Traffic Safety Improvement Program

Traffic Control Devices Category
FY 2023

Applications Received by August 16, 2021
## Traffic Control Devices

### FY 2023

Applications listed in alphabetical order by applicant.

<table>
<thead>
<tr>
<th>Page No.</th>
<th>Applicant</th>
<th>Title/Subject</th>
<th>Project</th>
<th>Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Cerro Gordo County</td>
<td>Temporary Traffic Signals</td>
<td>$50,521</td>
<td>$38,122</td>
</tr>
<tr>
<td>16</td>
<td>City of Arnolds Park/Okoboji</td>
<td>Signal upgrade – Fiber optic interconnect</td>
<td>$242,000</td>
<td>$242,000</td>
</tr>
<tr>
<td>50</td>
<td>Dubuque County</td>
<td>Temporary Traffic Signals</td>
<td>$55,450</td>
<td>$55,450</td>
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<tr>
<td>74</td>
<td>Hamilton County</td>
<td>Temporary Traffic Signals</td>
<td>$41,795</td>
<td>$41,795</td>
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<tr>
<td>84</td>
<td>Local Systems Bureau</td>
<td>Sign Replacement Program</td>
<td>$200,000</td>
<td>$200,000</td>
</tr>
<tr>
<td>87</td>
<td>Madison County</td>
<td>Temporary Traffic Signals</td>
<td>$63,000</td>
<td>$63,000</td>
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<tr>
<td>109</td>
<td>Polk County</td>
<td>Traffic Signal Upgrade</td>
<td>$46,800,000</td>
<td>$253,555</td>
</tr>
</tbody>
</table>

| TOTAL Applications | $47,389,766 | $893,922 |
Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

DATE: June 2, 2021

Location / Title of Project Cerro Gordo/Hancock County Temp. Traffic Signals

Applicant Cerro Gordo County

Contact Person Brandon Billings, P.E. Title County Engineer

Complete Mailing Address 17274 Lark Avenue
Mason City, IA 50401

Phone 641-424-9037 E-Mail cgengineer@cgcounty.org

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) Hancock County

Contact Person Jeremy Purvis P.E. Title County Engineer

Complete Mailing Address 855 State Street
Garner, IA 50438

Phone 641-923-2243 E-Mail Jeremy.purvis@hancockcountyia.org

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Funding Amount

Total Safety Cost $ 50,520.74

Total Project Cost $ 50,520.74

Safety Funds Requested $ 38,121.50

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 PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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  Cerro Gordo County Secondary Roads Department

Signed:  Brandon Billings, P.E.  6-3-2021
Signature  Date Signed

Printed Name

Attest:  Mary Arndt  6-3-2021
Signature  Date Signed

Printed Name
APPLICATION CERTIFICATION FOR PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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 Hancock County Secondary Roads Department

Signed: [Signature] 6/03/21
Jeremy Purvis, P.E.
Printed Name

Attest: [Signature] 6/03/21
Shaun Hackman
Printed Name
RESOLUTION 2021-57
APPROVAL OF TRANSPORTATION SAFETY IMPROVEMENT PROGRAM
APPLICATION FOR TEMPORARY TRAFFIC SIGNALS

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

WHEREAS, Cerro Gordo had determined that providing temporary traffic signals for use during
maintenance activities will aid in improving safety for flaggers, maintenance workers, and the
traveling public in road work zones; and

WHEREAS, portable temporary traffic signals are recognized temporary traffic control devices in
the Manual on Uniform Traffic Control Devices, 2009 Edition; and

WHEREAS, the Cerro Gordo County Engineer recommends a TSIP application be submitted to
the Iowa Department of Transportation for possible safety funding of the above-mentioned
traffic control devices.

IT IS THEREFORE RESOLVED by the Cerro Gordo County Board of Supervisors to endorse the
above-mentioned project and hereby commits to accepting and maintaining these temporary
traffic signals;

BE IT FURTHER RESOLVED that the Chairperson of the Cerro Gordo County Board of Supervisors
authorize and direct the County Engineer to submit the said funding application to the Iowa
Department of Transportation for possible Traffic Safety Improvement Funding

Adopted this 4th day of May 2021

Casey M. Callanan
Chair, Board of Supervisors

Attest:

Adam Wedmore
County Auditor
RESOLUTION NO. 2021-026

APPROVAL OF TRANSPORTATION SAFETY IMPROVEMENT PROGRAM
APPLICATION FOR TEMPORARY TRAFFIC SIGNALS

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

WHEREAS, Hancock County has determined that providing temporary traffic signals for use during maintenance activities will aid in improving safety for flaggers, maintenance workers, and the traveling public in road work zones; and

WHEREAS, portable temporary traffic signals are recognized temporary traffic control devices in the Manual on Uniform Traffic Control Devices, 2009 Edition; and

WHEREAS, the Hancock County Engineer recommends a TSIP application be submitted to the Iowa Department of Transportation for possible safety funding of the above-mentioned traffic control devices.

IT IS THEREFORE RESOLVED by the Hancock County Board of Supervisors to endorse the above-mentioned project and hereby commits to accepting and maintaining these temporary traffic signals;

BE IT FURTHER RESOLVED that the Chairperson of the Hancock County Board of Supervisors authorize and direct the County Engineer to submit the said funding application to the Iowa Department of Transportation for possible Traffic Safety Improvement Funding.

Passed and approved this ___ day of ___ , 2021.

Hancock County Board of Supervisors

[Signatures]

ATTEST:

[Signature]
Michelle K. Eisenman, Auditor

[Signature]
Florence “Sis” Greman

[Signature]
Gary Rayhons, Chair
B. NARRATIVE
Cerro Gordo and Hancock Counties are applying for Traffic Safety Improvement Program (TSIP) funds to be used for the purchase of portable temporary traffic signals. TSIP funds are being sought to aid in improving safety in our road work zones with the use of temporary traffic signals. These temporary traffic signals will be used instead of personnel acting as flaggers in work zones, and these will help improve safety for maintenance personnel. Traffic will also move through the work zone safely and more efficiently.

Together, both counties maintain 2,084 miles of roads with 521 miles paved and they maintain 286 bridges. The traffic volumes on the paved road system ranges from 70 AADT to 5,900 AADT. Currently the maintenance on these roads is performed under traffic, with traffic control methods ranging from flashing lights on vehicles to lane closures with flaggers to full road closures. All these methods create hazards for the employees and for the traveling public. The use of portable traffic signals would be very useful for maintenance operations.

The use of portable traffic signals during county maintenance operation will help improve safety by:

> Elimination of two personnel from work zone (which have the highest safety risk)
> Better familiarity with signage and what drivers should do
> Improved visibility – additional lights and signage
> Improved traffic flow in and around the work zone

Cerro Gordo County in conjunction with Hancock County is requesting TSIP funds to purchase one set of four-cart portable temporary traffic signals with doppler sensors, and wireless remote controls. The four-cart signals with these options will allow us the greatest flexibility in our traffic control operations and help ensure safety for the traveling public. They will help move vehicles efficiently through the work zone by detecting when there is a line of vehicles at one end of the work zone or the other. The slow-moving vehicle time extension option is being added to this since lights are being used in the rural parts of the county or where slow-moving farm equipment may be encountered in the work zone. This detection system will help ensure that a light is not switched to green when slow moving vehicles is going through the work zone, thus eliminating another potential safety issue. The wireless remote will allow those controlling the actual work to manipulate the signals to all red in the case where an extra vehicle, such as a ready-mix truck, must temporarily block the drive lane without necessary communication that would be needed when using flagger stations. Signals with these options would work to help improve safety in construction and maintenance work zones, aiding both the drivers and the workers.

The portable traffic lights will conform to and be used according to IDOT Road Standard TC-215. Their primary use will be to aid in traffic control on the paved road system and will aid in improving safety for maintenance staff and the traveling public.

These portable traffic signals will be housed in Cerro Gordo County and made available for use by Cerro Gordo County and Hancock County when not being used by either county. Maintenance for the portable traffic signals will be done jointly, and both counties will enter into a 28E agreement. Costs not covered by TSIP funding will be shared by the counties, including the enclosed trailer for the signals and all necessary advanced warning signage.
C. ITEMIZED BREAKDOWN OF COST

<table>
<thead>
<tr>
<th>Horizon PTS System**</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ2 System (4 carts)</td>
<td>$29,250.00</td>
</tr>
<tr>
<td>SQ2 Solar/outriggers (4 carts)</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>SQ2 outriggers (4)</td>
<td>$684.00</td>
</tr>
<tr>
<td>Doppler Sensors</td>
<td>$1,700.00</td>
</tr>
<tr>
<td>Wireless Remote</td>
<td>$1,987.50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$38,121.50</strong></td>
</tr>
</tbody>
</table>

**other PTS system quotes:

| OMJC Signal                | $42,305.00 |
| JTi                         | $56,000.00 |

Project Cost Covered by Counties

<table>
<thead>
<tr>
<th>Support Trailer</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>7x16 enclosed cargo trailer 7' height</td>
<td>$7,600.00</td>
</tr>
<tr>
<td>Rigging/electrical hardware</td>
<td>$800.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$8,400.00</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Material TC-215</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roll up TC-215 signs and stands (10)</td>
<td>$3,005.72</td>
</tr>
<tr>
<td>Temporary stop bars (2)</td>
<td>$100.00</td>
</tr>
<tr>
<td>42&quot; channelizers w/weights (24)</td>
<td>$893.52</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>$3,999.24</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$12,399.24</strong></td>
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</table>

Horizon quote attached.

D. TIME SCHEDULE

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>TSIP Application Due</td>
<td>August 15, 2021</td>
</tr>
<tr>
<td>TSIP Award Notification</td>
<td>Mid-January 2022</td>
</tr>
<tr>
<td>TSIP Funding Available</td>
<td>July 1, 2022</td>
</tr>
<tr>
<td>Final Quote Comparison</td>
<td>July 2022</td>
</tr>
<tr>
<td>Purchase of Traffic Signals</td>
<td>July 2022</td>
</tr>
<tr>
<td>Use of Temporary Traffic Signals</td>
<td>August 2022</td>
</tr>
</tbody>
</table>
F. COLOR PICTURES OF PROJECT SITE

SQ2® System
The original flagger replacement device.

TS-5 Type TR2
Mobile Traffic Signal

THE ONLY CRASH-TESTED PORTABLE TRAFFIC SIGNAL

The SQ2 system is the most dependable and user-friendly flagger safety PTS system. As with all Horizon Signal systems, the SQ2 System is engineered with the same quality and durability of SQ3 systems in a compact, ultra-portable form factor. The result is a signal that is perfect for daily work or short-term projects, with enough versatility to handle a wide range of applications including parking garages, haul roads, ramp meters, and more. The SQ2 is the real alternative to flaggers, allowing work crews to complete projects quicker and safer.

The SQ2 Portable Traffic Signal meets and exceeds NEMA TS-5 specifications for Type TR2 PTS.

“FROM AN ECONOMIC AND FEASIBILITY STANDPOINT, THE SQ2 SYSTEM HAS EXCEEDED OUR EXPECTATIONS”

MARC
Project Manager
Southern Contracting, LLC
SQ2® Portable Traffic Signal

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Carts Per System</td>
<td>4</td>
</tr>
<tr>
<td>Signal Heads Per Cart</td>
<td>1</td>
</tr>
<tr>
<td>Lamp Type</td>
<td>12&quot; (300 mm) Diameter LED</td>
</tr>
<tr>
<td>Power Source</td>
<td>12V / (2) 12V batteries</td>
</tr>
<tr>
<td>Height:Operating Position</td>
<td>95&quot; (244 cm)</td>
</tr>
<tr>
<td>Cart Footprint</td>
<td>31 x 25.5&quot; (79 x 65 cm)</td>
</tr>
<tr>
<td>Cart Weight</td>
<td>420 lb. (190 kg)</td>
</tr>
</tbody>
</table>

SQ3TS PTS FEATURES

- The only crash-tested PTS available today
- MUTCD Compliant
- Easily converts to pedestrian crosswalk or DAD
- Wireless/remote operation mode option
- Work zone indication light to provide visual cues
- Fast, efficient deployment and relocation
- Dual-Processor Malfunction Management System
- Battery power for a full week of operation on a single charge
- Easy-lift handles for maneuverability
- Meets NEMA TS-5 specifications for Type TR2 PTS

AVAILABLE OPTIONS

SOLAR CHARGING & OUTRIGGER PACKAGE | The solar charging option extends battery life while the outrigger option provides additional stabilization.

PEDESTRIAN CROSSWALK SIGNALS | System can be configured with MUTCD-compliant pedestrian crosswalk signal indicators.

ADVANCED REMOTE MONITORING | Receive text and/or email alert notifications of signal operation and battery voltage levels.

FLAGGER/PILOT CAR MODULE | Allows flagger or pilot car driver to control signal status with built-in safeguards.

TRANSPORT TRAILER | An enclosed trailer to transport, store and accommodate charging of SQ2 signals.

NCHRP 350 TL-3 Accepted
The SQ2 system is the only NEMA Type TR2 signal that has been successfully crash tested to NCHRP 350 TL-3 crash testing standards.

DISTRIBUTED BY

HORIZON SIGNAL
ADVANCING WORKZONE SAFETY

5 Corporate Blvd
Reeding, PA 19608
800.852.3796
horizonsignal.com

Regional Support Centers
Philadelphia, PA
Albuquerque, NM
Birmingham, AL
Chicago, IL
Fargo, ND
Indianapolis, IN
Orlando, FL
St. Catharines, ON
Waco, TX
In use on Route B-20 over I-35 in Cerro Gordo County. Necessitated rental for $2000/per week.

G. PLAN VIEW (proposed use of IDOT Road Standard TC-215)
H. TRAFFIC VOLUMES
See Iowa DOT Office of Transportation Data for latest data. (Direct Links Below)

Cerro Gordo County Traffic Volumes
Hancock County Traffic Volumes

I. TRAFFIC SIGNAL LAYOUT
See image in the Plan View Section G

J. B/C WORKSHEET
Not Applicable
# Quotation

Quote #JGH2133  
4-15-21

**CUSTOMER**  
Cerro Gordo County Roads Dept.  
Attn: Mary Arndt  
2716 South Federal Ave.  
Mason City, IA 50401  
Phone: 641-424-9037  
Email: marndt@cgcounty.org

RE: SQ2 Portable Traffic Signal System

<table>
<thead>
<tr>
<th>Part #</th>
<th>Item/Description</th>
<th>Unit Price</th>
<th>Qty</th>
<th>Total Price</th>
</tr>
</thead>
</table>
|        | **SQ2 System (4 Carts)**  
(4) telescoping carts with (1) signal head per cart, All LED lamps, (4) controllers, (1) PTS Programmer, backplates and wireless radio communication system. | $29,250.00 | 1 | $29,250.00 |
|        | **SQ2 Solar/Outriggers (4 carts)**  
130 watt solar panel, solar charger and outriggers which provides lateral stabilization for SQ2 carts. Price includes solar and outriggers for 4 carts. | $1,125.00 | 4 | $4,500.00 |
|        | **SQ2 Outriggers**  
Outriggers provide lateral stabilization for SQ2 Carts | $171.00 | 4 | $684.00 |
|        | **Trailer Pin Kit**  
Framework and pins to hold/lock the 4-SQ2 Carts in place in an enclosed trailer. | $600.00 | 1 | $600.00 |
|        | **Doppler Sensors**  
Motion detectors for signal actuation. Price includes (2) sensors. | $1,700.00 | 1 | $1,700.00 |
|        | **Wireless Remote Package**  
Provides wireless control of SQ2 or SQ3 signal system. One package required per system. Includes receiver and transmitter. | $1,987.50 | 1 | $1,987.50 |
|        | **50' Cabled Remote**  
50' hardwired remote for manual control of the signal system. | $356.25 | 1 | $356.25 |
|        | **Total** | | | **$ TBD** |

Terms: Net 30 days  
FOB: Reading, PA 19608  
*** 5 year warranty on LED Lights. Signals and components are warranted for a period of 2 years, excluding batteries and tires. ***
Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

DATE: August 12, 2021

Location / Title of Project
US 71 Traffic Control Improvements

Applicant
Arnolds Park

Contact Person
Linda Nase
Title
City Clerk

Complete Mailing Address
156 N. Highway 71, Arnolds Park, IA 51331

Phone
712-332-2341
E-Mail
lnase@arnoldsparkcity.com

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 Okoboji

Contact Person
Michael Meyers
Title
City Administrator

Complete Mailing Address
1322 Highway 71 N, Okoboji, IA 51355

Phone
712-332-2550
E-Mail
michael.meyers@okobojicity.com

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Funding Amount

Total Safety Cost
$ 242,000.00

Total Project Cost
$ 242,000.00

Safety Funds Requested
$ 242,000.00

Does this project appear on a Safety Improvement Candidate List or is there a safety study recommendation for this project?
☐ Yes – Explain
☒ No
APPLICATION CERTIFICATION FOR PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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 Arnolds Park

Signed: [Signature] [Date Signed] 8/12/2021 8/12/2021
Linda Nase
Printed Name

Attest: [Signature] [Date Signed] 8/12/2021
Teresa Kruse
Printed Name
APPLICATION CERTIFICATION FOR PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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 Okoboji

Signed: ____________________ Date Signed: 8/12/2021

Signature

Michael Meyers
Printed Name

Attest: ____________________ Date Signed: 8/12/2021

Signature

Jill Verdoorn
Printed Name
APPLICATION RESOLUTIONS
RESOLUTION NO. 41-2021

INTRODUCED BY: ADAMS                     SECONDED BY: WATTERS

A RESOLUTION OF THE CITY COUNCILS OF THE CITIES OF ARNOLDS PARK AND OKOBOJI, IOWA AUTHORIZING SUPPORT AND ENDORSING PREPARATION AND SUBMITTAL OF THE TSIP GRANT APPLICATION AND ASSURING MAINTENANCE OF THE FUNDED IMPROVEMENTS

WHEREAS, the City Councils of the Cities of Arnolds Park and Okoboji, Iowa, as the sponsors on an application to the IDOT TSIP Program for funding to assist with improvements and coordination of traffic control devices along the US Highway 71 corridor through both communities; and,

WHEREAS, that TSIP funding is critical and essential to the completion of this project; and,

WHEREAS, the City Councils of the Cities of Arnolds Park and Okoboji, Iowa pledge to adequately maintain the improvements funded by these TSIP funds and commit to city maintenance of these improvements now and in the future.

NOW THEREFORE BE IT RESOLVED that the Cities of Arnolds Park and Okoboji, Iowa, endorse the preparation and submittal of the application for TSIP assistance to the Iowa Department of Transportation, and commit to the stipulations of public maintenance to the proposed improvements outlined within said application.

PASSED AND APPROVED this 14th day of July, 2021.

Jim Hussong, Mayor
City of Arnolds Park

ATTEST:

Linda Nase, City Clerk
City of Arnolds Park
RESOLUTION NO. 21-34

A RESOLUTION OF THE CITY COUNCILS OF THE CITIES OF ARNOLDS PARK AND OKOBOJI, IOWA AUTHORIZING SUPPORT AND ENDORSING PREPARATION AND SUBMITTAL OF THE TSIP GRANT APPLICATION AND ASSURING MAINTENANCE OF THE FUNDED IMPROVEMENTS

WHEREAS; the City Councils of the Cities of Arnolds Park and Okoboji, Iowa, as the sponsors on an application to the IDOT TSIP Program for funding to assist with improvements and coordination of traffic control devices along the US Highway 71 corridor through both communities; and

WHEREAS; that TSIP funding is critical and essential to the completion of this project; and

WHEREAS; the City Councils of the Cities of Arnolds Park and Okoboji, Iowa pledge to adequately maintain the improvements funded by these TSIP funds and commit to city maintenance of these improvements now and in the future,

NOW THEREFORE BE IT RESOLVED that the City of Okoboji, Iowa, endorses the preparation and submittal of the application for TSIP assistance to the Iowa Department of Transportation, and commit to the stipulations of public maintenance to the proposed improvements outlined within said application.

Passed and Approved this 13th day of July, 2021.

[Signature]
Mayor VanderWoude, Okoboji

ATTEST:

[Signature]
Michael Meyers, City Administrator/City Clerk
NARRATIVE

The Cities of Arnolds Park and Okoboji along with the Iowa Department of Transportation, collectively, will be updating and/or installing signal equipment along the US 71 corridor from Lake Street north to Stakeout Road. This will be a total of six signals (4 by the cities, 2 by the IDOT) and will be undertaken in coordination with the IDOT’s US 71 improvement project scheduled to begin after Labor Day, 2022. Specifically, the IDOT will be installing new signals at Lake Street and Linden, while the Cities of Arnolds Park and Okoboji will update and interconnect, via fiber optic cable, the four remaining signals, which have been in place since 2000 and are in dire need of upgrading for improved traffic flow and pedestrian use. This joint City project is requesting TSIP funding to upgrade the current signal equipment to a fiber-optic connected system that will ensure efficiency of US 71 as well as the side streets, adding pedestrian buttons to improve wait time, and ultimately do their part to reduce congestion along US 71.

Specifically, this project involves updating the signal equipment controlling system on an obsolete system that was installed along US 71 in 2000 in the project area as shown in Table 1.

Table 1: Intersections for Signal System Upgrade/Replacements Along US 71

<table>
<thead>
<tr>
<th># Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Broadway Street</td>
</tr>
<tr>
<td>2. Lake Shore Drive/Gordon Drive</td>
</tr>
<tr>
<td>3. Sanborn Avenue</td>
</tr>
<tr>
<td>4. Stakeout Road</td>
</tr>
</tbody>
</table>

The project purpose:

1. Upgrade aging infrastructure
2. Ensure good coordination on US 71 from Arnolds Park through Okoboji while minimizing side street delay
3. Encourage safe pedestrian activity by adding pedestrian push buttons to improve wait times
4. Improve overall intersection operations and reduce congestion.

As seen from the location map, US 71 (See Section E) is a major Federal Highway that runs north-south completely through the Iowa Great Lakes Region connecting not only Arnolds Park and Okoboji, but Iowa to Minnesota and beyond. This specific area is the vacation destination for over 1 million annual tourists and the annual average daily traffic counts show it. (See Section H) US 71 in Arnolds Park shows AADT ranging from 11,000 to 16,500, while Okoboji has 13,700 to 14,400. The turning movement data also supports this high-volume traffic as well. (See Section H). These are averages and don’t fully reflect the larger volumes that are present during the period of Memorial Day to Labor Day when larger traffic volume fluctuations are experienced as tourists head to these summer recreation destinations.

US 71 within the proposed project area is surrounded by retail and commercial businesses, single and multi-family residences, municipal buildings, public park/open space and resort/amusement locations. There is sidewalk/trail along both sides of the thoroughfare. The existing roadway, through the project area is a three-lane (middle turning lane) street with a speed limit of 30. US 71, through the project area has a functional classification of Other Principal Arterial per Iowa DOT.
These 4 signals have been individually assessed and will be upgraded with N/S/E FYA, emergency vehicle preemption, fiber optic interconnect equipment, and 16” pedestrian countdown signals (Walk/Don’t Walk w/Countdown), and upgrade to Gridsmart Detection. Fiber optic cable and conduit will be installed through the project area as well. The upgrades to each specific signal have been delineated out in the detailed cost estimate.
<table>
<thead>
<tr>
<th>Project</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>6910 ft conduit &amp; header</td>
<td>$650,000</td>
</tr>
<tr>
<td>Embled Park</td>
<td>$630,000</td>
</tr>
<tr>
<td>Aminda Park</td>
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**Fire and Conduit**

- Upgrade to G sensor detection
- Fire detection equipment inside cabinet
- Install emergency vehicle preemption
- Sign on road

**Lake Shore Drive**

- Upgrade to G sensor detection
- Fire detection equipment inside cabinet
- Install emergency vehicle preemption

**Broadway**

- Upgrade to N/S/E flashing yellow arrow (F/YA)
- requiring new controller & monitor
- Reduce 5 section signals to 4 section & use existing conductors

Total costs:

- 242,000.00
- 63,500.00
- 4,000.00
- 16,000.00
- 4,000.00
- 16,000.00
- 4,000.00
- 16,000.00
- $500 per signal x 8

**Signal Upgrade Costs**

**Term 2 Breakdown of Costs**
TIME SCHEDULE

This project will be completely coordinated with the Iowa Department of Transportation's US 71 project through the Iowa Great Lakes Area. At this time, in speaking with the District Office, it was not certain in which stage the signal work would be incorporated, but a portion may be done during each phase. Flexibility in the timing will be adhered to enabling full coordination with the US 71 project.

Preliminary phases will be complete, and the signal project will be ready for installation by the beginning of the first construction phase of the US 71 project after Labor Day 2022.

**Construction Stage 1** (reconstruction of intersection at Okoboji Grove Rd, Benit Dr, Lake St, Dam Rd, Broadway St, Linden Dr, Ackley St, Lake Shore Dr, and Sanborn Ave): Begin **after Labor Day, 2022**

**Construction Stage 2** (NB lanes): Spring of 2023, **complete before Memorial Day, 2023**

**Construction Stage 3** (SB lanes): Begin **after Labor Day, 2023**

Completion and Cleanup (if needed): complete before Memorial Day, 2024
COLOR PICTURES
Intersection of Highway 71 & Sanborn Avenue - Looking East
GENERAL NOTES:
1. THE CONTRACTOR WILL BE MISTAKE THE LOCATION OF ALL DETECTORS, HANGERS, AND FOUNDATIONS IN THE FIELD.
2. ALL QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BECOME FAMILIAR WITH THE ACTUAL SITE CONDITIONS PRIOR TO PERFORMING SIGNAL WORK.
3. THE CONTRACTOR SHALL CONTACT THE LOCAL UTILITY COMPANY TO DETERMINE THE EXACT LOCATION OF THE SERVICE POLES AND POWER SUPPLY. THE CONTRACTOR SHALL PROVIDE CONNECTION TO THE POWER SOURCE USING A 60 AMP LOW FUSED CIRCUIT BREAKER TYPE WEATHER-PROOF SUBCONNECT. ALL COSTS ASSOCIATED WITH THE ELECTRICAL SERVICE CONNECTION SHALL BE INCLUDED IN THE Lump SUM BID FOR THE TRAFFIC SIGNAL WORK.
4. THE CONTRACTOR SHALL SUBMIT TO THE STATE TRAFFIC ENGINEER A LIST OF TRAFFIC SIGNAL ITEMS (CATALOG CUT SHEETS ACCEPTABLE) THAT ARE PROPOSED FOR INSTALLATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE FROGGER, UTILITY COMPANIES AND CITY ORS/UELS.
6. FOR THE PURPOSE OF LOCATING UNDERGROUND FACILITIES AND COORDINATING CONSTRUCTION ACTIVITIES.
7. ALL TRAFFIC SIGNAL WORK IN THIS PROJECT SHALL BE IN ACCORDANCE WITH THE OHA DOT STANDARD SPECIFICATIONS FOR HIGHWAY AND RURAL CONSTRUCTION, LATEST EDITION, CURRENT OHA SUPPLEMENTAL SPECIFICATIONS, OHA STATEWIDE URBAN DESIGN AND SPECIFICATIONS (SUSD), AND PROJECT SPECIFIC PROVISIONS.
8. PRELIMINARY AND EXISTING SIGNAL LAYOUTS SHOWN, FINAL DESIGN PENDING DESIGN REVIEW AND FINAL GEOMETRIC DESIGN REVIEW.

DESIGN NOTES:
1. SOUTH APPROACH IS A PRIVATE DRIVE. PED SIGNAL HEADS AND PED BUTTONS TO BE INCLUDED ACROSS THIS APPROACH TO INFORM PEDESTRIANS OF WHEN THIS APPROACH IS BEING SERVED BY SIGNAL.
2. EXISTING PAVEMENT MARKINGS ON LAKE ST (SOUTHBOUND) APPROACH DO NOT ALLOW THROUGH MOVEMENT TO PRIVATE DR. EXISTING PAVEMENT MARKINGS FOR SB LAKE ST ARE LEFT LANE MUST TURN LEFT RIGHT LAKE ST TURN RIGHT. SIGNAL HEAD CONFIGURATION SHOWN IN THIS PRELIMINARY SUBMITTAL ARE INTENDED TO MATCH EXISTING PAVEMENT MARKINGS AND MOVEMENTS. NEW MOVEMENTS MAY BE CONSIDERED FOLLOWING DESIGN REVIEW.
3. MAXIMUM ALIGMENT IS 5% SLOPE. REVERSE SIGNALS FOR THE WEST approach ARE INCORPORATED TO PROVIDE ADEQUATE SIGNAL VISIBILITY INCLUDING DURING SIGNIFICANT DUETING EVENTS.

LINES OR:
1. LINES APPROACH IS A PRIVATE DRIVE. PED SIGNAL HEADS AND PED BUTTONS TO BE INCLUDED ACROSS THIS APPROACH TO INFORM PEDESTRIANS OF WHEN THIS APPROACH IS BEING SERVED BY SIGNAL.
2. EXISTING PAVEMENT MARKINGS ON LAKE DR (WESTBOUND) APPROACH DO NOT ALLOW THROUGH MOVEMENT TO PRIVATE DR. EXISTING PAVEMENT MARKINGS FOR WB LAKE DR ARE LEFT LANE MUST TURN LEFT RIGHT LAKE ST TURN RIGHT. SIGNAL HEAD CONFIGURATION SHOWN IN THIS PRELIMINARY SUBMITTAL ARE INTENDED TO MATCH EXISTING PAVEMENT MARKINGS AND MOVEMENTS. NEW MOVEMENTS MAY BE CONSIDERED FOLLOWING DESIGN REVIEW.
3. MAXIMUM ALIGMENT IS 5% SLOPE. REVERSE SIGNALS FOR THE EAST approach ARE INCORPORATED TO PROVIDE ADEQUATE SIGNAL VISIBILITY INCLUDING DURING SIGNIFICANT DUETING EVENTS.

LINES OR:
1. EXISTING ROW AND AVAILABLE SPACE ON WEST SIDE OF INTERSECTION IS LIMITED DUE TO EXISTING RETAINING WALLS. THIS COULD LIMIT THE LOCATION OF TEMPORARY SIGNAL POLES.
2. SHOULDER RE.
3. ADDITIONAL FEDERAL/UTITAL FACILITIES ANTICIPATED ON NORTH SIDE OF INTERSECTION.

FILE NO. ENGLISH JOINEN TSM ITERIS DICKINSON COUNTY PROJECT NUMBER HNSN-71-717-22-30 SHEET NUMBER N.1
INTERSECTION NOTES:
1. INTERSECTIONS ARE UPDATED FINAL DESIGN REMOVED
2. DESIGN REMOVED AND FINAL DETAIL TAKEN FROM PREVIOUS DESIGN
3. DETAILING REMOVED AT THIS LOCATION DUE TO HANGING DETAIL REMOVED
4. EXISTING INSTRUCTIONS REMOVED TO DRAWER

Design Summary:
Modifications to Existing Signal to include
1) relocated pedestrian signals and push buttons to match revised ADA ramps;
2) NB/SB Flashing Yellow Operation (FYA);
3) replacing faulty vehicle detection; 4) replace wiring, conduit, and pull boxes impacted by paving work; 5) replace controller to support modifications; 6) fiber optic interconnect for coordinated operations.
Design Summary:

Modifications to Existing Signal to include:
1) relocated pedestrian signals and push buttons to match revised ADA ramps;
2) NB/SS Flashing Yellow Operation (FYA);
3) replacing faulty vehicle detection;
4) replace wiring, conduit, and pull boxes impacted by paving work;
5) replace controller to support modifications;
6) fiber optic interconnect for coordinated operations.

LAKE SHORE DRIVE

Subject to Change
Preliminary
Not for Construction

US-71 and LAKE SHORE DRIVE/GORDON DRIVE
Design Summary:
Modifications to Existing Signal to include:
1) replace existing pedestrian signals and push buttons to match revised ADA ramps with APS; 2) NB/SB Flashing Yellow Operation (FYA); 3) replacing faulty vehicle detection; 4) replace wiring, conduit, and pull boxes impacted by paving work; 5) replace controller to support modifications; 6) fiber optic interconnect for coordinated operations.
INTERSECTION NOTES:
1. VERIFY SIGNAL TOWER LOCATION
2. TSB TO BE PAINTED ORANGE
3. NORTH/WEST MINOR PHASE SIGNAL DEPLOYED AT 3RD BUTTON
4. PB: MODULAR, LEFT, ACROSS SIGNAL, DEPLOY TO ACCESS T-SHAPE OVERHEAD
5. STREET SIDE SADDLE DETECTION TO REMAIN

Design Summary:
Modifications to Existing Signal to include:
1) relocated pedestrian signals and push buttons to match revised ADA ramps;
2) NB/SB Flashing Yellow Operation (FYA);
3) replacing faulty vehicle detection;
4) replace wiring, conduit, and pull boxes impacted by paving work;
5) replace controller to support modifications;
6) fiber optic interconnect for coordinated operations.
TRAFFIC VOLUMES AND TURNING MOVEMENT
TRAFFIC FLOW MAP OF
ARNOLDS PARK
DICKINSON COUNTY
2019 ANNUAL AVERAGE DAILY TRAFFIC
Iowa Department of Transportation
Turning Movement Traffic Count Summary
Annualized Daily Traffic For All Vehicles

Station Number:
30232512099

Count Date:
Tuesday, June 04, 2019

County:
Dickinson

Location Description:
US 71 & LAKE ST

Volume Factor: 0.879
Pass Class Factor: 0.902
SU Class Factor: 0.765
Combo Class Factor: 0.728

Raw Data - All Vehicles:

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Iowa Department of Transportation
Turning Movement Traffic Count Summary
Annualized Daily Traffic For All Vehicles

Station Number:
30232920099

Count Date:
Tuesday, June 04, 2019

County:
Dickinson

Location Description:
US71 & BROADWAY ST

Volume Factor: 0.879
Pass Class Factor: 0.902
SU Class Factor: 0.765
Combo Class Factor: 0.728

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Raw Data-All Vehicles:

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Iowa Department of Transportation
Turning Movement Traffic Count Summary
Annualized Daily Traffic For All Vehicles

Station Number:
30234120099

Count Date:
Thursday, September 5, 2019

County:
Dickinson

Location Description:
US 71, LAKE SHORE DR & GORDON DR

Volume Factor: 1.758
Pass Class Factor: 1.808
SU Class Factor: 1.542
Combo Class Factor: 1.370

Raw Data-All Vehicles:

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<td>16:00</td>
<td>7</td>
<td>737</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>17:00</td>
<td>3</td>
<td>612</td>
<td>10</td>
<td>14</td>
</tr>
</tbody>
</table>
Iowa Department of Transportation
Turning Movement Traffic Count Summary
Annualized Daily Traffic For All Vehicles

Station Number:
30235121099

Count Date:
Wednesday, September 4, 2019

County:
Dickinson

Location Description:
US 71 & STAKE OUT RD

Volume Factor: 1.804
Pass Class Factor: 1.851
SU Class Factor: 1.566
Combo Class Factor: 1.391

Raw Data-All Vehicles:

<table>
<thead>
<tr>
<th>N Leg</th>
<th>E Leg</th>
<th>S Leg</th>
<th>W Leg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>T</td>
<td>R</td>
<td>L</td>
</tr>
<tr>
<td>07:00</td>
<td>8</td>
<td>255</td>
<td>4</td>
</tr>
<tr>
<td>08:00</td>
<td>11</td>
<td>256</td>
<td>23</td>
</tr>
<tr>
<td>11:00</td>
<td>32</td>
<td>436</td>
<td>8</td>
</tr>
<tr>
<td>12:00</td>
<td>27</td>
<td>426</td>
<td>14</td>
</tr>
<tr>
<td>15:00</td>
<td>18</td>
<td>390</td>
<td>4</td>
</tr>
<tr>
<td>16:00</td>
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<td>489</td>
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</tr>
<tr>
<td>17:00</td>
<td>12</td>
<td>493</td>
<td>7</td>
</tr>
</tbody>
</table>
Dubuque County will be applying for Traffic Safety Improvement Program funds for temporary traffic signals in the category of traffic control devices.
Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

DATE: 7-21-2021

Location / Title of Project: Dubuque County Temporary Traffic Signals
Applicant: Dubuque County Secondary Roads
Contact Person: Anthony Bardgett
Title: County Engineer
Complete Mailing Address: 1225 Seippel Rd
Dubuque, IA 52002
Phone: 563-557-7283
E-Mail: engineer@dubuquecounty.us

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: __________________________

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Funding Amount

Total Safety Cost $ 55,450.00
Total Project Cost $ 55,450.00
Safety Funds Requested $ 55,450.00

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 PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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 County of Dubuque

Signed: ___________________________ 7/20/21
Signature Date Signed
Anthony Bardgett
Printed Name

Attest: ___________________________ 7/20/21
Signature Date Signed
Mary Ann Knapp
Printed Name
RESOLUTION NO. 21-195

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

WHEREAS, Dubuque County has determined that providing temporary traffic signals will improve the safety of drivers, flaggers, and road crews during road maintenance activities; and

WHEREAS, portable temporary traffic signals are recognized temporary traffic control devices in the Manual on Uniform Traffic Control Devices, 2009 Edition; and

WHEREAS, TSIP Funds are available for traffic control devices; and

WHEREAS, the Dubuque County Engineer recommends a TSIP application be submitted to the Iowa Department of Transportation for possible safety funding of the above-mentioned traffic control devices.

THEREFORE BE IT RESOLVED that the Board of Supervisors of Dubuque County, Iowa hereby supports and approves the application for Iowa Department of Transportation Traffic Safety Improvement Program funding and commits to accepting and maintaining these temporary traffic control signals.

Adopted this 2nd day of August, 2021.

Ann McDonough, Chairperson
Dubuque County Board of Supervisors

ATTEST:

Kevin Dragotto, Dubuque County Auditor
B. Narrative

Dubuque County is applying for the Transportation Safety Improvement Program (TSIP) funds in the amount estimated to be 100% of the cost of a pair of portable temporary traffic signals. The primary purpose of the temporary traffic signals would be to replace flagging operations in Secondary Road Department work zones and to allow lane closure areas in overnight closure situations.

The Dubuque County Secondary Roads Department is responsible for the engineering, construction and maintenance of the county’s secondary road system. The secondary road system in Dubuque County consists of 216 bridges, 459 miles of paved roads, 304 miles of granular surfacing, and 5 miles of dirt roads totaling 768 miles. Typical paved route daily traffic counts in Dubuque County range from 50 to 4,750 vehicles per day.

Part 6F.84 of the MUTCD provides warrants, standards, guidance, and support for the use of traffic signals in work zones. Additional information regarding signal use is located in Part 4. The primary use of the temporary traffic signals would be in a work zone temporary lane closure scenario for one lane, two-way traffic operation.

Secondary Road Crews routinely are required to close lanes of travel for numerous maintenance activities including, but not limited to, the following: PCC patching, HMA patching, culvert repair and replacement, bridge approach repair and replacement, tile repair and installation, guardrail repair and replacement, bridge rail repair and slope repairs. The deployment of temporary traffic signals utilizing traffic control plan 6H-12 in work zones (see section I) would reduce the number of employees exposed to the traveling public which reduces risk of injury and possible conflicts between drivers and flaggers.

The safety benefits of utilizing temporary traffic signals over flaggers is hard to quantify in dollars. However, a list of safety benefits for maintenance crews and motorists in situations utilizing temporary traffic signals is available below:

- Increased visibility to approaching motorists (additional signage and overhead signal)
- More direct communication with motorist
- Clearer understanding and familiarity with drivers
- Significantly more viable for nighttime operations
- Relieves the physical demands, stress, fatigue and hazards of flagging
- Elimination of two positions from work zone with the highest risk exposure

Dubuque County is requesting TSIP funding for an amount equal to the cost of a pair of temporary traffic signals with pilot car remote and vehicle detection options included. Signals with these options would facilitate safe and efficient traffic flow in and around various work zones on Dubuque County secondary roads. Other County Departments, Cities and other jurisdictions could also benefit from these signals in the event of a signal knock down, disaster event or routine maintenance when not in use by Dubuque County. Additionally, it would allow Dubuque County the flexibility to establish short-term overnight closures for road and bridge repairs and remove employees from high-risk situations in close proximity to an ever-growing inattentive driving population.
C. Itemized Breakdown of Cost

Quotes listed here are for Set of Two Signals, with vehicle detection and pilot car remote for Temporary Traffic Control. These preliminary quotes are attached in appendix A.

<table>
<thead>
<tr>
<th>Date</th>
<th>Vendor</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/7/2021</td>
<td>OMJC Signal</td>
<td>$55,450.00</td>
</tr>
<tr>
<td>6/4/2021</td>
<td>Iowa Plains Signing, Inc.</td>
<td>$61,692.00</td>
</tr>
<tr>
<td>7/6/2021</td>
<td>Astro Optics, LLC</td>
<td>$69,750.00</td>
</tr>
</tbody>
</table>

D. Time Schedule

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSIP Application Due</td>
<td>August 15, 2021</td>
</tr>
<tr>
<td>TSIP Award Notification</td>
<td>Mid-January 2022</td>
</tr>
<tr>
<td>TSIP Funding Available</td>
<td>July 1, 2022</td>
</tr>
<tr>
<td>Final Quote Comparison</td>
<td>July 2022 (est.)</td>
</tr>
<tr>
<td>Purchase of Traffic Signals</td>
<td>July 2022 (est.)</td>
</tr>
<tr>
<td>Use of Temporary Traffic Signals</td>
<td>August 2022 (est.)</td>
</tr>
</tbody>
</table>
E. Map

Project locations would be any County Secondary Road location where lane closure is required.

F. Pictures

Image Source: Iowa Plains Signing, Inc. Quote

Image Source: OMJC Signal Quote
Figure 6H-10. Lane Closure on a Two-Lane Road Using Flaggers (TA-10)

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.
H. Traffic Volumes

Hyperlink to 2017 ADT MAP - DUBUQUE COUNTY
I. Traffic Signal Layout

Typical Application for Temporary Traffic Signals

2009 Edition

Figure 6H-12. Lane Closure on a Two-Lane Road Using Traffic Control Signals (TA-12)

Note: See Tables 6H-2 and 6H-3 for the meaning of the symbols and/or letter codes used in this figure.

Image Source: MUTCD 2009
I. Traffic Signal Layout - cont.

Table 6H-2. Meaning of Symbols on Typical Application Diagrams

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Symbol Image]</td>
<td>Arrow board</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Arrow board support or trailer (shown facing down)</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Changeable message sign or support trailer</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Channelizing device</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Crash cushion</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Direction of temporary traffic detour</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Direction of traffic</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Flagger</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>High-level warning device (Flag tree)</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Longitudinal channelizing device</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Luminaire</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Pavement markings that should be removed for a long-term project</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Shadow vehicle</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Sign (shown facing left)</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Surveyor</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Temporary barrier</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Temporary barrier with warning light</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Traffic or pedestrian signal</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Truck-mounted attenuator</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Type 3 barricade</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Warning light</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Work space</td>
</tr>
<tr>
<td>![Symbol Image]</td>
<td>Work vehicle</td>
</tr>
</tbody>
</table>

Table 6H-3. Meaning of Letter Codes on Typical Application Diagrams

<table>
<thead>
<tr>
<th>Road Type</th>
<th>Distance Between Signs**</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Urban (low speed)*</td>
<td>100 feet</td>
</tr>
<tr>
<td>Urban (high speed)**</td>
<td>350 feet</td>
</tr>
<tr>
<td>Rural</td>
<td>500 feet</td>
</tr>
<tr>
<td>Expressway / Freeway</td>
<td>1,000 feet</td>
</tr>
</tbody>
</table>

* Speed category to be determined by highway agency
** The column headings A, B, and C are the dimensions shown in Figures 6H-1 through 6H-46. The A dimension is the distance from the transition or point of restriction to the first sign. The B dimension is the distance between the first and second signs. The C dimension is the distance between the second and third signs. (The “first sign” is the sign in a three-sign series that is closest to the TTC zone. The “third sign” is the sign that is furthest upstream from the TTC zone.)

Image Source: MUTCD 2009

J. Cost/ Benefit Worksheet

Not Applicable
Appendix A

QUOTES
**Quotation**

**Quote Number**
8051

**Quote Date**
June 7, 2021

**Page:** 1

**ATTN:** MARY ANN KNAPP

**PH:** 5635577283

**FAX:**

**DUBUQUECOUNTYIOWA**

---

**Customer ID** | **Good Thru** | **Payment Terms** | **Sales Rep Name**
--- | --- | --- | ---
DUBUQUECOUNTYROADS | 7/7/21 | Net 30 Days | DAVID T. KNAPP

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Item</th>
<th>Description</th>
<th>Unit Price</th>
<th>Extension</th>
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<tbody>
<tr>
<td>1.00</td>
<td>LDPTS</td>
<td>ONE PAIR OF POP-UP LIGHT DUTY TRAILERS (ONE MASTER, ONE SECONDARY) W/ WIRELESS TRAFFIC CONTROL AND SOLAR POWER</td>
<td>49,950.00</td>
<td>49,950.00</td>
</tr>
<tr>
<td>2.00</td>
<td>TC26-B-OMJC</td>
<td>MICROWAVE VEHICLE DETECTOR</td>
<td>1,000.00</td>
<td>2,000.00</td>
</tr>
<tr>
<td>1.00</td>
<td>FALCON-MAX</td>
<td>3 BUTTON REMOTE SYSTEM 900MHZ, 12VDC, ANTENNA BULKHEAD PATCH CABLE, CUSTOM OMJC LABELING free delivery and training</td>
<td>3,500.00</td>
<td>3,500.00</td>
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**Total**

<p>| | | |</p>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Freight &amp; handling are in addition to the prices quoted above unless otherwise specified. All parts, materials and components are new unless otherwise specified. OMJC has been in business since July of 1985 to serve you.</td>
<td><strong>Subtotal</strong></td>
<td>55,450.00</td>
</tr>
<tr>
<td>Sales Tax</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Freight</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>55,450.00</td>
</tr>
</tbody>
</table>
The LD is optimized to control a single lane closure, but it is capable of far more. Its arm is 9’ long, meeting the MUTCD requirements. With the LD, you can quickly have two 12” ITE approved signals in positions mandated by the MUTCD at the mere push of a button. It is light enough that you can tow it with a pickup truck. Because it is only 6’ wide (the narrowest in the industry), you can fit it in almost anywhere. The LD features our exclusive Intelight™ ATC controller running Maxtime™ software. Our control units communicate in real time via wireless, license-free, encrypted spread spectrum radio. The control system can easily handle 7 trailers, as well as complex phasing.

DC2070 ATC™ Controller

Our system is based upon Intelight’s™ proven ATC controller equipped with their Maxtime™ software. It is capable of dual ring actuated operation, controlling up to 8 phases with pedestrian movements. All inputs and outputs are mappable, providing maximum flexibility. It has inputs for coordination, vehicle detection and preemption. It has internal TBC and a clock/calendar and can be programmed for up to 20 day plans with multiple events. The malfunction management unit is an EDI CMU-212. It monitors the following functions in real time: Power, Voltage, Conflict, Lack of signal, and 10 others.
Pop-Up LD™ Features

• Lift Mechanism - electric over hydraulic with remote pendant, single cylinder both lifts and extends in a single movement
• Arm Extension from side of trailer - 9’
• 12” RYG LED signals - ITE compliant, 1 overhead, 1 side of mast
• 180 degree signal rotation
• Traffic control equipment - Intelight Controller - ATC w/ Maxtime 2070 software – EZ Interface (Just answer 4 questions) - actuated 8 phase, dual ring, with pedestrian movements, preemption and coordination capable, knock-down capable, encrypted wireless connection between master and secondaries, real time monitoring

Pop-Up LD™ Options

• Vehicle detection option - microwave, video, loop
• Red clearance extender option
• Green recycle option
• Preemption system option
• Pilot Car remote option
• Optional remote monitoring & programming with on-board GPS
• Auto-start generator option

Specs

• Chassis length - 112”, removable hitch adds 56” for a 168” total
• Chassis Width - 72” - narrowest in industry
• Travel Height - 114” with solar
• Weight with solar, batteries, and controls - 2700#
• Clearance under arm - 17”
**Quote For:** Dubuque County Road Dept.  
**Att.:** Mary Ann Knapp  
**Type of Sale:** SQ3 Signal Set Sale  
**Phone:** 563-557-7283  
**Quote Date:** June 4, 2021  
**Fax #:**

<table>
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<th>Bid Item #</th>
<th>Description</th>
<th>Quantity</th>
<th>Units</th>
<th>Per Unit</th>
<th>Total</th>
</tr>
</thead>
</table>
| 1          | SQ3 Signal System  
(2) Solar-assisted signal trailers with Tandem tow capability. (2) signal heads per trailer, all LED lamps, (2) controllers, (1) PTS Programmer, and wireless radio communication system | 1 | EA | $56,925.00 | $56,925.00 |
| 2          | Motion Sensor  
Motion Detectors for signal actuation, price includes (2) sensors | 1 | EA | $1,955.00 | $1,955.00 |
| 3          | Pilot Car Module  
Price includes (2) modules and 1 transmitter | 1 | EA | $2,812.00 | $2,812.00 |

**Total** $61,692.00

**Conditions or Notes:**

Approx. Freight Cost is $3,500  
Thanks for the interest. Lead times are around two weeks. To move ahead with the purchase, please sign and date quote and email back to me.

---

**Date**  
Derek Riley  
Cell 515-360-6729  
**Signature**  
Acceptance **Signature**

TRAFFIC CONTROL * FLOODLIGHTING * TEMPORARY TRAFFIC SIGNALS  
PAINT STRIPING * TAPE STRIPING
The SQ3TS Portable Traffic Signal System is the most dynamic and dependable portable traffic signal available today. With an industry-leading 100-mph wind load, and a 25-year design life, the SQ3TS Portable Traffic Signal is the temporary traffic control workhorse that you can rely on year after year. From a simple one-lane bridge repair project, to complete intersection control, the SQ3TS System has you covered, under even the most demanding conditions.

The SQ3TS Portable Traffic Signal exceeds NEMA TS-5 specifications for Type TR1 PTS, and is available with a wide range of add-on components to meet any project requirements.
**SQ3TS® Portable Traffic Signal**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Lamp</td>
<td>12&quot; (300 mm) diameter LED</td>
</tr>
<tr>
<td>Signal Arm Extension</td>
<td>68 to 109&quot; (173 to 277 cm)</td>
</tr>
<tr>
<td>Solar Charge</td>
<td>520W min</td>
</tr>
<tr>
<td>Power Source</td>
<td>12V / (16) 6V batteries</td>
</tr>
<tr>
<td>Tow Height</td>
<td>89&quot; (226 cm)</td>
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<tr>
<td>Trailer Width</td>
<td>85&quot; (216 cm)</td>
</tr>
<tr>
<td>Trailer Weight</td>
<td>3000 lb. (1361 kg)</td>
</tr>
</tbody>
</table>

**SQ3TS FEATURES**

- Heavy-duty trailer with 25-year design life
- Dual-Processor Malfunction Management System
- Withstands sustained winds of 100 mph, gusts up to 110 mph
- 10-year structural warranty on trailer
- Lifting Ring for easy signal placement
- Hydraulic lift system
- 30 days run time on batteries alone
- Up to 14 phases of traffic per system
- Tandem-tow trailers
- Exceeds NEMA TS-5 requirements for Type TR1 PTS
- MUTCD Compliant

**AVAILABLE OPTIONS**

- **TILTING SOLAR PANELS** | Allows for solar panel adjustment on SQ3TS for maximum sun exposure.
- **15-FOOT EXTENSION ARM** | Longer extension arm for greater horizontal reach on SQ3TS trailer. Ideal for 2-lane applications.
- **ADVANCED REMOTE MONITORING** | Recieve text and/or email alert notifications of signal operation and battery voltage levels.
- **WIRELESS KNOCKDOWN** | Allows signal to operate in conjunction with a standard street corner control cabinet.
- **PRE-EMPTION SYSTEM** | Recognizes emergency vehicles and provides earliest safe green indications.
- **WAIT TIME & FAULT DISPLAY** | Informs motorists of wait time before next green indication.

**EASY TO DEPLOY**

The SQ3TS Portable Traffic Signal is equipped with a one-touch, easy-up hydraulic lifting system to make deployments simple.

**SPECIFICATIONS**

- **OVER THE ROAD CLEARANCE**
- **LAY-FLAT SOLAR PANELS**
- **EASY-UP HYDRAULIC LIFT**
- **NEMA 4 CABINET ENCLOSURE**
- **ADJUSTABLE OUTRIGGERS**

DISTRIBUTED BY

---

5 Corporate Blvd  
Reading, PA 19608  
800.852.8796  
horizonsignal.com

Regional Support Centers

<table>
<thead>
<tr>
<th>Location</th>
<th>Contact Details</th>
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<tr>
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</tr>
<tr>
<td>Albuquerque, NM</td>
<td>Orlando, FL</td>
</tr>
<tr>
<td>Birmingham, AL</td>
<td>St. Catharines, ON</td>
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<tr>
<td>Chicago, IL</td>
<td>Fargo, ND</td>
</tr>
<tr>
<td>Fargo, ND</td>
<td>Waco, TX</td>
</tr>
</tbody>
</table>
DATE: July 6, 2021

Quote For: Mary Ann Knapp
Administrative Assistant
Dubuque County Road Dept.
1225 Seippel Rd
Dubuque, IA 52002

Comments or Special Instructions:

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>DESCRIPTION</th>
<th>UNIT PRICE</th>
<th>AMOUNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Portable Traffic Signal System, SQ3TS, Solar Assisted Model w/2 signal trailers, wireless radios</td>
<td>$67,000.00</td>
<td>$67,000.00</td>
</tr>
<tr>
<td>1</td>
<td>Motion Sensors, 2 microwave sensors for traffic actuation for 2 trailers</td>
<td>$2,200.00</td>
<td>$2,200.00</td>
</tr>
<tr>
<td>1</td>
<td>Pilot Car Module Handheld Transmitter, remote for actuating Pilot Car Momdule for Horizon Signals</td>
<td>$550.00</td>
<td>$550.00</td>
</tr>
</tbody>
</table>

Quote by Heather Lopez, Office Manager

SUBTOTAL $ 69,750.00
TAX RATE
SALES TAX
SHIPPING & HANDLING TBD
TOTAL $ 69,750.00

THANK YOU FOR YOUR BUSINESS!
The most advanced portable traffic signal, ever.

The SQ3TS Trailer-Mounted PTS is the most dynamic and dependable portable traffic signal available today. With an industry-leading 100-mph wind load, and a 25-year design life, the SQ3TS Portable Traffic Signal is the temporary traffic control workhorse that you can rely on year after year. From a simple one-lane bridge repair project, to complete intersection control, the SQ3TS System has you covered, under even the most demanding conditions.

The SQ3TS Portable Traffic Signal exceeds NEMA TS-5 specifications for Type TR1 PTS, and is available with a wide range of add-on components to meet any project requirements.

“WE COULD NOT BE HAPPIER WITH THE SQ3TS.”

TAD BROOKS
Vice President - LMC Safety Barricade Corp.
SQ3TS® Portable Traffic Signal

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Lamp</td>
<td>12” (300 mm) diameter LED</td>
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<tr>
<td>Signal Arm Extension</td>
<td>68 to 109” (173 to 277 cm)</td>
</tr>
<tr>
<td>Solar Charge</td>
<td>520W min</td>
</tr>
<tr>
<td>Power Source</td>
<td>12V / (16) 6V batteries</td>
</tr>
<tr>
<td>Tow Height</td>
<td>89” (226 cm)</td>
</tr>
<tr>
<td>Trailer Width</td>
<td>85” (216 cm)</td>
</tr>
<tr>
<td>Trailer Weight</td>
<td>3000 lb. (1361 kg)</td>
</tr>
</tbody>
</table>

SQ3TS FEATURES

- Heavy-duty trailer with 25-year design life
- Dual-Processor Malfunction Management System
- Withstands sustained winds of 100 mph, gusts up to 110 mph
- 10-year structural warranty on trailer
- Lifting Ring for easy signal placement
- Hydraulic lift system
- 30 days run time on batteries alone
- Up to 14 phases of traffic per system
- Tandem-tow trailers
- Exceeds NEMA TS-5 requirements for Type TR1 PTS
- MUTCD Compliant

AVAILABLE OPTIONS

ADVANCED REMOTE MONITORING | Recieve text and/or email alert notifications of signal operation and battery voltage levels.

WIRELESS KNOCKDOWN | Allows signal to operate in conjunction with a standard street corner control cabinet.

PRE-EMPTION SYSTEM | Recognizes emergency vehicles and provides earliest safe green indications.

WAIT TIME & FAULT DISPLAY | Informs motorists of wait time before next green indication.

CLEARANCE TIME EXTENDER | Adds extra red time for slow-moving vehicles that need more time to clear the work area.

MESSAGE BOARD INTERFACE | Wireless connectivity with a portable VMS to display signal status messages in real-time.

EASY TO DEPLOY

The SQ3TS Portable Traffic Signal is equipped with a one-touch, easy-up hydraulic lifting system to make deployments simple.

DISTRIBUTED BY

Regional Support Centers

Philadelphia, PA
Albuquerque, NM
Birmingham, AL
Chicago, IL
Fargo, ND
Indianapolis, IN
Orlando, FL
St. Catharines, ON
Waco, TX

5 Corporate Blvd
Reading, PA 19608
800.852.8796
horizonsignal.com
**ADVANCED REMOTE MONITORING (ARM)**
The ARM system sends text message and/or email alerts, reporting signal status and operation. Battery voltage, signal location, and fault status is reported in real-time or on demand from our dedicated monitoring website.

**LEFT TURN ARROW**
MUTCD-Compliant left turn arrows can be easily added to any Horizon Signal SQ3TS system. This addition allows for dedicated turning lanes through intersections during construction or standard intersection control.

**VIDEO DETECTION**
Video actuation allows for true presence vehicle detection via the creation of customized detection zones. This non-intrusive detection system is easily installed and does not require a PC for configuration.

**EMERGENCY VEHILCE PREEMPTION**
Provides the earliest possible safe green indication in the direction of approaching emergency vehicles. Vehicles can be detected via either optical strobe light patterns or audible siren detection.

**CABLED REMOTE**
Easily place a call for green at either end of the work zone, or rest both signals of a 2-phase operation in red. Programmed red clearance intervals are always inserted between green indications, preventing the possibility of conflict.

**WIRELESS REMOTE**
With up to a 1/2 mile range, the wireless remote is the most convenient method of manual signal control. The built-in vibration function works as a confirmation of each button press, and the signals can be switched back to automatic mode with just one tap.

**PILOT CAR**
The Pilot Car / Flagger module allows a pilot car driver to control a Horizon Signal System remotely via a handheld transmitter for simple, all-day operation.

**WORK ZONE LUMINAIRE**
The Work Zone Luminaire increases safety by illuminating the Horizon PTS and surrounding work area during periods of low visibility. Photocell sensors automatically activate the light at dusk.
SQ3TS® Portable Traffic Signal

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Lamp</td>
<td>12” (300 mm) diameter LED</td>
</tr>
<tr>
<td>Signal Arm Extension</td>
<td>68 to 109” (173 to 277 cm)</td>
</tr>
<tr>
<td>Solar Charge</td>
<td>520W min</td>
</tr>
<tr>
<td>Power Source</td>
<td>12V / (16) 6V batteries</td>
</tr>
<tr>
<td>Tow Height</td>
<td>89” (226 cm)</td>
</tr>
<tr>
<td>Trailer Width</td>
<td>85” (216 cm)</td>
</tr>
<tr>
<td>Trailer Weight</td>
<td>3000 lb. (1361 kg)</td>
</tr>
</tbody>
</table>

SQ3TS FEATURES

- Heavy-duty trailer with 25-year design life
- Dual-Processor Malfunction Management System
- Withstands sustained winds of 100 mph, gusts up to 110 mph
- 10-year structural warranty on trailer
- Lifting Ring for easy signal placement
- Hydraulic lift system
- 30 days run time on batteries alone
- Up to 14 phases of traffic per system
- Tandem-tow trailers
- Meets/exceeds NEMA TS-5 requirements for Type TR1 PTS
- MUTCD Compliant

AVAILABLE OPTIONS

ADVANCED REMOTE MONITORING | Recieve text and/or email alert notifications of signal operation and battery voltage levels.
WIRELESS KNOCKDOWN | Allows signal to operate in conjunction with a standard street corner control cabinet.
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CLEARANCE TIME EXTENDER | Adds extra red time for slow-moving vehicles that need more time to clear the work area.
MESSAGE BOARD INTERFACE | Wireless connectivity with a portable VMS to display signal status messages in real-time.

DISTRIBUTED BY

Horizon Signal
5 Corporate Blvd
Reading, PA 19608
800.852.8796
horizonsignal.com

Regional Support Centers
Philadelphia, PA
Albuquerque, NM
Birmingham, AL
Chicago, IL
Fargo, ND
Indianapolis, IN
Orlando, FL
St. Catharines, ON
Waco, TX
Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

DATE: June 22, 2021

Location / Title of Project  Hamilton County Temporary Traffic Signals
Applicant  Hamilton County Secondary Roads Department
Contact Person  Ryan Weidemann  Title  County Engineer
Complete Mailing Address  2300 Superior Street, Suite 4
Webster City, IA 50595
Phone  515-832-9520  E-Mail  Rweidemann@hamiltoncounty.org

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:

Funding Amount

Total Safety Cost  $ 41,795
Total Project Cost  $ 41,795
Safety Funds Requested  $ 41,795

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 PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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 Hamilton County Board of Supervisors

Signed: [Signature] 6-16-21

Daniel Campidilli, Chairperson
Printed Name

Attest: [Signature] 6/16/21

Kim Schaa, Auditor
Printed Name
B. NARRATIVE

Hamilton County Secondary Road Department is applying for Transportation Safety Improvement (TSIP) funds for one set of portable temporary traffic signals. The primary purpose of the temporary traffic signals would be to replace flagging operations using personnel in an effort to provide safer work zones for county maintenance crews and to move traffic through the work zone more safely and efficiently.

Hamilton County Secondary Roads is responsible for the engineering, construction, and maintenance of the county's Secondary Road System. This system includes 933 miles of rural roads, of which 215 miles are hard surfaced. Located on these roads are 106 bridges over 20 feet in length, and hundreds of smaller drainage structures.

Portable traffic signals would primarily be used on two-lane paved roads during construction & maintenance projects that require one lane to be closed, per Standard Road Plan TC-215. Typical projects would include PCC and HMA patching, culvert and drainage repairs, and bridge inspection. Safety benefits of using portable traffic signals include:

- Minimize or eliminate the risk to flaggers from distracted drivers
- Increasing the number of workers available to complete the task, thus reducing closure time
- Ability to leave traffic control in place overnight, or conduct nighttime operations
- Signals convey a visible and clear message to motorists

Hamilton County is requesting TSIP funding for the cost of one set of portable traffic signals with pilot car remote and vehicle detection options included. Also requested are one set of signs and traffic channelizing devices per Standard Road Plan TC-215. These signals will increase the safety of our work zones, for both the traveling public, and our Secondary Roads workers.
C. ITEMIZED BREAKDOWN OF COSTS

Below is a cost quotation from Horizon Signal for the SQ2 Traffic Signal System and an estimate for the signing required per TC-215 obtained from trafficsafetystore.com.

<table>
<thead>
<tr>
<th>Item/Description</th>
<th>Unit Price</th>
<th>Qty</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQ2 System (4 Carts)</td>
<td>$29,250.00</td>
<td>1</td>
<td>$29,250.00</td>
</tr>
<tr>
<td>(4) telescoping carts with (1) signal head per cart, All LED lamps, (4) controllers, (1) PTS Programmer, backplates and wireless radio communication system.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQ2 Solar/Outriggers (4 carts)</td>
<td>$1,125.00</td>
<td>4</td>
<td>$4,500.00</td>
</tr>
<tr>
<td>130 watt solar panel, solar charger and outriggers which provides lateral stabilization for SQ2 carts. Price includes solar and outriggers for 4 carts.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50' Cabled Remote</td>
<td>$356.25</td>
<td>1</td>
<td>$356.25</td>
</tr>
<tr>
<td>50' hardwired remote for manual control of the signal system.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trailer Pin Kit</td>
<td>$179.00</td>
<td>1</td>
<td>$179.00</td>
</tr>
<tr>
<td>Framework and pins to hold/lock the 4-SQ2 Carts in place in an enclosed trailer.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doppler Sensors</td>
<td>$1,700.00</td>
<td>1</td>
<td>$1,700.00</td>
</tr>
<tr>
<td>Motion detectors for signal actuation. Price includes (2) sensors.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wireless Remote Package</td>
<td>$1,987.50</td>
<td>1</td>
<td>$1,987.50</td>
</tr>
<tr>
<td>Provides wireless control of SQ2 or SQ3 signal system. One package required per system. Includes receiver and transmitter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$37,972.75</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Terms: Net 30 days

FOB: Reading, PA 19608

***5 year warranty on LED Lights. Signals and components are warranted for a period of 2 years, excluding batteries and tires.***
## Items in Your Shopping Cart

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Total Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>48&quot; x 48&quot; Heavy Duty Roll-Up Construction Signs</td>
<td>2</td>
<td>$141.95</td>
<td>$283.90</td>
</tr>
<tr>
<td>48&quot; x 48&quot; Heavy Duty Roll-Up Construction Signs</td>
<td>2</td>
<td>$141.95</td>
<td>$283.90</td>
</tr>
<tr>
<td>48&quot; x 48&quot; Heavy Duty Roll-Up Construction Signs</td>
<td>2</td>
<td>$141.95</td>
<td>$283.90</td>
</tr>
<tr>
<td>Heavy Duty 24&quot; Round Round Up Sign - Reflective</td>
<td>2</td>
<td>$280.30</td>
<td>$560.60</td>
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<tr>
<td>42&quot; Longer Tube with 18 lb. Base</td>
<td>20</td>
<td>$26.75</td>
<td>$535.00</td>
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<tr>
<td>Bone Springs Sign Stand</td>
<td>18</td>
<td>$140.95</td>
<td>$2,535.20</td>
</tr>
</tbody>
</table>

### Shipping Summary

| Please enter your zip code: | 12312 |

**Total: $4,095.89**

Shipping: Not calculated yet
D. TIME SCHEDULE

- TSIP Application Due: August 15, 2021
- TSIP Award Notification: January, 2022
- TSIP Funding Available: July 1, 2022
- Purchase of Signals: July, 2022
- Implementation of Signals: August, 2022

E. Map
SQ2® Portable Traffic Signal

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signal Carts Per System</td>
<td>4</td>
</tr>
<tr>
<td>Signal Heads Per Cart</td>
<td>1</td>
</tr>
<tr>
<td>Lamp Type</td>
<td>12&quot; (300 mm) Diameter LED</td>
</tr>
<tr>
<td>Power Source</td>
<td>12V / (2) 12V batteries</td>
</tr>
<tr>
<td>Height: Operating Position</td>
<td>96&quot; (244 cm)</td>
</tr>
<tr>
<td>Cart Footprint</td>
<td>31 x 25.5&quot; (79 x 65 cm)</td>
</tr>
<tr>
<td>Cart Weight</td>
<td>420 lb. (190 kg)</td>
</tr>
</tbody>
</table>

SQ3TS PTS FEATURES

- The only crash-tested PTS available today
- MUTCD Compliant
- Easily converts to pedestrian crosswalk or DAD
- Wireless remote operation mode option
- Work zone indication light to provide visual cues
- Fast, efficient deployment and relocation
- Dual-Processor Malfunction Management System
- Battery power for a full week of operation on a single charge
- Easy-lift handles for maneuverability
- Meets NEMA TS-5 specifications for Type TR2 PTS

AVAILABLE OPTIONS

SOLAR CHARGING & OUTRIGGER PACKAGE | The solar charging option extends battery life while the outrigger option provides additional stabilization.

PEDESTRIAN CROSSWALK SIGNALS | System can be configured with MUTCD-compliant pedestrian crosswalk signal indicators.

ADVANCED REMOTE MONITORING | Receive text and/or email alert notifications of signal operation and battery voltage levels.

FLAGGER/PILOT CAR MODULE | Allows flagger or pilot car driver to control signal status with built-in safeguards.

NCHRP 350 TL-3 Accepted

The SQ2 system is the only NEMA Type TR2 signal that has been successfully crash tested to NCHRP 350 TL-3 crash testing standards.
H. Aerial Photograph – N/A
I. ICAT Crash Summary– N/A
J. Traffic Volumes – See 2019 IDOT Traffic Volumes for Hamilton County

K. TRAFFIC SIGN LAYOUT – Per TC-215, see section G.
L. BENEFIT / COST RATIO – Not required as per instructions.
Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

DATE: 08/13/21

Location / Title of Project
Sign Replacement Program for Cities/Counties

Applicant
Iowa Department of Transportation

Contact Person
Niki Stinn
Title
Secondary Roads Engineer

Complete Mailing Address
800 Lincoln Way
Ames, IA 50010

Phone
515-239-1064
E-Mail
niki.stinn@iowadot.us

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

Please complete the following project information:

Funding Amount

Total Safety Cost $200,000

Total Project Cost $200,000

Safety Funds Requested $200,000

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 OR RESOLUTION
Not applicable

B. NARRATIVE
Continued funding of the Department’s Sign Replacement Program for Cities and Counties (SRPFC) is being sought. This program is operated by the Traffic and Safety Bureau and provides funding for the replacement of damaged, worn out, obsolete, or substandard signs and signposts by cities and counties in Iowa. Under the current program, replacement sign eligibility is limited to regulatory, warning, and school area signs. These signs are critical to providing a safe environment for both motorists and pedestrians.

Each city/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 and $5,000 per city. The popularity of this program is demonstrated by the consistent and continual receipt of funding applications each year from a number of county and city jurisdictions. In 2020, 15 counties and 10 cities received funding from this program, and over the past 4 years this program has averaged over $160,000 in applications. Additional counties and cities have applied for funding if it becomes available. Continued funding is needed in order to meet the expected demand for the program. To date, the over $730,000 this program has provided to cities and counties has been a tremendous aid in improving the safety of the transportation system.

C. ITEMIZED BREAKDOWN OF COST
Approval of this application will provide funding that will allow the program to continue into the next fiscal year.

D. TIME SCHEDULE
Approval of this application will provide funding that will allow the program to continue into the next fiscal year.

E. MAP
This program will be applicable to all counties and cities in Iowa.

F. COLOR PICTURES

![Example of replacement signs](image)

G. PLAN VIEW
This program will be applicable to all counties and cities in Iowa.

H. TRAFFIC VOLUMES AND/OR TURNING MOVEMENT
This program will apply to signs on routes with a wide variety of traffic volumes and movement patterns.

I. SIGNALS
Not applicable

J. B/C WORKSHEET
Not applicable
MADISON COUNTY
TRAFFIC SAFETY IMPROVEMENT PROGRAM
APPLICATION FOR TRAFFIC CONTROL DEVICE
TEMPORARY TRAFFIC SIGNALS
FY 2023

Madison County is applying for Traffic Safety Improvement Program Funds. The application is for temporary traffic signals in the category of traffic control devices.
A. APPLICATION, CERTIFICATION & RESOLUTION

Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

DATE: July 27, 2021

Location / Title of Project Madison County Temporary Traffic Signals

Applicant Madison County

Contact Person Mike Hackett, PE & PLS

Title Assistant County Engineer

Complete Mailing Address 1105 E. Court AVE.

Winterset, Iowa 50273

Phone 515-462-1136

E-Mail mhackett@madisoncoia.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:

Funding Amount

Total Safety Cost $63,000

Total Project Cost $63,000

Safety Funds Requested $63,000

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

APPLICATION CERTIFICATION FOR PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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 County of Madison

Signed: ___________________________ 7/27/2021
Signature                                      Date Signed

Mike Hackett
Printed Name

Attest: ___________________________ 7/27/2021
Signature                                      Date Signed

Todd Hagan
Printed Name
A. APPLICATION, CERTIFICATION & RESOLUTION

RESOLUTION - SR-7-27-2021-C

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

WHEREAS, Madison County has determined that providing temporary traffic signals will improve the safety of drivers, flaggers, and road crews during road maintenance activities; and

WHEREAS, portable temporary traffic signals are recognized temporary traffic control devices in the Manual on Uniform Traffic Control Devices, 2009 Edition, and

WHEREAS, Traffic Safety Improvement Program Funds are available for traffic control devices;

BE IT HEREBY RESOLVED:

1. That the Madison County Board of Supervisors supports and approves the attached application for Iowa Department of Transportation Traffic Safety Improvement Program funding; and

2. The Madison County Board of Supervisors hereby commits to accepting and maintaining these improvements.

MADISON COUNTY BOARD OF SUPERVISORS

AYE

Phillip Clifton, Supervisor

Diane Fitch, Supervisor

Heather Stancil, Supervisor

NAY

Phillip Clifton, Supervisor

Diane Fitch, Supervisor

Heather Stancil, Supervisor

ATTEST: Shelley D. Kastor, Madison County Auditor

DATE: 7/12/21
B. Narrative

Madison County is applying for the Transportation Safety Improvement Program (TSIP) funds in the amount estimated to be 100% of the cost of a pair of portable temporary traffic signals and the associated signage and channelizing devices. The purpose of the temporary traffic signals would be to replace flagging operations in the work zones, move traffic through the work zone more safely and efficiently, provide safer work zones for the maintenance crews, and to allow lane closure in the work zone areas for a longer duration including but not limited to an overnight lane closure situation.

The Madison County Secondary Roads Department is responsible for the engineering, construction and maintenance of the county's secondary road system. The secondary road system in Madison County consists of a total of 906 miles of road systems. The 906 miles of road systems include 120 miles of paved roads, 745 miles of granular surfaced roads, and 41 miles of dirt roads. The 906 miles of road systems also includes 214 bridges, listed on the National Bridge Inventory, and an estimated 3800 culverts all maintained by Madison County Secondary Roads Department.

The Madison County Secondary Roads Department has multiple maintenance crews to work on the said systems which require traffic control work zones. The county maintenance crews’ traffic control plan often involve one-lane road and flagger operations. The one-lane road and flagger operations require extra personal for each crew. If portable temporary traffic signals are used, the extra personal that was assigned to the crews for traffic control could be used on other maintenance projects. Madison County estimates that this would free up an additional 800 man hours per year.

During bridge and pavement work, the concept and need for temporary/portable traffic signals became evident. As discussions progressed, the available uses for temporary traffic signals for county maintenance crews grew. This evolution included not only bridge construction, bridge repair and pavement patching, but also emergency scenarios, routine maintenance of culverts, ditches, shoulders, guardrail and many other activities on all classifications of secondary roads. Dialogue of the concept amongst county engineers, emergency management and human resources coordinators led to many other potential uses and benefits for the safety of Madison County employees and road users.

Part 6E84 of the MUTCD provides warrants, standards, guidance, and support for the use of traffic signals in work zones. Additional information regarding signal use is located in Part 4. The primary use of the temporary traffic signals would be in a work zone temporary lane closure scenario for one lane, two-way traffic operation. The safety benefits of utilizing temporary traffic signals over flaggers is hard to quantify and little information is available regarding crash modification or reduction factors in these applications. Cost benefits associated with the use of temporary traffic signals in work zones or for one lane closure scenarios are available in section J of this report. However, a list of safety benefits for maintenance crews and motorists in situations utilizing temporary traffic signals is available below:
B. NARRATIVE

B. Narrative

- Increased visibility to approaching motorists (additional signage and overhead signal)
- More direct communication with motorist
- Clearer understanding and familiarity with drivers
- Significantly more viable for nighttime operations
- Relieves the physical demands, stress, fatigue and hazards of flagging
- Elimination of two positions from work zone with the highest risk exposure

Often times the flagger is obstructed by vehicles in the que at the work zone, the signal itself is more visible to approaching motorist due to the height of the mast arm and its projection over the roadway. Signal heads communicate with bright, familiar, comprehendible messages to all motorist both day and night. Detection systems coupled with temporary traffic signals can facilitate more even traffic flow through the work zone in one-lane road situations. This may reduce driver wait times and frustration by providing consistent intervals of passage through the work zone.

Flagging is very stressful, can be physically demanding, and most importantly exposes employees to high-risk situations. Even a responsible flagger is extremely vulnerable to speeding or distracted drivers that do not yield when approaching work zones. The risk associated with flagging is evident in many ways, but can be quantified by looking at examples of worker compensation coverage rates. Various county employees have different rates depending on their job type. These classifications identify which type of work represents the most risk to the employee performing the task. Flagging would fall in a classification that is nearly double that of a peace officer for example. Removing two employees from close proximity to traffic would result in less time spent in the associate classification. This could potentially result in a cost saving to the county, but more importantly significantly reduces the risk of injury or death to an employee.

Madison County is requesting TSIP funding for an amount equal to the cost of a pair of temporary traffic signals with pilot car remote, vehicle detection options included, and the associated signage and channelizing devices. Signals with these options would facilitate safe and efficient traffic flow in and around various work zones on Madison County secondary roads. Additionally, it would allow Madison County the flexibility to establish short-term overnight closures for road and bridge repairs and remove employees from high-risk situations in close proximity to an ever-growing inattentive driving population.

Cities and other jurisdictions could also benefit from these signals in the event of a signal knock down, disaster event or routine maintenance when not in use by Madison County. Madison County will work through 28E agreements with the 5 local Cities in the county and the surrounding counties to use the signals to the maximum benefit.
### C. Itemized Breakdown of Cost

#### Temporary Traffic Signal Preliminary Quotes

*(Set of Two Signals, with vehicle detection and pilot car remote)*

<table>
<thead>
<tr>
<th>Description</th>
<th>Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMJC Signal – LDPTS</td>
<td>$52,000.00</td>
</tr>
<tr>
<td>Tower Sign and Signal – SX7500</td>
<td>$48,500.00</td>
</tr>
<tr>
<td>Horizon Signal – SQ3TS</td>
<td>$52,595.00</td>
</tr>
</tbody>
</table>

*See Reference Quotes*

#### Temporary Traffic Signs and Channelizing Devices Preliminary Quotes

<table>
<thead>
<tr>
<th>Description</th>
<th>Expenses</th>
</tr>
</thead>
<tbody>
<tr>
<td>W20-1 (48” x 48”), 2 Each</td>
<td>$307.00</td>
</tr>
<tr>
<td>W13-1 (24” x 24”), 2 Each</td>
<td>$77.00</td>
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<tr>
<td>R4-1 (36” x 48”), 2 Each</td>
<td>$115.00</td>
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<tr>
<td>W20-4 (48” x 48”), 4 Each</td>
<td>$615.00</td>
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<tr>
<td>W3-3 (48” x 48”), 4 Each</td>
<td>$615.00</td>
</tr>
<tr>
<td>R10-6 (24” x 48”), 2 Each</td>
<td>$115.00</td>
</tr>
<tr>
<td>W14-3 (48” x 64” x 64”), 2 Each</td>
<td>$234.00</td>
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<tr>
<td>G20-2A (48” x 24”), 2 Each</td>
<td>$154.00</td>
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<tr>
<td>Type “B” high-Intensity flashing waring light, 2 Each</td>
<td>$200.00</td>
</tr>
<tr>
<td>Type 3 EZ Kade Barricade mounting legs, 18 Each</td>
<td>$2,200.00</td>
</tr>
<tr>
<td>Channelizer Drum Plastic 18In 18000Ldpe Traffix, 40 Each</td>
<td>$2,200.00</td>
</tr>
<tr>
<td>Channelizer Drum Base (Only) 18005-Sfb Traffix, 40 Each</td>
<td>$866.00</td>
</tr>
</tbody>
</table>

Pricing From:


[https://secure.iowadot.gov/centralinventory/Catalog.aspx](https://secure.iowadot.gov/centralinventory/Catalog.aspx)
D. Time Schedule

- **TSIP Application Due:** August 15, 2021
- **TSIP Award Notification:** Mid-January 2022
- **TSIP Funding Available:** July 1, 2022
- **Final Quote Comparison:** July 2022 (est.)
- **Purchase of Traffic Signals:** July 2022 (est.)
- **Use of Temporary Traffic Signals:** August 2022 (est.)
E. MAP

MADISON COUNTY IOWA
E. MAP

F. Pictures

(Example Photos)

Image Source:
http://horizonsignal.com/portable-traffic-signal-sq3ts/

Image Source:
http://omjcsignal.com/portable-traffic-signals/

Image Source:
http://horizonsignal.com/portable-traffic-signal-sq3ts/
G. PLAN VIEW

Traffic Control Signals (TA-12)

Typical Application 12

Image Source: MUTCD 2009
F. Plan View

Table 6H-2. Meaning of Symbols on Typical Application Diagrams

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
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<tbody>
<tr>
<td>🚶‍♂️</td>
<td>Arrow board</td>
</tr>
<tr>
<td>🚪</td>
<td>Arrow board support or trailer (shown facing down)</td>
</tr>
<tr>
<td>🔔</td>
<td>Changeable message sign or support trailer</td>
</tr>
<tr>
<td>🚦</td>
<td>Channelizing device</td>
</tr>
<tr>
<td>🚪</td>
<td>Crash cushion</td>
</tr>
<tr>
<td>🚔</td>
<td>Direction of temporary traffic detour</td>
</tr>
<tr>
<td>🚦</td>
<td>Direction of traffic</td>
</tr>
<tr>
<td>🚰</td>
<td>Flagger</td>
</tr>
<tr>
<td>🚲</td>
<td>High-level warning device (Flag tree)</td>
</tr>
<tr>
<td>🚦</td>
<td>Longitudinal channelizing device</td>
</tr>
<tr>
<td>🚳</td>
<td>Luminaire</td>
</tr>
<tr>
<td>🚳</td>
<td>Pavement markings that should be removed for a long-term project</td>
</tr>
<tr>
<td>🚳</td>
<td>Shadow vehicle</td>
</tr>
<tr>
<td>🚪</td>
<td>Sign (shown facing left)</td>
</tr>
<tr>
<td>🚪</td>
<td>Surveyor</td>
</tr>
<tr>
<td>🚪</td>
<td>Temporary barrier</td>
</tr>
<tr>
<td>🚪</td>
<td>Temporary barrier with warning light</td>
</tr>
<tr>
<td>🚪</td>
<td>Traffic or pedestrian signal</td>
</tr>
<tr>
<td>🚪</td>
<td>Truck-mounted attenuator</td>
</tr>
<tr>
<td>🚪</td>
<td>Type 3 barricade</td>
</tr>
<tr>
<td>🚩</td>
<td>Warning light</td>
</tr>
<tr>
<td>🚳</td>
<td>Work space</td>
</tr>
<tr>
<td>🚳</td>
<td>Work vehicle</td>
</tr>
</tbody>
</table>

Image Source: MUTCD 2009
G. PLAN VIEW

F. Plan View

This layout is for conditions lasting up to three calendar days. For situations lasting longer than three days refer to TC-216.

1. For Temporary Traffic Signals, meet the requirements of Section 308.03 of the Standard Specifications except for the following:
   In lieu of a trailer or open-wire mounted system, signal heads may be located on the shoulders, one on each side of the
   roadway, with the heads being at least 5 feet above the bottom of the signal head to the top of the ground surface.
2. 24-inch stop lines required during nighttime operation.

Image Source: https://iowadot.gov/design/SRP/IndividualStandards/etc215.pdf
G. PLAN VIEW

F. Plan View

Image Source: https://iowadot.gov/design/SRP/IndividualStandards/etc216.pdf
H. TRAFFIC VOLUMES

H. Traffic Volumes

MADISON COUNTY TRAFFIC VOLUMES

https://iowadot.gov/maps/msp/traffic/2016/counties/MADISON.pdf
H. TRAFFIC VOLUMES

H. Traffic Volumes

Traffic volumes in Madison County continue to increase due to the locating of the county. The county is bordered by Interstates 80 and 29. The Des Moines metropolitan area borders the county and is part of Madison County. Madison County is often referred to as a bedroom community for the Des Moines metropolitan area. Madison County has seven towns and multiple rural subdivision that generate a large amounts of traffic to the surrounding communities. For perspective, two of Madison County’s highest volume roads have an Annual Average Daily Traffic (AADT) of 3110 VPD and 2610 VPD. These factors all contribute to the large traffic volumes the Madison County Road Department encounters on a daily basis. For that reason, the temporary traffic signals would provide a great benefit to the road users and traveling public, but also to the safety of our work zones and employees during maintenance operations. Included above is the 2016 AADT map for Madison County.
I. TRAFFIC SIGNAL LAYOUT

I. Traffic SIGNAL LAYOUT

Refer to Section G (PLAN View) for the temporary traffic signals Layout information.
J. Cost / Benefit

Per Traffic Control Device application instructions, a Benefit/Cost worksheet is not required for consideration in the Traffic Control Device category. However, it is pertinent to mention the cost benefits associated with the use of temporary traffic signals.

Our research did reveal cost benefit information from various research projects and studies executed in regards to feasibility, use, and efficiencies of temporary traffic signals in work zones. Although hard to quantitatively measure, it is worthwhile to mention the cost benefits shown below:

- Reduction in significant motorist delay compared to flagging operation
- Relieves the physical demands, stress, fatigue and hazards of flagging o Result may be quantifiable in workers compensation and insurance premiums
- Elimination of two positions from work zone with the highest risk exposure
- Increase productivity, efficiency and flexibility within the crew
- Elimination of a pilot car (depending on scenario)
- Cost benefits increase rapidly with more frequent use
References


# Quotation

**Quote Number:** 7786  
**Quote Date:** August 3, 2020

**Customer ID:** MADISONCOUNTYIA  
**Good Thru:** 9/2/20  
**Payment Terms:** Net 30 Days  
**Sales Rep Name:** DAVID T. KNAPP

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Item</th>
<th>Description</th>
<th>Unit Price</th>
<th>Extension</th>
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<tbody>
<tr>
<td>1.00</td>
<td>LDPTS</td>
<td>ONE PAIR OF POP-UP LIGHT DUTY TRAILERS (ONE MASTER, ONE SECONDARY) W/ WIRELESS TRAFFIC CONTROL AND SOLAR POWER</td>
<td>47,500.00</td>
<td>47,500.00</td>
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<tr>
<td>2.00</td>
<td>TC26-B-OMJC</td>
<td>VEHICLE DETECTOR</td>
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<td>2,000.00</td>
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<td>1.00</td>
<td>YJ</td>
<td>Hand Held Wireless Pendant Transmitter/Receiver w/ all cables &amp; antenna, Yellow Jacket w/ 5 momentary pushbuttons - 1 yr wrnty <strong>DELIVERY AND On-site training included at no additional cost if done on the same date</strong></td>
<td>2,500.00</td>
<td>2,500.00</td>
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---

*Freight & handling are in addition to the prices quoted above unless otherwise specified. All parts, materials and components are new unless otherwise specified. OMJC has been in business since July of 1985 to serve you.*

**Subtotal:** 52,000.00  
**Sales Tax:**  
**Freight Tot:** 52,000.00
REFERENCES

CUSTOMER
Madison County Secondary Roads Dept.
Attn: Mike Hackett
1105 E. Court Ave.
Winterset, IA 50273
Phone: 515-462-1136
Email: mhackett@madisoncola.us

<table>
<thead>
<tr>
<th>Part #</th>
<th>Item/Description</th>
<th>Unit Price</th>
<th>Qty</th>
<th>Total Price</th>
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<tbody>
<tr>
<td>SQ3TS System</td>
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</tr>
</tbody>
</table>
(2) solar-assisted signal trailers with tandem tow capability,
(2) signal heads per trailer, all LED lamps, (2) controllers, (1)
PTS Programmer, and wireless radio communication system. |
$ 24,225.00 | 2 | $ 48,450.00 |

| Motion Sensors |
Houston Radar Motion Sensor. Price includes two sensors |
$ 850.00 Ea. | 2 | $ 1,700.00 |

| Pilot Car Module |
Allows pilot car driver to operate signals remotely using a handheld transmitter. Price includes 2 modules and 1 transmitter. |
$ 2,445.00 | 1 | $ 2,445.00 |

| Training at your facility. 24/7 technical support for the life of the system. |
Included | Included |

***10-year limited warranty on the structural trailer. 5-year warranty on LED lights. Signals and components are warranted for a period of 2 years, excluding batteries and tires.***

Total | $ 52,595.00 |

Terms: Net 30 days
FOB: Reading, PA
Mike,
Thank you for interest in Horizon Signal Technologies, Inc. Current lead times once we receive a signed quote are approx. 1-2 weeks from receipt of your purchase order.
Should you decide to purchase the SQ3 Signal System, please sign and date this quote and email back to me at jheitkamp@horizonsignal.com.
Please call me with any questions!
Thanks,
Jesse Heitkamp

800.852.8796
horizonsignal.com

1

5 Corporate Blvd
Reading PA, 19608
# REFERENCES

---

## TOWER SIGN AND SIGNAL

24838 Hettick-Scottville Rd  
Hetlick, Illinois 62649  
ph 618-773-5250  
towersignandsignal@frontiernet.net

<table>
<thead>
<tr>
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<tr>
<td>Mike Hackett</td>
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<td></td>
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<td></td>
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<tr>
<td>Madison County</td>
<td></td>
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<tr>
<td>1105 E. Court Ave</td>
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<tr>
<td>Winter, IA 50273</td>
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<table>
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<td>ea</td>
<td>$24,000.00</td>
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<td>Standard SX7500 trailer mounted unit w/ solar assist, radar</td>
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<tr>
<td>detection, dual communications battery backup, touch screen</td>
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<tr>
<td>control panel multimode self repairing system</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1 yr warranty, plus applicable tax</td>
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<td>F.O.B. TSS shop</td>
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**Pilot car remote**  
In pilot car mode both trailers will hang on RED until  
the pilot car operator(s) requests GREEN

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<tr>
<td>total due</td>
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<td></td>
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<td></td>
<td></td>
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</table>

customer acceptance: 

---

Thanks for your business
Application for TRAFFIC CONTROL DEVICE
TSIP FUNDS

GENERAL INFORMATION

Location / Title of Project
US 69 & NE Broadway Ave / NE Broadway Ave Corridor Improvement Project – Traffic Signal Upgrade

Applicant
Polk County

Contact Person
Robert Rice

Title
Director, Public Works

Complete Mailing Address
5885 NE 14th St
Des Moines, IA 50313

Phone
515-286-3705
(Eight Characters)

E-Mail
Robert.Rice@polkcountyiowa.gov

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

Co-Applicant(s)

Contact Person

Title

Complete Mailing Address

Phone

(Eight Characters)

E-Mail

PLEASE COMPLETE THE FOLLOWING PROJECT INFORMATION:

Funding Amount

Total Safety Cost
$ 298,300

Total Project Cost
$ 46,800,000

Safety Funds Requested
$ 253,555

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 PUBLIC AGENCY

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 public agency(ies). I understand the attached resolution(s), where applicable, binds the participating public agency(ies) to assume responsibility for any additional funds, if required, to complete the project. In addition, the participating public agency(ies) agrees to maintain any new or improved public streets or roadways for a minimum of five years.

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  Polk County

Signed:  

Signature  Date Signed

Robert Rice  8/11/21

Printed Name

Attest:  

Signature  Date Signed

Rachelle Martin  8/11/21

Printed Name
RESOLUTION

Moved by Hockensmith, Seconded by McCoy that the following Resolution be adopted:

WHEREAS, the Traffic Safety Improvement Program, as defined by section 761, Chapter 164 of the Iowa Administrative Code provides safety funds to cities, counties, and the Iowa DOT; and

WHEREAS, said program allows for funding to be provided to local jurisdictions for public roadway safety improvements; and

WHEREAS, Polk County has planned for a corridor improvement project for NE Broadway Avenue between Iowa Highway 415 (NW 2nd St) and US Highway 6 (Hubbell Ave) along an active and growing Industrial and Residential corridor that would benefit from increased user safety and convenience through the construction of two roundabouts to replace two existing four-leg intersections and the reconstruction of the traffic signals at NE Broadway Avenue and NE 14th Street (US 69).

NOW, THEREFORE, BE IT RESOLVED that Polk County, Iowa:

1. Supports the grant application for TSIP Funding for infrastructure improvements to install two new roundabouts at the intersections of NE Broadway Ave & E 38th St and NE Broadway Ave & NE 46th St.
2. Supports the grant application for TSIP Funding for the replacement of the traffic signal equipment at the NE Broadway Ave & NE 14th Street intersection.
3. Commits to securing the match funding necessary as outlined in the grant applications.
4. Commits that the roadway improvements within the county limits of Polk County are and will continue to be dedicated for public use.
5. Certifies that jurisdictional responsibility for roadway segments within Polk County will remain with Polk County and the roadway will be adequately maintained.
6. Authorizes the Public Works Department to submit the applications to the Iowa DOT.

Approved this 10TH day of AUGUST, 2021.

POLK COUNTY, IOWA

Angela Connolly, Chairperson

ROLL CALL FOR ALLOWANCE

<table>
<thead>
<tr>
<th>Name</th>
<th>Vote</th>
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<tr>
<td>Steve Van Cort</td>
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</tr>
<tr>
<td>Robert Brownell</td>
<td>Nay</td>
</tr>
<tr>
<td>Matt McCoy</td>
<td>Yes</td>
</tr>
<tr>
<td>Tom Hockensmith</td>
<td>Yes</td>
</tr>
<tr>
<td>Angela Connolly</td>
<td>Yes</td>
</tr>
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</table>

Above tabulation made by:

Angela Connolly, Chairperson
RECOMMENDED FOR APPROVAL:

Robert Rice, Director
Polk County Public Works Department

APPROVED AS TO FORM:

JOHN P. SARCONA
POLK COUNTY ATTORNEY

Assistant County Attorney

FISCAL IMPACT: Project will utilize $25,000,000 in BUILD federal aid Funds and funding applications are currently being developed for several other federal and state funding programs to offset local funding needs.
ENDORsing THE BROADWAY AVENUE - 2ND AVENUE TO HUBBELL AVENUE PROJECT AS PART OF A TRANSPORTATION SAFETY IMPROVEMENT PROGRAM (TSIP) GRANT APPLICATION

WHEREAS, the City and Polk County are seeking a TSIP Grant to support the Broadway Avenue - Iowa Highway 415 (2nd Avenue) to US Highway 6 (Hubbell Avenue) Project; and

WHEREAS, the TSIP, as defined by section 761, Chapter 164 of the Iowa Administrative Code provides safety funds to cities, counties, and the Iowa DOT; and

WHEREAS, said program allows for funding to be provided to local jurisdictions for public roadway safety improvements; and

WHEREAS, the City of Des Moines, in coordination with Polk County, has planned for a corridor improvement project for Broadway Avenue between Iowa Highway 415 and US Highway 6 along an active and growing Industrial and Residential corridor that would benefit from increased user safety and convenience through updated signal equipment and the construction of two roundabouts to replace two existing four-leg intersections.

NOW, THEREFORE, BE, AND IT IS HEREBY RESOLVED by the City Council of the City of Des Moines, Iowa:

1. The City hereby endorses the Broadway Avenue - Iowa Highway 415 (2nd Avenue) to US Highway 6 (Hubbell Avenue) Project.
2. The City supports the grant application for TSIP Funding for infrastructure improvements to install signal equipment at the US Highway 69/E. 14th Street & Broadway intersection and two new roundabouts at the intersections of Broadway Avenue and E. 38th Street and Broadway Avenue and E. 46th Street.
3. Commits to securing the match funding necessary as outlined in the grant application.
4. Commits that the roadway improvements within the city limits of the City of Des Moines are and will continue to be dedicated for public use.
5. The City hereby acknowledges that it will remain responsible for Broadway Avenue within the city limits of Des Moines.

(City Council Communication Number 21-358 attached)
Activity ID 14-2019-004
**COUNCIL ACTION**

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<tr>
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<tr>
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<td>TOTAL</td>
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<td>✓</td>
<td>✓</td>
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</tbody>
</table>

**CERTIFICATE**

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

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

City Clerk

Mayor
NARRATIVE

Existing Conditions
The NE Broadway Corridor in Polk County is slated for reconstruction and widening to better accommodate increased industrial activity and traffic in the region. As part of this reconstruction, the replacement of the existing traffic signal is proposed for the intersection of NE Broadway Ave & US 69 (NE 14th St).

NE Broadway Ave is a minor arterial road that carries traffic east/west along the boundary of the City of Des Moines and Polk County. At the study intersection, NE Broadway Ave is currently configured as a five-lane road with dedicated eastbound and westbound left turn lanes with protected-only left turn phasing. Outside of the intersection, NE Broadway Ave is a two-lane road with a rural cross section. The posted speed limit along NE Broadway Ave is 35 mph. There are no pedestrian/bicycle accommodations along this segment of NE Broadway Ave nor at the study intersection.

US 69 (NE 14th St) is a primary highway that carries traffic north/south through the Des Moines Metro area. At the study intersection, US 69 (NE 14th St) is currently configured as a five-lane road with dedicated northbound and southbound left turn lanes with protected-only left turn phasing. Outside of the study intersection, US 69 (NE 14th St) is a four-lane road with a raised median and an urban cross section. The posted speed limit along US 69 (NE 14th St) is 45 mph. There are no pedestrian/bicycle accommodations along this segment of US 69 (NE 14th St).

Traffic Data
The annual average daily traffic (AADT) volume on US 69 (NE 14th St) is 16,139 and 17,649 south and north of the intersection, respectively, while AADT on NE Broadway Ave is 5,501 and 8,487 west and east of the intersection, respectively. NE Broadway Ave serves the industries along the corridor and adjacent industrial land uses resulting in daily truck usage of nine percent.

The turning movement traffic counts collected by the Iowa DOT in July 2016 are included in Section H.

Crash History
A review of crash data was made to determine the collision history at the intersection of NE Broadway Ave & US 69 (NE 14th St). The relevant crash data from 2016 – 2020 was accessed via the ICAT web application, an online tool made available by the Iowa DOT.

The most frequent manner of collision is rear-end with the second most frequent manner of collision of broadside. The calculated crash rate for the intersection is below the Iowa statewide average of similar intersections.

When reviewed further, the majority of rear-end crashes occurred on US 69 (NE 14th St), with direction of movement approximately evenly split NB/SB. Most broadside crashes are vehicles making left turns onto US 69 (NE 14th St) from NE Broadway Ave with the initial travel direction of the at-fault vehicle splitting approximately evenly between EB/WB.
The recorded crashes at the study intersection are summarized in Table 1 below.

<table>
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<th>Crash (Injuries) Severity</th>
<th>Crash Rate*</th>
<th>Predominant Manner of Collision (# Crashes)</th>
<th>Predominant Major Causes (# Crashes)</th>
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<tr>
<td>2 (2) Minor 7 (7) Possible 19 PDO**</td>
<td>0.65</td>
<td>•Rear-end (14) •Broadside (6) •Sideswipe (3) •Angle, Oncoming Left Turn (1) •Other (1) •Unknown (1)</td>
<td>•Ran Traffic Signal (5) •Followed too closely (4) •Driver distraction (3) •Unknown (3) •Other (3) •Swerving (2) •Driving too fast for conditions (2) •Improper Lane Change (2) •Operating vehicle in a reckless manner (1) •Lost control (1) •Equipment Failure (1)</td>
</tr>
</tbody>
</table>

*Crashes per Million Entering Vehicles
**Property Damage Only

**Proposed Improvements**

Proposed improvements include widening NE Broadway Ave from a two-lane rural to a three-lane urban section outside of the intersection limits. The east and west approaches will be reconstructed with both having a dedicated positive offset left turn lane, one through lane, and dedicated right turn lane. A shared use path will also be added to the north side of NE Broadway Ave.

The proposed signal replacement will provide protected/permissive for all approaches. The proposed operation of NB/SB protected/permissive phasing will be by time of day with protected operation during peak times and permissive operation at non-peak times. With the construction of the positive offset left turn lanes on the EB/WB approaches, protected/permissive left turn phasing will be allowed at all times of the day. EB/WB right turn lanes will include phasing overlap to provide right turn movement during nonconflicting phasing.

Pedestrian indications, pushbuttons, and phasing will be provided to cross the north approach.
ITEMIZED BREAKDOWN OF ALL COSTS

Please refer to the following page for a cost opinion that includes TSIP eligible items.

This request is part of a larger NE Broadway Corridor Improvement Project being administered by Polk County. A federal BUILD Grant has been secured for the corridor improvement plan; additional funding opportunities are being pursued including:

- Traffic Safety Improvement Program
- Revitalize Iowa’s Sound Economy Program
- County-State Traffic Engineering Program
- Urban-State Traffic Engineering Program
- Iowa’s Clean Air Attainment Program
- Iowa State Recreational Trail Funding Program

The following table represents the anticipated funding participation for the overall project:

**Table 2. Project Funding Sources**

<table>
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<th>Non-Federal Funding Sources</th>
<th>Funding</th>
<th>Notes</th>
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<td>TOTAL</td>
<td><strong>$8,854,000</strong></td>
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TOTAL PROJECT COST  $46,800,000
Anticipated Non-Federal Funding  $8,854,000
Anticipated Federal Funding  $26,500,000
Polk County / Des Moines Local Funding  $11,446,000
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<th>EXTENDED PRICE</th>
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<th>ESTIMATED LABOR (15%)</th>
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**TIME SCHEDULE**

As mentioned, this project is part of a larger NE Broadway Ave Corridor Improvement Project. The anticipated project schedule for the larger project includes three phases over several years as shown below, with the proposed intersection improvements as part of Phase 1.

<table>
<thead>
<tr>
<th>Table 3. Project Schedule</th>
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<td><strong>Overall Project Bid Letting</strong></td>
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<tr>
<td><strong>Phase 1 Construction</strong></td>
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<tr>
<td><strong>Phase 2 Construction</strong></td>
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<tr>
<td><strong>Phase 3 Construction</strong></td>
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</table>

The project has received BUILD Grant funding, and therefore the entire project must be let for bids as one package. As part of the BUILD Funding Agreement, all funding sources must be finalized by September 2022.
AREA MAP
COLOR PICTURES OF PROJECT SITE

NE Broadway Ave & US 69 (NE 14th St)

North Approach

South Approach

East Approach

West Approach

Overhead View
NE BROADWAY AVENUE RECONSTRUCTION
US 69 TRAFFIC SIGNAL LAYOUT

TRAFFIC SIGNAL FACES
LED Y 12"
LED G 12"
LED R 12"

PEDESTRIAN SIGNAL FACES

TRAFFIC SIGNAL PROPOSED PHASING

G & I
Iowa Department of Transportation
Turning Movement Traffic Count Summary
Annualized Daily Traffic For All Vehicles

Station Number: 77224981099
Count Date: Tuesday, July 26, 2016
County: Polk
Location Description: US 69, NE BROADWAY AVE & NE 46TH AVE
Volume Factor: 1.864
Pass Class Factor: 1.925
SU Class Factor: 1.856
Combo Class Factor: 1.502

Raw Data-All Vehicles:

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<th>W Leg</th>
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Created 9/26/2017 7:50:37AM
Vehicle Type: Passenger Vehicles

Station Number: 77224981099
Count Date: Tuesday, July 26, 2016
County: Polk
Location Description: US 69, NE BROADWAY AVE & NE 46TH AVE
Volume Factor: N/A
Pass Class Factor: N/A
SU Class Factor: N/A
Combo Class Factor: N/A

Raw Data-Passenger Vehicles:

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Iowa Department of Transportation
Turning Movement Traffic Count Summary
Vehicle Type: Single-Unit Trucks

Station Number:
77224981099

Count Date:
Tuesday, July 26, 2016

County:
Polk

Location Description:
US 69, NE BROADWAY AVE & NE 46TH AVE

Volume Factor: N/A
Pass Class Factor: N/A
SU Class Factor: N/A
Combo Class Factor: N/A

Raw Data-Single-Unit Trucks:

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Iowa Department of Transportation
Turning Movement Traffic Count Summary
Vehicle Type: Combination Trucks

Station Number: 77224981099

Count Date: Tuesday, July 26, 2016

County: Polk

Location Description: US 69, NE BROADWAY AVE & NE 46TH AVE

Volume Factor: N/A
Pass Class Factor: N/A
SU Class Factor: N/A
Combo Class Factor: N/A

Raw Data-Combination Trucks:

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TRAFFIC SIGNAL LAYOUT

See Section G for layout, type, phasing, and detector information