

Traffic Safety Improvement Program

Traffic Control Devices Applications FY 2018



Received by August 15, 2016

City of Urbandale

3600 86th Street • Urbandale, IA 50322 • 515.278.3900 • Urbandale.org

August 10, 2016



Mr. Steven Schroder, P.E.
Office of Traffic and Safety
Iowa Department of Transportation
800 Lincoln Way
Ames, IA 50010

RE: APPLICATION FOR TRAFFIC SAFETY FUNDS -TRAFFIC CONTROL DEVICES
TRAFFIC SIGNAL BATTERY BACKUP UNITS – MULTIPLE LOCATIONS
CITY OF URBANDALE

Dear Mr. Schroder:

The City of Urbandale is pleased to submit, for your consideration, an application for funding assistance through the Iowa Department of Transportation's Traffic Safety Improvement Program (TSIP) under the Traffic Control Device Category.

The proposed improvements consist of adding battery backup units at the follow intersections:

- 86th Street and New York Avenue
- 86th Street and HyVee Entrance
- 86th Street and Aurora Avenue
- Douglas Avenue and HyVee/Police Entrance
- Douglas Avenue and Mary Lynn Drive
- Douglas Avenue and 104th Street
- Douglas Avenue and 109th Street
- Douglas Avenue and 111th Street
- Douglas Parkway and Pilot Travel Center Entrance
- Douglas Parkway and 121st Street
- Douglas Parkway and 128th Street
- 100th Street and 99th Street
- NW Urbandale Drive and 100th Street

The proposed improvements will allow for continued operation of traffic signals during a power outage. This will provide safer intersections for the traveling public by reducing traffic confusion, congestion and delays. The improvements will also provide a safer environment for Public Works staff by limiting their exposure to traffic during a power outage.

The City is confident the information presented herein supports the applicability of the safety improvement goals of the program and demonstrates the worthiness of the project for TSIP funding assistance. If you have any questions, please call me at (515) 278-3950.

Sincerely,

A handwritten signature in blue ink, appearing to read 'D. McKay', is written over a horizontal line.

David J. McKay, P.E.
Director of Engineering and Public Works
City of Urbandale

Enclosure(s)

**IOWA DEPARTMENT OF TRANSPORTATION
TRAFFIC SAFETY IMPROVEMENT PROGRAM**

**FY2017 TRAFFIC SAFETY FUND
APPLICATION**



**City of Urbandale
Department of Engineering and Public Works
August 10, 2016**

David J. McKay, P.E. Director of Engineering and Public Works

TABLE OF CONTENTS

	Pages
A. Application, Certification, & Resolution	2 – 4
B. Narrative	5 – 6
C. Itemized Breakdown of Cost	7
D. Time Schedule	7
E. Map	8 – 9
F. Color Pictures	10 – 16
G. Plan View – NOT APPLICABLE	17
H. Traffic Volumes	17
I. Signal Layout – NOT APPLICABLE	17
J. Benefit / Cost Worksheet – NOT APPLICABLE	17

A. APPLICATION, CERTIFICATION, & RESOLUTION

APPLICATION:

Rev. 6/16



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION DATE: 8-10-2016

Location / Title of Project Traffic Signal Battery Backup Units- Multiple Locations

Applicant City of Urbandale

Contact Person David J. McKay Title Director of Engineering & Public Works

Complete Mailing Address 3600 86th Street
Urbandale, IA 50322-4057

Phone 515-278-3950 E-Mail dmckay@urbandale.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 Safety Cost	\$ <u>81,900.00</u>
Total Project Cost	\$ <u>97,500.00</u>
Safety Funds Requested	\$ <u>81,900.00</u>

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

A. APPLICATION, CERTIFICATION, & RESOLUTION CONT.

CERTIFICATION:

Rev. 6/16

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 Urbandale

Signed:  8-10-16
Signature Date Signed

David J. McKay, P.E.
Typed Name

Attest:  8/10/16
Signature Date Signed

John B. Larson, P.E.
Typed Name

A. APPLICATION, CERTIFICATION, & RESOLUTION CONT.

RESOLUTION:

A

RESOLUTION 99-2016

A RESOLUTION AUTHORIZING THE CITY OF URBANDALE, IOWA, TO MAKE AN APPLICATION TO THE IOWA DEPARTMENT OF TRANSPORTATION TRAFFIC SAFETY IMPROVEMENT PROGRAM FOR THE FUNDING OF THE INSTALLATION OF BATTERY BACKUP UNITS AT THIRTEEN (13) TRAFFIC SIGNALS AND FURTHER APPROVING THE APPLICATION WHICH OBLIGATES THE CITY TO MAINTAIN THE FUNDED IMPROVEMENTS.

WHEREAS, the Iowa Department of Transportation Traffic Safety Improvement operates under the rules of the Iowa Administrative Code 761 – Ch.164; and

WHEREAS, said program allows for the distribution of traffic safety funds to cities, counties and the Iowa DOT for roadway safety improvements, research, studies, or public information initiatives.; and

WHEREAS, the City of Urbandale has determined that by providing battery backups for these traffic signals there will be continued operation of signals during power outages thereby reducing traffic congestion and improving the safety of the intersection;

NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF URBANDALE, IOWA, THAT:

1. The City Council supports and approves the attached application for Iowa Department of Transportation Traffic Safety Improvement Program funding.
2. The City Council hereby commits to accepting and maintaining these improvements.
3. The Mayor is hereby authorized to execute the application on behalf of the City.

PASSED AND APPROVED this 19th day of July, 2016.



Robert B. Andeweg, Mayor

Attest:



Debra Mains, City Clerk

B. NARRATIVE

**Traffic Signal Battery Backup Units – Multiple Locations
 Urbandale, Iowa**

The City of Urbandale is 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 and the associated equipment to retrofit the existing signalized intersections described below. The battery backup unit is installed in a separate cabinet that is either mounted on or adjacent to the existing traffic signal cabinet. The City of Urbandale is responsible for the operation and maintenance of the signals.

- 86th Street is a 4 lane divided roadway with traffic volumes of approximately 20,000 vehicles per day. It is an arterial that serves as a major route to office and commercial areas.
- Douglas Avenue is a 4 lane divided roadway with traffic volumes that range from 16,000 to 25,000 vehicles per day and serves as a major route to office and commercial areas.
- 100th Street is 4 lane divided roadway with traffic volumes of approximately 17,500 vehicles per day and serves as a major route to office and commercial areas.
- NW Urbandale Drive is a 4 lane divided roadway with traffic volumes of approximately 12,900 vehicles per day.
- 100th Street at NW Urbandale Drive is a 2 lane roadway with traffic volumes of 2,830 vehicles per day. 100th Street is a major collector that primarily serves residential and office park areas.

Power disturbances at busy intersections can have far reaching consequences. Power loss to traffic signals can immediately gridlock an intersection and create congestion on arterials and outlying intersections dramatically increasing the likelihood of accidents. During a power outage in the City of Urbandale the affected signals cease to operate, creating a blacked out signal condition. This condition requires that drivers treat the intersection as an all way stop. However, in many instances drivers on the major street will treat this as a green and proceed through the intersection.

During a power outage the Public Works Department will mobilize and install temporary signs. This is a time consuming process as staff must first travel to the facility, load the signs, travel to the affected intersections, and install the signage. Depending on the severity of the power outage the City may or may not have enough signs to cover all impacted intersections. During this time public works staff and police personnel are unable to focus on their primary duties. The response time is increased when the outages occur outside of business hours as staff has to be notified and travel from their residences to the public works facility to load the signs.

The use of LED traffic signal indicators has made it possible to install battery backup units that can provide power during electrical outages. The battery backup unit can provide full operation of a traffic signal for over five hours. The additional hours of operation provided by battery backups during a power outage will allow for the continued operation of the signal while the

electrical supply is restored. During outages that exceed the battery life, the additional hours will allow for signage to be installed at a controlled intersection, thereby reducing the risk to staff. The intersections that are equipped with a battery backup will provide a safer environment for the traveling public and city staff by reducing traffic confusion, congestion and delays, and limiting the exposure of city of staff to traffic.

The City of Urbandale currently has 49 signalized intersections, and either has equipped or is in the process of installing battery backups at 15 intersections. The 86th Street corridor has battery backup at all signalized intersections except at 86th Street and New York Avenue, 86th Street and Hy-Vee Entrance and 86th Street and Aurora Avenue. By installing battery backups at these locations, the City will have the main north-south route fully functional during power outages. The Douglas Avenue corridor has battery backups at the I35/80 ramps and at 100th Street and Douglas Avenue. By installing battery backups at the remaining intersections along Douglas Avenue west of 86th Street, the City will have the main east-west route fully functional during power outages. The City of Urbandale will be installing battery backups units and GPS Emergency Preemption at all future signalized locations.

The City of Urbandale has installed GPS Emergency Preemption at all signalized intersections in the past two years. Installing Battery Backups at these major intersections will allow the Emergency Preemption to remain working during power outages which will allow emergency vehicles to have safer travel thru the intersection and allow other drivers to have proper signal to stop.

The City of Urbandale has also installed switches at all signalized intersections to get the data from the GPS Preemption and Battery Backups back to the City of Urbandale Engineering for monitoring and will provide notification when the system is operating on the battery backup, which will allow staff to analyze the problem remotely and make more timely repairs or to install signage if the outage is likely to exceed the battery life of the backup system.

The installation of battery backups at these critical intersections will increase public safety by reducing driver confusion and traffic congestion during power outages. Additionally, this will reduce the exposure of City staff to traffic in an uncontrolled intersection, and allow staff to focus on their primary duties. The continuous signal operation provided by battery backup systems during a power outage will allow for improved safety and traffic flow as well as reduce the traffic congestion and limit the potential for accidents.

C. ITEMIZED BREAKDOWN OF COSTS

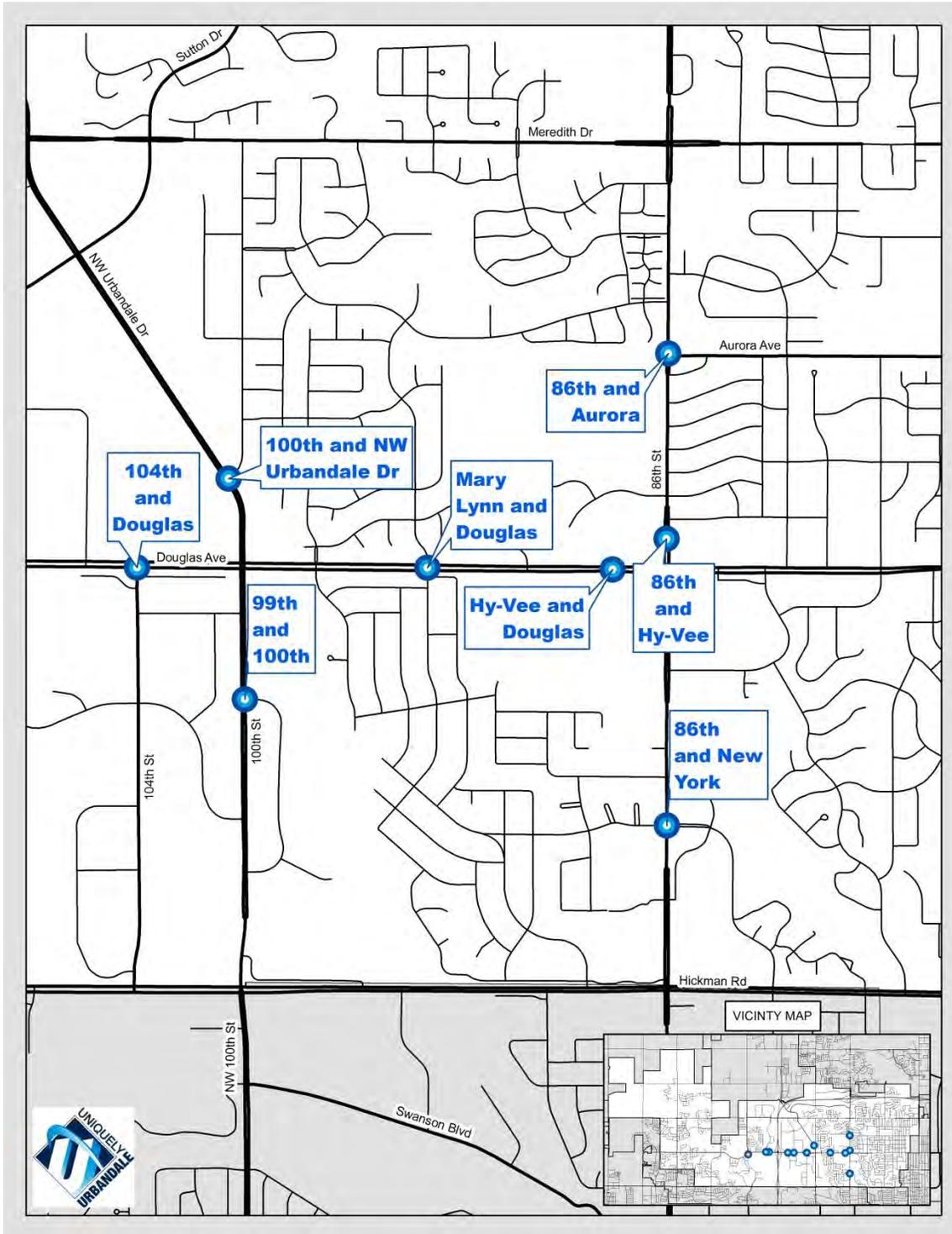
Intersection	Battery Backup	Intersection	Battery Backup
86 th Street and New York Avenue	\$6,300.00	Douglas Parkway and Pilot	\$6,300.00
86 th Street and Hy-Vee Ent.	\$6,300.00	Douglas Parkway and 121 st Street	\$6,300.00
86 th Street and Aurora Avenue	\$6,300.00	Douglas Parkway and 128 th Street	\$6,300.00
Douglas Avenue and Hy-Vee Ent.	\$6,300.00	100 th Street and 99 th Street	\$6,300.00
Douglas Avenue and Mary Lynn	\$6,300.00	NW Urbandale Drive and 100 th Street	\$6,300.00
Douglas Avenue and 104 th Street	\$6,300.00		
Douglas Avenue and 109 th Street	\$6,300.00		
Douglas Avenue and 111 th Street	\$6,300.00		
Proposed Grant Funds		Subtotal Materials	\$81,900.00*
City Funds		Subtotal Installation	\$15,600.00
		Total	\$97,500.00

* Unit prices are based on previously received contractor’s bids for installation and material costs provided by suppliers adjusted for the 2017 construction schedule.

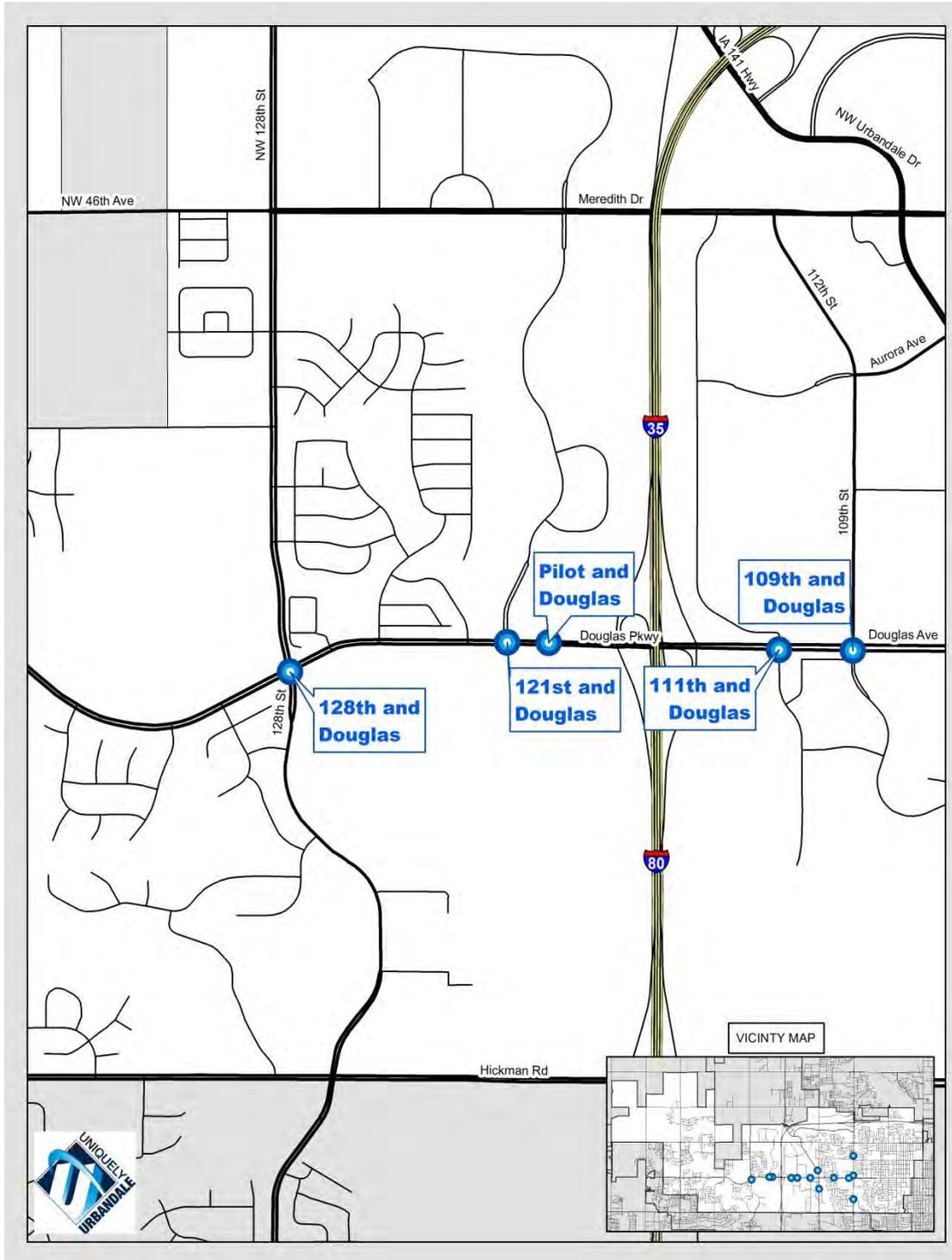
D. TIME SCHEDULE

TSIP Funding Application due	August 15, 2016
TSIP Notification of Award	December 15, 2016
TSIP Funding Available	July 1, 2017
Project Letting	July 15, 2017
Project Construction	August, 2017
Project Completion	November, 2017

E. LOCATION MAP



E. LOCATION MAP CONT.



F. PICTURES

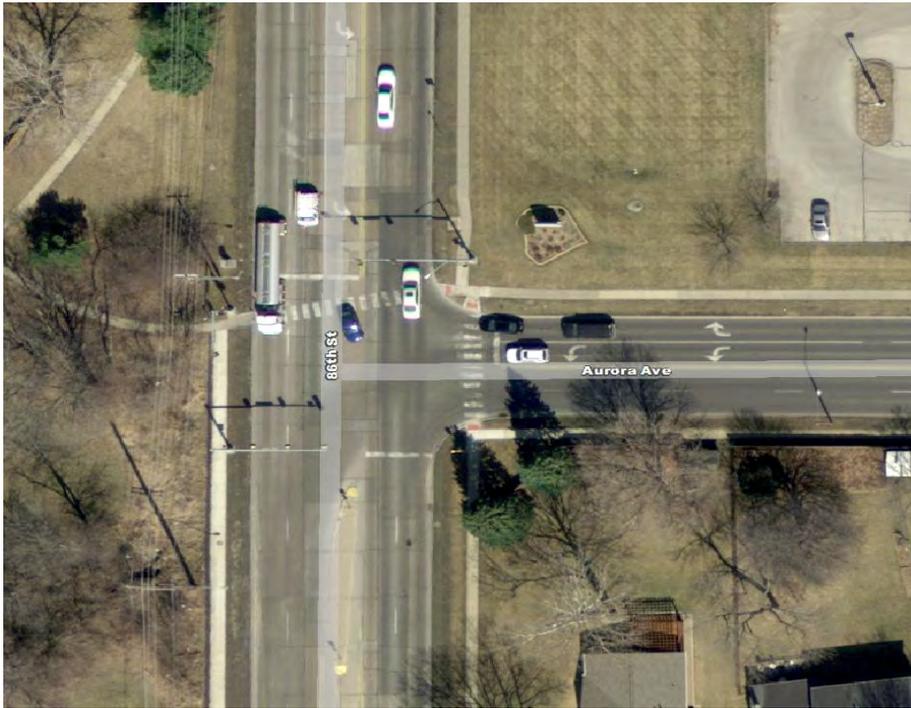


86th Street and New York Avenue



86th Street and Hy-Vee Entrance

F. PICTURES CONT.



86th Street and Aurora Avenue

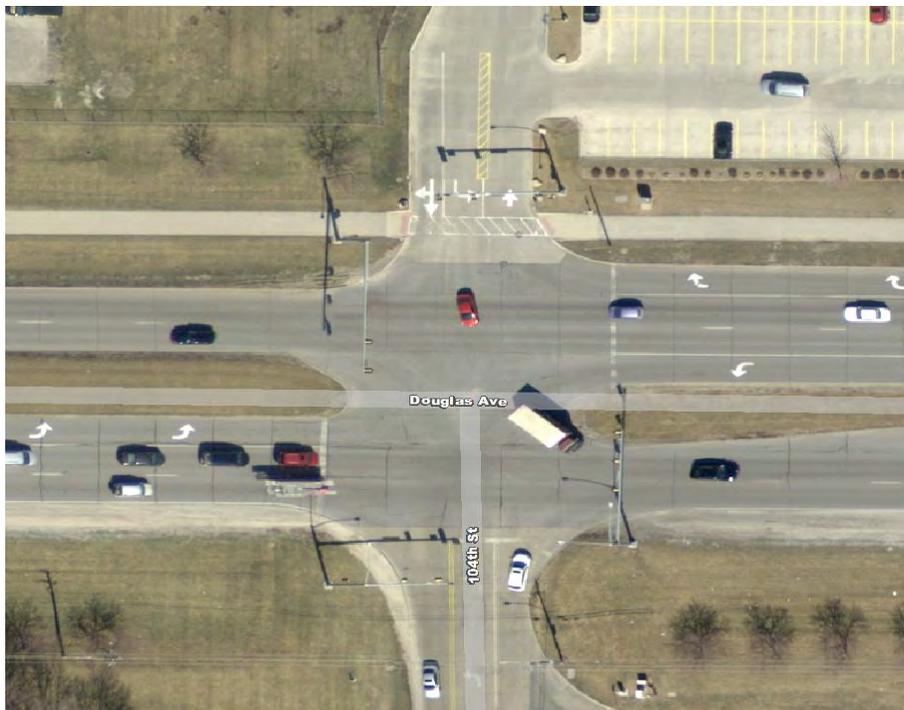


Douglas Avenue and Hy-Vee/ Police Entrance

F. PICTURES CONT.



Douglas Avenue and Mary Lynn Drive



Douglas Avenue and 104th Street

F. PICTURES CONT.

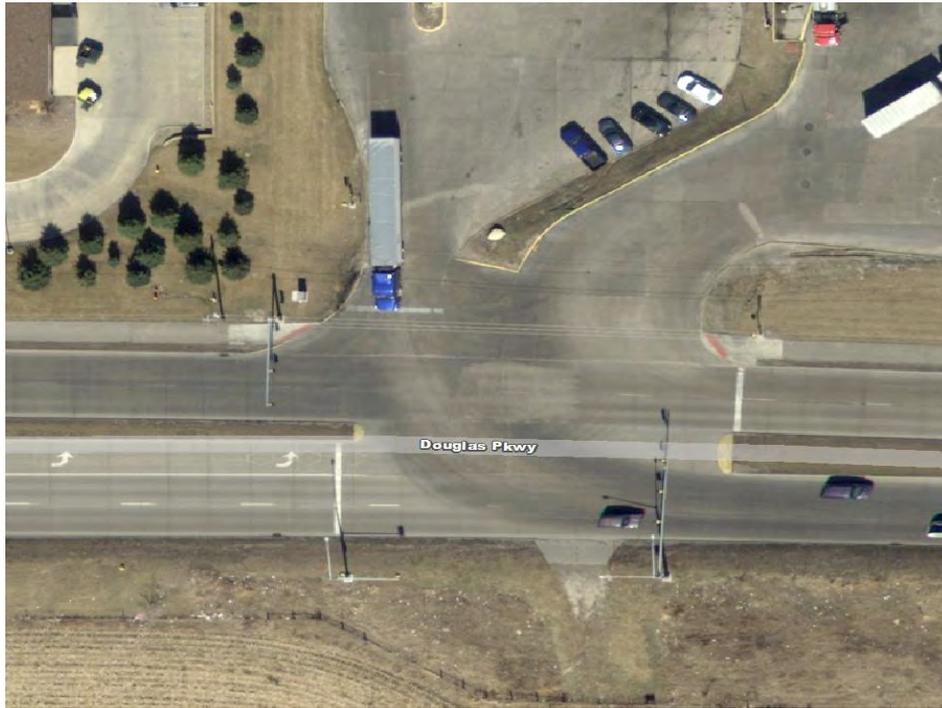


Douglas Avenue and 109th Street

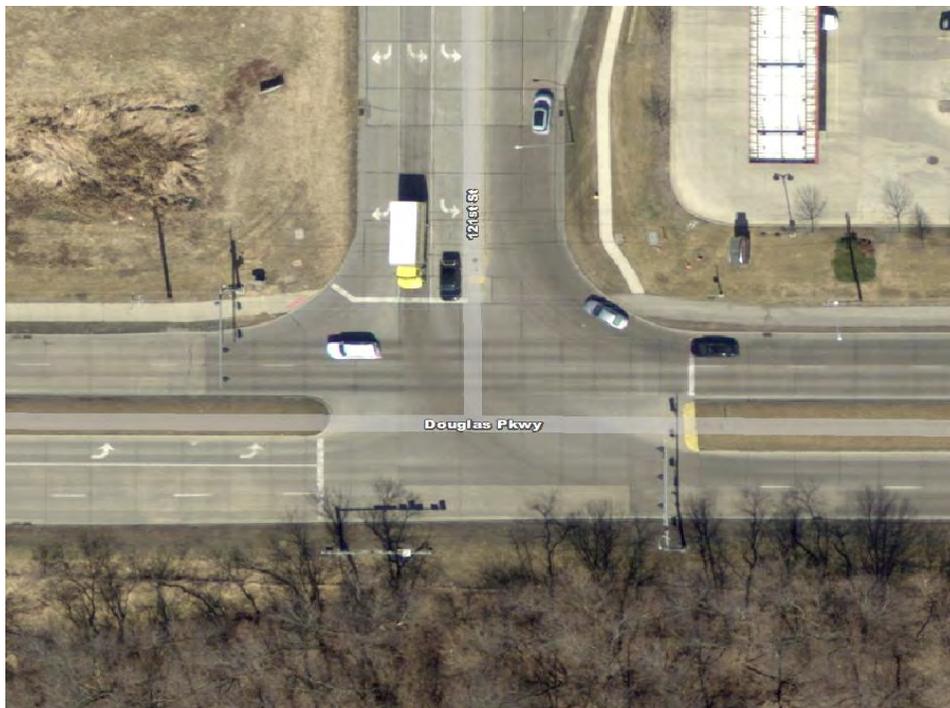


Douglas Avenue and 111th Street

F. PICTURES CONT.



Douglas Parkway and Pilot Travel Center Entrance



Douglas Parkway and 121st Street

F. PICTURES CONT.



Douglas Parkway and 128th Street



100th Street and 99th Street

F. PICTURES CONT.



NW Urbandale Drive and 100th Street

G. PLAN LAYOUT

NOT APPLICABLE

H. TRAFFIC VOLUMES

2012 Two-Way Daily Traffic Volumes (Vehicles per Day)

86 th Street at New York Avenue	21,700
86 th Street at Hy-Vee Entrance	19,600
Douglas Avenue and Mary Lynn Drive	18,200
Douglas Parkway at Pilot Travel Center	21,900
100 th Street at 99 th Street	17,500

2012 Intersection Daily Traffic Volumes (Vehicles per Day)

86 th Street and Aurora Avenue	20,770
Douglas Avenue and Hy-Vee Entrance	24,230
Douglas Avenue and 104 th Street	24,530
Douglas Avenue and 109 th Street	30,600
Douglas Avenue and 111 th Street	31,500
Douglas Parkway and 121 st Street	31,090
Douglas Parkway and 128 th Street	22,100
NW Urbandale Drive and 100 th Street	20,330

I. SIGNAL LAYOUT

NOT APPLICABLE

J. BENEFIT / COST WORKSHEET

NOT APPLICABLE



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

 DATE: 8/11/2016

 Location / Title of Project County Sign Replacement Program

 Applicant Iowa Department of Transportation

 Contact Person Tim Crouch Title State Traffic Engineer

 Complete Mailing Address 800 Lincoln Way
Ames, IA 50010

 Phone (515) 239-1513 E-Mail tim.crouch@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 Safety Cost \$ 100,000.00

 Total Project Cost \$ 100,000.00
Safety Funds Requested \$ 100,000.00

 Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

A. Not applicable

B. A county sign replacement program was initiated in FY 2017. The program is similar to the Department's city sign replacement program. Each county is allowed to submit one application per year for the replacement of signs eligible within the program guidelines. The applications are limited to a maximum of \$10,000 per county. Funding from the county curve sign replacement program has been rolled over into this program and \$100,000 was approved in the FY 2017 TSIP. It is anticipated that interest in this program will be higher than past sign replacement programs and additional funding will be needed in FY 2018.

C. Additional funding will allow the program to continue into the next fiscal year.

D. There is no application deadline. Counties may apply for funds year-round. Funding is limited and applications are received and processed on a first-come, first-served basis.



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: _____

Location / Title of Project 2017 Traffic Signal Replacement Project

Applicant City of Mount Vernon, Iowa

Contact Person Chris Nosbisch Title City Administrator

Complete Mailing Address 213 first Street West
Mount Vernon, Iowa 52314

Phone (319) 895-8742 E-Mail cnosbisch@cityofmtvernon-ia.gov
 (Area Code)

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

Co-Applicant(s) _____

Contact Person _____ Title _____

Complete Mailing Address _____

Phone _____ E-Mail _____
 (Area Code)

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Application Type

- Site Specific
- Traffic Control Device
- Safety Study

Funding Amount

Total Safety Cost \$ 59,965.00

Total Project Cost \$ 278,595.00

Safety Funds Requested \$ 59,965.00 (Signal Material Cost)

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

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 Mount Vernon, Iowa

Signed: *Chris Nosbisch* 8/12/16
Signature Date Signed

Chris Nosbisch
Typed Name

Attest: *Sue Ripke* 8-12-16
Signature Date Signed

Sue Ripke
Typed Name

Narrative

The City of Mount Vernon, Iowa is submitting this application for Traffic Safety Improvement Program funds under the traffic Control device category. The funding request is to provide funding for the material cost for the purchase of traffic signal equipment to replace the existing pedestrian activated signals at the intersection of First Street West and Fifth Avenue West. The city of Mount Vernon, Iowa is responsible for the operation and maintenance of the signals.

The location of this project, the intersection of Fifth Avenue and First Street West, is the intersection of two minor arterials which also service specific pedestrian traffic. The main contributors to the pedestrian traffic along these two arterials include Washington Elementary School, The Cornell College campus, Memorial Park, Mount Vernon United Methodist Church, First Presbyterian Church, and the Mount Vernon Uptown Business district. Please refer to Figure 1 in Section E for reference.

The purpose of this project is to replace the existing pedestrian activated crossing signal which is outdated, in poor repair, and of dysfunctional operation. Specifically the traffic on Fifth Avenue is controlled by stop signs, the existing pedestrian activated signal controls only traffic on First Street West. This leads to confusion on both the pedestrian as well as vehicle users.

Safety Needs: The intersection of Fifth Avenue and First Street West has a high pedestrian use due to a number of sources. These include:

- Washington Elementary School
- Cornell College
- Mount Vernon "Uptown Business" district
- Memorial Park
- First Presbyterian Church
- United Methodist Church (Including Preschool)

The existing condition explained below, are only partially ADA compliant. The existing pedestrian activated signals are in poor repair, and are not compliant with Manual on Uniform Traffic Control Devices (MUTCD) requirements. This causes an unsafe situation for pedestrians trying to cross the streets at this intersection.

Existing Conditions: Outdated pedestrian activated signals which control traffic on First Street West only. Fifth Avenue traffic is controlled by stop signs. Fifth Avenue has been reconstructed with brick crosswalk handicap crossings from two separate reconstruction projects. The pedestrian ramps are American with Disabilities Act (ADA) compliant on the northerly leg of the intersection. The pedestrian ramps are not ADA compliant on the southerly leg of the intersection. The marked (painted) pedestrian crosswalk on First street West is on the westerly side of the intersection. Please refer to Figure 2 in Section G for reference.

Project Concept: The proposed project concept and scope includes the installation of MUTCD and compliant pedestrian activated signals which would provide safe pedestrian passage for three pedestrian crosswalks from vehicular traffic from all four intersection legs. Pedestrian ramps which presently do not meet the ADA requirements will be reconstructed to comply with ADA requirements. Please refer to Figure 3 in Section G for reference.

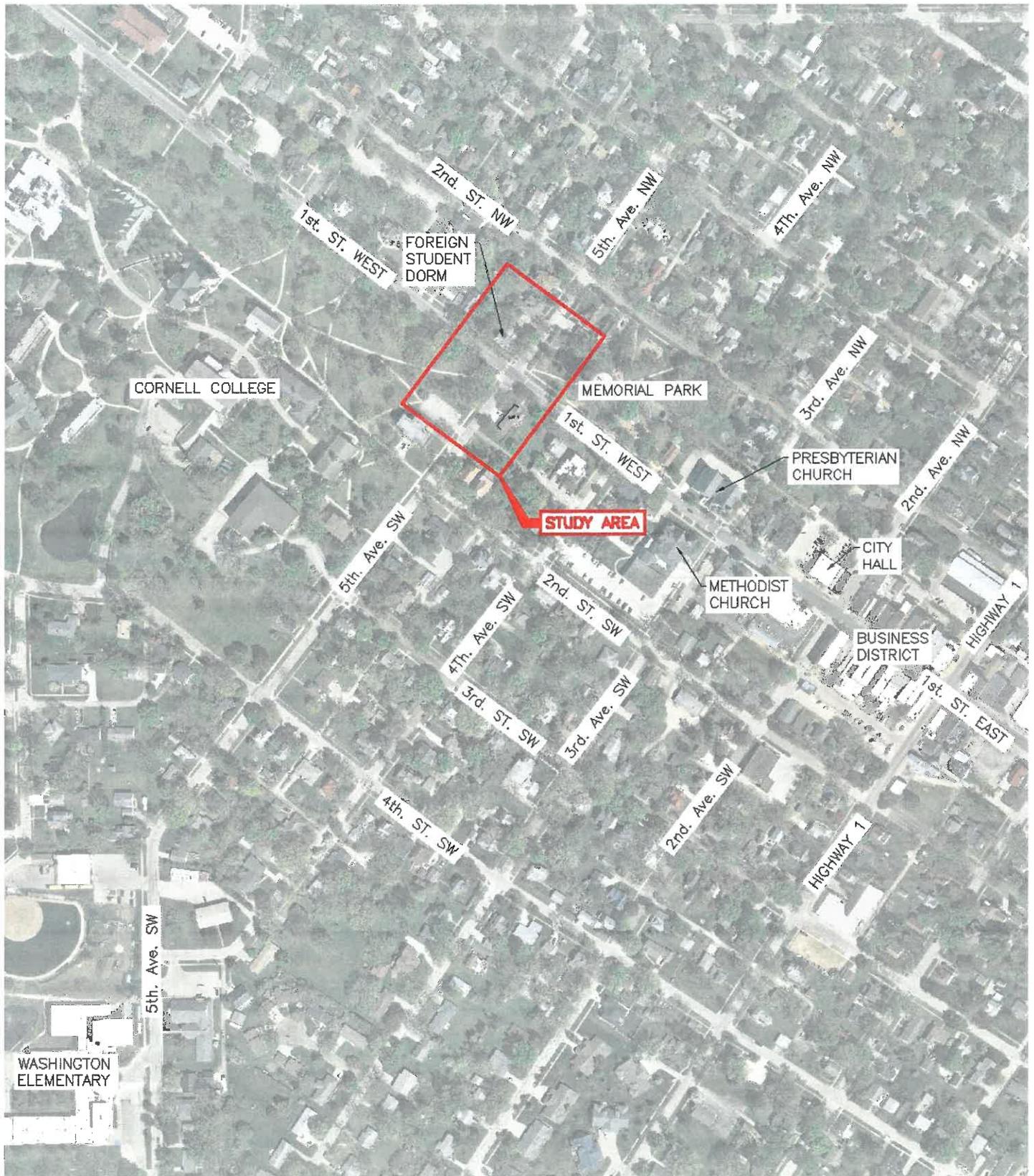
Manual on Uniform Traffic Control Devices (MUTCD) Requirements: The proposed pedestrian activated crossing signal will meet the applicable MUTCD requirements as set forth in Chapter 4D. Additionally, as set forth in Section 4D.03 Provisions for Pedestrians, Pedestrian signal heads conforming to the provisions set forth in Chapter 4E shall be installed.

Opinion of Cost for 2016 PEDESTRIAN ACTIVATED CROSSING SIGNALS					C
ESTIMATED MATERIAL COST FOR PROPOSED SIGNALS					
Mount Vernon, Iowa					
10-Aug-16					
No.	Description	Unit	Unit Price	Quantity	Extended Price
1	8 Phase Controller Cabinet & Base	Each	\$14,000.00	1	\$14,000.00
2	Vehicle Detection	Each	\$650.00	4	\$2,600.00
3	Push buttons w/ Signs	Each	\$200.00	8	\$1,600.00
4	Side of Pole Mount R,Y,G LED w/ Bracket Signal Heads	Each	\$575.00	4	\$2,300.00
5	Mast Arm Mount R,Y,G LED w/ Bracket Signal Heads	Each	\$575.00	4	\$2,300.00
6	12" LED Hand/Person Side Of Pole Mount Pedestrian Signal	Each	\$500.00	8	\$4,000.00
7	Cable & Conduit	L.F.	\$7.75	300	\$2,325.00
8	Pedestal Bases	Each	\$200.00	2	\$400.00
9	Traffic Signal Footing	Each	\$1,060.00	2	\$2,120.00
10	10 Ft Pedestrian Signal Pole	Each	\$1,440.00	4	\$5,760.00
11	Traffic Pole Powder Coated w/ 21' & 35' MA	Each	\$9,360.00	2	\$18,720.00
12	Remote Pedestrian Push /button Pole Powder Coated	Each	\$960.00	4	\$3,840.00
REQUESTED FUNDING					\$59,965.00

Schedule

August 2016	Application Submittal
December 2016	Grant Award
January 2017	Begin Design
March 2017	Award Contract
July 2017	Begin Construction
October 2017	Finish Construction

Location Map



Photos



Photo 1 – Looking Easterly along First Street West

Photos



Photo 2 – Looking Easterly along First Street

Photos



Photo 3 – Looking Northerly along Fifth Avenue

Photos



Photo 4 – Looking Northerly along Fifth Avenue

Photos



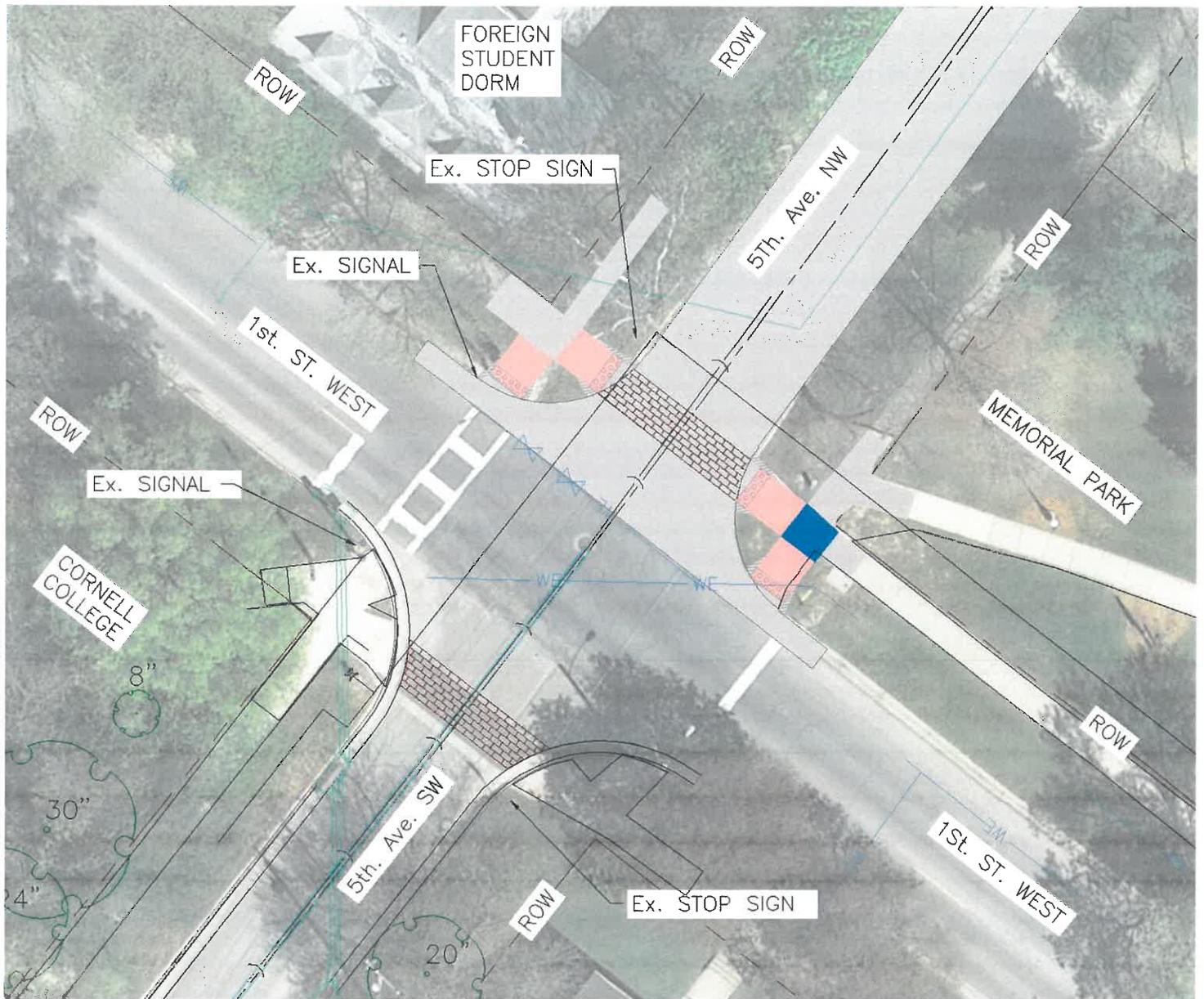
Photo 5 – Looking Westerly along First Street

Photos

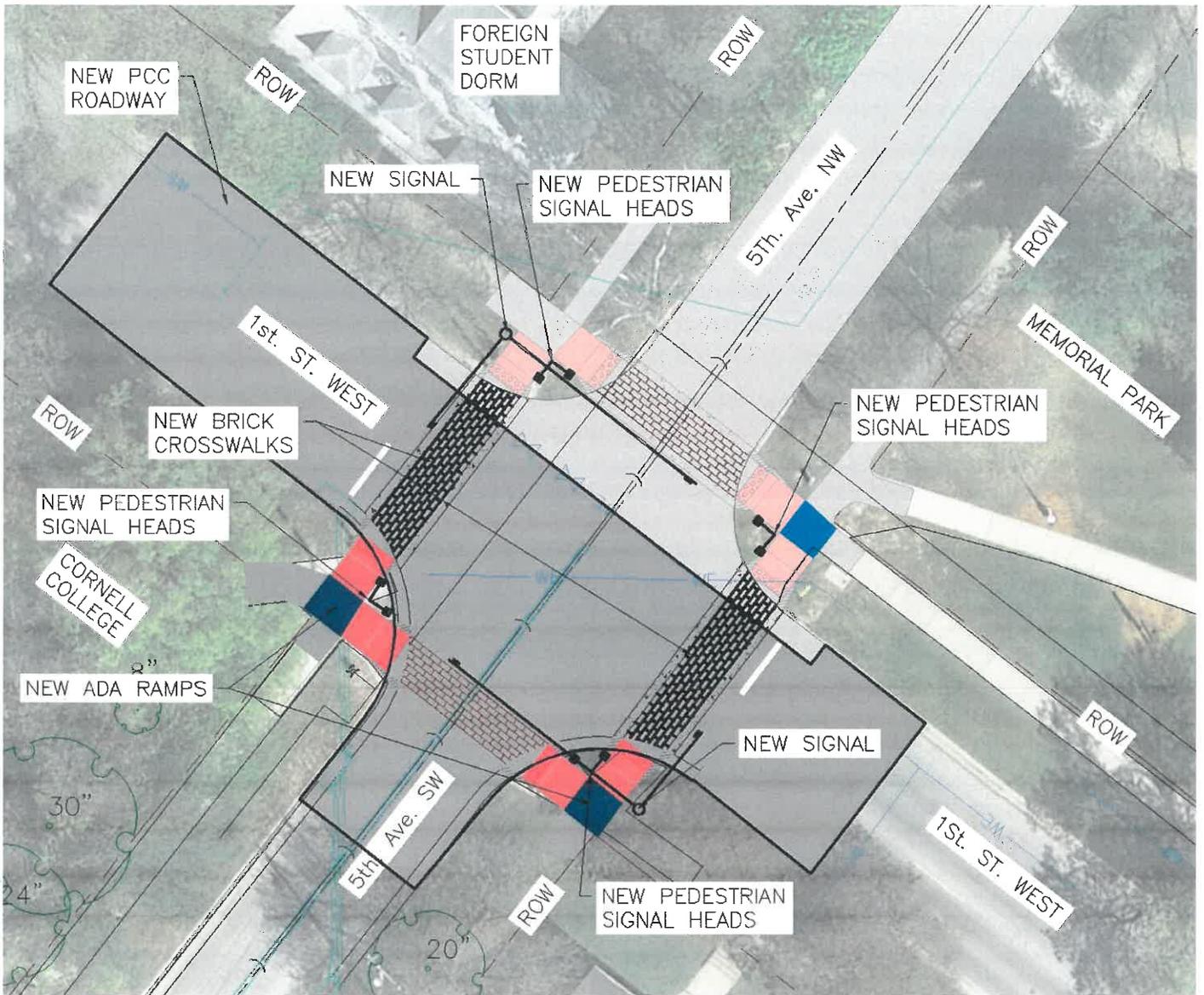


Photo 6 – Looking Westerly along First Street

Plan View - Existing



Plan View - Proposed





Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: 7/28/2016

Location / Title of Project 20th & Avenue L / 24th & Avenue L / 27th & Avenue L

Applicant City of Fort Madison

Contact Person Larry Driscoll Title Public Works Director

Complete Mailing Address 811 Avenue E, Fort Madison, IA 52627

Phone (319) 372-7700 E-Mail ldriscoll@fortmadison-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) _____

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 Safety Cost \$ 102,585.00

Total Project Cost \$ 102,585.00

Safety Funds Requested \$ 102,585.00

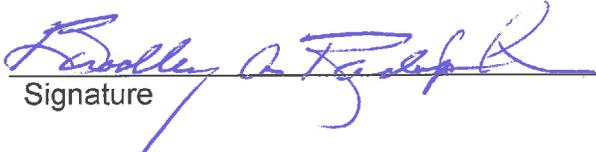
Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____
 No

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 Fort Madison

Signed:  August 2, 2016
Signature Date Signed

Bradley A. Randolph, Mayor
Typed Name

Attest:  August 2, 2016
Signature Date Signed

Melinda L. Blind, City Clerk
Typed Name

A RESOLUTION AUTHORIZING THE FILING OF AN APPLICATION WITH THE STATE OF IOWA FOR TRANSPORTATION SAFETY IMPROVEMENT PROGRAM (TSIP) FUNDS FOR TRAFFIC CONTROL DEVICES AT THE INTERSECTIONS OF HIGHWAY 2 AND 20th STREET, HIGHWAY 2 AND 24th STREET, AND HIGHWAY 2 AND 27th STREET ON BEHALF OF THE CITY OF FORT MADISON

WHEREAS, The City of Fort Madison intends to apply for Traffic Safety Improvement Program funding through the Iowa Department of Transportation (IDOT), and

WHEREAS, in order to avail itself of possible receipt of funds pursuant to any grant under the said program an application must be filed by the City of Fort Madison, and

WHEREAS, The City of Fort Madison fully supports the application and intends to utilize Traffic Safety Improvement Program funding for traffic control device improvements for the intersections of Highway 2 and 20th Street, Highway 2 and 24th Street, and Highway 2 and 27th Street, and

WHEREAS, the filing of the application is in the best interests of the citizens of the City of Fort Madison, Iowa, and should be approved.

BE IT HEREBY RESOLVED BY THE FORT MADISON CITY COUNCIL: That the City of Fort Madison guarantees the availability of funds for any required local match for traffic control device improvements at the intersections of Highway 2 and 20th Street, Highway 2 and 24th Street, and Highway 2 and 27th Street and agrees to maintain, or cause to be maintained, the completed improvements in a manner acceptable to the IDOT throughout their useful life and hereby authorizes the Director of Public Works to submit an application for funding the improvements through Southeast Iowa Regional Planning Commission.

APPROVED and ADOPTED this 2nd day of August, 2016.


Bradley A. Randolph, Mayor

ATTEST:


Melinda L. Blind, City Clerk

Narrative– **B.**

Existing Conditions:

Highway 2 (also known as Business Highway 61, transforming into Avenue L and Avenue O within the Fort Madison city limits) is a major business highway running through the heart of Fort Madison. The highway connects the eastern edge of town with the center of the city. Avenue L is the main business corridor within the city, and one of the most traveled roads, with 9800 annual average daily traffic. Avenue L is a four lane undivided road with lanes approximately 11 feet in width and a speed limit of 30 miles per hour. Many commercial businesses are located along Avenue L, including Hy-Vee, Walgreens, and O’Reilly Auto parts, among others. There are three key intersections along the avenue: 20th Street, 24th Street, and 27th Street. At all three of these intersections, the traffic control lights are pole-mounted and controlled by a nearby controller cabinet. However, these controller cabinets were first put in place in 1986 and are severely outdated and in dire need of replacement.

During June 2014, the Southeast Iowa Regional Planning Commission performed peak hour turn movement counts along all three intersections. The chart below shows the peak hour (AM and PM) traffic counts from each intersection.

Peak Hour Traffic Totals		
<i>Intersection</i>	<i>Time</i>	<i>Total Vehicle Number</i>
20th Street	8:00 - 9:00 AM	632
20th Street	4:15 - 5:15 PM	968
24th Street	8:00 - 9:00 AM	721
24th Street	4:30 - 5:30 PM	1160
27th Street	7:30 - 8:30 AM	739
27th Street	4:45 - 5:45 PM	1288

There have also been a total of 31 crashes at these three intersections from 2011 to 2015, according to SAVER data produced by the Iowa DOT. The chart below shows the type and distribution of these crashes.

Crash Data for 2011-2015				
<i>Intersection</i>	<i>Total</i>	<i>Injuries</i>	<i>PDO</i>	<i>% of All Crashes</i>
20th Street	4	1	3	13%
24th Street	10	1	9	32%
27th Street	17	8	12	55%

Proposed Concept

The proposed improvements for the intersections of Avenue L (Highway 2) and 20th Street, Avenue L and 24th Street, and Avenue L and 27th Street include new traffic control cabinets for the 3 intersections. The current signals at these intersections function adequately, however the devices that control them are

heavily outdated, past their useful life, and in need of replacement. Despite having functioning turn lights and signals, many accidents still occur each year at these intersections. These signals are outdated and need to be replaced by new signal control devices that incorporate the appropriate timing and looping sequence for the intersection.

These improvements along Avenue L will improve the operational traffic and safety of the business highway. All of the proposed improvements for the intersection will identify and incorporate any requirements set forth in the Manual on Uniform Traffic Control Devices and will address any problems within the clear zone.

Safety Justification

Based on SAVER data and the traffic counts, these three intersections suffer from a disproportionately large number of crashes each year in Fort Madison. The above proposed improvements will help mitigate this problem by providing better and more reliable timing and signals for drivers. These improvement will likely lead to more comfort for the driver and safer driving behavior by motorists in the functional area of the intersections.

The accident rate per hundred million miles for municipal primary roads within the state of Iowa for 2011 through 2015 was 251 accidents per hundred million vehicle miles (ACC/HMCM), according to the Iowa Department of Transportation, Office of Traffic and Safety. The chart below shows the comparisons in the accident rate for each intersection. These values were calculated using the formula:

$$\frac{\text{Total \# Accidents}}{(\text{AADT} \times \text{Years} \times 365 \times \text{Distance})} \times 100 \text{ Million} = \text{ACC/HMVM}$$

In comparison with the state averages, one can see that these three intersections within the city are the abnormal in the amount of accidents occurring at the intersections. By improving the quality of the traffic control devices, this number will decrease, providing a better and safer driving experience along the business highway.

Accidents per Hundred Million Vehicle Miles	
State Average	251 ACC/HMCM
<i>Intersection</i>	
20th Street	650 ACC/HMCM
24th Street	898 ACC/HMCM
27th Street	2,620 ACC/HMCM

By replacing the outdated traffic control devices, the new and improved systems will allow for more reliability in the intersections along Avenue L. The proposed replacements will help curb the number of collisions that occur in the intersections every year. Along with the potential safety benefits, the newer control systems will also reduce maintenance costs of the traffic signals at each intersection.

Itemized Breakdown of Cost – **C.**

Date: 08/03/2016

Expire Date: 9/2/2016

Prepared By: Jorgensen, Cathy L.

Customer: FOR0002

Morehouse, Bryan
Fort Madison, City Of
2201 Avenue M
Fort Madison IA 52627-4033
United States

Contact: Morehouse, Bryan

Phone: 319.371.2204

Fax: 319.372.8661

Email:

Description: Budgetary Estimates for Grant Monies

Part #	Description	Quantity	Price	Extended
ENGR	Cabinet - L Ave & 24th St (4 Phase)	1	\$8,625.00	\$8,625.00
ENGR	Cabinet - L Ave & 27th St (8 Phase)	1	\$9,420.00	\$9,420.00
ENGR	Cabinet - L Ave & 20th St (8 Phase)	1	\$9,420.00	\$9,420.00
ENGR	BBU System	3	\$5,345.00	\$16,035.00
ENGR	MS Sedco Intersector System - NO CABLE	3	\$19,695.00	\$59,085.00

Sale Amount:	\$102,585.00
Sales Tax:	0.00
Misc Charges:	0.00
Total Amount:	\$102,585.00

Notes:

QUOTATION DOES INCLUDE FREIGHT.

NOTE: CAT5e Outdoor Cable will be required on the Intersector Equipment. 800 ft per 4-approach system would be a good estimate. Maximum cable length is 300 ft for each detector before additional equipment is needed.

NOTE: There is technical time included in the pricing for the cabinets only. No technical time is included for the BBU or the MS Sedco budgetary estimates.

Time Schedule for Project Development

Grant Application.....	August 2016
Grant Award	January 2017
Approve contract with Iowa DOT.....	February 2017
Submit Plans	March 2017
Bid Letting, Award, and contract for Traffic signals.....	April/May 2017
Begin Construction	June/July 2017
Complete Construction	August 2017
Project Closeout.....	September/October 2017

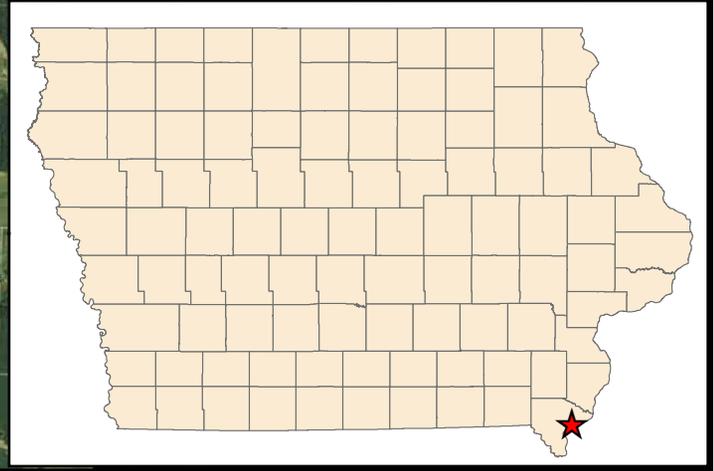
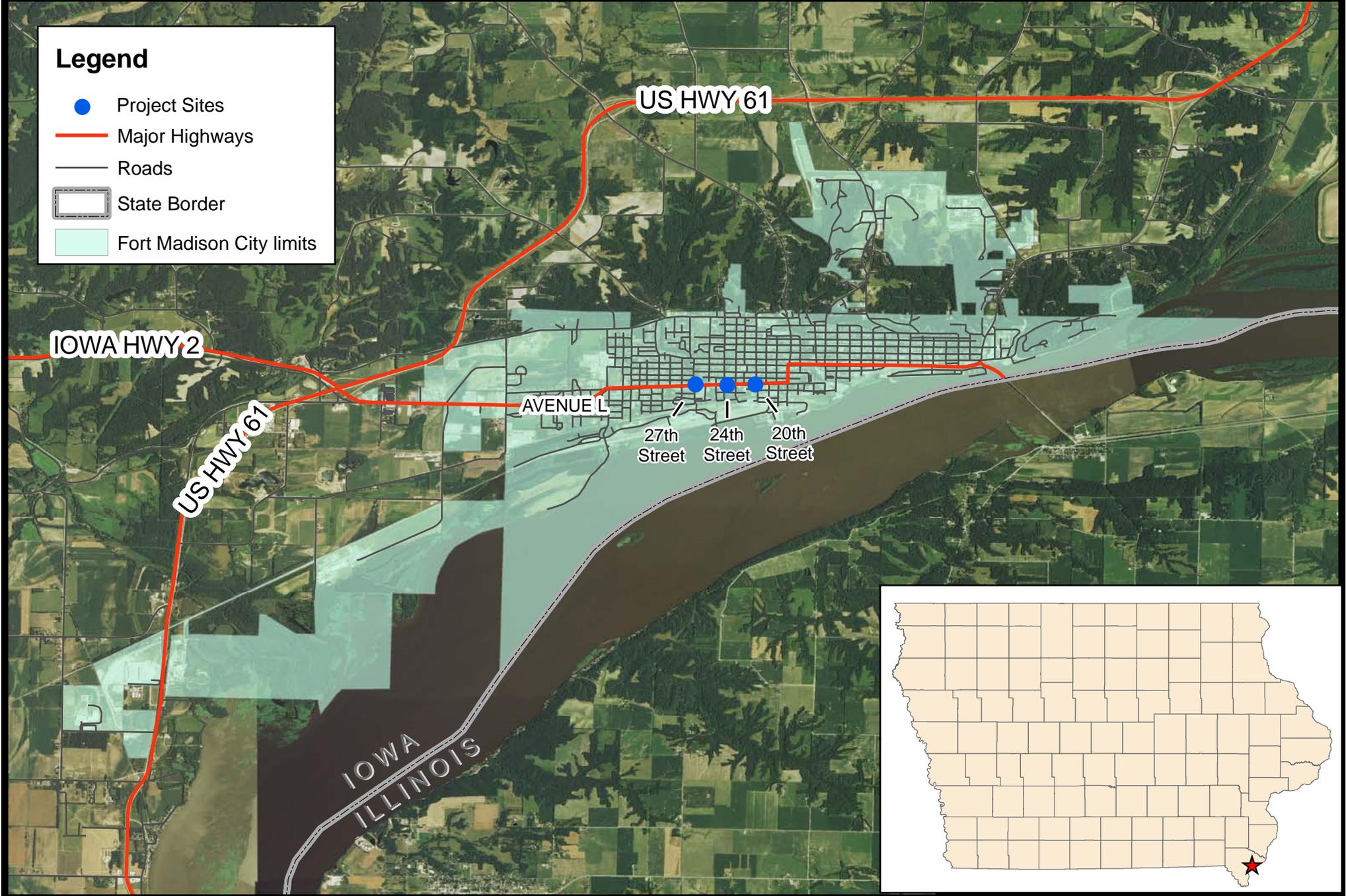
Fort Madison Project Locations Map

20th, 24th, and 27th Street Intersections



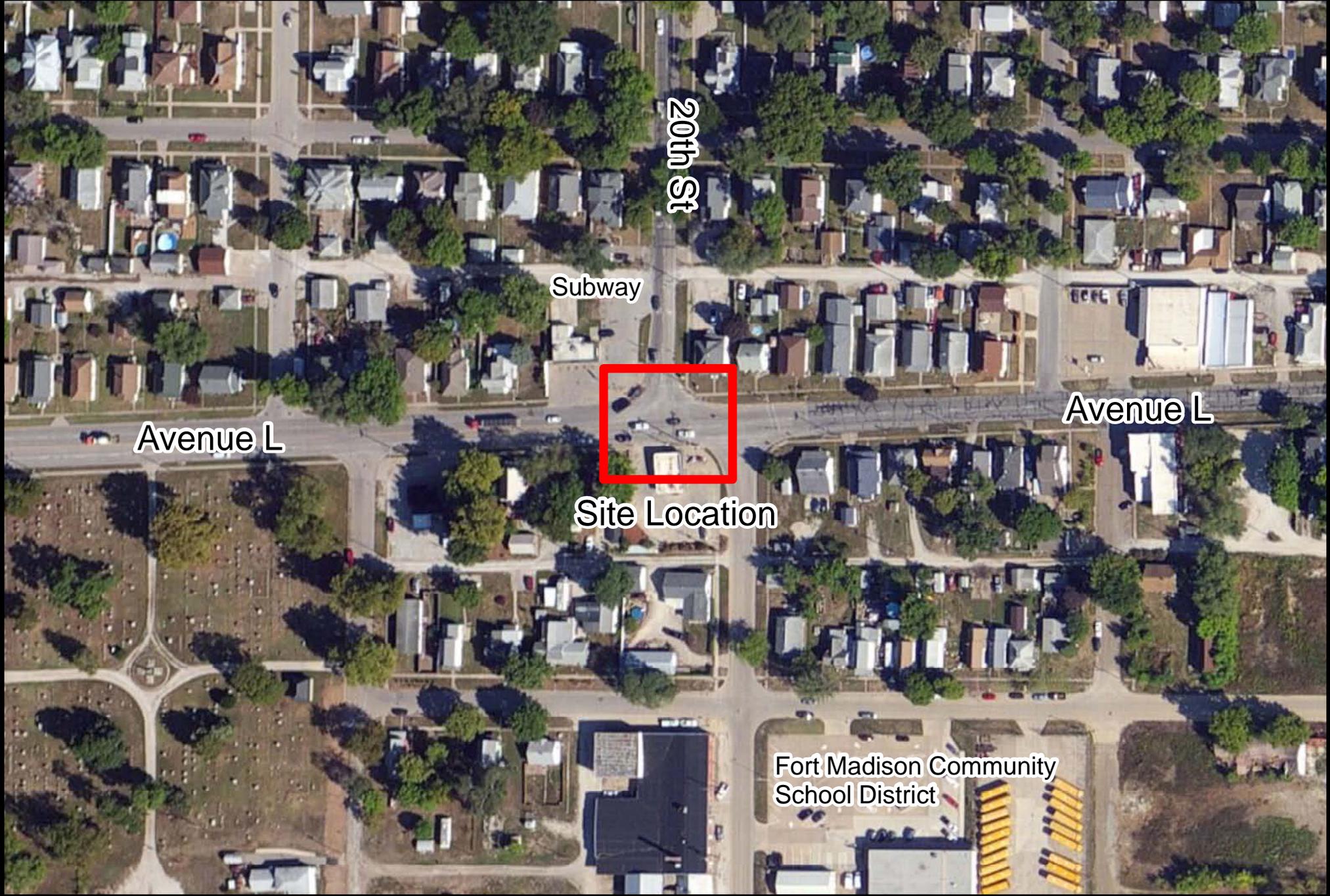
Legend

- Project Sites
- Major Highways
- Roads
- ▭ State Border
- ▭ Fort Madison City limits



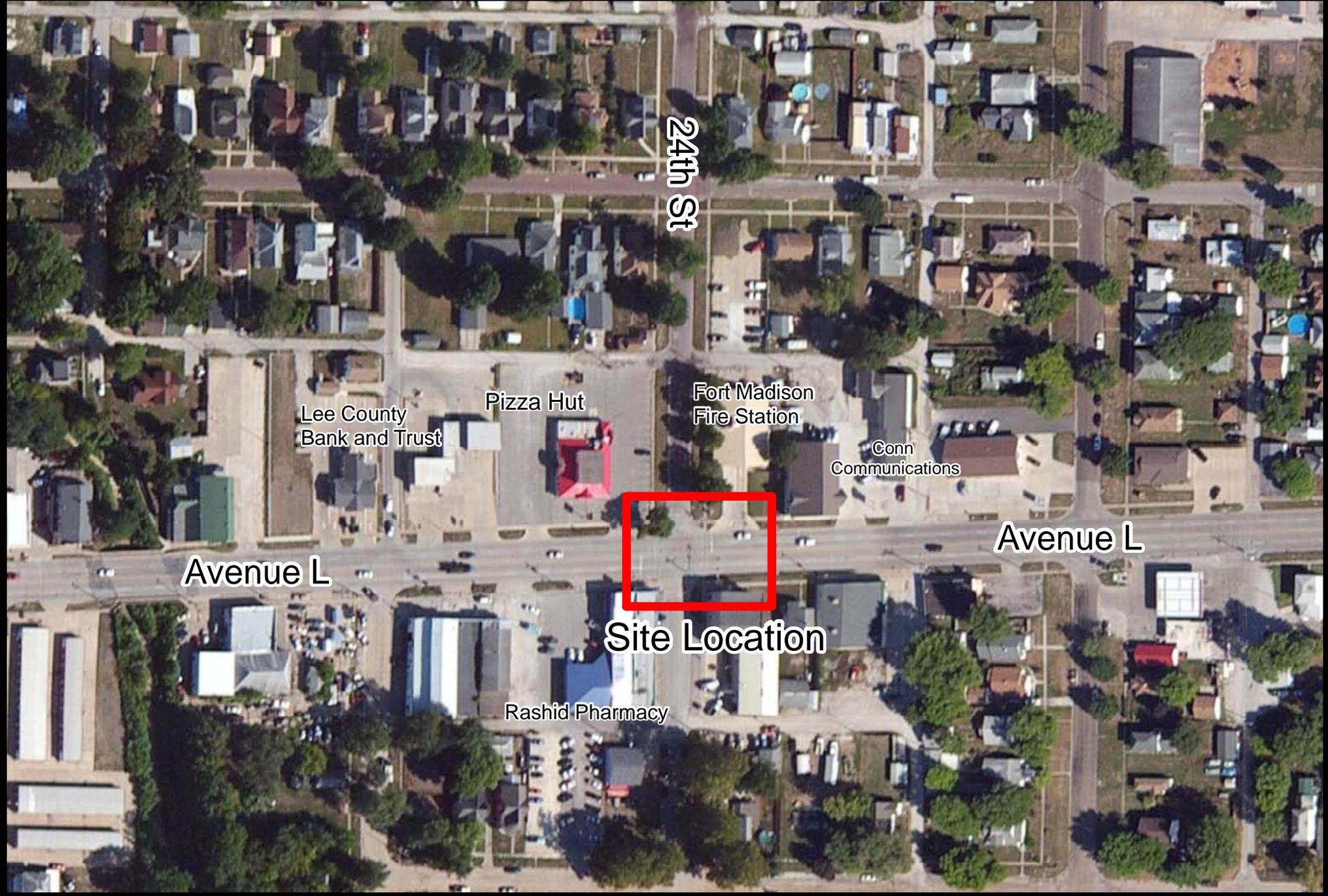
Project Location Map

20th Street and Avenue L



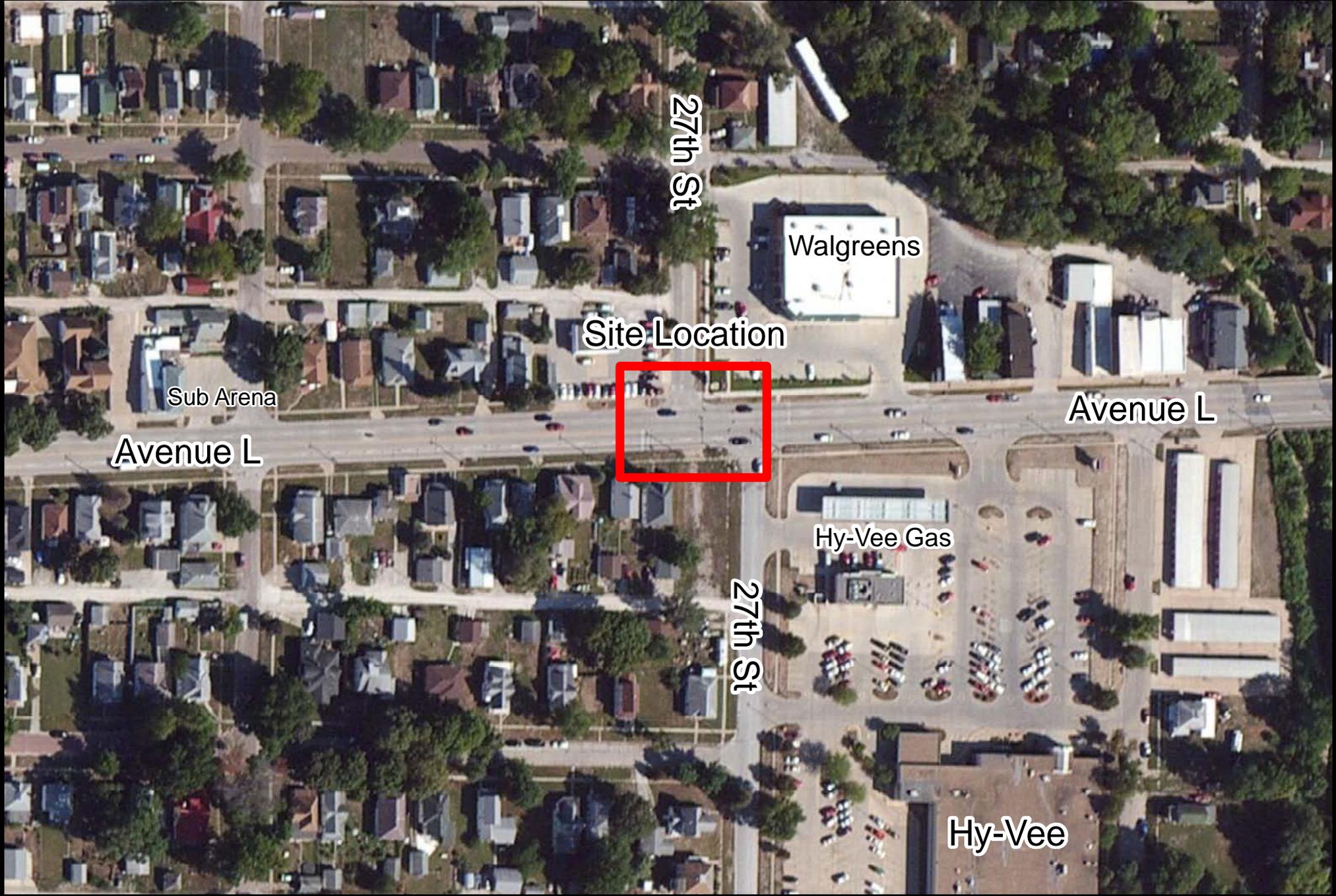
Project Location Map

24th Street and Avenue L



Project Location Map

27th Street and Avenue L



20th Street and Avenue L



Figure 1 – Intersection of 20th Street and Avenue L looking SE



Figure 2 – Intersection of 20th Street and Avenue L looking SW



Figure 3 – Intersection of 20th Street and Avenue L looking NE



Figure 4 – Intersection of 20th Street and Avenue L looking NW

24th Street and Avenue L



Figure 5 – Intersection of 24th Street and Avenue L looking SE



Figure 6 – Intersection of 24th Street and Avenue L looking NW

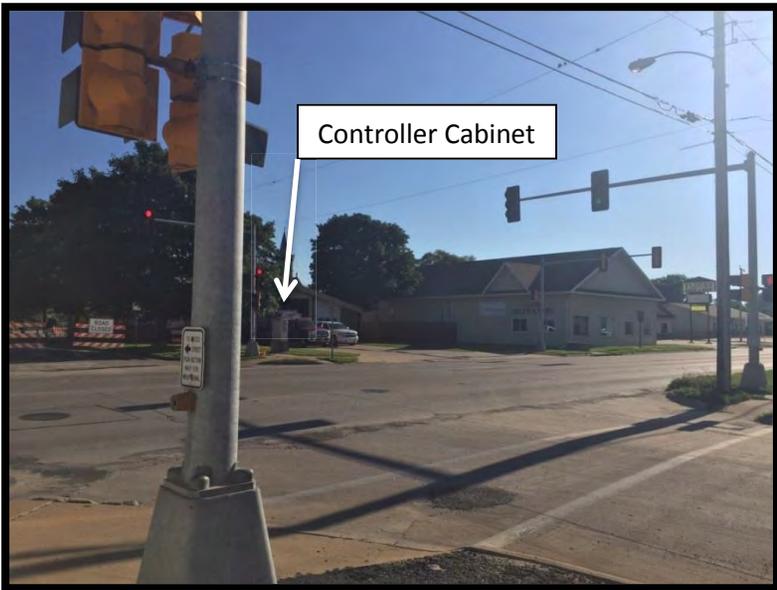


Figure 7 – Intersection of 24th Street and Avenue L looking NE



Figure 8 – Intersection of 24th Street and Avenue L looking SW

24th Street and Avenue L



Figure 9 – Control Cabinet at 24th Street and Avenue L

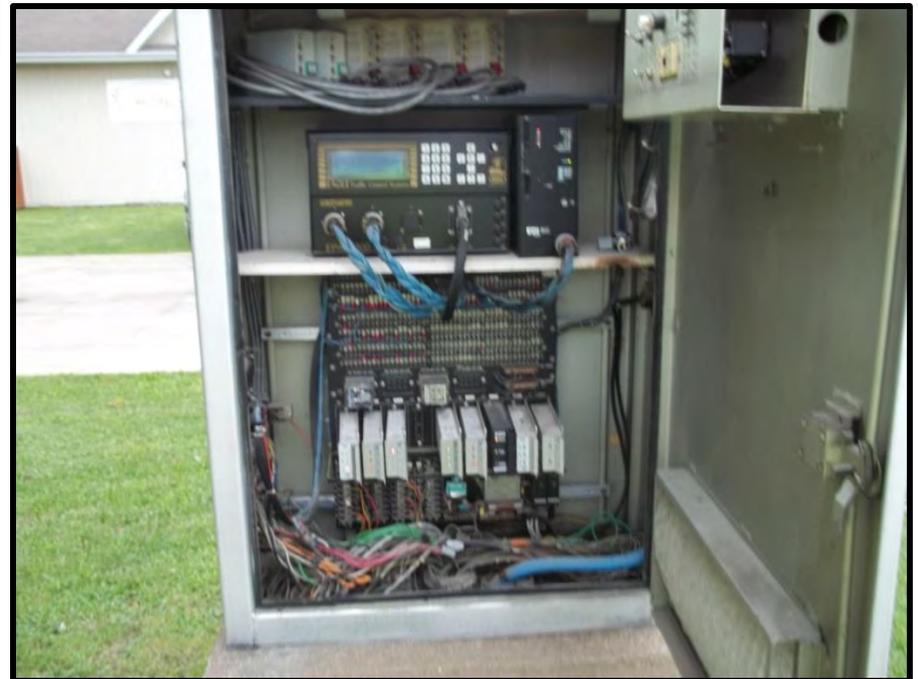


Figure 10 – Inside of Control Cabinet at 24th Street and Avenue L

27th Street and Avenue L



Figure 11 – Intersection of 27th Street and Avenue L looking SW



Figure 12 – Intersection of 27th Street and Avenue L looking SE



Figure 13 – Intersection of 27th and Avenue L looking NW



Figure 14 – Intersection of 27th Street and Avenue L looking NE

27th Street and Avenue L



Figure 15 - Control Cabinet at 27th Street and Avenue L

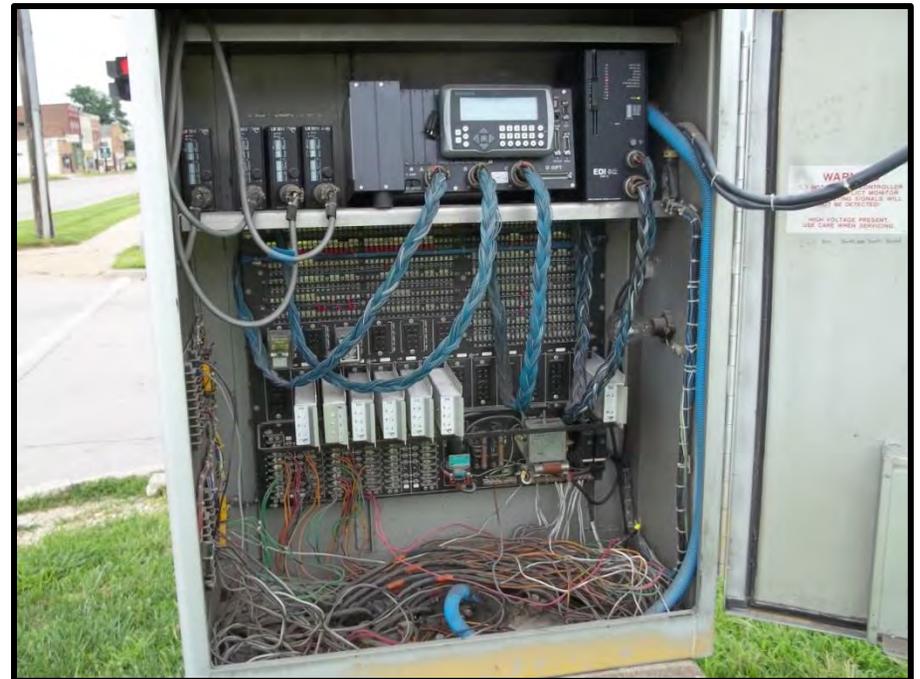
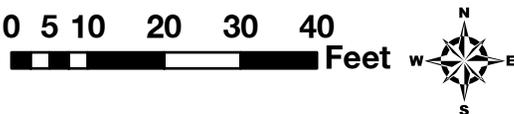
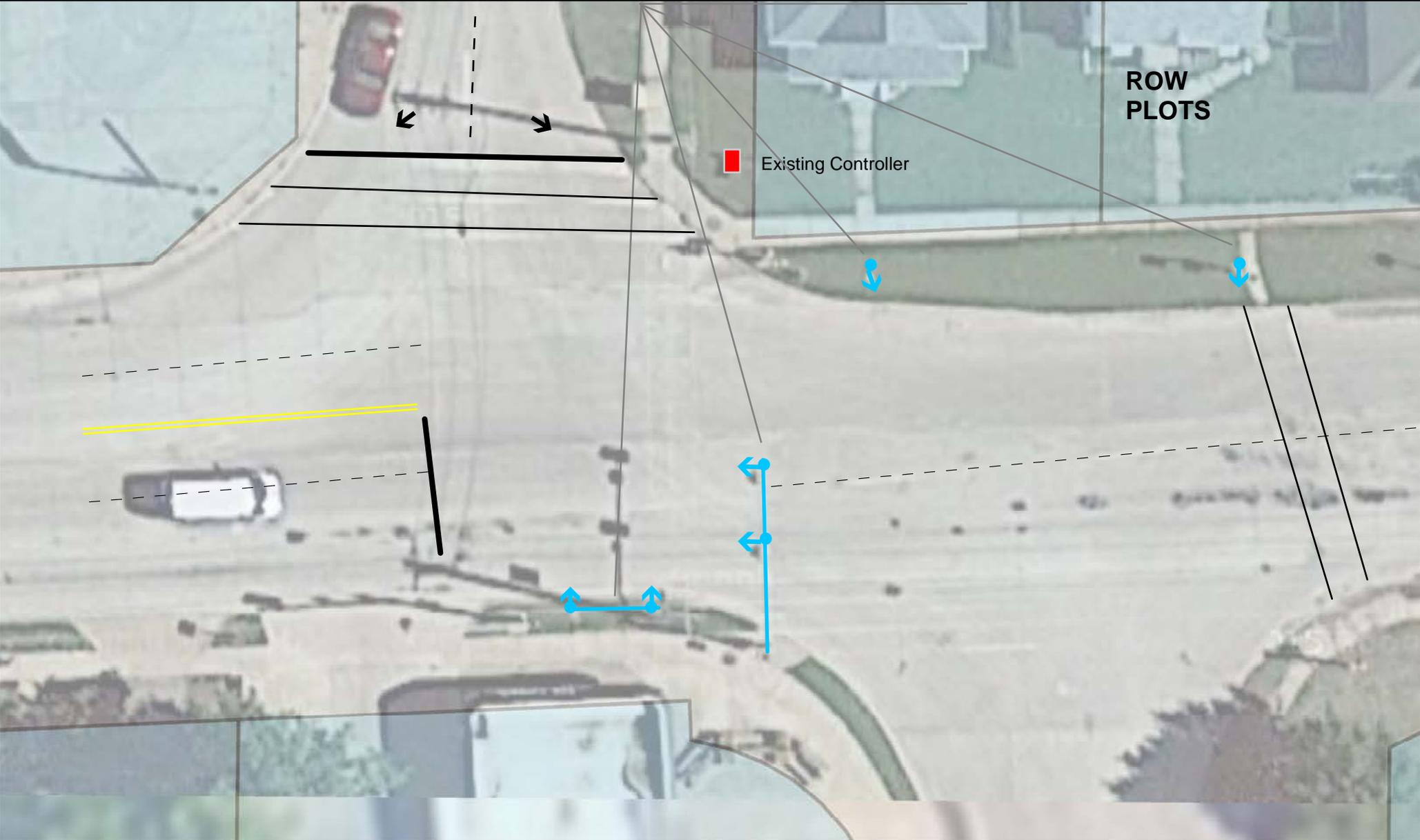


Figure 16 – Inside of Control Cabinet at 27th Street and Avenue L

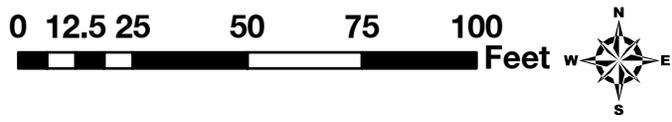
Plan View of Traffic Signals: 20th Street and Avenue L



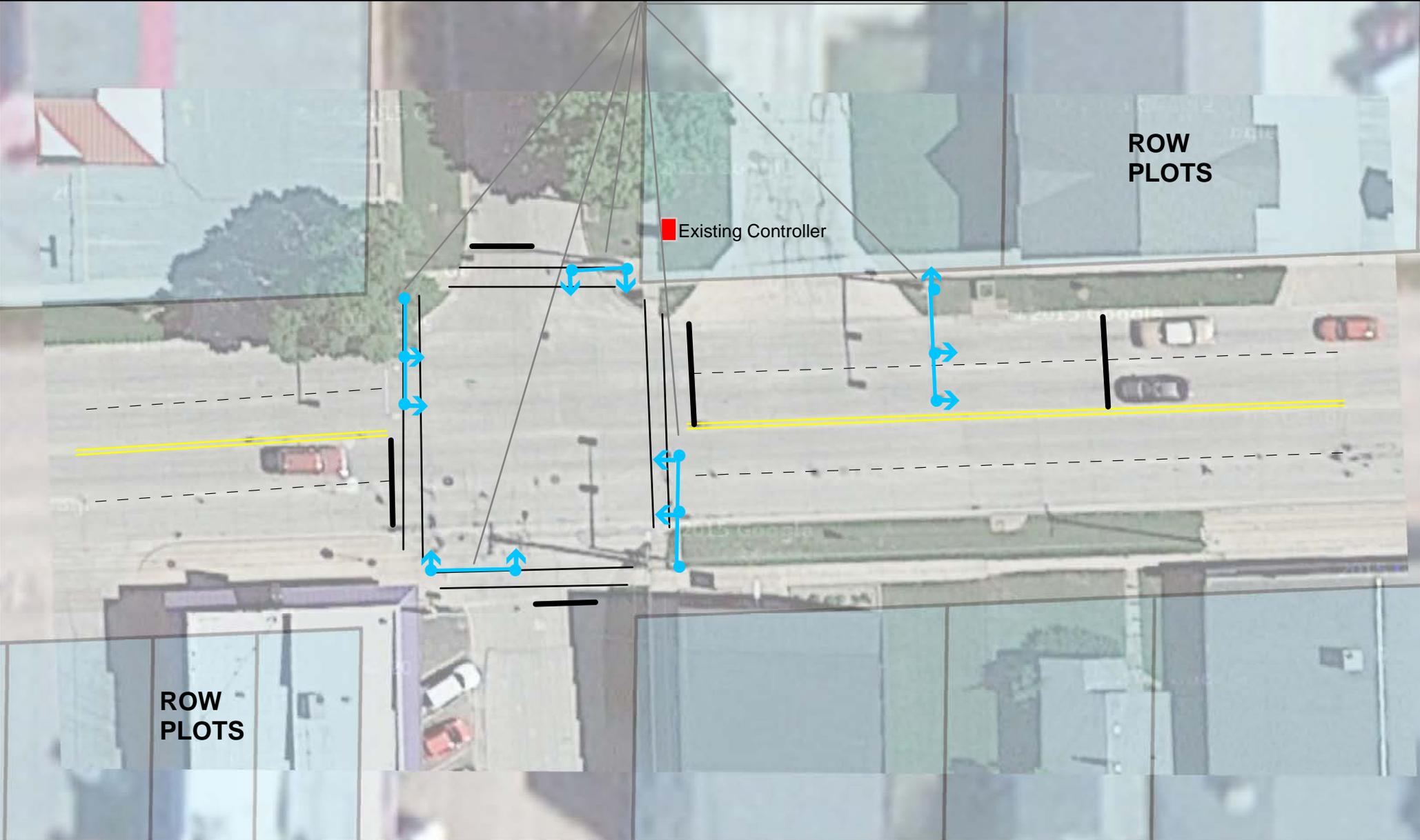
Existing Traffic Signals and Poles



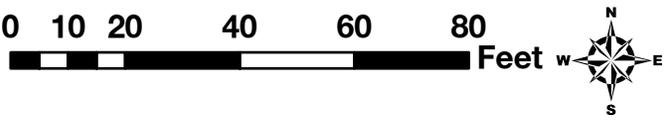
Plan View of Traffic Signals: 24th Street and Avenue L



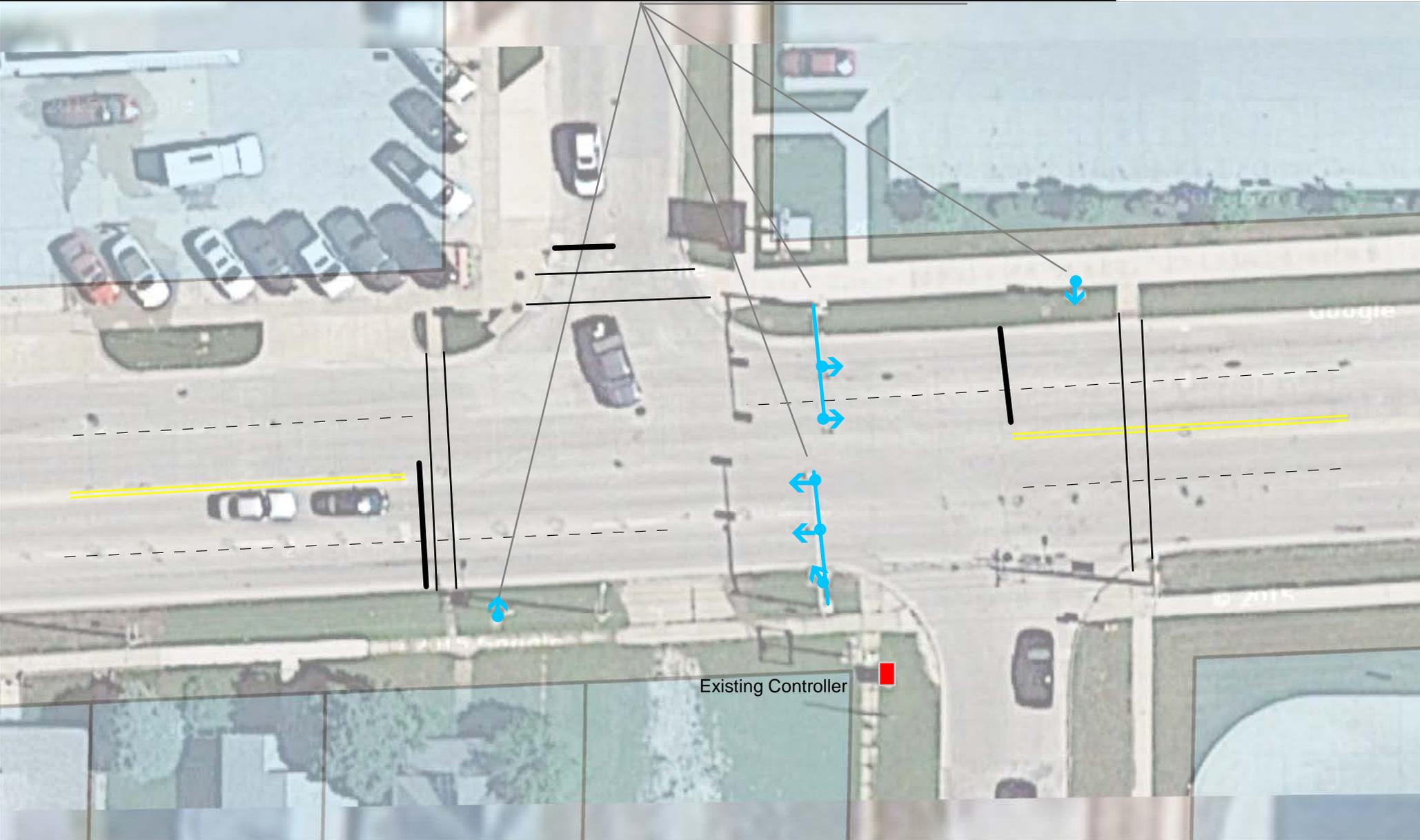
Existing Traffic Signals and Poles



Plan View of Traffic Signals: 27th Street and Avenue L

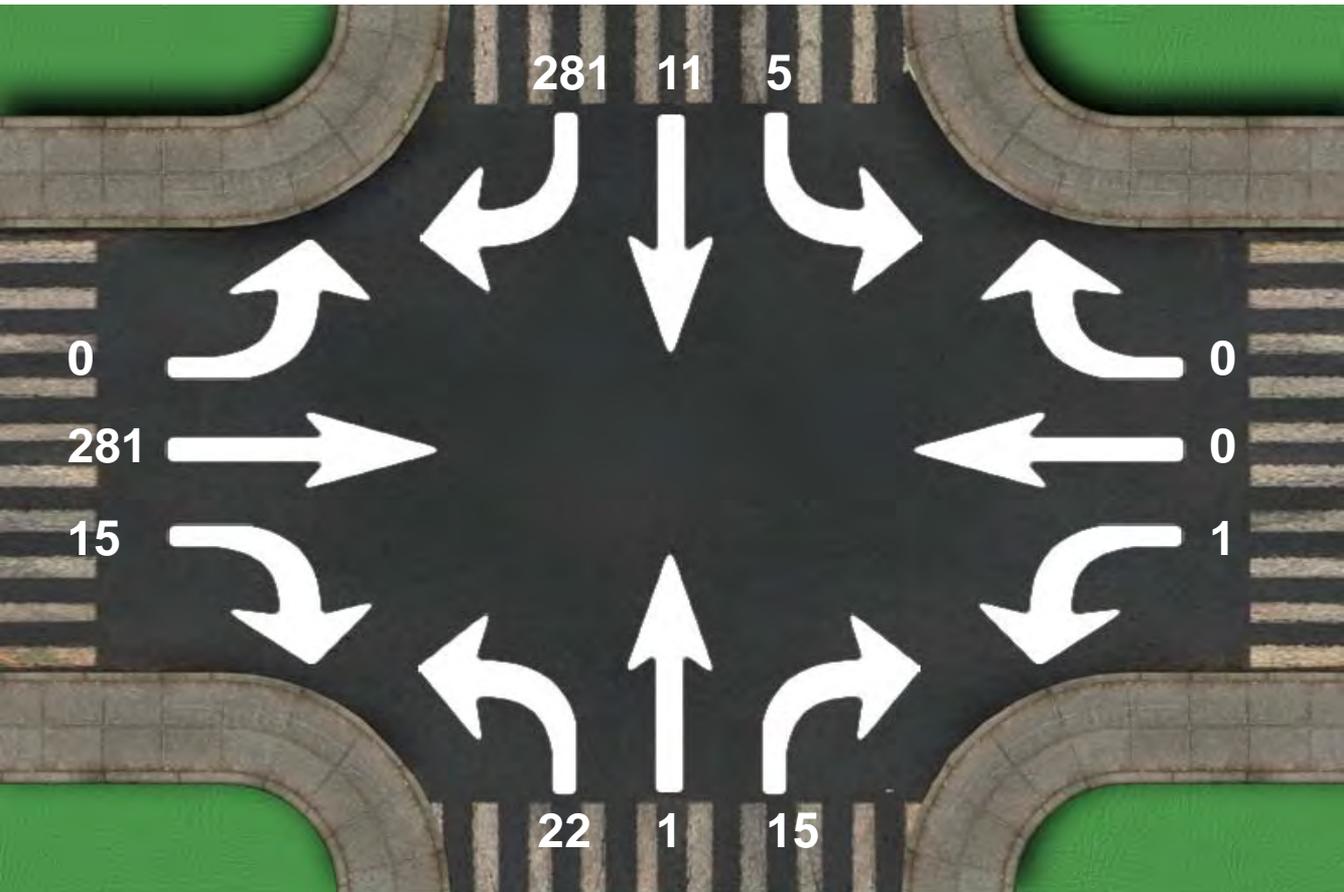


Existing Traffic Signals and Poles



Intersection Peak Hour

Location: 20th at Highway 2, Fort Madison, Iowa
GPS Coordinates: N = 40.627535, W= -91.333699
Date: 2014-06-05
Day of week: Thursday
Weather:
Analyst:



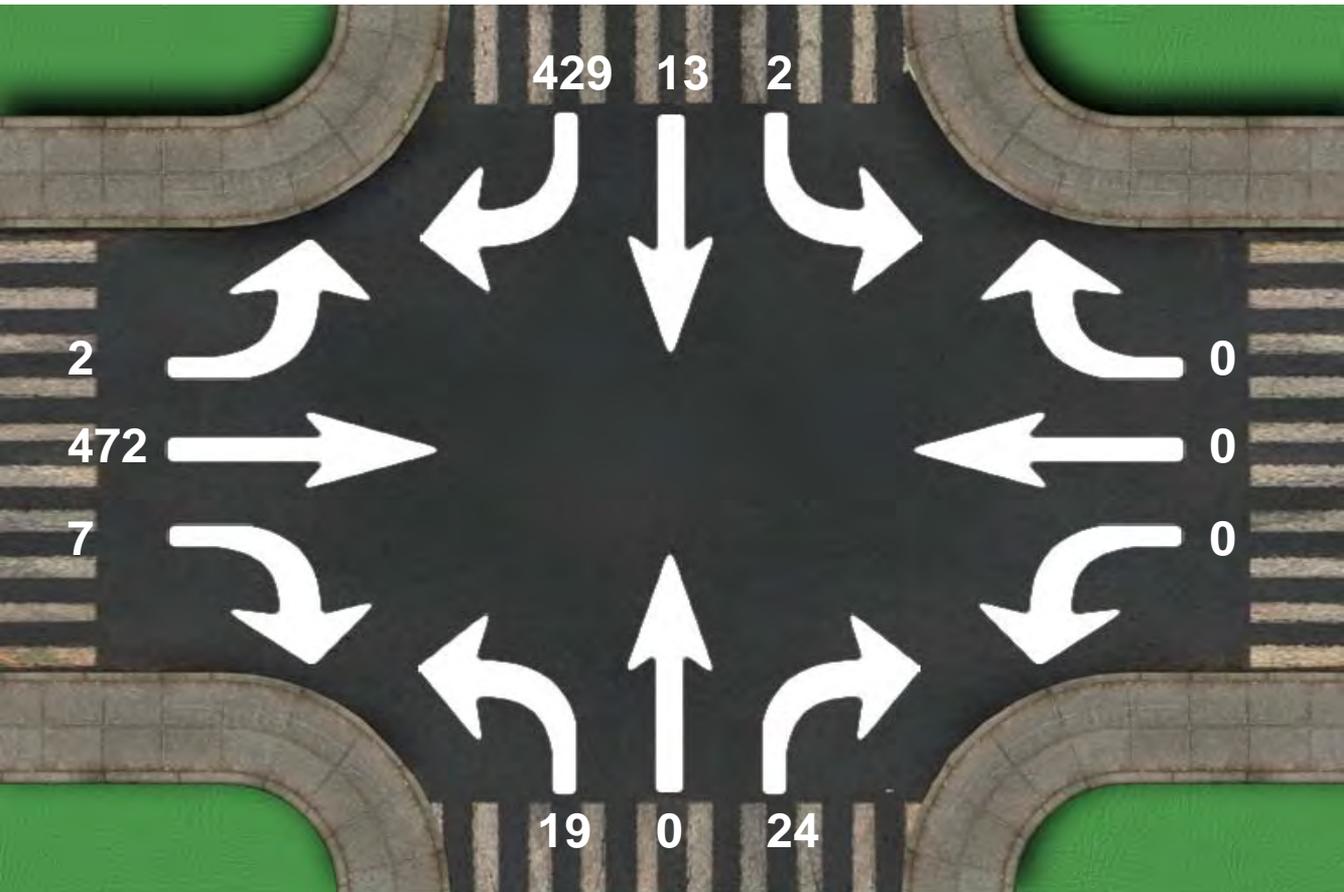
Intersection Peak Hour

08:00 - 09:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	5	11	281	1	0	0	22	1	15	0	281	15	632
Factor	0.62	0.46	0.94	0.25	0.00	0.00	0.61	0.25	0.54	0.00	0.84	0.62	0.89
Approach factor	0.91			0.25			0.73			0.85			

Intersection Peak Hour

Location: 20th St. at Highway 2, Fort Madison, Iowa
GPS Coordinates: N = 40.627457, W= -91.333488
Date: 2014-06-05
Day of week: Thursday
Weather:
Analyst:



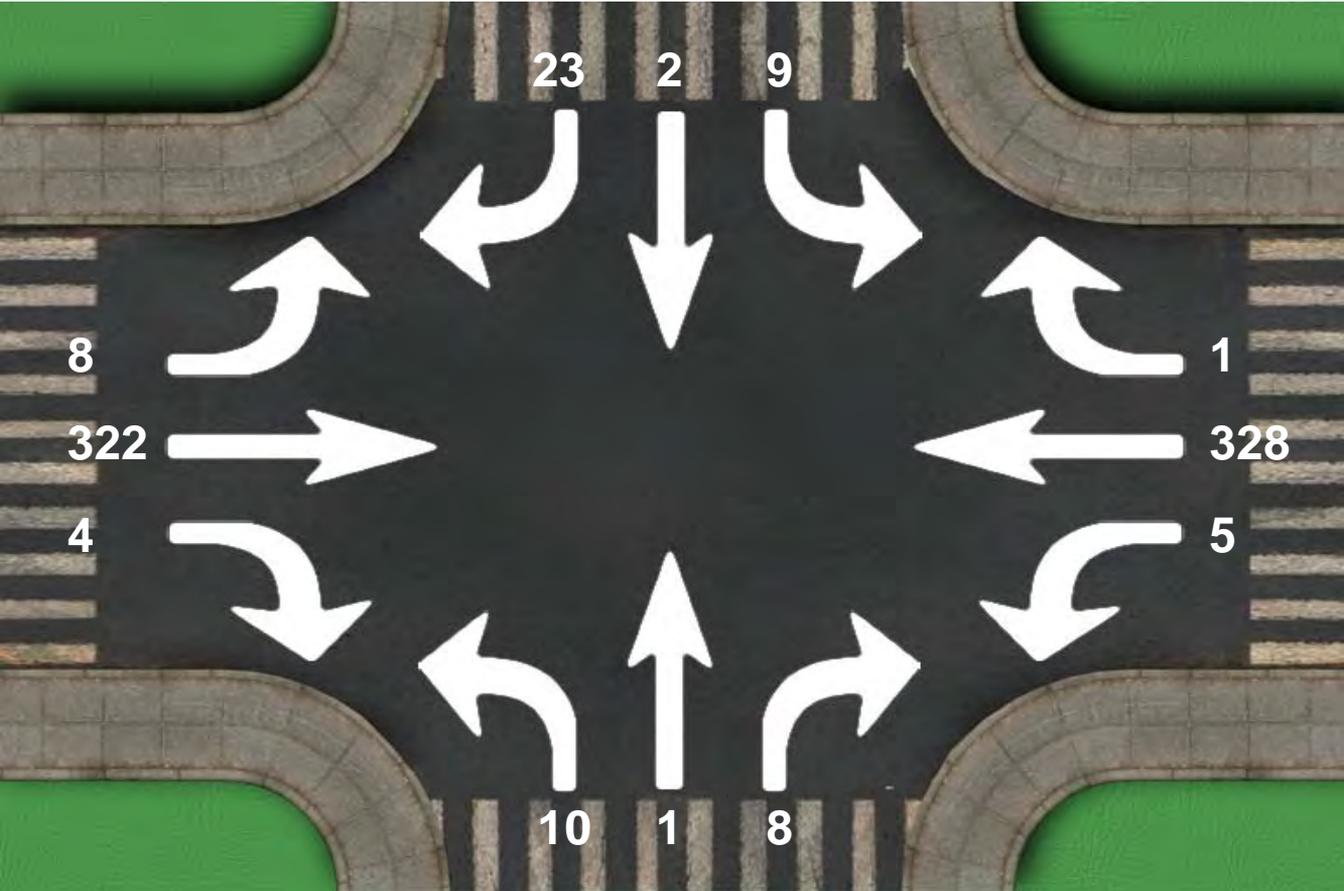
Intersection Peak Hour

16:15 - 17:15

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	2	13	429	0	0	0	19	0	24	2	472	7	968
Factor	0.50	0.65	0.88	0.00	0.00	0.00	0.68	0.00	0.86	0.25	0.91	0.58	0.94
Approach factor	0.90			0.00			0.83			0.92			

Intersection Peak Hour

Location: 24th St at Ave L/Hwy 2, Ft Madison, IA
GPS Coordinates:
Date: 2014-06-05
Day of week: Thursday
Weather:
Analyst:



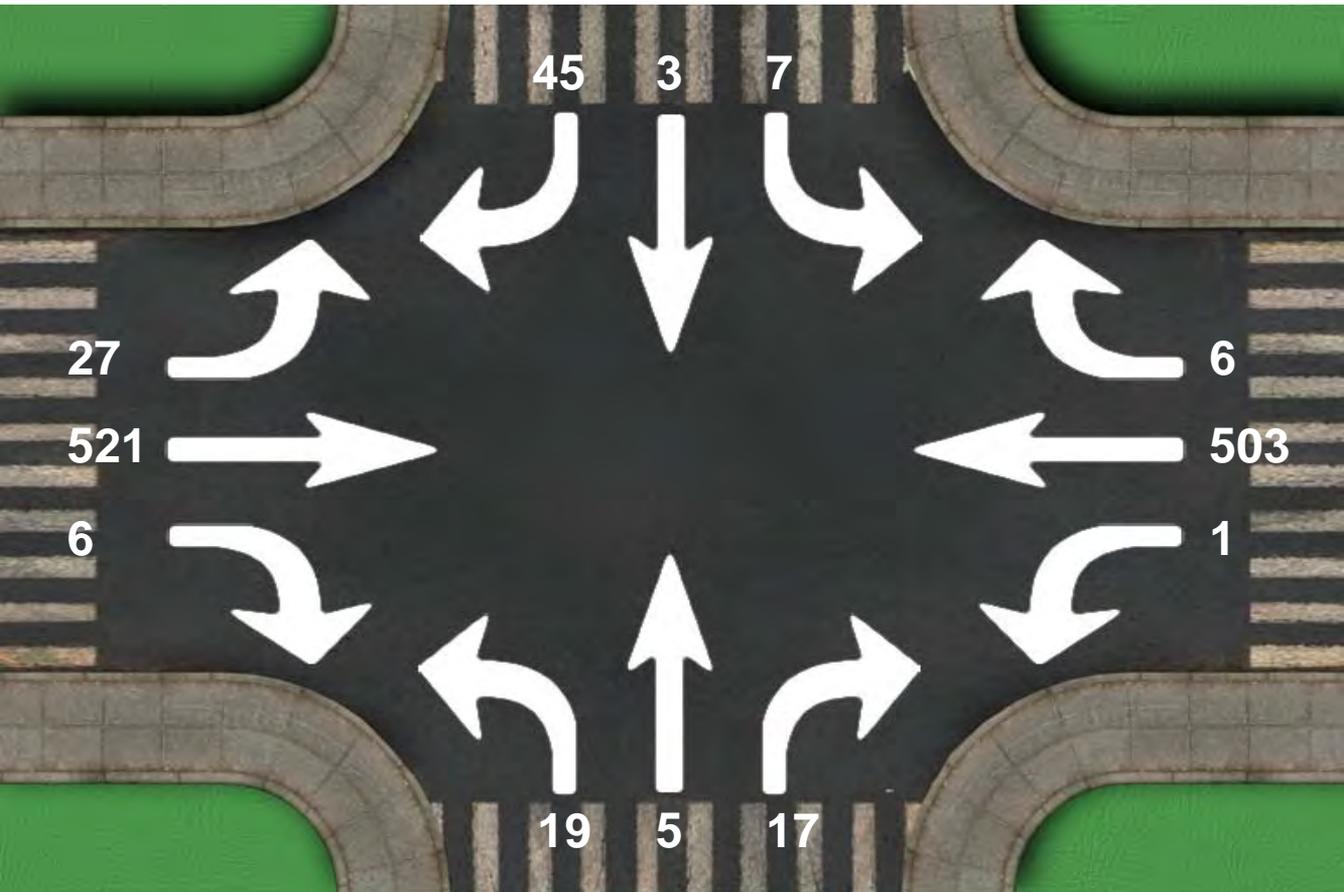
Intersection Peak Hour

08:00 - 09:00

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	9	2	23	5	328	1	10	1	8	8	322	4	721
Factor	0.56	0.50	0.64	0.62	0.93	0.25	0.42	0.25	0.67	0.50	0.91	0.50	0.90
Approach factor	0.71			0.95			0.68			0.89			

Intersection Peak Hour

Location: 24th St at Ave L/Hwy 2, Ft Madison, IA
GPS Coordinates:
Date: 2014-06-05
Day of week: Thursday
Weather:
Analyst:



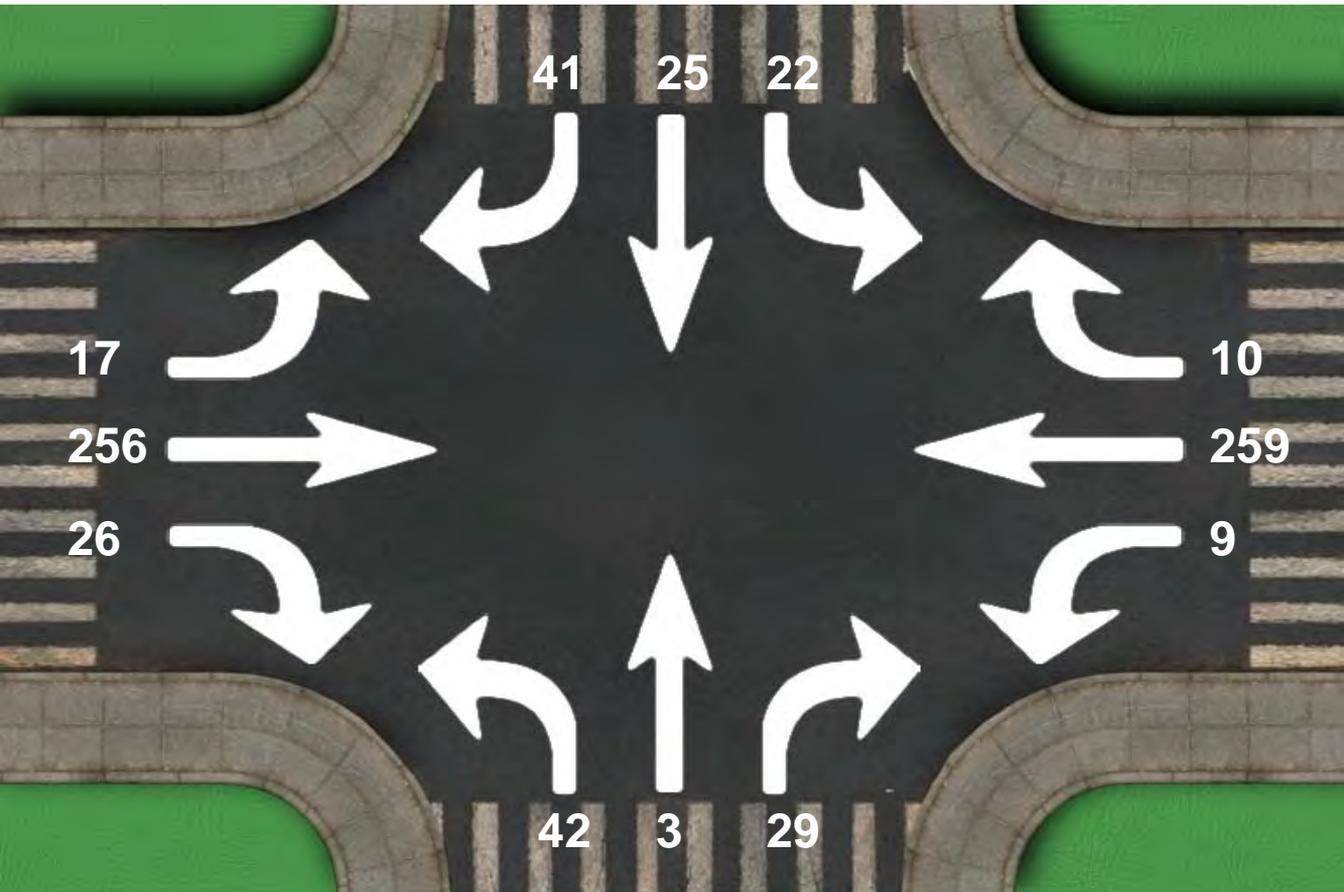
Intersection Peak Hour

16:30 - 17:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	7	3	45	1	503	6	19	5	17	27	521	6	1160
Factor	0.58	0.38	0.80	0.25	0.93	0.50	0.79	0.62	0.61	0.84	0.91	0.75	0.98
Approach factor	0.81			0.94			0.85			0.91			

Intersection Peak Hour

Location: 27th at Highway 2, Fort Madison, Iowa
GPS Coordinates: N = 40.627197, W= -91.344195
Date: 2014-06-11
Day of week: Wednesday
Weather:
Analyst:



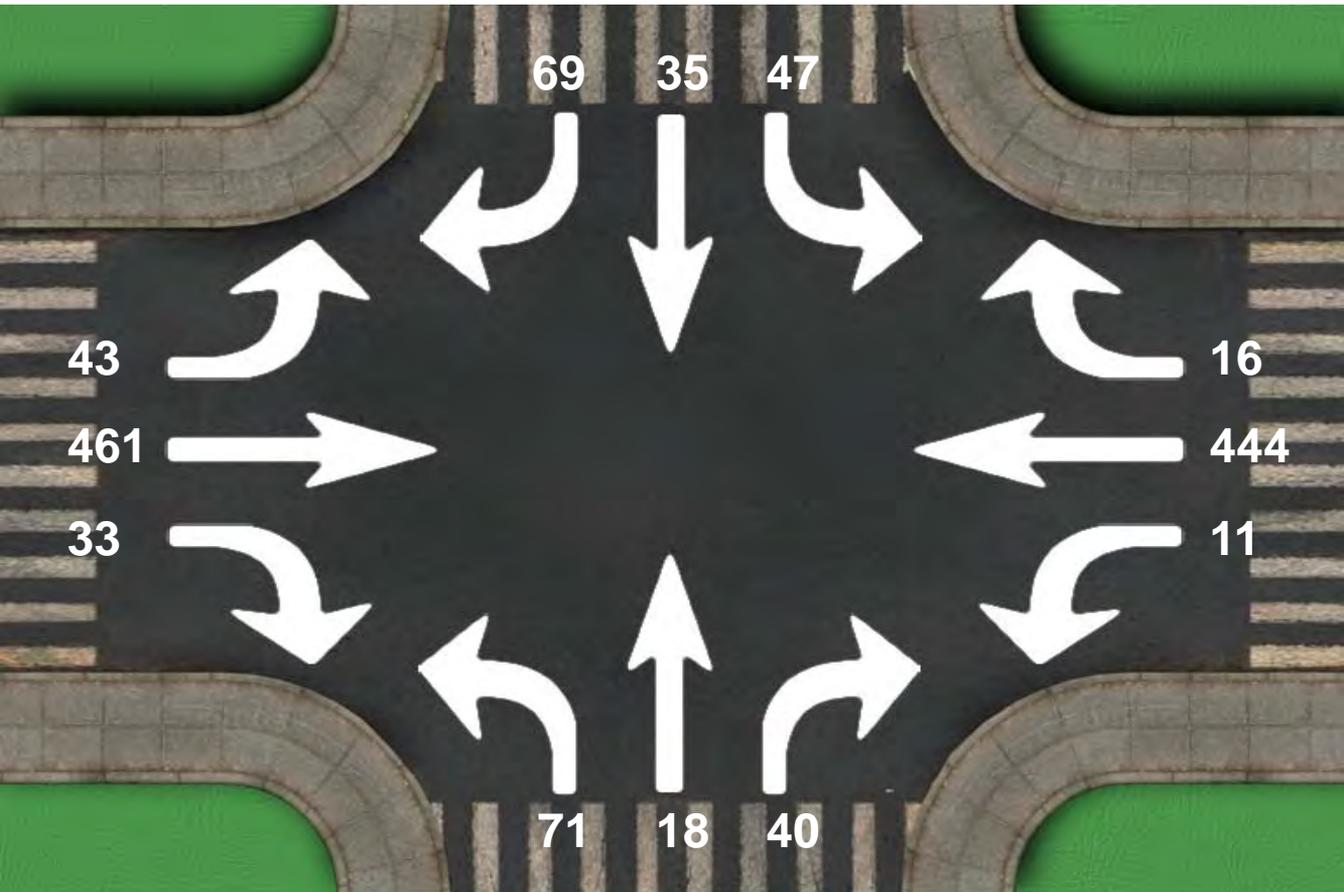
Intersection Peak Hour

07:30 - 08:30

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	22	25	41	9	259	10	42	3	29	17	256	26	739
Factor	0.69	0.62	0.68	0.56	0.80	0.50	0.70	0.25	0.73	0.61	0.88	0.81	0.89
Approach factor	0.71			0.80			0.77			0.90			

Intersection Peak Hour

Location: 27th at Highway 2, Fort Madison, Iowa
GPS Coordinates: N = 40.627075, W= -91.344616
Date: 2014-06-12
Day of week: Thursday
Weather:
Analyst:



Intersection Peak Hour

16:45 - 17:45

	SouthBound			Westbound			Northbound			Eastbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Vehicle Total	47	35	69	11	444	16	71	18	40	43	461	33	1288
Factor	0.69	0.67	0.86	0.69	0.94	0.57	0.85	0.75	0.83	0.83	0.85	0.75	0.90
Approach factor	0.75			0.97			0.98			0.88			

20th Street Signal Phasing

Date: ___ / ___ / ___

Intersection Name: _____

20TH + "L"

Prepared By: _____

Approved By: _____

Phase Interval Data Log

Intervals	Ph 1	Ph 2	Ph 3	Ph 4	Ph 5	Ph 6	Ph 7	Ph 8	
01 = Min Green		7	6	6		7	6	6	-
02 = Add Initial									
03 = Max Initial									
04 = Passage		1	2	2		1	2	2	-
05 = T.B.R.									
06 = T.T.R.									
07 = Min Gap									
08 = Max #1		40	40	20		40	40	20	-
09 = Max #2		50	50	50		50	50	50	-
10 = Walk		5		5		5		5	-
11 = Ped Clear		14		11		14		11	-
12 = Yellow		4.5	4	4		4.5	4	4	-
13 = Red Clear		1.5	1.5	1.5		1.5	1.5	1.5	-
14 = Initialize	0	3	1	1	0	3	1	1	-
15 = Non-Locking									
16 = NA response	0	0	0	0	0	0	0	0	-
17 = V Call/Recall	0	2	0	0	0	2	0	0	-
18 = P Call/Recall	0	0	0	0	0	0	0	0	-
19 = Flashing Walk	0	0	0	0	0	0	0	0	-
20 = # of Act	XX								
21 = Next Phase									
22 = Barriers									
23 = Dual Entry									

Overlap Programming Data Log

Overlap	Ph 1	Ph 2	Ph 3	Ph 4	Ph 5	Ph 6	Ph 7	Ph 8
Overlap A (#1)								
Overlap B (#2)						1	1	
Overlap C (#3)								
Overlap D (#4)								

Red Revert (Time In Seconds) = _____
 Start-Up Flash (Time In Seconds) = _____
 Last Car Passage (Enabled) = _____
 Flash Entry Phases = Ring 1 (_____) & Ring 2 (_____)
 Flash Exit Phases = Ring 1 (_____) & Ring 2 (_____)

TOOK OVERLAP OF
 OVERLAP A OFF
 OVERLAP B
 PUT 1 ON PH 6-7

Removed 47 \$13, &
 to prevent invalid c
 to SB RT J

24th Street Signal Phasing

UNIT DATA - RING STRUCTURE

	PHASE	RING	PH NXT	CONCURRENT PHASES	PH NXT : Phase Next or Phase To Follow.
Ring Structure	1	<u>1</u>	<u>2</u>	<u>56 0 0 0 0</u>	CONCURRENT PHASES: Phases In Other Rings Allowed To Run Concurrent.
	2	<u>1</u>	<u>3</u>	<u>56 0 0 0 0</u>	
	3	<u>1</u>	<u>4</u>	<u>28 2 2 2 2</u>	
	4	<u>1</u>	<u>1</u>	<u>28 2 2 2 2</u>	
1 To 4 Rings	5	<u>2</u>	<u>6</u>	<u>1 2 0 2 2 2</u>	
	6	<u>2</u>	<u>7</u>	<u>1 2 2 2 2 2</u>	
	7	<u>2</u>	<u>8</u>	<u>3 2 2 2 2 2</u>	
	8	<u>2</u>	<u>5</u>	<u>3 4 0 2 0 2</u>	
	9				

EXCL PED USES PHASE I/O = _____
 Phase 9 (Exclusive Ped) I/O = #-Phase Inputs, Outputs, & Timing

UNIT DATA - ALTERNATE SEQUENCES

SEQUENCE	REVERSE PHASES	SEQUENCE	REVERSE PHASES
00NONE.....	08	<u>78 0 0 0</u>
01	<u>12 0 0 0</u>	09	<u>12 78 0 0</u>
02	<u>34 0 0 0</u>	10	<u>34 78 2 0</u>
03	<u>12 34 0 0</u>	11	<u>12 34 78 0</u>
04	<u>56 0 0 0</u>	12	<u>56 78 0 0</u>
05	<u>12 56 0 0</u>	13	<u>12 56 78 0</u>
06	<u>34 56 0 0</u>	14	<u>34 56 78 0</u>
07	<u>12 34 56 0</u>	15	<u>12 34 56 78</u>

Reverse Phases Must Be In The Same Ring & Next To Each Other

COORDINATION DATA - MODE

OPERATIONAL DATA
 OPERATION MODE: 0
 CORRECTION MODE: 0
 MAX DWELL TIME (SEC): 0
 MANUAL DIAL #: 0
 MANUAL SPLIT #: 0
 MANUAL OFFSET #: 0

CYCLE LENGTH TABLE
 Dial..... 1.....2.....3.....4
 Split 1 : _____
 Split 2 : _____
 Split 3 : _____
 Split 4 : _____

CODES.....0.....1.....2..
 Operation FREE AUTO MANUAL
 Correction DWELL MXDW SH WAY

CYCLE LENGTH: All entries are in seconds. Care must be taken to assure cycle lengths equal the phase time sum of the Ring #1.

COORDINATION DATA - DIAL / SPLIT REFERENCE

MODE: 0-Actuated 1-Coord Phase 2-Min Rec 3-Max Rec 4-Ped Rec
 5-Max+Ped Recall 6-Phase Omitted 7-Dual Coord Phase

SEQUENCE: 00-15 (Unit Data Has Definition)
 RING LAG: Ring Offset From Local Cycle Zero When Not Barrier Locked To Ring 1.

COORDINATION DATA - DIAL 1

DIAL 1 / SPLIT 1

PHASE.....1...2...3...4...5...6...7...8
Time ::
Mode ::

OFFSET.....1...2...3
Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

DIAL 1 / SPLIT 2

Time ::
Mode ::

Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

DIAL 1 / SPLIT 3

Time ::
Mode ::

Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

DIAL 1 / SPLIT 4

Time ::
Mode ::

Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

COORDINATION DATA - DIAL 2

DIAL 2 / SPLIT 1

PHASE.....1...2...3...4...5...6...7...8
Time ::
Mode ::

OFFSET.....1...2...3
Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

DIAL 2 / SPLIT 2

Time ::
Mode ::

Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

DIAL 2 / SPLIT 3

Time ::
Mode ::

Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

DIAL 2 / SPLIT 4

Time ::
Mode ::

Time:
Sequence ...:
Ring 2 Lag ..:
Ring 3 Lag ..:
Ring 4 Lag ..:

27th Street Signal Phasing

PHASE DATA - GENERAL CONTROL

		PHASE..1	2	3	4	5	6	7	8
Gen.	Initialization:	0	3	1	1	0	0	0	0
Cont.	Non-Act Response ..:	0	0	0	0	0	0	0	0
	Vehicle Recall:	0	2	0	0	0	0	0	0
	Pedest. Recall:	0	0	0	0	0	0	0	0

Codes.....	0	1	2	3	4
Initialization ...	NONE	INACTIVE	RED	YELLOW	GREEN
Non-Act Response..	NONE	TO NA I	TO NA II	TO BOTH	---
Vehicle Recall....	NONE	1 CALL	MINIMUM	MAXIMUM	SOFT
Pedest. Recall....	NONE	1 CALL	RECALL	NON ACT	---

PHASE DATA - SEQUENCE & DETECTOR CONTROL

		PHASE..1	2	3	4	5	6	7	8
Seq.	Phase Omit	0	0	0	0	0	0	0	0
Cont.	Phase -Yellow ...:	0	0	0	0	0	0	0	0
Det.	Stretch	0	0	0	0	0	0	0	0
Cont.	Delay	0	0	0	0	0	0	0	0
	Switch	0	0	0	0	0	0	0	0

CODES.....	0	1 TO 8 (#-PHASE)
Phase Omit	NONE	Phase Is Omitted By #-Phase On.
Phase -Yellow .	NONE	Phase Yellow Is Omitted By #-Phase Yellow.
Switch	NONE	Phase Detector Is Switched To #-Phase When Phase Is Yel/Red & #-Phase Is Green.

UNIT DATA - GENERAL CONTROL

Start Up Time	5	Ring	1..2..3..4
Start Up Condition	0	Input Response-:	1 2 0 0
Condition: 0-Flash 1-All Red		Output Select .:	1 2 0 0
Red Revert Time	4.0	Hdwe Ring # For I/O Usage-	(0 = No Ring)
Auto Ped Clearance	0	Ring	1..2..3..4
0-No 1-Yes		Flash Entry ...:	0 0 0 0
Test A = Remote Flash ..:	0	Flash Exit	0 0 0 0
0-No 1-Yes		Phase # Entry & Exit Flash	(0 = No Phase)

UNIT DATA - OVERLAP CONTROL

OVERLAP		PHASE...	1	2	3	4	5	6	7	8
STANDARD	Overlap A.....:		0	0	0	0	0	0	0	0
PROGRAM	Overlap B.....:		0	0	0	0	0	0	0	0
	Overlap C.....:		0	0	0	0	0	0	0	0
	Overlap D.....:		0	0	0	0	0	0	0	0

0-Phase Is Not Part Of Overlap 1-Phase Is Part Of Overlap

OVERLAP.....		A	B	C	D	<<< -GRN/-YEL >>>
SPECIAL	Trail Grn:	0	0	0	0	Ovlp Grn Omitted
FEATURES	Trail Yel:	4.0	4.0	4.0	4.0	By #-Phase Grn
	Trail Red:	2.0	2.0	2.0	2.0	Ovlp Yel Omitted
	-GRN/-YEL:	0	0	0	0	By #-Phase Yel



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August 12, 2016

Location / Title of Project Iowa Highway 28 and Wakonda Drive

Applicant City of Norwalk

Contact Person Tim Hoskins Title Public Works Director

Complete Mailing Address 2626 North Avenue

Norwalk Iowa 50211

Phone 515.981.9530 E-Mail thoskins@norwalk.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 Safety Cost \$ 240,000

Total Project Cost \$ 290,000

Safety Funds Requested \$ 125,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

No

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 Norwalk, Iowa

Signed:  8-12-16
Signature Date Signed

Tim Hoskins
Typed Name

Attest:  8/12/2016
Signature Date Signed

Greg Roth
Typed Name

B. NARRATIVE

Norwalk continues to grow through development south of Iowa Highway 5. The community's main access continues to be Iowa Highway 28 (Sunset Drive). The intersection of Wakonda Drive is just north of Beardsley which is the first signalized intersection in Norwalk south of Iowa Highway 5.

This area is adjacent to the longtime community of Lakewood and the area adjacent to this development is growing rapidly. Masteller Road is opposite Wakonda Drive and is currently being rebuilt as part of the development 'The Market at Echo Valley'. This is a mixed use development that will be ready for commercial businesses later this year or early next and residential development to follow.

This intersection will be the main access off of Iowa Highway 28 and already has channelized turn lanes to reduce the opportunity for rear end collisions. This will simplify the project and limit activities to ADA ramp construction and signal installation.

The posted speed limit along Iowa Highway 28 is 45 MPH. This makes for some fast travel speeds along Highway 28 as there are no signals between the Iowa 5 bypass and this intersection. Drivers tend to adjust slowly to the speed adjustment needed in this type of setting.

Clear zones along Sunset Drive appear to be sufficient, however, sight distance for the side streets is not ideal and the southbound lanes for Iowa Highway 28 challenge the drivers to estimate gaps. The grades for the southbound lanes fall away from the intersection to the north making visibility difficult.

The photographs in Section F. of this application show the challenges of sight distance for the approach grades as described above. These photos also show the channelized left turn lanes, adjacent overhead power and the existing pedestrian walks.

The MUTCD Warrants for signals were met for this site with the development. The possibility of interconnection with the signals to the south will be built into the design for either hardwire or GPS methods. The need for this will be monitored and the decision for type of interconnect will depend on timing and age of the controller.

C. ITEMIZED BREAKDOWN OF COST

Mobilization	\$20,000
Traffic Control	\$10,000
Removals	\$5,000
Trail/Walk	\$15,000
Truncated Domes	\$1,000
Striping	\$3,500
Symbols	\$2,500
Signals – Equipment	\$110,000
Signal Installation/Labor	\$60,000
Battery Back Up	\$12,000
Site Restoration	\$5,000
Design and Const Engineering	<u>\$46,000</u>
Total	\$290,000

D. TIME SCHEDULE

TSF Application to Iowa DOT	August 15 2016
TSF Award by Iowa DOT Commission	December 2016
Check Plans	February 2016
Final Plans	March/April 2016
Project Letting	May 2016
DOT Concurrence & Award	May/June 2016
Start of Construction	July 2016
End Construction	October 2016

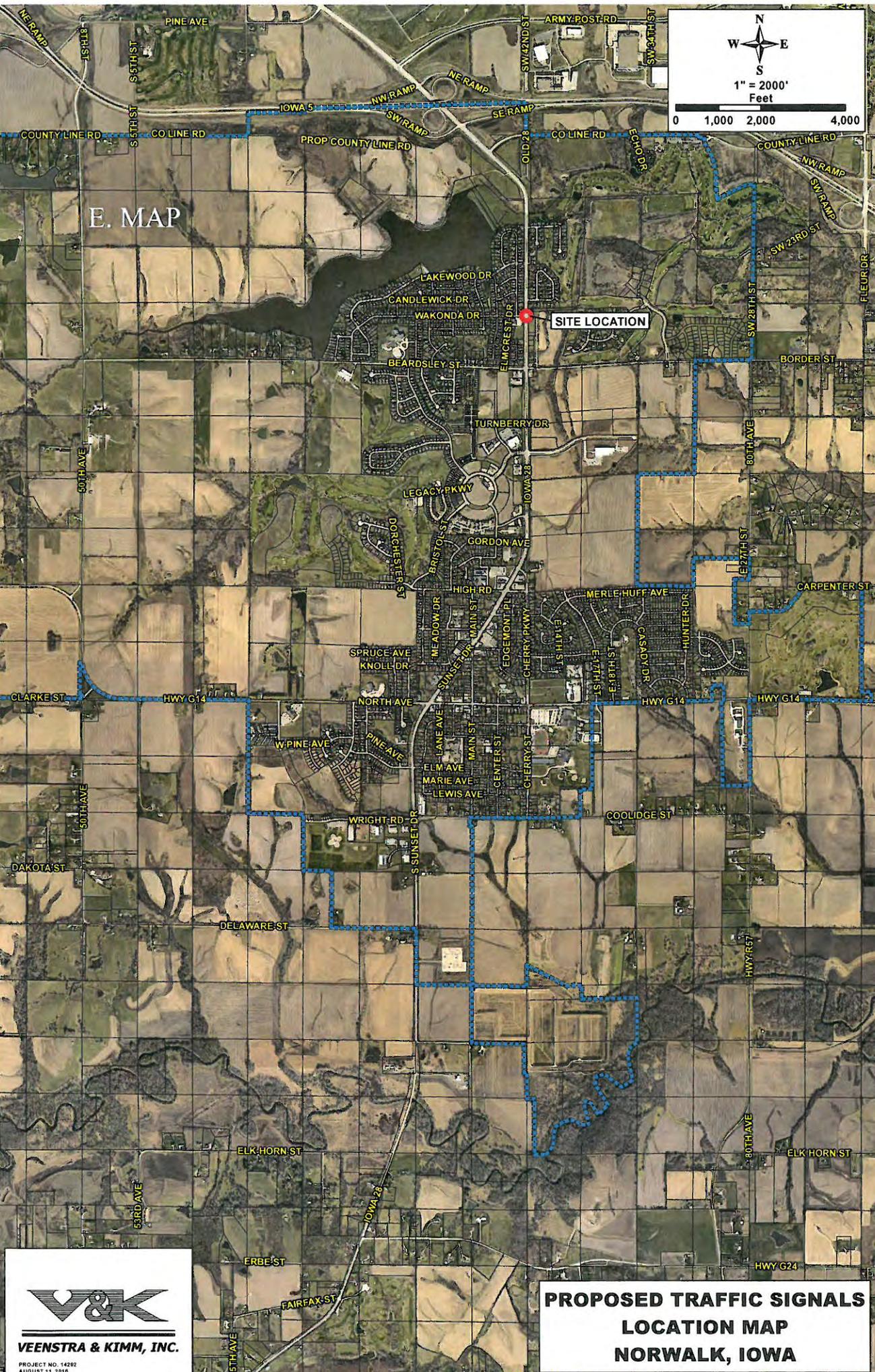
E. MAP



1" = 2000'
Feet

0 1,000 2,000 4,000

SITE LOCATION




VEENSTRA & KIMM, INC.

PROJECT NO. 14282
AUGUST 11, 2018

**PROPOSED TRAFFIC SIGNALS
LOCATION MAP
NORWALK, IOWA**

F. COLOR PICTURES



Approaching Iowa Highway 28 on Wakonda Drive



Looking north from Wakonda Drive



Looking south from Wakonda Drive



Looking north from Masteller Road

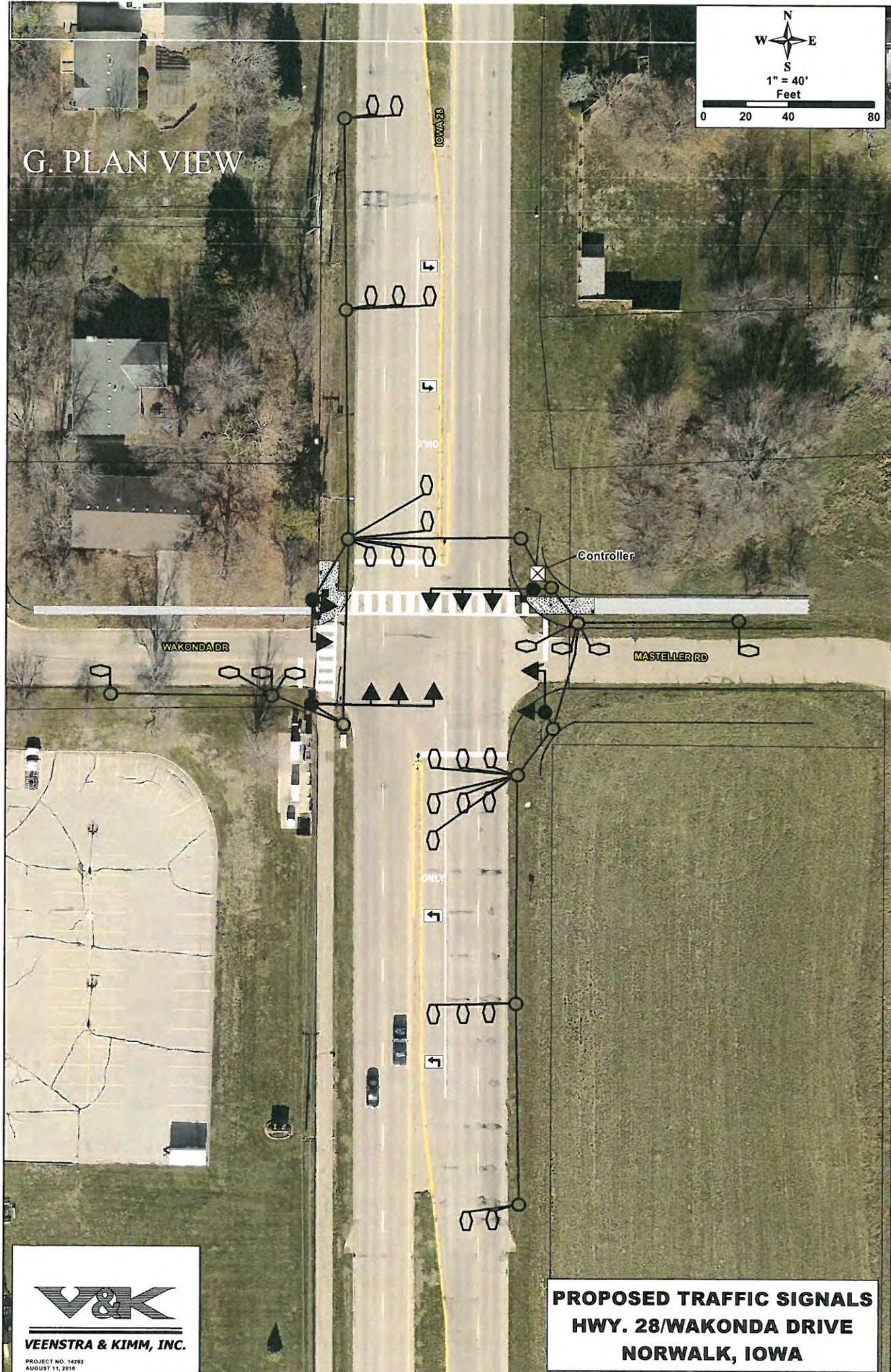
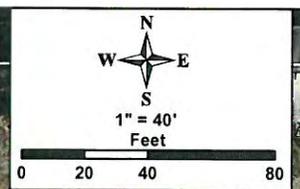


Looking south from Masteller Road



Looking west towards Wakonda Drive

G. PLAN VIEW



V&K
VEENSTRA & KIMM, INC.
PROJECT NO. 14292
AUGUST 11, 2016

**PROPOSED TRAFFIC SIGNALS
HWY. 28/WAKONDA DRIVE
NORWALK, IOWA**

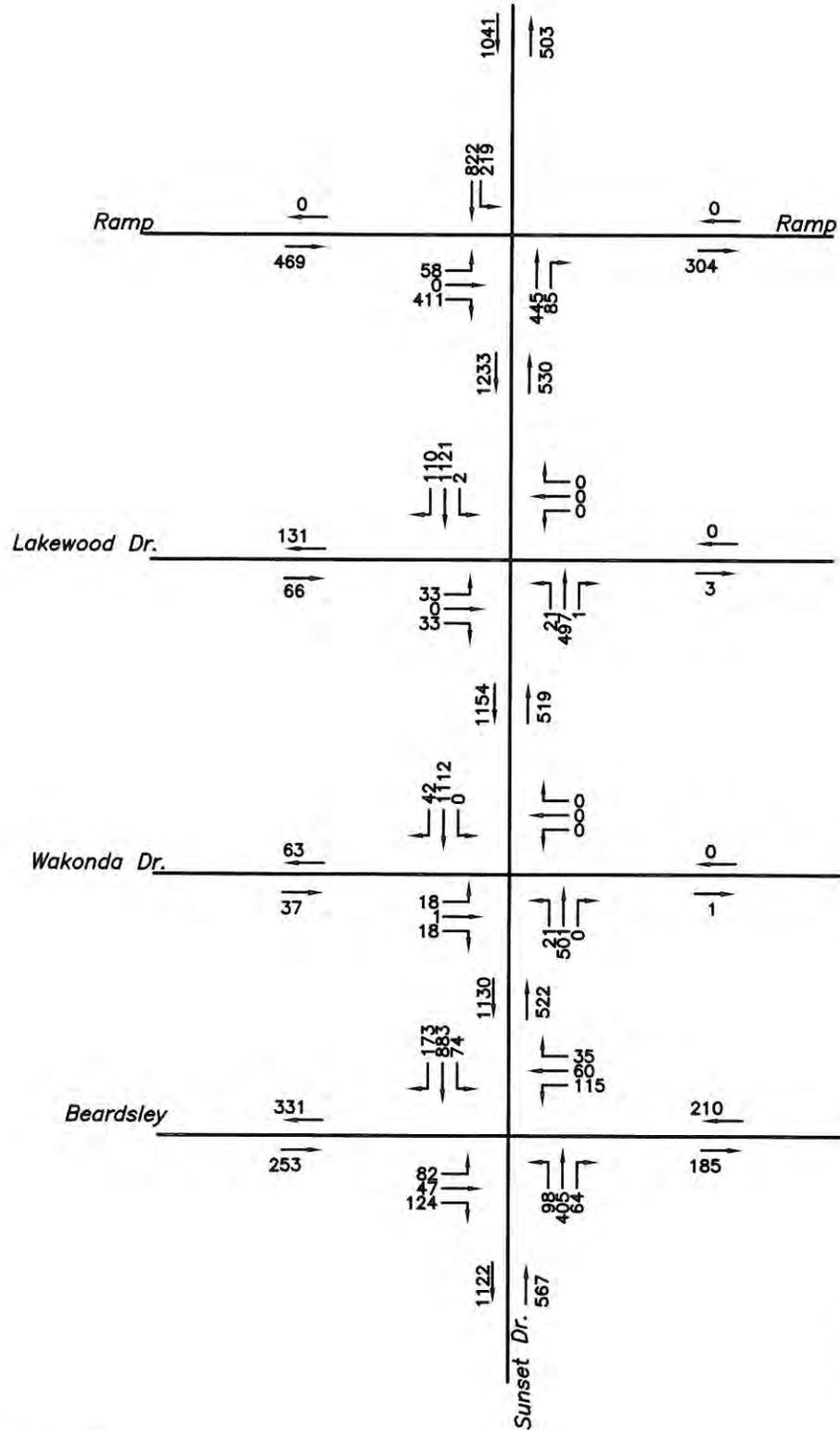
H. TRAFFIC VOLUMES & MOVEMENTS &

Warrants Summary Report 1: Wakonda

Intersection Information

	Major Street	Minor Street
Street Name	Sunset Dr	Masteller Rd
Direction	NB/SB	EB/WB
Number of Lane:	2	1
Approch Speed	45	25

Warrant	Met?	Notes
Warrant 3, Peak Hour		
	Yes	
Condition A Met?	No	0 Hours met (1 required)
Condition B Met?	Yes	1 Hours met (1 required)
Warrant 6, Coordinated Signal System		
	No	
Warrant 7, Crash Experience		
	No	
Traffic Volume Condi	No	1 Hours met (8 required)
Ped Condition?	No	0 Hours met (8 required)
Warrant 8, Roadway Network		
	Yes	
Warrant 9, Intersection Near a Grade Crossing		
	No	

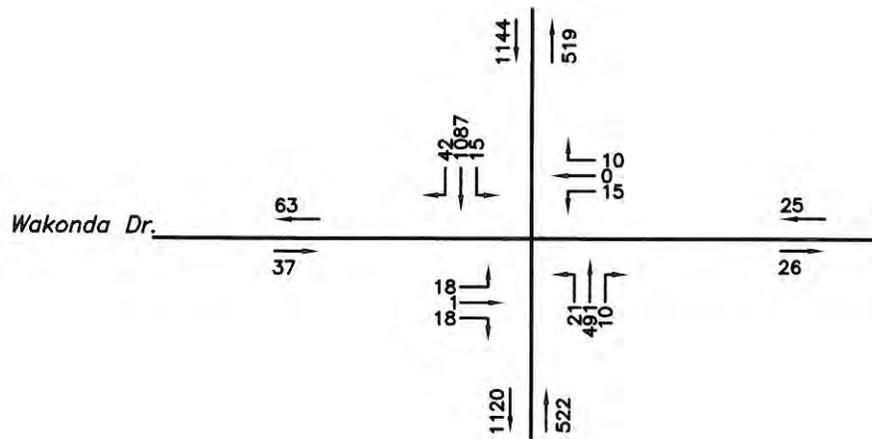


EXISTING
PM PEAK
1700-1800



VEENSTRA & KIMM, INC.

NORWALK
WARREN COUNTY, IA
FIGURE 1

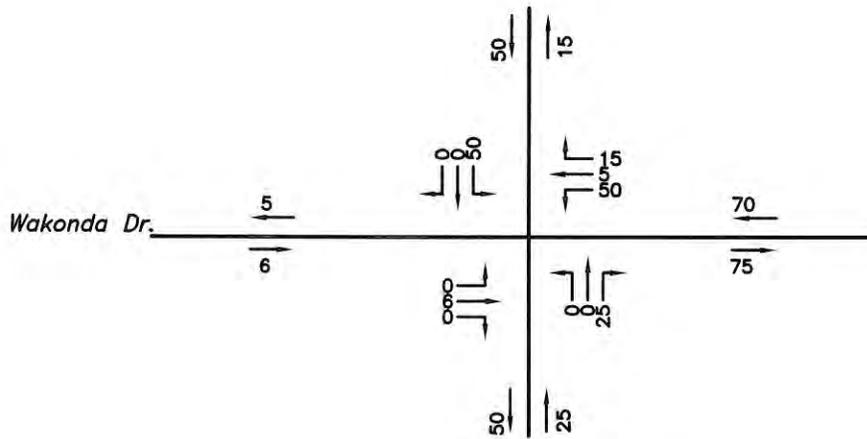


PASS-BY
REDISTRIBUTED



VEENSTRA & KIMM, INC.

NORWALK
WARREN COUNTY, IA
FIGURE 2

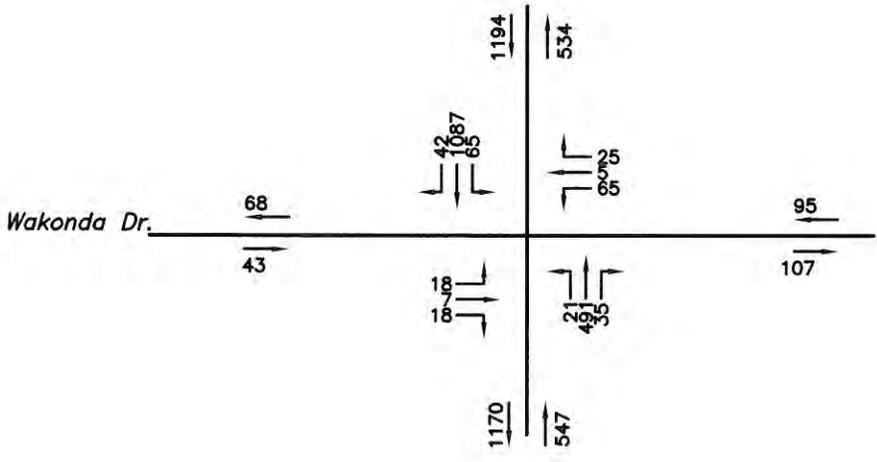


NEW TRIPS



VEENSTRA & KIMM, INC.

NORWALK
WARREN COUNTY, IA
FIGURE 3



Developed



VEENSTRA & KIMM, INC.

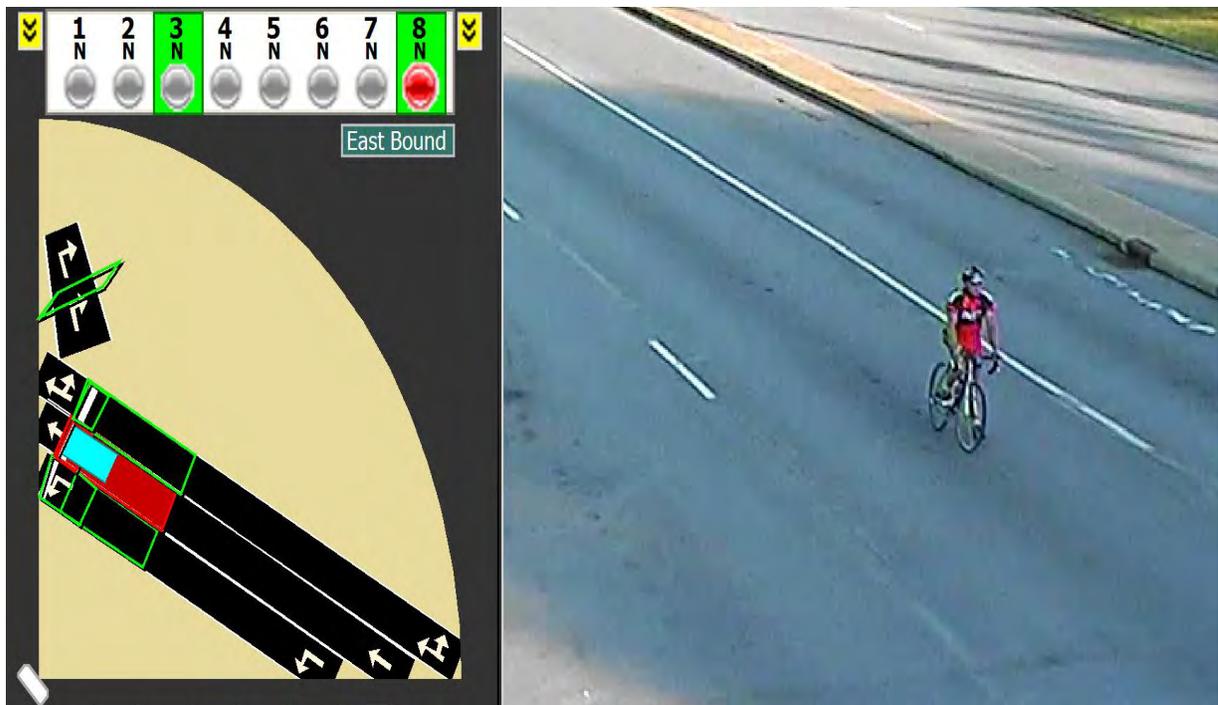
NORWALK
WARREN County, IA
FIGURE 4

I. TRAFFIC SIGNAL LAYOUT, TYPE, PROPOSED PHASING, AND DETECTOR LOCATIONS

The signals will be ready for interconnect via GPS or hardwire. The signals will operate as Iowa Highway 28 with green all time. Side streets will operate as actuated. Battery backup will be installed with the system. Conditions will be monitored for the need of timed operations. The emphasis will remain on through traffic for Iowa 28, particularly in peak hours. See plan view in item G of this application for detector loops.

City of West Des Moines

Traffic Safety Improvement Program Application - 2016



Radar Technology Traffic Signal
Detector Units

August 15, 2016



Application for TRAFFIC SAFETY FUNDS

GENERAL INFORMATION

DATE: August 15, 2016

Location / Title of Project Radar Technology Traffic Signal Detector Units

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.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 Safety Cost \$ 93,000

Total Project Cost \$ 93,000

Safety Funds Requested \$ 93,000

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project? Yes – Explain _____

No

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, Iowa

Signed:  8-11-16
Signature Date Signed

Bret Hodne, Director of Public Works
Typed Name

Attest:  8-11-16
Signature Date Signed

Jim Dickinson, Principal Engineer-Traffic
Typed Name

**CERTIFICATION OF GRANT APPLICATION
FOR TRAFFIC SIGNAL IMPROVEMENT PROGRAM (TSIP) FUNDS**

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.

Authorization is given to apply for Iowa Department of Transportation Traffic Safety Improvement Program (TSIP) Funds for Radar Technology Traffic Signal Detector Units.

If the project is funded, the City of West Des Moines will adequately maintain the completed project for its intended public use following project completion.



Tom Hadden, City Manager

NARRATIVE**Radar Technology Traffic Signal Detector Units
West Des Moines, Iowa**

The City of West Des Moines is 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 traffic signal equipment required for the installation of radar technology traffic signal detector units on the approaches of four existing signalized intersections in the City. The City of West Des Moines is responsible for the operation and maintenance of the signalized intersections.

In 2012, the City of West Des Moines started to designate bicycle routes by placing Shared Lane Markings, or sharrows, along some streets to indicate a shared lane environment for bicycles and automobiles. These on-street bicycle routes are being used to provide a connection between the off-street city trail systems. Currently there are over nine miles of city streets designated as sharrow routes.

Bicyclists, like vehicle drivers, are often forced to wait at signalized intersections for a green signal. The signalized intersections in West Des Moines are fully actuated and are set up to give green light preference to the main street with the heavy traffic flow. The signal will only change to the side street when a vehicle is detected and triggers the call. The problem is, most detection technologies do not always detect bicycles. Unless bicyclists have a vehicle in their lane to trigger the signal for them, they could wait undetected for a long period of time before the signal turns green. As a result, bicyclists often choose to run the red light, which is a choice that can be very unsafe.

Many of signalized intersections in West Des Moines use loop detector technology and they require a certain amount of metal to be present in order to properly detect passing vehicles. Modern bicycles, which are increasingly manufactured from non-metallic materials like carbon fiber, may not be detected. With even a metallic bicycle, unless the bicycle is properly over the loop, they may not be detected. Again, this creates a situation where the undetected bicyclist has to wait for a vehicle to arrive, dismount and go over to push the pedestrian button, or cross illegally.

In 2012, the City of West Des Moines started using radar technology traffic signal detector units at signalized intersections. These units provided very reliable detection of vehicles with the advantage of not distressing the pavement by sawing in detector loops. With the city's intensive pavement management program, crack sealing, patching, or overlay projects will not impact and disrupt the radar technology detection units like it does for the in pavement detector loops.

Currently 29 of our 115 signalized intersections are equipped with the radar traffic signal detection units. Along with providing detection of cars and trucks, it also provides detection of bicycles so that all vehicles using the roadway are detected.

The City of West Des Moines Bicycle Advisory Commission has been actively promoting bicycling in the city. As a result, over nine miles of city streets have been designated as shared bike routes with sharrow pavement markings and bike route signing installed on the streets. Currently many signalized intersections utilized by bicyclists use detector loops as the method of detecting traffic. The detector loops work well for larger vehicles but do not work well for detecting bicycles. This non-detection of bicycles causes many bicyclists to "run the red" if no vehicle pulls up behind them to trigger the detector and change the traffic signal from red to green. This creates a traffic safety issue for both the bicyclist crossing the street on red and the motorist traveling on the intersecting street entering the intersection on green.

With this project, the City of West Des Moines proposes to install radar technology traffic signal detector units at four intersections that experience on-street bicycle traffic. The radar detector unit will not only detect the larger vehicles but will also detect the bicycles. The bicyclist does not have to be concerned about correct positioning in the lane since they will trigger a detector anywhere in the detection zone.

Providing a safe traveling environment, for all forms of transportation, is a goal that we strive for. The proposed project, installing radar technology traffic signal detector units at the four signalized intersections, will go a long way to provide a safer traveling environment for the bicyclists, of all ages, in the City of West Des Moines.

ITEMIZED BREAKDOWN OF COST

Radar Technology Traffic Signal Detector Units

West Des Moines, Iowa

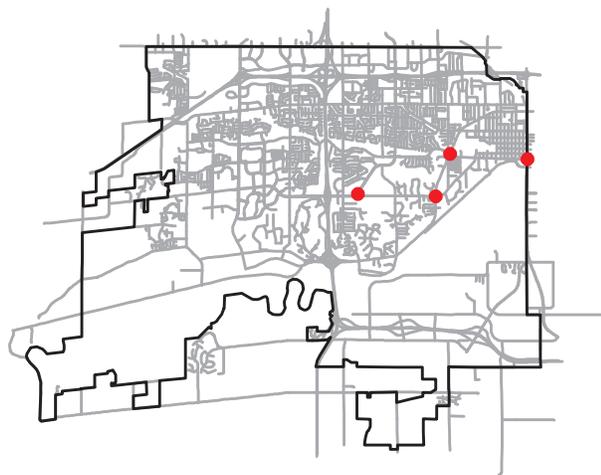
<u>Description</u>	<u>Cost</u>
Radar Technology Traffic Signal Detector Units	4 Intersections @ \$23,250 each = \$93,000

TIME SCHEDULE**Radar Technology Traffic Signal Detector Units****West Des Moines, Iowa**

TSIP Funding Application	August, 2016
TSIP Project Selection	December, 2016
TSIP Funding Available	July, 2017
Project Letting - Equipment	August, 2017
Start Project Installation	October, 2017
Project Completion	November, 2017



VICINITY 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 Within West Des Moines

DRAWN BY: REF

DATE: 7/11/2016

SHT. 1 OF 1

PICTURES

Radar Technology Traffic Signal Detector Units

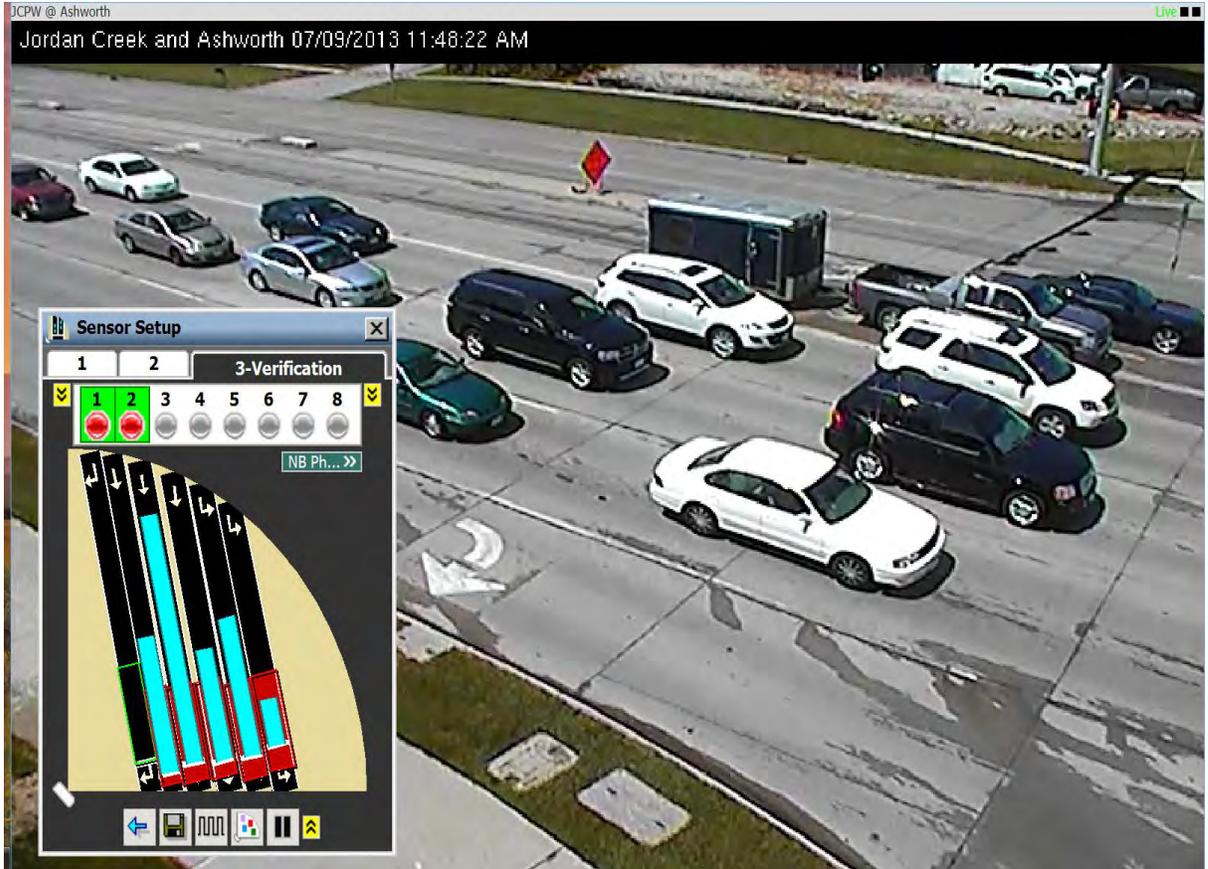
West Des Moines, Iowa



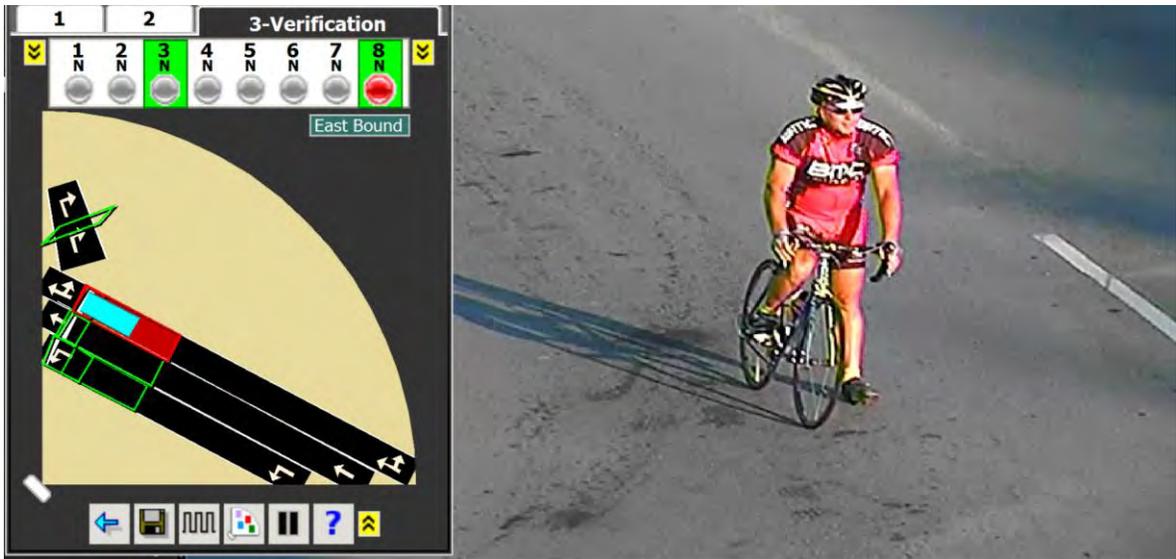
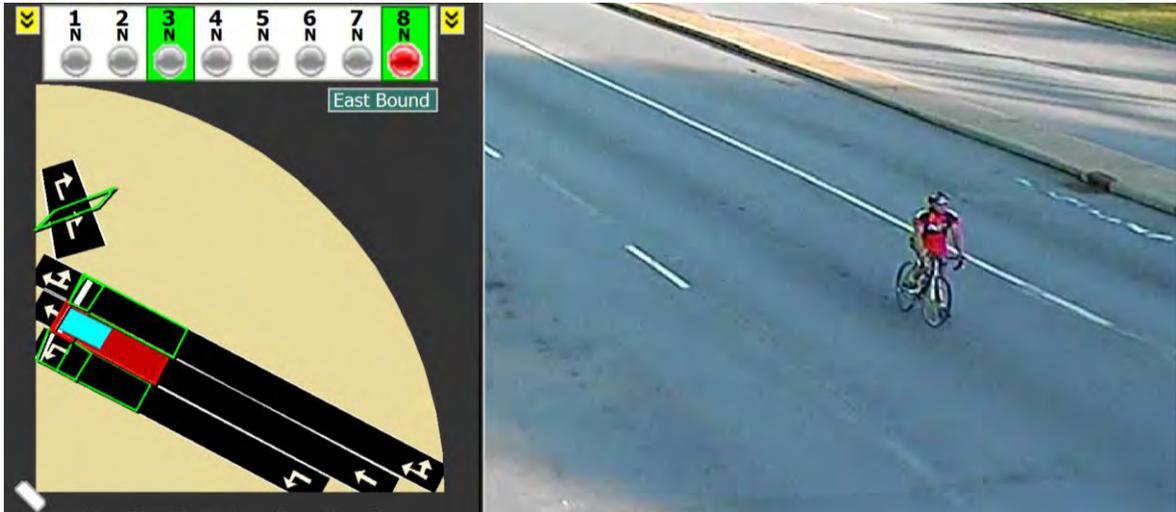
**Radar Technology Detector Antenna -
One Antenna Covers An Intersection Approach**



**Radar Technology Detector Antenna -
Top View**



**Vehicle Detection with Radar Technology Detector Units –
Vehicles Being Detected by Lane**



**Bicycle Detection with Radar Technology Detector Units –
Bicycle Being Detected by Lane**

TRAFFIC VOLUMES**Radar Technology Traffic Signal Detector Units****West Des Moines, Iowa**

	2012
INTERSECTION	COUNT
Grand Avenue	13,900
Railroad/EP True	12,000
1 st Street	32,000
Railroad Avenue	14,900
Mills Civic Parkway	8,420
Fuller Road	6,261
Grand Avenue	6,590
Fuller Road	5,363