

Traffic Safety Improvement Program

Applications for Traffic Control Devices

FY 2012



Received June 15, 2010

TRAFFIC CONTROL DEVICE APPLICATION FY 2012

Page No.	Applicant	Title/Subject	\$\$\$	
			Project	Request
1	Decatur County	Install overhead beacon at the intersection of US Highway 69 and County Route J-66 (Dale Miller Road)	\$3,147	\$3,147
13	Clinton County	Replace horizontal alignment and intersection signs on aggregate roads in Clinton County	\$71,400.40	\$51,400.40
21	Boone County	Replace warning signs along County Road E-41 from Ogden to Boone and along County Road R-27 from Boone SCL to County Road E-57	\$2,792.50	\$2,792.50
29	Guthrie County	Replace old signs with Chevrons along F65 (Hwy 6) corridor (5+ miles)	\$8,430.50	\$8,430.50
41	Polk County	Install yellow flashing beacons on Hwy 141 and red flashing beacons on NW 121 in Polk County	\$55,000	\$55,000
53	Polk County	Install new traffic signals to the intersection of NE 56 and NE Oak Hill Drive in eastern Polk County	\$200,000	\$85,000
67	Polk County	Install oversized Speed Limit sign with Limited Site Distance warning sign, and a Solar powered yellow flashing beacon on each approach of NW 66th Ave. to the Hwy 415 ramps.	\$26,000	\$26,000
81	Webster County	Upgrade Signage on paved road throughout Webster County with traffic volumes under 1000 VPD, Phase II	\$45,339.20	\$27,099.20
89	Webster County	Placing signs at locations of changes in horizontal alignment at locations without existing signs, Phase II	\$37,392	\$10,032
97	Montgomery County	Replacing 65 old W1-8 Chevron signs with new updated W1-8 Chevron signs County wide	\$5,778.50	\$5,778.50
103	City Of Des Moines	Install New Mast Arm-mounted traffic signals @ the intersection of 7th St. & Laurel Street with pedestrian countdown signals @ all approaches	\$150,000	\$75,000

Continued on next page

TRAFFIC CONTROL DEVICE APPLICATION (Continued)

Page No.	Applicant	Title/Subject	\$\$\$	
			Project	Request
121	City of Cedar Rapids	Installation of solar powered programmable flashers and install speed feedback signs in conjunction with the beacons on the school zone signs	\$46,836	\$42,436
131	City of Waterloo	Low Cost Safety Countermeasures at Six High Hazard Intersections in Waterloo	\$71,000	\$71,000
151	Iowa D.O.T. – Local Systems	City Sign Replacement Program, FY2012	\$250,000	\$250,000
153	Iowa D.O.T. – Office of Traffic & Safety	Improved Signing at High Crash County Horizontal Curves	\$70,000	\$70,000
	Totals	15 Projects	\$1,043,116.10	\$783,116.10



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Overhead Flashing Light Installation

Applicant Decatur County Secondary Roads

Contact Person Richard D. McKnight Title Decatur County Engineer

Complete Mailing Address 1306 South Main Street
Leon, IA 50144

Phone 641-446-7131 E-Mail decateng@grm.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 ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount

Total Project Cost \$ 3147.00

Safety Funds Requested \$ 3147.00

OFFICE OF
DECATUR COUNTY ENGINEER

Richard McKnight
County Engineer

1306 S. Main St.
Leon, Iowa 50144
641-446-7131
voice
641-446-3518
fax

Keith Hinds
Assistant to the Engineer

Doug Thiel
Office Manager

26 April 2010

Mr. Tom Welch, P.E.
Office of Traffic Safety
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010

Dear Tom:

RE: TSIP Application – Decatur County

The Decatur County Engineer and the Decatur County Board of Supervisors request review and approval of a Traffic Safety Improvement Program (TSIP) project to install an overhead beacon at the intersection of US Highway 69 and County Route J-66, also called Dale Miller Road.

This intersection is located in Section 1 of New Buda Township (T-67N; R-26W) southwest of Davis City in Decatur County. Although there have been no fatal accidents at this intersection in several years, this is the primary access route to Nine Eagles State Park. All lake traffic from Highway 69 and I-35 use this intersection and Dale Miller Road for the last six miles of their trip to Nine Eagles Park. There have been several property damage accidents here over the years, many of which are not reported because people are “on vacation.” The trees have been cleared from the right-of-way, where possible. We have overlaid the intersection and approach on Dale Miller Road to eliminate a depressed area that held water, to match the slope of the recently overlaid Highway 69 and to widen the southwest radius; however, visibility can still be reduced by low lying fog in the early spring and fall.

The proposed beacon will be suspended over the center of the intersection and flash red for traffic on the secondary road (Dale Miller Road) and yellow for traffic on the primary road (Highway 69). It will be similar to the beacon installed on Highway 69 north of Leon in 2003. TSIP funds will be used for the initial purchase and installation. County funds will be used thereafter for operation and maintenance. Estimated completion date is 90 days after approval.

Your review and favorable consideration will be appreciated.

Sincerely,



Richard D. McKnight
Decatur County Engineer

cc: Decatur County Board of Supervisors

OFFICE OF
DECATUR COUNTY ENGINEER

Richard McKnight
County Engineer

1306 S. Main St.
Leon, Iowa 50144
641-446-7131
voice
641-446-3518
fax

Keith Hinds
Assistant to the Engineer

Doug Thiel
Office Manager

20 April 2010

Memo for Record

Subject: Cost Estimate for Intersection Caution Light at J-66 and Hwy 69

The following cost estimate is provided for a proposed Red/Yellow flashing light suspended over the intersection of County Route J-66 and US Highway 69. The light will show flashing red for the north/south traffic on J-66 and flashing yellow for the east-west traffic on US Highway 69. A similar installation was placed at the intersection of County Route J-20 and US Highway 69 a few years ago.

Item	Description	Unit	Unit Cost	Quantity	Extended Cost
001	Utility Pole w/guy wire	each	\$225.00	2	\$450.00
002	Pole Installation	each	\$ 75.00	2	\$150.00
003	Support Cable	foot	\$.65	140	\$ 91.00
004	Anti-sway Cable	foot	\$.65	140	\$ 91.00
005	Misc. Hardware	pound	\$.75	10	\$ 7.50
006	Cabinet	each	\$ 275.00	1	\$ 275.00
007	4-Way Bracket	each	\$ 120.00	1	\$ 120.00
008	Luminaires				
	Red	each	\$ 195.00	2	\$ 390.00
	Yellow	each	\$ 195.00	2	\$ 390.00
009	Electric Meter Base	each	\$ 65.00	1	\$ 65.00
010	Electrician	hour	\$ 85.00	6	\$ 510.00
011	Utility Labor & Equipment Costs	hour	\$ 135.00	4.50	\$ 607.50
				Total	\$ 3147.00



IOWA







































































































































Department of Transportation

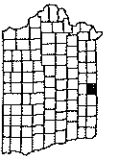
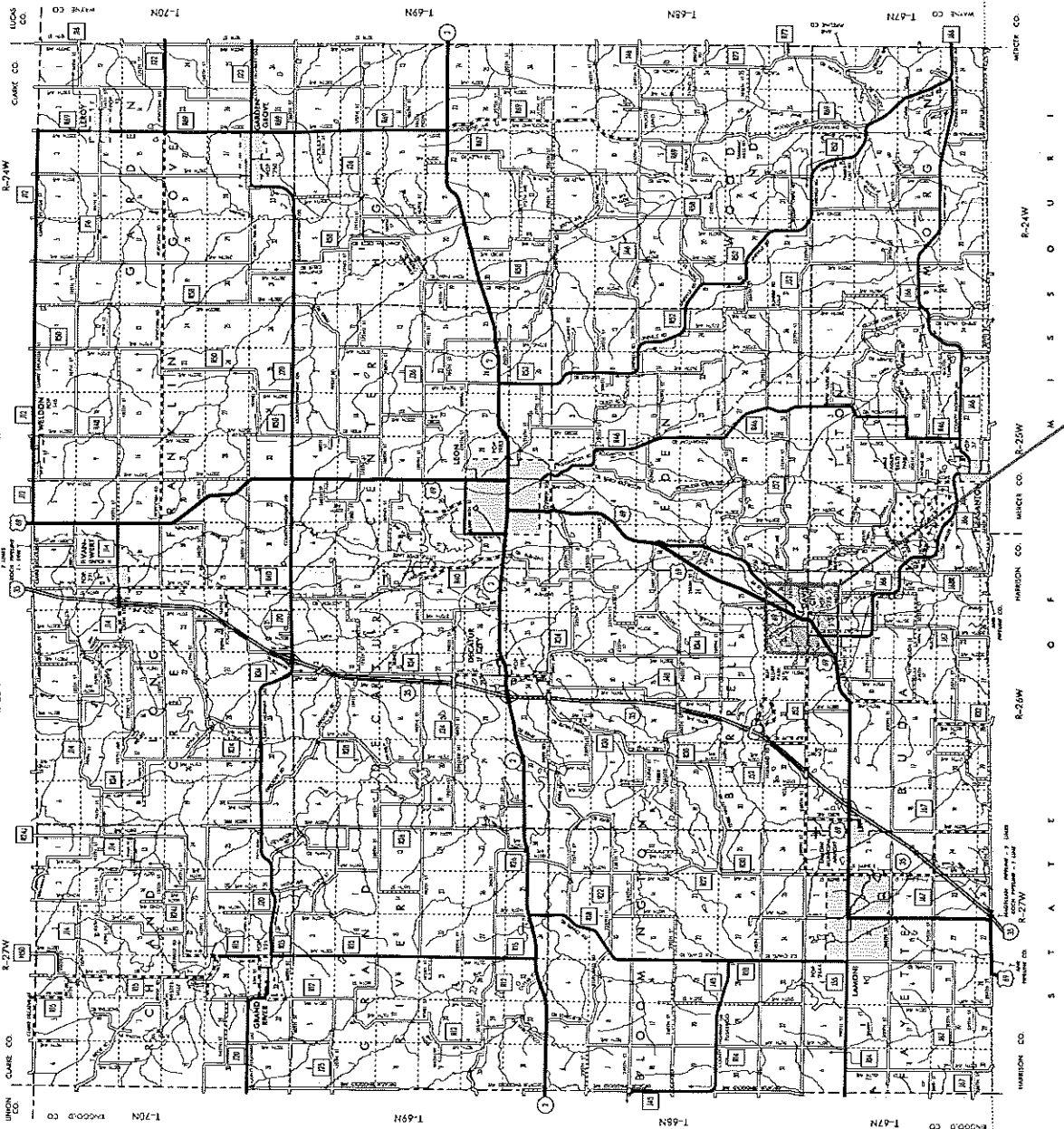


JANUARY 1, 2009



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See insert next page.



Proposed Project
Location

New Buda Twp
(T-67N; R-26W)

Section # 1



Hwy 69 J-66 intersection looking south. I-35 traffic going to "Nine Eagles State Park" comes east (from right in photo) from I-35 on US 69, turning to their right (south) onto County Route J-66 (Dale Miller Rd). This route leads to the main entrance to the park. Hwy 69 was overlayed and widened last fall, and the speed limit was raised from 50 mph to 55 mph. The county improved this intersection by widening the radius to the south and overlaying the county route to match the new overlay of Hwy 69. This was funded with County funds.



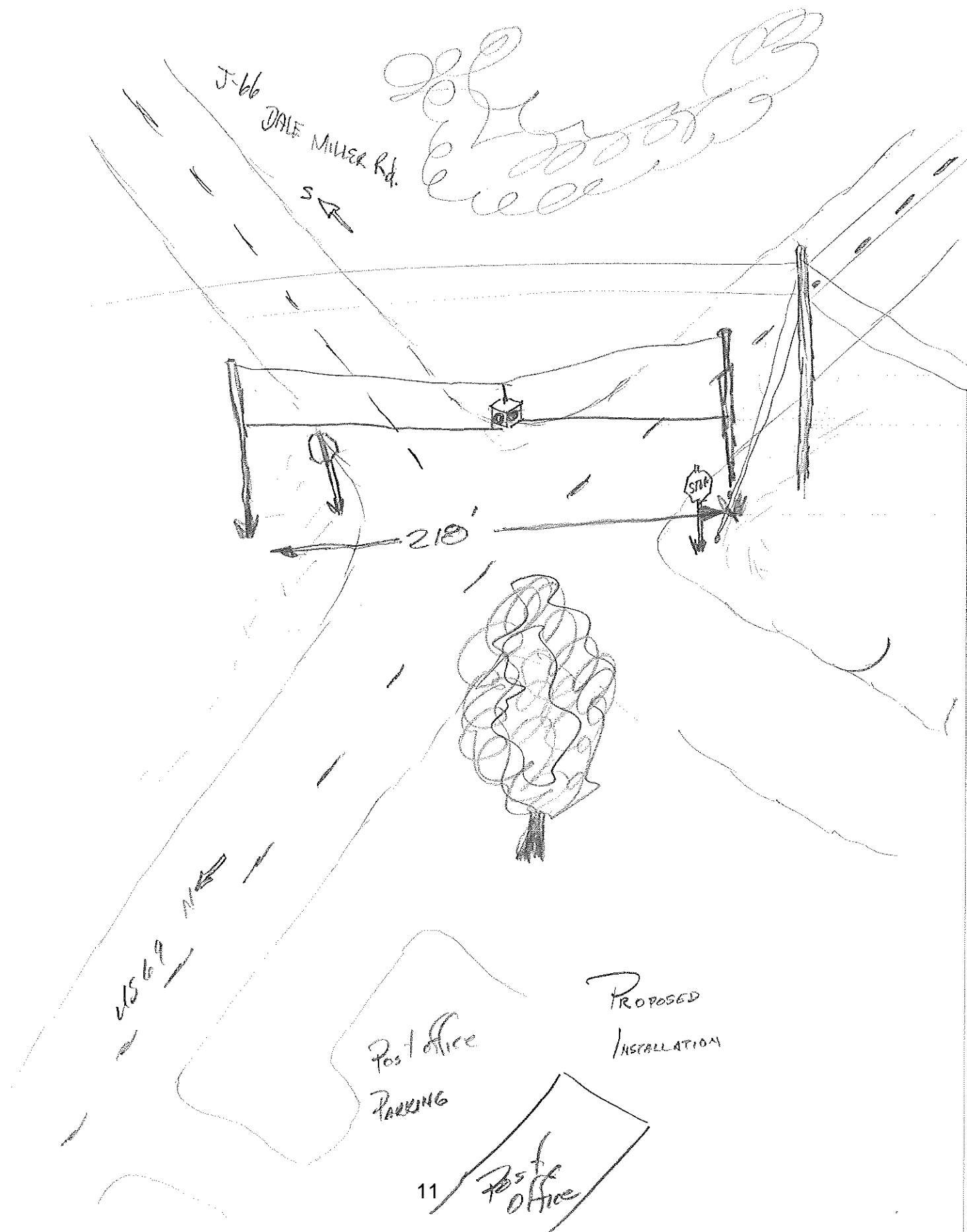
This view, looking north from County Route 1-16, shows the area repaired and overlayed by the county. The widened radius is on the left. The area can become foggy in early spring or late fall. I had requested two stop signs here, but was told by the state that another stop sign would not be allowed, unless the intersection was to include an island. Hence the Flag pennant on the stop sign.



This photo was taken approaching the intersection of US 69 and J-66 (on J-66) from the west on US 69. The small building on the left is the Post Office for Davis City. This is a high volume traffic area. The access to the Post office is from US Hwy 69 just east of this intersection. The machine on the right (just east of that) is sitting in the drive of Davis City Coop and Grainery.



This photo shows the same intersection looking west from US HWY 69. The post office is off to the left.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Replacement of horizontal alignment and intersection signs on unpaved roads

Applicant Clinton County Secondary Roads Department

Contact Person Todd Kinney Title Clinton County Engineer

Complete Mailing Address 1900 N 3rd Street
Clinton, IA 52732

Phone 563-244-0564 E-Mail tkinney@clintoncounty-ia.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 \$ 71,400.40

Safety Funds Requested \$ 51,400.40

REQUEST FOR TRAFFIC SAFETY FUNDS (TSF) PROJECT NARRATIVE

Location: The project is located throughout the Clinton County Secondary Road system on unpaved roads where there exists horizontal alignment change signs (W1-1, W1-2, W1-3, W1-4, W1-5 and W1-6) and intersection warning signs (W1-7).

Existing Conditions: The existing Clinton County roadway signage is in the process of being inventoried via a GPS software inventory system. The existing sign retro-reflectivity is in a varied state of degradation. In order to comply with the FHWA retro-reflectivity requirements, Clinton County has implemented a sign replacement policy (see attached policy) that implements the “Expected Sign Life Method” of compliance. All signs in the county will be inventoried by January 2012. Those signs older than the specified warranty period will be scheduled for replacement. Signs scheduled for replacement will be replaced on or before January 2015.

According to information produced by the IDOT in the “Iowa Comprehensive Highway Safety Plan, One Death is Too Many”, 21% of all fatal and severe injury single vehicle run off the road (ROR) type crashes occur on unpaved public roads. Replacing low retro-reflectivity signs with new higher grade (fluorescent) sheeting signs will give the traveling public better advanced warning of horizontal alignment changes in the roadway and of intersections.

The paved road system warning signage was upgraded in conjunction with the High Risk Rural Roads Phase 1 sign replacement program.

Proposed Improvements: The improvements proposed for this traffic signage project are to replace all of the horizontal alignment change and intersection warning signs located on unpaved roads in Clinton County. The replacement sign sheeting will be Diamond Grade Cubed (fluorescent) sheeting (12-year warranty).

TIME SCHEDULE

Clinton County proposes to begin installing the signs as soon as they can be delivered from the supplier. The sign installation will be completed by our sign crew. The installation of the new signs should be complete in approximately one year after delivery.

Clinton County Horizontal Alignment and Intersection Signage Replacement TSF Application
04/18/2010

Orientation/Direction	MUTCD Code	Size	Backing	Sheeting	Number	Unit Cost	Amount
90-degree curve Left	W1-1	30x30	Aluminum	DG3	76	\$52.90	\$4,020.40
90-degree curve Right	W1-1	30x30	Aluminum	DG3	82	\$52.90	\$4,337.80
45-degree curve Left	W1-2	30x30	Aluminum	DG3	63	\$52.90	\$3,332.70
45-degree curve Right	W1-2	30x30	Aluminum	DG3	70	\$52.90	\$3,703.00
Reverse Turn Left	W1-3	30x30	Aluminum	DG3	12	\$52.90	\$634.80
Reverse Turn Right	W1-3	30x30	Aluminum	DG3	21	\$52.90	\$1,110.90
Reverse Curve Left	W1-4	30x30	Aluminum	DG3	44	\$52.90	\$2,327.60
Reverse Curve Right	W1-4	30x30	Aluminum	DG3	27	\$52.90	\$1,428.30
Winding Road Left	W1-5	30x30	Aluminum	DG3	32	\$52.90	\$1,692.80
Winding Road Right	W1-5	30x30	Aluminum	DG3	45	\$52.90	\$2,380.50
One Direction Arrow	W1-6	48x24	Aluminum	DG3	66	\$67.60	\$4,461.60
Two Direction Arrow	W1-7	48x24	Aluminum	DG3	325	\$67.60	\$21,970.00

Total	863	Total	\$51,400.40
Signs			

CLINTON COUNTY SECONDARY ROAD DEPARTMENT
POLICY AND PROCEDURES
FOR
TRAFFIC SIGNAGE REPAIR AND REPLACEMENT

SUBJECT: Establish department procedures and policies for traffic sign inspection and replacement in accordance with applicable state and federal requirements.

GENERAL: The Clinton County Board of Supervisors recognizes the fact that traffic signage within the county road right-of-way may be damaged or destroyed outside normal secondary road crew working hours. It is the policy of Clinton County to replace or repair within a reasonable period of time traffic signs that are destroyed or damaged. This policy statement will cover the procedures to be followed in accordance with this objective and establish regular inspection and replacement procedures. This policy will be subject to change in order to comply with periodic revisions to the Manual on Uniform Traffic Control Devices (MUTCD) as approved by the Federal Highway Administration (FHWA) and the Iowa Department of Transportation.

PROCEDURES:

A. Replacement of Signs Required Due to Damage or Theft

The Maintenance Superintendent or designated representative will evaluate all reports and claims regarding traffic sign damage or theft.

The evaluation of all such reports and claims shall be conducted as promptly as possible and a determination made by the Maintenance Superintendent or designated representative as to the validity and extent of damage. The following types of signs shall be replaced within 24 hours of verification of damage.

1. Stop Signs and Stop Ahead Signs
2. Horizontal Alignment Warning Signs
3. No Shoulder Signs
4. Advisory Speed and Speed Limit Signs
5. Two-Direction Large Arrow Signs
6. Yield Signs

The replacement or repair of these signs shall be completed under an overtime call-in situation as required to facilitate repair or replacement within 24 hours of verification of damage. If the Maintenance Superintendent determines that the missing sign is an immediate hazard to the traveling public he/she may install temporary signage before calling Secondary Road Department personnel to permanently repair or replace the sign. Repair or replacement within 24 hours is subject to manpower, equipment and material availability. If conditions exist where these signs cannot be replaced or repaired within 24 hours temporary signage shall be installed until permanent repairs can be completed.

Other types of signs damaged that will not normally be replaced or repaired until normal Secondary Road Department working hours include: 911 address signs, no passing signs, crossing signs, street and avenue signs, warning signs not previously listed, and various other traffic signs used throughout the county not previously listed in items 1-6. The Maintenance Superintendent or designated representative may call Secondary Road Department personnel in under an overtime situation to repair or replace a sign not listed in items 1 through 6 at his/her discretion.

B. Replacement of Signs in Accordance with Minimum Retro-reflectivity Requirements

In order to comply with the FHWA minimum retro-reflectivity levels as adopted by the MUTCD 2003 Revisions 1 and 2, Clinton County will implement the Expected Sign Life Management Method for maintaining sign retro-reflectivity. This method is an approved method by the FHWA for maintaining sign retro-reflectivity. The Expected Sign Life Method requires monitoring the age of signs and that signs are replaced before they reach their expected sign life age. The expected sign life is based on the experience of sign retro-reflectivity degradation in a geographic area compared to minimum levels. Clinton County will use the warranty period given by the sign manufacturer of each type of sign sheeting as the expected sign life.

1. All applicable signs will be inventoried on or before January 2012. Those signs identified with service periods greater than the warranty period will be replaced on or before January 2015. After January 2015, signs will be replaced before their warranty period has expired.
2. Street and avenue signs older than their applicable warranty period will be identified and replaced on or before January 2018.
3. Visual inspections will also be conducted to evaluate sign positioning, cleanliness, legibility and overall general condition.

MINIMUM MAINTAINED RETROREFLECTIVITY LEVELS

Sign Color	Sheeting Type	Required Retro-reflectivity	Notes
White on Green	Prismatic	W=120 G=15	Ground Mounted
Black on Orange	Prismatic	Y=50 O=50	For text and symbols >48 in and all bold symbols
Black on Yellow	Prismatic	Y=75 O=75	For text and symbols < 48 in
White on Red	Prismatic	W=35 R=7	Min sign contrast >3:1 (W/R)
Black on White	Prismatic	W=50	None

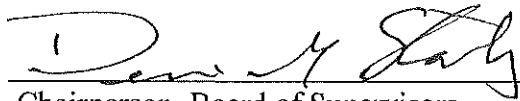
W=white sheeting, G=green sheeting, Y=yellow sheeting, O=orange sheeting
 Minimum contrast ratio=3:1 (white reflectivity reading divided by red retro-reflectivity)
 Units are cd/lx/m² measured at an observation angle of 0.2 and entrance angle of -4.0.

4. The following signs are excluded from minimum retroreflectivity requirements: parking, standing and stopping signs (R7-R8 series), walking/hitchhiking/crossing signs (R9 series

and R10-1 thru R10-4b), Adopt-A-Highway signs and all signs with blue or brown backgrounds.

5. Signs located on paved roadways shall be replaced with "Diamond Grade" reflective sheeting (VIP-fluorescent) signs. Warranty period specified by the manufacturer is 12-years.
6. Signs located on non-paved roadways (including all street and avenue signs) shall be replaced with "High Intensity Grade" reflective sheeting signs. Warranty period specified by the manufacturer is 10-years.
7. Installation and location of signs shall be in accordance with the current version of the "Manual on Uniform Traffic Control Devices" (Chapter 2A) as approved by the Iowa Department of Transportation.

APPROVED BY THE CLINTON COUNTY BOARD OF SUPERVISORS


Chairperson, Board of Supervisors

4/27/09
Date

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Warning Sign Replacement on E-41 and R-27
Applicant Boone County Secondary Roads
Contact Person Scott H. Kruse Title Assistant County Engineer
Complete Mailing Address Courthouse, 201 State Street
Boone, IA 50036
Phone 515-433-0530 E-Mail scottk@boonecounty.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 \$ 2,792.50
Safety Funds Requested \$ 2,792.50

Iowa Traffic Safety Funds Application

Boone County Roads E-41, and R-27

Replacement of Warning Signs

Narrative

Boone County Roads E-41 and R-27 have segments of roadway that are deserving of Iowa Traffic Safety Funds for the replacement of warning signs that queue the driver of upcoming geometric changes in the roadway. These segments can be seen on the attached map of Boone County.

The Segments of E-41 are all 22' wide pavement with a minimum 6' earth shoulder and 3:1 foreslopes. These segments have traffic volumes ranging from 1680 VPD to 4080 VPD.

The segments of R-27 are all 22' wide pavement with varying shoulder widths. From E-57 north to E-52 the roadway has 6' shoulders and 3:1 foreslopes. From E-52 north to Hwy 30 the shoulders are 3' wide with 2.5:1 foreslopes. Traffic Volumes on this route range from 530 VPD to 890 VPD.

In 1985 Boone County conducted a county-wide roadway signing update. Throughout the county faded and non-reflective signs were replaced. A sign inventory was performed and entered into a computer. The roads in this application were included in that activity. Since that time routine sign maintenance, inspection, and upgrades have been conducted. All sign data is now integrated into our GIS system with a program developed in house, to manage our sign inventory.

Boone County met with Robert Sperry with the Institute for Transportation at Iowa State. In conversation he advised Boone County to apply for funding to replace the warning signs that aid motorists in reacting to the geometric changes in the roadway. In order to keep uniformity of signage on these routes Boone County is proposing to replace all warning signs.

Boone County is requesting funding for all or a portion of the signs shown on the quote.

Iowa Traffic Safety Funds Application

Boone County Roads E-41, and R-27

Replacement of Warning Signs

Itemized Breakdown of Costs

Boone County has attached the Quote for sign materials from Iowa Prison Industries. The costs break down for each segment of roadway is also attached. Below is a listing of costs broken down by general category of signs inside the warning signs.

Cost For Deer Crossing Signs – \$144.20

Cost For No Passing Signs – \$1,034.80

Cost For Curve Signs and Speed Plates -- \$1,613.50

Total Cost for all Signs – \$2,792.50

The cost of materials purchased for replacement of obsolete traffic control devices shall comply with the applicable warrants in the Manual on Uniform Traffic Control Devices (MUTCD) adopted in rule 761—130.1(321) of the Iowa Administrative Code.

TSIP Eligible Sign Quote from IPI

MUTCD Code	Description	Size of sign	Sheeting	Sign Material	Qty	Unit Price	Total Price
W1-2L	Curve Lt.	30" x 30"	Diamond Grade	Aluminum	6	48.70	\$ 292.20
W1-2R	Curve Rt.	30" x 30"	Diamond Grade	Aluminum	7	48.70	\$ 340.90
W13-1	Advisory Spd Plt. 45 mph	18" x 18"	Diamond Grade	Aluminum	6	17.60	\$ 105.60
W13-1	Advisory Spd Plt. 35 mph	18" x 18"	Diamond Grade	Aluminum	3	17.60	\$ 52.80
W1-4L	Reverse Curve Lt.	30" x 30"	Diamond Grade	Aluminum	4	48.70	\$ 194.80
W1-4R	Reverse Curve Rt.	30" x 30"	Diamond Grade	Aluminum	6	48.70	\$ 292.20
W1-5L	Winding Rd. Lt.	30" x 30"	Diamond Grade	Aluminum	2	48.70	\$ 97.40
W7-3A	Next 4 Miles	18" x 24"	Diamond Grade	Aluminum	2	23.40	\$ 46.80
W14-3	No Passing Zone	36" x 48"	Diamond Grade	Aluminum	26	39.80	\$ 1034.80
W3-1	Stop Ahead (Message)	36" x 36"	Diamond Grade	Aluminum	2	70.10	\$ 140.20
W11-3	Deer Crossing (Symbol)	30" x 30"	Diamond Grade	Aluminum	2	48.70	\$ 97.40
W1-5R	Winding Rd. Rt.	30" x 30"	Diamond Grade	Aluminum	2	48.70	\$ 97.40
Total Signs					68	@	\$ 2792.50

*Quoting regular yellow Diamond Grade
(not fluorescent yellow)*

IOWA PRISON INDUSTRIES
406 North High Street
PO Box 430
Anamosa, IA 52205-0430

Carney Quoten 42410

Sign Listing Eligible for Traffic Safety Improvement Program

Route Number	MUTCD Code	Description	Qty	Unit Price	Total Price
E-41 Ogden to Boone	W7-3A	Next 4 Miles	2	\$ 23.40	\$ 46.80
E-41 Ogden to Boone	W11-3	Deer Crossing	2	\$ 48.70	\$ 97.40
E-41 Ogden to Boone	W14-3	No Passing Zone	12	\$ 39.80	\$ 477.60
E-41 Ogden to Boone	W1-4R	Reverse Curve Rt	4	\$ 48.70	\$ 194.80
E-41 Ogden to Boone	W1-5R	Winding Rd. Rt.	2	\$ 48.70	\$ 97.40
E-41 Ogden to Boone	W1-5L	Winding Rd. Lt.	2	\$ 48.70	\$ 97.40
E-41 Ogden to Boone	W1-2L	Curve Lt.	1	\$ 48.70	\$ 48.70
E-41 Ogden to Boone	W1-2R	Curve Rt.	2	\$ 48.70	\$ 97.40
E-41 Ogden to Boone	W13-1	Advisory Spd Plt. 45 mph	6	\$ 17.60	\$ 105.60
E-41 Ogden to Boone	W13-1	Advisory Spd Plt. 35 mph	3	\$ 17.60	\$ 52.80
Sub-Total					\$ 1,315.90
E41 Boone to HWY 17	W14-3	No Passing Zone	2	\$ 39.80	\$ 79.60
E41 Boone to HWY 17	W1-2R	Curve Rt.	2	\$ 48.70	\$ 97.40
E41 Boone to HWY 17	W1-2L	Curve Lt.	2	\$ 48.70	\$ 97.40
Sub-Total					\$ 274.40
R-27 US Hwy 30 to E-57	W3-1	Stop Ahead (Message)	2	\$ 70.10	\$ 140.20
R-27 US Hwy 30 to E-57	W14-3	No Passing Zone	12	\$ 39.80	\$ 477.60
R-27 US Hwy 30 to E-57	W1-4L	Reverse Curve Lt.	4	\$ 48.70	\$ 194.80
R-27 US Hwy 30 to E-57	W1-4R	Reverse Curve Rt	2	\$ 48.70	\$ 97.40
R-27 US Hwy 30 to E-57	W1-2L	Curve Lt.	3	\$ 48.70	\$ 146.10
R-27 US Hwy 30 to E-57	W1-2R	Curve Rt.	3	\$ 48.70	\$ 146.10
Sub-Total					\$ 1,202.20
Total Signs			68	@	\$ 2,792.50

Iowa Traffic Safety Funds Application

Boone County Roads E-41, and R-27

Replacement of Warning Signs

Time Schedule

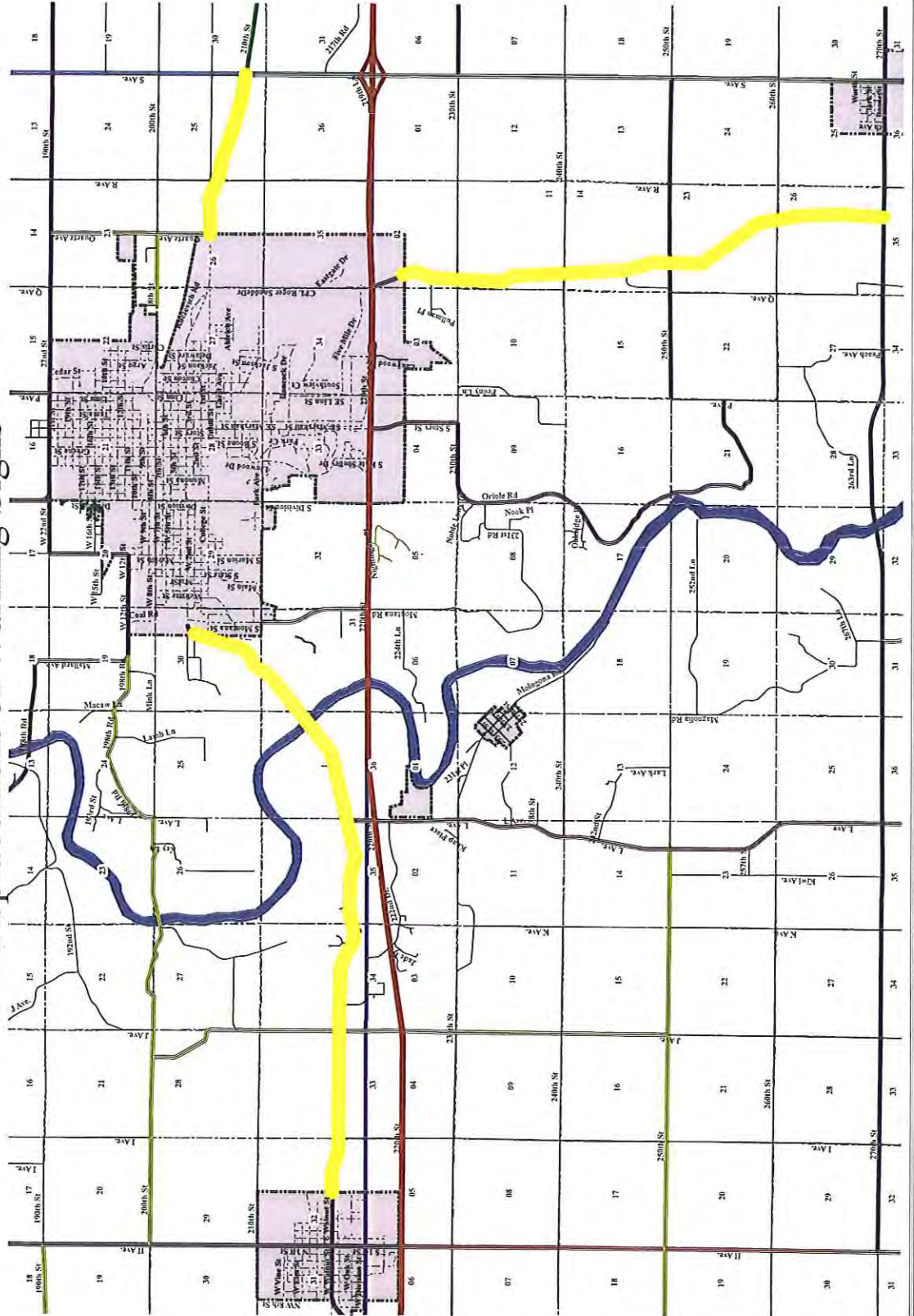
If the Office of Traffic and Safety reviews the application and appropriates funds to Boone County, the signs would be ordered and installed as quickly as possible.

Boone County, Iowa Traffic Safety Funds Application Replacement of Warning Signs



Legend

- Roads**
 - City
 - Private
 - Local
 - PA
 - MA
 - MC FM
 - MAC FM
 - sde.SDE.corplim
 - PoliticalTownship
 - Corporate Limits
 - Section Lines
 - Water
 - Eligible TSIP Routes





Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Guthrie County F65 Sign Upgrade Project
Applicant Guthrie County, IA Road Department
Contact Person Josh Sebern Title Engineer
Complete Mailing Address 2211-215th Street, Guthrie Center, IA 50115

Phone 641-747-2274 E-Mail engr39@netins.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) 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 \$ 8,430.50
Safety Funds Requested \$ 8,430.50

**F65 Sign Upgrade Project
Guthrie County, IA**

NARRATIVE

All of Guthrie County's signs along F65 have deteriorated in condition, and along with the changing retro-reflectivity standards are overdue for replacement. This paved road is our most heavily traveled road with ADT ranging from 820 on the west end to 1890 on the east section. The highway design dates back to the 30's and is the old highway 6 which the county took over in 2004. According to our sign inventory, we have 192 signs that we would like to upgrade to the new florescent standard. A listing of number and type of signs is included in Section C of this application. This replacement would provide compliance with the new standard, and provide EXCELLENT reflectivity to the motorists of the County.

The safety benefits of using these high visibility florescent signs will be realized after installation by demanding the motorist's attention and increasing their awareness to upcoming hazards. It will also allow us to get started on the conversion path dictated by the federal MUTCD timeline.

F65 Sign update Project

C

Guthrie County Road Department 2211 215th Street, Guthrie Center, IA 50115

sign type	number of signs	Description	unit price	sign cost
W1-2L	6	Left Curve	\$52.90	\$317.40
W1-2R	7	Right Curve	\$52.90	\$370.30
W1-4L	5	Left Curve	\$52.90	\$264.50
W1-4R	1	Right Curve	\$52.90	\$52.90
W14-3	38	No Passing	\$42.80	\$1,626.40
W1-7	7	Double Arrow	\$67.60	\$473.20
S1-1	2	School Designation	\$52.90	\$105.80
S3-1	2	School Bus Stop Ahead	\$58.20	\$116.40
H-1L	34	Object Marker	\$25.40	\$863.60
H-1R	34	Object Marker	\$25.40	\$863.60
W1-8	46	Chevron	\$61.90	\$2,847.40
W3-1	2	Stop Ahead	\$52.90	\$105.80
W13-1	6	Specify Speed	\$52.90	\$317.40
W8-5	2	Slippery Road	\$52.90	\$105.80
	192		Total sign cost	\$8,430.50

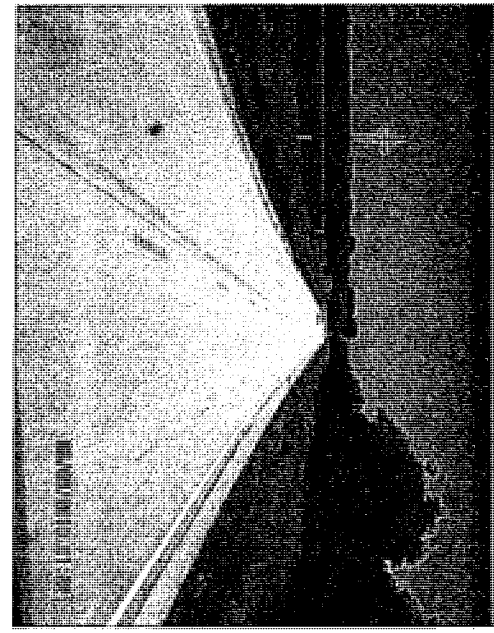
F65 Sign Update Project
Guthrie County Road Department
Time Schedule

This project would include replacing 192 signs along F65.

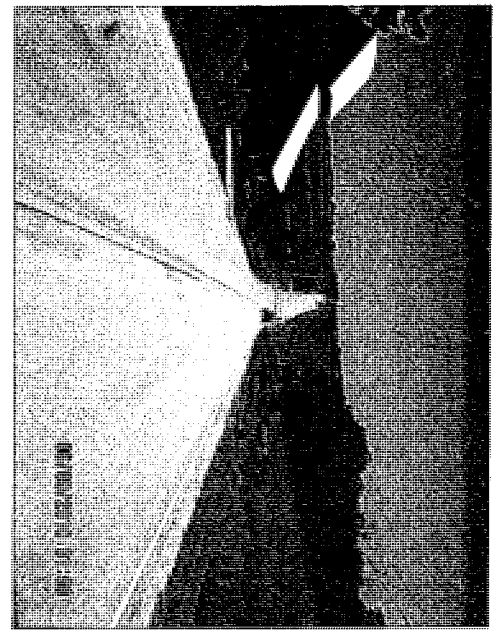
It is expected to take our sign man a total of 10 days once we have the signs.

We would start ASAP but definitely need to have the work done prior to November 1, 2010.

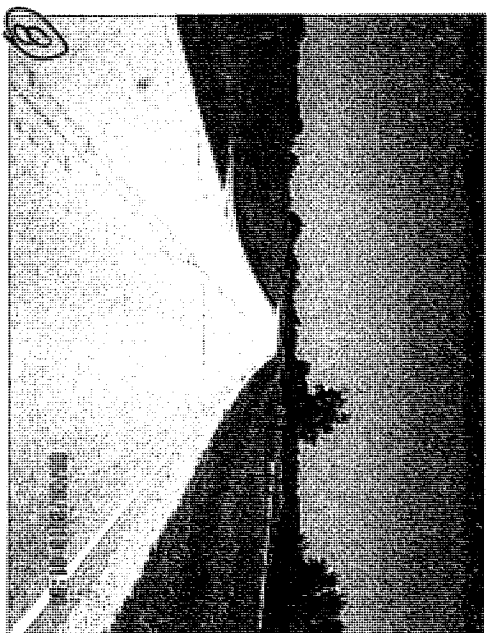
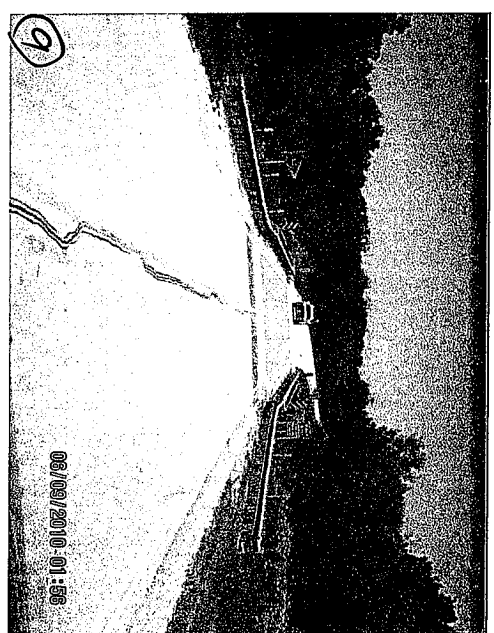
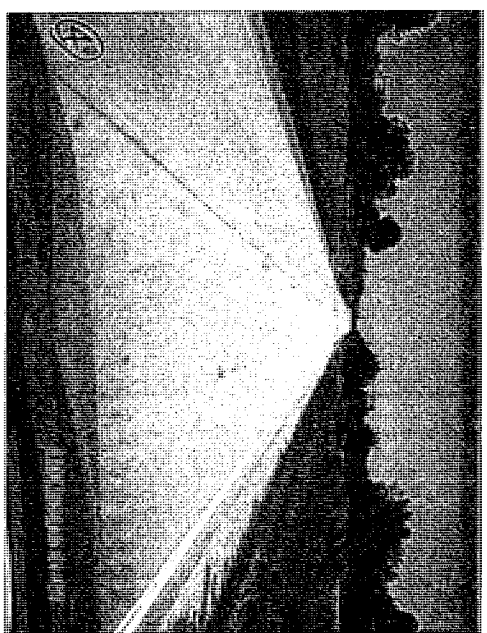
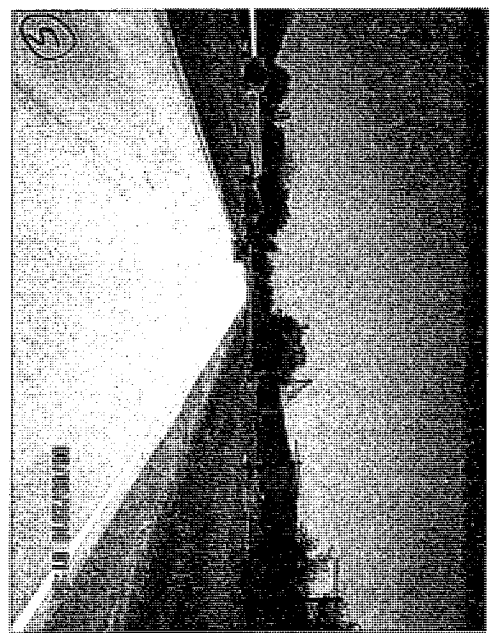
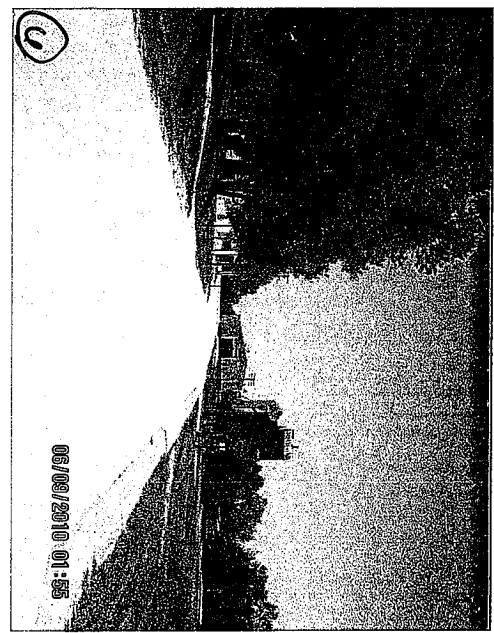
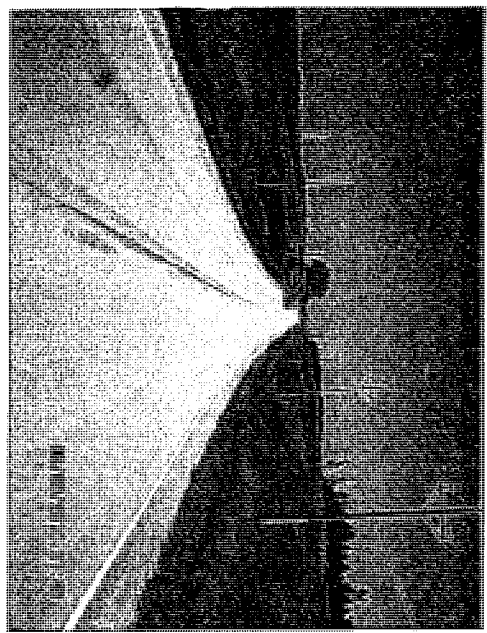
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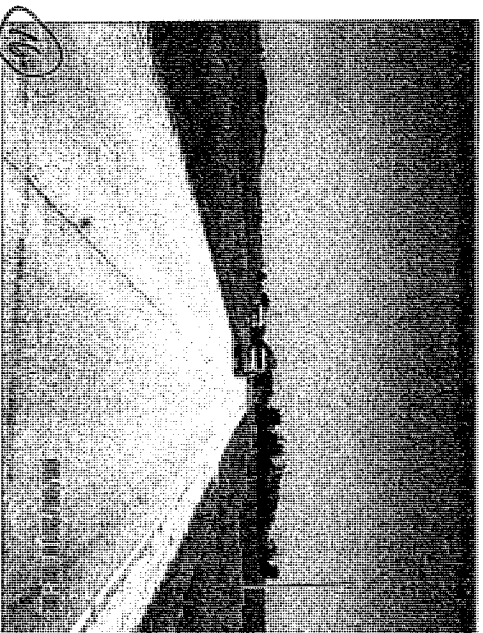
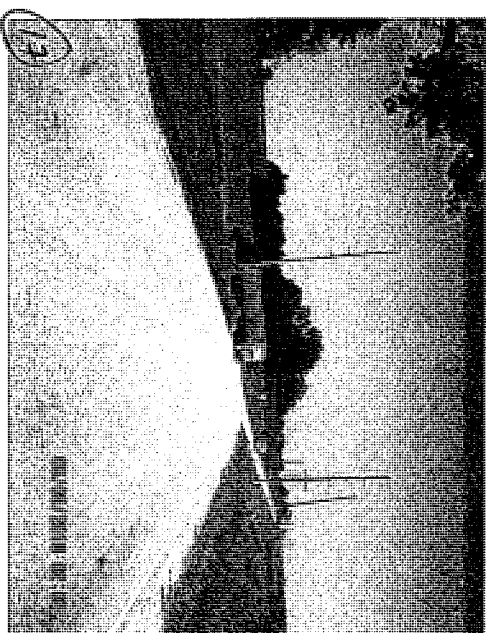
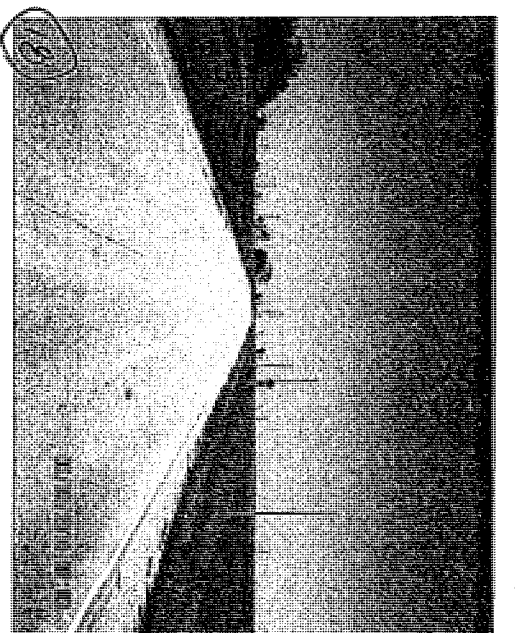
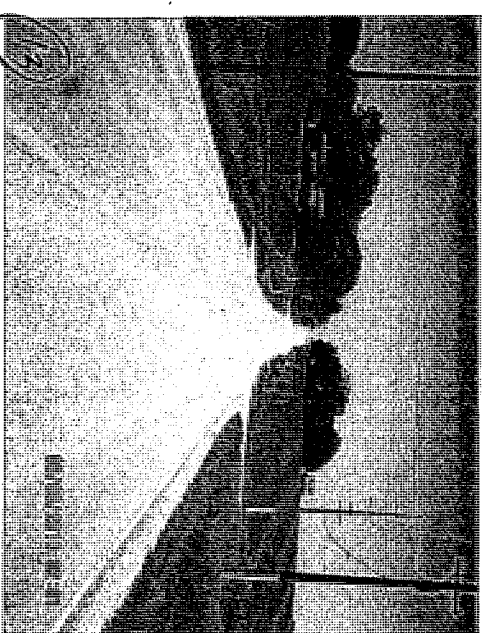
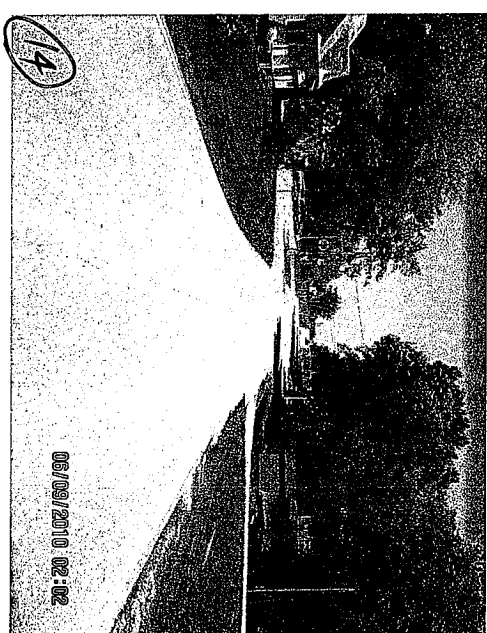
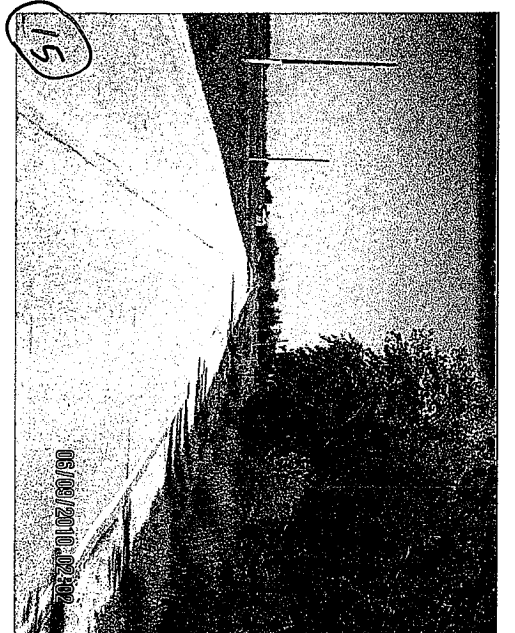
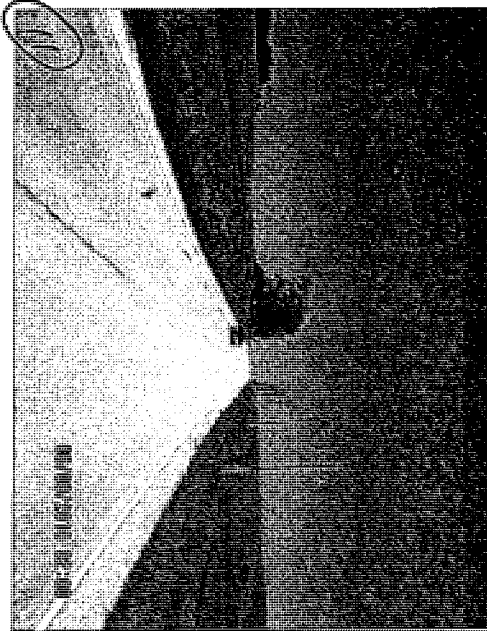
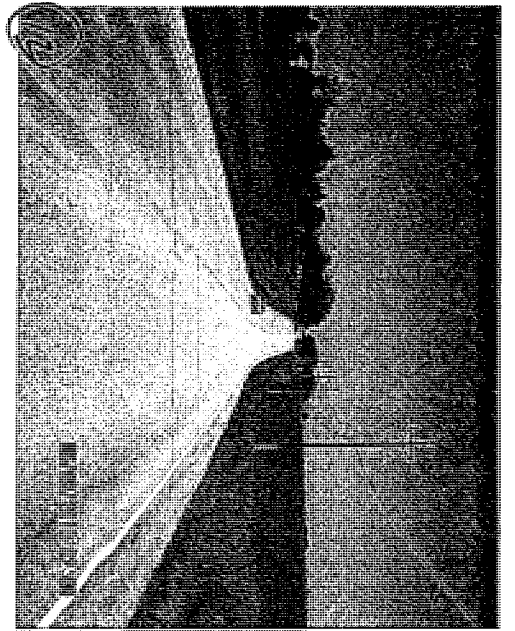


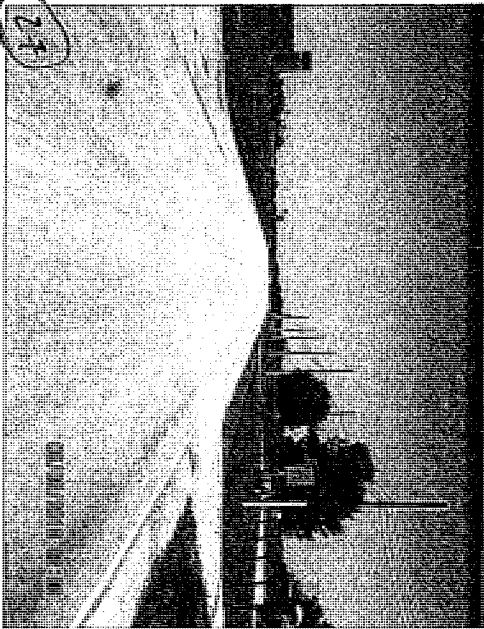
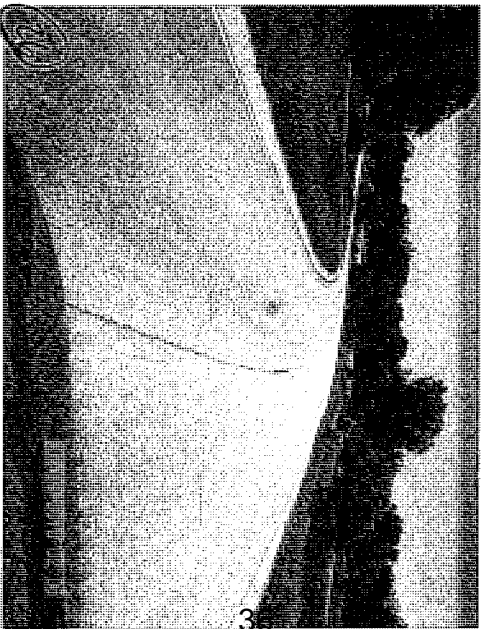
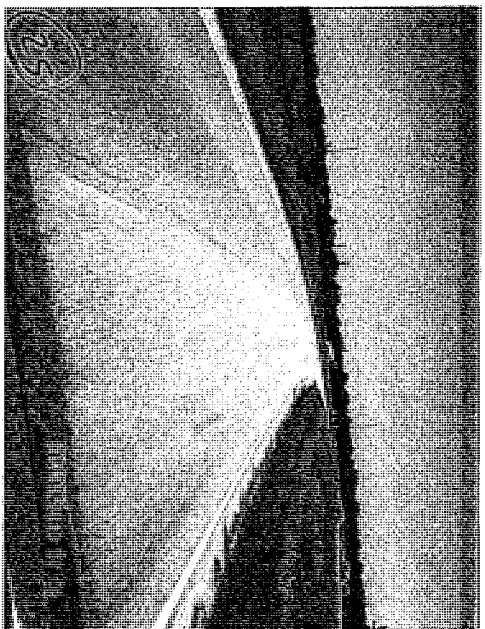
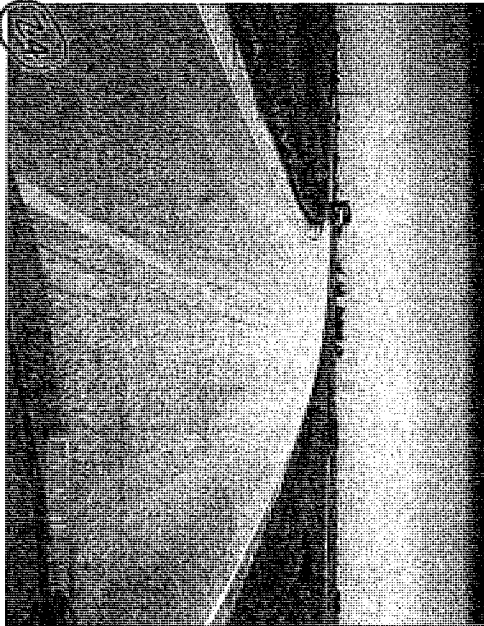
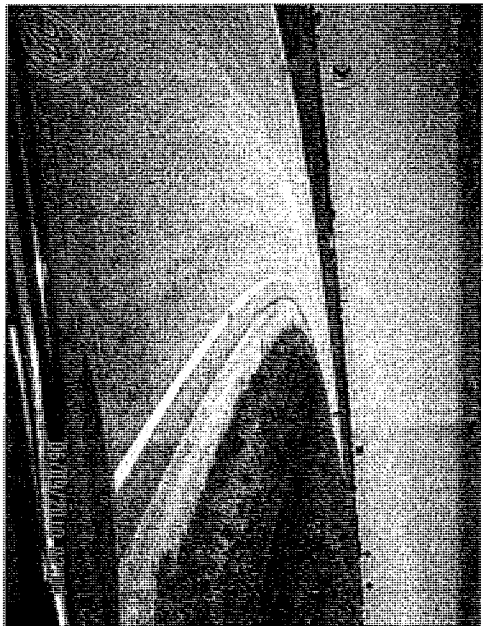
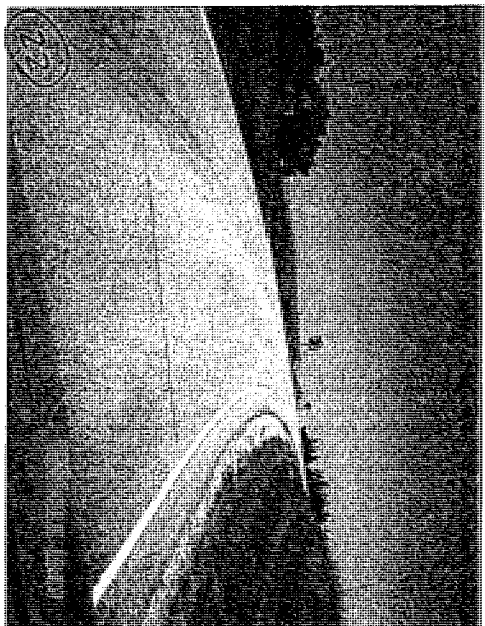
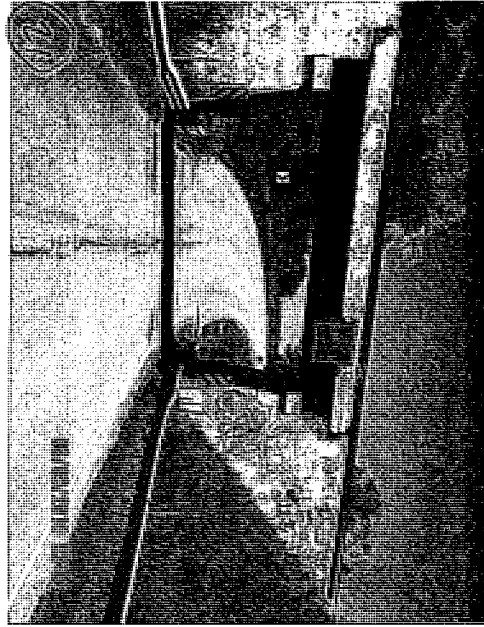
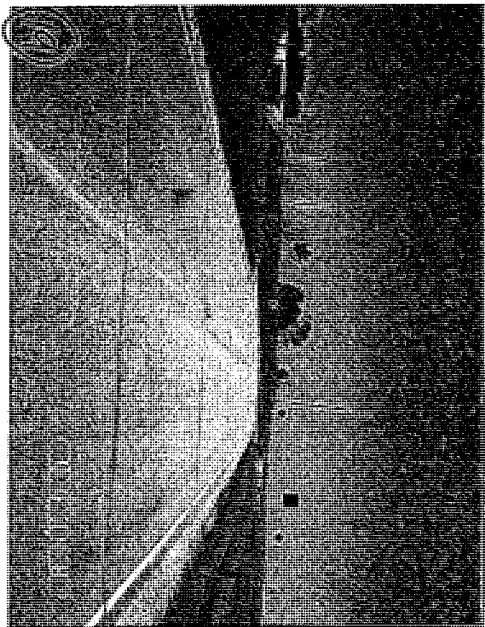
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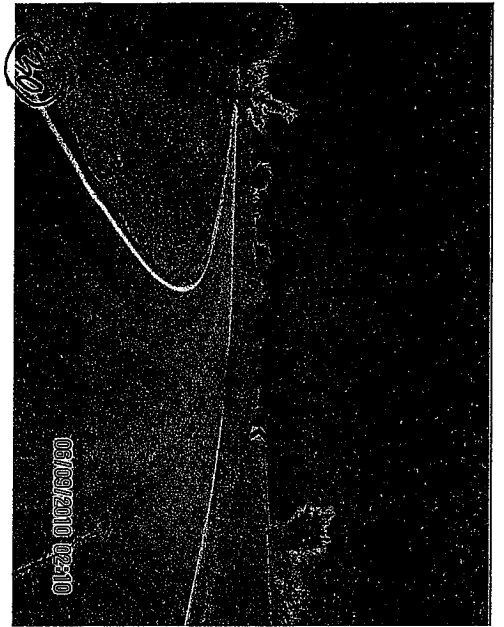
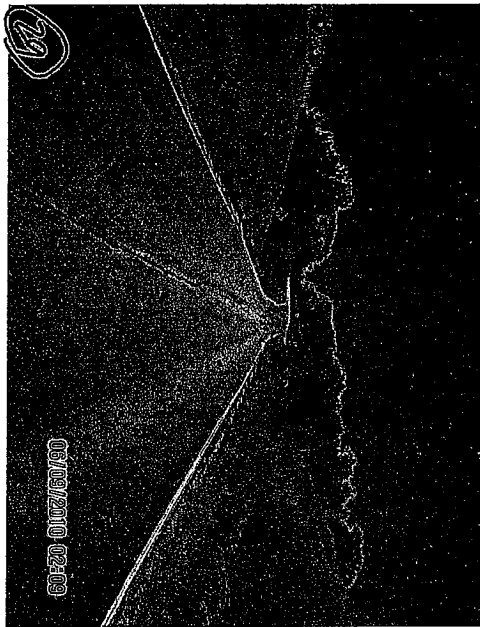


1









TRAFFIC FLOW MAP OF GUTHRIE COUNTY

Prepared by
**Iowa Department
of Transportation**
March 1983

Phone (515) 239-1282
In Cooperation With

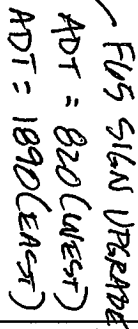
United States
Department of Transportation

JANUARY 1, 2008



LEGEND

FIELD RESEARCH
FACILE RESEARCH
INTERESTING RESEARCH
GRATIFYING RESEARCH
EARTH RESEARCH
HOW NOT TO DO RESEARCH



2008

I

Guthrie County F65 Sign Upgrade

Guthrie County Road Department

There are no signals proposed along this route.

Road Segment Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Guthrie Prepared by: James K. Jordan Date Prepared: Jun 10, 2010
 Location: F65 Sign Upgrade - Traffic Control Device Application

Improvement

Proposed Improvement(s): Sign Upgrade along F65 throughout Guthrie County

\$ <u>8,431</u> Estimated Improvement Cost, EC	6 Est. Improvement Life, years, Y
\$ <u>-</u> Other Annual Cost (after initial year), AC	7 Crash Reduction Factor (integer), CRF
\$ <u>-</u> Present Value Other Annual Costs, OC	4.0% Discount Rate, INT
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$	
	<div style="border: 1px solid black; display: inline-block; padding: 2px;">\$ <u>8,431</u></div> Present Value All Costs, COST = EC + OC

Traffic Volume Data

Source: 2008 IDOT Traffic Study 2008 Date of traffic count

Two-way

Length (mi.)	veh/day	Description
21.50	1,355	From Adair East to County Line

21.50 miles total

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

29,133 Current Vehicle Miles / Day, **VM**
 36,862 End of Life Veh. Miles / Day
 10,633,363 Current Veh. Miles / Year, **AM**
 70,530,833 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>2004</u>	First full year -->	<u>2008</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		Fatalities @	\$3,500,000 \$ -
			4 Major Injuries @	\$240,000 \$ 960,000
<u>4</u>	Injury Crashes		3 Minor Injuries @	\$48,000 \$ 144,000
			2 Possible Injuries @	\$25,000 \$ 50,000
<u>7</u>	Property Damage Only		(assumed cost per crash)	\$2,700 \$ 29,700
<u>11</u>	Total Crashes, TA		-OR- enter all Property Costs of all crashes:	Total \$ Loss, LOSS \$ <u>1,183,700</u>

2.20 Current Crashes / Year, AA = TA / T \$ 107,609 Cost per Crash, AVCR = LOSS / TA 14.6 Total Expected Crashes, TCR = CR x TVMT / 10^8 0.15 Crashes Avoided First Year AAR = AA x CRF / 100 \$ 16,572 Crash Costs Avoided in First Year, AAR x AVCR 1.0 Total Avoided Crashes, TCR x CRF / 100	20.7 Crashes / HMVM, Crash Rate, CR CR = TA x 10^8 / (AM x T) <div style="border: 1px solid black; display: inline-block; padding: 2px;">\$ <u>95,607</u></div> 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 = \$95,607 : \$8,431 = 11.34 : 1

Iowa Department of Transportation Request for Traffic Safety Funds

GENERAL INFORMATION

Location/Title of Project: Upgrade Signs / Add Beacons at the intersection of NW 121st Street and Highway 141

Applicant: County of POLK

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

Title: 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:

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

Funding:	Total Cost of the Proposed Project	\$55,000
	Safety Funds Requested for the Project	\$55,000

NARRATIVE

The Polk County Secondary Road system is constantly subjected to increasing traffic volumes due to the population growth and economic expansion occurring in the Des Moines metropolitan area. The rapid traffic growth in the northern and northwestern sections of the Metro area, and shift of job opportunities to the metro area, has resulted in increased traffic at the intersection of Iowa Highway 141 and NW 121 Street in Polk County. These high traffic levels, the configuration of the intersection, and the apparent difficulty motorists seem to have with at-grade intersections on 4-lane expressways, has resulted in several accidents over the last five years, with high severity.

The Polk County Public Works Department regularly monitors traffic accident trends and changing conditions for possible improvements if sufficiently justified. This location is one we believe is worthy of consideration for improvements. This intersection is located about 1.5 miles east of the Hwy 17/Hwy 141 Interchange, and ½ mile west of the Hwy 415/Hwy 141 Interchange in Jefferson Township. This section of Hwy 141 is a four-lane roadway with a Principal Arterial federal functional classification, and a posted speed limit of 65 mph. This route serves as a major north-south corridor between Des Moines and the Grimes, Granger, and NW Polk County area, including the Interchange with I-35/80.

Although turn lanes have been added to this intersection, as well as oversized approach signing and Stop signs with red flags on NW 121 Street, we are still experiencing several failure to yield accidents at this intersection.

NW 121 Street is a 24' wide HMA roadway with the stop conditions at Hwy 141 has Major and Minor Collector federal functional classifications. NW 121 Street is the main access road to Jester Park and the Jester Park Golf Course, as well as the north side of the City of Grimes. Due to the residential growth that has occurred over the past 5 years, NW 121 Street especially north of Hwy 141, has become a significant commuter route to access Hwy 141.

As you can see on the Section G plan sheet, we propose to install yellow flashing beacons on Hwy 141 and red flashing beacons on NW 121 St. to add additional warning to motorists, especially those on Hwy 141, that traffic may be entering Hwy 141 unexpectedly. We believe the addition of these beacons will not only reduce the number of accidents, but also reduce the severity of the accidents. A detailed cost estimate can be found in Section "C".

The Polk County Public Works Department thanks the Iowa Department of Transportation for their consideration of this project.

C

ENGINEER'S ESTIMATE					
NW121st Street and Highway 141 Advanced Signing with Solar Powered Beacons					
LINE NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	Dual 36" x 36" Cross Road Intersection Warning Sign, W2-1, & W16-8P, 15" advance street name sign, with Solar-Powered Beacon, on NB & SB Hwy 141	EA	4.00	\$ 8,000.00	\$ 32,000.00
2	36" x 36" Stop Sign, R1-1, w/Solar Powered Beacon	EA	2.00	\$ 8,000.00	\$ 16,000.00
3	Traffic Control	LS	1.00	\$ 2,000.00	\$ 2,000.00
4	Mobilization	LS	1.00	\$ 5,000.00	\$ 5,000.00
			TOTAL CONSTRUCTION		\$ 55,000.00

PROJECT TIME SCHEDULE

Proposed N.W. 121st Street / Highway 141 Advanced Signing with Solar Powered Beacons
IOWA DOT TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING APPLICATION

Polk County, Iowa

PROJECT PHASE (YEARS 2011 - 2012)	2011												2012											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
IDOT Funding Approval/Agreement																								
Project Design and Project Approvals																								
Bid Letting																								
Project Construction																								
Project Closeout																								

D

E

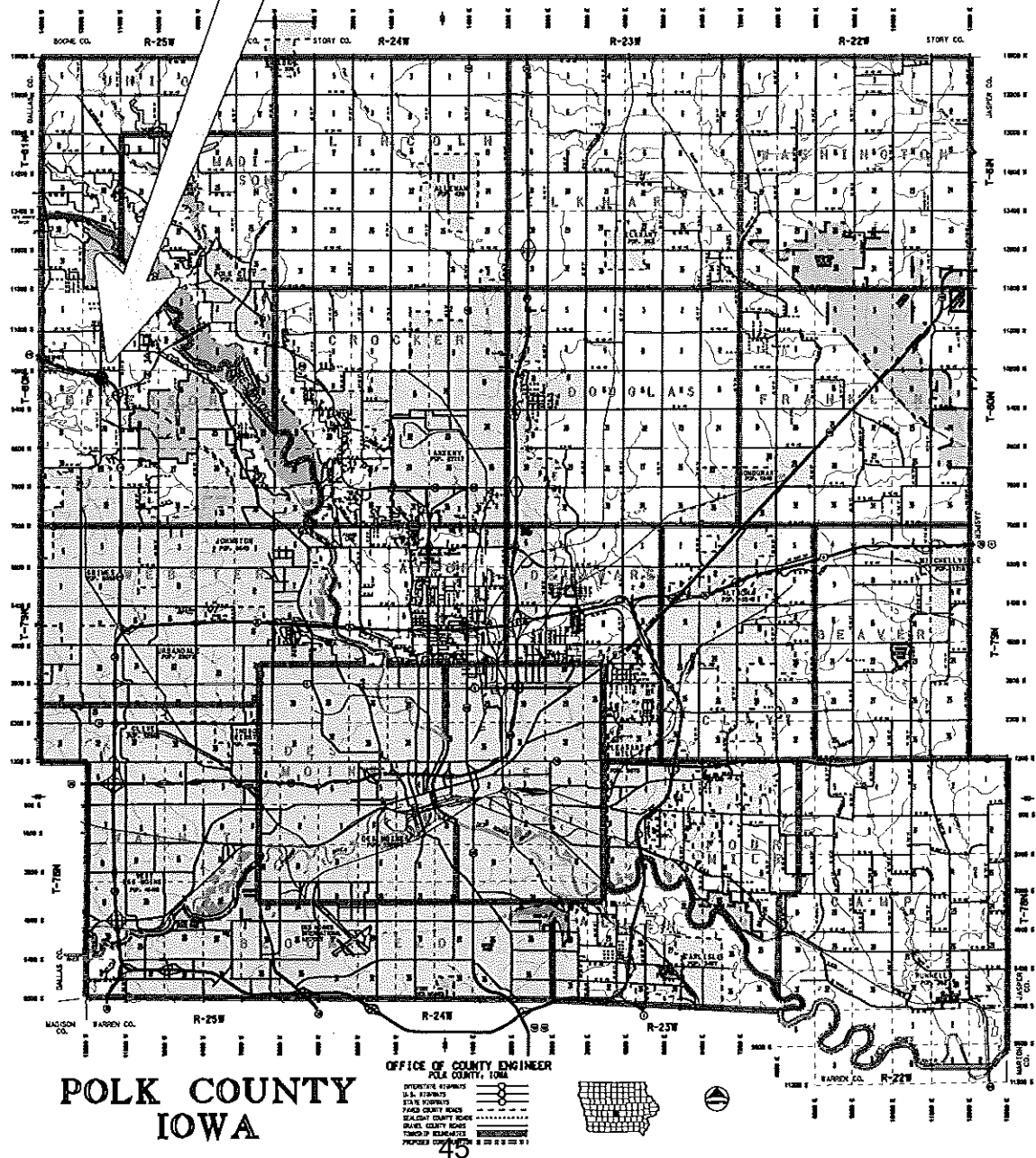
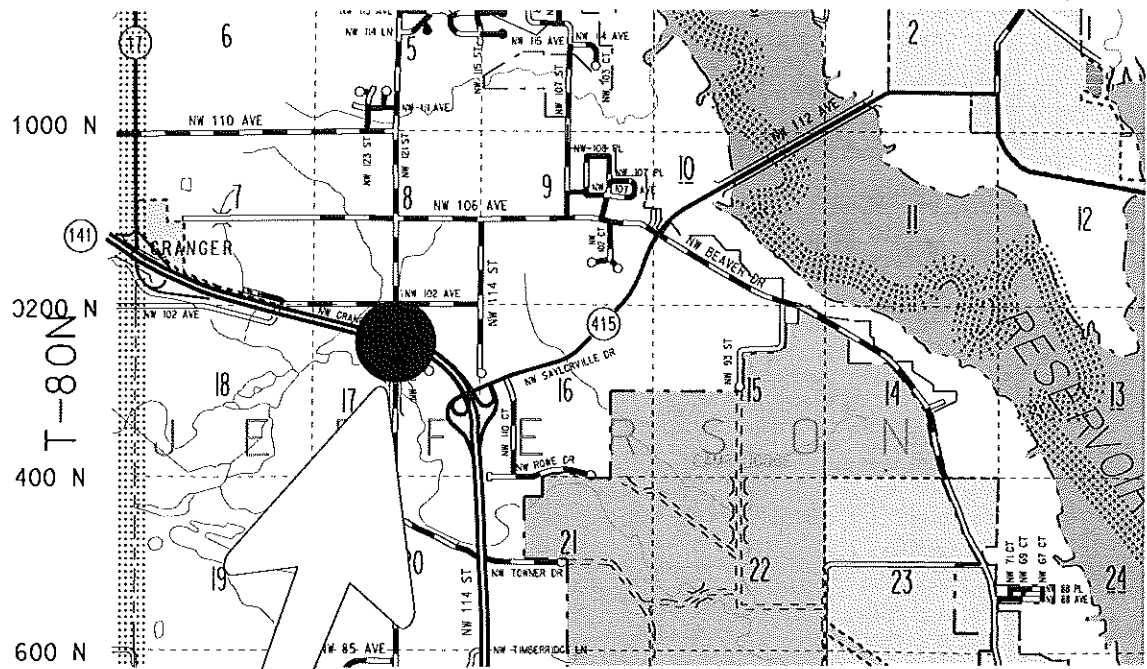




Figure 1 Northbound IA Hwy 141 Approaching Intersection.



Figure 2 Southbound IA Hwy 141 Approaching Intersection.

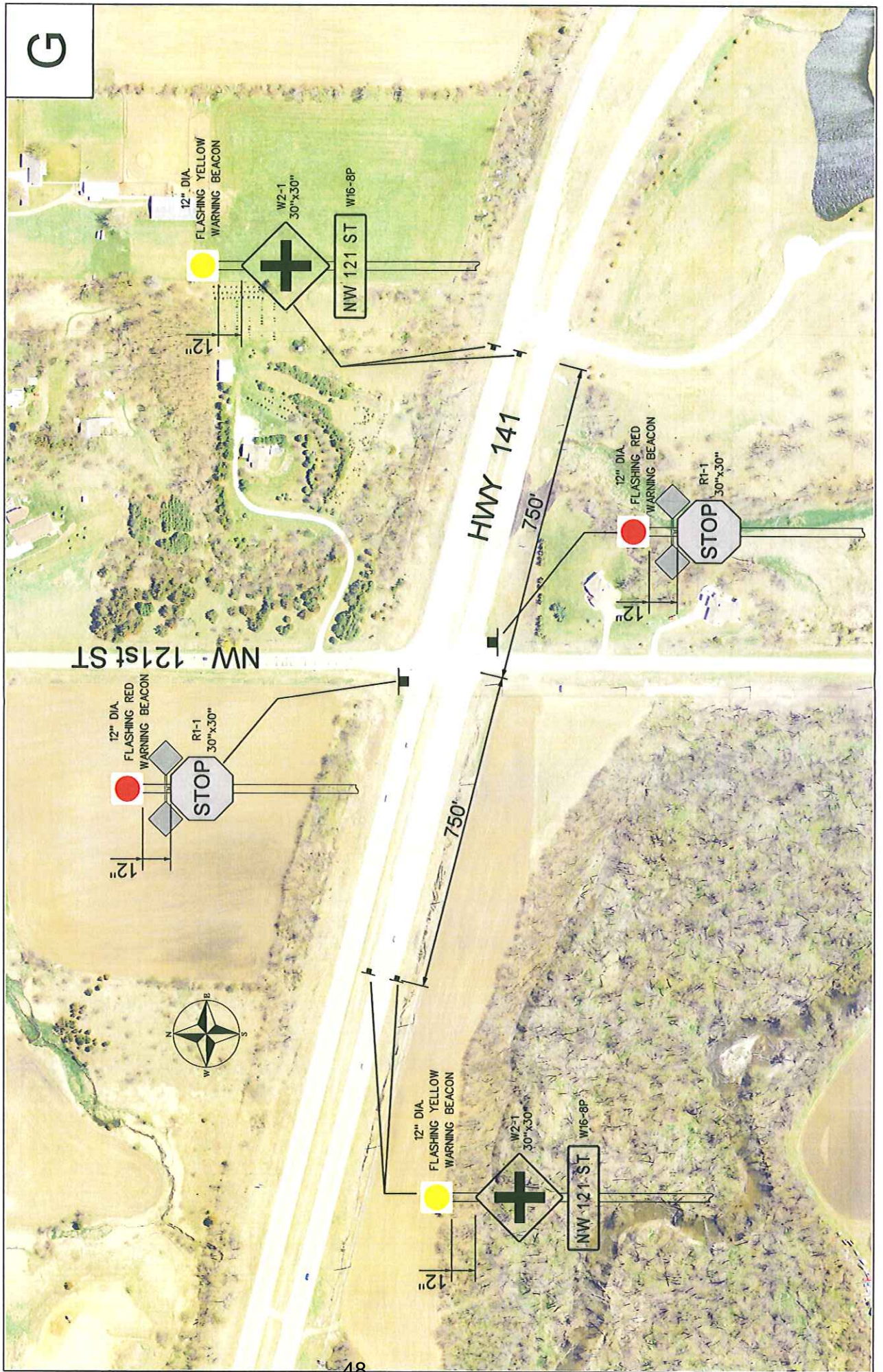


Figure 3 Northbound NW 121 Street Approaching Intersection.



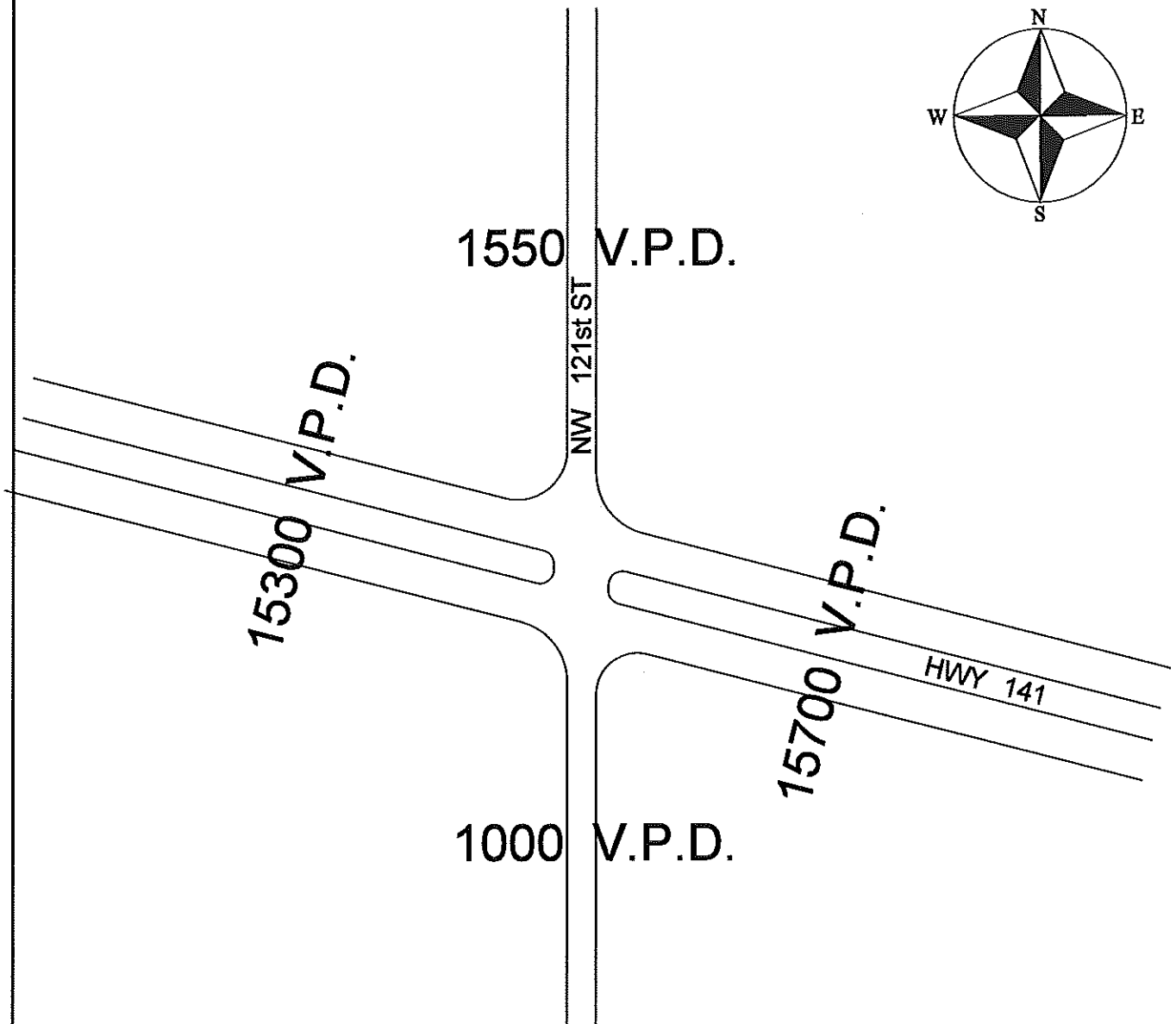
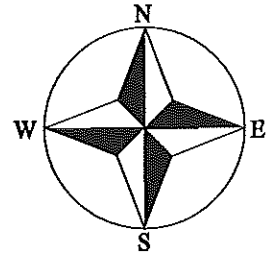
Figure 4 Southbound NW 121 Street Approaching Intersection

G



TRAFFIC VOLUME INFORMATION
NW 121ST ST/ HWY 141
NODE: 31-6025

H



ALL TRAFFIC COUNTS
I.D.OT. 2008 ANNUAL
AVERAGE DAILY TRAFFIC MAPS

TRAFFIC COUNTS AT INTERSECTION of
NW 121st St/ HWY 141

J



NW 121st ST

HWY 141

K

ACCIDENT HIST NW 121 Street and Hwy 141

Revised: 6/3/10

Acc. No.	Node No.	Date of Accident	Type of Accident	Type of Injury	Property Damage	Accident Description
1	31-6025	6/21/2005	PDO		\$ 1,500	Failure to Stop Safe/Sure Distance
2	31-6025	10/19/2005	PI	1 possible	\$ 7,500	Failure to Yield ROW From Stop
3	31-6025	10/3/2006	PI	2 possible	\$ 13,000	Failure to Yield ROW From Stop
4	31-6025	12/25/2006	PI	1 Fatality 1 Major 1 Possible	\$ 10,000	Failure to Yield ROW From Stop
5	31-6025	5/28/2007	PI	1 minor	\$ 14,000	Failure to Yield ROW From Stop
6	31-6025	3/26/2008	PI	1 possible	\$ 20,000	Failure to Yield ROW From Stop
7	31-6025	5/7/2008	PDO		\$ 10,000	Failure to Yield ROW From Stop
8	31-6025	12/13/2008	PI	1 minor	\$ 20,000	Failure to Yield ROW From Stop
9	31-6025	1/23/2009	PI	1 minor	\$ 14,000	Failure to Yield ROW From Stop
10	31-6025	4/13/2010	PI	1 minor	\$ 9,000	Failure to Yield ROW From Stop
10				1 fatality 1 major 4 minor 4 possible	\$ 119,000	Total Property Damage

SUMMARY

1	Fatalities @	\$ 3,500,000		\$ 3,500,000
1	Major @	\$ 240,000		\$ 240,000
4	Minor @	\$ 48,000		\$ 192,000
4	Possible @	\$ 25,000		\$ 100,000
Property Damage				\$ 119,000

TOTAL DAMAGE \$ 4,151,000

Intersection or Spot Benefit / Cost Safety Analysis

Rev. 8/09

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: KDB Date Prepared: Jun 4, 2010
 Intersection: NW 121 St. and Hwy 141

Improvement

Proposed Improvement(s): Improve Signs and Add Beacons

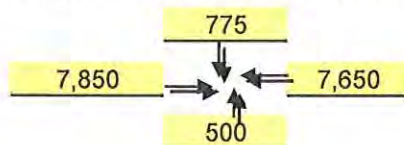
\$ 55,000 Estimated Improvement Cost, EC 8 Est. Improvement Life, years, Y
 \$ 200 Other Annual Cost (after initial year), AC 52 Crash Reduction Factor (integer), CRF
 \$ 1,347 Present Value Other Annual Costs, OC 4.0% Discount Rate (time value of \$), INT

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$
 \$ 56,347 Present Value Cost, COST = EC + OC

Traffic Volume Data

Source: Polk 2007 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



6,122,875 Current Annual Entering Veh., AEV = DEV * 365

19,655 veh / day, Final Year DEV, FDEV

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

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

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

16,775 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
<u> </u> Additional months		values as of Dec. 2007
<u>1</u> Fatal Crashes	<u>1</u> Fatalities @	\$3,500,000 \$ 3,500,000
	<u>1</u> Major Injuries @	\$240,000 \$ 240,000
<u>7</u> Injury Crashes	<u>4</u> Minor Injuries @	\$48,000 \$ 192,000
	<u>4</u> Possible Injuries @	\$25,000 \$ 100,000
<u>2</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ -
	-OR- enter all Property Costs of all crashes:	\$ <u>119,000</u>
<u>10</u> Total Crashes, TA	Total \$ Loss, LOSS	\$ <u>4,151,000</u>

2.00 Current Crashes / Year, AA = TA / T 0.33 Crashes / MEV, Crash Rate, CR
 \$ 415,100 Cost per Crash, AVC = LOSS / TA CR = TA x 10^6 / (DEV x 365 x T)
 17.2 Total Expected Crashes, TECR = CR x TMEV \$ 3,105,678 Present Value of Avoided
 1.04 Crashes Avoided First Year AAR = AA x CRF / 100 Crashes, BENEFIT
 \$ 431,704 Crash Costs Avoided in First Year, AAR x AVC
 8.9 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 = \$3,105,678 : \$56,347 = 55.12 : 1

Iowa Department of Transportation

Request for Traffic Safety Funds

GENERAL INFORMATION

Location/Title of Project: Traffic Signalization at Intersection of N.E. 56th Street and N.E. Oak Hill Drive

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.

Not Applicable

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	\$85,000

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. Road surface upgrades, bridge replacements, and intersection improvements are all part of the County's annual Capital Improvement Program. Existing safety measures such as signs, overhead lights, and traffic signals are field checked and upgraded on an annual basis.

One location of concern in Polk County is the intersection of N.E. 56th Street and N.E. Oak Hill Drive. N.E. 56th Street from 8th St SE in Altoona to Hwy 163 was recently widened and reconstructed which included the addition of right and left turn lanes at the intersection of NE Oak Hill Drive in 2008. These improvements were essentially completed in May of 2008. NE 56 St. is classified as a "Minor Arterial" on the Urban Federal Functional Classification System.

N.E. Oak Hill Drive is a 24' wide asphalt surfaced roadway with the approaches to NE 56 St. overlayed in 2008. The roadway is classified as a "Collector" on the Urban Federal Functional Classification System.

This intersection lies ¼ mile south of the corporate limits of the City of Des Moines and approximately ¼ mile north of the corporate limits of the City of Pleasant Hill. N.E. 56th Street to the north in Altoona has become a commercial and retail hub. The newly opened Bass Pro Shop development on NE 56 St. in Altoona will also increase the traffic on this roadway. The areas along N.E. 56th Street to the south in Pleasant hill are also commercial in nature.

Access to the Primary Roadway System is within close vicinity to the intersection with Hubbell Avenue located two miles to the west (US Hwy 6) and 1 ½ miles to the north (US Hwy 65). University Avenue (IA Hwy 163) is also located 1 mile to the south of this intersection. N.E. 56th Street and N.E. Oak Hill Drive are major routes utilized by numerous commuters from Altoona, Pleasant Hill and S.E. Polk County to serve the northeast portion of the Des Moines metropolitan area as alternates to Interstate 80, US Hwy 65, and University Avenue.

Traffic volumes have increased between 100-200% on these roadways since 2000 and are expected to continue increasing at a rapid rate as Altoona, Pleasant Hill, and S.E. Polk County continue to grow. Please refer to Section H for the latest traffic count.

B

Accidents occurring at this intersection involve mostly vehicles on NE Oak Hill Drive failing to yield to traffic on NE 56 St. This is attributed to the high volume on traffic on NE 56 St. as well as the angle of intersection of these two roadways. Please refer to Section K for detailed accident information including copies of the available accident reports. The posted speed limit on N.E. 56th Street is 45 MPH and the posted speed on N.E. Oak Hill Drive is 35 MPH in the vicinity of the intersection.

Polk County proposes to add traffic signals to this intersection in an effort to reduce the potential for, and reduce the severity of, future accidents. Please refer to Section G for a plan showing the proposed signal design.

With these improvements, it can be seen that the potential reduction in number and severity of accidents to the traveling public would 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.

ENGINEER'S ESTIMATE NE 56 STREET AND NE OAK HILL DRIVE TRAFFIC SIGNALS					
LINE NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	REMOVAL OF SIGNS	EACH	2.00	\$ 250.00	\$ 500.00
2	TRAFFIC SIGNALIZATION	LS	1.00	\$ 190,000.00	\$ 190,000.00
3	CONSTRUCTION SURVEY	LS	1.00	\$ 2,500.00	\$ 2,500.00
4	TRAFFIC CONTROL	LS	1.00	\$ 2,000.00	\$ 2,000.00
5	MOBILIZATION	LS	1.00	\$ 5,000.00	\$ 5,000.00
			TOTAL CONSTRUCTION		\$ 200,000.00
			Less Proposed TSF Funding (42.5%)		\$ 85,000
			Polk County Share (57.5%)		\$ 115,000

PROPOSED PROJECT TIME SCHEDULE

IDOT Agreement Approval:	February, 2011
Check Plan Submittal:	March 1, 2011
Final Plan Submittal:	March 22, 2011
Bid Letting:	June 21, 2011
Construction Completion:	October 2011

E

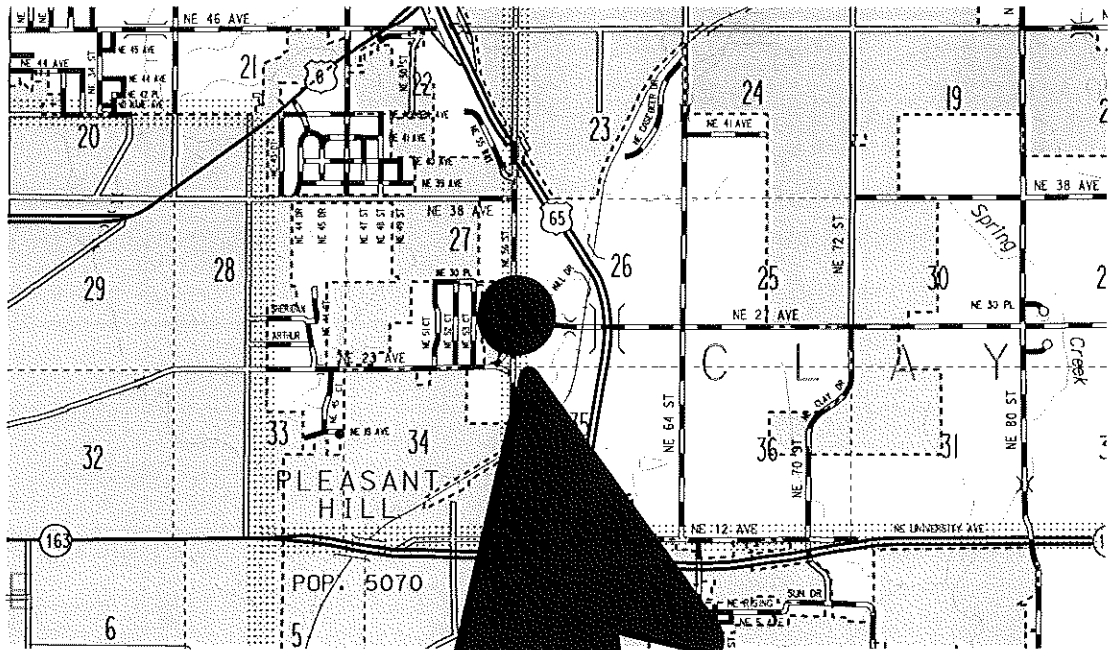




Figure 1 NE 56th Street; looking North at NE Oak Hill Dr intersection.



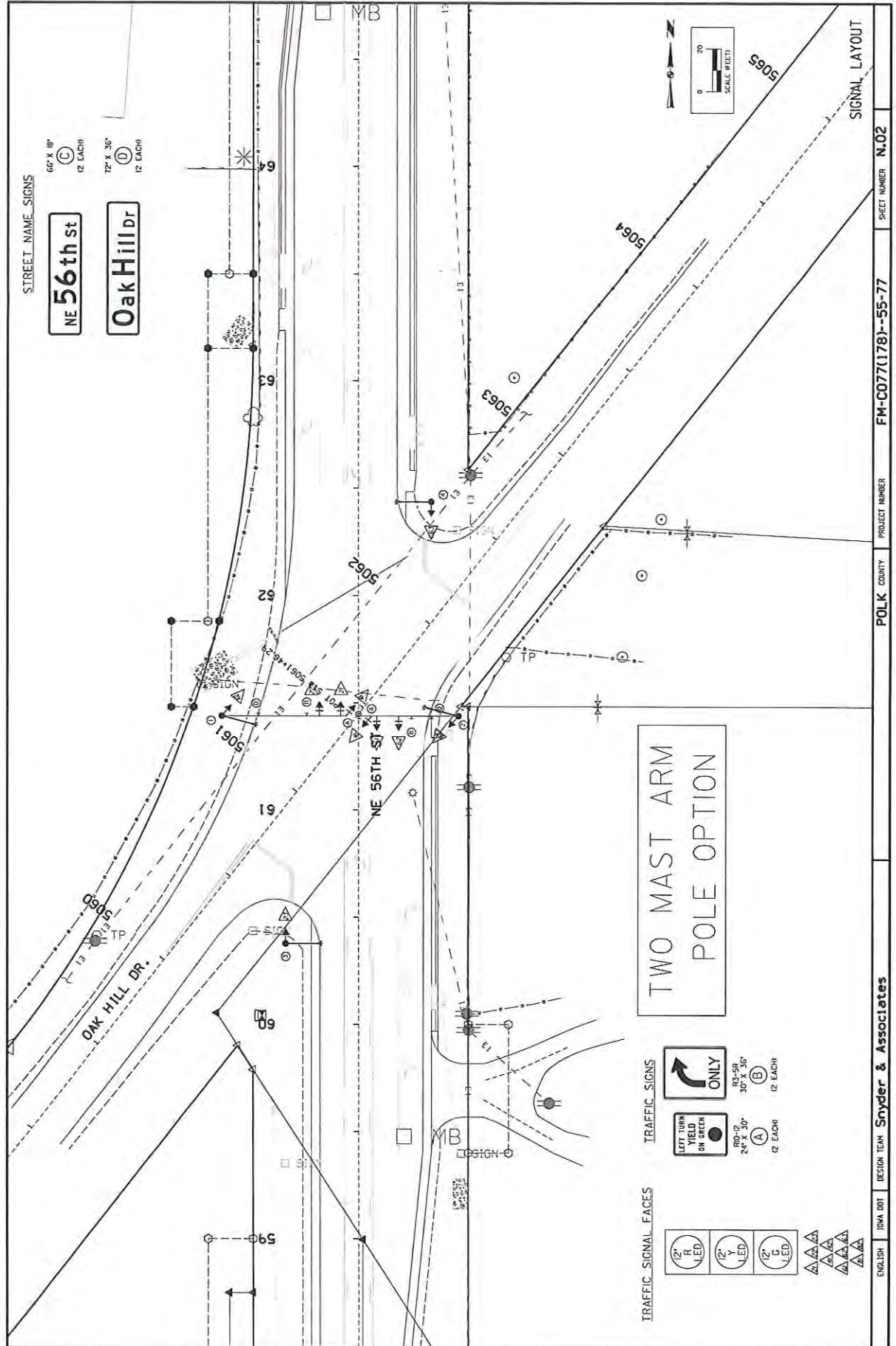
Figure 2 NE 56th Street; looking South at NE Oak Hill Dr intersection.



Figure 3 NE Oak Hill Dr; looking East at NE 56th Street intersection.

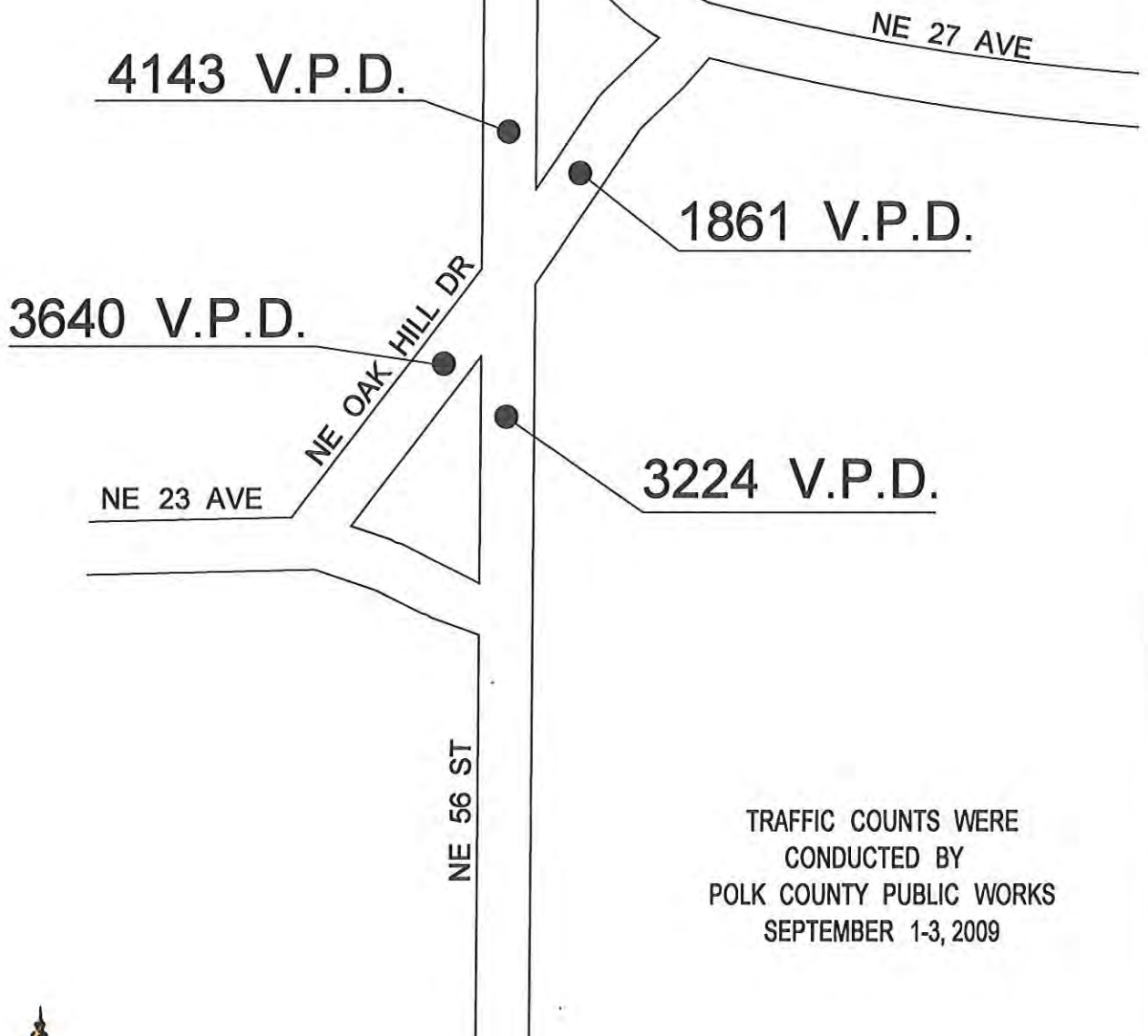


Figure 4 NE Oak Hill Dr; looking West at NE 56th Street intersection.



TRAFFIC VOLUME INFORMATION
NE 56TH ST/ NE OAK HILL DRIVE
NODE: 23-1965

H



TRAFFIC COUNTS WERE
CONDUCTED BY
POLK COUNTY PUBLIC WORKS
SEPTEMBER 1-3, 2009



TRAFFIC COUNTS AT INTERSECTION of
NE 56th Street/ NE Oak Hill Drive

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 backplates. 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



ACCIDENT HISTORY - NE 56 St. and NE Oak Hill Drive

Revised: 6/4/10

Acc. No.	Node No.	Date of Accident	Type of Accident	Type of Injury	Property Damage	Damage Correctible by Improvement	Accident Description
1	23-1965	5/7/2010	PI	1 possible	\$ 10,000		Failure to yield from stop sign- EB
2	23-1965	12/31/2009	PI	2 Possible	\$ 15,000		Failure to yield Making Left Turn
3	23-1965	11/18/2009	PDO		\$ 5,000		Failure to yield from stop sign- EB
4	23-1965	10/3/2009	PDO		\$ 7,000		Failure to yield Making Left Turn
5	23-1965	6/16/2009	PDO <i>ALC</i>		\$ 8,000		Ran Stop sign - EB
6	23-1965	5/29/2009	PDO		\$ 15,000		Failure to yield from stop sign- EB
7	23-1965	11/26/2008	PI	1 possible	\$ 16,500		Failure to yield from stop sign- EB
8	23-1965	9/5/2008	PI	1 minor	\$ 13,000		Failure to yield from stop sign- EB
9	23-1965	5/21/2008	PDO		\$ 6,000		Failure to yield from stop sign- EB
10	23-1965	7/1/2007	PDO <i>ALC</i>		\$ 900		Failure to yield from stop sign- EB
11	23-1965	1/15/2007	PDO		\$ 7,000		Failure to Maintain Control- SB- RT- Single Car
12	23-1965	12/22/2006	PDO		\$ 14,000		Failure to yield from stop sign- EB
13	23-1965	8/3/2006	PI	1 possible	\$ 3,000		Failure to Stop in a safe dist.- EB Rear end
14	23-1965	3/17/2006	PDO		\$ 3,500		Failure to yield from stop sign- EB
15	23-1965	14/45/2005	PDO		\$ 14,000		Failure to Maintain Control- SB- RT- Ice
15		Total		0 fatality 0 major 1 minor 5 possible	\$ 137,900		Total Property Damage

SUMMARY ACCIDENTS LAST 5 YEARS ONLY

0	Fatalities @	\$ 3,500,000	\$ -
0	Major @	\$ 240,000	\$ -
1	Minor @	\$ 48,000	\$ 48,000
5	Possible @	\$ 25,000	\$ 125,000
	Property Damage		\$ 137,900

TOTAL DAMAGE \$ 310,900

K

Intersection or Spot Benefit / Cost Safety Analysis

Rev. 8/09

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: KDB Date Prepared: Jun 4, 2010

Intersection: NE 56 St. and NE Oak Hill Dr.

Improvement

Proposed Improvement(s): Add Traffic Signals

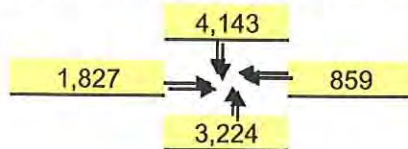
\$ 85,000 Estimated Improvement Cost, **EC** 15 Est. Improvement Life, years, **Y**
 \$ 200 Other Annual Cost (after initial year), **AC** 20 Crash Reduction Factor (integer), **CRF**
 \$ 2,224 Present Value Other Annual Costs, **OC** 4.0% Discount Rate (time value of \$), **INT**

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$
 \$ 87,224 Present Value Cost, **COST** = EC + OC

Traffic Volume Data

Source: Polk 2009 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



3,669,345 Current Annual Entering Veh., **AEV** = DEV * 365

13,530 veh / day, Final Year DEV, **FDEV**

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

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

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

10,053 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
<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>5</u> Injury Crashes	<u>1</u> Minor Injuries @	\$48,000 \$ 48,000
	<u>5</u> Possible Injuries @	\$25,000 \$ 125,000
<u>10</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ -
	-OR- enter all Property Costs of all crashes:	\$ <u>137,900</u>
<u>15</u> Total Crashes, TA	Total \$ Loss, LOSS	\$ <u>310,900</u>

3.00 Current Crashes / Year, **AA** = TA / T

\$ 20,727 Cost per Crash, **AVC** = LOSS / TA

51.9 Total Expected Crashes, **TECR** = CR x TMEV

0.60 Crashes Avoided First Year **AAR** = AA x CRF / 100

\$ 12,436 Crash Costs Avoided in First Year, **AAR** x AVC

10.4 Total Avoided Crashes, **TECR** x CRF / 100

0.82 Crashes / MEV, Crash Rate, **CR**

CR = TA x 10^6 / (DEV x 365 x T)

\$ 157,121 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 = \$157,121 : \$87,224 = 1.80 : 1

Iowa Department of Transportation Request for Traffic Safety Funds

GENERAL INFORMATION

Location/Title of Project: Upgrade Signs / Add Beacons at intersection of Hwy 415 and NW 66th Avenue

Applicant: County of POLK

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

Title: 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	\$26,000
	Safety Funds Requested for the Project	\$26,000

NARRATIVE

The Polk County Secondary Road system is constantly subjected to increasing traffic volumes due to the population growth and economic expansion occurring in the Des Moines metropolitan area. The expansion of residential construction, especially in the Ankeny area near this intersection, has increased congestion and several accidents over the last five years.

This intersection is located approximately 2 miles north of Interstate 35/80 and approximately 1.5 miles south of Oralabor Road in Ankeny. NW 66th Avenue is classified as a minor arterial roadway and is an important east-west route connecting NE 14th Street and NW 6th Drive to Highway 415.

The Polk County Public Works Department regularly monitors traffic accident trends and changing conditions for possible improvements if sufficiently justified. One location we believe is worthy of consideration for improvements is at the Highway 415 (NW 2nd Ave) SB Exit Ramp intersection at NW 66th Avenue. In April of 2009, a fatality occurred at this location which caused both Polk County and the Iowa DOT Dist 1 staff to review the sight distance from the SB Ramp stop condition and discovered it only met 20 mph as signed and painted. A speed study completed on March 19, 2010, indicated the 85th% speed is 45.4 mph, with a recorded maximum of 81.8 mph.

Due to the significant exposure to severe personal injury and property loss accidents, we believe it is appropriate to upgrade the advanced warning signs and add flashing beacons to increase compliance with the posted speed limit due to the limited sight distance intersection from the SB exit ramp termini. Our proposal includes installation of an oversized 25 mph Speed Limit sign with Limited Site Distance warning sign, and a yellow flashing beacon on each approach of NW 66 Ave. to the Hwy 415 ramps as shown in Section G. Solar powered flashing beacons are proposed in an effort to reduce operating and maintenance costs as well as for environmental considerations. Polk County Public Works has discussed this proposal with Iowa DOT District 1 staff and have received support of these improvements from Tony Gustafson, Assistant District 1 Engineer. Details of the proposed project and analysis supporting its worthiness may be found within these application materials.

The Polk County Public Works Department thanks the Iowa Department of Transportation for their consideration of this project.

ENGINEER'S ESTIMATE					
Highway 415 Overpass Of NW 66th Avenue - Speed Limit Signing with Solar Powered Flashing Yellow Beacons					
LINE NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL COST
1	36" x 36" 25 mph Speed Limit Sign, R2-1, w/24" x 24" "Limited Site Distance" sign, with Yellow Flashing Solar-Powered Beacons	EA	2.00	\$ 8,000.00	\$ 16,000.00
2	36" x 36" Stop Sign, R1-1, with Red Flashing Solar Powered Beacon	EA	1.00	\$ 8,000.00	\$ 8,000.00
3	Traffic Control	LS	1.00	\$ 1,000.00	\$ 1,000.00
4	Mobilization	LS	1.00	\$ 1,000.00	\$ 1,000.00
			TOTAL CONSTRUCTION	\$ 26,000.00	

PROJECT TIME SCHEDULE

Proposed Addition of Warning Signs & Beacons at intersection of Hwy 415 & NW 66th Avenue
IOWA DOT TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING APPLICATION

Polk County, Iowa

PROJECT PHASE (YEARS 2011 - 2012)	2011												2012											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
IDOT Funding Approval/Agreement																								
Project Design and Project Approvals																								
R.O.W. Acquisition/Utility Agreements																								
Bid Letting																								
Project Construction																								
Project Closeout																								

D



Figure 1 NW 66th Avenue; Looking west at Highway 415 intersection.



Figure 2 Highway 415 NB on-ramp; Looking west.



Figure 3 NW 66th Avenue; Looking east at Highway 415 overpass.



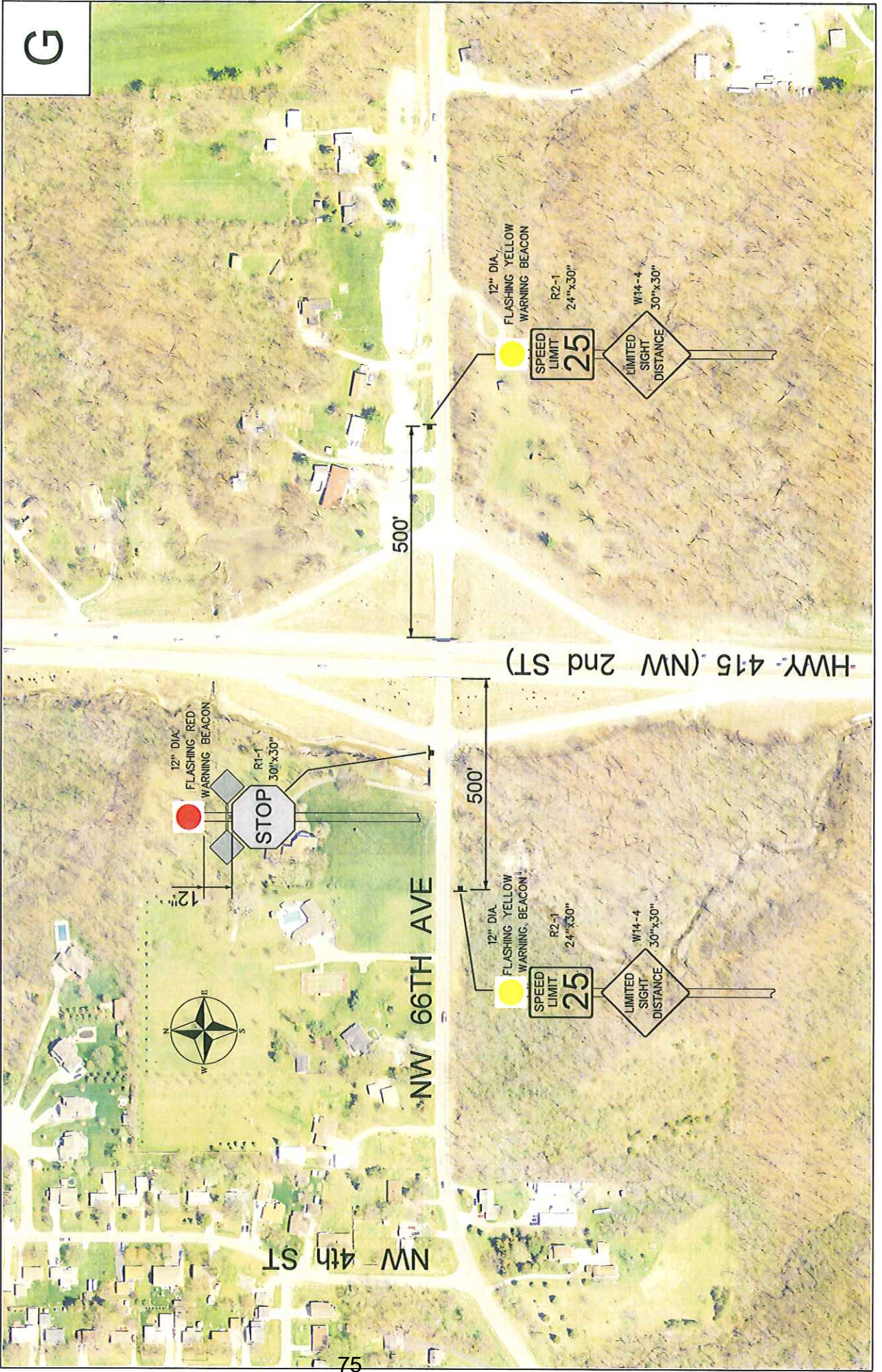
Figure 4 Highway 415 SB on-ramp; Looking east.



Figure 5 Limited Sight Distance from Hwy 415 SB off-ramp; Looking east from Stop Bar, middle of Ramp.



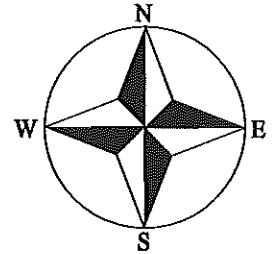
Figure 6 Limited Sight Distance from Hwy 415 SB off-ramp; Looking east from just past Stop Bar, west side of Ramp.



G

TRAFFIC VOLUME INFORMATION
NW 66TH AVE/ NW 2ND ST (HWY 415)
NODE: 22-8965

H



372 V.P.D. (ENTERING & TOTAL)

2213 V.P.D. (ENTERING)
3997 V.P.D. (TOTAL)

2267 V.P.D. (ENTERING)
4392 V.P.D. (TOTAL)

NW 66 AVE

HWY 415 (NW 2nd ST)

TRAFFIC COUNTS WERE
CONDUCTED BY
POLK COUNTY PUBLIC WORKS
MARCH 19, 2010

TRAFFIC COUNTS AT INTERSECTION of
NW 66th Ave/ NW 2nd St (HWY 415)

J



NW 66TH AVE

77 HWY 415 (NW 2nd ST)



K

ACCIDENT HISTORY					
Period of 1/05 to 12/09					
NW 66th Avenue at NW 2nd(Hwy 415)					
Revised: 6/4/10					
Acc. No.	Date of Accident	Type of Accident	Type of Injury	Property Damage	Accident Description
1	4/15/2009	PI	1 Fatality	\$ 8,500	7 PM- WB Motorcycle broadsided car pulling onto NW 66 Ave from SB Ramp to go east.
2	12/3/2008	PDO		\$ 5,000	EB, Turning onto SB on ramp- Following too close
3	7/17/2007	PDO		\$ 1,600	WB, Turning onto NB on ramp- following too close -Fail to Maintain Control
4	12/29/2005	PI	1 Fatality 1 Major	\$ 17,000	WB Pickup Broad-sided Semi-trailer crossing 66th from NB off ramp to go north on NB on ramp
5	9/11/2005	PDO		\$ 5,000	SB on Off Ramp- pulled out in front of WB Vehicle
6	1/21/2005	PDO		\$ 3,500	WB ran into back of WB
6	Total Accidents related to Speed or Site Distance		2 fatality 1 major 0 minor 0 possible	\$ 40,600	Total Property Damage

SUMMARY				
Acc. No.		B/C Value per Injury Type		TOTAL LOSS
2	Fatality	\$ 3,500,000		\$ 7,000,000
1	Major Injury	\$ 240,000		\$ 240,000
0	Minor Injury	\$ 48,000		\$ -
0	Poss. Injury	\$ 25,000		\$ -
	Total Property Damage			\$ 40,600
	TOTAL LOSS OVER 5-YR PERIOD			\$ 7,280,600

Intersection or Spot Benefit / Cost Safety Analysis

Rev. 8/09

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: KDB Date Prepared: Jun 4, 2010

Intersection: NW 66 Ave. and Hwy 415 SB Off Ramp

Improvement

Proposed Improvement(s): Add Approach Beacons on NW 66 Ave. with Speed Advisory

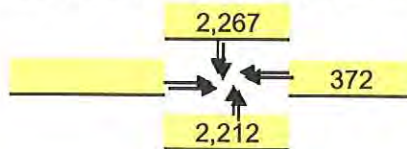
\$ 26,000 Estimated Improvement Cost, **EC** 10 Est. Improvement Life, years, **Y**
 \$ 200 Other Annual Cost (after initial year), **AC** 25 Crash Reduction Factor (integer), **CRF**
 \$ 1,622 Present Value Other Annual Costs, **OC** 4.0% Discount Rate (time value of \$), **INT**

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$
 \$ 27,622 Present Value Cost, **COST** = EC + OC

Traffic Volume Data

Source: Polk 2010 Date of traffic count

Daily Entering Vehicles by Approach (or AADT / 2)



1,770,615 Current Annual Entering Veh., **AEV** = DEV * 365

5,913 veh / day, Final Year DEV, **FDEV**

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

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

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

4,851 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
<u>Additional months</u>		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>0</u> Injury Crashes	<u>0</u> Minor Injuries @	\$48,000 \$ -
	<u>0</u> Possible Injuries @	\$25,000 \$ -
<u>4</u> Property Damage Only	(assumed cost per crash)	\$2,700 \$ -
<u>6</u> Total Crashes, TA	-OR- enter all Property Costs of all crashes:	\$ <u>40,600</u>
	Total \$ Loss, LOSS	\$ <u>7,280,600</u>

1.20 Current Crashes / Year, **AA** = TA / T

Cost per Crash, **AVC** = LOSS / TA

13.1 Total Expected Crashes, **TECR** = CR x TMEV

0.30 Crashes Avoided First Year **AAR** = AA x CRF / 100

\$ 364,030 Crash Costs Avoided in First Year, AAR x AVC

3.3 Total Avoided Crashes, **TECR** x CRF / 100

0.68 Crashes / MEV, Crash Rate, **CR**

CR = TA x 10^6 / (DEV x 365 x T)

\$ 3,212,402 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 = \$3,212,402 : \$27,622 = 116.30 : 1



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Signs on Paved Roads, Phase II

Applicant Webster County

Contact Person Jamie Johl Title Assistant County Engineer

Complete Mailing Address 703 Central Avenue

Fort Dodge, IA 50501

Phone 515-576-3281 E-Mail jjohl@webstercountyia.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 \$ 45,339.20

Safety Funds Requested \$ 27,099.20

Narrative

The City of Fort Dodge, Rogers Sports Complex, Fort Dodge Regional Airport, Webster County OHV Park, two major (and numerous smaller) truck lines, four gypsum factories, three ethanol plants, and other many other businesses combine to make Webster County a regional hub for entertainment, commerce and transportation. As a result, the roads in Webster County see higher traffic, and subsequently a higher number of crashes, than any of the surrounding counties.

In 2003, there were 42,643 people killed on roads in the United States. Over 25,000 of these deaths happened when a vehicle left its lane and crashed. Giving drivers the information they need to safely control their vehicles helps keep drivers on the road. A major tool used to accomplish this is retroreflective signing.

In an effort to improve safety on its county roads, the Webster Secondary Roads Department has developed a program to upgrade signs to sizes that are easily readable by an aging population, and to prismatic sheeting material that is highly visible at night. Many of the 6,000 + signs in Webster County's inventory are old, undersized, fading, in need of repair, or a combination thereof. As part of its sign program, Webster County is applying for this grant to upgrade some of the regulatory and warning signs (stop, stop ahead, no passing zone). The program consists of multiple phases. Phase I upgraded the signs along routes with traffic greater than 1,000 vehicles per day. This phase was completed in 2009. Phase II will upgrade the signs on paved routes under 1,000 vehicles per day. It is Phase II for which we are seeking funding. The upgrade would include replacing existing signs of various sheeting materials with an ASTM Type X or better prismatic sheeting (e.g. 3M brand Diamond Grade DG3), and increasing the size of most signs from 30 inches to 36 inches. Larger, more visible signs are the first step in making Webster County a safer place to live and drive. We hope that you approve this grant so that Webster County can make this step a reality.

Cost Breakdown

The total cost of this project is estimated to be \$38,106.10. The signs would be purchased from Iowa Prison Industries. Webster County Secondary Roads would supply the labor and equipment. The breakdown of the costs is as follows:

LABOR

Hours	Wage Rate	Total	Name	Position
160	\$19.68	\$3,148.80	Dan Hammersland	Sign Technician
160	\$19.47	\$3,115.20	Chris Burney	Asst. Sign Technician

EQUIPMENT

Hours	Rental Rate	Total	Description
160	\$74.85	\$11,976.00	Sign Truck

MATERIALS

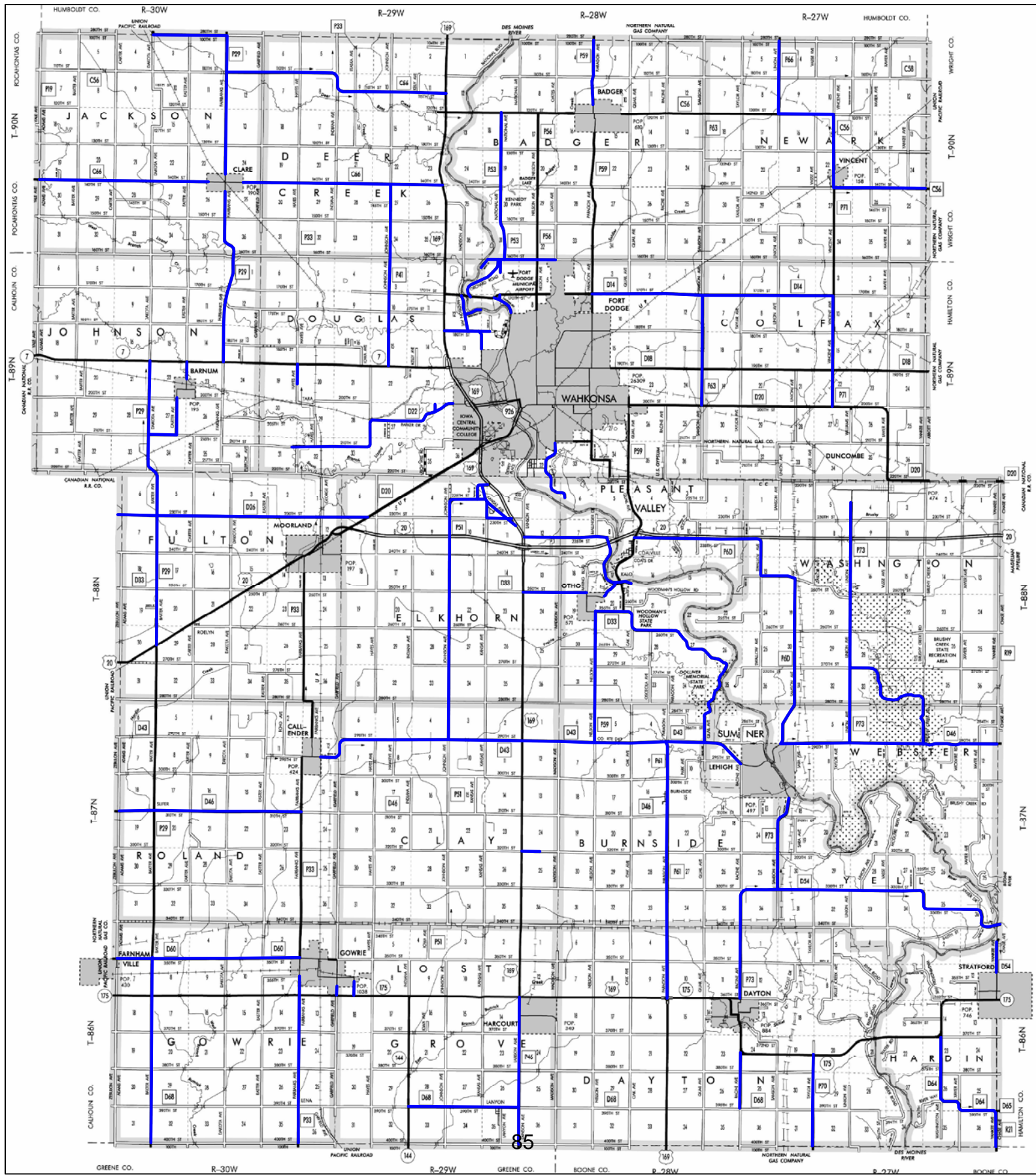
Qty	Unit Price	Total	MUTCD ID	Description
72	\$56.60	\$4,075.20	R1-1	Stop
96	\$72.00	\$6,912.00	W3-1	Stop Ahead
424	\$38.00	\$16,112.00	W14-3	No Passing Zone
		\$45,339.20	TOTAL	

Time Schedule

This project will take approximately four weeks to complete. If the grant is approved, the signs will be ordered from Iowa Prison Industries. Upon delivery of the signs, anticipated to be Spring/Summer of 2011, Webster County Secondary Roads employees will begin installing the signs. We anticipate the project to be complete by June 30, 2011.

Webster County, Iowa

Paved Roads with AADT<1,000 VPD



Pictures



30" Stop Sign on High Intensity



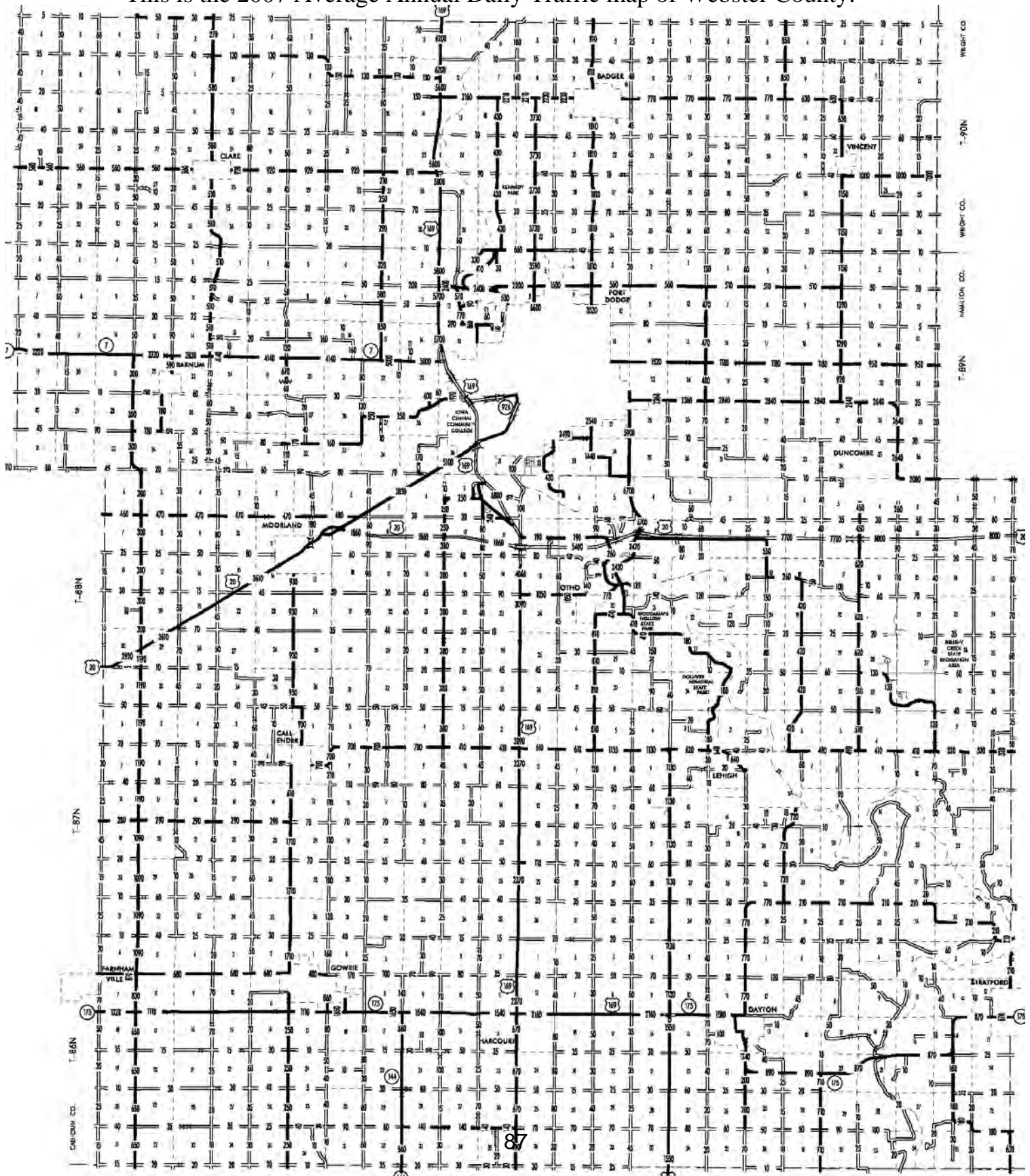
24" No Passing Zone on High Intensity



30" Stop Ahead on Engineering Grade

Traffic Volumes

This is the 2007 Average Annual Daily Traffic map of Webster County.





Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Curve Signing, Phase II

Applicant Webster County

Contact Person Jamie Johl Title Assistant County Engineer

Complete Mailing Address 703 Central Avenue

Fort Dodge, IA 50501

Phone 515-576-3281 E-Mail jjohl@webstercountyia.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 \$ 37,392.00

Safety Funds Requested \$ 10,032.00

Narrative

In 2003, there were 42,643 people killed on roads in the United States. Over 25,000 of these deaths happened when a vehicle left its lane and crashed. Giving drivers the information they need to safely control their vehicles helps keep drivers on the road. Changes in horizontal and vertical alignment are common causes of vehicles leaving their lane. In order to better prevent these types of lane departures, Webster County is implementing a plan for signing at locations of changes in horizontal alignment i.e. curves. Phase I of the plan consisted of upgrades at locations **with** existing signs. The upgrade included replacing signs of various sheeting materials with an ASTM Type X or better prismatic sheeting (e.g. 3M brand Diamond Grade DG3), and using fluorescent yellow-green background. The size of the signs (chevrons) was increased from 18"x24" to 24"x30". Phase II of the plan consists of placing signs at locations **without** existing curve signs. Phase I was completed in 2009. We are seeking funds to complete Phase II. Placing signs at locations of changes in horizontal alignment is a big step in making Webster County a safer place to live and drive. We hope that you approve this grant so that Webster County can make this step a reality.

Cost Breakdown

The total cost of this project is estimated to be \$37,392.00. The signs would be purchased from Iowa Prison Industries. Webster County Secondary Roads would supply the labor and equipment. The breakdown of the costs is as follows:

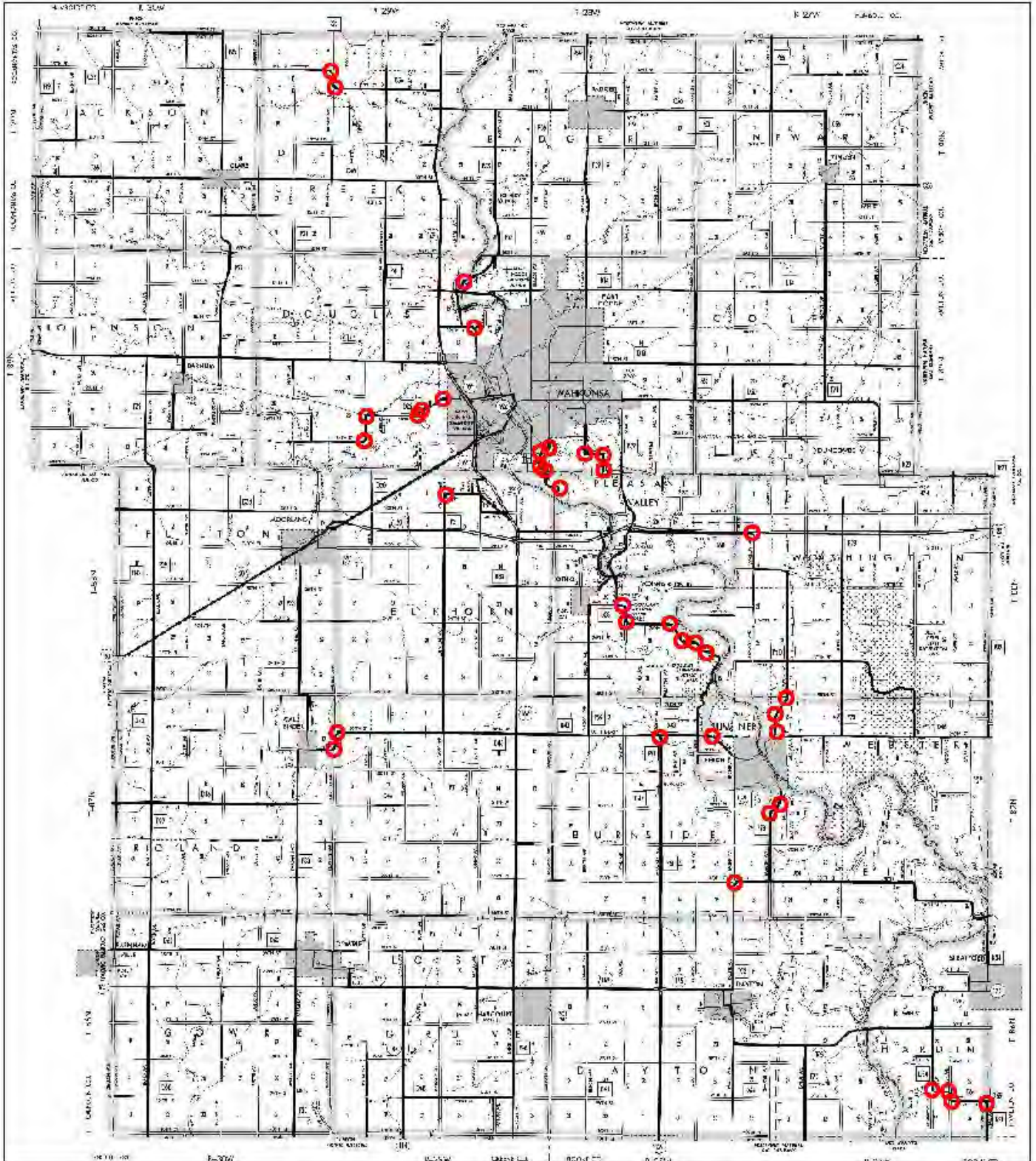
LABOR				
Hours	Wage Rate	Total	Name	Position
240	\$19.68	\$4,723.20	Dan Hammersland	Sign Technician
240	\$19.47	\$4,672.80	Chris Burney	Asst. Sign Technician
EQUIPMENT				
Hours	Rental Rate	Total	Description	
240	\$74.85	\$17,964.00	Sign Truck	
MATERIALS				
Qty (avg 6/site)	Unit Price	Total	MUTCD ID	Description
240	\$41.80	\$10,032.00	W1-8	Chevron
		\$37,392.00	TOTAL	

Time Schedule

This project will take approximately two months to complete. If the grant is approved, the signs will be ordered from Iowa Prison Industries. Upon delivery of the signs, anticipated to be summer of 2011, Webster County Secondary Roads employees will begin installing the signs. We anticipate the project to be complete by October 31, 2011.

Map

Unsigned curve locations in Webster County

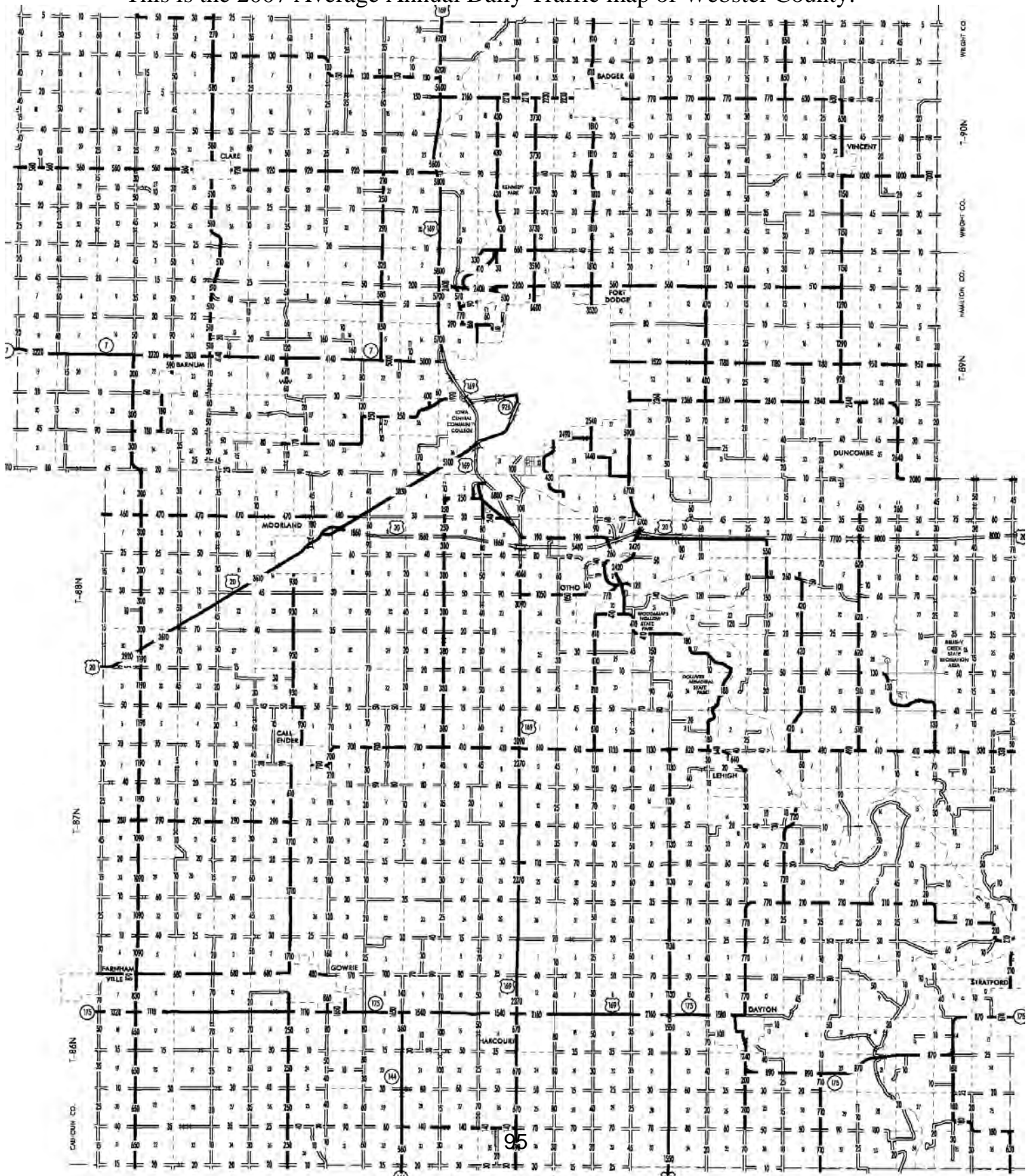


Pictures



Traffic Volumes

This is the 2007 Average Annual Daily Traffic map of Webster County.





Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Montgomery County Chevron Upgrade Project
Applicant Montgomery County
Contact Person Bradley J. Skinner Title County Engineer
Complete Mailing Address P.O. Box 95
Red Oak IA. 51566
Phone 712-623-5197 E-Mail bsmontengr@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 ☐
Traffic Control Device ☒
Safety Study ☐

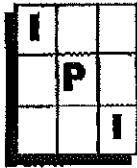
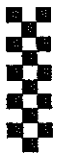
Funding Amount

Total Project Cost \$ 5778.50
Safety Funds Requested \$ 5778.50

NARRATIVE

Montgomery County's W1-8 Chevron signs have deteriorated in condition, and along with the changing retro-reflectivity standards are overdue for replacement. According to our sign inventory, we have 65 W1-8 Chevron signs that utilize lower grade sheeting and would like to upgrade these signs to the new florescent standard. This replacement would provide compliance with the new standard, and provide EXCELLENT reflectivity to the motorists of the County.

The safety benefits of using these high visibility W1-8 Chevron signs will be realized after installation by demanding the motorist's attention and increasing their awareness to upcoming hazards. It will also allow us to get started on the conversion path dictated by the federal MUTCD timeline.



Iowa
Prison
Industries
406 North High Street
ANAMOSA, IOWA 52205-0430
Tel. 1-800-336-5863 1-800-741-0390

QUOTE

6/14/10

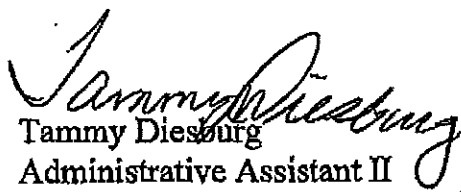
Montgomery Co Eng
406 W 4th St
Red Oak, IA

130 – W1-8 18x24" aluminum, high intensity prismatic Chevron signs	\$15.60 each
65 – Chevron Brackets w/hardware	\$21.10-set
65 – 10' x 2" x 14 gauge square posts	\$23.20 each
65 – 4' x 2-1/4" x 12 gauge square posts	\$13.40 each

Delivery: 30 days or less ARO

Freight free delivery on sign orders over \$750.00

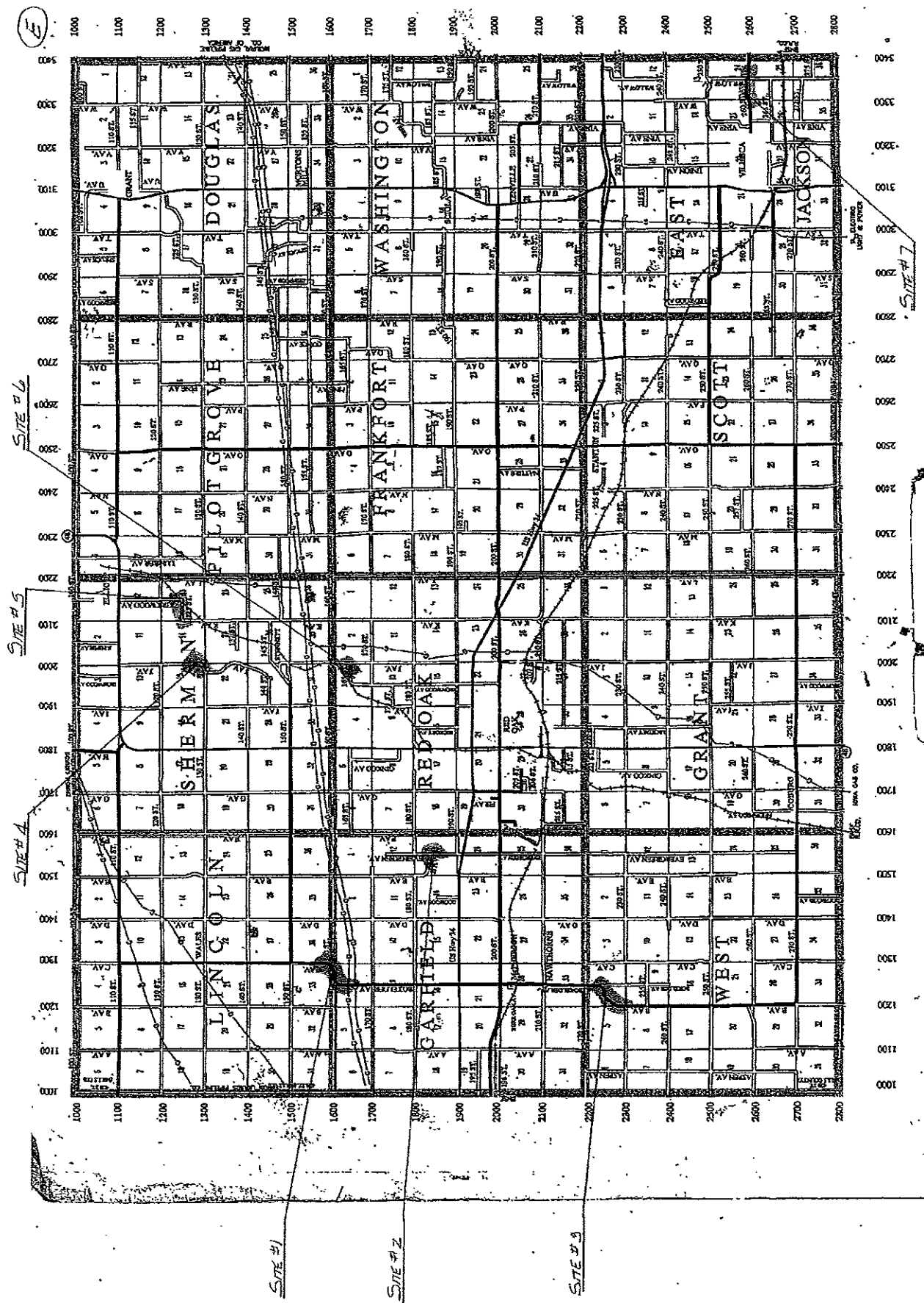
Please advise if you wish to proceed with an order.


Tammy Diesburg
Administrative Assistant II
Iowa Prison Industries
406 N High St
Anamosa IA 52205
1-800-336-5863 or fax 1-800-741-0390

MONTGOMERY COUNTY #69 W1-8 CHERVONS**TIME SCHEDULE**

Montgomery County proposes to begin erecting the 65 W1-8 chevrons signs as soon as possible, following their delivery. This work would be accomplished with our existing work force and delays could be possible from natural disasters, such as flooding or tornados.

However, our intent is to get the new signs up as quickly as possible to maximize their effectiveness. We should be able to accomplish this within three months after delivery.



2008 ANNUAL AVERAGE DAILY TRAFFIC

IOWA

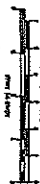


11613433 Jodelite 117 11 1
 11613434 Jodelite 117 11 1
 11613435 Jodelite 117 11 1

Phone: (313) 239-4203
La Compañía, S.A.

United States
with passport in

Department of Transportation

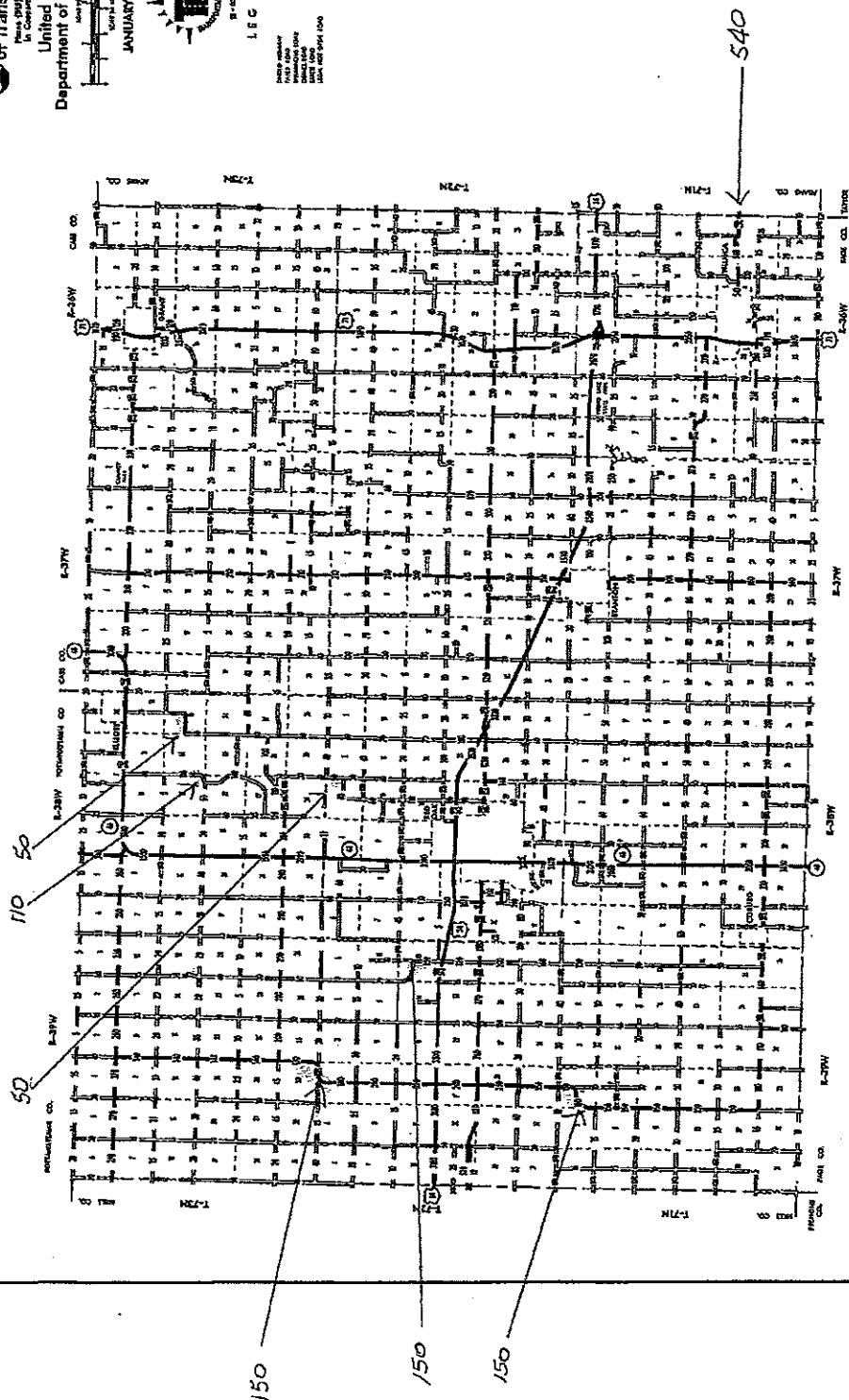


JANUARY 1, 2008



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7
3
0
0

WOLF PAPER CO. INC.
(800) 837-7272
9601 S. Dime
4701 S. Overland
C/O 434
Aurora, IL 60015





Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project 7th and Laurel Traffic Signal Installation
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) _____
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 \$ 150,000
Safety Funds Requested \$ 75,000

PROJECT DESCRIPTION

7th STREET AND LAUREL STREET TRAFFIC SIGNAL INSTALLATION

(TRAFFIC CONTROL DEVICE CATEGORY)

Project Description:

The proposed improvement consists of a traffic signal installation at the intersection of 7th Street and Laurel Street, including the Des Moines Area Community College (DMACC) entrance. New mast arm-mounted traffic signals would be installed with poles located 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 fully-actuated operation would be installed. The traffic signals would be interconnected to the existing traffic signals one block south at 7th St. and the I-235 westbound ramp. The total project cost is estimated to be \$150,000. The cost of the material and equipment, estimated at \$75,000, is being requested from State Traffic Safety funds.

Existing Conditions:

The intersection of 7th Street and Laurel is a 4-legged location, with Laurel Street as the east leg, and the entrance to DMACC as the west leg. 7th Street is the north-south street, and is one way, southbound in this area. Laurel Street is the first east-west street north of I-235, and provides a major connection to the Mercy Medical Complex as well as the main entrance to DMACC. The intersection of 7th and Laurel is controlled as a 2-way stop, with 7th Street having the right-of-way. 7th Street splits south of University Avenue to form the southbound one-way street to pair with northbound 6th Avenue. 7th Street curves just north of Laurel, so sight distance from Laurel to enter or cross 7th Street is limited.

Staff has worked with DMACC representatives concerning traffic issues at the intersection of 7th Street and Laurel Street, which is the main entrance to the Des Moines Urban Campus of DMACC. Enrollment at this campus has increased dramatically, from less than 2,000 students in 1998 to nearly 7,000 students this year, and continues to increase annually. The main entrance and exit for those students is the intersection of 7th & Laurel. In addition, a number of the students commute to the campus on DART buses, which requires them to cross 7th Street as pedestrians. Several of those students are confined to wheelchairs, so the crossing is particularly difficult for them.

Traffic counts taken in late April of 2010 show about 8,300 vehicles per day (vpd) on 7th Street, with approximately 3,600 vpd on the east leg of Laurel and 1,700 vpd on the west leg, which is the DMACC entrance. The 85th percentile speed on 7th Street approaching the intersection is 31 mph, but due to the curvature of the road on this approach, the vehicles appear to arrive at the intersection very quickly, and it is also somewhat difficult to accurately judge the speed of approaching vehicles. The traffic signal at 6th & Laurel creates platoons of vehicles arriving at 7th, and during the morning and afternoon peak traffic periods, it is difficult for those vehicles to enter or cross 7th, resulting in considerable delay for these motorists.

Overall, the crash history at this intersection has not been excessive, with a total of 14 crashes during the four-year period 2006-2009. The crash rate is also below average, with a rate of 0.83/MEV (million entering vehicles). Seven of the crashes were right

angle crashes. There were also six left-turning crashes between westbound vehicles on Laurel turning left onto 7th Street and eastbound vehicles from the DMACC drive.

Traffic and Transportation staff completed a traffic signal warrant analysis of this intersection, and found that the traffic volumes and patterns did not fully meet any of the individual signal warrants. Warrant 1 is the primary warrant, which requires minimum traffic volumes on both the major street and the side street for a total of at least eight hours on an average day. Laurel Streets meets the minimum side street volume of 150 vehicles per hour for 12 hours, and exceeds that volume by at least 37% for eight hours. 7th Street meets the minimum major street volume for three of the required hours, but is within 90% of the minimum volume for eight hours.

Based on (1) the combination of traffic volumes well over minimum values on Laurel and at 90% or more on 7th Street, (2) the limited sight distance due to the curving approach on 7th Street, (3) the pattern of crashes at the intersection, (4) the long queues and delays on Laurel, and (5) the need to provide improved pedestrian crossing opportunities, it is recommended that a traffic signal be installed at this intersection. This signal should be interconnected to the signals at 7th & I-235.

Project Justification:

The City's current analysis for January, 2006 – December, 2009 crash information (4-year period) indicates the following information:

<u>Accident Type</u>	<u>Number</u>
Left turning	6
Right-Angle	7
Other	1
Total	14
Average per year:	3.5

Of the 14 reported accidents, there were 3 personal injury crashes involving 3 injuries.

Several safety benefits will occur as a result of this project. They are listed below:

- The number of left-turning and right-angle crashes should be reduced. Although the number of crashes is not excessive, the two major types of crashes should both be reduced. The number of right-angle crashes are generally reduced by signalization. The left-turning crashes at this location are due to westbound vehicles paying so much attention to looking for a gap in southbound traffic around the approaching curve that they are not aware of eastbound vehicles.
- Pedestrians, including those requiring wheelchairs, will have traffic signals available to cross 7th Street. If they use the north crosswalk, there should be a very limited number of conflicts, since 7th St. is a one-way street, southbound, and the only conflicting vehicles would be southbound drivers turning right on red.
- The signals would be interconnected into the city's downtown signal system. Because 7th St. is a one-way street, there should be no adverse affect on southbound traffic flow through this corridor. Also, with proper signal timing, westbound platoons coming from the Mercy Medical Center complex should be able to approach the 7th/Laurel intersection on a "green" signal indication.

COST ESTIMATE***7th Street and Laurel Street Traffic Signal
Installation***

TRAFFIC SIGNAL INSTALLATION: \$120,000

INTERCONNECT TO 7TH/I-235: \$30,000

TOTAL CONSTRUCTION COST: \$150,000

(MATERIAL/EQUIPMENT COST): \$75,000

(INSTALLATION COST): \$75,000

DESIGN / INSPECTION: \$20,000

TOTAL PROJECT COST: \$170,000

TSF FUNDS REQUESTED*: \$75,000

***Material and Equipment Costs Only**

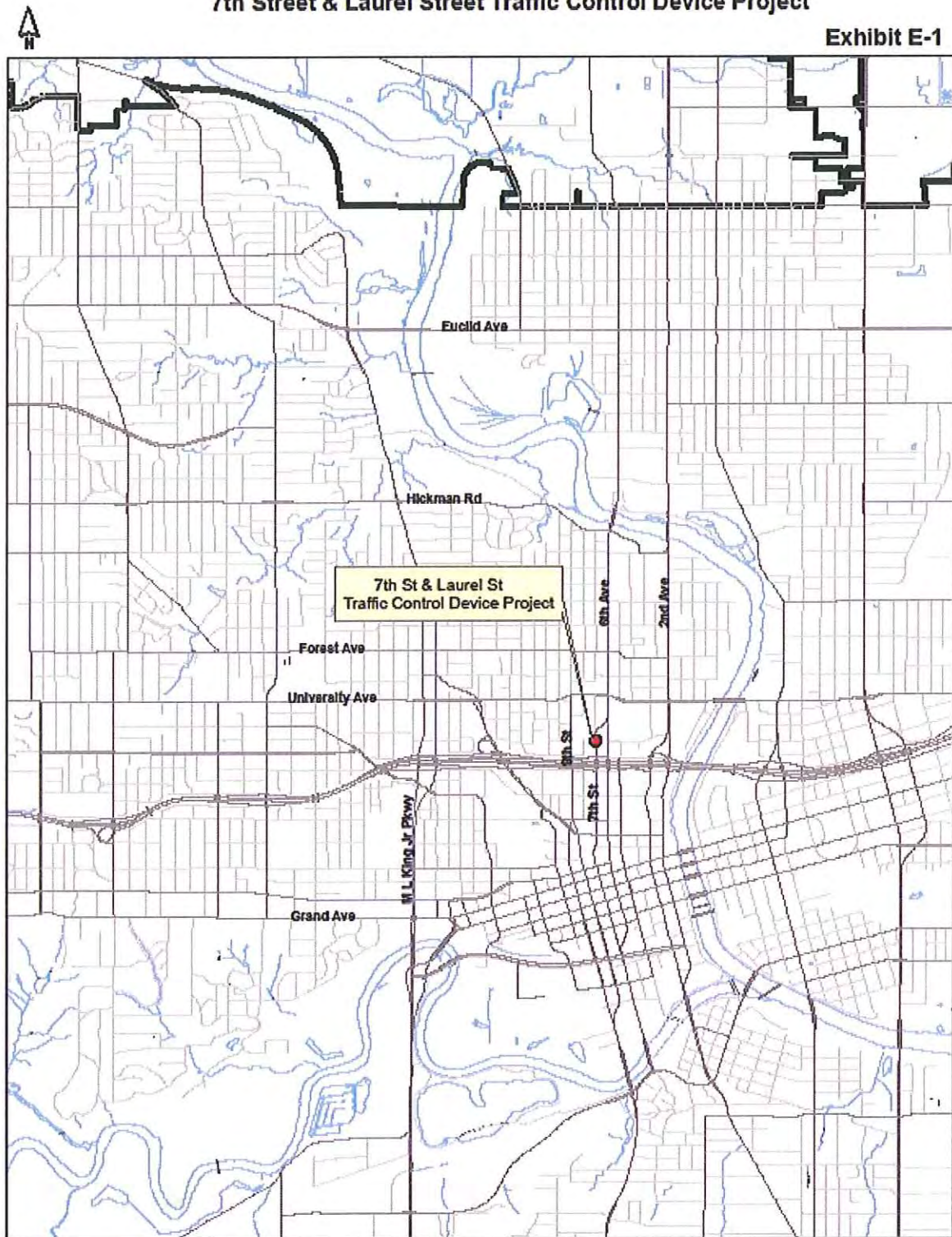
***7th Street and Laurel Street Traffic Signal
Installation***

TIME SCHEDULE

Project Approval:	December 2010
Agreement Signed:	March 2011
Project bid:	June 2011
Construction completed:	November 2011
Project Closeout:	June 2011

7th Street & Laurel Street Traffic Control Device Project

Exhibit E-1



7th Street & Laurel Street Traffic Control Device Project

Exhibit E-2







On Laurel Street, looking west toward 7th Street.



On 7th Street, 200 North of Laurel, looking south



On 7th Street, 300 North of Laurel, looking south

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

Tube Count

Site Code:
Station ID:
7th & Laurel
DMA/CC Entrance
Latitude: 0.0000 Undefined

Start Time	20-Apr-10		Tue		Wed		Thu		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM															1	10
01:00							0	8	2	11					0	2
02:00							1	0	0	3					0	2
03:00							0	3	0	1					0	1
04:00							0	2	1	0					0	1
05:00							2	0	2	0					2	0
06:00							1	3	8	8					4	6
07:00							8	14	2	5					5	10
08:00							13	85	11	88					12	76
09:00							33	94	18	93					26	94
10:00							29	87	11	37					20	56
11:00							35	84	0	0					23	64
12:00 PM							37	85	0	0					47	79
01:00							52	116	53	100					52	108
02:00							39	71	56	87					48	79
03:00							47	68	53	77					50	72
04:00							31	78	35	63					33	70
05:00							44	79	45	83					44	81
06:00							52	65	52	59					52	62
07:00							42	73	33	91					38	82
08:00							31	28	33	33					32	30
09:00							26	11	23	22					24	16
10:00							8	14	9	9					10	12
11:00							4	5	11	6					8	6
Lane	0	0	0	0	491	835	568	1100	55	226	0	0	0	0	504	1022
Day	0		0		1205		1453		284		0		0		1558	
AM Peak					11:00		11:00		08:00		08:00		11:00		08:00	
Vol					57		37		18		53		47		94	
PM Peak					12:00		13:00		12:00		12:00		12:00		12:00	
Vol					52		56		100		52		52		108	
Comb. Total	0		0		1326		1683		281		0		0		1558	
ADT	ADT 1 663		ADT 1 663		ADT 1 663		ADT 1 663		ADT 1 663		ADT 1 663		ADT 1 663		ADT 1 663	

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

Site Code:
Station ID:
7th & Laurel
east approach
Latitude: 0' 0.000 Undefined

Start Time	26-Apr-10		Tues		Wed		Thurs		Fri		Sat		Sun		Week Average	
	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB	EB	WB
12:00 AM																
01:00																
02:00																
03:00																
04:00																
05:00																
06:00																
07:00																
08:00																
09:00																
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12:00 PM																
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04:00																
05:00																
06:00																
07:00																
08:00																
09:00																
10:00																
11:00																
Lane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Day	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM Peak																
Vol	71	246	1100	1000	700	2872	180	734	160	554	0	0	0	0	747	3570
PM Peak																
Vol	122	256	1200	1500	1600	1200	109	227	67	192	0	0	0	0	116	237
Week Average																
Vol	116	237	1100	1200	1200	1200	109	227	67	192	0	0	0	0	116	237

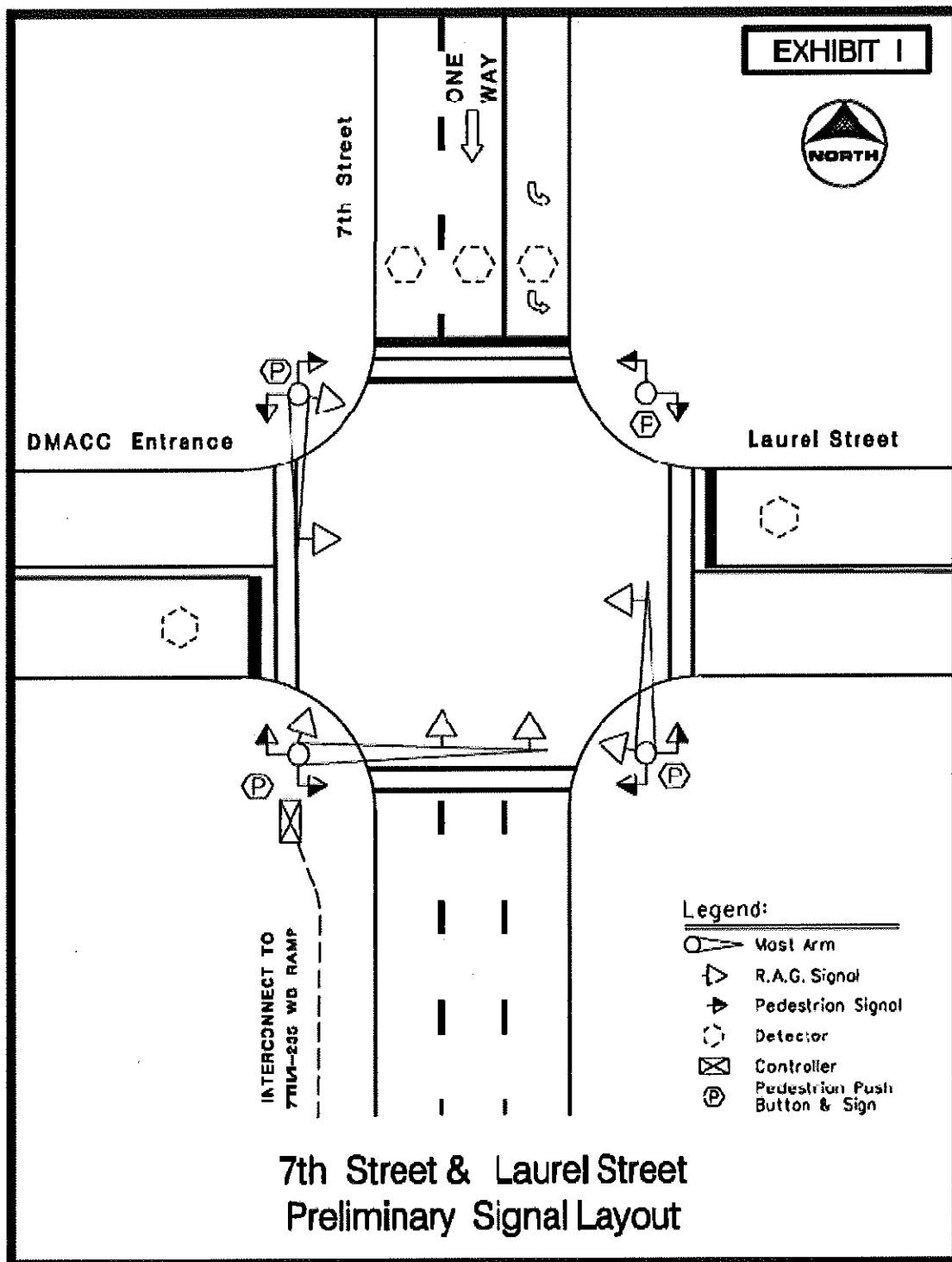
Comb. Total ADT 3581 0 2800 3581 734 0 3570

Page 1

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

Site Code:
Station ID:
7th & Laurel
north approach
Latitude: 0' 0.000 Undefined

Start Time	Mon 26-Apr-10	Tue 27-Apr-10	Wed 28-Apr-10	Thu 29-Apr-10	Fri 30-Apr-10	Average Day	Sat 01-May-10	Sun 02-May-10	Week Average
12:00 AM	•	•	•	56	60	58	•	•	58
01:00	•	•	•	47	45	46	•	•	46
02:00	•	•	•	29	38	34	•	•	34
03:00	•	•	•	32	37	34	•	•	34
04:00	•	•	•	64	50	57	•	•	57
05:00	•	•	•	165	132	148	•	•	148
06:00	•	•	•	378	379	378	•	•	378
07:00	•	•	•	728	666	697	•	•	697
08:00	•	•	•	602	618	610	•	•	610
09:00	•	•	•	453	241	347	•	•	347
10:00	•	•	435	433	•	444	•	•	444
11:00	•	•	479	475	•	477	•	•	477
12:00 PM	•	•	541	542	•	542	•	•	542
01:00	•	•	521	553	•	537	•	•	537
02:00	•	•	537	553	•	553	•	•	553
03:00	•	•	592	617	•	604	•	•	604
04:00	•	•	559	575	•	567	•	•	567
05:00	•	•	502	562	•	532	•	•	532
06:00	•	•	401	396	•	388	•	•	388
07:00	•	•	335	332	•	334	•	•	334
08:00	•	•	265	272	•	284	•	•	284
09:00	•	•	208	204	•	206	•	•	206
10:00	•	•	164	165	•	164	•	•	164
11:00	•	•	131	129	•	130	•	•	130
Day Total	0	0	5740	8352	2766	8183	0	0	8183
% Avg. WkDay	0.0%	0.0%	70.1%	102.2%	27.7%				
% Avg. Week	0.0%	0.0%	70.1%	102.2%	27.7%	100.0%	0.0%	0.0%	
AM Peak Vol.			1700	0700	0700	0700			0700
PM Peak Vol.			579	728	666	697			697
Grand Total	0	0	5740	8352	2766	8183	0	0	8183
ADT	ADT 8.362	ADT 8.362	ADT 8.362	ADT 8.362	ADT 8.362				



Intersection or Spot Benefit / Cost Safety Analysis

Iowa DOT Office of Traffic & Safety

County: Polk Prepared by: Mike Ring Date Prepared: Jun 14, 2010

Intersection: 7th and Laurel

Improvement

Proposed Improvement(s): Traffic Signal Installation

\$ 75,000 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

$$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$$
 \$ 75,000 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)

8,180 4,212,100 Current Annual Entering Veh., AEV = DEV * 365
 535 13,398 veh / day, Final Year DEV, FDEV
 2,825 67.80 MEV, Total Million Entering Veh. Over
 0 life of Project, TMEV
 1.0% Projected Traffic Growth (0%-10%), G

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

 11,540 Current Daily Entering Vehicles, DEV

Crash Data

2006 First full year --> 2009 Last full year 4.0 years, Time Period, T
 Additional months values as of Dec. 2007
 0 Fatal Crashes 0 Fatalities @ \$3,500,000 \$ -
 0 Major Injuries @ \$240,000 \$ -
 3 Injury Crashes 1 Minor Injuries @ \$48,000 \$ 48,000
 2 Possible Injuries @ \$25,000 \$ 50,000
 11 Property Damage Only (assumed cost per crash) \$2,700 \$ -
 -OR- enter all Property Costs of all crashes: \$ 42,800
 14 Total Crashes, TA Total \$ Loss, LOSS \$ 140,800
 3.50 Current Crashes / Year, AA = TA / T 0.83 Crashes / MEV, Crash Rate, CR
 \$ 10,057 Cost per Crash, AVC = LOSS / TA CR = TA x 10⁶ / (DEV x 365 x T)
 56.3 Total Expected Crashes, TECR = CR x TMEV \$ 83,390 Present Value of Avoided
 0.70 Crashes Avoided First Year AAR = AA x CRF / 100 Crashes, BENEFIT
 \$ 7,040 Crash Costs Avoided in First Year, AAR x AVC
 11.3 Total Avoided Crashes, TECR x CRF / 100

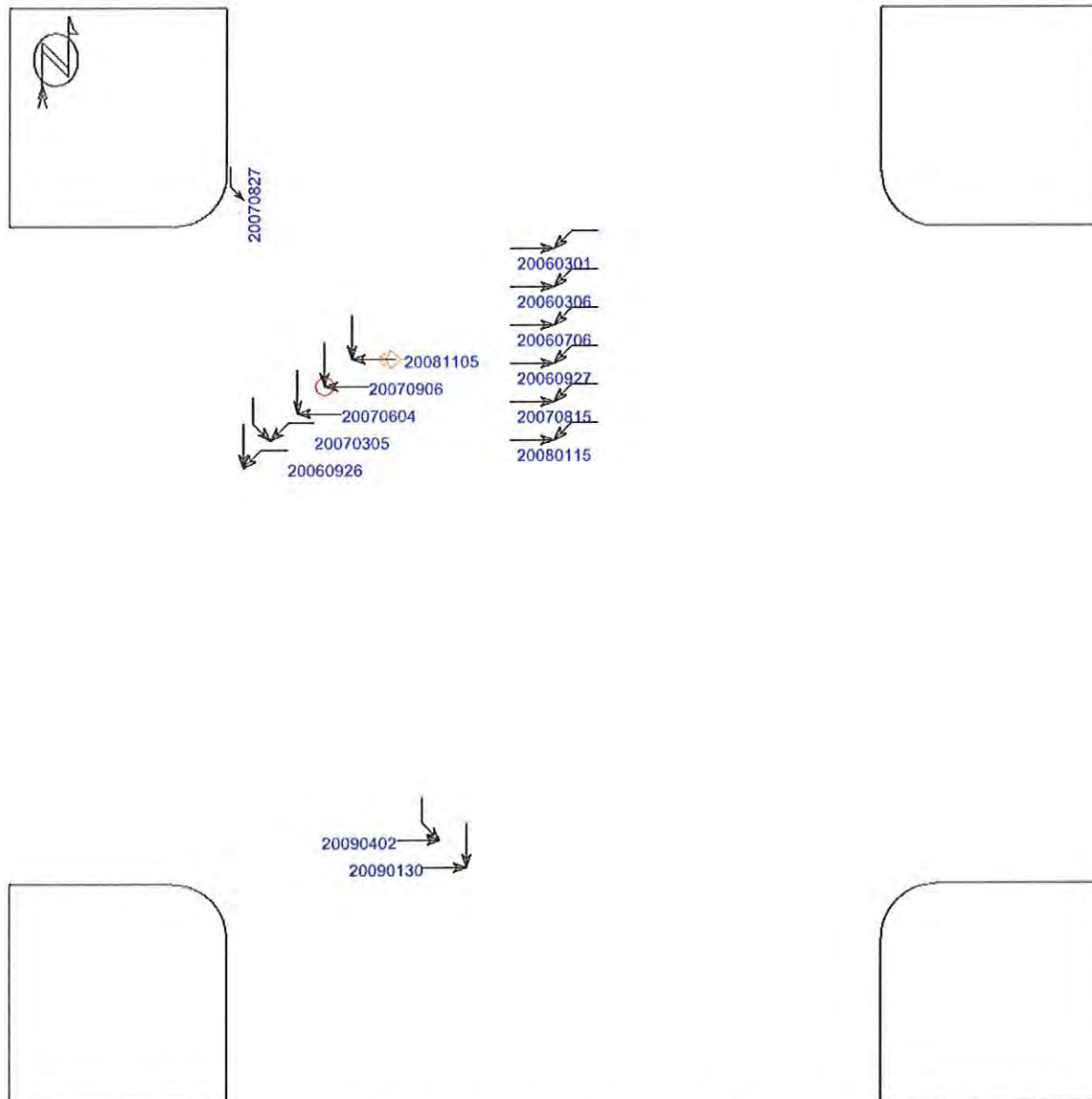
$$BEN = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$$

Benefit / Cost Ratio

Benefit : Cost = \$83,390 : \$75,000 = 1.11 : 1

7th and Laurel

2006 - 2009 Reportable Crashes



(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
 Ǝ DUI

Fixed objects:

□ General □ Pole
 ▣ Signal □ Curb
 ▤ Tree ☒ Animal

◁ 3rd vehicle

✱ Extra data

Pd* Programming, Inc. 06/15/2010

Review of Accident History						
Location:	7th and Laurel					
Dates:	Jan 2006 - Dec 2009					
14-Jun-10						
Date	Type	Fatality	Major	Minor	Possible	PropDam
1-Mar-06	Left turning					\$3,500
6-Mar-06	Left turning					\$400
6-Jul-06	Left turning					\$2,000
26-Sep-06	Right Angle					\$4,000
27-Sep-06	Left turning					\$5,000
5-Mar-07	Left turning					\$6,000
4-Jun-07	Right Angle					\$2,500
15-Aug-07	Left turning					\$1,400
27-Aug-07	Single vehicle				1	\$1,000
6-Sep-07	Right Angle			1		\$1,000
15-Jan-08	Left turning					\$2,000
5-Nov-08	Right Angle					\$5,000
30-Jan-09	Right Angle					\$4,000
2-Apr-09	Right Angle				1	\$5,000
Totals:		0	0	1	2	\$42,800
Costs:		\$0	\$0	\$8,000	\$4,000	\$42,800
Inj Acc=>	3	Number of years:				4.0
PDO Acc=>	11	Total Accident Cost:				\$54,800



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project 76th Avenue & Kirkwood Boulevard SW: School Zone
Beacons & Speed Feedback Signs

Applicant City of Cedar Rapids

Contact Person Leslie Hart, P.E. PTOE Title Associate Traffic Engineer

Complete Mailing Address 1201 6th St SW
Cedar Rapids, IA 52404

Phone 319-286-5802 E-Mail l.hart@cedar-rapids.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 \$ 46,836

Safety Funds Requested \$ 42,436

EXHIBIT “B”

PROJECT NARRATIVE

School Zone Beacons and Speed Feedback Signs

EXISTING CONDITIONS

College Community School District campus is located in the southwest quadrant of Cedar Rapids. 4 elementary schools, 2 middle schools, and a high school are located along Kirkwood Boulevard and 76th Avenue SW. The total enrollment is approximately 4,100 K-12 students. The posted speed limit around the campus is 45 M.P.H. During school hours the speed limit is lowered to 25 M.P.H. The school zone is marked by speed limit signs with “when children are present” plaques (S4-2P).

The high-speed rural cross-section roadway and poor public understanding of the signage has led to compliance and enforcement issues.

PROPOSED PROJECT

With the proposed installation of solar powered programmable flashers to emphasize the school speed zone hours and limits, The City of Cedar Rapids will provide a high level of warning to alert drivers to a specific time when the school zone speed limit is active. Beacons also support better enforcement of the school zone by law enforcement.

To assist enforcement of the school zone speed limit, the City of Cedar Rapids proposes to install speed feedback signs in conjunction with the beacons on the school zone signs. These feedback signs will flash vehicle speed when you are approaching faster than the posted speed for the school zone and which will alert the driver to slow down. The speed feedback signs offer a great traffic calming solution because they give the drivers notice they are speeding. Tests have shown that speeders will slow down for these signs. Typical average speed reductions are 10-20%, and overall compliance with the posted speed limit will go up by 30-60%.

EXHIBIT “C”

PROJECT COST SUMMARY

SCHOOL ZONE BEACONS AND SPEED FEEDBACK SIGNS

June 15, 2010

Total Anticipated Materials Costs	\$	42,436.00
Total Anticipated Costs for Installation	<u>\$</u>	<u>4,400.00</u>
Total Estimated Project Costs	\$	46,836.00

NOTES:

Materials include:

Master Flash System Qty 2

Slave Flash System Qty 3

Feedback Sign w/ 18" display Qty 4

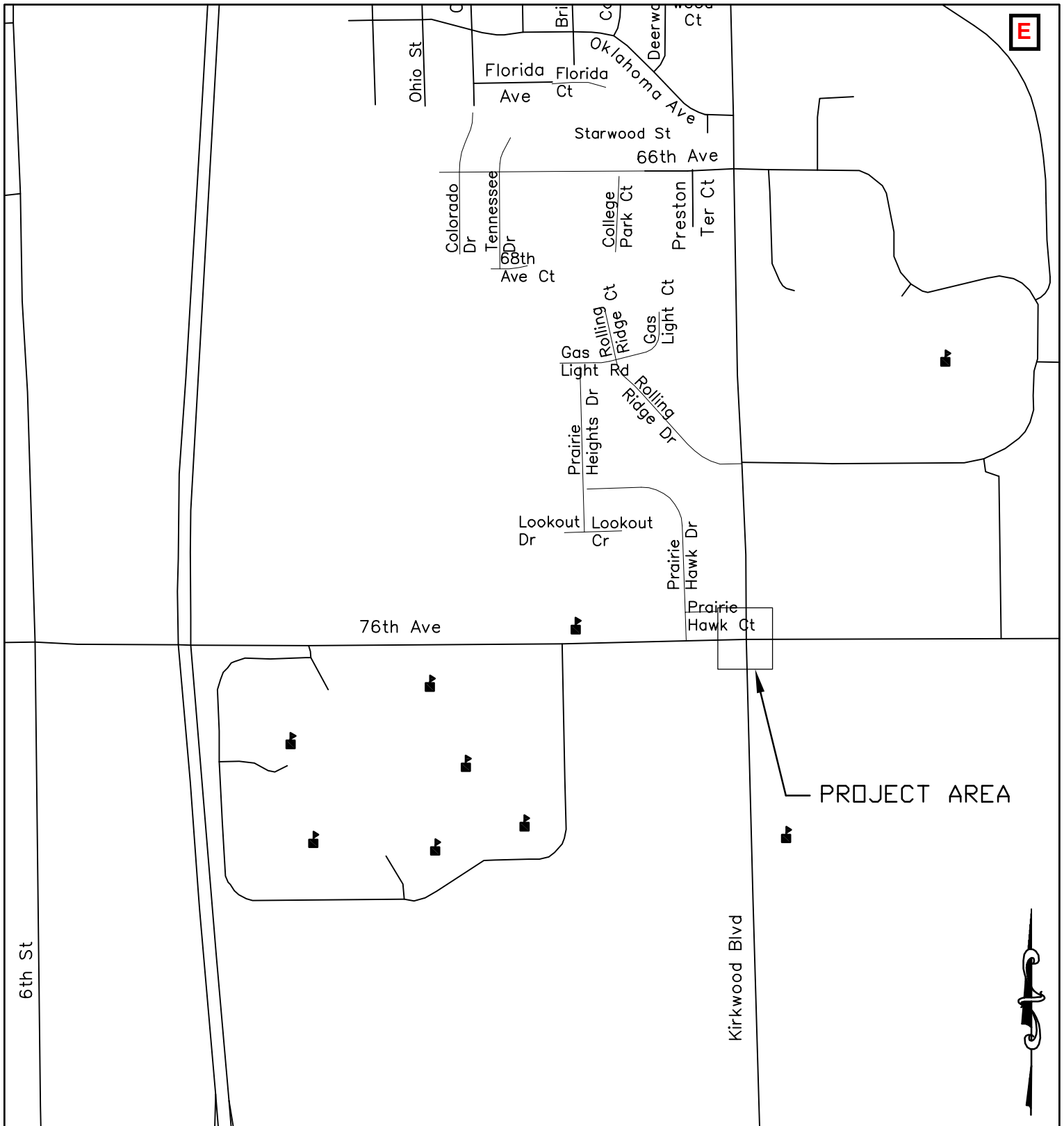
Solar Panels for Feedback signs Qty 4

EXHIBIT “D”

TIME SCHEDULE FOR PROPOSED PROJECT

SCHOOL ZONE BEACONS & SPEED FEEDBACK SIGNS

June 15, 2010	--	T.S.I.P. Project submittal deadline
December 15, 2010	--	Traffic Safety Improvements Program approval
May 15, 2011	--	Project agreement approval
July 15, 2011	--	Materials Delivery
August 1, 2011	--	Project construction start
August 15, 2011	--	Project construction completion



LEGEND

 SCHOOL

LOCATION MAP

FILE NO.: 60-10-004

DRAWN BY: JLR

APPROVED BY: LH

DATE: 6/14/10

SCALE: 1" = 1000'

76TH AVE AND KIRKWOOD
BLVD SW
125



CEDAR RAPIDS
City Of Five Seasons

EXHIBIT “F”

COLOR PICTURES OF THE PROJECT SITE

School Zone Beacons and Speed Feedback Signs



Photos 1 (above, westbound at east end) and 2 (below, eastbound at west end) show the existing school zone designation on 76th Avenue SW between Kirkwood Blvd and 6th Street. Four campus accesses are located within this one-half mile zone.



View of project area on Kirkwood Boulevard SW. School zone is associated with aligned access to Prairie Point Middle School (east side) and a general access to College Community campus on west side.



Photo 3. Northbound view on Kirkwood Boulevard SW toward 76th Avenue SW.



Photo 4. Southbound view on Kirkwood Boulevard SW leaving 76th Avenue SW.



AERIAL PHOTOGRAPH



FILE NO.: 60-10-004
DRAWN BY: JLR
APPROVED BY: LH
DATE: 6/14/10
SCALE: 1" = 1000'

76TH AVE AND KIRKWOOD
BLVD SW
128





AERIAL PHOTOGRAPH

LEGEND

 SCHOOL

FILE NO.: 60-10-004

DRAWN BY: JLR

APPROVED BY: LH

DATE: 6/14/10

SCALE: 1" = 1000'

76TH AVE AND KIRKWOOD
BLVD SW
129



CEDAR RAPIDS
City Of Five Seasons



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Low Cost Safety Countermeasures at Six High Hazard Intersections in Waterloo

Applicant City of Waterloo

Contact Person Mohammad Elahi Title Traffic Engineer

Complete Mailing Address 408 E. 6th Street
Waterloo, Iowa 50703

Phone (319) 291-4440 E-Mail mohammad.elahi@waterloo-ia.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 \$ 71,100

Safety Funds Requested \$ 71,100

B. NARRATIVE

This TCD proposal covers low cost safety countermeasures at six high hazard locations in Waterloo. The proposed improvements have high probabilities of success in reducing crashes. Most of the proposed techniques are proven to reduce their target crash patterns. The techniques are listed next.

Changing protected-permitted left turn signal phasing to protected-only will eliminate crashes that happen on permitted phase.

Installing near-side signal heads will mark the beginning of the intersection and will help reduce red light running and rear-end collisions.

Split signal phasing will eliminate opposing traffic crashes. Advance end of green warning system will help reduce red light running and rear end accidents.

One signal head over each lane and a far-side pole mounted signal head will improve signal visibility. It will help reduce red light running.

Each narrative contains most the relevant information for the particular location.

B.1 - Intersection of E San Marnan Drive and Shoppers Boulevard

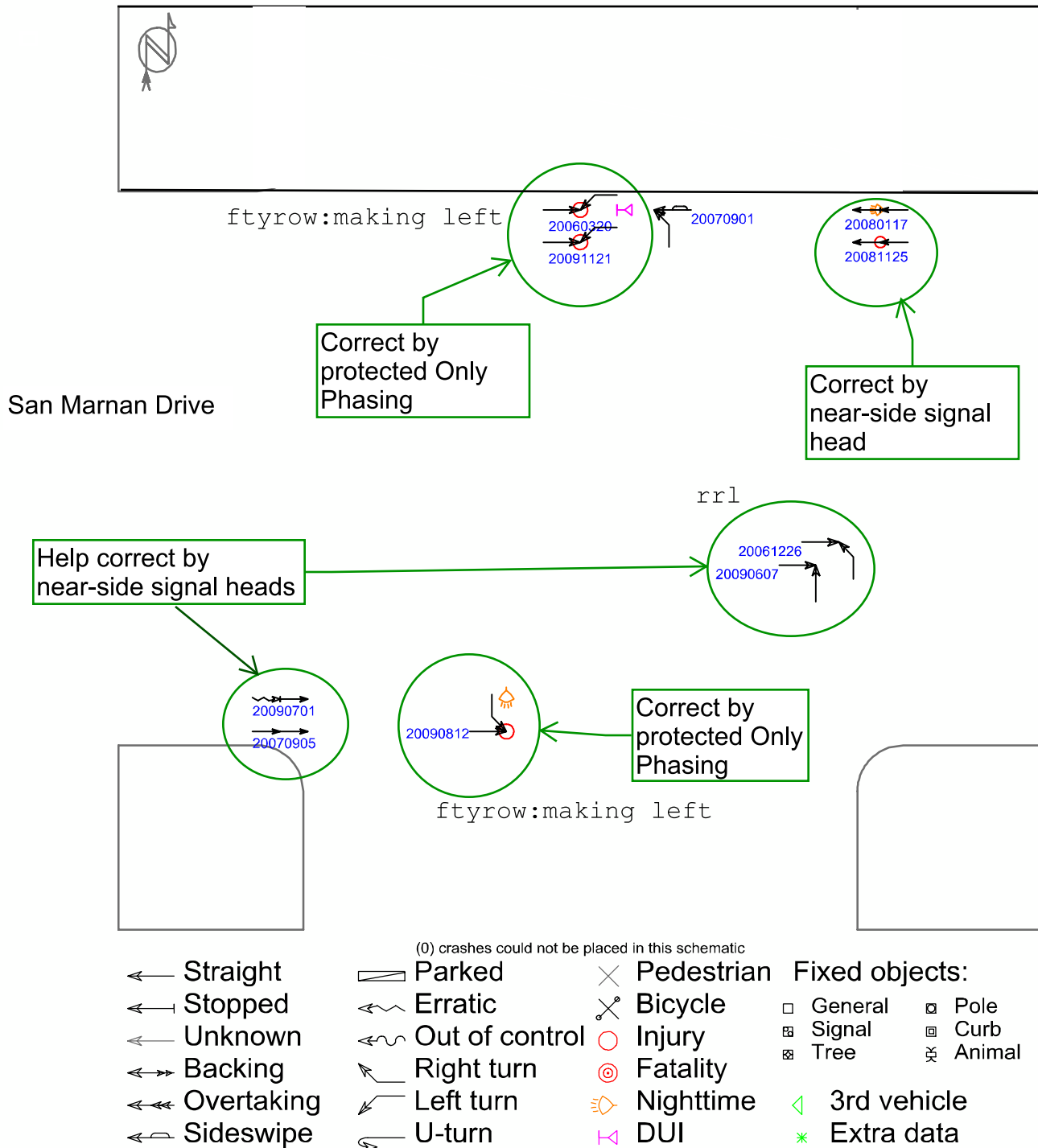
Changing permitted-protected signal phasing to protected only, and adding signal heads are proposed. East San Marnan Drive is a divided 45 mph arterial. Shopper's Boulevard provides access to a commercial area. The t-intersection where the two roadways meet is number 10 on Statewide Intersection Safety Improvement Candidate Location (SICL) List for Waterloo. Accident history for a 4.4 year period shows three *failed to yield right of way: making left collisions*. All these were injury crashes and all involved left turns from San Marnan. Changing left turn signal phasing from protected-permitted to protected-only is proposed. The CRF is reported as high as 99%. Waterloo's own experience confirms that. There have been *rear end collisions* and right angle crashes caused by *running the red light*. Near side signal heads on San Marnan Drive would help reduce these type of crashes. The collision diagram on next page shows the type of countermeasure proposed for different groups of accidents.

Table 1: Crash types expected to be reduced by the proposed improvements.

Number of Crashes	Crash severity	Description	Counter Measure
3	Injury	Involved Left Turners On Permitted Phase	Change Left Turn Signal Phasing To Protected Only
3	PDO	Rear-end	Add a near-side signal head
1	Injury	Rear-end	Add a near-side signal head
2	PDO	Ran Red Light (San Marnan)	Add a near-side signal head

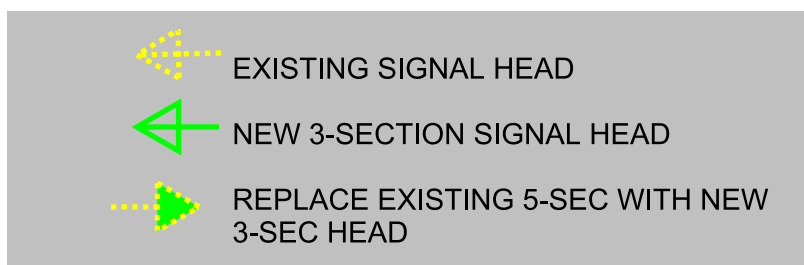
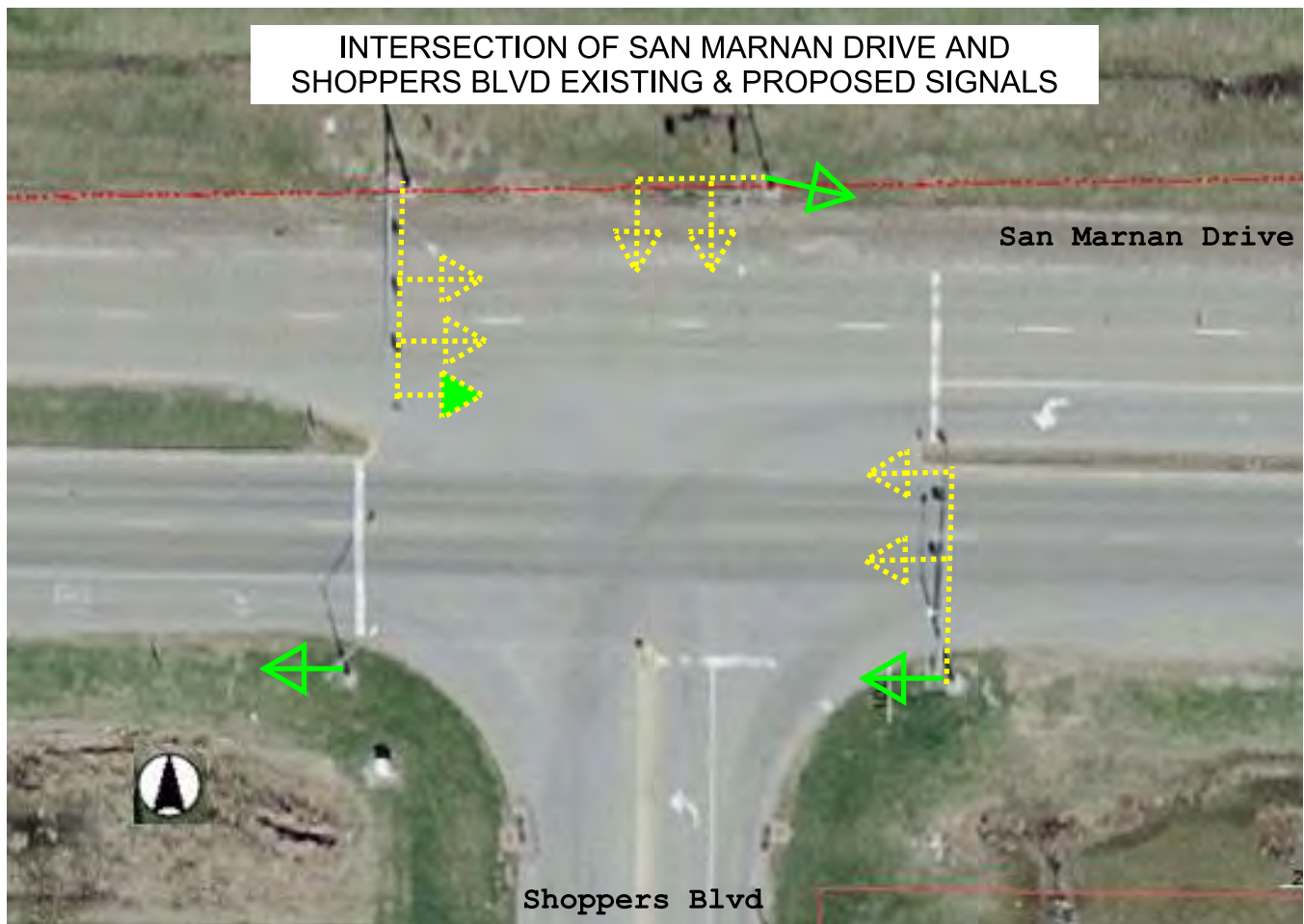
Shoppers Blvd & San Marnan Drive

2006-2009 and Part 2010 Reportable Crashes



Pd' Programming, Inc. 05/20/2010





B.2 - Intersection of W Park Avenue and Commercial Street

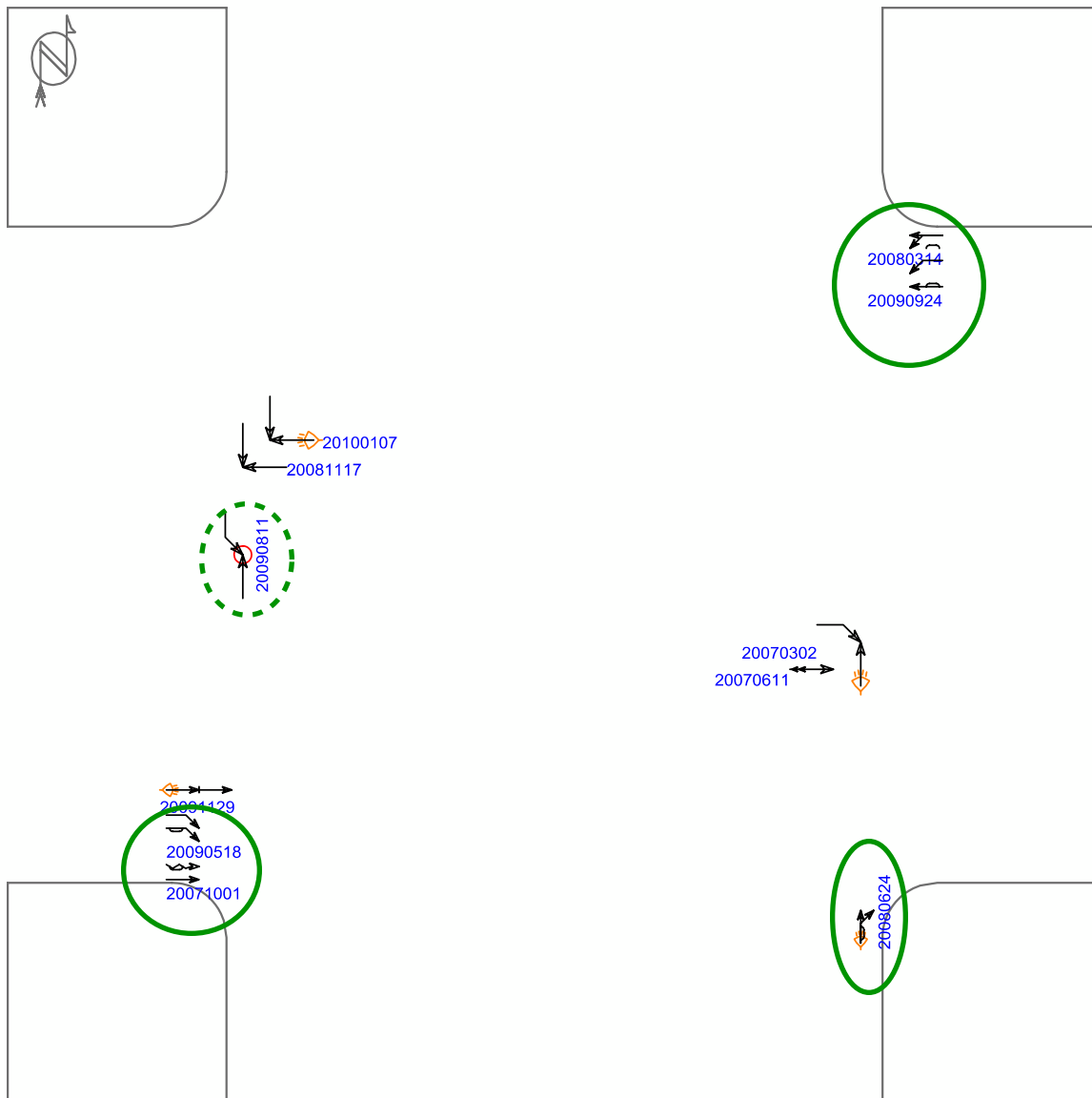
Proposed improvements are to upgrade equipment and modify signal heads to accommodate split phasing on Park Avenue. W Park Avenue and Commercial Streets are both 30 mph roadways in downtown Waterloo. The intersection is listed as number 3 on Statewide Intersection Safety Improvement Candidate Location (SICL) List for Waterloo. Accident History a 4.4 year period shows a variety of patterns. Horizontal alignment of W. Park Avenue's legs could be cause of some of the problems. City has recently added near side overhead signal heads. A proven technique to reduce accidents involving opposing traffic at signals is use of split phasing. The signals are currently set as a simple two phase operation. Signage is proposed to provide positive guidance as to expected movements from each lane combined with use of "arrow" signal heads to match the expected lane group movement.

Park Avenue phasing is proposed to be changed to split phase operation. Only one approach will have the green at a time. Signal timing will have to be adjusted to favor northbound traffic coming into town in the morning, southbound traffic heading out of downtown in the evening and balanced timing for the noon hour. The controller cabinet is old and needs to be replaced to accommodate this change. One three section head on each direction will have to be replaced by a four section head having a green left turn arrow. Also proposed are lane assignment signs and matching arrowed signal heads. Cost is estimated at \$14,600.



Park_Commercial

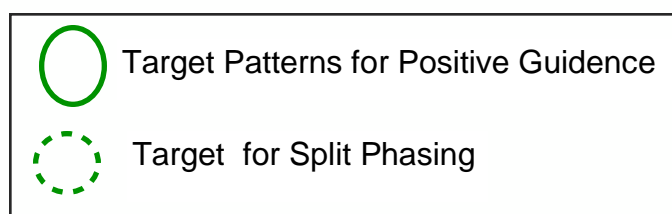
2006 to Part 2010



(0) crashes could not be placed in this schematic

← Straight	Parked	Pedestrian	Fixed objects:
← Stopped	Erratic	Bicycle	
← Unknown	Out of control	Injury	General
↔ Backing	Right turn	Fatality	Signal
↔ Overtaking	Left turn	Nighttime	Tree
↔ Sideswipe	U-turn	DUI	Pole
			Curb
			Animal
			3rd vehicle
			Extra data

Pd' Programming, Inc. 06/15/2010



B.3 – Intersection of US 218/ Washington Street and Hawthorne Avenue

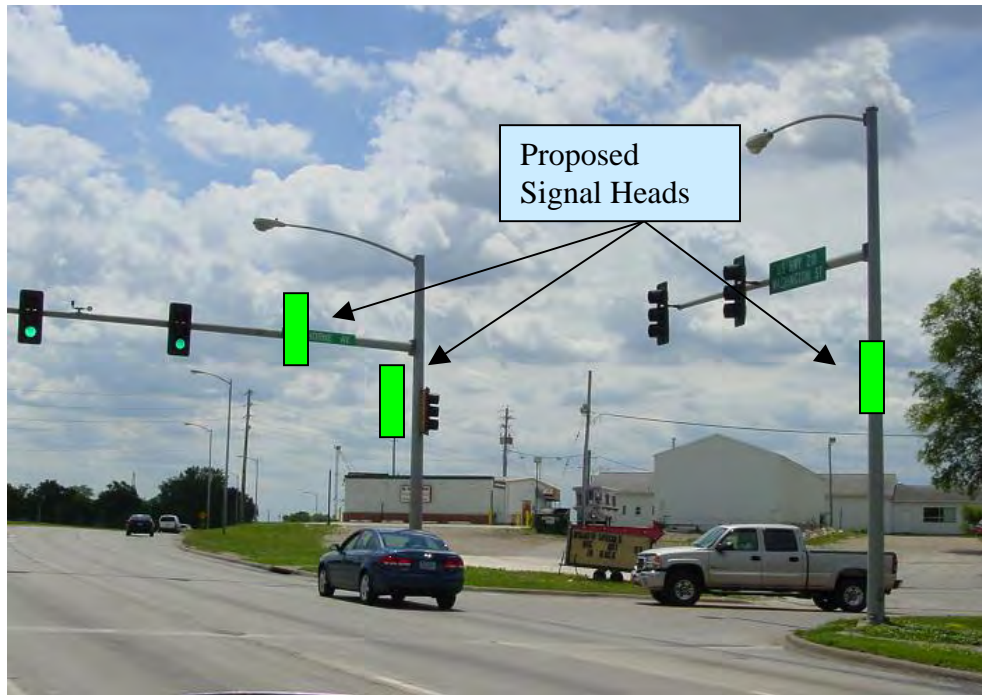
This intersection is listed as number 2 on Statewide Intersection Safety Improvement Candidate Location (SICL) List for Waterloo. City has recently changed the permitted-protected left turn phasing on US 218. The left turn phasing in protected –only now. This should help reduce the left turn crashes. To reduce the red light running, rear-end and improper lane change crashes the following countermeasures are proposed:

B.3.1- Install one signal head over curb lane for US 218 southbound approach on the exiting mast arm poles.

B.3.2- Install pole mounted near side signal heads.

B.3.2- Install a pole mounted far-side signal head.

The picture shows US 218 southbound approach at Hawthorne Avenue.



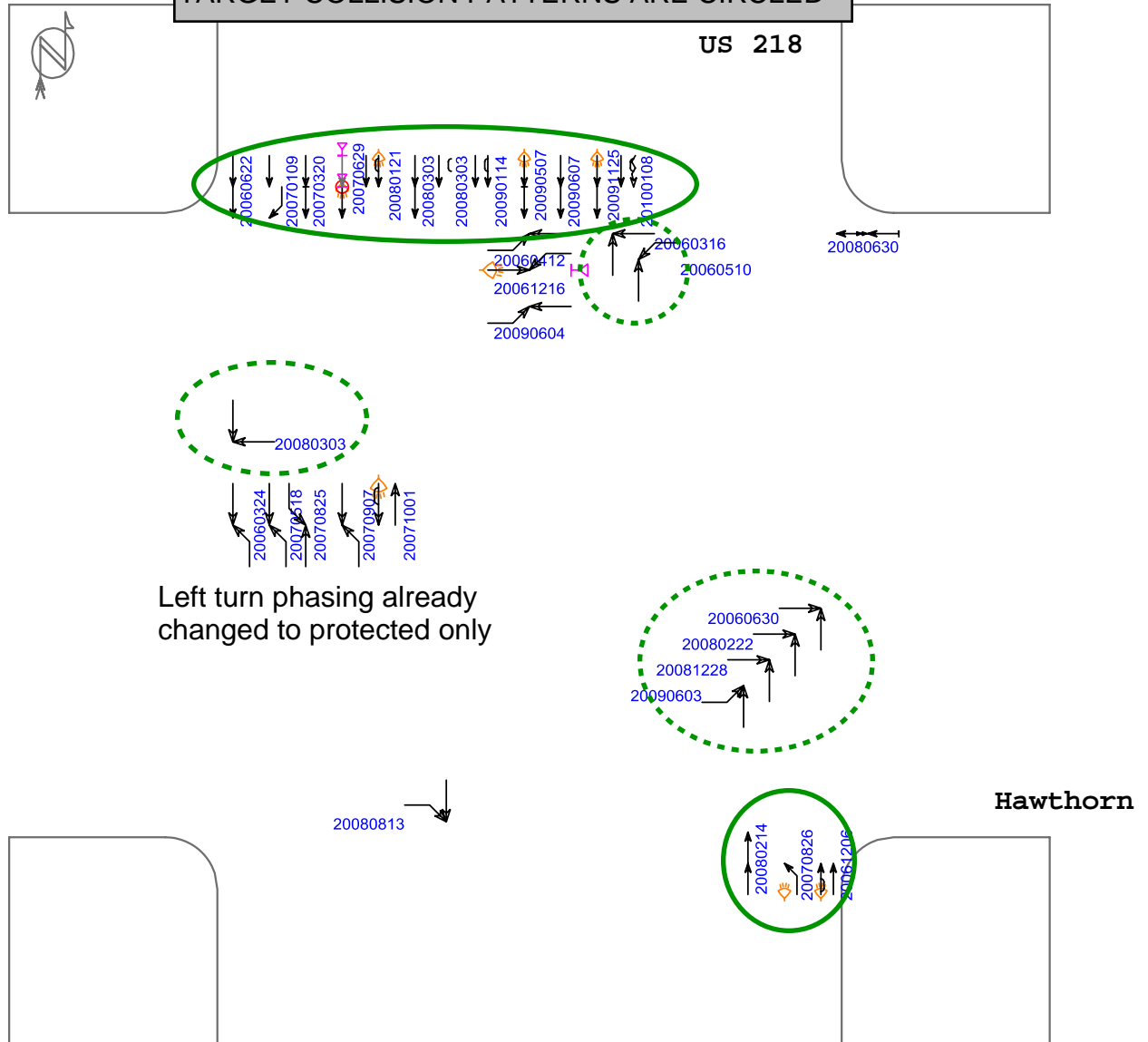
For northbound 218 only two, one near side and one far side, pole mounted signal heads are proposed.

Cost of five 3-section heads complete with mounting hardware, and incidentals is estimated at \$3,900. Added signal heads is expected to reduce instances of the red-light running and rear end collisions.

US218 & Hawthorne Avenue

2006 to Part 2010

TARGET COLLISION PATTERNS ARE CIRCLED



(0) crashes could not be placed in this schematic

← Straight	▬ Parked	× Pedestrian	Fixed objects:
← Stopped	← Erratic	× Bicycle	
← Unknown	← Out of control	○ Injury	□ General
← Backing	← Right turn	⊙ Fatality	▣ Signal
← Overtaking	← Left turn	👤 Nighttime	▣ Tree
← Sideswipe	← U-turn	🚦 DUI	▣ Pole
			▣ Curb
			▣ Animal
			◁ 3rd vehicle
			* Extra data

Pd' Programming, Inc. 06/15/2010

B.4 – Intersection US 63 and US 218 Off Ramp

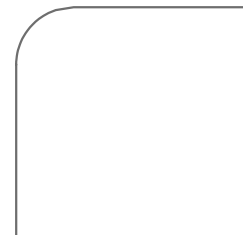
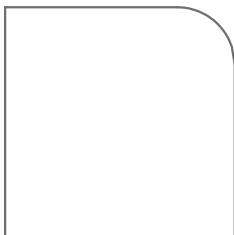
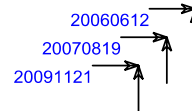
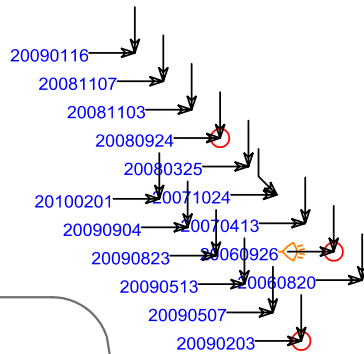
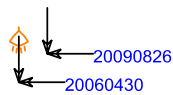
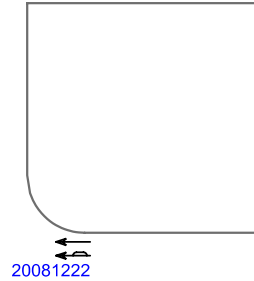
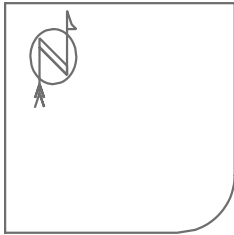
This intersection is listed as number 21 on Statewide Intersection Safety Improvement Candidate Location (SICL) List for Waterloo. Red light running is observed by southbound traffic on US 63. A near side pole mounted traffic signal can help identify the ramp intersection.



218 AND 63

B4

2006 TO PART 2010



(0) crashes could not be placed in this schematic

← Straight	⊠ Parked	× Pedestrian	Fixed objects:	
← Stopped	⋈ Erratic	⋈ Bicycle	□ General	⊠ Pole
← Unknown	⋈ Out of control	○ Injury	⊠ Signal	⊠ Curb
↔ Backing	↗ Right turn	⊙ Fatality	⊠ Tree	⊠ Animal
↔ Overtaking	↖ Left turn	⚡ Nighttime	◁ 3rd vehicle	
↔ Sideswipe	↪ U-turn	⚡ DUI	* Extra data	

Pd' Programming, Inc. 06/15/2010

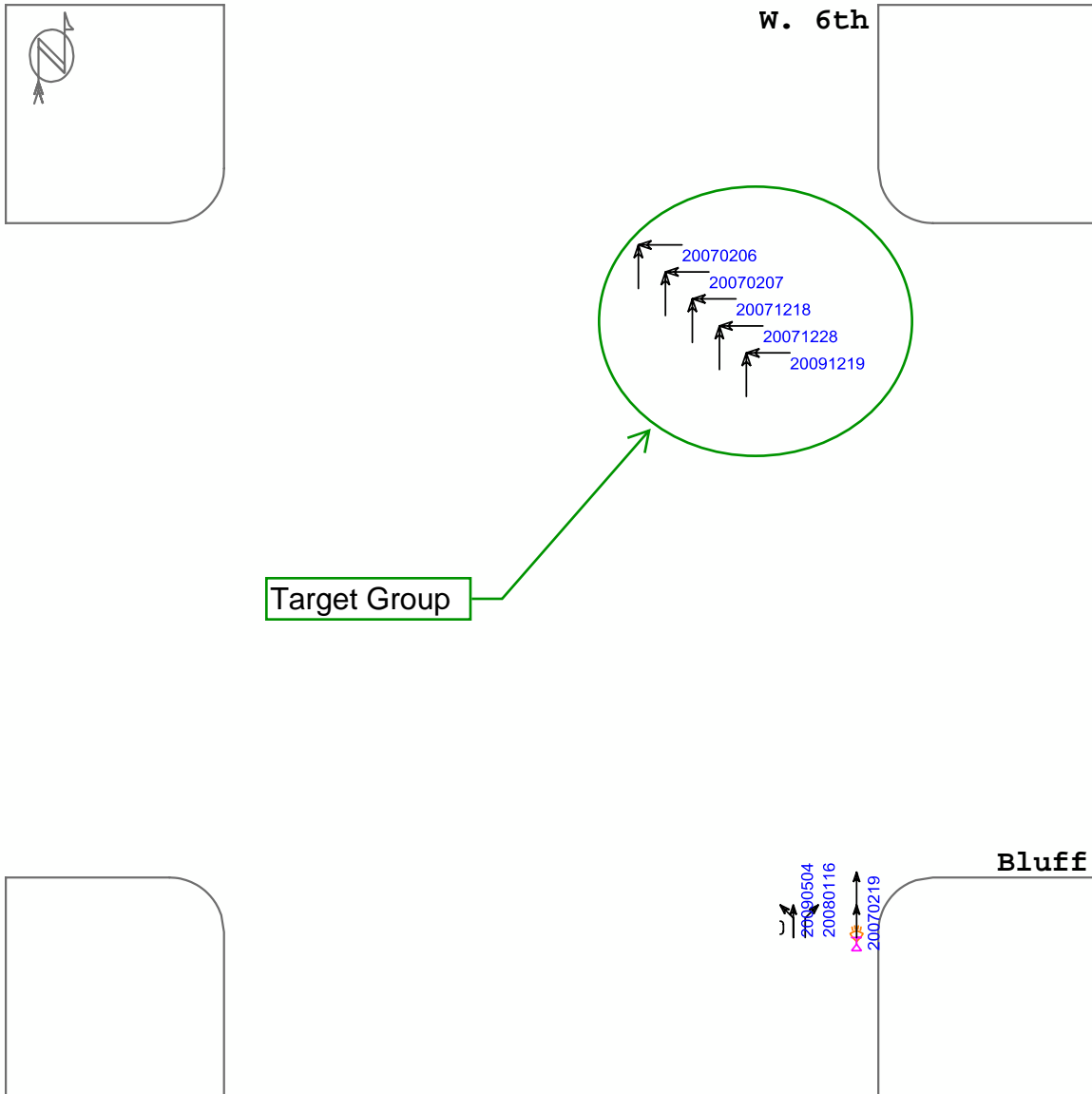
B.4 – Intersection of W 6th Street and Bluff Street and Washington Street

This intersection is listed as number 2 on Statewide Intersection Safety Improvement Candidate Location (SICL) List for Waterloo. Frequent red light running is observed by westbound traffic on Bluff. This is due to visibility of the downstream signals. Driver could confuse a downstream green indication as his own. Installing programmable visibility heads is proposed to remedy the situation.



Bluff_W6th

2006 to Part 2010



← 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 □ Pole
 ▣ Signal ▣ Curb
 ▣ Tree ⌘ Animal
 ◁ 3rd vehicle
 * Extra data

(1) crashes could not be placed in this schematic

Pd' Programming, Inc. 06/15/2010

B.6 – Intersection University Avenue and Ansborough Avenue

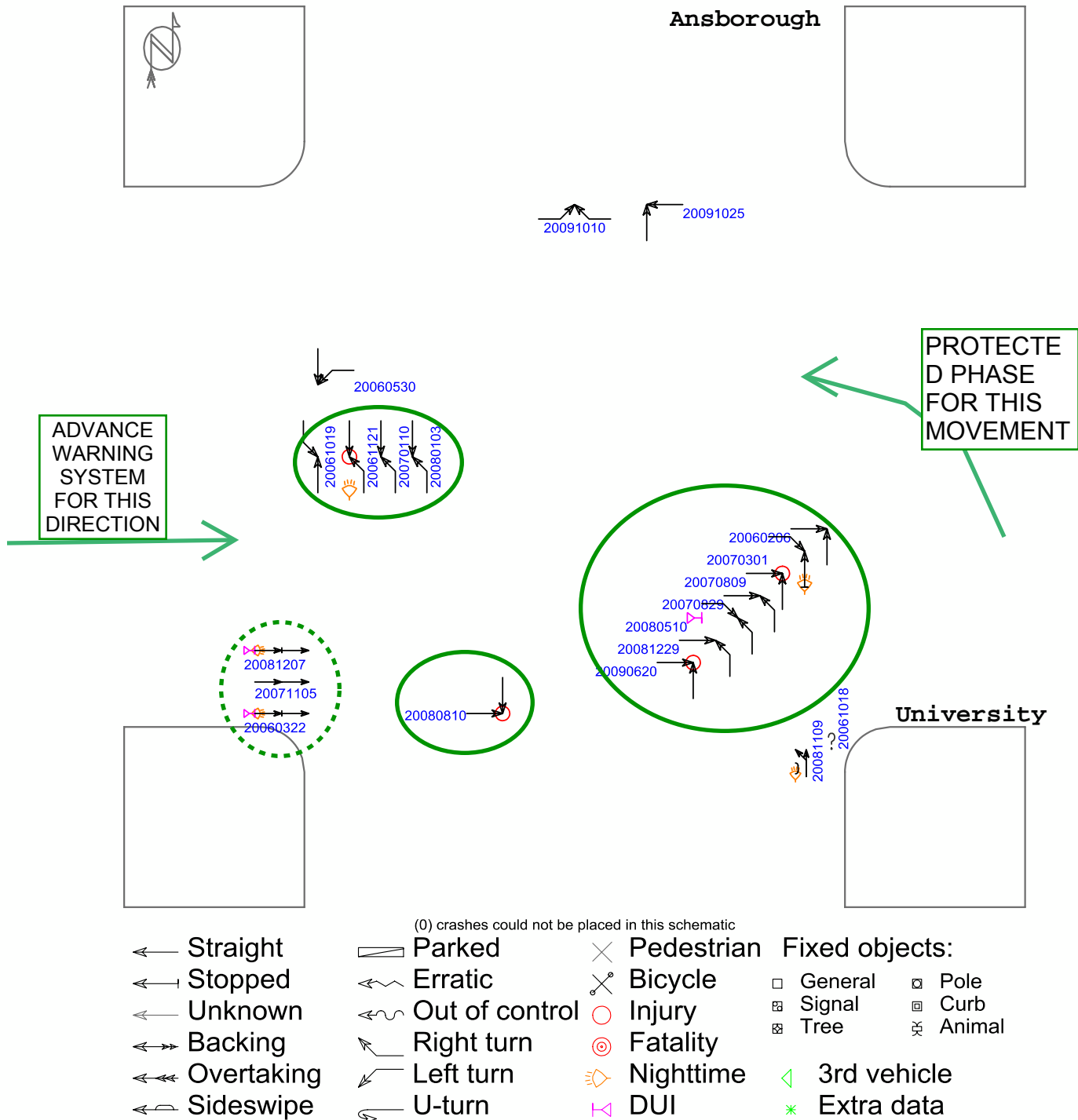
Both University Avenue and Ansborough Avenue are arterials. University Avenue is a 45 mph multi-lane divided 6 lane roadway with additional turn lanes at Ansborough Avenue. Two predominant crash patterns exist at this location. One pattern shows left turns colliding with opposing through on Ansborough. Northbound approach turning left onto University collides with southbound through traffic. Protected left turn phasing for northbound approach on Ansborough will help eliminate this problem. Another pattern is red light running and rear end collisions at the southwest corner on University Avenue. This is mainly due to the existence of a horizontal approach curve. Advance end of green warning system, and a near side signal head is proposed for eastbound approach on University Avenue.



WESTBOUND TRAFFIC ON UNIVERSITY APPROACHING ANSBOROUGH AVENUE

ANsborough & University

2006-2009 and Part 2010



Pd' Programming, Inc. 06/15/2010

C. ITEMIZED BREAKDOWN OF ALL COSTS:**C****Intersection of East San Marnan and Shoppers Boulevard**

		QNTY.	UNIT \$	TOTAL \$
1	3-SECTION LED RYG LEFT ARROW SIGNAL HEAD AND MOUNTING HARDWARE	1 EA	700	700
2	3-SECTION LED RYG SOLID BALL SIGNAL HEAD AND MOUNTING HARDWARE	3 EA	700	2,100
3	WIRES, CABLES, ETC	1 LS	200	200
	TOTAL			\$3,000

Intersection of W Park Avenue and Commercial Street

		QNTY.	UNIT \$	TOTAL \$
1	4-SECTION LED RYG SOLID BALL WITH LEFT ARROW SIGNAL HEAD AND MOUNTING HARDWARE	2 EA	9000	1800
2	NEW CONTROL CABINET COMPLETE WITH BASE	1 EA	12000	12000
3	INCIDENTALS (CABLES, ETC)	1 LS	400	400
4	SIGNS	8 EA	50	400
	TOTAL			\$14,600

218 and Hawthorne

		QNTY.	UNIT \$	TOTAL \$
1	3-SECTION LED RYG SOLID BALL SIGNAL HEAD AND MOUNTING HARDWARE	5 EA	700	3500
2	INCIDENTALS (CABLES, ETC)	1 LS	400	400
	TOTAL			\$3,900

Intersection US 63 and US 218 Off Ramp

		QNTY.	UNIT \$	TOTAL \$
1	3-SECTION LED RYG SOLID SIGNAL HEADS COMPLETE WITH MOUNTING AND PROGRAMMING HARDWARE	1 EA	700	700
2	ONE 10' PEDESTAL POLE SIGNAL SUPPORT, COMPLETE WITH BREAKAWAY TRANSFORMER BASE AND BASE	1 LS	2200	2200
3	CONDUIT, WIRING & INCIDENTALS	1 LS	7000	7000
	TOTAL			\$9,900

Intersection of W 6th Street and Bluff Street

		QNTY.	UNIT \$	TOTAL \$
1	3-SECTION LED RYG SOLID BALL REMOTE PROGRAMMABLE VISIBILITY SIGNAL HEADS COMPLETE WITH HARDWARE	12 EA	2000	24,000
	TOTAL			\$24,000

University & Ansborough

		QNTY.	UNIT \$	TOTAL \$
1	3-SECTION LED RYG SIGNAL HEAD AND MOUNTING HARDWARE	1 EA	700	700
2	ADVANCE END OF GREEN WARNING SYSTEM	1 EA	15000	15000
	TOTAL			\$15,700

SUMMARY

1	Intersection of East San Marnan and Shoppers Boulevard	3000
2	Intersection of W Park Avenue and Commercial Street	14600
3	218 and Hawthorne	3900
4	Intersection US 63 and US 218 Off Ramp	9900
5	Intersection of W 6th Street and Bluff Street	24000
6	University & Ansborough	15700
	TOTAL	\$71,100

D. TIME SCHEDULE

	2011												2012											
	DEC	NOV	OCT	SEPT.	AUGUST	JULY	JUNE	MAY	APRIL	MARCH	FEB	JAN	DEC	NOV	OCT	SEPT	AUGUST	JULY	JUNE	MAY	APRIL	MARCH	FEB	
START																								◆
DOT Agreement Exchange																								
Bidding/ Procurement Process																								
Installations																								
END																								◆

E

E. LOCATION MAP



Request for Traffic Safety Funds Iowa Department of Transportation

GENERAL INFORMATION

Location/Title of Project: Traffic Sign Inventories/Replacement Program

Applicant: Iowa Department of Transportation

Contact Person: John Dostart, P.E. Title: Urban Engineer

Complete Mailing Address: 800 Lincoln Way
(Street Address and/or Box Number)

Ames Iowa 50010
(City) (State) (Zip)

Daytime Phone: 515-239-1291 e-mail John.Dostart@dot.iowa.gov
(Area Code)

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.

Co-Applicant(s): _____

Contact Person: _____ Title: _____

Complete Mailing Address: _____
(Street Address and/or Box Number)

(City) (State) (Zip)

Daytime Phone: _____ e-mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Nature of Application: ☐ Site Specific
☒ Traffic Control Device
☐ Safety Study

Funding: Total Cost of the Proposed Project \$ 250,000

Safety Funds Requested for the Project \$ 250,000

IOWA DEPARTMENT OF TRANSPORTATION

To Office	Traffic and Safety	Date	June 15, 2010
Attention	Steve Gent, P.E.	Ref. No.	800
From	Charlie Purcell, P.E.		
Office	Local Systems		
Subject	Funding Request for City Sign Replacement Program, FY 2012		

Action Requested: Approval of \$250,000 from Traffic Safety Improvement Funds (Traffic Control Devices Category)

Background: The Iowa DOT started the subject program in 1991 at a funding level of \$120,000. Since FY07, this program was continued at an increased level of funding of \$250,000 in the Traffic Control Devices as part of Traffic Safety Improvement Funds. The program has been structured such that all communities with a population of 5,000 or less are eligible to apply. The focus of this program has been replacing STOP (R1-1), YIELD (R1-2), STOP AHEAD (W3-1), DO NOT ENTER (R5-1), single headed arrow (W1-6), and double headed arrow (W1-7) signs only. Applications for the program are considered in the order received. For this year, as a trial program, an expansion of the program is proposed to include all cities.

Application Process: Eligible communities will submit applications requesting replacement of STOP (R1-1), YIELD (R1-2), STOP AHEAD (W3-1), DO NOT ENTER (R5-1), single headed arrow (W1-6), double headed arrow (W1-7), or other regulatory or warning signs determined by the Office of Traffic and Safety to be necessary. The signs to be replaced shall be in poor condition or those that are obsolete. This application will be submitted to the Iowa DOT Office of Traffic and Safety along with a resolution approved by their city council. When the application from a community is received, evaluated, and approved, the Iowa DOT will arrange for production and delivery. The approved signs, posts, and hardware, up to a maximum of \$5,000 in materials, will be delivered to an Iowa DOT maintenance facility near the city's location. The applicant is responsible for picking up and installing the signs according to guidance for proper installation provided with the application.

Program Needs: This program is extremely popular with Iowa communities due to their expressed need to replace obsolete signs. In addition to replacing obsolete signs, this program allows Iowa's communities the ability to update their traffic control devices to comply with the most recent requirements in the Manual of Uniform Traffic Control Devices (MUTCD).

Due to the new retroreflectivity requirements in the 2009 MUTCD we would like to expand this program to cities of all sizes and allow the Office of Traffic and Safety to determine if additional regulatory or warning signs should qualify for replacement under this program while keeping the \$5,000 limit in place for a one year trial.

In view of this overwhelming demand and need to meet the new retroreflectivity requirements from communities as stated above, we request your approval of \$250,000 from Traffic Safety Improvement Funds to continue this program in the next fiscal year.

Please contact John Dostart or myself if you have any questions.

MJP:JED

Attachment

cc: Tom Welch
Kurtis Younkin
Terry Ostendorf
John Dostart

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Improved Signing at High Crash Horizontal Curves
Applicant Iowa DOT – Office of Traffic and Safety
Contact Person Kurtis Younkin Title Traffic Engineer
Complete Mailing Address 800 Lincoln Way
Ames, IA 50010
Phone 515-239-1184 E-Mail Kurtis.Younkin@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 ☒ **X**
Safety Study ☐

Funding Amount

Total Project Cost \$ 70,000
Safety Funds Requested \$ 70,000

Narrative

Improved Signing at High Crash Horizontal Curves

Research and pilot studies indicate that replacing existing chevron signs with oversized signs with high reflective fluorescent yellow prismatic sheeting reduce both curve speed and associated run-off-the-road crashes.

CTRE has provided to the Iowa DOT a prioritized list of crash horizontal curve sites throughout the State. This funding would target these high crash areas and improve curve signing.

Amount Requested: \$70,000

