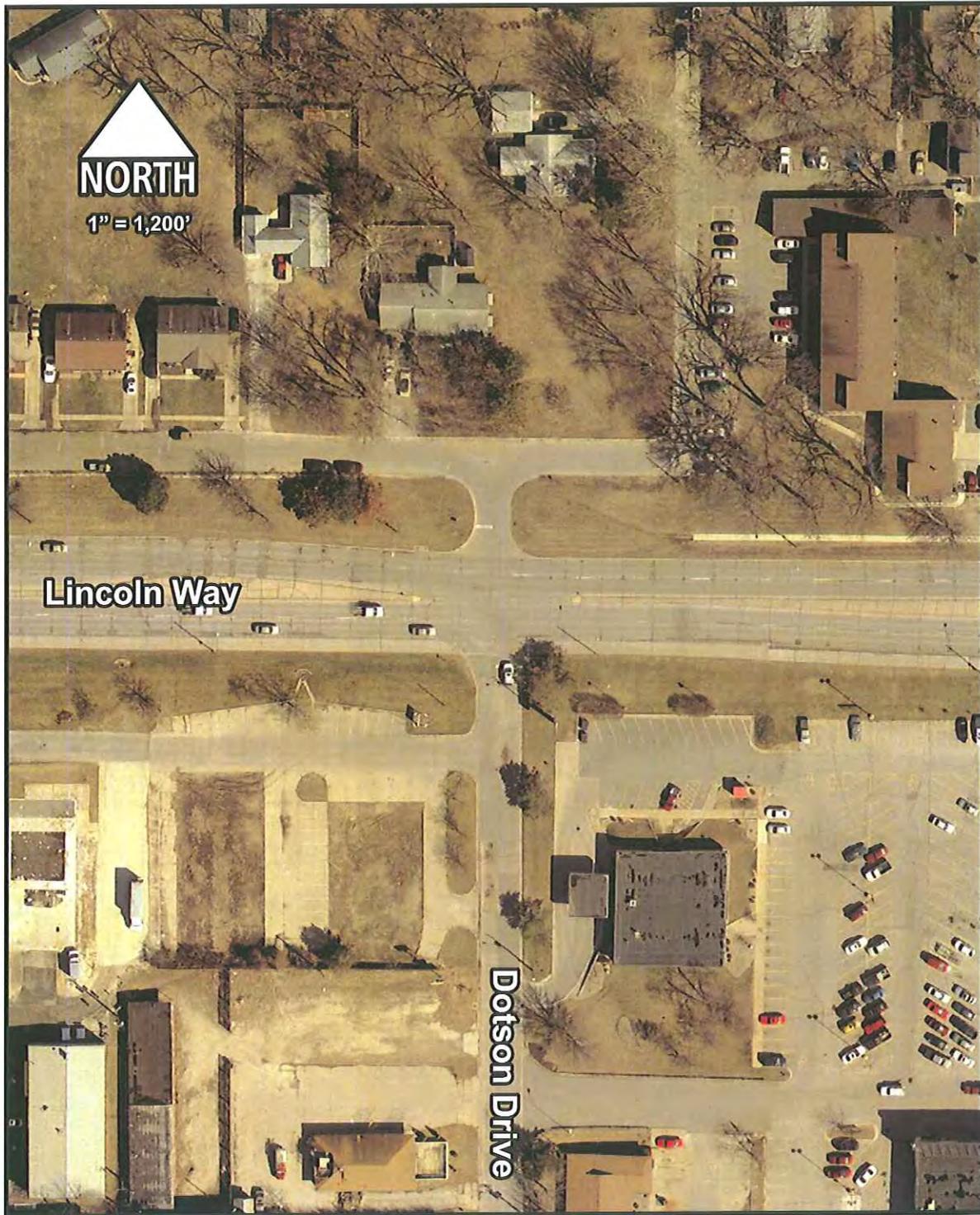


The ROW in this area varies from 140 feet to 165 ft in width and therefore will not change as part of this project.

G. Plan View – Proposed:



H. Aerial Photograph:

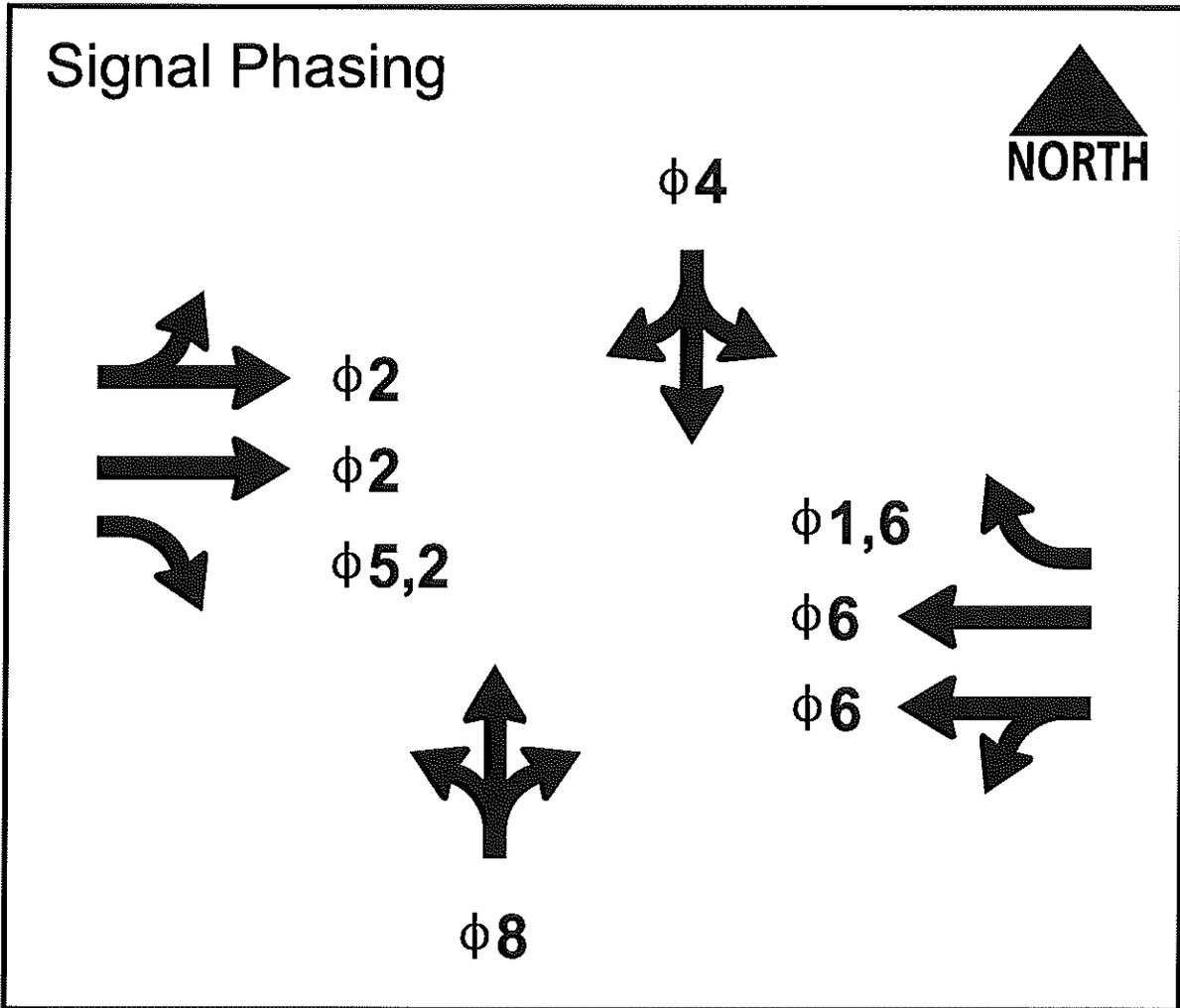


J. Turning Movement Counts (May 2011):

	Start Time	DOTSON SB			Lincoln Way WB			DOTSON NB			Lincoln Way EB			HR Total	PHF
		Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
	07:00 AM	0	0	2	0	33	1	8	0	7	18	111	0		
	07:15 AM	0	0	2	0	43	2	14	0	12	11	133	0		
	07:30 AM	1	0	3	1	48	6	12	0	11	20	140	0		
AM Peak	07:45 AM	0	0	1	1	47	5	12	0	14	25	174	0	918	0.82
	08:00 AM	1	0	5	0	49	6	14	0	11	18	129	0	971	0.87
	08:15 AM	0	0	1	1	56	7	18	0	15	17	139	0	1,008	0.90
	08:30 AM	1	0	6	1	66	14	15	0	10	15	116	2	1,012	0.91
	08:45 AM	1	2	4	0	49	5	15	0	12	12	113	1	947	0.93
	09:00 AM	1	1	2	0	53	5	7	0	4	15	98	1	901	0.89
	09:15 AM	2	0	1	1	51	9	17	1	7	12	84	0	832	0.85
	09:30 AM	1	1	0	1	56	5	16	0	6	18	118	1	809	0.91
	09:45 AM	0	0	1	0	56	8	15	0	12	9	90	0	786	0.88
	10:00 AM	0	0	1	0	65	9	8	0	14	14	84	0	794	0.89
	10:15 AM	0	1	2	0	65	8	9	1	13	18	87	1	814	0.91
	10:30 AM	1	0	1	2	59	10	15	0	14	19	101	0	813	0.92
	10:45 AM	0	0	1	0	73	7	6	1	15	23	82	0	830	0.93
	11:00 AM	0	0	1	0	61	10	18	0	6	19	87	1	838	0.94
	11:15 AM	0	0	1	0	81	6	10	1	17	22	114	0	885	0.88
	11:30 AM	0	0	1	0	87	7	12	0	22	14	103	0	909	0.90
	11:45 AM	1	0	1	1	98	12	16	0	11	20	94	1	956	0.94
Mid Peak	12:00 PM	0	0	2	2	98	14	17	0	16	15	111	0	1,028	0.93
	12:15 PM	0	0	2	1	103	11	11	0	20	18	110	1	1,053	0.95
	12:30 PM	0	0	0	0	112	8	16	0	11	21	105	0	1,080	0.97
	12:45 PM	0	1	0	0	112	6	12	0	17	16	108	0	1,097	0.99
	01:00 PM	0	3	1	1	103	14	15	0	13	19	99	1	1,091	0.98

01:15 PM	0	0	3	2	98	10	17	0	20	9	98	1	1,072	0.98	
01:30 PM	0	1	1	2	119	9	16	1	19	8	95	0	1,070	0.98	
01:45 PM	1	0	3	2	91	11	10	0	10	26	96	0	1,048	0.97	
02:00 PM	0	0	2	3	99	4	13	0	15	20	106	0	1,041	0.96	
02:15 PM	0	0	3	0	137	12	18	0	11	8	102	0	1,074	0.92	
02:30 PM	0	0	0	1	105	17	14	0	13	16	91	0	1,060	0.91	
02:45 PM	0	1	2	1	104	9	12	0	23	23	91	3	1,079	0.93	
03:00 PM	1	0	1	3	97	9	10	1	14	19	88	0	1,060	0.91	
03:15 PM	0	1	3	1	106	11	14	1	17	26	99	0	1,048	0.94	
03:30 PM	0	0	1	2	125	13	9	0	17	26	75	1	1,060	0.95	
03:45 PM	0	1	3	4	114	19	9	1	16	22	97	1	1,078	0.94	
PM Peak	04:00 PM	1	1	3	2	168	17	17	1	18	19	106	1	1,189	0.84
	04:15 PM	0	2	5	7	170	13	23	0	24	33	92	0	1,279	0.87
	04:30 PM	0	2	1	0	150	17	16	0	17	26	90	1	1,330	0.90
	04:45 PM	0	1	3	3	136	19	14	1	27	33	103	0	1,383	0.94
05:00 PM	0	2	1	1	158	16	14	1	19	22	100	0	1,363	0.92	
05:15 PM	0	1	3	3	168	15	8	2	25	33	103	0	1,355	0.94	
05:30 PM	0	2	2	5	117	14	13	3	28	28	110	0	1,357	0.94	
05:45 PM	0	3	5	1	138	15	20	0	26	28	84	0	1,337	0.93	
06:00 PM	1	0	2	1	107	17	11	2	27	31	75	0	1,277	0.88	
06:15 PM	4	0	2	1	109	13	15	0	24	31	85	1	1,201	0.93	
06:30 PM	0	0	1	3	87	5	12	0	23	19	92	1	1,122	0.88	
06:45 PM	0	0	2	0	98	11	10	1	22	14	90	1	1,051	0.92	

K. Traffic Signal Layout and Phasing:



Lincoln Way and Dotson Drive Timing

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Volume (vph)	132	696	28	680	92	12	16	12
Turn Type	pm+pt		pm+pt		Perm		Perm	
Protected Phases	5	2	1	6		8		4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	8	8	4	4
Switch Phase								
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	12.0	20.0	12.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	17.0	47.0	12.0	42.0	31.0	31.0	31.0	31.0
Total Split (%)	18.9%	52.2%	13.3%	46.7%	34.4%	34.4%	34.4%	34.4%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag				
Lead-Lag Optimize?	Yes	Yes	Yes	Yes				
Recall Mode	Max							
Act Effect Green (s)	54.0	42.0	44.0	37.0		26.0		26.0
Actuated g/C Ratio	0.60	0.47	0.49	0.41		0.29		0.29
v/c Ratio	0.35	0.47	0.08	0.57		0.51		0.12
Control Delay	10.3	17.5	8.4	21.9		23.9		15.6
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	10.3	17.5	8.4	21.9		23.9		15.6
LOS	B	B	A	C		C		B
Approach Delay		16.4		21.4		23.9		15.6
Approach LOS		B		C		C		B

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 90
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 55
 Control Type: Pretimed
 Maximum v/c Ratio: 0.57
 Intersection Signal Delay: 19.3
 Intersection Capacity Utilization 60.1%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 3: Int

