

Traffic Safety Improvement Program

Applications for Traffic Control Devices

FY 2013



Received June 15, 2011

TRAFFIC CONTROL DEVICE APPLICATION

FY 2013

Page No.	Applicant	Title/Subject	\$\$\$	
			Project	Request
1	Van Buren County	Four Grouping project (by traffic volume) to replace existing deteriorated, aged and weathered Curve and Turn signs	\$46,197.66	\$32,533.56
11	Webster County	Upgrading Regulatory and Warning signs (Stop, Stop Ahead, No Passing Zone) on Paved Routes under 1000 ADT in Webster County.	\$45,339.20	\$27,099.20
21	Buena Vista County	Install Chevron at curve located on County Road M-44 located 4 miles North of Strom Lake Iowa	\$2,296.70	\$2,296.70
27	City Of Des Moines	Purchase and Installation of updated School Flasher Control System that Operates the City's 100 School Flashers	\$225,000.00	\$156,000.00
41	Iowa Department of Transportation, Office of Local Systems	Traffic Sign Inventory/Traffic Sign Replacement Program	\$250,000.00	\$250,000.00
43	Iowa Department of Transportation, Office of Traffic & Safety	Improved Signing at Horizontal Curves	\$1,000,000.00	\$150,000.00
45	Iowa Department of Transportation, Office of Traffic & Safety	Replacement of Overhead Red-Yellow Flashing Beacons	\$200,000.00	\$100,000.00
47	Jasper County	Upgrading Regulatory and Warning signs on County Roads F-17E & W, T-38S, F-62W and T-14S that are deteriorated in condition.	\$60,000.00	\$30,000.00
55	City of West Des Moines	Purchase Traffic Signal Battery Back-up Units at High Volume Intersection along University Ave in West Des Moines	\$117,000.00	\$117,000.00
71	City of Denison	Replace Existing Obsolete Equipment with New Mast Arms and Poles. Replace existing cables, detectors and controller with state-of-the-art equipment	\$200,000.00	\$115,000.00
93	City of Iowa City	Install Mid-way and Pedestrian Countdown signals at six intersection and make improvements to refuge areas	\$33,000.00	\$33,000.00
	Totals	11 Projects	\$2,178,833.56	\$1,012,929.46

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Curve and Turn sign replacement

Applicant Van Buren County Highway Department

Contact Person David L. Barrett, P.E. Title County Engineer

Complete Mailing Address 20554 Hwy. 1 P.O. Box 494
Keosauqua, Iowa 52565-0494

Phone (3129) 293-3663 E-Mail vbcoeng@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) _____

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 \$ 46,197.66

Safety Funds Requested \$ 32,533.56

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

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

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

Representing the Van Buren County Highway Department

Signed:


Signature

3/9/11
Date Signed

David L. Barrett
Typed Name

Attest:


Signature

3/9/11
Date Signed

Donald G. Pool
Typed Name

RESOLUTION NO. 3-7-2011
RELATING TO FUNDING
APPLICATION FOR
ROADWAY SIGNAGE

March 7, 2011

RESOLUTION

WHEREAS, the Van Buren County Engineer has recommended that an application for grant funding of replacement Curve and Turn signs in Van Buren County be submitted to the Iowa DOT for consideration under their Transportation Safety Improvement Program, and

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

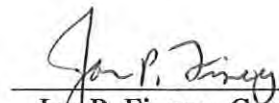
NOW THEREFORE BE IT RESOLVED that the Van Buren County Board of Supervisors do hereby agree to those terms and authorize it's chairman to sign the application form for the potential funding of sign materials.

Passed and Approved this 7TH day of March, 2011


Marvin Philips, Chair


Ted Nixon


Mark Meek

ATTEST: 
Jon P. Finney, County Auditor

VAN BUREN COUNTY
APPLICATION FOR
TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING

March 2011

Project:
Curve & Turn Sign replacement

NARRATIVE

The Van Buren County Highway Department is proposing a project to replace our existing Curve and Turn signs. The project has been divided into four groups: Group 1 consisting of curve and turn signs on hard surfaced roads. This group is our first priority since traffic volumes and average speeds are highest on these roadways. Group 2 consists of curve and turn signs on crushed stone surface roads with traffic volumes greater than 70 vehicles per day. Group 3 consists of curve and turn signs on roads with traffic volumes of 41 to 70 vehicles per day. Group 4 consists of curve and turn signs on roads with traffic volumes of 40 or less vehicles per day.

Van Buren County has promoted itself as a tourist destination for many years. Also, Van Buren County offers excellent hunting and fishing locations. These factors increase the volume of traffic on our roadway of drivers who are not residents of the area and who are unfamiliar with the many curves and turns in our road. Warning signs for approaching curves and turns are particularly important in these situations. This project would bring the curve and turns signs into compliance with the new retroreflectivity standard, and greatly enhance the safety of the traveling public.

According to our sign inventory, we have 729 existing curve and turn signs. These signs have been placed over several years and now are deteriorated due to age and weathering. Due to budget restraints there has been no program for regular replacement of these signs.

The Van Buren County Highway Department will furnish all labor and equipment for the replacement of these signs and sign installations. Estimated time and equipment costs for the project are \$46,197.66. The requested funds are for purchase of signs, posts and hardware only. We are estimating that approximately 28 % of the existing posts will need replacement. Costs for posts and hardware are based on this estimate.

**VAN BUREN COUNTY
APPLICATION FOR
TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING**

March 2011

Project:
Curve & Turn Sign replacement

COST ESTIMATE

Group 1 - Hard Surfaced Roadways

Curve/Turn signs requested:	128
Sign sheeting requested:	High Intensity Prismatic
Sign backing requested:	Aluminum
Sign size requested:	30" X 30"
Cost each (from vendor)	\$33.00
Subtotal Curve signs	\$4,224.00
 Advisory Speed Plates requested	 80
Sign sheeting requested:	High Intensity Prismatic
Sign backing requested:	Aluminum
Sign size requested:	18" X 18"
Cost each (from vendor)	\$12.00
Subtotal Adv. Sp. Plates	\$960.00
 TOTAL - Signs	 \$5,184.00
 12' Telspar Posts & 5' Bases	 32
Cost each (from vendor)	\$30.00
Subtotal 12' Posts	\$960.00
 Hardware - Angle bolts	 320
Cost each (from vendor)	\$0.48
Subtotal Post Bases	\$153.60
 GROUP 1 TOTAL REQUESTED	 \$6,297.60

**VAN BUREN COUNTY
APPLICATION FOR
TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING**

March 2011

Project:
Curve & Turn Sign replacement

COST ESTIMATE

Group 2 - Cr. Stone Surfaced Roadways
70 and greater V.P.D. AADT

Curve/Turn signs requested:	225
Sign sheeting requested:	High Intensity Prismatic
Sign backing requested:	Aluminum
Sign size requested:	30" X 30"
Cost each (from vendor)	\$33.00
Subtotal Curve signs	\$7,425.00

TOTAL - Signs	\$7,425.00
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12' Telspar Posts & 5' Bases	56
Cost each (from vendor)	\$30.00
Subtotal 12' Posts	\$1,680.00

Hardware - Angle bolts	462
Cost each (from vendor)	\$0.48
Subtotal Post Bases	\$221.76

GROUP 2 - TOTAL REQUESTED	\$9,326.76
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**VAN BUREN COUNTY
APPLICATION FOR
TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING**

March 2011

Project:
Curve & Turn Sign replacement

COST ESTIMATE

Group 3 - Cr. Stone Surfaced Roadways
41 through 70 V.P.D. AADT

Curve/Turn signs requested:	160
Sign sheeting requested:	High Intensity Prismatic
Sign backing requested:	Aluminum
Sign size requested:	30" X 30"
Cost each (from vendor)	\$33.00
Subtotal Curve signs	\$5,280.00

TOTAL - Signs	\$5,280.00
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12' Telspar Posts & 5' Bases	40
Cost each (from vendor)	\$30.00
Subtotal 12' Posts	\$1,200.00

Hardware - Angle bolts	400
Cost each (from vendor)	\$0.48
Subtotal Post Bases	\$192.00

GROUP 3 - TOTAL REQUESTED	\$6,672.00
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**VAN BUREN COUNTY
APPLICATION FOR
TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING**

March 2011

Project:
Curve & Turn Sign replacement

COST ESTIMATE

Group 4 - Cr. Stone Surfaced Roadways
40 V.P.D and less AADT

Curve/Turn signs requested:	216
Sign sheeting requested:	High Intensity Prismatic
Sign backing requested:	Aluminum
Sign size requested:	30" X 30"
Cost each (from vendor)	\$33.00
Subtotal Curve signs	\$7,128.00

TOTAL - Signs	\$7,128.00
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12' Telspar Posts & 5' Bases	54
Cost each (from vendor)	\$30.00
Subtotal 12' Posts	\$1,620.00

Hardware - Angle bolts	540
Cost each (from vendor)	\$0.48
Subtotal Post Bases	\$259.20

GROUP 4 - TOTAL REQUESTED	\$9,007.20
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VAN BUREN COUNTY
APPLICATION FOR
TRAFFIC SAFETY IMPROVEMENT PROGRAM FUNDING

March 2011

Project:
Curve & Turn Sign replacement

TIME SCHEDULE

Van Buren County proposes to begin erecting the Curve /Turn and advisory speed plate signs as soon as possible, following their delivery. This work would be accomplished with our existing work force. It will at times be necessary to suspend work on this project to complete routine maintenance on other signs, and to repair other lost or damaged signs. Delays could also 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. The length of time necessary to complete the project will depend on the number of groups that are awarded grant funds. We should be able to accomplish this within eight months after delivery.

Application for TRAFFIC SAFETY FUNDS**GENERAL INFORMATION**Location / Title of Project Signs on Paved Roads, Phase IIApplicant Webster CountyContact Person Jamie Johll Title Assistant County EngineerComplete Mailing Address 703 Central Avenue
Fort Dodge, IA 50501Phone 515-576-3281 E-Mail jjohll@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 \$ 45,339.20Safety Funds Requested \$ 27,099.20

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT


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

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

Representing the Webster County Board of Supervisors

Signed:  6-17-11
Signature Date Signed

Keith Dencklau, Chairman
Typed Name

Attest:  6-17-2011
Signature Date Signed

Carol Messerly, Webster County Auditor
Typed Name

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 much higher traffic counts than any other county in the area.

Webster County has a large population of persons over 65 years old. The percentage of Webster County residents in this age group is 30% higher than the U.S. average and 11% higher than the Iowa average.

This combination of higher traffic and an older population has resulted in high crash rates on a number of Webster County roads. In an effort to improve safety on these 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. The program consists of multiple phases. Phase I upgraded the signs along paved routes with traffic greater than 1,000 vehicles per day. Phase II will upgrade the signs on paved routes under 1,000 vehicles per day. Phase III will upgrade the signs on non-paved routes. Phase I is complete. We are seeking funding to help us implement Phase II.

The program consists of upgrading the regulatory and warning signs (stop, stop ahead, no passing zone) of various sheeting materials with an ASTM Type X or better prismatic sheeting (e.g. 3M brand Diamond Grade DG3), and increasing the overall size of the signs. The font size would also be increased and make use of Clearview font. Implementing larger, more visible signs is 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

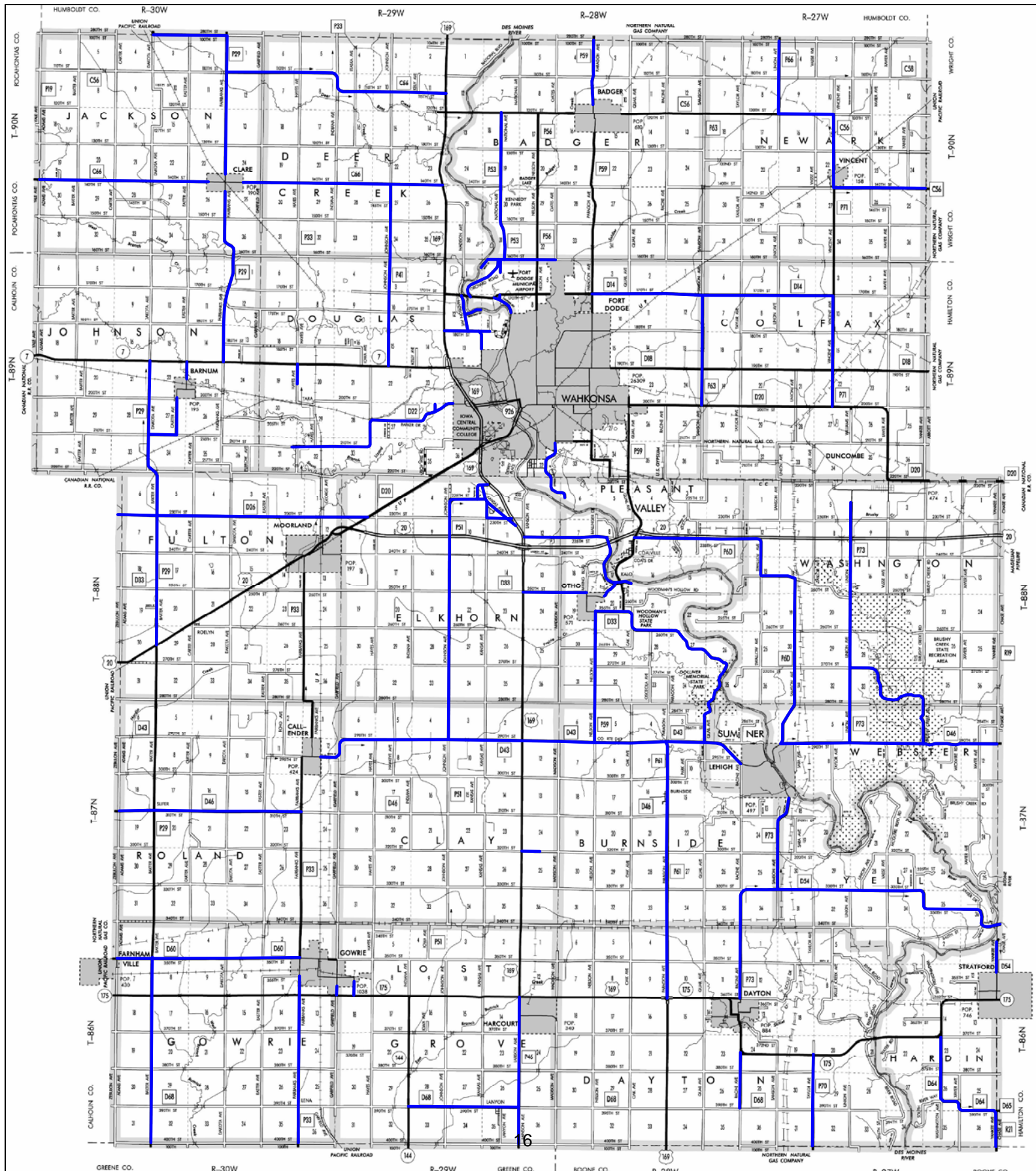
Qty	Unit Price	Total	MUTCD ID	Description
72	\$56.60	\$4,075.20	R1-1	Stop
96	\$72.00	\$6,912.00	W3-1	Stop Ahead
424	\$38.00	\$16,112.00	W14-3	No Passing Zone
		\$45,339.20	TOTAL	

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 2012, Webster County Secondary Roads employees will begin installing the signs. We anticipate the project to be complete by August 31, 2012.

Webster County, Iowa

Paved Roads with AADT<1,000 VPD



Pictures



30" Stop Sign on High Intensity



24" No Passing Zone on High Intensity



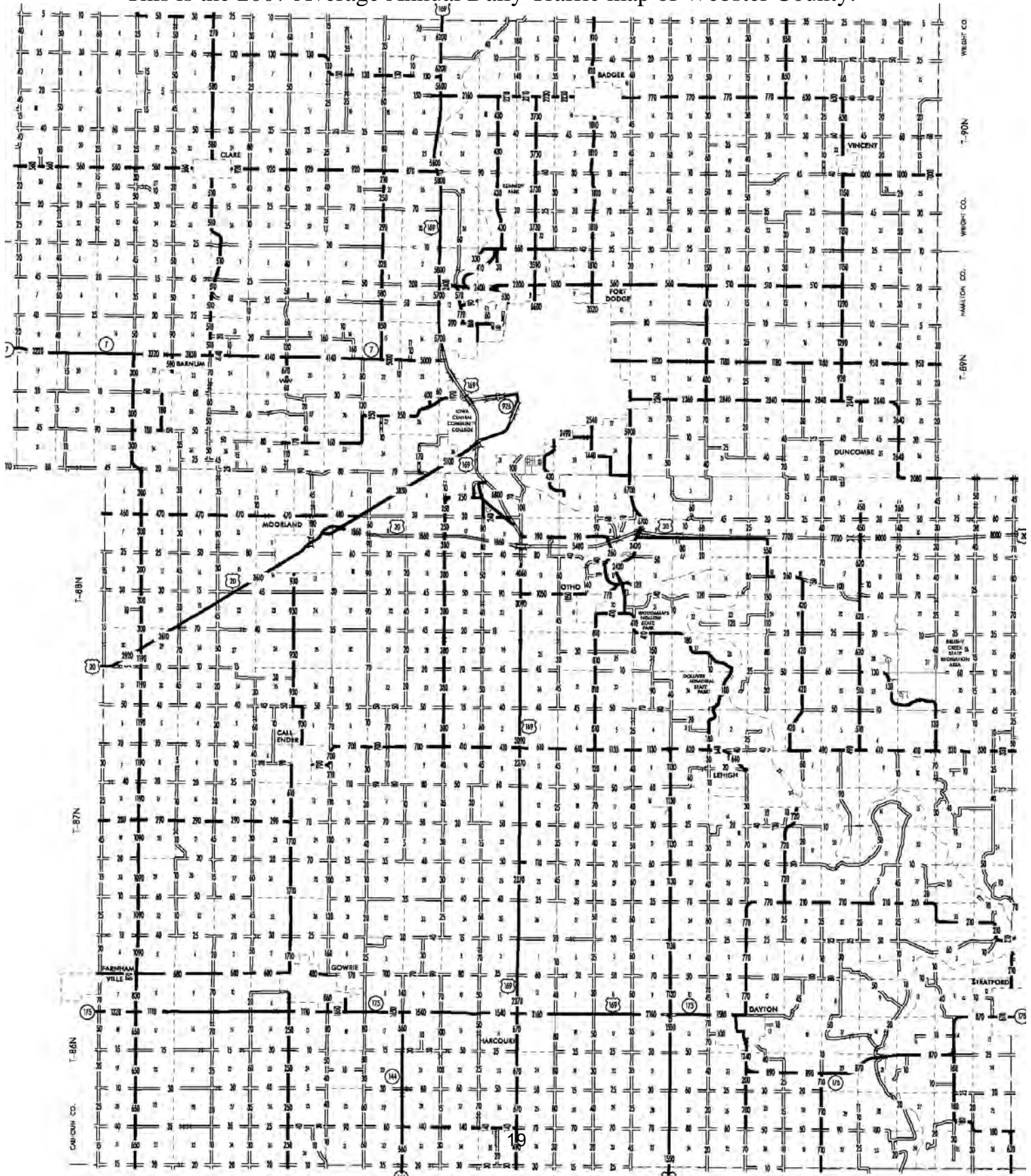
30" Stop Ahead on Engineering Grade

Plan View

A plan view is not applicable to this project.

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 County Road M44 - Section 10, T91N, R37W

Applicant Buena Vista County

Contact Person Jon L. Ites Title County Engineer

Complete Mailing Address PO Box 368
Storm Lake, Iowa 50588

Phone (712) 749-2540 E-Mail jites@co.buena-vista.ia.us
(Area Code)

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

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount

Total Project Cost \$ 2,296.70

Safety Funds Requested \$ 2,296.70

Item B

The proposed project site is a curve located on County Road M44 approximately 4 miles north of Storm Lake in Buena Vista County. This route is a major collector for the City of Storm Lake and has close to 2,000 AADT. The speed limit at the curve is 55 mph and also serves as an intersection for County Roads M44 and C43.

For Safety reasons, Buena Vista County would like to install chevrons around this curve. There have been several accidents at this curve including a fatality 2 years ago. According to Table 2C-6 of the MUTCD, Buena Vista County would like to install 12 double chevrons at a spacing of 160' around the curve with a length of 1,821 feet.

Item C

Breakdown of Costs are as follows:

Labor: 2 men x 10 hours	\$409.50
Equipment: pickup (2hr) + Sign Truck (8hr)	\$320.00
Materials: 24 W1-8 Chevrons (18"x24" HIP)	24 x \$25.85 = \$620.40
12 Double Post Brackets	12 x \$34.50 = \$414.00
12 Galvanized Posts	12 x \$44.40 = \$532.80

-Prices were obtained from Tapco Sign Company

Item D

Time Schedule: Buena Vista would install the chevrons in the spring or summer of 2012.

HIGHWAY AND TRANSPORTATION MAP



Prepared By
**Iowa Department
of Transportation**

United States
Department of Transportation

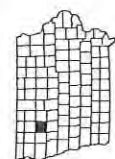
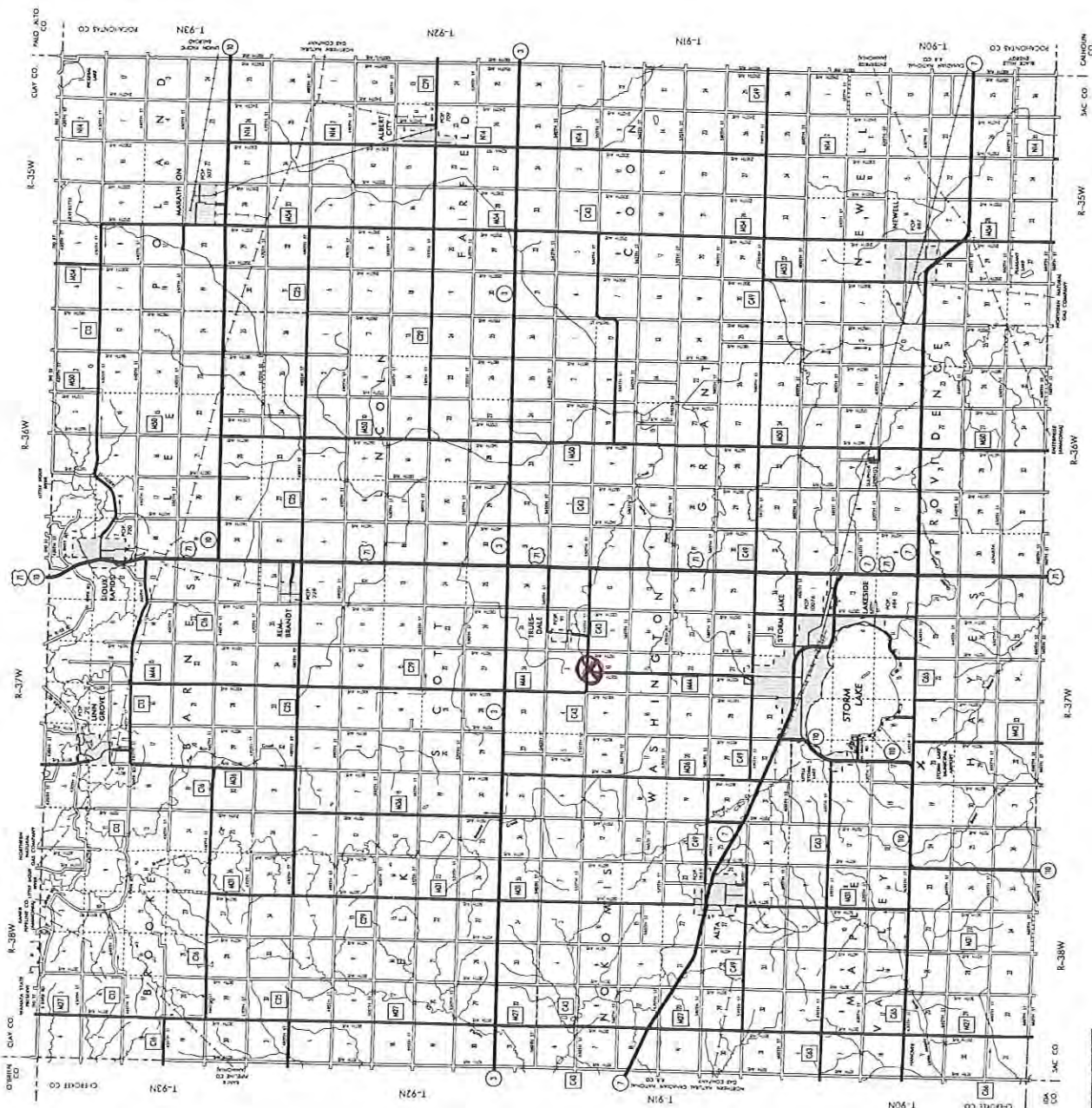


JANUARY 1, 2009


$$10 - 14 = 24$$

LEGEND

- [illegible]



Location of Project

ITEM E

11

Item F



M44 curve looking north



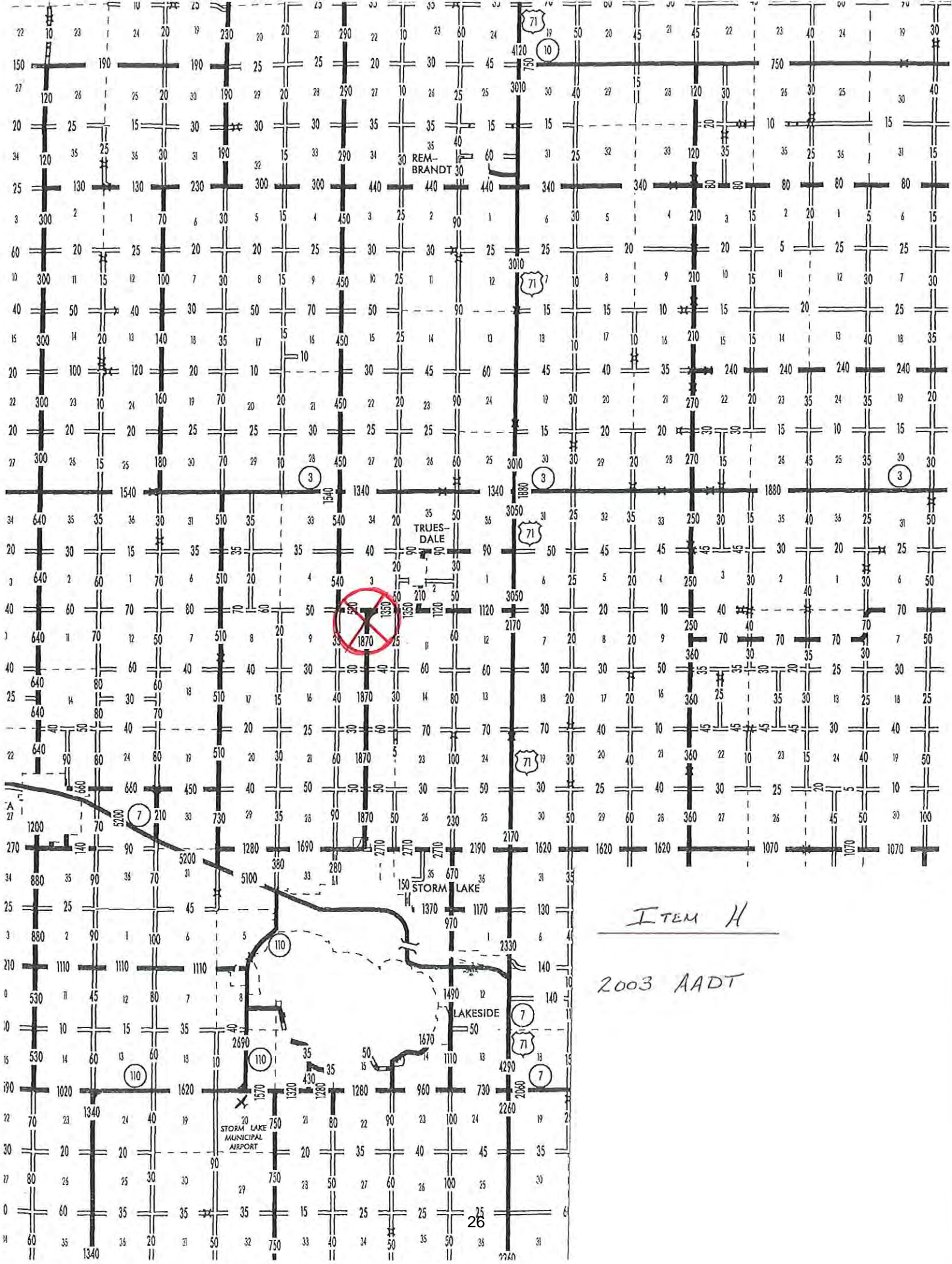
M44 curve looking west

ITEM G

CH C43 550th ST.

$\Delta = 91^{\circ} 04' RT$
 $D = 5^{\circ}$
 $T = 1,167.5'$
 $L = 1,821.3'$
 $E = 490.0$
 $R = 1,146.0$
 $PC = 250 + 40.6$
 $PT = 268 + 61.9$

Sign Spacing = 160'
- MUTED TABLE 2C-6




**Iowa Department
of Transportation**

Rev. 3/08

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 Location / Title of Project Citywide School Flasher System Upgrade

 Applicant City of Des Moines

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

 Complete Mailing Address 800 East Court Avenue, Suite 200
Des Moines, IA 50309

 Phone 515-283-4070 E-Mail mpring@dmgov.org

(Area Code)

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

 Co-Applicant(s) N/A

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____

(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:
Application Type

 Site Specific ☐
 Traffic Control Device ☒
 Safety Study ☐
Funding Amount

 Total Project Cost \$ 225,000

 Safety Funds Requested \$ 156,000

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

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

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

Representing the _____

Signed:


Signature

JUN 13 2011

Date Signed

T. M. Franklin Cownie, Mayor

Typed Name

Attest:


Signature

JUN 13 2011

Date Signed

Diane Rauh, City Clerk

Typed Name

★ Roll Call Number

11-0863

Agenda Item Number

9Date May 23, 2011

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

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

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

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

(Council Communication Number 11-307 Attached)

Moved by Hensley to adopt.

APPROVED AS TO FORM:

Kathleen Vanderpool
Kathleen Vanderpool
Deputy City Attorney

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

MOTION CARRIED

APPROVED

T. M. Franklin Cownie
Mayor

CERTIFICATE

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

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

Diane Rauh

City Clerk

PROJECT DESCRIPTION

CITYWIDE SCHOOL FLASHER SYSTEM UPGRADE

(TRAFFIC CONTROL DEVICE CATEGORY)

Project Description:

The project involves the purchase and installation of an updated school flasher control system that will operate the city's 100 school flashers. Two-way communications will be provided between the central control system and each school flasher assembly. A contractor would be hired to install the central portion of the communications system. The City would be responsible for installation of the equipment needed at the school flasher sites. The total project cost is \$225,000. The City is requesting \$156,000 in Traffic Safety Funds, which is the cost of the equipment.

This project will involve 52 of the city's major corridors that are immediately adjacent to schools. See the "Vicinity Map" below for a summary of all locations.

Existing Conditions:

The City currently operates a School Flasher Control System that was installed in the late 1980's and utilizes out-dated, limited technology. The existing system utilizes a radio-frequency signal that turns on the school flashers at each school during arrival and dismissal times. When energized, these flashers reduce the speed limit to 25 MPH in proximity of each school. The system has very limited flexibility, especially for "early-out" days, "late-start" days, "snow days", or other times when the school's hours vary from normal hours. Because of these limitations, there are times when the school arrival and dismissal hours are not controlled by the lower speed limit, so vehicles are legally travelling faster than the desired speed of 25 MPH.

Another limitation of the existing flasher system is that it only provides for "one-way" communications – sending out a message to turn on and off the school flashers. There is no "return message" verification that the flasher units are actually operating. The City must rely on citizen reports or other field-verification to determine whether the school flashers are working. The result of this limitation is that there can be days or weeks when the signals are not flashing correctly.

Project Justification:

The primary goal of the City's school flasher control system is to reduce the speed of traffic during the times that children are arriving or dismissing at school. Better compliance to this can be received if motorists are allowed to drive at what they think is a "reasonable speed" along the corridor. When school is not in session and no children are present, the driver has a different concept of what a "reasonable speed" is than when children are present. To accomplish this, the school flasher system provides a two-tiered speed limit for the motoring public: (1) a lower speed (25 MPH) when children are expected to be present, and (2) a higher speed limit (30 to 40 MPH) when no children are expected.

The proposed improvement will provide (1) a more reliable and accountable system to insure that the school flasher assemblies are operating when they should be operating, and (2) a much more flexible system that allows the times of operation to better coincide with the actual hours that children are arriving and dismissing at each school. This will provide lower vehicle speeds in proximity of the schools, which in turn will affect the safety of children

walking and bicycling to school. Several studies have indicated that the slower the motorists' speed, the less likely a pedestrian will be hit and injured.

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

- The primary safety benefit will be slower speeds and more awareness by the driver that children may be present during the school's arrival and dismissal times.
- Traffic should tend to operate at a more uniform speed, so the "speed differential" would be lessened. This should occur during all periods of the day. While the signs are flashing, motorists should be more acceptable to driving the revised speed limit, knowing that it is on only during the times when school is arriving/dismissing. When the signs are not flashing, motorists would be allowed to travel at a somewhat higher rate of speed, since the pedestrian conditions would be lessened. This lessening of the "speed differential" should result in a reduced number of rear-end and sideswipe crashes.

In order to identify an approximate number of pedestrian crashes that occur near schools in Des Moines, previous data was utilized that was compiled by the Center for Transportation Research and Education (CTRE) as part of an Iowa Traffic Safety Data Services (ITSDS) request. In 2001, the city requested the number of school-age pedestrian crashes during school hours within ½ mile of the 10 middle schools in Des Moines. Using 5-year data (1995-1999), CTRE identified 32 crashes that involved 5-14 year old children, which correlates to a rate of 6.4 crashes per year for the 10 schools. In these 32 crashes, there were 9 major injuries, 15 minor injuries, and 8 possible injuries.

Assuming the same rate per year for all 52 school locations where school flashers are present, there would be 33 school-age pedestrian crashes per year. Further, there would be 9 major injuries, 16 minor injuries per year, and 8 possible injuries per year.

A "Benefit/Cost" analysis was conducted using these injury numbers. Assuming a project life of 10 years and a Crash Reduction Factor of 1%, this relates to a 1.74:1 benefit/cost ratio.

On the following page is a table showing the data prepared in the 2001 school crash review.

Table 3: Pedestrian Crashes within ½ Mile of Middle Schools in Des Moines between 1995 and 1999 by
Age: 5 to 19 / Period: August 15th to June 15th
Day: Monday through Friday / Time: 7.00 A.M through 5.00 P.M

SCHOOL NAME	SEVERITY	AGE GROUPS		
		5 to 11	12 to 14	15 to 19
BRODY	Fatal			
	Major			
	Minor			
	Possible/Unknown			1
CALLAHAN	Fatal			
	Major		1	
	Minor			
	Possible/Unknown	1	1	
GOODRELL	Fatal			
	Major			
	Minor		1	1
	Possible/Unknown			
HARDING	Fatal			
	Major		2	
	Minor	1		1
	Possible/Unknown		1	
HIATT	Fatal			
	Major	3		
	Minor	3	2	1
	Possible/Unknown	2	1	3
HOYT	Fatal			
	Major		1	
	Minor	1	1	
	Possible/Unknown			
MCCOMBS	Fatal			
	Major			
	Minor	1		
	Possible/Unknown			
MEREDITH	Fatal			
	Major			
	Minor	1		
	Possible/Unknown	1		1
MERRILL	Fatal			
	Major			
	Minor	1		
	Possible/Unknown			
WEEKS	Fatal			
	Major	1	1	
	Minor	2	1	
	Possible/Unknown	1		
Total		19	13	8
GRAND TOTAL		40		

COST ESTIMATE***Citywide School Flasher
System Upgrade***

Item	Quantity	Unit	Unit Price	Requested TSIP Funds	Costs by City	Total Cost
Preliminary Engineering						
(by City Staff)	1	LS	\$5,000		\$5,000	\$5,000
Equipment Installation						
(portion by City Staff)	1	LS	\$40,000		\$40,000	\$40,000
Project Construction						
System Software	1	LS	\$5,000	\$5,000		\$5,000
Programmable time clock	100	Each	\$1,100	\$110,000		\$110,000
Communications antenna	100	Each	\$150	\$15,000		\$15,000
Gateway interface unit	20	Each	\$1,100	\$22,000		\$22,000
Gateway antenna	20	Each	\$200	\$4,000		\$4,000
Equipment Installation – by contract	1	LS	\$24,000		\$24,000	\$24,000
TOTALS				\$156,000	\$ 69,000	\$225,000

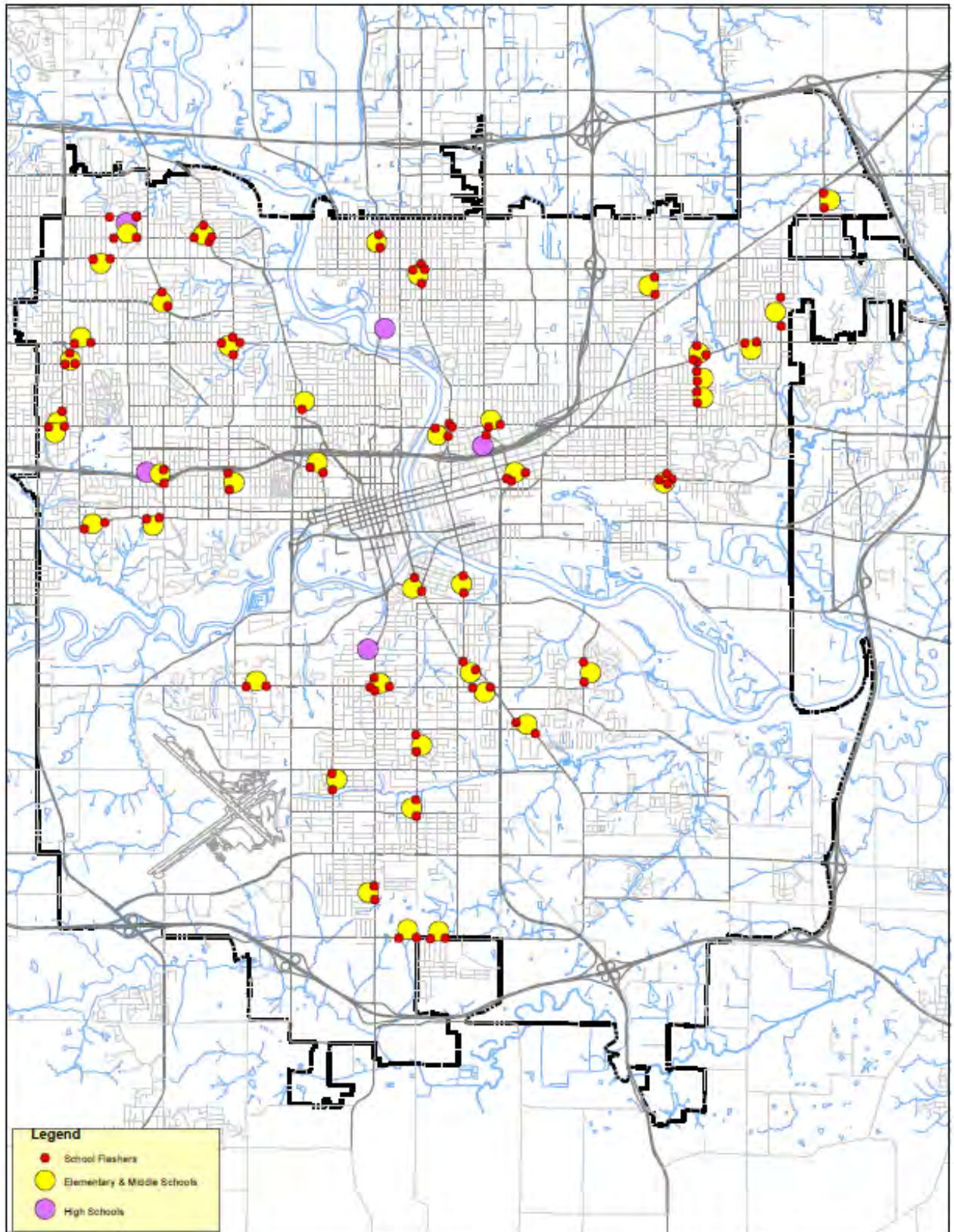
(MATERIAL/EQUIPMENT COST): \$156,000**(INSTALLATION COST): \$69,000****TOTAL PROJECT COST: \$225,000****TSF FUNDS REQUESTED*: \$156,000*****Material and Equipment Costs Only**

Citywide School Flasher System Upgrade

TIME SCHEDULE

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

School Flasher Locations



Photographs of area



School Flasher Assembly – Example No. 1



School Flasher Assembly – Example No. 2



School Flasher Assembly – close-up

Traffic Volume Information

This project will affect over 50 streets within the City of Des Moines, with traffic volumes ranging from 1,000 vehicles per day to 20,000 vehicles per day.

Specific traffic count data can be provided by the City if desired.

Intersection or Spot Benefit / Cost Safety Analysis						Rev. 8/09
Iowa DOT Office of Traffic & Safety						
County:	Polk	Prepared by:	Mike Ring	Date Prepared:	Jun 7, 2011	
Intersection:	Citywide School Flasher System Upgrade					
Improvement						
Proposed Improvement(s):		Replace existing system				
\$ 156,000	Estimated Improvement Cost, EC	10	Est. Improvement Life, years, Y			
\$ -	Other Annual Cost (after initial year), AC	1	Crash Reduction Factor (integer), CRF			
\$ -	Present Value Other Annual Costs, OC	4.0%	Discount Rate (time value of \$), INT			
$OC = \frac{AC}{INT} \left(1 - \frac{1}{(1 + INT)^Y} \right)$		\$ 156,000	Present Value Cost, COST = EC + OC			
Traffic Volume Data						
Source:	City traffic counts	2009	Date of traffic count			
Daily Entering Vehicles by Approach (or AADT / 2)						
		4,380,000	Current Annual Entering Veh., AEV = DEV * 365			
		13,255	veh / day, Final Year DEV, FDEV			
		45.82	MEV, Total Million Entering Veh. Over life of Project, TMEV			
1.0%	Projected Traffic Growth (0%-10%), G	$TMEV = \frac{AEV}{-G} \left(1 - \left(\frac{1+G}{1} \right)^Y \right) / 10^6$				
12,000	Current Daily Entering Vehicles, DEV					
Crash Data						
1999	First full year -->	1999	Last full year	1.0 years, Time Period, T		
Additional months		values as of Dec. 2007				
0	Fatal Crashes	0	Fatalities @	\$3,500,000	\$ -	
		9	Major Injuries @	\$240,000	\$ 2,160,000	
33	Injury Crashes	16	Minor Injuries @	\$48,000	\$ 768,000	
		8	Possible Injuries @	\$25,000	\$ 200,000	
0	Property Damage Only	(assumed cost per crash)		\$2,700	\$ 89,100	
-OR- enter all Property Costs of all crashes:				\$ -		
33	Total Crashes, TA	Total \$ Loss, LOSS		\$ 3,217,100		
33.00	Current Crashes / Year, AA = TA / T	7.53	Crashes / MEV, Crash Rate, CR			
\$ 97,488	Cost per Crash, AVC = LOSS / TA	CR = TA x 10 ⁶ / (DEV x 365 x T)				
345.3	Total Expected Crashes, TECR = CR x TMEV	\$ 272,120	Present Value of Avoided Crashes, BENEFIT			
0.33	Crashes Avoided First Year AAR = AA x CRF / 100					
\$ 32,171	Crash Costs Avoided in First Year, AAR x AVC					
3.5	Total Avoided Crashes, TECR x CRF / 100	$BEN = \frac{AVC \times AAR}{(INT - G)} \left(1 - \left(\frac{1+G}{1+INT} \right)^Y \right)$				
Benefit / Cost Ratio						
Benefit : Cost =		\$272,120	:	\$156,000	=	1.74 : 1



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Traffic Sign Inventory/Traffic Sign Replacement Program

Applicant Iowa Department of Transportation

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

Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

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 and fill in the information below (use additional sheets if necessary).

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount

Total Project Cost \$ 250,000

Safety Funds Requested \$ 250,000

IOWA DEPARTMENT OF TRANSPORTATION

To Office	Traffic and Safety	Date	June 9, 2011
Attention	Terry Ostendorf	Ref. No.	800
From	John Dostart, P.E.		
Office	Local Systems		
Subject	Funding Request for City Sign Replacement Program, FY 2013		

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. Last year the program was not funded due to the program having a large balance. Over the past year, at least 55 small cities were provided funding at a cost of over \$100,000.

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 an 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 current 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.

In view of the expected 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. This amount is anticipated to be necessary to meet the demand from expanding the program to cover all cities.

Please contact John Dostart if you have any questions.

Attachment

cc: Jeremy Vortherms, P.E.
Kurtis Younkin, P.E.
Steve Gent, P.E.
Charlie Purcell, P.E.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Improved Signing at Horizontal Curves

Applicant Iowa DOT, Office of Traffic & Safety

Contact Person Steven Schroder Title Traffic Safety Engineer

Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

Phone 515-239-1623 E-Mail Steven.Schroder@dot.iowa.gov
(Area Code)

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

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount

Total Project Cost \$ 1,000,000

Safety Funds Requested \$ 150,000

Title

Improved Signing at Horizontal Curves

Narrative

Local and national research indicates that a high portion of rural run-off-the-road crashes occur at horizontal curves, and that many of those crashes can be mitigated through low-cost solutions such as installing advance curve warning signs, chevron signs, or replacing existing curve warning signs with larger and/or brighter curve warning signs.

In conjunction with the safety benefits of better curve signing, the 2009 Manual on Uniform Traffic Control Devices (MUTCD) includes additional guidance and requirements for signing, specifically related to horizontal curves. These funds will help counties comply with the nominal safety requirements defined in the MUTCD.

These funds will be used to provide curve warning and chevron signs for high-crash locations, including additional funding the curve sign program for counties.

Applicant

Steven Schroder
Iowa DOT, Office of Traffic & Safety

On Behalf of Counties and Iowa DOT



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Replacement of Overhead Red-Yellow Flashing Beacons

Applicant Iowa DOT, Office of Traffic & Safety

Contact Person Tim Simodynes Title Traffic Safety Engineer

Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

Phone 515-239-1349 E-Mail Tim.Simodynes@dot.iowa.gov
(Area Code)

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

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount

Total Project Cost \$ 200,000

Safety Funds Requested \$ 100,000

Title

Replacement of Overhead Red-Yellow Flashing Beacons

Narrative

In the past, one mitigation for crashes at rural, two-way stop controlled intersections was to install overhead red and yellow flashing beacons over the center of the intersection. The red flashing lights face the stop-controlled minor approach and the yellow flashing lights face the through traffic on the major road approaches.

Research and experience has shown that this arrangement can lead to driver error when minor-road drivers see the overhead flashing red beacon and incorrectly assume that all the beacons are flashing red and the entire intersection is all-way stop controlled. The result can be an increase in minor road “failed to yield from stop sign” crashes.

An alternative to overhead flashing red and yellow beacons is to mount red flashing beacons on the top of the stop signs, and mount the yellow flashing beacons on top of intersection ahead warning signs, in advance of the intersection.

These funds will be used to replace overhead red-yellow flashing beacons with sign-mounted signs as described previously. Replacement sites will be prioritized based on applicable crash history and traffic volumes.

Applicant

Tim Simodynes

Office of Traffic & Safety



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Traffic Control Device Replacements
Applicant Jasper County Secondary Roads
Contact Person Russell Stutt Title County Engineer
Complete Mailing Address 910 N 11th Ave E
Newton, IA 50208
Phone 641-792-5862 E-Mail rsjasper@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 \$ 60,000.00
Safety Funds Requested \$ 30,000.00

A

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

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

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

Representing the Jasper County Board of Supervisors

Signed:

Dennis Stevenson
Signature

6-14-11
Date Signed

Dennis Stevenson (Chairman of the Board)
Typed Name

Attest:

Tina Mulgrew Deputy Auditor
Signature

6-14-11
Date Signed

Tina Mulgrew (Deputy Auditor)

Dennis Parrott (Auditor)
Typed Name

NARRATIVE

Jasper County's lower grade sheeting signs have deteriorated in condition, and along with the changing retro-reflectivity standards are overdue for replacement. According to our sign inventory, we have 848 warning, routing and regulatory signs on Jasper County Roads F-17E & W, T-38S, F-62W and T-14S they utilize lower grade sheeting and would like to upgrade these signs to the newer Diamond Grade or Prismatic Grade sheeting. This replacement would provide compliance with the new standard, and provide EXCELLENT reflectivity for the motorist in Jasper County.

The safety benefits of using the high visibility signs will be realized after installation by demanding the motorist's attention and increasing their awareness to upcoming hazards. It will also allow Jasper County to move closer to completing the conversion path dictated by the federal MUTCD timeline.

COST ESTIMATE FOR SIGN REPLACEMENTS

Jasper County
June 13, 2011

Number of signs requested	848
Sign Sheeting requested:	Diamond / or Hi Intensity with Prismatic
Sign backing requested:	Aluminum
Sign size requested:	Various Sizes

Total Grant Request: \$ 30,000.00

Copy of sign listing estimate attached.

Jasper County Cost Estimate Based On Recent Invoices.

C

Sign Legend	Size	Route	Quantity	Price Per	
				Each	Total Cost
STOP	36" X 36"	F 17 E	14	43.00	602.00
		F17W	25	43.00	1075.00
		T 14 S	12	43.00	516.00
		T 38 S	21	43.00	903.00
		F 62 E	25	43.00	1075.00
STOP AHEAD	36" X 36"	F 17 E	2	76.10	152.20
		F17W	4	76.10	304.40
		T 14 S	0	76.10	0.00
		T 38 S	6	76.10	456.60
		F 62 E	9	76.10	684.90
NO PASSING ZONE	36" X 48"	F 17 E	13	43.80	569.40
		F17W	27	43.80	1182.60
		T 14 S	7	43.80	306.60
		T 38 S	48	43.80	2102.40
		F 62 E	45	43.80	1971.00
SPEED LIMIT / SPEED ZONE AHEAD	24" X 30"	F 17 E	4	42.00	168.00
		F17W	15	42.00	630.00
		T 14 S	0	42.00	0.00
		T 38 S	6	42.00	252.00
		F 62 E	23	42.00	966.00
CHEVRON	18" X 24"	F 17 E	0	31.20	0.00
		F17W	12	31.20	374.40
		T 14 S	38	31.20	1185.60
		T 38 S	144	31.20	4492.80
		F 62 E	76	31.20	2371.20
Object Markers	12" X 36"	F 17 E	0	32.10	0.00
		F17W	8	32.10	256.80
		T 14 S	0	32.10	0.00
		T 38 S	4	32.10	128.40
		F 62 E	24	32.10	770.40
CURVES / TURNS	36" X 36"	F 17 E	0	57.60	0.00
		F17W	1	57.60	57.60
		T 14 S	9	57.60	518.40
		T 38 S	18	57.60	1036.80
		F 62 E	18	57.60	1036.80
ROUTE MARKERS	24" X 24"	F 17 E	14	33.40	467.60
		F17W	26	33.40	868.40
		T 14 S	8	33.40	267.20
		T 38 S	30	33.40	1002.00
		F 62 E	46	33.40	1536.40
ROUTE MARKER ARROWS/ JCT/ EAST/WEST/NORTH/ SOUTH		ALL RTS	66	30.00	1980.00
Grand Total			848		\$32,267.90

TIME SCHEDULE

Jasper County proposes to begin erecting the 848 requested signs as soon as possible, following delivery. This work would be accomplished with our existing work force and delays could be possible from natural causes, 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 4 to 5 months after delivery.

Map of Route Locations Listed in the TSIP Application 6/13/2011

HIGHWAY AND TRANSPORTATION MAP

JASPER COUNTY

IOWA



United States
Department of Transportation

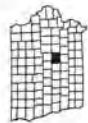
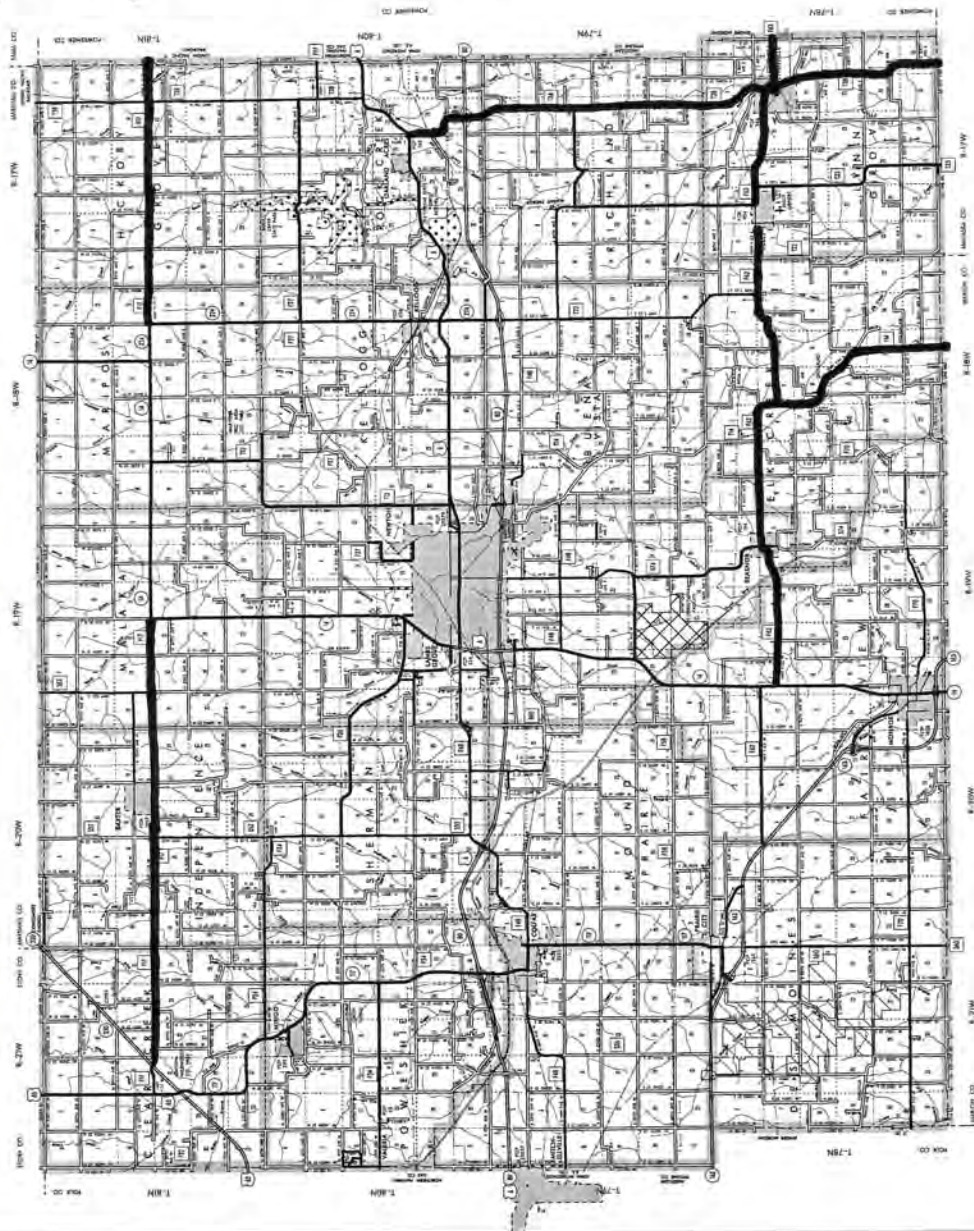


JANUARY 1, 2005



LEGEND

Interstate	State Highway	County Road	Waterway	Unimproved Road	Proposed Road	Other
Thick solid line with red and blue shields	Thin solid line with blue shield	Dashed line	Blue line with wavy pattern	Thin solid line	Thin solid line with cross-hatch pattern	Various symbols for bridges, tunnels, etc.



E



F

EXAMPLE PICTURES OF SIGNS TO BE REPLACED



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Traffic Signal Battery Backup Units - University Avenue
Applicant City of West Des Moines, Iowa
Contact Person Jim Dickinson, PE Title Principal Engineer - Traffic
Complete Mailing Address 560 South 16th Street
West Des Moines, Iowa 50265
Phone 515-222-3480 E-Mail Jim.Dickinson@wdm-ia.com
(Area Code)

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

Co-Applicant(s) City of Clive
Contact Person Bart Weller Title Public Works Director
Complete Mailing Address 2123 NW 111th Street
Clive, Iowa 50325
Phone 515-223-6231 E-Mail bweller@cityofclive.com
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount


Total Project Cost \$ 117,000
Safety Funds Requested \$ 117,000

APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

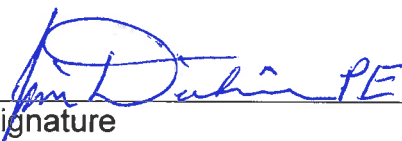
To the best of my knowledge and belief, all information included in this application is true and accurate, including the commitment of all physical and financial resources. This application has been duly authorized by the participating local government(s). I understand the attached resolution(s) binds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

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

Representing the City of West Des Moines

Signed:  6-15-11
Signature Date Signed

Bret Hodne, Director of Public Works
Typed Name

Attest:  PE 6-15-11
Signature Date Signed

Jim Dickinson, Principal Engineer - Traffic
Typed Name

**RESOLUTION APPROVING GRANT APPLICATION
FOR TRAFFIC SIGNAL IMPROVEMENT PROGRAM (TSIP) FUNDS**


WHEREAS, the City Council of the City of West Des Moines strongly promotes the reduction of traffic congestion and the safe, continuous operation of the city's traffic control signals,

therefore,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF WEST DES MOINES, IOWA, authorization is given to the City Engineer to apply for Traffic Safety Improvement Program (TSIP) Funds.


BE IT FURTHER RESOLVED, that if the projects are funded, the City of West Des Moines will adequately maintain the completed project for its intended public use following project completion.

PASSED AND APPROVED this 13th day of June, 2011.



Steven K. Gaer, Mayor

ATTEST:



Jody E. Smith, CMFA, MMC
City Clerk

COUNCIL ACTION	YEAS	NAYS	ABST.	ABSENT
TREVILLYAN	✓			
SCHNEIDER	✓			
TRIMBLE	✓			
OHMART	✓			
SANDAGER	✓			
MOTION BY <u>Ohmart</u>				
SECOND BY <u>Trevillyan</u>				
ROLL CALL # <u>11-228</u>				

11-06-13-01



June 14, 2011

Administration
Phone 515-223-6220
1900 NW 114th Street
Clive, IA 50325-7077
Fax 515-457-3091

Community
Development
Phone 515-223-6221
1900 NW 114th Street
Clive, IA 50325-7077
Fax 515-457-3091

Parks & Recreation
Phone 515-223-5246
1900 NW 114th Street
Clive, IA 50325-7077
Fax 515-457-3092
Aquatic Center
Phone 515-440-0599

Public Library
Phone 515-453-2221
1900 NW 114th Street
Clive, IA 50325-7077
Fax 515-453-2246

Fire Administration
Phone 515-223-1595
8505 Harbach Boulevard
Clive, IA 50325-1029
Fax 515-223-6457

Police Administration
Phone 515-278-1312
8505 Harbach Boulevard
Clive, IA 50325-1029
Fax 515-278-6066

Public Works
Phone 515-223-6231
2123 NW 111th Street
Clive, IA 50325-6917
Fax 515-223-6013

www.cityofclive.com

Jim Dickinson
Principal Engineer - Traffic
City of West Des Moines
P.O. Box 65320
West Des Moines, IA 50265

RE: Traffic Safety Improvement Program Application Letter of Support

Dear Jim:

This letter is in support of the Traffic Safety Improvements Program Application (TSIP) through the Iowa Department of Transportation for the installation of a battery backup system on all shared traffic signals along University Avenue in Clive and West Des Moines.

Retrofitting the intersections along University Ave with a battery backup system is another step to increase the safety of motorist and reduced traffic congestion by allowing traffic signals to function during a power failure. Furthermore it eliminates staff time to deploy temporary stop measures or police officers having to control traffic.

Sincerely,

Bart Weller
Director of Public Works

Cc: Dennis Henderson, City Manager

NARRATIVE**Traffic Signal Battery Backup Units – University Avenue
West Des Moines and Clive, Iowa**

The cities of West Des Moines and Clive are submitting this application for Traffic Safety Improvement Program funds under the Traffic Control Device category. The funding request is to provide for the purchase of battery backup units to install at the eighteen (18) signalized intersections shared by West Des Moines and Clive. The battery backup unit is located in a separate cabinet that is mounted on or adjacent to the existing traffic signal cabinet. The city of West Des Moines is responsible for the operation and maintenance of these intersections in accordance with a 28E agreement between West Des Moines and Clive. Clive shares in the electrical and maintenance costs for these intersections.

University Avenue is five-lane facility from 22nd Street on the east end through 142nd Street on the west end. There is a raised concrete median with left turn lanes provided at the intersections. Daily traffic volumes obtained in 2010 range from 13,244 to 33,344 vehicles per day. The arterial serves as a major route to office and commercial areas along the corridor. Valley West Mall is located along the south side of University Avenue at the intersection of Valley West Drive. The corridor experiences many motorists that are familiar with the area and many that are from out-of-town that are not so familiar with where they are going.

Currently when there is a power outage, planned or unplanned, the affected traffic signals cease to operate. This blacked out signal condition would require all drivers to treat these signals as all way stops. However, in reality, many drivers treat a blacked out signal as a green, especially drivers on the major street.

Typically when traffic signals are blacked out, the Public Works Department will deploy temporary stop signs. This requires the signal technicians to go to the Public Works Facility, load the stop signs, and then place the stop signs at the intersection or intersections. There have been instances that the power outage has been so extensive that there were not enough temporary stop signs available to place at all of the impacted intersections. All of these steps take time and divert the city traffic technicians and police personnel away from their primary responsibilities. When these outages occur during non-working hours, response times are longer. Traffic signal technicians must be called out from home and travel to the Public Works Facility to load up the stop signs.

The use of LED traffic signal indications at the intersections has made it possible to install battery backup units at the signal cabinet to provide power during the electrical outages. The battery backup unit can provide full operation of a traffic signal for over five hours. With the battery backup unit installed at a traffic signal, traffic safety and the

safety of City personnel is enhanced and traffic congestion, confusion, and delay are minimized.

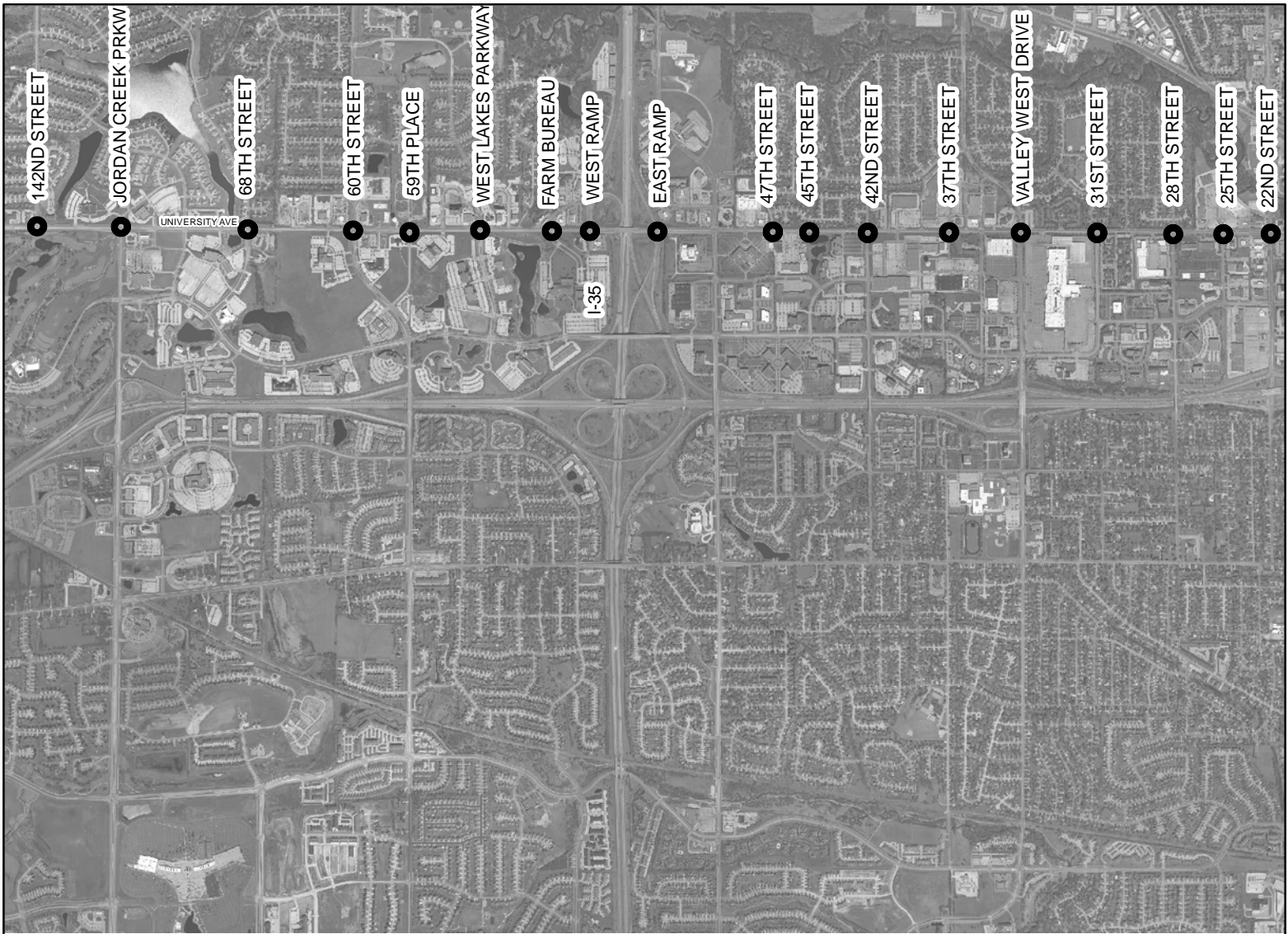
The objective of installing traffic signal battery backup units is to increase public safety and reduce traffic congestion by allowing traffic signals to function even during a power failure. A typical traffic signal intersection experiences eight to ten local power outages annually of varying lengths of time. By immediately going to battery backup power during a power outage and keeping the signals in operation will provide increased safety to the public and eliminate the need to dispatch police or signal technicians to control traffic or set up temporary stop signs. Providing continuous signal operation, even during a power outage, will improve the safety of the intersection as well as reduce traffic crashes and congestion that would occur if the signals are out during a power outage.

ITEMIZED BREAKDOWN OF COST**Traffic Signal Battery Backup Units – University Avenue
West Des Moines and Clive, Iowa**

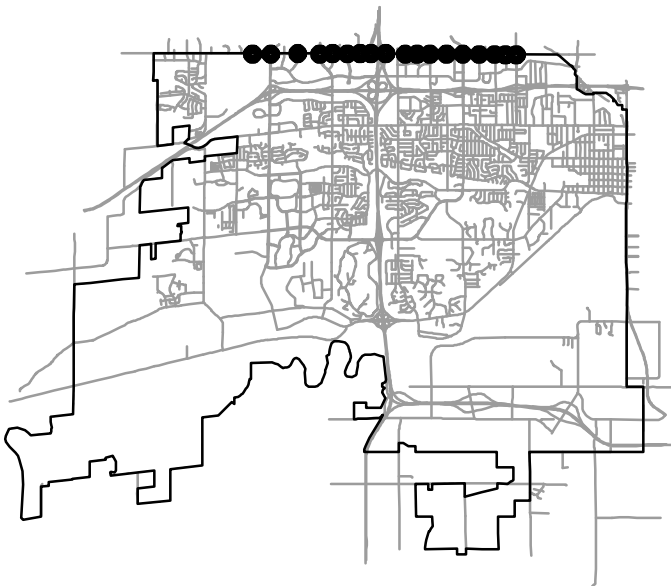
<u>Description</u>	<u>Cost</u>
Traffic Signal Battery Backup Unit 18 units @ \$6,500 each =	\$117,000

TIME SCHEDULE**Traffic Signal Battery Backup Units – University Avenue
West Des Moines and Clive, Iowa**

TSIP Funding Application	June, 2011
TSIP Project Selection	December, 2011
TSIP Funding Available	July, 2012
Project Letting	July, 2012
Project Construction	July, 2012
Project Completion	October, 2012



VICINTY MAP



LEGEND

PROJECT LOCATION



**DEPARTMENT OF PUBLIC WORKS
ENGINEERING DIVISION**

560 S. 16TH STREET (515)222-3475
WEST DES MOINES, IOWA 50265
FAX NO. (515)222-3478

PROJECT:

TSIP Funding

LOCATION:

Various Locations Along University Avenue

DRAWN BY: REF

DATE: 6/6/2011

SHT. 1 OF 1

PICTURES**Traffic Signal Battery Backup Units – University Avenue
West Des Moines and Clive, Iowa**

Battery Backup Unit



University Avenue
Looking West From Jordan Creek Parkway



University Avenue
Looking East From 59th Place



University Avenue
Looking East From I-35/80 Bridge



22nd Street and University Avenue
Looking South

TRAFFIC VOLUMES

Traffic Signal Battery Backup Units – University Avenue West Des Moines and Clive, Iowa

2010 Two-Way Daily Traffic Volumes On University Avenue (Vehicles Per Day)

22 nd Street to 25 th Street	13,244
25 th Street to 28 th Street	19,180
31 st Street to Valley West Drive	19,194
36 th Street to 42 nd Street	20,090
42 nd Street to 50 th Street	23,737
50 th Street to East I-35/80 Ramp	33,344
I-35/80 Ramp to West Lakes Pkwy	28,685
West Lakes Pkwy to 59 th Place	26,161
60 th Street to 68 th Street	18,786
Jordan Creek Pkwy to 142 nd Street	28,608



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project US Hwy 30 & South Main, 12th & 11th Street Intersections

Applicant City of Denison

Contact Person Kevin Flanagan Title City Manager

Complete Mailing Address 111 North Main Street
Denison, Iowa 51442

Phone (712) 263-3143 E-Mail dnmanager@frontiernet.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 \$ 200,000.00

Safety Funds Requested \$ 115,000.00


APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

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

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

Representing the City of Denison, Iowa

Signed:

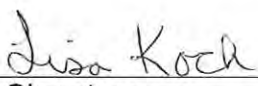

Signature

6-14-11
Date Signed

Kevin Flanagan

Typed Name

Attest:


Signature

6-14-11
Date Signed

Lisa Koch, City Clerk

Typed Name

RESOLUTION NO. 2011-22

**A RESOLUTION APPROVING TRAFFIC SAFETY
IMPROVEMENT PROGRAM FUNDING APPLICATION FOR
U.S. HIGHWAY 30 AND SOUTH MAIN, 12TH & 11TH STREETS**


WHEREAS, the City of Denison desires to replace permanent traffic signals at the intersections of U.S. Highway 30 with South Main, 12th and 11th Streets; and

WHEREAS, the City of Denison, Iowa, desires to determine whether any traffic safety improvement funds would be available to help finance this project.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL, CITY OF
DENISON, IOWA:**


That the Traffic Safety Improvement Program Funding Application for replacing permanent traffic signals at the intersections of U.S. Highway 30 with South Main, 12th & 11th Streets in the City of Denison, Iowa, is hereby approved, and the Mayor and City Clerk are hereby authorized to execute such application and deliver it to the Iowa Department of Transportation.

Passed and approved by the City Council of the City of Denison, Iowa, this 14th day of June, 2011.



Dennis Fineran, Mayor
Jean Heiden, Mayor Pro-tem

ATTEST:



Lisa K. Koch, City Clerk

(CITY SEAL)

It was moved by Council member Ahart and accepted by
Council member Mahrt that the foregoing Resolution be adopted.

The motion was duly put to vote of the Council, the ayes and nays were called and the vote
thereon was as follows:

AYES: Ahart, Mahrt, Rodriguez, Hough, Heiden

NAYS: none

ABSENT: none

Whereupon the Mayor declared the motion duly carried and the Resolution duly adopted.

CERTIFICATE

I, Lisa K. Koch, City Clerk of the City of Denison, Iowa, hereby certify that the foregoing
is a true copy of a Resolution adopted by the City Council of the City of Denison, Iowa, at a
special meeting of the City Council held on the 14th day of June, 2011, and the vote thereon as
recorded in the records of the City now in my custody.

Dated this 14th day of June, 2011.

Lisa K Koch
Lisa K. Koch, City Clerk

(CITY SEAL)

B. NARRATIVE

The existing traffic signals at South Main Street and US Hwy 30 were originally installed in 1968.

The signals were upgraded in 1983 when new signals were added at US Hw 30 and 11th and 12th Streets. The signals at 11th and 12th Streets were interconnected to the Pre-Timed Signal at South Main Street and the controller at South Main was upgraded to a master controller with coordination capabilities.

All three controllers have now had 28 years in service and are quickly becoming obsolete. Replacement parts are not readily available and the controller cabinets are rusting through.

The interconnecting cable has also been a maintenance problem in recent years and all the spare conductors in the interconnecting cable have been used up.

The signals heads on the 11th and 12th Street Signals need to be upgraded with L.E.D. bulbs and the heads and lenses replaced.

The signal heads on South Main Street hang from a cable off the end of the mast arms, which are oriented at 45° from the SE and NW corners of the intersection. This was originally done to save on cost of mast arms, but the design is obsolete as a strong wind can actually turn the signal heads from a direct line of sight with the drivers, thus becoming a safety hazard.

The project would replace the obsolete equipment with new mast arms and poles placed at the minimum ten feet from back-of-curb, another safety feature which is currently violated. All existing cables, detectors and controllers will be replaced with new, state-of-the-art equipment.

The interconnecting cable to the 12th and 11th Street intersections would be replaced and new "slave" controllers placed at 11th and 12th Streets in new cabinets.

Pre-Emption Equipment will be added as a major safety feature for enabling Emergency Vehicles with the capability to pre-empt the signals and give themselves the right-of-way.

Finally, the existing poles and mast arms at the 12th and 11th Street signals would be sandblasted and repainted, due to their rusting condition.

C. ITEMIZED BREAKDOWN OF COST

1. MAST ARMS, 4 @ \$8,500.00	\$ 34,000.00
2. SIGNAL HEADS MAST-ARM MTD., 8 @ \$600.00	\$ 4,800.00
3. SIGNAL HEADS, POLE MTD., 24 @ \$550.00	\$ 13,200.00
4. TRAFFIC SIGNAL CABLE & LOOP DETECTOR WIRE	\$ 2,700.00
5. PEDESTRIAN PUSH BUTTON, 12 @ \$150.00	\$ 1,800.00
6. PEDESTRIAN SIGNAL, 12 @ \$450.00	\$ 5,400.00
7. CONTROLLER, 3 @ \$15,000	\$ 45,000.00
8. CONDUIT, JUNCTION BOXES AND MISCELLANEOUS MATERIALS	\$ 4,000.00
9. INTERCONNECTING CABLE	\$ 3,000.00
10. EMERGENCY VEHICLE PRE-EMPTION	\$ 6,500.00
TOTAL ESTIMATED MATERIALS COST	\$ 115,000.00
TSIP FUNDS REQUESTED	= <u>\$ 115,000.00</u>

D. TIME SCHEDULE

1.	GRANT APPROVAL	07-01-11
2.	IDOT COMMISSION APPROVAL	12-01-11
3.	DESIGN COMPLETED	02-01-12
4.	TAKE BIDS	04-01-12
5.	COMPLETE CONSTRUCTION	09-01-12



78

F. Pictures



South Main Street Looking East



South Main Street Looking NW



South Main Street Looking East



South Main Street Looking SE



South Main Street Looking South



12th Street Looking South



12th Street Looking West



12th Street Looking SE



11th Street Looking NW



11th Street Looking East



11th Street Looking West



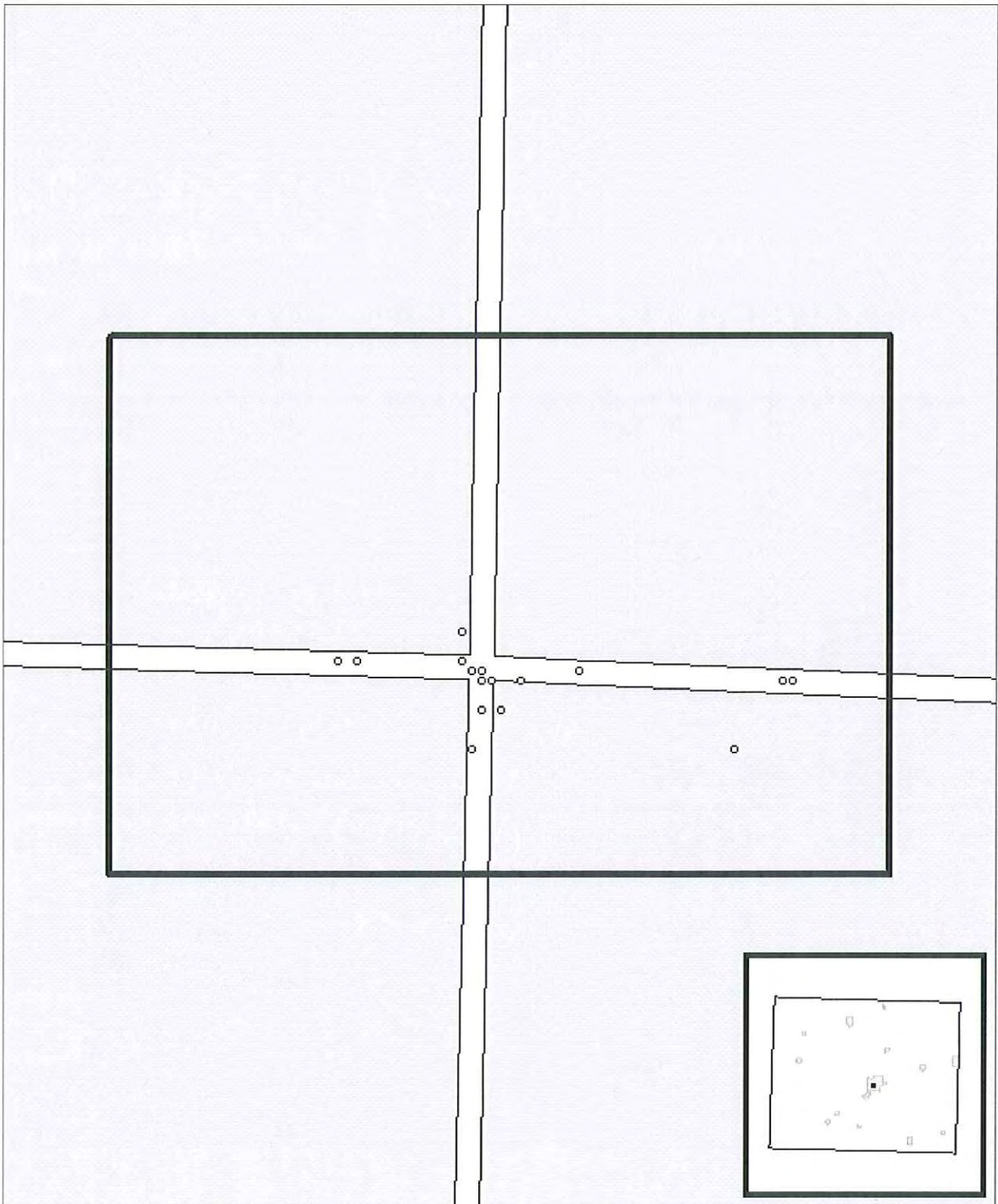
11th Street Looking SE

Location Map

South Main at US 30

Incidents: 49

Report Version 1.1 Mar 2005



Analyst: drd

Notes: Incidents selected by rectangle



Abbreviated Crash Report

South Main at US 30

Report Version 1.2 Mar 2005

Date	DOT Case #	Agency Case #	City	Crash Sev.	Literal Description
02/12/2001	2001008790		Denison	Poss/Unk	On US Route 0030/4TH AVE S and S MAIN ST
03/16/2001	2001016377		Denison	PDO	On US Route 0030/4TH AVE S and S MAIN ST
06/15/2001	2001033137		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
09/18/2001	2001050907		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
11/20/2001	2001064866		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
12/24/2001	2001073197		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
06/18/2002	2002032736		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
07/03/2002	2002035847		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
09/09/2002	2002045695	71334	Denison	PDO	INTERSECTION OF HWY 30 AND MAIN ST IN DENISON
10/28/2002	2002055567		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
11/06/2002	2002060052		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
11/08/2002	2002060056		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
01/27/2003	2003004450		Denison	Poss/Unk	S MAIN ST and MAIN ST and US 0030 / 4TH AVE S
02/19/2003	2003009849		Denison	PDO	S MAIN ST and MAIN ST and US 0030 / 4TH AVE S
06/04/2003	2003028416		Denison	PDO	S MAIN ST and MAIN ST and US 0030 / 4TH AVE S
06/07/2003	2003028411		Denison	PDO	S MAIN ST and MAIN ST and US 0030 / 4TH AVE S
09/22/2003	2003046522		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
09/23/2003	2003046524		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
10/09/2003	2003051164		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
10/18/2003	2003052296		Denison	Minor	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
10/31/2003	2003057063		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
11/24/2003	2003062099		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
12/08/2003	2003063060		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
02/13/2004	2004209556		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
06/04/2004	2004227924		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
06/19/2004	2004228526		Westside	PDO	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
10/10/2004	2004249934		Denison	Minor	US 0030 / 4TH AVE S and S MAIN ST and MAIN ST
11/05/2004	2004256439		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST
01/08/2005	2005205460		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST
02/17/2005	2005210848		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST
02/21/2005	2005210846		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST
05/12/2005	2005224604		Denison	Poss/Unk	US 0030 / 4TH AVE S and S MAIN ST

2/11/2011

Crash Mapping Analysis Tool 3.6.0

Page: 1 of 2



Abbreviated Crash Report

South Main at US 30

Report Version 1.2 Mar 2005

Date	DOT Case #	Agency Case #	City	Crash Sev.	Literal Description
06/22/2005	2005229529		Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST
09/30/2005	2005248342		Denison	Poss/Unk	US 0030 / 4TH AVE S measuring 50 Feet West from US 0030 / 4TH AVE S
02/27/2006	2006209008	060731	Denison	PDO	US 0030 / 4TH AVE S
04/08/2006	2006219539	061222	Denison	PDO	S MAIN ST AND US 0030 / 4TH AVE S
05/05/2006	2006219548	061605	Denison	Poss/Unk	S MAIN ST AND US 0030 / 4TH AVE S
08/29/2006	2006237855	063388	Denison	PDO	S MAIN ST AND US 0030 / 4TH AVE S
09/24/2006	2006242233	063794	Denison	PDO	S MAIN ST AND US 0030 / 4TH AVE S
10/20/2006	2006246997	064131	Denison	PDO	US 0030 / 4TH AVE S
11/01/2006	2006251528	064287	Denison	Poss/Unk	S MAIN ST AND US 0030 / 4TH AVE S
01/05/2007	2007206029	070054	Denison	PDO	S MAIN ST AND US 0030 / 4TH AVE S
02/20/2007	2007213540	070641	Denison	PDO	US 0030 / 4TH AVE S AND S MAIN ST
07/22/2007	2007384550	072882	Denison	PDO	US 0030 / 4TH AVE S and S MAIN ST
07/25/2007	2007384556	072927	Denison	Minor	US 0030 / 4TH AVE S and S MAIN ST
05/17/2008	2008441875	081780	Denison	Poss/Unk	S MAIN ST and US 0030 / 4TH AVE S
10/18/2008	2008465677	083962	Denison	PDO	S MAIN ST and US 0030 / 4TH AVE S
05/14/2009	2009506644	091793	Denison	PDO	S MAIN ST and US 0030 / 4TH AVE S
06/25/2009	2009513103	092389	Denison	PDO	S MAIN ST and US 0030 / 4TH AVE S

Selection Filter:

None

Analyst: drd

Notes: Incidents selected by rectangle

Driver and Time Summary

South Main at US 30

Report Version 1.0 Aug 2008

Crash Time of Day Summary:

From To	00:00 01:59	02:00 03:59	04:00 05:59	06:00 07:59	08:00 09:59	10:00 11:59	12:00 13:59	14:00 15:59	16:00 17:59	18:00 19:59	20:00 21:59	22:00 23:59	NR	Total	%
SUN	-	-	-	-	-	-	-	1	-	2	-	-	-	3	6
MON	-	-	-	-	-	2	3	3	1	1	-	-	-	10	20
TUE	-	-	-	-	3	-	1	1	1	-	-	-	-	6	12
WED	-	-	-	-	2	-	2	2	-	1	-	-	-	7	14
THU	-	-	-	-	1	-	2	-	2	-	-	-	-	5	10
FRI	-	-	-	-	-	1	1	6	1	1	-	1	-	11	22
SAT	-	-	-	-	-	3	1	1	1	1	-	-	-	7	14
Tot.					6	6	10	14	6	6		1		49	
%					12	12	20	29	12	12		2			100

Driver Age/Gender Summary:

Age	Male	Female	NR	Drivers	%
<14	-	-	-		
14	-	-	-		
15	2	-	-	2	2
16	6	3	-	9	9
17	3	1	-	4	4
18	1	2	-	3	3
19	-	-	-		
20	-	-	-		
21 to 24	4	3	-	7	7
25 to 29	4	5	-	9	9
30 to 34	5	4	-	9	9
35 to 39	5	3	-	8	8
40 to 44	4	5	-	9	9
45 to 49	6	3	-	9	9
50 to 54	3	3	-	6	6
55 to 59	4	1	-	5	5
60 to 64	2	1	-	3	3
65 to 69	4	3	-	7	7
70 to 74	2	1	-	3	3
75 to 79	3	1	-	4	4
80 to 84	1	1	-	2	2
85 to 89	2	-	-	2	2
90 to 94	-	-	-		
95 plus	-	-	-		
NR	-	-	-		
Drivers	61	40	0	101	
%	60	40	0		100

Drug/Alcohol Summary:

	Total	%
Drug		
Alcohol, Less than Statutory		
Alcohol, Statutory		
Drug/Alcohol, Less than Statutory		
Drug/Alcohol, Statutory		
Refused		
Under Influence of Alc/Drugs/Meds		
None Indicated	49	100
Total Crashes	49	100

Fixed Object Struck Summary:

	Vehs.	%
Bridge/Bridge rail/Overpass		
Underpass/Structure Support		
Culvert		
Ditch/Embankment		
Curb/Island/Raised Median		
Guardrail		
Concrete Barrier		
Tree		
Pole - Utility/Light/Etc		
Sign Post		
Mailbox		
Impact Attenuator		
Other Fixed Object		
None	101	100
Total Vehicles	101	100

Selection Filter:

None

Analyst: drd

Notes: Incidents selected by rectangle

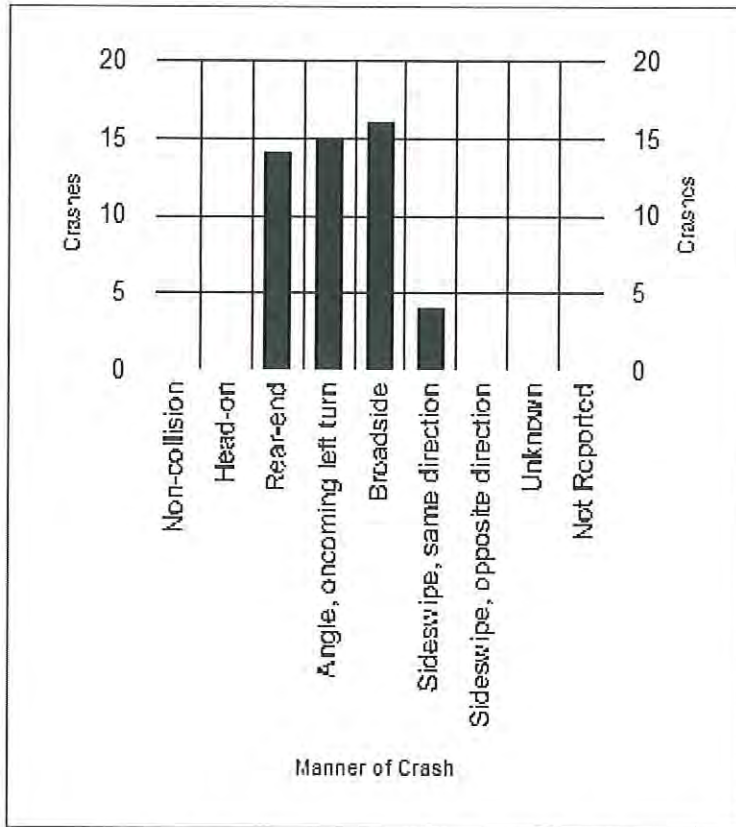
2/11/2011

Incidents: 49

Major Cause



South Main at US 30



2/11/2011

Incidents: 49



Major Cause Summary

South Main at US 30

Report Version 1.1 Jan 2006

Analysis Years: 2001 [6], 2002 [6], 2003 [11], 2004 [5], 2005 [6], 2006 [7], 2007 [4], 2008 (2), 2009(2)

Crash Summary:		Injury Summary:		Surface Condition Summary:	
Fatal	-	Fatal	-	Dry	42
Major Injury	-	Major Injury	-	Wet	5
Minor Injury	3	Minor Injury	3	Ice	1
Possible/Unknown	14	Possible	16	Snow	-
PDO	32	Unknown	3	Slush	-
Total Crashes	49	Total Injuries	22	Sand/Dirt/Oil/Gravel	-
				Water	-
				Other	-
				Unknown	-
				Not Reported	1
				Total Crashes	49

TOT Property Damage: \$225,384

AVG Property Damage: \$4,600

Major Cause Summary:

Animal	Improper Backing
11 Ran Traffic Signal	Illegally Parked/Unattended
Ran Stop Sign	1 Swerving/Evasive Action
1 Crossed Centerline	Over-Correcting/Over-Steering
FTYROW: At Uncontrolled Intersection	Downhill Runaway
FTYROW: Making Right Turn on Red Signal	Equipment Failure
FTYROW: From Stop Sign	Separation of Units
FTYROW: From Yield Sign	Ran Off Road - Right
15 FTYROW: Making Left Turn	Ran Off Road - Straight
1 FTYROW: From Driveway	Ran Off Road - Left
FTYROW: From Parked Position	Lost Control
FTYROW: To Pedestrian	Inattentive/Distracted By: Passenger
4 FTYROW: Other (explain in narrative)	Inattentive/Distracted By: Use of Phone or Other
Traveling Wrong Way or on Wrong Side of Rd	Inattentive/Distracted By: Fallen Object
Driving Too Fast for Conditions	Inattentive/Distracted By: Fatigued/Asleep
Exceeded Authorized Speed	Other: Vision Obstructed
2 Made Improper Turn	Oversized Load/ Oversized Vehicle
Improper Lane Change	Cargo/Equipment Loss or Shift
2 Followed Too Close	6 Other: Other Improper Action
Disregarded Railroad Signal	5 Unknown
Disregarded Warning Sign	1 Other: No Improper Action
Operating Vehicle in Reckless/Aggressive Manner	None Indicated

Selection Filter:

None

Analyst: drd

Notes: Incidents selected by rectangle

Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

Location / Title of Project Mid-Way Pedestrian Buttons, Assemblies, and Refuge Area Improvements

Applicant City of Iowa City

Contact Person Darian Nagle-Gamm Title Traffic Engineering Planner

Complete Mailing Address 410 E Washington St
Iowa City, IA 52240

Phone 319-356-5254 E-Mail darian-nagle-gamm@iowa-city.org
(Area Code)

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

Co-Applicant(s) Iowa Department of Transportation

Contact Person Cathy Cutler Title District 6 Planner

Complete Mailing Address 430 16th Ave S.W.
Cedar Rapids, IA 52404

Phone 319-364-0235 E-Mail catherine.cutler@dot.iowa.gov
(Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

Site Specific ☐
Traffic Control Device ☒
Safety Study ☐

Funding Amount

Total Project Cost \$ 33,000

Safety Funds Requested \$ 33,000

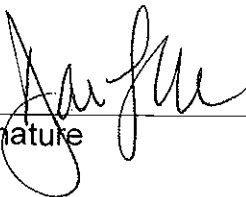
APPLICATION CERTIFICATION FOR LOCAL GOVERNMENT

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

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

Representing the City of Iowa City

Signed:


Signature

June 15th, 2011
Date Signed

Darian Nagle-Gamm
Typed Name

Attest:

Kellie K. Tuttle
Signature

June 15, 2011
Date Signed

Kellie K. Tuttle
Typed Name



CITY OF IOWA CITY MEMORANDUM



Date: June 13th, 2011
To: Terry Ostendorf, Iowa DOT
From: Darian Nagle-Gamm, Traffic Engineering Planner, City of Iowa City
Re: 2011 TSIP Application for Mid-Way Pedestrian Buttons, Countdown Pedestrian Signals, and Refuge Area Improvements

The City of Iowa City is requesting Traffic Safety Improvement Program funds to improve pedestrian accommodations at five signalized intersections:

- Highway 6 / Boyrum Street
- Highway 6 / Keokuk Street
- Highway 6 / Broadway Street
- Highway 6 / Fairmeadows Boulevard
- Melrose Avenue / Hawkeye Park Road / West High School

Enclosed are the requested documents for the City's Traffic Safety Improvement Program grant. Below is a description of existing and proposed conditions including justifications for the project.

Existing Conditions

Highway 6 and Melrose Avenue are both four lane divided roadways with turn lanes and a median, which means that pedestrians must travel a considerable distance (between 85' – 105') to cross the main line.

The Boyrum Street, Keokuk Street, and Broadway Street intersections are surrounded by commercial areas to the south and a combination of residential and commercial uses to the north. The commercial areas include a large grocery store, restaurants, service shops, several discount stores, and numerous other commercial destinations. A well-used grade separated trail provides pedestrian access between the Boyrum Street, Keokuk Street, and Broadway Street intersections. The Fairmeadows Boulevard intersection provides access to an industrial area to the north and a residential area to the south. The Melrose Avenue intersection provides direct access to West High School and University of Iowa recreational and parking facilities. There is at least one existing crosswalk (across the main line) with pedestrian signals at each intersection.

The speed limit is 35 mph at the Boyrum Street, Keokuk Street, Melrose Avenue intersections, 40 mph at the Broadway Street, and 45 mph at Fairmeadows Boulevard. The traffic signals in both the Highway 6 and Melrose corridors are coordinated to provide efficient vehicle progression on the main line during peak travel periods.

Proposed Concept

Iowa City seeks to install mid-way pedestrian buttons and countdown signals (where they do not already exist) and make improvements to the refuge areas by adding curbs at the median noses to better delineate where the refuge is located. The new pedestal poles would be break-away therefore would be eligible for location within the clear zone.

Benefits of the enhanced pedestrian facilities at these locations:

- Provides refuge for pedestrians who cannot crossing the wide, higher speed, and heavily travelled corridors in one signal cycle.
- The additional mid-way pedestrian countdown timers will be easier for pedestrians to read from the curb.
- The MUTCD now requires the use of slower walking speed (3.5 feet/second) to calculate pedestrian clearance time. Installing mid-way pedestrian signal buttons will allow the timings to be set to the refuge area rather than the entire crossing distance. This will allow the City to set the side-street green times appropriately for the side street traffic volumes which will keep the traffic signals on the main line "in coordination".
- Installing mid-way pedestrian buttons/signals will help to reduce congestion and driver frustration on Highway 6 and Melrose Avenue by keeping main line signals coordinated, especially during peak periods. When signals come out of coordination in a corridor, traffic backups occur at intersections which can result in increased risky driving behaviors such as speeding, red light running, and tailgating. These behaviors can be directly attributed to at least 57% of collisions in the corridor during the last five years. The attached memo provides additional information about signal timing benefits of installing mid-way pedestrian refuge in the Highway 6 corridor.

Time Schedule

The project would be initiated upon receipt of funds in July 2012, with completion during 1Q FY13.

Cc: Cathy Cutler, Department of Transportation
Ron Knoche, City Engineer
John Yapp, Transportation Planner

COST ESTIMATES - By INTERSECTION



PROJECT: <u>Broadway</u>				DATE: _____		ACTIVITY _____	
				NUMBER: _____			
PERSONNEL				EQUIPMENT			
WORKER	HOURS	RATE	TOTAL	VEHICLE NO.	HOURS	RATE	TOTAL
Guy Irvin	16	27.48	439.68	302		30.00	
KWK		25.51		306	16	30.00	480.00
NF		25.51		312	8	30.00	240.00
Mark Hubbell	16	12.00	192.00	308		20.00	
Admin Assistant		25.00		318		2.00	
				319		10.00	
GI OT		41.22		320		30.00	
KK OT		38.27		307		30.00	
NF OT		38.27		110		30.00	
TP OT		18.00		325		20.00	
		37.50		DUMP TRUCK		30.00	
				AIR COMPRESSOR		10.00	
MATERIALS							
PART NAME	PART NO.	NO./AMT USED	PRICE	TOTAL	S.O.R. #	REQ. #	P.O. #
10 foot aluminum conduit		1	131.00	131.00			
pole cap		1	20.00	20.00			
Pelco ped base		1	125.00	125.00			
9 /c cable		200	1.47	294.00			
12' countdown head		2	545.00	1090.00			
with side of pole mounts							
Bulldog push button		1	98.00	98.00			
with cup							
12 x 18 sign		1	36.00	36.00			
misc parts		1	200.00	200.00			
wire nuts							
banding supplies							
REFUGE AREA/CROSSWALK WORK							
Concrete work, adding truncated domes, new crosswalk pavement markings					\$3,500	X 1	3,500
RENTAL EQUIPMENT							
ITEM	VENDOR	COST		# of Feet	total		
concrete base	advanced bortek	500.00	per base	1	\$500.00		
boring and conduit	advanced bortek	15.00	per foot	70	\$1,050.00		
COMMENTS							
add equipment for pedestrian signal in the center island.							
LABOR <u>631.68</u>		EQUIPMENT <u>720.00</u>		PARTS <u>1994.00</u>			
RENTAL <u>1550.00</u>		REFUGE/XWALK <u>3,500.00</u>		TOTAL <u>8395.68</u>			

PROJECT: <u>KEOKUK</u>				DATE: _____		ACTIVITY NUMBER: _____	
PERSONNEL				EQUIPMENT			
WORKER	HOURS	RATE	TOTAL	VEHICLE NO.	HOURS	RATE	TOTAL
Guy Irvin	16	27.48	439.68	302		30.00	
KWK		25.51		306	16	30.00	480.00
NF		25.51		312	8	30.00	240.00
Mark Hubbell	16	12.00	192.00	308		20.00	
Admin Assistant		25.00		318		2.00	
				319		10.00	
GI OT		41.22		320		30.00	
KK OT		38.27		307		30.00	
NF OT		38.27		110		30.00	
TP OT		18.00		325		20.00	
		37.50		DUMP TRUCK		30.00	
				AIR COMPRESSOR		10.00	
SIGNAL MATERIALS							
PART NAME	PART NO.	NO./AMT USED	PRICE	TOTAL	S.O.R. #	REQ. #	P.O. #
10 foot aluminum conduit			131.00				
pole cap			20.00				
Pelco ped base			125.00				
9 /c cable		280	1.47	411.60			
12' countdown head							
with side of pole mounts		4	545.00	2180.00			
Bulldog push button		2	105.00	210.00			
with cup							
12 x 18 sign		1	36.00	36.00			
misc parts		1	200.00	200.00			
wire nuts							
banding supplies							
REFUGE AREA/CROSSWALK WORK							
Concrete work, adding truncated domes, new crosswalk pavement markings					\$3,500	X 2	7,000
RENTAL EQUIPMENT							
ITEM	VENDOR	COST	# of Feet	total			
concrete base	advanced bortek	\$500.00 per base	1	\$500.00			
boring and conduit	advanced bortek	\$15.00 per foot	100	\$1,500.00			
COMMENTS							
add equipment for pedestrian signal in the center island.							
LABOR <u>631.68</u>		EQUIPMENT <u>720.00</u>		PARTS <u>3037.60</u>			
RENTAL <u>2000.00</u>		REFUGE/XWALK <u>7,000.00</u>		TOTAL <u>13389.28</u>			

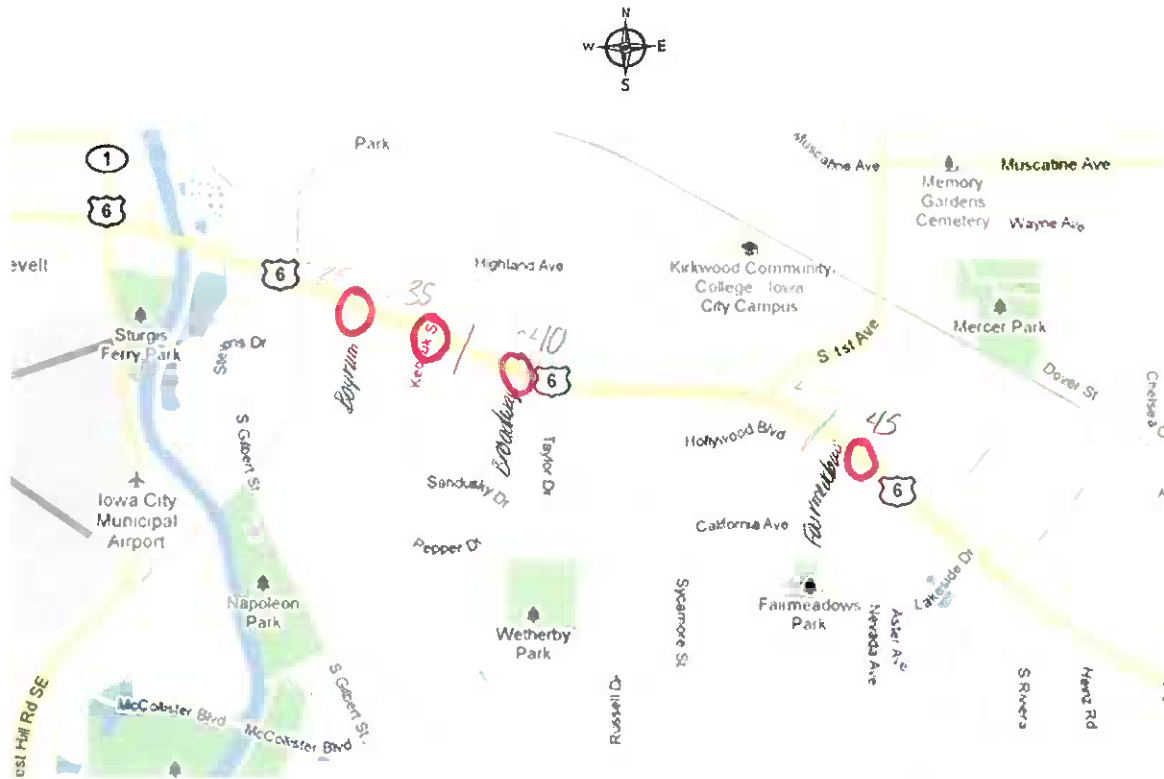
PROJECT: <u>Boyrum</u>				DATE: _____		ACTIVITY _____	
				NUMBER: _____			
PERSONNEL				EQUIPMENT			
WORKER	HOURS	RATE	TOTAL	VEHICLE NO.	HOURS	RATE	TOTAL
Guy Irvin	16	27.48	439.68	302		30.00	
KWK		25.51		306	16	30.00	480.00
NF		25.51		312	8	30.00	240.00
Mark Hubbell	16	12.00	192.00	308		20.00	
Admin Assistant		25.00		318		2.00	
				319		10.00	
GI OT		41.22		320		30.00	
KK OT		38.27		307		30.00	
NF OT		38.27		110		30.00	
TP OT		18.00		325		20.00	
		37.50		DUMP TRUCK		30.00	
				AIR COMPRESSOR		10.00	
MATERIALS							
PART NAME	PART NO.	NO./AMT USED	PRICE	TOTAL	S.O.R. #	REQ. #	P.O. #
10 foot aluminum conduit			131.00				
pole cap			20.00				
Pelco ped base			125.00				
9 /c cable		200	1.45	290.00			
12' countdown head		2	545.00	1090.00			
with side of pole mounts							
Bulldog push button		1	98.00	98.00			
with cup							
12 x 18 sign		1	36.00	36.00			
misc parts		1	200.00	200.00			
wire nuts							
banding supplies							
RENTAL EQUIPMENT							
ITEM	VENDOR	COST	# of Feet	total			
concrete base	advanced bortek	per base	1				
boring and conduit	advanced bortek	per foot	10				
COMMENTS							
add equipment for pedestrian signal in the center island.							
<div> <div>LABOR <u>631.68</u></div> <div>EQUIPMENT <u>720.00</u></div> <div>PARTS <u>1714.00</u></div> </div>							
RENTAL _____				TOTAL <u>3065.68</u>			



PROJECT: <u>MELROSE and WHS</u>				DATE: _____		ACTIVITY _____	
NUMBER: _____							
PERSONNEL				EQUIPMENT			
WORKER	HOURS	RATE	TOTAL	VEHICLE NO.	HOURS	RATE	TOTAL
Guy Irvin	16	27.48	439.68	302		30.00	
KWK		25.51		306	16	30.00	480.00
NF		25.51		312	8	30.00	240.00
Mark Hubbell	16	12.00	192.00	308		20.00	
Admin Assistant		25.00		318		2.00	
				319		10.00	
GI OT		41.22		320		30.00	
KK OT		38.27		307		30.00	
NF OT		38.27		110		30.00	
TP OT		18.00		325		20.00	
		37.50		DUMP TRUCK		30.00	
				AIR COMPRESSOR		10.00	
MATERIALS							
PART NAME	PART NO.	NO./AMT USED	PRICE	TOTAL	S.O.R. #	REQ. #	P.O. #
10 foot aluminum conduit		1	131.00	131.00			
pole cap		1	12.00	12.00			
Pelco ped base		1	125.00	125.00			
9 /c cable		260 ft	1.47	382.20			
12' countdown head		2	545.00	1090.00			
with side of pole mounts							
Bulldog push button		1	105.00	105.00			
with cup							
12 x 18 sign		1	36.00	36.00			
misc parts		1	200.00	200.00			
wire nuts							
banding supplies							
RENTAL EQUIPMENT							
ITEM	VENDOR	COST		# of Feet	total		
concrete base	advanced bortek	500.00	per base	1	\$500.00		
boring and conduit	advanced bortek	25.00	per foot	10	\$250.00		
COMMENTS							
add equipment for pedestrian signal in the center island.							
<div> <div>LABOR <u>631.68</u></div> <div>EQUIPMENT <u>720.00</u></div> <div>PARTS <u>2081.20</u></div> </div>							
<div> <div>RENTAL <u>750.00</u></div> <div>TOTAL <u>4182.88</u></div> </div>							

[illegible]

HIGHWAY 6 INTERSECTIONS



MELROSE / HAWKEYE PARK ROAD / WEST HIGH SCHOOL



MELROSE / HAWKEYE PARK ROAD



(X) - Location of proposed pedestrian mid-way button with pedestrian signals

HWY 6 / BOYRUM



★ pld buttons/signals

HWY 6/ FAIRMEADOWS



Both Lanes
Continuous.

(*) P/d buttons/signals

File Name: S:\JCCOG\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hawkeye Park Road

Start Date: 10/18/2007

Start Time: 7:15:00 AM

Site Code: 00000000

Comment 1: Default Comments

Comment 2: Change These in The Preferences Window

Comment 3: Select File/Preference in the Main Screen

Comment 4: Then Click the Comments Tab

Start Time	HAWKEYE PARK RD Southbound					MELROSE AVE Westbound					HAWKEYE PARK RD Northbound					MELROSE AVE Eastbound					Peak Hr?
	Right	Thru	Left	Peds	Totals	Right	Thru	Left	Peds	Totals	Right	Thru	Left	Peds	Totals	Right	Thru	Left	Peds	Totals	
07:15 AM	3	11	1	0	1	63	52	0	0	9	1	1	1	0	27	132	34	0	0	335	1838
07:30 AM	2	47	0	1	4	91	88	0	0	18	2	11	0	0	54	171	83	0	0	571	1753
07:45 AM	1	84	4	3	2	103	78	1	1	17	11	14	0	0	49	128	35	3	0	526	1392
08:00 AM	2	36	4	1	10	85	44	2	2	16	5	4	0	0	26	160	14	0	0	406	
08:15 AM	3	0	4	0	2	70	10	0	0	2	0	0	0	2	5	148	6	0	0	250	
08:30 AM	0	1	1	0	4	67	10	1	1	6	0	3	0	0	10	101	7	0	0	210	
Pk hr totals	8	178	9	5	17	342	262	3	3	60	19	30	0	0	156	591	166	3	0	1838	

% of mvmt 4% 91% 5% 3% 55% 42% 17% 28% 17% 65% 18%

% of tti traffic 0% 10% 0% 1% 19% 14% 3% 2% 8% 32% 9%

movement % 11% 34% 6% 50%



File Name: S:\JCCOG\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hwy 6 & Boyrum - AM - Jun09.ppd

Start Date: 6/17/2009

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1:

Comment 2:

Comment 3:

Comment 4:

Start Time	BOYRUM Southbound			HWY 6 Westbound			BOYRUM Northbound			HWY 6 Eastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
07:00 AM	5	13	6	0	16	199	11	0	4	5	9	0
07:15 AM	3	13	8	1	15	208	7	0	5	6	8	0
07:30 AM	5	5	8	1	16	305	6	0	7	10	7	0
07:45 AM	4	26	12	1	15	213	13	0	9	10	10	1
08:00 AM	5	6	5	0	17	190	3	0	15	2	9	0
08:15 AM	2	8	5	0	9	188	9	0	15	7	6	0



File Name: S:\JCCO\G\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hwy 6 & Boyrum - PM - Jun09.ppd

Start Date: 6/23/2009

Start Time: 4:15:00 PM

Site Code: 00000000

Comment 1:

Comment 2:

Comment 3:

Comment 4:

Start Time	BOYRUM Southbound			HWY6 Westbound			BOYRUM Northbound			HWY6 Eastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
04:15 PM	10	15	19	0	19	235	14	0	36	15	21	0
04:30 PM	8	24	13	6	29	271	13	0	30	15	23	1
04:45 PM	11	31	13	0	32	248	14	1	28	27	34	2
05:00 PM	13	20	21	0	24	258	8	3	40	35	48	0
05:15 PM	11	14	15	0	36	246	12	2	23	30	43	0
05:30 PM	9	9	10	0	19	225	10	0	24	43	44	2

File Name:
Start Date:
Start Time:
Site Code:
Comment 1:
Comment 2:
Comment 3:
Comment 4:

6/23/2009
7:15:00 AM
000000000

Start Time	KEOKUK Southbound				HWY 6 Westbound				KEOKUK Northbound				HWY 6 Eastbound			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
07:15 AM	9	15	9	0	3	211	5	0	26	8	4	0	1	143	5	0
07:30 AM	6	12	16	0	10	227	9	0	26	4	2	1	6	134	7	0
07:45 AM	9	16	11	0	3	247	5	0	20	15	4	1	1	193	8	1
08:00 AM	3	4	14	1	5	165	5	0	18	6	3	0	9	152	12	0
08:15 AM	5	6	10	0	4	142	3	1	20	7	5	0	3	141	8	0
08:30 AM	5	7	6	0	4	140	6	0	17	11	5	0	5	172	13	9



File Name: S:\JCCOG\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hwy 6 & Keokuk - PM - Jul09.ppd

Start Date: 7/23/2009
 Start Time: 4:15:00 PM
 Site Code: 00000000

Comment 1:
 Comment 2:
 Comment 3:
 Comment 4:

Start Time	KEOKUCK Southbound					HWY 6 Westbound					KEOKUCK Northbound					HWY 6 Eastbound				
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds	
04:15 PM	12	25	12	2		21	226	8	0		31	22	11	2		18	244	23	1	
04:30 PM	14	47	17	0		23	257	11	4		42	25	14	0		21	256	27	4	
04:45 PM	18	27	17	0		11	219	6	0		48	29	10	1		11	285	26	0	
05:00 PM	19	27	16	0		23	226	13	2		35	35	23	1		17	307	25	0	
05:15 PM	16	23	18	0		19	255	16	0		31	22	24	1		8	299	32	0	
05:30 PM	12	15	14	1		27	219	11	1		45	21	12	0		29	257	27	1	



File Name: S:\JCCOG\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hwy 6 & Broadway - AM - May09.ppd

Start Date: 5/27/2009

Start Time: 7:15:00 AM

Site Code: 00000000

Comment 1:

Comment 2:

Comment 3:

Comment 4:

Start Time	BROADWAY Southbound				HWY 6 Westbound				BROADWAY Northbound				HWY 6 Eastbound			
	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
07:15 AM	0	0	0	0	11	231	0	0	5	0	14	0	0	140	2	1
07:30 AM	0	0	0	0	6	240	0	1	11	0	16	0	0	186	8	0
07:45 AM	0	0	0	0	2	245	0	1	9	0	14	0	0	214	6	0
08:00 AM	0	0	0	0	5	213	0	0	3	0	9	0	0	175	4	0
08:15 AM	0	0	0	0	6	227	0	1	7	0	22	0	0	134	7	0
08:30 AM	0	0	0	0	12	168	0	0	11	0	15	0	0	157	5	0

File Name:
Start Date:
Start Time:
Site Code:
Comment 1:
Comment 2:
Comment 3:
Comment 4:

8/11/2009

4:15:00 PM

00000000

Comment 1:

Comment 2:

Comment 3:

Comment 4:

Start Time	BROADWAY Southbound					HWY 6 Westbound					BROADWAY Northbound					HWY 6 Eastbound				
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds	
04:15 PM	0	0	0	1		21	226	0	1		17	0	25	1		0	269	9	0	
04:30 PM	0	0	0	0		21	238	0	3		17	0	34	1		1	267	8	0	
04:45 PM	0	0	0	2		19	278	0	1		26	0	30	0		0	290	1	4	
05:00 PM	0	0	0	0		20	241	0	1		11	0	37	1		1	294	12	1	
05:15 PM	0	0	0	1		23	269	0	0		20	0	35	0		8	296	25	1	
05:30 PM	0	0	0	0		14	221	0	3		11	0	37	0		1	300	14	7	



File Name: S:\JCCOG\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hwy 6 & Fairmeadows - AM - Jun09.ppd

Start Date: 6/4/2009

Start Time: 7:00:00 AM

Site Code: 00000000

Comment 1:

Comment 2:

Comment 3:

Comment 4:

Start Time	FAIRMEDOWS Southbound					HWY 6 Westbound					FAIRMEDOWS Northbound					HWY 6 Eastbound				
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds	
07:00 AM	11	3	0	1	0	91	26	3	3	0	8	5	3	0	0	3	93	4	0	
07:15 AM	13	1	0	0	1	117	48	0	7	12	7	12	1	2	1	2	81	3	0	
07:30 AM	16	5	0	0	1	179	46	0	12	24	12	24	3	0	2	2	104	3	0	
07:45 AM	16	4	1	0	3	107	57	0	3	22	3	22	4	0	5	5	106	2	0	
08:00 AM	14	7	3	0	2	77	44	0	4	14	4	14	3	1	0	0	69	4	0	
08:15 AM	14	2	1	0	1	75	27	0	6	14	6	14	0	2	2	2	65	3	0	



File Name: S:\JCCOG\TRANS\Traffic Counts\Peak Hour Counts\Iowa City\Hwy 6 & Fairmeadows - PM - Aug09.ppd

Start Date: 8/13/2009
 Start Time: 4:15:00 PM
 Site Code: 00000000

Comment 1:
 Comment 2:
 Comment 3:
 Comment 4:

Start Time	FAIRMEADOWS Southbound					HWY 6 Westbound					FAIRMEADOWS Northbound					HWY 6 Eastbound				
	Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds		Left	Thru	Right	Peds	
04:15 PM	25	8	3	0		4	112	24	0		8	8	5	1		3	118	10	0	
04:30 PM	29	14	3	1		4	133	31	1		7	6	3	0		1	149	4	0	
04:45 PM	31	8	2	4		2	113	32	0		10	10	3	0		2	144	9	0	
05:00 PM	33	7	7	0		3	114	40	0		5	11	5	1		4	131	12	0	
05:15 PM	29	13	2	0		6	108	37	0		5	15	8	2		3	155	16	0	
05:30 PM	22	17	2	1		4	92	29	1		7	7	4	1		5	158	20	0	



TECHNICAL MEMORANDUM

TO: John Yapp, MPOJC
Darian Nagle-Gamm, MPOJC

FROM: Brian Willham, Shive-Hattery, Inc.

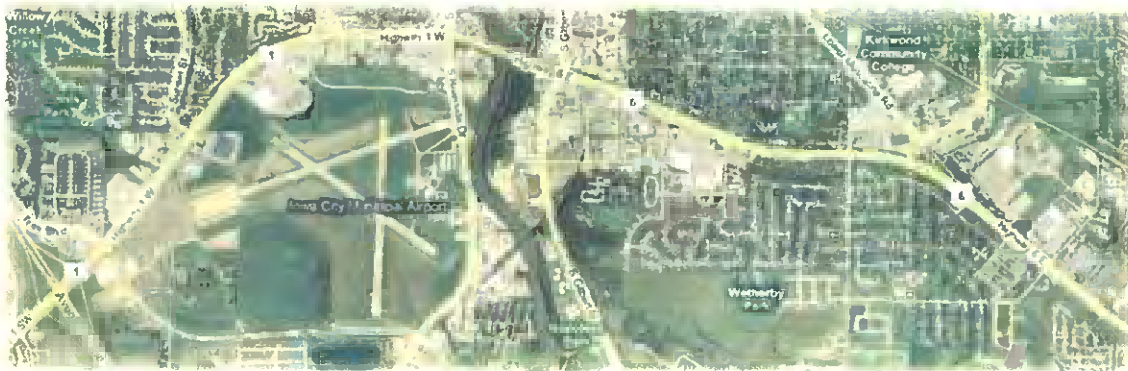
DATE: May 25, 2011

RE: 2009 Traffic Signal Timing Program

This memorandum includes a review of traffic signal timing and associated traffic signal system coordination plans throughout Iowa City included in the 2009 Traffic Signal Timing Program. The HWY 1/HWY 6 system / corridor was reviewed from Naples Avenue to Heinz Road and included the intersection of Westside Drive and Mormon Trek Drive due to its proximity to the HWY 1/HWY 6 corridor.

VEHICULAR SIGNAL TIMING

The signalized vehicular movements were reviewed for the intersections in the 2009 program. *Synchro* V7 traffic analysis software was used to evaluate the traffic signal timings currently being used with recent traffic volumes collected by JCCOG. Average delay, queuing, and progression of traffic through the HWY 1/HWY 6 corridor were reviewed and observed during field observations.



Traffic signals located along the HWY 1 / HWY 6 corridor are coordinated together to provide adequate progression of traffic during the peak hours throughout the day. In general, the corridor is a rural 4-lane divided highway, includes dedicated turn lanes at primary intersections, and has a speed limit between 35 MPH and 50 MPH. The higher speed limit zones are found on the western and eastern ends of the corridor. Because of the higher speeds and large volumes of traffic along this route, the majority of the

signalized intersections include protected left turn phasing for the major movements. This evaluation reviewed the AM and PM peak periods of the day.

Based on recent traffic volumes and peak hour observations, changes to the vehicular signal timing splits are recommended and are found in **Table 1**.

TABLE 1
Traffic Signal Timing Plan Modifications
HWY 1/HWY 6 Corridor

Intersection	Peak Period	Phase	Split (Current)	Split (Recommended)
Sunset Street & HWY 1	AM	1	15 sec	25 sec
		2	50 sec	40 sec
Riverside Drive & HWY 6	AM	1	20 sec	25 sec
		2	30 sec	25 sec
Boyrum Street & HWY 6	PM	1	17 sec	12 sec
		2	47 sec	52 sec
Keokuk Street & HWY 6	PM	1	19 sec	15 sec
		2	48 sec	52 sec
		5	19 sec	15 sec
		6	48 sec	52 sec
Heinz Road & HWY 6	PM	1	22 sec	15 sec
		2	44 sec	55 sec
		4	29 sec	25 sec
		5	22 sec	15 sec
		6	44 sec	55 sec

Based on a review of the AM and PM peak signal coordination plans, it is recommended to modify the offsets presented in **Table 2**.

TABLE 2
Recommended Coordination Plan Offsets (seconds)
HWY 1/HWY 6 Corridor

Intersection	AM Peak Hour		PM Peak Hour	
	Existing	Rec'd	Existing	Rec'd
HWY 1/HWY 6 Corridor				
Naples Ave/HWY 1	--	--	--	--
SB 218 Ramps/HWY 1	--	--	--	--
Mormon Trek BLVD/HWY 1	--	--	36	45
Mormon Trek BLVD/Westside Drive	--	--	--	--
Sunset St/HWY 1	--	--	18	10
Walmart Entrance/HWY 1	56	70	--	--
Ruppert Rd/HWY 1	--	--	--	--
Miller Ave/HWY 1	--	--	--	--
Orchard St/HWY 1	--	--	--	--
Riverside Drive/HWY 6	--	--	--	--
Gilbert St/HWY 6	--	--	--	--
Boyrum St/HWY 6	10	0	--	--
Keokuk St/HWY 6	--	--	--	--
Broadway St/HWY 6	9	30	--	--
Sycamore St/HWY 6	--	--	--	--
1 st Ave/HWY 6	--	--	50	35
Fairmeadows BLVD/HWY 6	--	--	55	40
Lakeside Drive/HWY 6	--	--	60	45
Heinz Road/HWY 6	--	--	--	--

YELLOW AND ALL-RED TIMING

The yellow change clearances and all red clearances were also reviewed based on travel speeds and intersection geometry. A summary of the ITE clearance interval calculations are attached for reference. The recommended modifications to the yellow change, as found in **Table 3**, provide intervals that meet ITE standards. The recommended ALL red clearances are a combination of results from the ITE calculations and an attempt to provide similarity throughout the system. Because the use of an ALL red phase is optional, local jurisdictions have flexibility with the interval timing.

TABLE 3
Vehicular clearance intervals
Interval (seconds) [Phase]

Intersection	Existing		Recommended	
	Yellow	ALL Red	Yellow	ALL Red
HWY 1/HWY 6 Corridor				
Naples Ave/HWY 1	3.0[2,6]	--	5.0[2,6]	--
SB 218 Ramps/HWY 1	--	--	--	--
Mormon Trek BLVD/HWY 1	4.0[2,6] 3.5[4,8]	--	5.0[2,6] 3.6[4,8]	--
Mormon Trek BLVD/Westside Drive	3.0[2,6]	1.0[2,6] ; 1.0[4]	3.6[2,6]	2.0[2,6] ; 2.5[4]
Sunset St/HWY 1	--	1.2[2,6]	--	1.3[2,6]
Wal-Mart Entrance/HWY 1	--	1.3[2]	--	1.7[2]
Ruppert Rd/HWY 1	3.6[2,6]	--	4.5[2,6]	--
Miller Ave/HWY 1	3.5[2,6]	1.7[2,6]	3.6[2,6]	2.0[2,6]
Orchard St/HWY 1	3.2[2,6]	1.7[2,6]	3.6[2,6]	2.0[2,6]
Riverside Drive/HWY 6	3.0[2,6]	--	3.6[2,6]	--
Gilbert St/HWY 6	--	1.7[2,6]	--	2.0[2,6]
Boyrum St/HWY 6	--	1.5[2,6]	--	2.5[2,6]
Keokuk St/HWY 6	--	1.5[2] ; 1.2[6]	--	2.0[2] ; 2.0[6]
Broadway St/HWY 6	--	1.5[2,6] ; 1.5[3]	--	1.7[2,6] ; 2.0[3]
Sycamore St/HWY 6	--	--	--	--
1 st Ave/HWY 6	--	1.3[2,6]	--	1.7[2,6]
Fairmeadows BLVD/HWY 6	--	1.3[2,6]	--	1.7[2,6]
Lakeside Drive/HWY 6	--	1.5[2,6]	--	1.7[2,6]
Heinz Road/HWY 6	4.0[2,6]	1.0[2,6]	4.5[2,6]	2.0[2,6]

-- No Change

PEDESTRIAN TIMING

The signalized pedestrian movements were reviewed for the intersections in the 2009 program. A summary of the clearance interval calculations are attached for reference. The pedestrian clearance times (flashing don't walk) is based on the current version of the Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD requires a pedestrian walking speed of 3.5 feet/second. The pedestrian walk and clearance times in **Table 4** are recommended to be implemented at the intersections within this program.

TABLE 4
Pedestrian walk and clearance intervals
Interval (seconds) [Phase]

Intersection	Existing		Recommended	
	WALK	Clearance	WALK	Clearance
HWY 1/HWY 6 Corridor				
Naples Ave/HWY 1	N/A	N/A	N/A	N/A
SB 218 Ramps/HWY 1	N/A	N/A	N/A	N/A
Mormon Trek BLVD/HWY 1	--	12[4]	--	24[4]**
Mormon Trek BLVD/Westside Drive	--	10[2] ; 12[4]	--	15[2] ; 19[4]**
Sunset St/HWY 1	N/A	N/A	N/A	N/A
Walmart Entrance/HWY 1	N/A	N/A	N/A	N/A
Ruppert Rd/HWY 1	N/A	N/A	N/A	N/A
Miller Ave/HWY 1	N/A	N/A	N/A	N/A
Orchard St/HWY 1	N/A	N/A	N/A	N/A
Riverside Drive/HWY 6	N/A	N/A	N/A	N/A
Gilbert St/HWY 6	--	12[4] ; 12[6]	--	25[4]** ; 21[6]**
Boyrum St/HWY 6	--	18[3] ; 12[6]	--	14[3]* ; 17[6]
Keokuk St/HWY 6	--	11[2,6] ; 15[4]	--	15[2,6] ; 17[4]*
Broadway St/HWY 6	--	17[3] ; 12[6]	--	11[3]* ; 17[6]
Sycamore St/HWY 6	--	17[4]	--	13[4]*
1 st Ave/HWY 6	N/A	N/A	N/A	N/A
Fairmeadows BLVD/HWY 6	--	17[4]	--	11[4]*
Lakeside Drive/HWY 6	N/A	N/A	N/A	N/A
Heinz Road/HWY 6	--	12[6]	--	14[6]

-- No Change

* Update changes only after a mid-way pushbutton is installed

** Changes will result in intersection losing signal coordination temporarily

As seen in **Table 4**, there are several pedestrian movements that are recommended to include updated pedestrian clearance intervals. Several of the recommendations relate to the north/south pedestrian crossings along the corridor, which can be a long distance due to the cross section HWY 1/HWY 6.

Intersections have been reviewed for the potential addition of a pedestrian pushbutton in the median between the eastbound and westbound lanes. Where adequate space exists (Boyrum St, Keokuk St, Broadway St, Sycamore St, and Fairmeadows BLVD intersections) the recommended pedestrian clearance intervals were developed such that pedestrians could traverse half-way across the intersection during each cycle, and are presented in **Table 4**. **It is important to note that these particular pedestrian clearance times are recommended to be implemented only if and when the intermediate push buttons are provided.**

For intersections that would not have adequate median space to provide a half-way crossing refuge (Westside Dr and Gilbert St intersections), the recommended pedestrian clearance intervals, when activated by crossing pedestrians, would cause the intersection to extend the associated split, thus causing the intersection to lose signal coordination with adjacent intersections until it is able to come

back into progression, which is typically 4 to 5 signal cycles. **Adjusting the associated splits to accommodate the lengthened pedestrian clearances was studied, but due to peak hour capacity issues of the intersections, it is not recommended to change the associated vehicular splits and/or intersection cycle lengths.** Impacts to these intersections are expected to be minimal due the relatively low volume of pedestrians activating the pedestrian crossings during peak hours.

The Mormon Trek BLVD and HWY 1 intersection currently includes a mid-way pedestrian push button for the north/south crosswalk. However, the pedestrian clearance to traverse half way is recommended to be increased. Similar to the discussion above, this updated pedestrian clearance, when used, would cause the intersection to extend the associated split, thus causing the intersection to lose signal coordination with adjacent intersections for several signal cycles.

RECOMMENDATION PRIORITY

The recommendations found in this review have been prioritized by safety considerations and then operational considerations as follows:

1. Pedestrian Timing Modifications
2. Yellow and ALL Red Clearance Interval Modifications
3. Coordination Plan Modifications / Split Modifications

FUTURE IMPROVEMENTS

A summary of the future improvements that should be considered with increases in traffic or in conjunction with re-construction projects include:

1. **Sycamore Street & HWY 6 intersection:** The City of Iowa City is currently developing a project to modify the intersection of Sycamore Street and Highway 6. The addition of pedestrian refuge for north/south pedestrian accommodation is being considered, as well as modifications to the traffic signal phasing. The final proposed traffic signalization modifications, phasing and signal timing, should be reviewed with the Highway 6 corridor operations.
2. **Boyrum Street, Keokuk Street, Broadway Street, and Fairmeadows BLVD intersections with HWY 6:** These intersections should be further studied for the potential to add a pedestrian refuge for north/south pedestrian traffic across HWY 6.

If you have any additional questions or need any additional information, please call me at (800) 798-8104.

2009 Traffic Signal Timing Program
Clearance Interval Calculations

Intersection	Vehicular		Pedestrian		E/W Speed (MPH)	N/S Speed (MPH)	Vehicular		Pedestrian	
	E/W Width	N/S Width	E/W Width	N/S Width			E/W Yellow	N/S Yellow	E/W Red	N/S Red
Naples & HWY 1	95	130	0	0	50	35	4.67	3.57	1.57	2.05
SB 218 Ramps & HWY 1	70	110	0	0	50	35	4.67	3.57	1.23	1.77
Mormon Trek & HWY 1	110	110	0	170	50	35	4.67	3.57	1.77	1.77
Sunset & HWY 1	70	120	0	0	50	25	4.67	2.83	1.23	1.91
Walmart & HWY 1	70	100	0	0	45	15	4.30	2.10	1.36	1.82
Ruppert & HWY 1	80	70	0	0	45	25	4.30	2.83	1.52	1.36
Miller & HWY 1	75	65	0	0	35	25	3.57	2.83	1.85	1.66
Orchard & HWY 1	75	65	0	0	35	25	3.57	2.83	1.85	1.66
Riverside & HWY 6	90	90	0	0	35	30	3.57	3.20	2.14	2.14
Gilbert & HWY 6	90	90	74	88	35	30	3.57	3.20	2.14	2.14
Boyrum & HWY 6	105	100	60	102	35	25	3.57	2.83	2.44	2.34
Keokuk & HWY 6	70	110	54	115	35	25	3.57	2.83	1.75	2.53
Broadway & HWY 6	80	100	60	93	40	25	3.93	2.83	1.70	2.05
Sycamore & HWY 6	60	110	52	116	40	30	3.93	3.20	1.36	2.22
First & HWY 6	75	90	0	0	40	25	3.93	2.83	1.62	1.88
Fairmeadows & HWY 6	80	110	40	92	45	25	4.30	2.83	1.52	1.97
Lakeside & HWY 6	90	120	0	0	45	25	4.30	2.83	1.67	2.12
Heinz & HWY 6	100	100	50	0	45	25	4.30	2.83	1.82	1.82
Westside & Mormon Trek	80	100	53	66	35	25	3.57	2.83	1.95	2.34

Vehicle Clearance Interval Calculations

$YELLOW = t + V / 2a$
 t = perception-reaction time (1 second)
 V = approach speed (ft/sec)
 a = deceleration rate (10 ft/sec²)

$ALL\ RED = (W + L) / V$
 W = width of intersection (ft)
 L = length of vehicle (20 ft)
 V = approach speed (ft/sec)

Pedestrian Clearance Interval Calculations

WALK = 7 seconds

$FLASHING\ DON'T\ WALK = D / V$
 D = Pedestrian Crossing Distance (ft)
 V = walking speed (3.5 ft/sec)

Pedestrian Clearance Intervals
(with north/south pedestrian refuge)

Intersection	Pedestrian		Pedestrian	
	E/W Width	N/S Width	E/W Clear	N/S Clear
Mormon Trek & HWY 1 (north)	0	83	0	24
Mormon Trek & HWY 1 (south)	0	71	0	20
Gilbert & HWY 6	74	88	21	25
Boyrum & HWY 6 (north)	60	37	17	11
Boyrum & HWY 6 (south)	60	50	17	14
Keokuk & HWY 6 (north)	54	58	15	17
Keokuk & HWY 6 (south)	54	32	15	9
Broadway & HWY 6 (north)	60	39	17	11
Broadway & HWY 6 (south)	60	34	17	10
Sycamore & HWY 6 (north)	52	46	15	13
Sycamore & HWY 6 (south)	52	31	15	9
Fairmeadows & HWY 6 (north)	40	39	11	11
Fairmeadows & HWY 6 (south)	40	38	11	11
Heinz & HWY 6	50	0	14	0
Westside & Mormon Trek	53	66	15	19

Pedestrian Clearance Interval Calculations

WALK = 7 seconds

FLASHING DON'T WALK = D / V

D = Pedestrian Crossing Distance (ft)

V = walking speed (3.5 ft/sec)