HIGHWAY WORK PROPOSAL

Wisconsin Department of Transportation
06/2017 s.66.0901(7) Wis. Stats

Proposal Number: 030

COUNTY	STATE PROJECT	FEDERAL	PROJECT DESCRIPTION	HIGHWAY
Douglas	3700-50-54	N/A	C Superior, Tower Avenue; Sth 105 Intersection	STH 035

This proposal, submitted by the undersigned bidder to the Wisconsin Department of Transportation, is in accordance with the advertised request for proposals. The bidder is to furnish and deliver all materials, and to perform all work for the improvement of the designated project in the time specified, in accordance with the appended Proposal Requirements and Conditions.

Proposal Guaranty Required: $40,000.00 Payable to: Wisconsin Department of Transportation	Attach Proposal Guaranty on back of this PAGE.
Bid Submittal Date: November 10, 2020 Time (Local Time): 11:00 am	Firm Name, Address, City, State, Zip Code SAMPLE NOT FOR BIDDING PURPOSES
Contract Completion Time August 30, 2021	
Assigned Disadvantaged Business Enterprise Goal 0%	This contract is exempt from federal oversight.

This certifies that the undersigned bidder, duly sworn, is an authorized representative of the firm named above; that the bidder has examined and carefully prepared the bid from the plans, Highway Work Proposal, and all addenda, and has checked the same in detail before submitting this proposal or bid; and that the bidder or agents, officer, or employees have not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with this proposal bid.

Do not sign, notarize, or submit this Highway Work Proposal when submitting an electronic bid on the Internet.

Subscribed and sworn to before me this date _____

(Signature, Notary Public, State of Wisconsin)	(Bidder Signature)
(Print or Type Name, Notary Public, State Wisconsin)	(Print or Type Bidder Name)
(Date Commission Expires)	(Bidder Title)

Notary Seal

For Department Use Only

Type of Work:
Excavation, Base, Concrete Pavement, Curb and Gutter, Sidewalk, Signs, Pavement Marking, Traffic Signals, Street Lighting

Notice of Award Dated	Date Guaranty Returned

PLEASE ATTACH
PROPOSAL GUARANTY HERE

Effective with November 2007 Letting

PROPOSAL REQUIREMENTS AND CONDITIONS

The bidder, signing and submitting this proposal, agrees and declares as a condition thereof, to be bound by the following conditions and requirements.

If the bidder has a corporate relationship with the proposal design engineering company, the bidder declares that it did not obtain any facts, data, or other information related to this proposal from the design engineering company that was not available to all bidders.

The bidder declares that they have carefully examined the site of, and the proposal, plans, specifications and contract forms for the work contemplated, and it is assumed that the bidder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished, and as to the requirements of the specifications, special provisions and contract. It is mutually agreed that submission of a proposal shall be considered conclusive evidence that the bidder has made such examination.

The bidder submits herewith a proposal guaranty in proper form and amount payable to the party as designated in the advertisement inviting proposals, to be retained by and become the property of the owner of the work in the event the undersigned shall fail to execute the contract and contract bond and return the same to the office of the engineer within fourteen (14) days after having been notified in writing to do so; otherwise to be returned.

The bidder declares that they understand that the estimate of quantities in the attached schedule is approximate only and that the attached quantities may be greater or less in accordance with the specifications.

The bidder agrees to perform the said work, for and in consideration of the payment of the amount becoming due on account of work performed, according to the unit prices bid in the following schedule, and to accept such amounts in full payment of said work.

The bidder declares that all of the said work will be performed at their own proper cost and expense, that they will furnish all necessary materials, labor, tools, machinery, apparatus, and other means of construction in the manner provided in the applicable specifications and the approved plans for the work together with all standard and special designs that may be designed on such plans, and the special provisions in the contract of which this proposal will become a part, if and when accepted. The bidder further agrees that the applicable specifications and all plans and working drawings are made a part hereof, as fully and completely as if attached hereto.

The bidder, if awarded the contract, agrees to begin the work not later than ten (10) days after the date of written notification from the engineer to do so, unless otherwise stipulated in the special provisions.

The bidder declares that if they are awarded the contract, they will execute the contract agreement and begin and complete the work within the time named herein, and they will file a good and sufficient surety bond for the amount of the contract for performance and also for the full amount of the contract for payment.

The bidder, if awarded the contract, shall pay all claims as required by Section 779.14, Statutes of Wisconsin, and shall be subject to and discharge all liabilities for injuries pursuant to Chapter 102 of the Statutes of Wisconsin, and all acts amendatory thereto. They shall further be responsible for any damages to property or injury to persons occurring through their own negligence or that of their employees or agents, incident to the performance of work under this contract, pursuant to the Standard Specifications for Road and Bridge Construction applicable to this contract.

In connection with the performance of work under this contract, the contractor agrees to comply with all applicable state and federal statutes relating to non-discrimination in employment. No otherwise qualified person shall be excluded from employment or otherwise be subject to discrimination in employment in any manner on the basis of age, race, religion, color, gender, national origin or ancestry, disability, arrest or conviction record (in keeping with s.111.32), sexual orientation, marital status, membership in the military reserve, honesty testing, genetic testing, and outside use of lawful products. This provision shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation, and selection for training, including apprenticeship. The contractor further agrees to ensure equal opportunity in employment to all applicants and employees and to take affirmative action to attain a representative workforce.

The contractor agrees to post notices and posters setting forth the provisions of the nondiscrimination clause, in a conspicuous and easily accessible place, available for employees and applicants for employment.

If a state public official (section 19.42, Stats.) or an organization in which a state public official holds at least a 10% interest is a party to this agreement, this contract is voidable by the state unless appropriate disclosure is made to the State of Wisconsin Ethics Board.

Effective with August 2015 Letting

BID PREPARATION

Preparing the Proposal Schedule of Items

A General

(1) Obtain bidding proposals as specified in section 102 of the standard specifications prior to 11:45 AM of the last business day preceding the letting. Submit bidding proposals using one of the following methods:

1. Electronic bid on the internet.
2. Electronic bid on a printout with accompanying diskette or CD ROM.
3. Paper bid under a waiver of the electronic submittal requirements.

(2) Bids submitted on a printout with accompanying diskette or CD ROM or paper bids submitted under a waiver of the electronic submittal requirements govern over bids submitted on the internet.

(3) The department will provide bidding information through the department's web site at:
https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

The contractor is responsible for reviewing this web site for general notices as well as information regarding proposals in each letting. The department will also post special notices of all addenda to each proposal through this web site no later than 4:00 PM local time on the Thursday before the letting. Check the department's web site after 5:00 PM local time on the Thursday before the letting to ensure all addenda have been accounted for before preparing the bid. When bidding using methods 1 and 2 above, check the Bid Express™ on-line bidding exchange at http://www.bidx.com/ after 5:00 PM local time on the Thursday before the letting to ensure that the latest schedule of items Expedite file (*.ebs or *.00x) is used to submit the final bid.

(4) Interested parties can subscribe to the Bid Express™ on-line bidding exchange by following the instructions provided at the www.bidx.com web site or by contacting:

Info Tech Inc.
5700 SW 34th Street, Suite 1235
Gainesville, FL 32608-5371
email: mailto:customer.support@bidx.com

(5) The department will address equipment and process failures, if the bidder can demonstrate that those failures were beyond their control.

(6) Contractors are responsible for checking on the issuance of addenda and for obtaining the addenda. Notice of issuance of addenda is posted on the department's web site at:
https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

or by calling the department at (608) 266-1631. Addenda can ONLY be obtained from the departments web site listed above or by picking up the addenda at the Bureau of Highway Construction, 4th floor, 4822 Madison Yards Way, Madison, WI, during regular business hours.

(7) Addenda posted after 5:00 PM on the Thursday before the letting will be emailed to the eligible bidders for that proposal. All eligible bidders shall acknowledge receipt of the addenda whether they are bidding on the proposal or not. Not acknowledging receipt may jeopardize the awarding of the project.

B Submitting Electronic Bids

B.1 On the Internet

(1) Do the following before submitting the bid:

1. Have a properly executed annual bid bond on file with the department.

2. Have a digital ID on file with and enabled by Info Tech Inc. Using this digital ID will constitute the bidder's signature for proper execution of the bidding proposal.

(2) In lieu of preparing, delivering, and submitting the proposal as specified in 102.6 and 102.9 of the standard specifications, submit the proposal on the internet as follows:

1. Download the latest schedule of items reflecting all addenda from the Bid Express™ web site.
2. Use Expedite™ software to enter a unit price for every item in the schedule of items.
3. Submit the bid according to the requirements of Expedite™ software and the Bid Express™ web site. Do not submit a bid on a printout with accompanying diskette or CD ROM or a paper bid. If the bidder does submit a bid on a printout with accompanying diskette or a paper bid in addition to the internet submittal, the department will disregard the internet bid.
4. Submit the bid before the hour and date the Notice to Contractors designates.
5. Do not sign, notarize, and return the bidding proposal described in 102.2 of the standard specifications.

(3) The department will not consider the bid accepted until the hour and date the Notice to Contractors designates.

B.2 On a Printout with Accompanying Diskette or CD ROM

(1) Download the latest schedule of items from the Wisconsin pages of the Bid Express™ web site reflecting the latest addenda posted on the department's web site at:
https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

Use Expedite ™ software to prepare and print the schedule of items. Provide a valid amount for all price fields. Follow instructions and review the help screens provided on the Bid Express™ web site to assure that the schedule of items is prepared properly.

(2) Staple an 8 1/2 by 11 inch printout of the Expedite™ generated schedule of items to the other proposal documents submitted to the department as a part of the bidder's sealed bid. As a separate submittal, not in the sealed bid envelop but due at the same time and place as the sealed bid, also provide the Expedite™ generated schedule of items on a 3 1/2 inch computer diskette or CD ROM. Label each diskette or CD ROM with the bidder's name, the 4 character department-assigned bidder identification code from the top of the bidding proposal, and a list of the proposal numbers included on that diskette or CD ROM as indicated in the following example:

Bidder Name

BN00

Proposals: 1, 12, 14, & 22

(3) If bidding on more than one proposal in the letting, the bidder may include all proposals for that letting on one diskette or CD ROM. Include only submitted proposals with no incomplete or other files on the diskette or CD ROM.

(4) The bidder-submitted printout of the Expedite™ generated schedule of items is the governing contract document and must conform to the requirements of section 102 of the standard specifications. If a printout needs to be altered, cross out the printed information with ink or typewriter and enter the new information and initial it in ink. If there is a discrepancy between the printout and the diskette or CD ROM, the department will analyze the bid using the printout information.

(5) In addition to the reasons specified in section 102 of the standard specifications, proposals are irregular and the department may reject them for one or more of the following:

1. The check code printed on the bottom of the printout of the Expedite™ generated schedule of items is not the same on each page.
2. The check code printed on the printout of the Expedite™ generated schedule of items is not the same as the check code for that proposal provided on the diskette or CD ROM.

3. The diskette or CD ROM is not submitted at the time and place the department designates.

C Waiver of Electronic Submittal

(1) The bidder may request a waiver of the electronic submittal requirements. Submit a written request for a waiver in lieu of bids submitted on the internet or on a printout with accompanying diskette or CD ROM. Use the waiver that was included with the paper bid document sent to the bidder or type up a waiver on the bidder's letterhead. The department will waive the electronic submittal requirements for a bidding entity (individual, partnership, joint venture, corporation, or limited liability company) for up to 4 individual proposals in a calendar year. The department may allow additional waivers for equipment malfunctions.

(2) Submit a schedule of items on paper conforming to section 102 of the standard specifications. The department charges the bidder a $75 administrative fee per proposal, payable at the time and place the department designates for receiving bids, to cover the costs of data entry. The department will accept a check or money order payable to: "Wisconsin, Dept. of Transportation."

(3) In addition to the reasons specified in section 102 of the standard specifications, proposals are irregular and the department may reject them for one or more of the following:

1. The bidder fails to provide the written request for waiver of the electronic submittal requirements.
2. The bidder fails to pay the $75 administrative fee before the time the department designates for the opening of bids unless the bidder requests on the waiver that they be billed for the $75.
3. The bidder exceeds 4 waivers of electronic submittal requirements within a calendar year.

(4) In addition to the reasons specified in section 102 of the standard specifications, the department may refuse to issue bidding proposals for future contracts to a bidding entity that owes the department administrative fees for a waiver of electronic submittal requirements.

PROPOSAL BID BOND

Wisconsin Department of Transportation

DT1303 1/2006

Proposal Number	Project Number	Letting Date
Name of Principal		
Name of Surety	State in Which Surety is Organized	

We, the above-named Principal and the above-named Surety, are held and firmly bound unto the State of Wisconsin in the sum equal to the Proposal Guaranty for the total bid submitted for the payment to be made; we jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns. The condition of this obligation is that the Principal has submitted a bid proposal to the State of Wisconsin acting through the Department of Transportation for the improvement designated by the Proposal Number and Letting Date indicated above.

If the Principal is awarded the contract and, within the time and manner required by law after the prescribed forms are presented for signature, enters into a written contract in accordance with the bid, and files the bond with the Department of Transportation to guarantee faithful performance and payment for labor and materials, as required by law, or if the Department of Transportation shall reject all bids for the work described, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect. In the event of failure of the Principal to enter into the contract or give the specified bond, the Principal shall pay to the Department of Transportation **within 10 business days of demand** a total equal to the Proposal Guaranty as liquidated damages; the liability of the Surety continues for the full amount of the obligation as stated until the obligation is paid in full.

The Surety, for value received, agrees that the obligations of it and its bond shall not be impaired or affected by any extension of time within which the Department of Transportation may accept the bid; and the Surety does waive notice of any such extension.

IN WITNESS, the Principal and Surety have agreed and have signed by their proper officers and have caused their corporate seals to be affixed this date: **(DATE MUST BE ENTERED)**

PRINCIPAL

(Company Name) **(Affix Corporate Seal)**

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

(Name of Surety) **(Affix Seal)**

(Signature of Attorney-in-Fact)

NOTARY FOR PRINCIPAL

(Date)

State of Wisconsin)
) ss.
_____ County)

On the above date, this instrument was acknowledged before me by the named person(s).

(Signature, Notary Public, State of Wisconsin)

(Print or Type Name, Notary Public, State of Wisconsin)

(Date Commission Expires)

Notary Seal

NOTARY FOR SURETY

(Date)

State of Wisconsin)
) ss.
_____ County)

On the above date, this instrument was acknowledged before me by the named person(s).

(Signature, Notary Public, State of Wisconsin)

(Print or Type Name, Notary Public, State of Wisconsin)

(Date Commission Expires)

Notary Seal

IMPORTANT: A certified copy of Power of Attorney of the signatory agent must be attached to the bid bond.

CERTIFICATE OF ANNUAL BID BOND

Wisconsin Department of Transportation

DT1305 8/2003

Time Period Valid (From/To)
Name of Surety
Name of Contractor
Certificate Holder Wisconsin Department of Transportation

This is to certify that an annual bid bond issued by the above-named Surety is currently on file with the Wisconsin Department of Transportation.

This certificate is issued as a matter of information and conveys no rights upon the certificate holder and does not amend, extend or alter the coverage of the annual bid bond.

Cancellation: Should the above policy be cancelled before the expiration date, the issuing surety will give thirty (30) days written notice to the certificate holder indicated above.

(Signature of Authorized Contractor Representative) (Date)

March 2010

LIST OF SUBCONTRACTORS

Section 66.0901(7), Wisconsin Statutes, provides that as a part of the proposal, the bidder also shall submit a list of the subcontractors the bidder proposes to contract with and the class of work to be performed by each. In order to qualify for inclusion in the bidder's list a subcontractor shall first submit a bid in writing, to the general contractor at least 48 hours prior to the time of the bid closing. The list may not be added to or altered without the written consent of the municipality. A proposal of a bidder is not invalid if any subcontractor and the class of work to be performed by the subcontractor has been omitted from a proposal; the omission shall be considered inadvertent or the bidder will perform the work personally.

No subcontract, whether listed herein or later proposed, may be entered into without the written consent of the Engineer as provided in Subsection 108.1 of the Standard Specifications.

Name of Subcontractor	Class of Work	Estimated Value

DECEMBER 2000

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - PRIMARY COVERED TRANSACTIONS

Instructions for Certification

1. By signing and submitting this proposal, the prospective contractor is providing the certification set out below.

2. The inability of a person to provide the certification required below will not necessarily result in denial of participation in this covered transaction. The prospective contractor shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective contractor to furnish a certification or an explanation shall disqualify such person from participation in this transaction.

3. The certification in this clause is a material representation of fact upon which reliance was placed when the department determined to enter into this transaction. If it is later determined that the contractor knowingly rendered an erroneous certification in addition to other remedies available to the Federal Government the department may terminate this transaction for cause or default.

4. The prospective contractor shall provide immediate written notice to the department to whom this proposal is submitted if at any time the prospective contractor learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

5. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of the rules implementing Executive Order 12549. You may contact the department to which this proposal is being submitted for assistance in obtaining a copy of those regulations.

6. The prospective contractor agrees by submitting this proposal that, should this contract be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department entering into this transaction.

7. The prospective contractor further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," which is included as an addendum to PR-1273 - "Required Contract Provisions Federal Aid Construction Contracts," without

modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

8. The contractor may rely upon a certification of a prospective subcontractor/materials supplier that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A contractor may decide the method and frequency by which it determines the eligibility of its principals. Each contractor may, but is not required to, check the Disapproval List (telephone # 608/266/1631).

9. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

10. Except for transactions authorized under paragraph 6 of these instructions, if a contractor in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions

(1) The prospective contractor certifies to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offense enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the prospective contractor is unable to certify to any of the statements in this certification, such prospective contractor shall attach an explanation to this proposal.

Special Provisions

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SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project 3700-50-54, C Superior, Tower Avenue, STH 105 Intersection, STH 35, Douglas County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2021 Edition, as published by the department, and these special provisions.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.

100-005 (20200629)

2. Scope of Work.

The work under this contract shall consist of traffic signal installation, sidewalk and curb ramp replacement, constructing raised medians, access modifications, lane reconfigurations and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

3. Prosecution and Progress.

Begin work within ten calendar days after the engineer issues a written notice to do so.

Provide the start date to the engineer in writing within a month after executing the contract but at least 14 calendar days before the preconstruction conference. Upon approval, the engineer will issue the notice to proceed within ten calendar days before the approved start date.

To revise the start date, submit a written request to the engineer at least two weeks before the intended start date. The engineer will approve or deny that request based on the conditions cited in the request and its effect on the department's scheduled resources.

The Notice to Proceed will be issued such that work shall start no later than June 7, 2021, unless otherwise approved by the engineer.

The project shall be completed in two primary stages. The first stage consists of improvements along the exterior portions of the existing roadway including the replacement of sidewalk and curb ramps at all four quadrants of the STH 35 and STH 105 intersection. The second stage consists of improvements within the core of the STH 35 roadway including the installation of raised medians between 60th Street and 62nd Street. Traffic Signal improvements will occur during both stages.

During construction, a minimum of one lane of traffic shall be maintained on all roadways in both directions except for operations involving placement of concrete curb and gutter and sidewalk in the medians between STH 105/61st Street and 62nd Street. Flagging operations are restricted to 10:00 PM to 12:00 AM and 12:00 AM to 6:00 AM. The work shall be completed in a manner which minimizes disruption to traffic.

The contractor is advised that there may be multiple mobilizations for such items as erosion control, traffic control, signing items, pavement markings and other incidental items related to staging. The department will make no additional payment for said mobilizations.

Northern Long-eared Bat *(Myotis septentrionalis)*

Northern Long-eared Bats (NLEB) have the potential to inhabit the project limits because they roost in trees. Roosts may not have been observed on this project, but conditions to support the species exist. The species and all active roosts are protected by the Federal Endangered Species Act. If an individual bat or active roost is encountered during construction operations, stop work and notify the engineer and the WisDOT Regional Environmental Coordinator (REC).

If additional construction activities beyond what was originally specified are required to complete the work, approval from the engineer, following coordination with WisDOT REC, is required prior to initiating these activities.

4. Traffic.

The following is a general overview of the traffic control and staging required throughout all stages of the project.

Staging

Work along STH 35, STH 105, and 61st Street will be completed under staged construction using single lane closures, lane shifts, and shoulder closures. Turn lanes along STH 35 may be closed during staging, but one approach lane must be provided during all stages of construction on all legs of the intersection.

Traffic Control

Use drums, barricades, or other traffic control devices to direct vehicular traffic in the work zone and to protect and delineate hazards such as open excavations and abrupt drop-offs.

Maintain a minimum lane width of 12 feet and a minimum lane width plus shoulder width of 16 feet on all roadways.

Portable Changeable Message Signs (PCMS) shall be in place 7 calendar days prior to beginning construction. The message(s) shall read as indicated on the plans or as directed by the engineer.

Place roadway signing and roadway temporary pavement marking as directed by the engineer and in conformance to the manual on Uniform Traffic Control Devices (MUTCD), latest edition. Traffic control shall be completely in place before traffic is switched, or as directed by the engineer.

Do not deliver or store materials and equipment within open travel lanes or open side roads during any stage of construction. Conduct operations in a manner that will cause the least interference to traffic.

Property Access

All access to commercial and private entrances shall be maintained during construction.

Pedestrian Access

Pedestrian access shall be provided at all times within the project limits. Only one quadrant of the intersection shall be closed at a time to minimize pedestrian impacts and temporary facilities are provided to maintain pedestrian access around the work area. Additional pedestrian crossings are located within one block of each leg of the intersection and may be used to relocate pedestrian traffic around the work zone.

Transit Users

The existing transit route (Route 17) for Duluth Transit Authority (DTA) runs along STH 35 through the project limits. The STH 35 and STH 105 intersection has bus stops in the northwest and southeast quadrants along STH 35. These bus stop signs will be removed by DTA prior to construction and riders will be required to gain bus access at the adjacent STH 35 intersections at 60th Street and 62nd Street. Contact Rod Fournier, Director of Operations, at (218) 623-4336 within three working days of substantial completion.

Railways

The BNSF railroad crosses the west and south legs of the project intersection. This project will not affect rail operations. Coordinate with the department and BNSF for work activities taking place near railroad right-of-way. The contractor will be required to have a BNSF railroad flagger on site while installing the concrete medians along STH 35 and at any time while bi-directional traffic is in operations or working within 25’ of the railroad crossing.

Advance Notification

Notify the organizations below 48 hours in advance of the start of work, closures of existing roads, and prior to traffic control changes. Notifications must be given by 4:00 PM on Thursday for such work to be done on the following Monday.

State Patrol/County Sheriff/Local Police
Wisconsin State Patrol – Spooner Post
(715) 635-2141

Douglas County Sheriff
(715) 395-1371

Superior Police Department
(715) 395-7234

Douglas County Emergency Management, Communications & General Services
(715) 395-1636

Duluth Transit Authority
(218) 623-4336

Fire Departments/EMS/Ambulance
City of Superior Fire Department
(715) 394-0227

School Districts
School District of Superior
(715) 394-8700

Wisconsin Lane Closure System Advance Notification

Provide the following advance notification to the engineer for incorporation into the Wisconsin Lane Closure System (LCS).

TABLE 108-1 CLOSURE TYPE AND REQUIRED MINIMUM ADVANCE NOTIFICATION

Closure type with height, weight, or width restrictions (available width, all lanes in one direction < 16')	**MINIMUM NOTIFICATION**
Lane and shoulder closures	7 calendar days
Full roadway closures	7 calendar days
Ramp closures	7 calendar days
Detours	7 calendar days
Closure type without height, weight, or width restrictions (available width, all lanes in one direction ≥ 16')	**MINIMUM NOTIFICATION**
Lane and shoulder closures	3 business days
Ramp closures	3 business days
Modifying all closure types	3 business days

Discuss LCS completion dates and provide changes in the schedule to the engineer at weekly project meetings in order to manage closures nearing their completion date.

5. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 35, STH 105, or 61st Street traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday periods:

- From noon Friday, May 28, 2021 to 6:00 AM Tuesday, June 1, 2021 for Memorial Day;
- From noon Friday, July 2, 2021 to 6:00 AM Tuesday, July 6, 2021 for Independence Day;
- From noon Friday, September 3, 2021 to 6:00 AM Tuesday, September 7, 2021 for Labor Day,

stp-107-005 (20181119)

6. Utilities.

This contract does not come under the provision of Administrative Rule Trans 220.

stp-107-066 (20080501)

Some of the utility work described below is dependent on prior work being performed by the contractor at a specific site. In such situations, provide the engineer and the affected utility a good faith notice of when the utility is to start work at the site. Provide this notice 14 to 16 calendar days in advance of when the prior work will be completed, and the site will be available to the utility owner. Follow-up with a confirmation notice to the engineer and the utility owner not less than three working days before the site will be ready for the utility owner to begin its work.

Coordinate construction activities with a call to Diggers Hotline or a direct call to the utilities with underground facilities in the area, as required per state statutes. Use caution to maintain the integrity of utilities and maintain code clearances from overhead facilities at all times. Coordinate with the engineer to adjust plans as needed to avoid any unanticipated utility conflicts.

The following utility companies have facilities within the project area; however, no adjustments are anticipated:

CenturyLink (communication line)

CenturyLink has an overhead crossing STH 105 at Station 203+08 where it becomes underground and continues to the east in the terrace along the south side of STH 105, crosses under STH 35 at Station 104+94, and continues underground within the right-of-way along the south side of 61st Street to beyond the project limits. No relocations are anticipated; CenturyLink will work with the contractor during construction to protect and hold existing facilities within the project area. Contact CenturyLink at least 3 business days prior working in areas of potential conflict.

City of Superior (sanitary sewer)

The city has sanitary sewer crossings STH 35 at Station 103+43 and Station 107+30. No conflicts are anticipated with the sanitary sewer.

Consolidated Comm (communication line)

Consolidated Comm has pedestal, handhole, and underground BFO-96 fiber inside a 1.25” innerduct in the southeast quadrant of the STH 35 and 62nd Street intersection. No conflicts are anticipated.

Superior Water, Light & Power (electricity)

Superior Water, Light, & Power has an overhead crossing on STH 35 at Station 107+15 and an underground crossing on STH 35 at Station 101+18. No conflicts are anticipated.

Superior Water, Light & Power (gas)

Superior Water, Light, & Power has underground gas in the terrace along the north side of STH 105 from Station 204+07 to the west with a service crossing STH 105 at Station 204+00. No conflicts are anticipated.

Superior Water, Light, & Power (water)

Superior Water, Light, & Power (SWLP) has water main along STH 35 under the southbound travel lanes within the entire project limits with various services to businesses crossing STH 35. SWLP has water main along STH 105 along the north curb line, crosses STH 35 near Station 105+53, and continues to the east along 61st Street in the north terrace, with multiple services provided to businesses along STH 105 and 61st Street.

A water manhole is located in the curb and gutter in the northeast quadrant of the STH 35 and STH 105 intersection. The cover shall be protected during construction and adjusted, if necessary, to place the new curb and gutter.

BNSF is proposing to install a new railroad signal with a concrete base along the north side of 61st Street at approximately Station 207+75.76, 21.9' LT. The location of this concrete base is in close proximity and above the existing water main which is a 12-inch cast iron pipe. During project design, the depth to the top of the pipe was confirmed to be 8.5' below the existing surface in the vicinity of the new base and therefore, the existing pipe is not anticipated to be in conflict with installation of the new signal base. SWLP shall be notified no less than 7 calendar days prior to the base installation work so that they can have an inspector on site to ensure the safety of their facility.

7. Railroad Insurance and Coordination - BNSF Railway Company.

A Description

Comply with standard spec 107.17 for all work affecting BNSF Railway Company property and any existing tracks.

A.1 Railroad Insurance Requirements

In addition to standard spec 107.26, provide railroad protective liability insurance coverage as specified in standard spec 107.17.3. Insurance is filed in the name of BNSF Railway Company.

Notify evidence of the required coverage, and duration to Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to bnsf@certfocus.com.

Approval of the policy will not take place until the Manager of Public Projects has been contacted.

Also send a copy to the following: Anna Davey, NW and NC Region Railroad Coordinator; 1701 N 4th Street, Superior, WI 54880; Telephone (715) 392-7960; E-mail: anna.davey@dot.wi.gov.

Include the following information on the insurance document:

- Project ID: 3700-50-54
- Project Location: Superior, WI
- Route Name: STH 35, Douglas County
- Crossing ID: 082857M and 082858U
- Railroad Subdivision: Lakes Sub
- Railroad Milepost: 67.484 and 67.43
- Work Performed: Install intersection traffic signals, concrete median barriers,

A.2 Train Operation

Approximately two through freight trains operate daily at up to 10 mph. There are no switching movements at this location.

A.3 Names and Addresses of Railroad Representatives for Consultation and Coordination

Construction Contact

Daniel Peltier, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail daniel.peltier@bnsf.com for consultation on railroad requirements during construction.

Amend standard spec 108.4 to include the railroad in the distribution of the initial bar chart, and monthly schedule updates. The bar chart shall specifically show work involving coordination with the railroad.

Flagging Contact

Notify the Construction Contact above a minimum of 40 working days in advance to arrange for a railroad flagger. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact the BNSF Communications Network Control Center at (800) 533-2891, five working days before the locate is needed. Reference Wisconsin Milepost 67.484 on Line Segment 233.

BNSF will only locate railroad owned facilities located in the railroad right-of-way. The railroad does not locate any other utilities.

A.4 Work by Railroad

The railroad will perform the work described in this section, except for work described in other special provisions, and will be accomplished without cost to the contractor. None

A.5 Temporary Grade Crossing

If a temporary grade crossing is desired, submit a written request to the railroad representative named in A.3 at least 40 days prior to the time needed. Approval is subject to the discretion of the railroad. The department has made no arrangements for a temporary grade crossing.

A.6 Rail Security Awareness and Contractor Orientation

Prior to entry on railroad right-of-way, the contractor shall arrange for on-line security awareness and contractor orientation training and testing and be registered through "e-RAILSAFE" for all contractor and subcontractor employees working on railroad right-of-way. See e-railsafe.com "Information". The security awareness and contractor orientation training are shown under the railroad's name.

The security awareness and contractor orientation certification is valid for 2 year(s) and must be renewed for projects that will carry over beyond the 2 year period. Contractor and subcontractor employees shall wear the identification badge issued by e-RAILSAFE when on railroad right-of-way. Costs associated with training and registration are incidental to other items in the contract.

stp-107-026 (20200629)

8. Health and Safety Requirements for Workers Remediating Petroleum Contamination.

Add the following to standard spec 107.1(2):

Soil contamination with gasoline, diesel fuel, fuel oil, or other petroleum related products may be encountered during excavation activities. Prepare a site specific Health and Safety Plan complying with the Occupational Safety and Health Administration (OSHA) standard for Hazardous Waste Operation and Emergency Response (HAZWOPER), 29 CFR 1910.120.

All site workers taking part in remediation activities or who will have the reasonable probability of exposure of safety or health hazards associated with the hazardous material shall have completed Health and Safety training that meets OSHA requirements. Before the start of remediation work, submit to the engineer a site specific Health and Safety Plan, and written verification that workers will have completed up-to-date OSHA training.

Develop, delineate, and enforce the health and safety exclusions zones for each contaminated site location pursuant to 29 CFR 1910.120.

stp-107-115 (20150630)

9. Hauling Restrictions

Use only City of Superior designated truck routes for material haul roads. Haul roads are detailed in standard spec 618. City of Superior designated truck routes are available on the City of Superior website:

http://www.ci.superior.wi.us/

10. Notice to Contractor, Construction Equipment Height Notification – FAA Regulations.

Due to the proximity to airports, the use of any tall construction equipment including temporary cranes, with a height of more than 17 feet above ground level will require advance notice to the FAA.

The department will file an initial FAA Obstruction Analysis/Airport Airspace Analysis for tall construction equipment. If the contractor proposes to use equipment taller than 31 feet above ground level; as will be applied for by the department, the contractor must do a reapplication with coordination through WisDOT so a revision can be made to the airspace analysis.

If the contractor exceeds the filed time window which is 18 months from FAA's determination letter, reapplication would also need to occur. Reapplication should occur three weeks prior to operations so that approvals can be made available prior to work.

The initial FAA Obstruction Analysis/Airport Airspace Analysis and any conditions or requirements will be available prior to construction from the regional office by contacting Stephanie King, Design Project Manager at 715-392-7874.

FAA Obstruction Evaluation/Airport Airspace Analysis (OE/AAA) website:

http://oeaaa.faa.gov/oeaaa/external/portal.jsp

Contact the following Airports one week before utilizing cranes on the project site. Contact Information:

William Amorde,
Richard I. Bong Memorial Airport Manager
4804 Hammond Avenue
Superior, WI 54880

11. Coordination with Businesses and Residents.

The contractor shall arrange and conduct a meeting between the contractor, the department, affected residents, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Hold the first meeting at least one week before the start of work under this contract and hold two meetings per month thereafter. The contractor shall arrange for a suitable location for meetings that provides reasonable accommodation for public involvement. The department will prepare and coordinate publication of the meeting notices and mailings for meetings. The contractor shall schedule meetings with at least two weeks' prior notice to the engineer to allow for these notifications.

stp-108-060 (20141107)

12. Stamping Colored Concrete, Item 405.1000.

This special provision describes stamping and coloring concrete WisDOT Red for work constructed under other contract bid items. Conform to standard spec 405 as modified in this special provision.

Replace the entire contents of standard spec 405.2.2 with the following:

(1) Under the Stamping Colored Concrete bid item, furnish full-depth colored concrete conforming to 405.2.1.

Replace the entire contents of standard spec 405.3.2 with the following:

(1) Color concrete full-depth conforming to standard spec 405.3.1

(2) Pattern to be a stiff broom finish alternating from parallel to perpendicular.

stp-405-100 (20190618)

13. Concrete Pavement Joint Layout, Item 415.5110.S.

A Description

This special provision describes providing a concrete pavement or concrete base joint layout design for intersections and marking the location of joints in the field.

B (Vacant)

C Construction

Plan and locate all points necessary to establish the horizontal position of the transverse and longitudinal joints in the concrete to prevent uncontrolled cracking. Submit a joint layout design to the engineer at least 7 calendar days before paving each intersection. Do not lay out joints until the engineer has reviewed the joint layout design. Mark the location of concrete joints in the field. Follow the plan details for joints in concrete making adjustments as required to fit field conditions.

D Measurement

The department will measure Concrete Pavement Joint Layout as a single lump sum unit for all joint layout designs and marking, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
415.5110.S	Concrete Pavement Joint Layout	LS

Payment is full compensation for providing the intersection joint layout designs and marking all joints in the field.

The department will adjust pay for crack repairs as specified in standard spec 415.5.3.

stp-415-020 (20170615)

14. Protecting Concrete.

Supplement standard spec 415.3.14 as follows:

Provide a minimum of one concrete finisher to remain on the project site after final finishing of all concrete surfaces until such time as the concrete has hardened sufficiently to resist surface scarring caused by footprints, handprints, or any other type of imprint, malicious or otherwise. The finisher shall actively and continuously patrol on foot the newly placed concrete and repair any damage to the surface that might be sustained as described above.

The cost for providing the finisher(s), the necessary equipment, and materials shall be considered incidental to the contract unit price for each concrete item.

15. Concrete Driveway.

Supplement standard spec 416.3.2 as follows:

Contraction joints, if necessary, are required to be sawed. Saw contraction joints at least one-third the depth of the concrete driveway and approximately 1/8 inch wide. Perform the sawing as soon as possible after the concrete sets sufficiently to prevent raveling during sawing and before shrinkage cracking occurs.

16. Concrete Curb and Gutter.

Modify standard spec 601.3.4(5) to require that contraction joints be sawed only.

17. Removing Signs Type II and Removing Small Sign Supports.

Replace standard spec 638.3.4(2) and (3) and 638.3.5 with the following:

Remove Type II signs and sign supports to the City of Superior Municipal Services Building, 2301 Hill Avenue, Superior, WI. Contact Nathan Johnstad, Street Superintendent, at (715) 394-0244 at least three working days in advance of delivery.

Duluth Transit Authority (DTA) has existing signs within the project. DTA will remove these signs prior to construction and replace signage upon substantial completion. Contact Rod Fournier, Director of Operations, at (218) 623-4336 within three working days of substantial completion.

18. Field Office.

Add the following to standard spec 642:

For field offices without handwashing facilities, provide and maintain a portable handwashing station at every project field office. The station shall include a hands-free sink with foot pump-operated faucet, soap dispenser, paper towel dispenser, fresh water supply, and collection tank for gray water. Regularly service and maintain the handwashing station and all supplies as needed, and properly dispose of all materials. Costs associated with the handwashing station are incidental to the field office bid item.

stp-642-010 (20200629)

19. Nighttime Work Lighting-Stationary.

A Description

This special provision describes furnishing portable lighting as necessary to complete nighttime work. Nighttime operations consist of work specifically scheduled to occur after sunset and before sunrise.

B (Vacant)

C Construction

C.1 General

This provision shall apply when providing, maintaining, moving, and removing portable light towers and equipment-mounted lighting fixtures for nighttime stationary work operations, for the duration of nighttime work on the contract.

At least 14 days before the nighttime work, furnish a lighting plan to the engineer for review and acceptance. Address the following in the plan:

1. Layout, including location of portable lighting – lateral placement, height, and spacing. Clearly show on the layout the location of all lights necessary for every aspect of work to be done at night.
2. Specifications, brochures, and technical data of all lighting equipment to be used.
3. The details on how the luminaires will be attached.
4. Electrical power source information.
5. Details on the louvers, shields, or methods to be employed to reduce glare.
6. Lighting calculations. Provide illumination with average to minimum uniformity ratio of 5:1 or less throughout the work area.
7. Detail information on any other auxiliary equipment.

C.2 Portable Lighting

Provide portable lighting that is sturdy and free standing and does not require any guy wires, braces, or any other attachments. Furnish portable lighting capable of being moved as necessary to keep up with the construction project. Position the portable lighting and trailers to minimize the risk of being impacted by traffic on the roadway or by construction traffic or equipment. Provide lightning protection for the portable lighting. Portable lighting shall withstand up to 60 mph wind velocity.

If portable generators are used as a power source, furnish adequate power to operate all required lighting equipment without any interruption during the nighttime work. Provide wiring that is weatherproof and installed according to local, state, federal (NECA and OSHA) requirements. Equip all power sources with a ground-fault circuit interrupter to prevent electrical shock.

C.3 Light Level and Uniformity

Position (spacing and mounting height) the luminaires to provide illumination with an average to minimum uniformity ratio of 5:1 or less throughout the work area.

Illuminate the area as necessary to incorporate construction vehicles, equipment, and personnel activities.

C.4 Glare Control

Design, install, and operate all lighting supplied under these specifications to minimize or avoid glare that interferes with all traffic on the roadway or that causes annoyance or discomfort for properties adjoining the roadway. Locate, aim, and adjust the luminaires to provide the adequate level of illumination and the specified uniformity in the work area without the creation of objectionable glare.

Provide louvers, shields, or visors, as needed, to reduce any objectionable levels of glare. As a minimum, ensure the following requirements are met to avoid objectionable glare on the roadways open to traffic in either direction or for adjoining properties:

1. Aim tower-mounted luminaires, either parallel or perpendicular to the roadway, so as to minimize light aimed toward approaching traffic.
2. Aim all luminaires such that the center of beam axis is no greater than 60 degrees above vertical (straight down).

If lighting does not meet above-mentioned criteria, adjust the lighting within 24 hours.

C.5 Continuous Operation

Provide and have available sufficient fuel, spare lamps, generators, and qualified personnel to ensure that the lights will operate continuously during nighttime operation. In the event of any failure of the lighting system, discontinue the operation until the adequate level of illumination is restored. Move and remove lighting as necessary.

D (Vacant)

E Payment

Costs for furnishing a lighting plan, and for providing, maintaining, moving, and removing portable lighting, tower mounted lighting, and equipment-mounted lighting required under this special provision are incidental to the contract.

stp-643-010 (20100709)

20. Traffic Control.

Supplement standard spec 643.3.1 with the following:

Cover and/or remove traffic control devices from the traveled way and shoulders of the roadway when not in use. Cover or render lighting devices inoperative when not in use.

Provide to the engineer, City of Superior Police Department, County Sheriff's Department, and the State Patrol District Headquarters responsible for that county with the current telephone number(s) which the contractor or their representative can be contacted at all times in the event a safety hazard develops. Repair, replace or restore the damaged or disturbed traffic control devices within two hours from the time notified or made aware of the damaged or disturbed traffic control devices.

Keep appropriate emergency officials informed of routes to provide emergency services. Do not park or store equipment, vehicles, or construction materials within 30 feet of the edge of the traffic lane of any roadway during non-working hours.

Utilize two-way radios, and/or additional flag persons, within lane closure areas and at public road intersections, in order to positively direct, control, and safeguard traffic through the work zone.

All contractor vehicles or equipment operating within the project limits shall be equipped with and have flashing yellow lights operating.

A third flag person is required at all moving construction operations involving milling, paving, and shouldering. The third flag person is required to be located at the area of the moving operation to safely guide traffic around the equipment and personnel working at the moving operation.

All state owned signs that are removed by the contractor because of interference with construction operations shall, unless otherwise authorized by the engineer, be promptly replaced as directed by the engineer. At no time may stop signs be removed or moved without flag persons present.

21. General Requirements for Electrical Work.

Replace standard spec 651.3.3 (3) with the following:

Notify the engineer and request a signal inspection at least 5 business days before the date of the requested inspection. In the event of deficiencies, request a reinspection when the work is corrected. The engineer will not authorize turn-on until the contractor corrects deficiencies.

Electrical item inspections are required at the following times: after the staking of all electrical underground items, before the pouring of all lighting, signal, and cabinet bases; before cable and wire are pulled; during field terminations at signal and lighting bases; and prior to the installation of any poles, standards, or other above ground electrical items.

Request electrical inspections of the completed signal and lighting work to the engineer at least five working days prior to the time of the required inspection. Notify the City of Superior Public Works Department at (715) 395-7334 and notify the Northwest Region – Eau Claire Office Electrical Field Unit at (715) 225-0360 to coordinate the inspections.

22. Electrical Service Meter Breaker Pedestal STH 35 & STH 105, Item 656.0200.01.

Add the following to standard spec 656.2.3 (1):

The contractor will be responsible for the electric service installation request. Notify the City of Superior Public Works Department at (715) 395-7334 when application is submitted to the utility company.

Electric utility company service installation and energy cost will be billed to and paid for by the maintaining authority.

Install the cabinet base and meter breaker pedestal first, so the electric utility company can install the service lateral. Finish grade the service trench, replace topsoil that is lost or contaminated with other materials, fertilize, seed, and mulch all areas that are disturbed by the electric utility company.

Add the following to standard spec 656.5 (3):

Payment for grading the service trench, replacing topsoil, fertilizer, seed, and mulch will be incidental to this work unless the bid items are in the contract and then they will be paid for at the contract price.

23. Traffic Signals, General.

Note that failure to comply with the state standards and specifications may result in the cost of the corrections to be made at the contractor's expense. Also, any additional disruption of State-owned facilities shall be repaired or relocated as needed at the contractor's expense.

Notify the City of Superior Public Works Department at (715) 395-7334 and the Northwest Region – Eau Claire Office Electrical Field Unit at (715) 225-0360 at least three weeks prior to the beginning of the traffic signal work.

All overhead permanent signal equipment along STH 35 shall have a 20 foot clearance to the surface of the roadway to maintain an existing high clearance route.

Prior to ordering monotube equipment, the monotube locations shall be staked to confirm arm lengths with the engineer in the field. Note that there is a several month backorder for delivery of monotube traffic signal equipment. Provide as much advance notice as possible to the monotube manufacturer to ensure timely delivery.

24. Concrete Curb & Gutter 18-Inch Type G Special, Item SPV.0090.01.

A Description

This special provision describes constructing concrete curb and gutter according to the requirements of standard spec 601, the details shown in the plans, and as hereinafter provided.

B Materials

Furnish concrete that conforms to the requirements for concrete according to standard spec 501.

C Construction

Modify standard spec 601.3.4(5) to require that contraction joints be sawed.

Saw the joints to a minimum depth of one-third (D/3) of the depth of the curb and gutter at the flag line. Provide a gutter thickness as shown in the plan details.

D Measurement

The department will measure Concrete Curb & Gutter 18-Inch Type G Special by the linear foot, acceptably completed, measured along the flow line of the gutter.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.01	Concrete Curb & Gutter 18-Inch Type G Special	LF

Payment is full compensation for furnishing all foundation excavation and preparation; all special construction required at driveway and alley entrances or curb ramps; providing all materials, including concrete, expansion joints, and reinforcement tie bars unless specified otherwise; for placing, finishing, protecting, and curing; sawing joints; for disposing of surplus excavation material and restoring the work site; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work. Payment also includes providing tie bars in unhardened concrete. For tie bars provided in concrete not placed under the contract, the department will pay separately under the Drilled Tie Bars bid item as specified in standard spec 416.5.

25. Cure and Seal Treatment Concrete Curb and Gutter, Item SPV.0090.02.

A Description

This special provision describes treating all newly constructed concrete curb and gutter with a surface cure and seal treatment as shown on plans, and as hereinafter provided.

B Materials

Furnish material conforming to ASTM C1315, ASTM C309, and AASHTO M148 specifications and be produced by a manufacturer on the approved list.

C Construction

Application rates for the treating material shall be according to the manufacturer’s specifications.

D Measurement

The department will measure Cure and Seal Treatment Concrete Curb and Gutter by the linear foot, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.02	Cure and Seal Treatment Concrete Curb and Gutter	LF

Payment is full compensation for furnishing and applying cure and seal treatment concrete curb and gutter.

26. Marking Removal Line Water Blasting Crosswalk 6-Inch, Item SPV.0090.03.

A Description

This special provision describes removing existing crosswalk pavement markings as shown on plans, and as hereinafter provided.

B (Vacant)

C Construction

Perform work according to standard spec 646.3.1.4(3).

D Measurement

The department will measure Marking Removal Line Water Blasting Crosswalk 6-Inch by the linear foot, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.03	Marking Removal Line Water Blasting Crosswalk 6-Inch	LF

Payment is full compensation for removing the marking and for resealing areas of clear protective surface treatments on structures.

27. Furnish and Install Battery Back-Up System STH 35 & STH 105, SPV.0105.01.

A Description

This specification describes furnishing and installing an uninterruptible power supply (UPS) and fully equipped cabinet to provide a battery back-up system (BBS) for traffic signal control applications at the intersection of STH 35 & STH 105.

B Materials

B.1 General

Furnish a BBS that will provide uninterruptible reliable emergency power to a traffic signal system in the event of a power failure or interruption. The BBS shall be capable of providing power for full run-time operation and for flashing mode operation of all traffic signals at an intersection. The BBS system shall have a shelf mounted configuration and shall include:

- Inverter/charger
- internal power transfer switch
- tap switching transfomer
- automatic bypass switch
- manually operated bypass transfer switch
- all auxiliary equipment, hardware, and wiring to provide a complete operating BBS system
- cabinet and cabinet equipment, including mounting hardware
- battery management system, including batteries

Design the system for outdoor applications and meet the environmental requirements of NEMA Standards Publication TS2 – 2003v02.06 – Traffic Controller Assemblies with NTCIP Requirements, except as modified herein. The system shall be capable of receiving power from a generator.

Configure the BBS to provide a minimum of two hours of full run-time operation for an intersection using LED traffic signals, LED pedestrian signals, and LED blank out message signs with a total operating load of 1500 watts minimum.

B.2 Features

The UPS shall be an inverter/charger complying with UL 1778.

When utilizing battery power, the BBS output voltage shall be between 110 VAC and 125 VAC, pure sine wave output with THD < 3% at 60 Hz +/- 3 Hz.

Provide buck and boost capability to provide constant output voltage without battery input.

The range of operating temperatures for the inverter/charger shall be -34° C to +74° C.

The UPS shall be fully programmable and controllable, both locally using the UPS touch pad and remotely using a standard personal computer USB interface with a Windows operating system, including all UPS features listed in this specification; all settings, controls, logs, tests, and counters; and all other electronic features.

Provide a backlit LCD display to indicate current battery charge status, input/output voltages, power output, battery temperature, faults, alarms, date, time, and settings of the various relays.

The UPS shall be fully SNMP Ethernet ready, including a RJ-45 (also known as an 8P8C) Ethernet connector port.

Provide on the UPS a resettable inverter event counter and a cumulative inverter timer.

All controls and external connections shall be on the front panel. The UPS unit shall sit horizontally on a shelf. Orient all controls and labels to read horizontally.

Provide lightning/ surge protection complying with ANSI/IEEE C.62.41 and C.62.45 Cat A & B and UL 1449.

Equip the UPS with an event log for at minimum the last 100 events. The events shall be time and date stamped. The event log shall be retrievable via the USB port and the last event in the log shall be viewable from the LCD screen.

The UPS shall be capable of performing a SELF-TEST of the BBS. The duration of the SELF-TEST shall be programmable in 1-minute increments from one minute to four hours.

The operation of the flash mode shall be field programmable to activate at various times, battery capacities, or alarm conditions.

Provide password protection for certain maintenance controls such as Battery Test, BBS inverter ON/OFF, viewing the Event log, and changing default settings. Furnish the UPS with a default password and the ability for the user to change the password.

Use the following LED lights conditions to indicate current status:

Red LED	Flashing for ALARM
Red LED steady ON	for FAULT
Green LED Flashing	for battery back-up mode
Green LED steady ON	for normal line mode operation

Provide on the UPS at least four sets of NO / NC panel-mounted and potential free contact relays rated 1 Amp, 120 VAC, and labeled 1 through 4. Each relay's setting shall be either preset or programmable to activate under any number of conditions. The available settings for the relays shall be:

ON BATTERY – relay activates when BBS switches to battery power.

LOW BATTERY – relay activates when batteries have reached a certain level of remaining useful capacity while on battery power. This number is adjustable by battery voltage.

TIMER – relay activates after being on battery power for a given amount of time. This number is adjustable from 0 to 8 hours.

UPS FAILURE – relay activates in the event of UPS inverter/charger failure to be able to run according to these specifications.

B.3 Battery Requirements

Battery String Voltage	48 Vdc
<u>Input Specifications</u>	
Nominal Input Voltage	120 VAC, Single Phase
Input Voltage Range	120 VAC +/- 25%
Input Frequency	60 Hz +/- 5%
<u>Output Specifications</u>	
Nominal Output Voltage	120 VAC, Single Phase
Power Rating	2000 VA minimum at 25° C (1500 Watts at 74° C)

Output Frequency	60 Hz (+/- 3%)
Voltage Wave Form	Pure Sine Wave, THD < 3.0%
Efficiency (nominal)	Minimum 85% at 100% load

B.4 Switches

The four switches listed in this section may be in separate units or may be integrated into one or more units.

The range of operating temperatures for all switches shall be -34° C to +74° C.

B.4.1 Automatic Transfer Switch

Provide an automatic transfer switch to transfer the critical load to the UPS when the utility line fails or is out of tolerance range. The transfer from utility power to battery power shall not interfere with the normal operations of the traffic controller, conflict monitor, or any other peripheral devices within the traffic control system. The automatic transfer switch shall automatically disconnect the battery heater pads when the critical load is operating from the UPS.

Input / Output Specifications

Nominal Voltage	120 VAC, Single Phase
Voltage Range	92 to 135 VAC
Input Frequency	60 Hz +/- 5%
Current	20 A minimum

B.4.2 Automatic Bypass Switch

Furnish an automatic bypass switch to transfer the critical load to the utility line if there is a fault on the UPS, if there is battery failure, and upon complete battery discharge. The transfer from battery power to utility power shall not interfere with the normal operations of the traffic controller, conflict monitor, or any other peripheral devices within the traffic control system.

Input / Output Specifications

Nominal Voltage	120 VAC, Single Phase
Voltage Range	92 to 135 VAC
Input Frequency	60 Hz +/- 5%
Current	20 A minimum

B.4.3 Manual Bypass Switch

Furnish a manual bypass switch to provide a mechanical bypass of the UPS without any interruption of power to the intersection.

Input / Output Specifications

Nominal Voltage	120 VAC, Single
Phase Voltage Range	92 to 135 VAC
Input Frequency	60 Hz +/- 5%
Current	20 A minimum

B.4.4 Generator Transfer Switch

Furnish a generator transfer switch to automatically transfer the input to the UPS from the utility line to a portable AC generator. The switch shall break both line and neutral to the utility, and prevent back-feeding the utility lines.

Input / Output Specifications

Nominal Voltage	120 VAC, Single Phase
Voltage Range	92 to 135 VAC
Input Frequency	60 Hz +/- 5%
Current	20 A minimum

B.5 Other Equipment

Furnish all equipment, mounting hardware, wire, cable, fasteners, and connectors not otherwise specified to provide a complete and operational BBS, including but not limited to, the cable connections to the batteries.

B.6 Operation

B.6.1 Loss / Restoration of Utility Power

The BBS shall transfer the load to battery power when the utility line voltage is outside the High and Low Limits. Set the default high and low limits as 130 and 100 VAC, respectively. Operate in the Buck and Boost modes for partial line voltage correction.

For the low line voltage condition, the BBS shall return to line mode when the utility power has been restored to above 105 VAC for the specified line qualification time. This line qualification time shall be user adjustable from 3 to 30 seconds.

For the high line voltage condition, the BBS shall return to line mode when the utility power has been restored to below 125 VAC for the specified line qualification time. This line qualification time shall be user adjustable from 3 to 30 seconds. In cases where the nominal voltage is between 125 and 130 VAC, the BBS shall return to line mode when the utility power is back to nominal.

The maximum transfer time allowed, from disruption of normal utility line voltage to stabilized inverter line voltage from batteries, shall be 65 milliseconds. The same maximum allowable transfer time shall also apply when switching from inverter line voltage to utility line voltage.

B.6.2 Battery Operation

In the event of UPS failure, battery failure, or complete battery discharge, the automatic power transfer switch shall revert to the NC (and de-energized) state, where utility power is supplying the cabinet.

Provide a temperature compensated battery charging system. The charging system shall compensate over a wide range of 2.5 to 4 mV / °C / Cell. The charger shall be rated 10 amps at 48 VDC. Batteries shall not be charged when battery temperature exceeds manufacturer’s recommendations for the specific batteries being used. The charging system shall fully recharge the batteries within 20 hours.

B.7 Product Compatibility

The BBS shall be compatible with all of the following for full phase operation mode, flash operation mode, or a combination of both full and flash mode operation:

- Type 2070 controllers and cabinet components
- NEMA TS1 controllers and cabinet components
- NEMA TS2 controllers and cabinet components

The complete BBS system including batteries shall fit inside and be compatible with a NEMA type traffic control cabinet of minimum size 26-inch wide X 40-inch high X 13-inch deep and maximum size 32-inch wide X 51-inch high X 18-inch deep, with minimum 3- inches in the front and minimum 1-inch air space on the top, back, and sides of a shelf mounted UPS.

B.8 Electrical Protections

The BBS shall be equipped to prevent a malfunction feedback to the cabinet or from feeding back to the utility service per UL 1778, Section 48 "Back-feed Protection Test". The upstream back-feed voltage from the BBS system shall be less than 1 volt AC.

B.9 Maintenance

The individual BBS parts shall be easily replaced and installed (complete turnkey system with all necessary hardware). The BBS shall not require any special tools for removal or installation.

B.10 Cabinet

Furnish a non-ground mounted, aluminum, outdoor rated, NEMA type 3R traffic control cabinet of minimum size 26-inch wide X 40-inch high X 13-inch deep and maximum size 32-inch wide X 51-inch high X 18-inch deep. The size of the cabinet shall be of sufficient size to provide ample space for housing all equipment specified herein, all equipment furnished with the Wisconsin Department of Transportation (department) Uninterruptible Power Supply (UPS) specification, and all batteries. Provide a minimum clear space of 3-inches in the front of a shelf mounted UPS, and minimum 1-inch on both sides, back, and top of the UPS. Slope the top of the cabinet towards the door with a 2-inch drip lip over the door and

cabinet front. All sheet metal parts shall be 0.125-inch thick aluminum of type 5052-H32. All seams shall be continuously welded.

Provide an access door on the front of the cabinet with a continuous hinge, door latch assembly with 3-point locking mechanism, #2 Corbin lock, dust cap, and two #2 keys. The door shall have a closed-cell neoprene gasket on all four edges. The continuous hinge shall be heavy gauge aluminum with ¼-inch diameter stainless steel hinge pin. Secure hinge with ¼-inch X 20 TPI stainless steel carriage bolts and stainless steel nylon locking nuts. The 3-point locking system shall have ½-inch X ¼-inch X length required latch bars and nylon rollers. Door handle shall be a ¾-inch solid stainless steel inward-turning handle with provisions for padlocking. Provide a steel rod door holder. All hardware shall be stainless steel, unless otherwise specified.

Provide ventilation louvers on the front of the cabinet of sufficient open area to provide air flow for the cabinet fan. Provide a ½-inch air filter over all the louver area. Air filter shall slide into a channel and shall be easily removed and replaced.

Provide installed a minimum of three full width and depth, aluminum shelves sufficient to hold all equipment furnished with the department's Uninterruptible Power Supply specification, and all batteries. All shelves shall have neoprene (or similar material) pads. The shelves shall not be the swing out type. The shelf locations shall be adjustable to within 6 inches of the top of the cabinet and 12 inches from the bottom of the cabinet. The shelves shall be capable of supporting up to 180 pounds.

B.11 Cabinet Equipment

Provide and install a power distribution terminal block for wire connections, wire size up to #8AWG, from the traffic signal cabinet. Locate the block on one side of the UPS cabinet between one and two feet from the top of the cabinet.

Provide a generator connection outlet installed on one side of the cabinet placement shall not interfere with the installation or use of batteries, UPS, or any switches.

Ventilate the UPS cabinet by means of an installed 120 VAC, 60HZ, tube axial compact type fan. The fan's free delivery airflow shall be greater than 2.83 cubic meters per minute. The magnetic field of the fan motor shall not affect the performance of control equipment. The fan bearings shall operate freely. The fan unit shall not crack, creep, warp, or have bearing failure within a 7-year duty cycle. The maximum noise level shall be less than 40 decibels. The fan unit shall be corrosion resistant. The fan shall be thermostatically controlled. Thermostat shall be set to manufacturer required settings. The fan shall be fused.

Provide a temperature sensor bonded to the pad, electrical power cord, and a thermal fuse in each power cord.

Provide a battery voltage balancer, battery cable for each battery, and interface cable of the size compatible with the battery string.

In all controller cabinets and auxiliary cabinets, the AC common, the logic ground, and the chassis ground shall be isolated from each other as detailed by NEMA Standard.

Each 120 VAC circuit that serves an inductive device, such as a fan motor or a mechanical relay, shall have a suppressor to protect the controller's solid state devices from excessive voltage surges. Such suppressors shall be in addition to the surge protector at the input power point.

B.12 Batteries

Furnish four batteries for each cabinet from one of the following batteries:

- Alpha – AlphaCell 220GXL
- Power Battery – TG12110S (Traffic Grid Series of VRLA)
- C&D Technologies – UPS12-400MR

Batteries shall be newly built and fully charged when delivered.

B.13 Equipment Installation

Install the furnished BBS, batteries, and battery equipment according to manufacturer's requirements. Bolt the BBS cabinet firmly to the back or side of the traffic signal control cabinet at the direction of the department as required by the design of each signal cabinet. Use a minimum of four bolts of the size recommended by the BBS cabinet manufacturer. Use fender washers on the inside of both cabinets. Use all stainless steel hardware.

Furnish and install from the electrical service to the BBS cabinet and back to the signal cabinet, the larger of 1) #10 AWG, 600 volt, electric wire, 2) the wire size recommended by the UPS manufacturer, 3) the largest size wire used in the signal cabinet for the power connections, or 4) the wire size required by WSEC. Install the wire through a ¾-inch hole drilled between the cabinets and install two ¾-inch bushings in the hole. Provide grounding, suppressors and lightning arrestors according to the WSEC requirements.

Program and/or enter configuration settings for the equipment and make the equipment fully operational.

B.14 Certification

Provide a written certification with the cabinet delivery that the equipment meets the requirements of the plans and specifications and will fully operate the traffic signal cabinet. The certification shall be on the contractor's company letterhead, shall be addressed to both the department and the construction contractor, if there is one, and shall be signed by a company officer authorized to legally obligate the company. Cabinet testing and quality control documents may accompany the certification.

B.15 Documentation

Submit detailed equipment layout drawings and inter-equipment wiring diagrams furnished under this specification to the City of Superior for approval. Two sets of approved equipment layout drawings and inter-equipment wiring diagrams shall be contained in a heavy-duty clear plastic envelope mounted on the inside of the front door.

For the cabinet and cabinet equipment, at the time of the delivery, furnish two printed sets, and one .pdf file on a CD-ROM or flash drive, of cabinet installation, operations, and maintenance manuals per cabinet and an itemized price list for each type of equipment, and their replacement parts. The manuals shall as a minimum include the following information: a) table of contents, b) operating procedure, c) step-by-step maintenance and troubleshooting information for the entire assembly, d) part numbers, and e) maintenance checklists. Also provide two prints and the .dgn or CADD file of the as-built cabinet design and layout.

For the installed equipment, at the time of the delivery, furnish two printed sets, and one .pdf file on a CD-ROM or flash drive, of equipment installation, operations, and maintenance manuals per cabinet and an itemized price list for each type of equipment, their sub-assemblies, and their replacement parts. The manuals shall as a minimum include the following information for each piece of equipment: a) table of contents, b) startup procedure, c) operating procedure, d) step by step maintenance and trouble-shooting information for the entire assembly, e) circuit wiring diagrams, f) pictorial diagrams of parts locations, g) part numbers, h) theory of operation, and i) maintenance checklists. The instructional manuals shall include an itemized parts list. The itemized parts list shall include the manufacturer's name and part numbers for all components (such as IC's, diodes, switches, relays, etc.) used in each piece of equipment. The list shall include cross-references to part numbers of other manufacturers who make the same replacement parts. Also provide the .dgn CAD files for the equipment layout drawings and inter-equipment wiring diagrams.

B.16 Warranty

The BBS System shall include a five-year manufacturer warranty on parts and labor on the entire BBS System, including batteries, to the City of Superior when utilizing the BBS manufacturers own designed enclosure, meeting the above cabinet specifications.

Should the City decide not to use the enclosure provided by the BBS manufacturer, the manufacturer shall provide a three-year manufacturer warranty on parts and labor on the BBS Inverter Module only.

The BBS manufacturer shall provide a 5-year unconditional full replacement warranty for every battery installed under this specification. Under the warranty time period, the battery must provide a minimum of 70% of its original capacity; otherwise it will be considered to be non-compliant to the warranty and replaced by the BBS manufacturer at no cost to the City or department.

C Construction

Install the battery backup cabinet on the side of the controller cabinet. Wire the battery backup system to the controller cabinet per the manufacturers recommendation. After installation have a manufacturer representative verify that the system is functioning properly.

D Measurement

The department will measure Furnish and Install Battery Back-Up System STH 35 & STH 105 as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.01	Furnish and Install Battery Back-Up System STH 35 & STH 105	LS

Payment is full compensation for furnishing and installing the UPS together with cabinet, switches, batteries, and fittings as are necessary to assure that the battery back-up system will perform the said functions; and for certifications, field testing, warranties, and making the battery back-up system fully operational with the traffic signal cabinet in the field.

28. Traffic Signal Cabinet and Controller STH 35 & STH 105, Item SPV.0105.02.

A Description

This special provision describes furnishing and installing a fully equipped and operational NEMA TS2 Type 1 traffic signal control cabinet.

B Materials

B.1 General

Furnish and install equipment and assemble the cabinet conforming to the latest revision of NEMA Standards Publication TS 2-2003, *Traffic Controller Assemblies with NTCIP Requirements*, National Electrical Manufacturers Association, hereinafter called NEMA TS2 Standard, except where modified in this specification. All work shall conform to the Wisconsin State Electrical Code (WSEC). All work shall conform to standard spec 651, 2020 Edition, as supplemented or modified in this specification.

Provide cabinets designed for TS2 Type 1 operation. Pre-wire cabinets for a minimum of sixteen phases as specified herein.

The traffic signal controller shall be an Econolite ASC/3.

Furnish and install at no extra cost any equipment and materials not specifically described but required in order to perform the intended functions in the cabinet.

Install the cabinet on the foundation and terminate all connections. Test for correct operation.

Provide the project plans and specifications to the traffic signal controller and cabinet supplier at least 18 weeks prior to scheduled field installation. Coordinate with the traffic signal controller and cabinet supplier to schedule the cabinet delivery date and time to the project site location. Notify the City of Superior Public Works Department at (715) 395-7334 at least five working days prior to cabinet delivery.

Coordinate directly with the traffic signal controller and cabinet supplier to schedule the cabinet acceptance testing. Notify the City of Superior Public Works Department at (715) 395-7334 and participate in the acceptance testing. The City of Superior has the final determination of the cabinet acceptance testing date and time. The acceptance testing procedures will be provided by the City of Superior.

The owner will not be responsible for project delays and costs due to the delays of delivery by the supplier or by the failure of the traffic signal controller and cabinet to pass acceptance testing.

Provide all other needed materials in conformance with standard spec 651.2, 652.2, 653.2, 654.2, 655.2, 656.2, 657.2, 658.2 and 659.2.

B.2 Cabinet

B.2.1 Cabinet Design

Furnish a door-in-door ground mounted (without anchor bolts) aluminum cabinet of clean-cut design and appearance. Provide a cabinet of minimum size 44 inches wide, minimum 24 inches deep, and minimum 52 inches to maximum 60 inches high. The size of the cabinet shall provide ample space for housing the controller, all of the associated devices which are to be furnished with the controller, all other auxiliary devices herein specified, and all equipment to be furnished as listed in the materials section of this specification.

The cabinet shall comply with the environmental and operating standards outlined in the NEMA TS2 Standard. The cabinet shall provide reasonable vandalism protection. The cabinet shall have a NEMA 3R rating.

Construct the cabinet from type 5052-H32 aluminum with a minimum thickness of 0.125 inches. Furnish the cabinet with a natural, uncoated, aluminum finish inside and outside. Continuously weld all seams. The surface shall be smooth, free of marks and scratches. Use stainless steel for all external hardware.

On the top of the cabinet, incorporate a 1-inch slope toward the rear to prevent rain accumulation. Incorporate a rain channel into the design of the main door opening to prevent liquids from entering the enclosure.

Include an exhaust plenum with a vent screen into the roof of the cabinet. Perforations in the vent screen shall not exceed 0.125 inches in diameter.

Equip the lower section of the cabinet door with a louvered air entrance. The air inlet shall be large enough to allow sufficient air flow per the rated fan capacity. Louvers must satisfy the NEMA rod entry test for Type 3R ventilated enclosures. Secure a washable, fiberglass, removable air filter to the air entrance. The filter shall fit snugly against the cabinet door wall.

Attach an aluminum, easily removable, gasketed cover over the air filter and louver.

B.2.2 Doors

The cabinet door opening shall be a minimum of 80 percent of the front surface of the cabinet. The main door and police door-in-door shall each close against a weatherproof and dust-proof, closed-cell neoprene gasket seal. The gasket material for the main door shall be a minimum of 0.188 inches thick by 1.00 inch wide. The gasket material for the police door shall be a minimum of 0.188 inches thick by 0.500 inches wide. Permanently bond the gaskets to the cabinet.

Equip the main door with a three-point latching mechanism. The upper and lower locking points of the latching mechanism shall each have a pair of nylon rollers. The handle on the main door shall utilize a shank of stainless steel 3/4 inches minimum diameter. The handle shall include a hasp for the attachment of an optional padlock. The cabinet door handle may turn either clockwise or counterclockwise to open and shall not extend outwards past the edge of the door at any time. Position the lock assembly so the key will not cause any interference with the handle, or a person's hand on the handle, when opening the cabinet door.

Include on the main door a solid stainless steel rod stop and catch mechanism capable of rigidly holding the door open at approximately 90, 120, and 180 degrees under windy conditions. The operator must be able to engage and disengage the catch with a shoed or booted foot.

The main door hinge shall be a one-piece, continuous piano hinge with a minimum 0.25 inch stainless steel pin running the entire length of the right side of the door (right-handed). Attach the hinge in such a manner that no rivets or bolts are exposed.

Equip the main door with a brass Corbin tumbler lock No. 2, swing away dust cap, and provide two keys No. 2. Equip the police door-in-door with a standard police lock and provide one key.

Electrically bond the door to the rest of the cabinet with a braided copper grounding conductor. The length of the grounding conductor shall allow the door to swing fully open, without using the stop bar, without stretching or breaking the grounding conductor. The grounding conductor shall not interfere with normal door operation.

Provide a door switch for the main cabinet door. When the door is opened the switch shall send a signal to the controller sufficient for the controller to log an alarm.

B.2.3 Shelves and Mounting

Mount a minimum of three vertical "C" channels, compatible with Unistrut channel nuts, on each interior side wall of the cabinet for the purpose of mounting the cabinet components. The channels shall accommodate spring mounted nuts or studs. Install three vertical "C" channels or three slotted rails on the interior back wall of the cabinet. All mounting channels and rails shall extend to within 7 inches of the top and bottom of the cabinets and shall be of sufficient strength to rigidly hold specified shelves and equipment.

Provide two full-width, 11-inch deep, fully adjustable, aluminum shelves to support the controller and other equipment. Mount the lower shelf at a height above the bottom of the cabinet such that the shelf and attached drawer does not interfere with the ability to tilt the terminal facility forward on its hinges for maintenance purposes. Mount the top shelf at least 13 inches above the surface of the lower shelf.

Locate the controller and MMU on the top shelf. Locate the loop detector racks and other auxiliary equipment on the lower shelf. The power supply may be mounted on either shelf.

Provide an under-shelf drawer under the lower shelf. The drawer shall be approximately 20 inches wide and the full depth of the shelf. The drawer shall operate easily and smoothly and shall have a stop to prevent inadvertently pulling the drawer out of its support. Design the stop to allow purposeful complete removal of the drawer without the use of tools.

B.2.4 Auxiliary Cabinet Equipment

Ventilate the cabinet by means of a 120 VAC, 60HZ, tube axial compact type fan located in the top of the cabinet plenum. The fan's free delivery airflow shall be equal to or greater than 100 cubic feet per minute. The magnetic field of the fan motor shall not affect the performance of control equipment. The fan bearings shall operate freely. The fan unit shall not crack, creep, warp, or have bearing failure within a seven year duty cycle. The maximum noise level shall be less than 40 decibels. The fan unit shall be corrosion resistant. The thermostat's turn on setting shall be adjustable from 90 to 120 degrees F. The fan shall run until the cabinet temperature decreases below the turn-on temperature setting by approximately 30 degrees F. The fan shall be fused.

Mount an incandescent lamp and socket in the cabinet to sufficiently illuminate the field terminals. Wire the lamp to a 15-amp ON/OFF toggle switch mounted on the rear cover of the police panel as specified in the Cabinet Switches section of this specification.

Provide a 250 watt element heater. Install the heater on the face of the aluminum, louvered air filter cover such that feed air is supplied through the cover. Provide a protective, ventilated cover over the heater. Provide a cord and twist-off plug to an electrical receptacle on the cabinet door. Provide a thermostat with an adjustable setting from 0 to 100 degrees F. Install the thermostat on the interior ceiling of the cabinet well away from the cabinet light or any heat source. Provide a thermal limit switch to prevent the heater's protective cover from exceeding 170 degrees F.

B.3 Terminals and Facilities

B.3.1 Terminal Facility

The terminal facility panel shall be constructed from 5052-H32 brushed aluminum of 0.125 inches minimum thickness and formed so as to eliminate any flexing when plug- in components are installed.

Mount the bottom of the terminal facility a minimum of nine inches from the bottom of the cabinet. Hinge the terminal facility at the bottom to allow easy access with simple tools to all wiring on the rear of the panel. It shall not be necessary to remove the lower shelf, the shelf drawer, or any shelf-mounted equipment to hinge down the terminal facility. Provide sufficient slack in the load bay wiring to allow for dropping the load bay.

Fully wire the terminal facility with 16 load switch sockets: 8 phases of vehicular, 4 phases of pedestrian, and 4 phases of overlap operation; 8 flash transfer relay sockets; 1 flasher socket; and 2 terminal facility BIU rack slots. The use of printed circuit boards is not acceptable on the terminal facility, except printed circuit boards are acceptable for the BIU interface with the load bay. Position the 16 load switch sockets in two horizontal rows of 8 sockets each. Support the load switches and flasher by a bracket or shelf extending at least 3 inches from the terminal facility.

Label all terminals, load switches, and flash transfer relay sockets. Label reference designators by silk-screening on the front and rear of the terminal facility to match drawing designations.

Provide rack mounted BIU's. Provide a dual-row, 64-pin female DIN 41612 Type B connector for each BIU rack position. Provide card guides for both edges of the BIU. Terminal and facilities BIU mounting shall be an integral part of the terminal facility.

Provide two 16-channel, 8-position, TS2 detector racks, with an integrally mounted BIU mounting. The rack shall be addressable. Power the detector rack by the cabinet power supply. Fasten the loop detector rack towards the left side of the lower shelf.

For BIU rack connectors, provide pre-wired address pins or jumper plugs corresponding to the requirements of the NEMA TS2 Standard. The address pins or jumper plugs shall control the BIU mode of operation. BIUs shall be capable of being interchanged with no additional programming.

For the terminal facility, contain all field wires within one or two rows of horizontally- mounted Marathon heavy duty terminal blocks. Terminate all field output circuits on an unfused terminal block with a minimum rating of 10 amps. Use mechanical connector lugs rated for copper wire. Angle the lower section of the terminal block out from the back of the cabinet at approximately a 45 degree angle.

Identify all field input/output (I/O) terminals by permanent alphanumeric labels. All labels shall use standard nomenclature per the NEMA TS2 Standard.

All field flash sequence programming at the field terminals shall be able to be accomplished with the use of only a screwdriver.

Wire field terminal blocks to use three positions per vehicle or overlap phase (green, yellow, red).

Wire one RC network in parallel with each flash transfer relay coil.

Permanently label all logic-level, NEMA-controller and MMU input and output terminations on the terminal facility. Identity the function of each terminal position on the cabinet drawings.

Terminal blocks for DC signal interfacing shall have a number 6-32 x 7/32 inch screw as minimum. Functions to be terminated shall be as specified in the listing of Input/ Output Terminals in Section 5 of the NEMA TS2 Standard.

Conform all terminal facility and cabinet wiring to the WSEC. The green/ walk, yellow, and red/don't walk load switch outputs shall be minimum 16 gauge wire. The MMU (other than AC power), controller I/O, and logic ground shall be minimum 22 gauge wire. All wire colors shall be consistent.

B.3.2 Auxiliary Panels

B.3.2.1 Vehicle Detection Interface Panel

Provide a 32-position interface panel or two 16-position panels. Each interface panel shall allow for the connection of 32 or 16 independent field loops, respectively. The panels shall have barrier strip type terminals using 8-32 screws and be rated for 20 inch pounds of torque.

Provide a ground bus terminal between each loop pair terminal to provide a termination for the loop lead-in cable ground wire. Secure the interface panels to a mounting plate attached to the left interior side wall of the cabinet. Provide a cable consisting of 20 AWG twisted pair wires to enable connection to and from the interface panel to a detector rack. The twisted pair wires shall be color-coded wires. Provide a cable of sufficient length to allow the detector rack to be placed on either shelf.

Identify all termination points by a unique number silk screened on the panel.

B.3.2.2 Intersection Lighting

Provide an intersection lighting control panel as described. The intersection lighting control panel shall consist of an aluminum panel 0.125 inches thick and approximately 5 inches by 10 inches. Determine the actual panel size by the cabinet's mounting rail placement. Attach to the panel a 2 pole-30 amp contactor-120vac coil (Square D #8910DPA32V02 or equal), and a heavy duty six position terminal block (Marathon DJ1606 or equal). Use wire sizes 10AWG for power and load wiring, and 16AWG for control wires. Wire the terminal strip as follows:

- Control coil
- L1 in
- L2 in
- Neutral in and control coil
- L1 out
- L2 out

Protect each output by a MOV (V150LA20A) wired between the output and neutral. Include a photo control (Intermatic #K4021C or equal). Mount the photo control just above the cabinet door and approximately 12 inches from the right side of the cabinet. Wire the photo control to a 3 position terminal strip using 16AWG wire color coded to match the photo control wiring connected to the intersection lighting control panel.**B.3.3**

Conductors and Cabling

All conductors in the cabinet shall be copper 22 AWG or larger. All 14 AWG and smaller wire shall conform to MIL-W-16878/1, Type B, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation without clear nylon jacket and rated to 105 degrees Celsius. All 12 AWG and larger wire shall be UL or NRTL listed THHN/THWN 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation, and clear nylon jacketed.

Provide controller and MMU cables of sufficient length to allow the units to be placed on either cabinet shelf in the operating mode. Connecting cables shall be sleeved in a braided nylon mesh. Exposed tie-wraps and interwoven cables are unacceptable.

Provide the cabinet configuration with enough SDLC RS-485 Port 1 communication cables to allow full capabilities of that cabinet. Each communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS-485 communications. Secure all connecting cables and wire runs by mechanical clamps. Stick-on type clamps are not acceptable.

Pre-wire the terminal facility for a Type 16 MMU. All wiring shall be neat in appearance. Stow excess cable behind the terminal facility or below the shelves in order to allow easy access to the terminal facility and cabinet components. All cabinet wiring shall be continuous from its point of origin to its termination point. Butt type connections/splices are not acceptable.

Wire the grounding system in the cabinet into three separate circuits: AC Neutral, Earth Ground, and Logic Ground.

Optoisolate all pedestrian pushbutton inputs from the field to the controller through the BIU and operate at 12 VAC.

Hook or loop all wire, size 16 AWG or smaller, at solder joints around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable.

B.3.4 Cabinet Switches

Locate the following switches on a maintenance panel on the inside of the cabinet door:

- Controller On/Off
- Cabinet Light
- Stop Time (Three Position)
- Manual Detector Switches (Three Position)

Position	Switch	Label Function
Upper	Stop Time	Place stop time on the controller
Center	Run	Remove the stop time input to the controller
Lower	Normal	Connects the MMU to the controller stop time input

Locate the following switches behind the police access door:

- Signal/Off
- Flash/Normal
- Hand/ Auto
- Coiled hand control and cable

The above switches shall function as follows:

- Off: Signals Dark
- Signal: Signals On and operating as follows:
- Flash: Signals Flash
- Normal: Normal signal operation
- Hand: Signals advance by use of hand control
- Auto: Signal advance by programmed operation.

Provide manual detector switches. Provide a minimum of 16 vehicle detector switches, and four pedestrian detector switches. The switches shall be spring loaded and automatically return to the center position. Wire the vehicle detector switches to detector BIU slot 1. Wire the pedestrian switches to the T&F BIU slot 1. The switches shall operate as follows:

Position	Function Up
Up	Detector Disabled
Center	Center Detector Enabled
Down	Down Detector Called

B.4 Power Panel

B.4.1 Power Panel Design

The power panel shall consist of a separate module, securely fastened to the interior right side wall of the cabinet. Wire the power panel to provide the necessary power to the cabinet, controller, MMU, cabinet power supply, and all auxiliary equipment. Manufacture the power panel from 0.090-inch, 5052-H32 aluminum. Panel layout shall facilitate field inspection and maintenance accessibility without excessive disassembly or special tools.

Provide a light, tough, transparent, weather-resistant, non-yellowing, thermoplastic cover, rigidly mounted over the full power panel, with access holes for circuit breakers and other equipment, and open on the sides for ventilation.

B.4.2 Bus Bar

Provide a minimum 20-position neutral bus bar capable of connecting three #12 AWG wires per position.

B.4.3 Circuit Breakers

House in the power panel the following vertically mounted, single pole, 120 volts AC, 60 Hertz, circuit breakers, with the ON position being up:

- One 30-amp signal breaker. This breaker shall supply power for all cabinet functions not powered through one of the other breakers or fuses listed below. This breaker shall feed a signal bus supplied through a solid state bus relay and a radio interference line filter. The bus relay, in all cases, shall be a solid state contactor and shall not be jack mounted. Breakers shall be thermal magnetic type, UL or NRTL listed, with a minimum of 22,000 amp interrupting capacity.
- One 30-amp breaker for streetlighting.
- One 15-amp auxiliary breaker. This breaker shall supply power to the fan and heater.
- One 10-amp breaker. This breaker shall supply power for control equipment: controller, MMU, and cabinet power supply.
- One 20-amp circuit breaker for future use.

Power the cabinet light through the GFI fuse, not a circuit breaker.

B.4.4 Radio Interference Suppressor

Equip each control cabinet with a single radio interference suppressor (RIS) of sufficient ampere rating to handle the load requirements. Install the RIS at the input power point. The RIS shall minimize interference in both the broadcast and the aircraft frequencies and shall provide a maximum attenuation of 50 DB over a frequency range from 200 KHZ to 75 MHZ, when used in connection with normal installations. The RIS shall be hermetically sealed in a substantial metal case filled with a suitable insulating compound. The terminals shall be nickel-plated brass studs of sufficient external length to provide space to connect two #8 AWG wires and shall be so mounted that they cannot be turned in the case. Ungrounded terminals shall be properly insulated from each other and shall maintain a surface leakage distance of not less than 6.35 mm between any exposed current conductor and any other metallic parts. The terminals shall have an insulation factor of 100-200 megohms dependent upon external conditions. The RIS shall be rated at minimum 50 amperes. Design the RIS for operation on 115 VAC +/- 10%, 60HZ, singlephase circuits, and to meet the standards of UL or a NRTL and Radio Manufacturer's Association.

B.4.5 Bus Relay

Provide a normally-open, 60 amp, solid state relay.

B.4.6 Surge Protector

Install a plug-in type EDCO SHA-1250, or Atlantic/Pacific approved equal, surge protector across the load terminal of the 10-amp circuit breaker. Install a General Electric Varistor, catalog #V130PA20A, at the load terminals of the circuit breaker from the hot line to the grounded current carrying neutral conductor.

B.4.7 Power Receptacles

Mount a 120 VAC 20 amp, NEMA 5-20R GFCI convenience outlet at each of these two locations:

- On the interior right side wall above the power panel. The outlet shall be fully operational, and fuse protected.
- Near the power panel where it will not interfere with power panel maintenance. This outlet is to be wired by field installation personnel.

B.4.8 Suppressors and RC Network

Provide a suppressor for each 120 VAC circuit that serves an inductive device, such as a fan motor or a mechanical relay, to protect the controller's solid state devices from excessive voltage surges. Such suppressors shall be in addition to the surge protector at the input power point.

Wire one RC network in parallel with each inductive device.

B.5 Auxiliary Devices

B.5.1 Load Switches

Provide 16 solid state load switches conforming to the requirements of section 6.2 of the NEMA TS2 Standard.

B.5.2 Flashers

Provide one solid state flasher conforming to the requirements of section 6.3 of the NEMA TS2 Standard.

B.5.3 Flash Transfer Relays

Provide four flash transfer relays conforming to the requirements of section 6.4 of the NEMA TS2 Standard.

B.5.4 Inductive Loop Detector Units

Provide inductive loop detector units conforming to the requirements of section 6.5 of the NEMA TS2 Standard for 2-channel, rack mount detector units, type C.

B.5.5 Cabinet Power Supply

Provide one cabinet power supply with each cabinet conforming to the requirements of section 5.3.5 of the NEMA TS2 Standard. Provide LED indicators for the 12 VDC, 12 VAC, and 24 VDC outputs. Provide jack plugs on the front panel for access to the +24 VDC for test purposes.

B.6 Bus Interface Units (BIU)

Provide three BIUs conforming to the requirements of section 8 of the NEMA TS2 Standard. Provide two BIUs with the main panel and one BIU with one of the detector racks.

B.7 Malfunction Management Unit (MMU)

Provide one shelf-mountable, 16 channel, solid-state MMU with Ethernet capability. The MMU shall meet the requirements of Section 4 of the NEMA TS2 Standard. The MMU shall be capable of the following:

- Detecting inputs of Green (Walk), Yellow, or Red (Don't Walk) on the same channel.
- Determining if the field signal input states detected as active or inactive by the MMU correspond with the data provided by the Controller Unit.
- Monitoring and optional external watchdog output from a Controller Unit or other external cabinet device.
- Monitoring an intersection with up to four approaches using the Flashing Yellow Arrow (for protected/permissive left and right turn movements).
- Event logging for the following; AC Line log, Prior/Previous Faults log, and Monitor Reset Log. All log entries shall include a date and time stamp.
- All monitor functions shall be capable of being programmed through the front panel, without the need for computers or special programs cards.
- A built-in Diagnostic Wizard shall be provided that displays detailed diagnostic information regarding the fault being analyzed. This mode shall provide a concise view of the signal states involved in the fault, pinpoint faulty signal inputs, and provide guidance on how the technician should isolate the cause of the malfunction.
- The MMU shall have an LCD display that allows for viewing of log files and field indications, as well as the viewing and setting of date and time and configuration parameters.

B.8 Traffic Signal Controller

The traffic signal controller provided shall be an Econolite ASC/3, compatible with the NEMA TS2 Type 1 specifications.

B.8.1 Firmware

Provide installed in the controller current, fully operational, controller firmware and software sufficient for the controller to perform all functions shown on the plans, sequence of operation plan sheet, specifications, and signal timing plan for the local intersection. Provide all software licenses.

The firmware and software shall be compatible with and able to fully communicate with: All phase sequences used by the city, including flashing yellow for both left and right turns.

Communications, closed loop, and on-street control software designed for use with the provided controller and provided under separate bid items.

Both the controller and the MMU.

City PC laptop and desktop computers with Windows XP and Windows 7 operating systems.

The supplier's multi-level central operation software programs for potential future Application.

B.8.2 Features/Functions

B.8.2.1 General

Provide shelf-mounted controller units.

Provide intersection controller units with up to 16-phase operation plus 16 programmable overlaps regardless of whether or not preemption, coordination, or other special programming is used.

Provide a four-ring, programmable for both single and dual entry concurrent timing, nine- phase frame or equivalent. Provide volume density timing for eight phases and pedestrian timing for all phases. Provide MUTCD flash capability. All controls shall be according to the NEMA TS2 Standard.

All controller timing parameters shall be fully programmable from the front panel keyboard inputs, and memory storage features shall be non-volatile under power-off conditions for at least 30 days. A security code must be entered before any timing parameters can be changed. The locking, non-locking detection mode and per phase recall shall also be accessible on the front panel.

Provide a data key port on the controller to load and store intersection programming.

Internally buffer all logic circuit inputs to withstand transients and noise, such as might result from normal usage, without damage to any mechanism components.

B.8.2.2 Front Panel Display

Provide a display panel on the front panel consisting of a backlit alphanumeric LCD display. The face of the display shall be scratch, chemical, and solvent resistant. The operator shall access the controller through a menu system. By selecting various menu options, real time operational status or stored parameter tables shall be presented to the operator.

Show on the LCD display, in addition to information required elsewhere:

- The status of each signal phase on.
- The interval status.
- Phase termination information.
- The presence of vehicular and pedestrian calls for each phase.

B.8.2.3 Timing

The passage timer shall time concurrently with the minimum green timer, such that the duration of the minimum green time is directly adjustable and is independent of the passage time setting.

In the dual-ring application, no more than two phases shall be permitted to time concurrently, and no more than one phase per ring. Provide barrier protection against concurrent timing of two conflicting phases; no phases assigned to one side of the barrier shall be permitted to time concurrently, if a conflict will occur. Service calls on a single entry basis. Both rings shall cross the barrier simultaneously according to the following logic:

- Phases timing concurrently shall terminate simultaneously if both have a gap-out due to excessive time between actuations.
- Phases timing concurrently shall terminate simultaneously if both have a maximum timeout.
- Phases timing concurrently shall terminate simultaneously if one has a gap-out and the other has a maximum time-out.

In the event that one phase has not achieved a gap-out or maximum time-out, the other gapped-out phase shall be permitted to leave the gapped-out condition and retime an extension when an actuation is received.

Controllers shall not accept any operator input or stored timing parameters that would result in intervals shorter than the following:

- Yellow clearance - 3.0 seconds Standard minimum walk - 4.0 seconds
- Preemption minimum walk = 0.0 seconds Minimum pedestrian clearance - 6.0 seconds

At the beginning of each of the above intervals, the controller shall check the previously stored data against these minimums. If an operator attempts to load an incorrect timing parameter, the controller unit shall output a unique error code on the front panel display. As an alternate to minimum timing control a coded keyboard entry security feature may be provided.

B.8.2.4 Manual (Police) Control

If manual control is used, actuation of the manual control shall permit manual advance of the Walk, Pedestrian Clearance, and Green interval terminations only. Manual termination of Yellow or All-Red clearance intervals shall not be permitted.

B.8.2.5 Coordination

The controller shall be capable of operation in progressive coordination systems and mutual coordination and shall contain, but not be limited to, the following external inputs, with all functions brought out:

Vehicle/Pedestrian Detectors (per phase)
Pedestrian Omit (per phase)

Phase Omit (per phase)
Hold (per phase)

Omit Red Clearance (per ring)
Internal Maximum Inhibit (per ring)
Maximum II (per ring)

Red Rest (per ring)
Stop Timing (per ring)
Force-Off (per ring)

Select Minimum Recall (per controller)
Manual Control (per controller)

Semi-Modes (per controller)
External Start (per controller)

B.8.2.6 Diagnostic Program

Provide a diagnostic program prepared by the manufacturer of the controller unit which will demonstrate the proper operation of all of the inputs, outputs, controls and indicators in the controller, and have visual confirmation on the front panel. The diagnostic program shall be resident in each controller. The controller shall continuously run a diagnostic routine in the background to assure unit integrity.

B.8.2.7 Message Logging

Provide user programmable, data logging of local events or alarm events including, but not limited to: Conflict Flash, Remote Flash, Local Flash, Controller Voltage Monitor, Detector Failure, On Line and Data Change. The time and date shall be recorded as a part of the message logged. The logging function shall be resident in the controller unit. The logging function shall be viewed from the front panel LCD display. If the logging function cannot be viewed from the front panel LCD display, it shall be performed by supplemental auxiliary equipment supplied with this specification.

B.8.2.8 Closed Loop Operation

The controller shall be able to be used in a closed loop system using twisted pair copper, single mode fiber, multimode fiber, or wireless radio to connect to compatible equipment.

B.8.2.9 RS-232 Interface and Ethernet Port

Provide a RS-232C interface and connector for interconnecting to a conflict monitor, printer, another like controller unit, or a local personal computer, as well as a remote personal computer through an external modem. A modem is not required to be provided with this specification. Include Ethernet communications capability as a standard feature and provide an Ethernet port. Ports shall be on the front panel of the controller.

B.9 Documentation

B.9.1 Cabinet Intersection Wiring Diagram

For each individual cabinet ordered, within 10 calendar days after receipt of the procurement order, furnish to the city engineer two sets of 22X34-inch detailed printed cabinet intersection wiring diagrams for information only.

At the time of the cabinet delivery, furnish to the city engineer two sets of printed 22X34-inch cabinet intersection wiring diagrams per cabinet. Printing the 22X34-inch sheet in smaller sizes is not acceptable. Leave a third drawing in the under-shelf drawer in the signal cabinet. After cabinet acceptance is complete, if any cabinet wiring changes were made, revise the cabinet wiring diagrams, leave one drawing in the under-shelf drawer in the signal cabinet, and furnish to the city engineer two sets of as-built printed cabinet wiring diagrams per cabinet. If no changes were made from time of cabinet delivery, notify the city engineer in writing.

B.910.2 MMU and Controller Programming

At the time of cabinet delivery, furnish to the city engineer two printed copies of the MMU programming and two copies of the signal timing in the traffic signal controller. Leave a third copy in the under-shelf drawer in the signal cabinet. After cabinet acceptance is complete, if any MMU or controller timing changes were made, revise the documents, leave one copy in the under-shelf drawer in the signal cabinet, and furnish to the city engineer two copies per cabinet. If no changes were made from time of cabinet delivery, notify the city engineer in writing.

B.9.3 Manuals

At the time of the cabinet delivery, furnish to the city engineer one set of installation, operations, and maintenance manuals per cabinet including each type of equipment in the cabinet. The manuals shall as a minimum include the following information:

- Table of contents
- Operating procedure
- Step-by-step maintenance and trouble-shooting information for the entire assembly Schematic diagrams
- Pictorial diagrams of parts locations Itemized parts lists with parts numbers
- Theory of operation
- Maintenance checklists

The itemized parts lists shall include the manufacturer's name and parts number for all components (such as IC, diodes, switches, relays, etc.) used. The list shall include cross references to parts numbers of other manufacturers who make the same replacement parts.

For each of the traffic signal controller and MMU, in addition to the above manual requirements, furnish one reference manual for the processor and components proposed to perform the controller and MMU functions. Include a complete set of schematics for the controller, MMU, and any auxiliary circuit boards either in the reference manual or in a separate volume. In addition, furnish a written narrative describing the controller and MMU operation and front panel configuration, and a conceptual flow chart illustrating the control logic for comparison with these specifications. The narrative shall include a discussion of any limitation or exceptions to the performance described in these specifications, and a discussion of any control capabilities provided in addition to that required in these specifications.

B.11 Cabinet Delivery

The construction contractor will provide the traffic signal specifications and plans, including the sequence of operation, to the contractor. The vendor shall determine the required cabinet equipment and assembly requirements from the plans and specifications and provide the city engineer a list of procurement items. The city engineer will approve or request resubmittal of the procurement items list prior to the cabinet being built.

Provide the list of procurement items to the city engineer a minimum of 30 days before the cabinet is scheduled to be installed in the field. The vendor is responsible for coordinating with the project construction contractor to determine the scheduled cabinet installation date. Cabinets shall be completed, delivered, and accepted within 50 calendar days after the city engineer approves the procurement item list.

If the city makes a modification to any cabinet order before the entire cabinet is completely built in the vendor's shop, the delivery time does not change. If the city accepts a vendor requested cabinet order or other modification at any time, the delivery time does not change. All cabinet modifications will be made without additional cost to the city, except if an additional equipment item is added at the city's request and the additional item is not to remedy any contractor or vendor error.

The contractor shall deliver the fully wired and equipped cabinets to the intersection where the cabinet will be installed, or other site as designated by the city or the project construction contractor. The contractor is responsible for arranging the unloading of the cabinet.

When the city exercises its right to test a cabinet as described in the Acceptance Testing section of this specification, deliver the cabinet to the location specified by the city engineer. When the testing is complete, pick up the cabinet from the shop within three business days of notification.

The contractor is notified that delivery times and schedules may be changed or delayed at any time for any reason. The contractor may be required to store completed cabinets at their facility for extended periods of time.

B.12 Acceptance Testing

Complete on-site traffic signal acceptance testing in the presence of the city. The acceptance testing will occur after the signal cabinet is fully installed at the project intersection and before the traffic signal is turned on. The construction contractor and the city will determine the time for the acceptance testing. In addition to the cabinet as specified in this specification, add-on accessory items, traffic signal interconnect, system communication, and closed loop system operation are included in the acceptance testing.

Provide an IMSA certified Traffic Signal Bench Technician, Level II or an IMSA certified Traffic Signal Field Technician, Level II with a minimum of three years' experience in construction and operation of traffic signal cabinets similar to the cabinets specified in this specification. Alternatively, provide a technician or electrician with a minimum of three years' experience in construction and operation of traffic signal cabinets similar to the cabinets specified in this specification. The technician or electrician shall be on-site during the entire acceptance testing and shall be capable and equipped to make in-field revisions/ repairs to the signal cabinet and controller to conform to this specification.

Upon successful completion of the acceptance testing as determined by the city, a 30-day conditional acceptance of the signal cabinet will be provided to the contractor. Should the cabinet within the 30-day conditional acceptance period fail to perform in any way as determined by the city, the contractor shall repair the cabinet to bring it into conformance with this specification and the acceptance testing shall be repeated. Repair times shall conform to the warranty service response times in this specification. The acceptance testing shall be repeated. Upon successful completion of the retesting, a new 30-day conditional acceptance period shall begin. After the signal cabinet runs 30 days without failure, the cabinet will be fully accepted by the city. The contractor will be allowed up to two 30-day conditional acceptance periods. If the cabinet fails during the second 30-day period, an entirely new cabinet shall be furnished and installed in the field by the contractor at no cost to the city and a new acceptance testing procedure shall begin. Cabinet replacement times shall conform to the warranty service response times in this specification. The original cabinet becomes the property of the contractor.

The city reserves the right to perform its own tests on the traffic signal cabinet at any time using the city's control equipment. Should an individual traffic signal cabinet be found to not meet the requirements of these specifications, the contractor shall pick up the traffic signal cabinet from the city or from the field, perform at their shop repairs / revisions as necessary to bring the traffic signal cabinet into conformance

with these specifications, and deliver the repaired / revised traffic signal cabinet back to the designated location, all at no additional cost to the city.

B.13 Certification

Provide a written certification with the cabinet delivery that the equipment meets the requirements of the plans and specifications and will fully run the sequence of operation and the signal timing, including closed loop system operation if applicable. The certification shall be on the contractor's company letterhead, shall be addressed to both the department and the construction contractor, and shall be signed by a company officer authorized to legally obligate the company.

B.14 Warranty

The contractor shall certify that the equipment meets the required specification and shall supply a complete catalog description. The following documents shall also be provided:

- A warranty statement which stipulates that equipment to be supplied shall be warranted by the manufacturer for two years from the date of purchase.
- Operations manuals.
- Maintenance manuals.
- Schematic diagrams.
- Component and equipment locations within the cabinet.

Controller Operation. Consistent with customary trade practices, the manufacturer shall furnish a warranty for all electrical or mechanical equipment described herein. The contractor shall turn such warranty over to the owner for potential dealing with the guarantor.

During the installation and testing of the controller, the contractor shall provide, at his own expense, a competent representative to oversee, direct and manage the installation and testing of the controller. In the final stages of the installation and testing, the manufacturer's representative shall be available at the job site for consultation until such time as the controller operation is tested and accepted.

C Construction

Perform work according to standard spec 651.3, 652.3, 653.3, 654.3, 655.3, 656.3, 657.3, 658.3 and 659.3 except as specified below.

All components shall be assembled, mounted, and connected in the traffic signal control cabinet per the plans. The controller shall be firmly mounted to the concrete pad. The assembled controller and cabinet shall be adjusted, tested, and demonstrated to be operating properly before acceptance.

Request a signal inspection of the completed signal installation to the engineer at least five working days prior to the time of the requested inspection. City of Superior personnel will perform the inspection.

D Measurement

The department will measure Furnish and Install Traffic Signal Controller and Cabinet STH 35 & STH 105 as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.03	Traffic Signal Controller and Cabinet STH 35 & STH 105	LS

Payment is full compensation for furnishing and installing the traffic signal controller and cabinet, testing and set up, and making the signal system fully operational.

29. Furnish and Install Emergency Vehicle Preemption System STH 35 & STH 105, Item SPV.0105.03.

A Description

This special provision includes furnishing and installing an emergency vehicle preemption (EVP) system for the permanent traffic signal installation as shown on the plans.

B Materials

The EVP Receivers shall be a GTT Opticom Model #711 or approved equal.

The EVP Processor shall be a GTT Opticom Model #764 Phase Selector or approved equal.

C Construction

Install equipment according to manufacturer's instructions to provide a fully operational system. Make connections in the signal cabinet and program the signal controller according to the preemption sequence in the plans.

Coordinate with the City of Superior to arrange testing of each receiver and the overall preemption system using city emergency vehicles under realistic conditions. Adjust detectors and other system equipment to provide the specified detection ability.

D Measurement

The department will measure Furnish and Install Emergency Vehicle Preemption System STH 35 & STH 105 as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.03	Furnish and Install Emergency Vehicle Preemption System STH 35 & STH 105	LS

Payment is full compensation for furnishing and installing the emergency vehicle preemption system, testing and set up, and making the EVP system fully operational.

30. Vehicular Video Detection System STH 35 & STH 105, Item SPV.0105.04.

A Description

This work shall consist of furnishing, installing and placing into operation a vehicular video detection system (VVDS) as shown on the plans, and as directed by the engineer in the field. The VVDS shall be a four-camera system.

B Materials

This specification sets forth the minimum requirements for a system that detects vehicles on a roadway by processing video images and providing detection outputs to a traffic signal controller. The materials shall also include all brackets, mounting hardware, cable, terminations, interface panels, detector racks, processors, and all other incidentals for the installation of the video detection equipment. This equipment shall meet the NEMA environmental, power and surge ratings as set forth in NEMA TS2 specifications.

All video detection equipment, components, and terminations supplied under this item shall be fully compatible with Eagle EPAC 300 M51 and Econolite ASC/3 traffic signal controllers. The Vehicular Video Detection System shall be able to transmit and receive data by means of a hybrid single mode/multi-mode fiber optic cable. The system architecture shall fully support Ethernet networking of system components. All required interface equipment needed for transmitting and receiving data and video shall be provided for with the VVDS.

Some of the video cameras may be required to be mounted on a riser attached to a trombone or monotube arm. This item includes furnishing and installing risers as necessary and indicated on the plans.

The Video Vehicle Detection System shall be the Autoscope Vision system including all associated hardware and software to create a fully functioning vehicle detection system.

B.1 Hardware

The machine vision system hardware shall consist of three components: 1) a color, zoom, Machine Vision Processor (MVP) sensor 2) a modular cabinet interface unit 3) a communication interface panel. Additionally, an optional personal computer (PC) shall host the server and client applications that are used to program and monitor the system components. The real-time performance shall be observed by viewing the video output from the sensor with overlaid flashing detectors to indicate the current detection state (on/off). The MVP sensor shall optionally store cumulative traffic statistics internally in non-volatile memory for later retrieval and analysis.

The MVP shall communicate to the modular cabinet interface unit via the communications interface panel and the software applications using the industry standard TCP/IP network protocol. The MVP shall have a built-in, Ethernet-ready, Internet Protocol (IP) address and shall be addressable with no plug in devices or converters required. The MVP shall provide standard MPEG-4 streaming digital video.

The communication interface panel shall provide four sets of three electrical terminations for three wire power cables for up to eight MVP sensors that may be mounted on a pole or mast arm with a traffic signal cabinet or junction box. The communications interface panel shall provide single-point Ethernet connectivity via RJ45 connector for communication to and between the modular cabinet interface module and the MVP sensors.

B.2 Machine Vision Processor Sensor

The MVP sensor shall be an integrated imaging color CCD array with zoom lens optics, high-speed, dualcore image processing hardware bundled into a sealed enclosure. The CCD array shall be directly controlled by the dual-core processor, thus providing high-quality video for detection that has virtually no noise to degrade detection performance. It shall be possible to zoom the lens as required for setup and operation. It shall provide JPEG video compression as well as standard MPEG-4 digital streaming video with flashing detector overlay. The MVP shall provide direct real-time iris and shutter speed control. The MVP image sensor shall be equipped with an integrated 22x zoom lens that can be changed using either configuration computer software. The digital streaming video output and all data communications shall be transmitted over the three-wire power cable.

B.3 Modular Cabinet Interface Unit

The modular cabinet interface unit shall provide the hardware and software means for up to 8 MVP sensors to communicate real-time detection states and alarms to a local traffic signal controller. It shall comply with the electrical and protocol specifications of the detector rack standards. The card shall have 1500 Vrms isolation between rack logic ground and street wiring. The modular cabinet interface unit shall be a simple interface card that plugs directly into a 170 input file rack or a NEMA type C or D detector rack. The modular cabinet interface unit shall occupy only 2 slots of the detector rack. The modular cabinet interface unit shall accept up to 16 phase inputs and shall provide up to 24 detector outputs.

B.4 Communications Interface Panel

The communications interface panel shall support up to eight MVPs. The communications interface panel shall accept 110/220 VAC, 50/60 Hz power and provide predefined wire termination blocks for MVP power connections, a Broadband-over-Power-Line (BPL) transceiver to support up to 10MB/s interdevice communications, electrical surge protectors to isolate the modular cabinet interface unit and MVP sensors, and an interface connector to cable directly to the modular cabinet interface unit.

The interface panel shall provide power for up to eight MVP sensors, taking local line voltage 110/220 VAC, 50/60 Hz and producing 110/220 VAC, 50/60 Hz, at about 30 watts to each MVP sensor. Two ½-amp SLO-BLO fuses shall protect the communications interface panel.

B.5 Functional Requirements

The vision sensor shall be able to be programmed with a variety of detector types that perform specific functions selectable by software. Detector types shall include stopline detectors capable of providing presence of moving vehicle detection based upon phase status, presence detectors, directional presence and input detectors. Additionally, phase green or red shall be displayed.

The unit shall monitor video contrast and apply video-loss timing parameters to the output by implementing minimum, maximum, or user defined fixed time recall for the assigned phase(s). The detector shall be capable of having Boolean logic applied to multiple detectors or a minimum number of detectors out of a total present, prior to placing a call.

B.6 Minimum Detector Requirements

Minimum detector requirements shall include the following:

- Count detection - provide bi-directional vehicle counts, occupancy, and headway, and provide means to output these traffic volume statistics.
- Speed and classification detection - define vehicle by speed, classification and length, with a minimum of 3 different categories for each.
- Presence detection - indicate presence of a vehicle, stopped vehicle, or a vehicle traveling in the wrong direction.
- Detector function combination - monitor outputs of multiple detectors via Boolean logic functions.

- Label display - provide information on the video output and pass input information to other detectors.
- Detector Station - collect and report traffic data gathered over specified time intervals including 1, 5, 10, 15, 30, 60-minute intervals and per cycle.
- Incident detection - monitor traffic parameters for conditions that indicate an incident has occurred, such as an accident or a stalled vehicle that results in a sudden reduction in roadway capacity or throughput.
- Schedulers - define plans that can be used by other detectors to specify different parameters for each time-of-day plan.
- Contrast Loss detection - monitor the quality of the video image that the vision sensor is processing.
- Speed Alarm – generate alarm outputs based on user-defined algorithms based on vehicle speed.

B.7 Power

The vision sensor shall operate on 110/220 VAC 50/60 Hz at a maximum of 25 watts. The camera and processor electronics shall consume a maximum of 10 watts. The remaining 15 watts shall support an enclosure heater.

B.8 Sensor Operations Log

The vision sensor shall maintain a non-volatile operations log, which minimally contains:

- Revision numbers for the current vision sensor hardware and software components in operation.
- Title and comments for the detector configuration.
- Date and time the last detector configuration was downloaded to the vision sensor. Date and time the operation log was last cleared.
- Date and time communications were opened or closed with the vision sensor. Date and time of last power up.
- Time stamped, self-diagnosed hardware and software errors that shall aid in system maintenance and troubleshooting.

B.9 Sensor Vehicle Detection Performance

The real time detection performance of the vision sensor shall be optimized by following the guidelines for the traffic application including vision sensor mounting location; the number of traffic lanes to monitor; the sizing, placement, and orientation of vehicle detectors; traffic approaching and/or departing from the sensor's field of view; and minimizing the effects of lane changing maneuvers.

B.10 Detection Zone Placement

The video detection system shall provide flexible detection zone placement anywhere and at any orientation within the field of view of the vision sensor. Preferred detector configurations shall be detection zones placed across lanes of traffic for optimal count accuracy, detection zones placed parallel to lanes of traffic for optimal presence detection accuracy of moving or stopped vehicles. A single detection zone shall be able to replace one or more conventional detector loops connected in series. Detection zones shall be able to be overlapped for optimal road coverage. In addition, selective groups of detectors shall be able to be logically combined into a single output by using optional delay and extend timing and signal state information. Optimal detection shall be achieved when the vision sensor placement provides an unobstructed view of each traffic lane where vehicle detection is required.

B.11 Detection Zone Programming

Placement of detection zones shall be by means of a PC with a Windows operating system, a keyboard, and a mouse. The PC monitor shall be able to show the detection zones superimposed on images of traffic scenes.

The detection zones shall be created by using a mouse to draw detection zones on the PC monitor. Using the mouse and keyboard it shall be possible to place, size, and orient detection zones to provide optimal road coverage for vehicle detection. It shall be possible to download detector configurations from the PC to the MVP sensor and cabinet interface module, to retrieve the detector configuration that is currently running in the MVP sensor, and to back up detector configurations by saving them to the PC fixed disks or other removable storage media.

The supervisor computer's mouse and keyboard shall be used to edit previously defined detector configurations to permit adjustment of the detection zone size and placement, to add detectors for additional traffic applications, or to reprogram the MVP sensor for different traffic applications or changes in installation site geometry or traffic rerouting.

B.12 Optimal Detection

The video detection system shall provide optimal detection of vehicle passage and presence when the vision sensor is mounted 30 feet or higher above the roadway, the image sensor is adjacent to the desired coverage area and the distance to the farthest detection zone locations is not greater than 10 times the mounting height of the vision sensor.

The vision sensor shall be able to view either approaching or departing traffic or both in the same field of view. The vision sensor, when placed at a mounting height that minimizes vehicle image occlusion and equipped with a lens to match the width of the road shall be able to monitor a minimum of six traffic lanes simultaneously.

B.13 Detection Zone Operations

The vision sensor's real-time detection operation shall be verifiable through the following means:

View the video output of the sensor with any standard video display device (monitor).

The video output of the vision sensor (differential twisted pair) shall be capable of selectively transmitting:

- Camera video only.
- Analog video overlaid with the current real-time detection state of each detector.
- Camera video with overlaid, scaled crosshairs that are used for aiming the sensor (during installation).

Individual detectors shall have the option of being hidden.

Electrically monitor assigned contact closure pinouts from a detector port master such as a detector rack interface card. Each pin of an interface card shall have one associated LED output to reflect its output state.

View the associated output LED state on the detector port master:

- An LED shall be ON when its assigned detector output or signal controller phase input is on.
- An LED shall be OFF when its assigned detector or signal controller input is off.

B.14 Count Detection Performance

Using a vision sensor installed within the optimal viewing specifications described above for count station traffic applications the system shall be able to accurately count vehicles with at least 96% accuracy under normal operating conditions (day and night) and at least 93% accuracy under adverse conditions. Adverse conditions are combinations of weather and lighting conditions that result from shadows, fog, rain, snow, etc. The data shall be optionally stored internally in non-volatile memory for later retrieval and anaylsis.

B.15 Demand Presence Detection Performance

Using a vision sensor installed within the optimal viewing specifications described above for intersection control applications the system shall be able to accurately provide demand presence detection. The demand presence accuracy shall be based on the ability to enable a protected turning movement on an intersection stop line, when a demand exists. The probability of not detecting a vehicle for demand presence shall be less than 1%error under all operating conditions. In the presence of adverse conditions, the vision sensor shall minimize extraneous (false) protected movement calls to less than 7%.

B.16 Speed Detection Performance

The vision sensor shall accurately measure average (arithmetic mean) speed of multiple vehicles with more than 98% accuracy under all operating conditions for approaching and departing traffic. The average speed measurement shall include more than ten vehicles in the sample to ensure statistical significance. Optimal speed detection performance requires the sensor location to follow the specifications described above for count station traffic applications with the exception that the sensor must be higher than 40 feet. The vision sensor shall accurately measure individual vehicle speeds with more than 95% accuracy under all operating conditions for vehicles approaching the sensor (viewing the rear end of the vehicles). These specifications shall apply to vehicles that travel through both the count and speed detector pair and shall not include partial detection situations created by lane changing maneuvers.

C Construction

The Vehicular Video Detection System shall be installed by supplier factory-certified installers and as recommended by the supplier and documented in installation materials provided by the supplier.

The camera shall be mounted at the end of the luminaire arm. The cable shall be secured to the luminaire arms with a maximum of 3 feet between secured points. The cable shall be fed through the cap of the luminaire pole and sealed. Slack shall be provided in the cable at the camera and at the pole sufficient for drip loops.

C.1 Sensor Electrical

The video output of the vision sensor shall be isolated from earth ground. All video connections from the sensor to the interface panel shall also be isolated from earth ground. The video output communication, and power stages of the sensor shall include transient protection to prevent damage to the sensor due to voltage transients occurring on the cable leading from the vision sensor to other field terminations. Connections for video communications and power shall be made to the image sensor using a single 18-pin circular metal shell connector (Bendix PT07C-14-18P or equivalent). The mating cable shall use a right angle shell. The vision sensor shall have passed requirements for and received the CE mark. The power to the sensor shall be fused in the controller cabinet. Cable used between the vision sensor and the traffic control cabinet interface shall be a continuous unbroken run. This cable shall follow all local electrical codes, and be suitable for installation in conduit or overhead with appropriate span wire.

C.2 Auxilliary Equipment

The system shall be supplied with a color 10-inch monitor to display a camera field of view with detection areas overlaid. This monitor shall include sufficient cable and terminals to either be used in the controller cabinet or from within the engineer or technician's vehicle. The input to the monitor shall be selectable from any of the cameras in the system via a quad video processor. All camera field-of-view displays shall also be viewable in real time with the use of a laptop computer connected to the video detection system.

C.3 Training and Support

The supplier of the video detection system shall provide two days of training to maintenance and engineering personnel in the operation, setup, and maintenance of the video detection system.

The supplier shall maintain an ongoing program of technical support for the video detection system. This technical support shall be available via telephone, or via personnel sent to the installation site upon placement of an acceptable order at the supplier's then current pricing and terms of sale for on-site technical support services.

The supplier shall provide a two-year warranty on the video detection system from the date of installation. During the warranty period, technical support shall be available from the supplier via telephone within four hours of the time a call is made by a user, and this support shall be available from factory-certified personnel or factory-certified installers. Updates to the video detection system software shall be available from the supplier without charge.

D Measurement

The department will measure Vehicular Video Detection System STH 35 & STH 105 as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.04	Vehicular Video Detection System STH 35 & STH 105	LS

Payment is full compensation for furnishing and installing the vehicular video detection system, testing and set up, and making the detection system fully operational.

31. Remove and Salvage Lighting Equipment STH 35 & STH 105, Item SPV.0105.05.

A Description

This special provision describes the removal and salvaging of existing lighting equipment at the intersection of STH 35 & STH 105 conforming to standard specification 204.

B (Vacant)

C Construction

Arrange for the de-energizing of the existing lighting with the local electrical utility after receiving approval from the engineer that the existing lighting can be removed.

Notify the City of Superior Public Works Department at (715) 395-7300 at least five working days prior to the removal of the lighting. Complete the removal work as soon as possible following shut down of this equipment. The lighting system shall remain operational throughout all nighttime hours.

The City of Superior assumes that all equipment is in good condition and in working order prior to the contractor's removal operation. Prior to removal, inspect and provide a list of any damaged or non-working lighting equipment to the engineer. Any damaged or not working equipment delivered to the city and not listed as damaged or not working prior to removal, shall be replaced by the contractor at no cost to the department.

Remove all poles per plan from their concrete footings and disassemble out of traffic. Remove the arms, luminaires, wiring/cabling, and mounting devices from each pole. Ensure that all access hand hole doors and all associated hardware remain intact.

Remove the underground lighting wiring as indicated on the plans. Dispose of the lighting wiring and internal wires off the state right-of-way. Salvage the above-ground equipment and deliver it to the City of Superior municipal building at 2301 Hill Ave, Superior, WI 54880. Contact the City of Superior Public Works Department at (715) 395-7300 at least three working days prior to delivery to make arrangements.

Salvage the equipment necessary for reinstallation as indicated on the plans. Storage of the salvaged lighting equipment prior to reinstallation is the responsibility of the contractor and is incidental to this item.

Any materials which are lost or damaged during removal, transport, or storage shall be repaired or replaced by the contractor at the expense of the contractor or will be repaired or replaced by the department at the expense of the contractor, as determined by the engineer.

D Measurement

The department will measure Remove and Salvage Lighting Equipment STH 35 & STH 105 as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.05	Remove and Salvage Lighting Equipment STH 35 & STH 105	LS

Payment is full compensation for removing, disassembling light assemblies, scrapping of some materials, disposing of scrap material, delivering the requested materials to the department, and incidentals necessary to complete the contract work.

32. Railroad Preemption System STH 35 & STH 105, Item SPV.0105.06.

A Description

This work shall consist of furnishing and installing a Railroad Preemption System (RPS) at the intersection of STH 35 and STH 105/61st Street as shown on the plans and as hereinafter provided.

B Materials

The RPS shall be manufactured by Rio Grande Pacific Technology, Inc. (RioTech) and shall consist of a Processor Module, Expansion Module, RPS Rack with Backpanel, and Cabinet Wiring Assembly. This equipment shall be furnished and installed by the contractor. The model numbers for the RPS system components are included below:

X-RPS Processor Module – shall be model CTC-RPS -PO5

X-RPS Expansion Module – shall be model CTC-RPS-E03

X-RPS 3 Position RPS Rack with Backpanel – shall be model CTC-3BC-01

X-RPS Cabinet Wiring Assembly – shall be model CTC 20-1041

The Railroad Preemption Interconnect Circuit cable is paid for under a separate bid item. This cable shall be routed from the RPS to the Railroad Equipment Bungalow. There shall be NO cable splices from the RPS to the Railroad Equipment Bungalow.

The RPS, as specified and shown in the Plans, shall be completed in place, tested, and in full operation.

C Construction

Install the RPS per manufacturer's recommendations. Terminate the Railroad Preemption Interconnect Circuit cable ends in the signal controller. The Railroad will terminate the cable in the Railroad Equipment Bungalow**.**

D Measurement

The department will measure the Railroad Preemption System STH 35 & STH 105 as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.06	Railroad Preemption System STH 35 & STH 105	LS

Payment is full compensation for furnishing and installing the Railroad Preemption System (RPS) including Processor Module, Expansion Module, RPS Rack with Backpanel, and Cabinet Wiring Assembly; and for setting up the system.

33. Concrete Apron 24-Inch, Item SPV.0165.01; Concrete Apron 24-Inch Mountable, Item SPV.0165.02.

A Description

This special provision describes constructing Concrete Apron 24-Inch and Concrete Apron 24-Inch Mountable according to the requirements of standard spec 601 and 602, the details shown in the plans, and as hereinafter provided.

B Materials

Furnish concrete that conforms to the pertinent requirements for concrete according to standard spec 501.

C Construction

Modify standard spec 601.3.4(5) to require that contraction joints be sawed.

Provide a thickness as shown in the plan details.

D Measurement

The department will measure Concrete Apron 24-Inch and Concrete Apron 24-Inch Mountable by the square foot, acceptably completed, according to pertinent standard spec 601.4 and 602.4.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.01	Concrete Apron 24-Inch	SF
SPV.0165.02	Concrete Apron 24-Inch Mountable	SF

Payment is full compensation for furnishing all foundation excavation and preparation; providing all materials, including concrete, expansion joints, and reinforcement tie bars unless specified otherwise; for placing finishing, protecting, and curing; sawing joints; for disposing of surplus excavation material and restoring the work site.

34. Cure and Seal Treatment Concrete Sidewalk, Item SPV.0165.03; Cure and Seal Treatment Concrete Apron 24-Inch, Item SPV.0165.04; Cure and Seal Treatment Concrete Apron 24-Inch Mountable, Item SPV.0165.05.

A Description

This work includes treating all newly constructed concrete sidewalk, concrete aprons 24-inch, and concrete aprons 24-inch mountable with a surface protective treatment as shown on plans, and as hereinafter provided.

B Materials

The treating material shall conform to ASTM 1315, ASTM C309, and AASHTO M148 specifications and be produced by a manufacturer on the approved list.

C Construction

Application rates for the treating material shall be according to the manufacturer's specifications.

D Measurement

The department will measure Cure and Seal Treatment Concrete (type) by the square foot, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.03	Cure and Seal Treatment Concrete Sidewalk	SF
SPV.0165.04	Cure and Seal Treatment Concrete Apron 24-Inch	SF
SPV.0165.05	Cure and Seal Treatment Concrete Apron 24-Inch Mountable	SF

Payment is full compensation for furnishing and applying cure and seal treatment for concrete sidewalk, concrete apron 24-inch, and concrete apron 24-inch mountable.

35. Cure and Seal Treatment Concrete Pavement, Item SPV.0180.01; Cure and Seal Treatment Concrete Driveway, Item SPV.0180.02.

A Description

This work includes treating all newly constructed concrete pavement and driveways with a surface protective treatment as shown on plans, and as hereinafter provided.

B Materials

The treating material shall conform to ASTM 1315, ASTM C309, and AASHTO M148 specifications and be produced by a manufacturer on the approved list.

C Construction

Application rates for the treating material shall be according to the manufacturer's specifications.

D Measurement

The department will measure Cure and Seal Treatment Concrete (type) by the square yard, acceptably completed.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.01	Cure and Seal Treatment Concrete Pavement	SY
SPV.0180.02	Cure and Seal Treatment Concrete Driveway	SY

Payment is full compensation for furnishing and applying cure and seal treatment for concrete pavement and concrete driveways.

36. Excavation, Hauling, and Disposal of Petroleum-Contaminated Soil and Management of Petroleum-Contaminated Groundwater, Item SPV.0195.01.

A Description

A.1 General

This special provision describes excavating, loading, hauling, and disposing of petroleum-contaminated soil at a licensed bioremediation/disposal facility and the management of petroleum-contaminated groundwater. The closest licensed soil bioremediation/disposal facilities are:

Waste Management Timberline Trail RDF
N4581 Hutchinson Road
Weyerhaeuser, WI 54895
(715) 868-7000

Vonco V Waste Campus
1100 West Gary Street
Duluth, Minnesota 55808
(218) 336-5100

Waste Management Voyager Landfill
6830 US-53
Canyon, Minnesota 55717
(218) 345-6302

Perform this work according to standard spec 205 and with pertinent parts of Chapters NR 700-754 of the Wisconsin Administrative Code, as supplemented herein. Per NR 718.07, a solid waste collection and transportation service-operating license is required under NR 502.06 for each vehicle used to transport contaminated soil. If a Minnesota bioremediation/disposal facility is utilized, perform hauling and disposal according to equivalent State of Minnesota requirements.

A.2 Notice to the Contractor – Contaminated Soil and Groundwater Locations

The department completed testing for soil contamination within this project where excavation is required. Testing indicated that petroleum-contaminated soil is present or likely to be present at the following location as shown on the plans:

1. Station 204+50 to Station 204+67 (STH 105), from reference line of STH 105 to construction limits LT, from ground surface to a depth of approximately 4 feet below existing grades.
2. Station 204+67 to Station 205+00 (STH 105), from reference line of STH 105 to Station 106+00 (STH 35), from ground surface to a depth of approximately 7 feet below existing grades.

The department and others completed testing for groundwater contamination within this project where excavation is required. Testing indicated that petroleum-contaminated groundwater is present or likely to be present at the following locations as shown on the plans:

1. Station 204+50 to Station 205+00 (STH 105), from reference line of STH 105 to Station 106+00 (STH 35), at a depth of approximately 7 feet below existing grades.

Excavations may extend beyond the depth to groundwater at the location above; however, due to the low permeability of subsurface materials, significant dewatering is not anticipated.

If contaminated soil or groundwater is encountered at other locations, terminate excavations in that area and notify the engineer. The excavation management plan for this project has been designed to minimize the off-site disposal of contaminated material. These special provisions, which outline the excavation management plan, have been developed in cooperation with the WDNR. The WDNR's concurrence is on file at the department.

For further information regarding previous investigation and remediation activities at this location, contact:

Contact: Mr. Aaron Gustafson, WisDOT Northwest Region
Address: 1701 North 4th Street, Superior, WI 54880
Phone: (715) 919-3051
Fax: (715) 392-7863
Email: aaron.gustafson@dot.wi.gov

A.3 Coordination

Coordinate work under this contract with the environmental consultant:

Name:	GEI Consultants, Inc., Mr. Roger Miller or Mr. Michael DeBraske
Address:	3159 Voyager Drive, Green Bay, WI 54311
Phone:	(920) 455-8657 / (920) 455-8655
Fax:	(920) 455-8225
E-mail:	rmiller@geiconsultants.com, mdebraske@geiconsultants.com

The role of the environmental consultant will be limited to:

1. Determining the locations and limits of contaminated material to be excavated based on analytical results from previous investigations, visual observations, and field-screening of material that is excavated;
2. Identifying contaminated material to be hauled to the bioremediation/disposal facility;
3. Documenting that activities associated with management of contaminated material are in conformance with state regulations;
4. Obtaining the necessary approvals for treatment and disposal of contaminated material.

Provide at least a 14-calendar day notice of the preconstruction conference date to the environmental consultant. At the preconstruction conference, provide a schedule for all excavation activities in the contaminated areas specified above to the environmental consultant. Also notify the environmental consultant at least three calendar days prior to commencement of excavation activities in each of the contaminated areas.

Coordinate with the environmental consultant to ensure that the environmental consultant is present during excavation in contaminated areas. Perform excavation work in these areas on a continuous basis until excavation work is completed.

Identify the licensed bioremediation/disposal facility that will be used for disposal of contaminated material and provide this information to the environmental consultant no later than 30 calendar days prior to commencement of excavation activities in the contaminated areas or at the preconstruction conference, whichever comes first. The environmental consultant will be responsible for obtaining the necessary approvals for disposal of contaminated soils from the bioremediation/disposal facility. Do not transport contaminated soil offsite without prior approval from the environmental consultant.

A.4 Health and Safety Requirements

Supplement standard spec 107.1 with the following:

During excavation activities, expect to encounter soil and groundwater contaminated with gasoline, diesel fuel, or other petroleum related products. Site workers taking part in activities that will result in the reasonable probability of exposure to safety and health hazards associated with hazardous materials shall have completed health and safety training that meets the Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations and Emergency Response (HAZWOPER), as provided in 29 CFR 1910.120.

Prepare a site-specific Health and Safety Plan, and develop, delineate and enforce the health and safety exclusion zones for each contaminated site location as required by 29 CFR 1910.120. Submit the site-specific health and safety plan and written documentation of up-to-date OSHA training to the engineer prior to the start of work.

B (Vacant)

C Construction

Supplement standard spec 205.3 with the following:

Control operations in the contaminated areas to minimize the quantity of contaminated material excavated.

The environmental consultant will periodically evaluate material excavated from the contaminated areas. The environmental consultant will evaluate excavated material based on field-screening results, visual observations, and analytical results from previous environmental investigations. Assist the environmental consultant in collecting samples for evaluation using excavation equipment. The sampling frequency shall be a maximum of one sample for every 15 cubic yards excavated.

On the basis of the results of such field-screening, the material will be designated as follows:

- Excavation Common consisting of clean soil and/or clean construction and demolition fill (such as boulders, concrete, reinforced concrete, bituminous pavement, bricks, building stone, and unpainted or untreated wood), which under NR 500.08 are exempt materials, or
- Petroleum-contaminated soil for bioremediation/disposal at the selected licensed bioremediation/disposal facility.

Directly load and haul material designated by the environmental consultant for offsite treatment and disposal at the licensed facility. Use loading and hauling practices that are appropriate to prevent any spills or releases of contaminated material or residues. Prior to transport, sufficiently dewater material designated for off-site treatment and disposal so as not to contain free liquids.

Control activities in the contaminated areas to minimize the amount of dewatering required. Allow contaminated water encountered, but not requiring removal as a standard course of construction, to remain in-place and do not manage according to this special provision.

Pump contaminated water into the City of Superior sanitary sewer or into temporary holding tanks for on-site or offsite treatment and disposal as necessary to complete construction. Make every effort to minimize the amount of silt, sand, sediment, and other deleterious substances discharged during dewatering operations.

Obtain approval from the City of Superior prior to discharge of contaminated water to the sanitary sewer. If accepted by the city, restrictions will likely be placed on contaminated water concentrations and/or pumping rates. Perform all necessary monitoring to document compliance with city discharge requirements. Furnish, install, operate, maintain, disassemble, and remove all equipment necessary to comply with city discharge requirements.

If contaminated water is not discharged to the sanitary sewer, then means and methods together with dewatering pumping rates will impact the characterization of discharged water and requirements for treatment and disposal. The WDNR's concurrence with plans to accomplish dewatering will be required and include limits on impacted water that can be discharged to the surface. Pump tests with sampling and laboratory analysis of water generated during dewatering operations in the contaminated areas will likely be required. If water is discharged to the surface, meet all applicable requirements of the Wisconsin Pollution Discharge Elimination System (WPDES) General Permit for Discharge of Petroleum Contaminated Groundwater from Remedial Action Operations. This includes, but is not limited to, pretreatment of water, if required, to meet WPDES discharge requirements. Perform all necessary monitoring to document compliance with WPDES requirements. Furnish, install, operate, maintain, disassemble, and remove treatment equipment necessary to comply with WPDES requirements.

D Measurement

The department will measure Excavation, Hauling, and Disposal of Petroleum-Contaminated Soil and Management of Petroleum-Contaminated Groundwater in tons of contaminated soil, accepted by the bioremediation/disposal facility, as documented by weight tickets generated by the bioremediation/disposal facility. The management of contaminated groundwater shall be considered incidental to the project.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0195.01	Excavation, Hauling, and Disposal of Petroleum-Contaminated Soil and Management of Petroleum-Contaminated Groundwater	TON

Payment is full compensation for excavating, segregating, loading, hauling, and treatment via bioremediation or direct landfilling of contaminated soil; obtaining solid waste collection and transportation service operating licenses; assisting in the collection of soil samples for field evaluation; management of contaminated groundwater, if necessary; and dewatering of soils prior to transport, if necessary.

ADDITIONAL SPECIAL PROVISION 4

Payment to First-Tier Subcontractors

Within 10 calendar days of receiving a progress payment for work completed by a subcontractor, pay the subcontractor for that work. The prime contractor may withhold payment to a subcontractor if, within 10 calendar days of receipt of that progress payment, the prime contractor provides written notification to the subcontractor and the department documenting "just cause" for withholding payment.

The prime contractor may also withhold routine retainage from payments due subcontractors.

Payment to Lower-Tier Subcontractors

Ensure that subcontracting agreements at all tiers provide prompt payment rights to lower-tier subcontractors that parallel those granted first-tier subcontractors in this provision.

Release of Routine Retainage

After granting substantial completion the department may reduce the routine retainage withheld from the prime contractor to 75 percent of the original total amount retained.

When the Department sends the semi-final estimate the department may reduce the routine retainage withheld from the prime contractor to 10 percent of the original total amount retained.

Within 30 calendar days of receiving the semi-final estimate from the department, submit written certification that subcontractors at all tiers are paid in full for acceptably completed work and that no routine retainage is being withheld. The department will pay the prime contractor in full and reduce the routine retainage withheld from the prime contractor to zero when the department approves the final estimate.

This special provision does not limit the right of the department, prime contractor, or subcontractors at any tier to withhold payment for work not acceptably completed or work subject to an unresolved contract dispute.

Additional Special Provision 6
ASP 6 - Modifications to the standard specifications

Make the following revisions to the standard specifications:

102.1 Prequalifying Bidders

Replace paragraph two with the following effective with the October 2020 letting:

(2) Furnish a dated prequalification statement on the department's form at least 10 business days before the time set for the letting to close.

102.6 Preparing the Proposal

Replace the entire text with the following effective with the October 2020 letting:

102.6.1 General

(1) Submit completed proposals on the department's bidding proposal described in 102.2. Submit legible information only. Write everything in ink, by typewriter, or by computer-controlled printer. Provide all dollar amounts in dollars and cents, in numerals. Attach all addenda to the submitted proposal.

(2) Properly execute the proposal. Place the required signatures, in ink, in the space provided on the bidding proposal as indicated below:

ENTITY SUBMITTING PROPOSAL	REQUIRED SIGNATURE
Individual	The individual or a duly authorized agent.
Partnership	A partner or a duly authorized agent.
Joint venture	A member or a duly authorized agent of at least one of the joint venture firms.
Corporation	An authorized officer or duly authorized agent of the corporation. Also show the name of the state chartering that corporation and affix the corporate seal.
Limited liability company	A manager, a member, or a duly authorized agent.

(3) Instead of using the schedule of items provided on the department's bidding proposal, the bidder may submit a substitute schedule with the proposal. Use a format for the substitute schedule conforming to the department’s guidelines for approval of a bidder-generated schedule of items. Obtain the department’s written approval before using a substitute schedule.

(4) Provide a unit price for each bid item listed in the schedule of items. Calculate and show, in the bid amount column, the products of the respective unit prices and quantities. For a lump sum bid item, show the same price in the unit price column and in the bid amount column pertaining to that bid item. Show the total bid obtained by adding the values entered in the bid amount column for the listed bid items.

(5) If a unit price or lump sum bid already entered in the proposal needs to be altered, cross out the entered unit price or lump sum bid with ink or typewriter and enter the new price above or below and initial it in ink.

(6) A change that the bidder makes in the proposal is not an alteration if the bidder makes that change as directed in a specific instruction contained in an addendum.

102.6.2 Disadvantaged Business Enterprise (DBE) Commitment

(1) Before the letting is closed, submit the following documentation for proposals with a DBE goal:

1. Commitment to subcontract to DBE on department form DT1506.
2. Attachment A for each subcontractor listed on the DT1506.
3. If the DBE goal is not attained, certificate of good faith efforts on department form DT1202.

(2) Within 24 hours after the letting is closed, email all supplemental documentation for the DT1202 verifying efforts made to attain the DBE goal to DBE_Alert@dot.wi.gov.

102.7.2 Department May Reject

Replace paragraph one with the following effective with the October 2020 letting:

(1) Proposals are irregular and the department may reject them for one or more of the following reasons:

1. The proposal contains unauthorized alterations of format, words, or figures.
2. The schedule of items contains errors, alterations, or omissions in, bid item numbers, quantities, descriptions, or units of measure, that cannot be corrected as specified in 102.7.1.
3. The proposal is not prepared as specified in 102.6.
4. There are unauthorized alterations, additions, conditional or alternate bids, amendments, attachments, or irregularities that may tend to make the proposal incomplete, indefinite, or ambiguous as to its meaning.
5. There are unauthorized erasures or alterations appearing on the designation of the party to whom the department issued the bidding proposal.
6. The award of the bid, together with the value of the bidder's uncompleted contract work, exceeds the bidder's established ratings, as determined in 102.1, at the time set for awarding the work.
7. A single entity, under the same or different names, or affiliated entities submit more than one proposal for the same work. The submitting entity may be an individual, partnership, joint venture, corporation, or limited liability company.
8. Does not submit the DBE forms and required supplemental documentation of the good faith efforts as specified in 102.6.2.

102.12 Public Opening of Proposals

Replace paragraph one with the following effective with the October 2020 letting:

(1) The letting will close at the time and place indicated in the notice to contractors. The department will publicly open and post the total bid for each proposal on the Bid Express web site beginning at noon on the day after the letting is closed except as specified in 102.7.3 and 102.8. If a proposal has no total bid shown, the department will not post the bid. After verification for accuracy under 103.1, the department will post bid totals on the HCCI web site.

https://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

103.1 Consideration of Proposals

Replace paragraph one with the following effective with the October 2020 letting:

(1) Following the public opening of the proposals received, the department will compare them based on the summation of the products of the quantities of work listed and the contract unit prices offered. In case of discrepancies, errors, or omissions, the department will make corrections as specified in 102.7.1. In awarding contracts, the department, in addition to considering the amounts stated in the proposals, may consider one or more of the following:

1. The responsibility of the various bidders as determined from a study of the data required under 102.1.
2. The responsiveness of the bid as determined under 102.6.
3. Information from other investigations that the department may make.

107.17.1 General

Replace paragraph four with the following effective with the November 2020 letting:

(4) Comply with the railroad's rules and regulations regarding operations on or near the railroad right-of-way as follows:

- When working on the railroad right-of-way.
- When working within 25 feet of the track centerline or adjacent facilities, including equipment or extensions of equipment that can fall within 25 feet of the track centerline or adjacent facilities.

If the railroad's chief engineering officer requires, arrange with the railroad to obtain the services of qualified railroad employees to protect railroad traffic through the work area. Bear the cost of these services and pay the railroad directly. Notify the railroad's representative, specified in the project special provisions, in writing at least 40 business days before starting work near a track. Provide the specific time planned to start the operations.

450.2.1 Acronyms and Definitions

Add the following definitions to 450.2.1(2) effective with the November 2020 letting:

Butt Joint A transverse joint between existing and newly paved surfaces, formed by milling or sawing a vertical notch into the existing surface and then paving against the notch.

Echelon Paving Paving two or more adjacent lanes with adjacent pavers offset from each other by 200 feet or less.

Notched Wedge Joint A longitudinal joint consisting of a wedge placed at the edge of the initially paved lane with an overlapping wedge placed on the subsequent lane.

Tandem Paving Paving two or more adjacent lanes with adjacent pavers offset from each other by more than 200 feet.

Vertical Joint A longitudinal joint between 2 paved lanes with a vertical or nearly vertical interface between the adjacent mats.

450.3.2.8 Jointing

Replace paragraph two with the following with the November 2020 letting:

(2) Where placing against existing HMA pavement, saw or mill the existing mat to form a full-depth joint.

Replace paragraphs five and six with the following effective with the November 2020 letting:

(5) At the prepave meeting, submit documentation to the engineer that includes the brand name and model of each extruding and compacting device proposed for notched wedge joint construction. Alternatively, submit pictures of fabricated wedging and compacting devices. Do not use devices before engineer approval.

(6) For notched wedge joints, construct and shape the wedge for each layer using the engineer-approved extruding device and compacting device that will provide a uniform slope and will not restrict the main screed. Compact the wedge with a weighted roller wheel or vibratory plate compactor the same width as the wedge. Clean and apply tack coat to the wedge surface and both notches before placing the adjacent lane.

(7) For butt and vertical joints, clean and apply tack coat to promote bonding and seal the joint.

(8) If paving in echelon, the contractor may use a vertical or notched wedge joint. Joints paved in echelon need not be tack coated.

460.2.2.3 Aggregate Gradation Master Range

Replace table 460-1 with the following effective with the November 2020 letting:

TABLE 460-1 AGGREGATE GRADATION MASTER RANGE AND VMA REQUIREMENTS

SIEVE	PERCENT PASSING DESIGNATED SIEVES							
	NOMINAL SIZE							
	No. 1 (37.5 mm)	No. 2 (25.0 mm)	No.3 (19.0 mm)	No. 4 (12.5 mm)	No. 5 (9.5 mm)	No. 6 (4.75 mm)	SMA No. 4 (12.5 mm)	SMA No. 5 (9.5 mm)
50.0-mm	100							
37.5-mm	90 - 100	100						
25.0-mm	90 max	90 - 100	100					
19.0-mm	___	90 max	90 - 100	100			100	
12.5-mm	___	___	90 max	90 - 100	100		90 - 97	100
9.5-mm	___	___	___	90 max	90 - 100	100	58 - 80	90 - 100
4.75-mm	___	___	___	___	90 max	90 - 100	25 - 35	35 - 45
2.36-mm	15 - 41	19 - 45	23 - 49	28 - 58	32 - 67	90 max	15 - 25	18 - 28
1.18-mm	___	___	___	___	___	30 - 55	___	___
0.60-mm	___	___	___	___	___	___	18 max	18 max
0.075-mm	0 - 6.0	1.0 - 7.0	2.0 - 8.0	2.0 - 10.0	2.0 - 10.0	6.0 - 13.0	8.0 - 11.0	8.0 - 12.0
% VMA	11.0 min	12.0 min	13.0 min	14.0 min[1]	15.0 min[2]	16.0 - 17.5	16.0 min	17.0 min

[1] 14.5 for LT and MT mixes.

[2] 15.5 for LT and MT mixes.

532.2.1 General

Replace paragraph one with the following effective with the November 2020 letting:

(1) Furnish structural steel conforming to ASTM as follows:

<= 1/2 inch thick structural tube and pipe	ASTM A500 grade C
> 1/2 inch thick structural tube and pipe	API 5L PSL 2 grade 46 or ASTM 1085
Tapered vertical supports	ASTM A595 grade A or ASTM A572 grade 55
Multi-sided or greater than 26-inch diameter round tapered poles	ASTM A572 grade 65
Structural angles and plates	ASTM A709 grade 36

532.3.8 Acceptance and Inspection

Add the following new subsection effective with the November 2020 letting:

532.3.8 Acceptance and Inspection

(1) Demonstrate to the engineer that electrical and mechanical systems for each high mast tower installation are fully operational. The department will not accept an installation until the engineer is satisfied that it functions properly.

(2) Inspect completed "S" or "L" designated structures before opening to public traffic conforming to the BOS structure inspection manual part 4 for sign, signal, and high mast towers available at:

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/inspection-manual.aspx

Ensure that a department-certified active team leader for sign/signal inspections, listed on the department's highway structures information system (HSIS) website, performs inspections. Conform to the following:

- Notify the engineer at least 5 business days before inspection.
- Ensure that the team leader performing inspections submits the signed inspection reports and provides punch list items as maintenance items in the inspection report to the engineer within one business day after completing each inspection. Submit that signed final inspection report to the engineer and HSIS at:

  https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/strct/hsi.aspx
- Notify the engineer and region ancillary structure project manager upon completion of the punch list items.

550.2.1 Steel Piles and Pile Shells

Replace paragraph three with the following:

(3) For steel pipe sections and steel pile shells for cast-in-place concrete piles, use ASTM A252 grade 3 steel.

710.2 Small Quantities

Replace paragraph one with the following effective with the November 2020 letting:

(1) For contracts with only small quantities of material subject to testing, as defined under specific contract QMP provisions, modify the requirements of 710 as follows:

1. The contractor may submit an abbreviated quality control plan as allowed in 701.1.2.3.
2. The engineer may accept aggregate based on documented previous testing and non-random start-up gradation testing as allowed in 710.5.6.1.

710.5.6 Aggregate Testing

Replace the entire text with the following effective with the November 2020 letting:

710.5.6.1 General

(1) Test aggregate gradations during concrete production. The department will accept non-random start-up testing during concrete production for the following:

- Small quantities, as defined in 715.1.1.2, of class I concrete placed under 715.
- Less than 400 cubic yards of class II ancillary concrete placed under the contract.

710.5.6.2 Gradation Testing During Concrete Production

(1) Test aggregate gradation during concrete production batching either at a central mix batch plant or at a ready mix plant. The contractor's concrete production QC tests can be used for the same mix design on multiple contracts.

(2) Conform to combined gradation limits submitted in the contractor's quality control plan. Determine the complete gradation using a washed analysis for both fine and coarse aggregates. Report results for the 1 1/2", 1", 3/4", 1/2", 3/8", #4, #8, #16, #30, #50, #100, and #200 sieves.

(3) Contractor QC testing frequency is based on the cumulative plant production for each mix design across multiple WisDOT contracts.

TABLE 710-1 PLANT PRODUCTION QC GRADATION TESTING FREQUENCY

Daily Plant Production Rate for WisDOT Work	Minimum QC Frequency per Stockpile
250 cubic yards or less	one test per cumulative total of 250 cubic yards
more than 250 through 1000 cubic yards	one test per day
more than 1000 cubic yards	two tests per day

(4) Department QV testing frequency is based on the quantity of each mix design placed under each individual WisDOT contract.

TABLE 710-2 CONTRACT PLACEMENT QV GRADATION TESTING FREQUENCY

Anticipated Daily Placement Rate Each WisDOT Contract	Minimum QV Frequency per Stockpile
less than or equal to 1000 cubic yards	one test per 5 days of placement
more than 1000 cubic yards	two tests per 5 days of placement

716.2.1 Class II Concrete

Replace paragraphs four through six with the following effective with the November 2020 letting:

(4) Provide concrete with a 28-day compressive strength that equals or exceeds the following:

- If the contract specifies f'c, then f'c.
- If the contract does not specify f'c, then 3000 psi.

ERRATA

460.2.7(1) HMA Mixture Design

Correct table 460-2 errata by eliminating plasticity index requirements for LT, MT, and HT mixes.

TABLE 460-2 MIXTURE REQUIREMENTS

Mixture type	LT	MT	HT	SMA
LA Wear (AASHTO T96)				
100 revolutions(max % loss)	13	13	13	13
500 revolutions(max % loss)	50	45	45	35
Soundness (AASHTO T104) (sodium sulfate, max % loss)	12	12	12	12
Freeze/Thaw (AASHTO T103 as modified in CMM 860.2.7) (specified counties, max % loss)	18	18	18	18
Fractured Faces (ASTM D5821 as modified in CMM 860.7.2) (one face/2 face, % by count)	65/___	75 / 60	98 / 90	100/90
Flat & Elongated (ASTM D4791) (max %, by weight)	5 (5:1 ratio)	5 (5:1 ratio)	5 (5:1 ratio)	20 (3:1 ratio)
Fine Aggregate Angularity (AASHTO T304, method A, min)	40[1]	43[1]	45	45
Sand Equivalency (AASHTO T176, min)	40	40[2]	45	50
Clay Lumps and Friable Particle in Aggregate (AASHTO T112)	<= 1%	<= 1%	<= 1%	<= 1%
Plasticity Index of Material Added to Mix Design as Mineral Filler (AASHTO T89/90)				<= 4
Gyratory Compaction				
Gyrations for Nini	6	7	8	7
Gyrations for Ndes	40	75	100	65
Gyrations for Nmax	60	115	160	100
Air Voids, %Va (%Gmm Ndes)	4.0 (96.0)	4.0 (96.0)	4.0 (96.0)	4.5 (95.5)
% Gmm Nini	<= 91.5[3]	<= 89.0[3]	<= 89.0	___
% Gmm Nmax	<= 98.0	<= 98.0	<= 98.0	<= 98.0
Dust to Binder Ratio[4] (% passing 0.075/Pbe)	0.6 - 1.2[5]	0.6 - 1.2[5]	0.6 - 1.2[5]	1.2 - 2.0
Voids filled with Binder (VFB or VFA, %)	68 - 80[6] [8]	65 - 75[6] [7] [9]	65 - 75[6] [7] [9]	70 - 80
Tensile Strength Ratio (TSR) (AASHTO T283)[10] [11]				
no antistripping additive	0.75 min	0.75 min	0.75 min	0.80 min
with antistripping additive	0.80 min	0.80 min	0.80 min	0.80 min
Draindown (AASHTO T305) (%)	___	___	___	<= 0.30
Minimum Effective Asphalt Content, Pbe (%)	___	___	___	5.5

[1] For No 6 (4.75 mm) nominal maximum size mixes, the specified fine aggregate angularity is 43 for LT and 45 MT mixes.

[2] For No 6 (4.75 mm) nominal maximum size mixes, the specified sand equivalency is 43 for MT mixes.

[3] The percent maximum density at initial compaction is only a guideline.

[4] For a gradation that passes below the boundaries of the caution zone (ref. AASHTO M323), the dust to binder ratio limits are 0.6 - 1.6.

[5] For No 6 (4.75 mm) nominal maximum size mixes, the specified dust to binder ratio limits are 1.0 - 2.0 for LT mixes and 1.5 - 2.0 for MT and HT mixes.

[6] For No. 6 (4.75mm) nominal maximum size mixes, the specified VFB is 67 - 79 percent for LT mixes and 66 - 77 percent for MT and HT mixes.

[7] For No. 5 (9.5mm) and No. 4 (12.5 mm) nominal maximum size mixtures, the specified VFB range is 70 - 76 percent.

[8] For No. 2 (25.0mm) nominal maximum size mixes, the specified VFB lower limit is 67 percent.

[9] For No. 1 (37.5mm) nominal maximum size mixes, the specified VFB lower limit is 67 percent.

[10] WisDOT eliminates freeze-thaw conditioning cycles from the TSR test procedure.

[11] Run TSR at asphalt content corresponding to 3.0% air void regressed design, or 4.5% air void design for SMA, using distilled water for testing.

513.2.1(2) General

Correct errata by changing the CMM reference from 875.2 to 875.4.

(2) Conform to the department's certification method of acceptance, as defined in CMM 875.4, for railing and railing components. Furnish a certificate of compliance for miscellaneous hardware.

531.1(1) Description

Correct errata by adding structural steel sign supports constructed under 635.

(1) This section describes constructing drilled shaft foundations for the following:

- Overhead sign structures constructed under 532.
- High mast light towers constructed under 532.
- Structural steel sign supports constructed under 635.
- Camera poles constructed under 677.

635.3.1(1) Structural Steel Sign Supports

Correct errata by adding "type NS" concrete footings.

(1) Locate and erect the supports as specified for placement and orientation in 637.3.3.2. Construct Type NS concrete footings conforming to 531.

654.5(2) Payment

Correct errata by changing excavating to drilling.

(2) Payment for the Bases bid items is full compensation for providing concrete bases; for embedded conduit and electrical components; for anchor templates, rods, nuts, and washers; for bar steel reinforcement; and for drilling and backfilling.

ADDITIONAL SPECIAL PROVISION 7

A. Reporting 1st Tier and DBE Payments During Construction

1. Comply with reporting requirements specified in the department's Civil Rights Compliance, Contractor's User Manual, Sublets and Payments.
2. Report payments to all DBE firms within 10 calendar days of receipt of a progress payment by the department or a contractor for work performed, materials furnished, or materials stockpiled by a DBE firm. Report the payment as specified in A(1) for all work satisfactorily performed and for all materials furnished or stockpiled.
3. Report payments to all first tier subcontractor relationships within 10 calendar days of receipt of a progress payment by the department for work performed. Report the payment as specified in A(1) for all work satisfactorily performed.
4. All tiers shall report payments as necessary to comply with the DBE payment requirement as specified in A(2).
5. Require all first tier relationships, DBE firms and all other tier relationships necessary to comply with the DBE payment requirement in receipt of a progress payment by contractor to acknowledge receipt of payment as specified in A(1), (2), (3) and (4).
6. All agreements made by a contractor shall include the provisions in A(1), (2), (3), (4) and (5), and shall be binding on all first tier subcontractor relationships and all contractors and subcontractors utilizing DBE firms on the project.

B. Costs for conforming to this special provision are incidental to the contract.

NOTE: CRCS Prime Contractor payment is currently not automated and will need to be manually loaded into the Civil Rights Compliance System. Copies of prime contractor payments received (check or ACH) will have to be forwarded to paul.ndon@dot.wi.gov within 5 days of payment receipt to be logged manually.

***Additionally, for information on Subcontractor Sublet assignments, Subcontractor Payments and Payment Tracking, please refer to the CRCS Payment and Sublets manual at:

https://wisconsindot.gov/Documents/doing-bus/civil-rights/labornwage/crcs-payments-sublets-manual.pdf

Effective January 2019 Letting ASP 9

ADDITIONAL SPECIAL PROVISION 9
Electronic Certified Payroll or Labor Data Submittal

(1) Use the department's Civil Rights Compliance System (CRCS) to electronically submit certified payroll reports for contracts with federal funds and labor data for contracts with state funds only. Details are available online through the department's highway construction contractor information (HCCI) site on the Labor, Wages, and EEO Information page at:

https://wisconsindot.gov/Pages/doing-bus/civil-rights/labornwage/default.aspx

(2) Ensure that all tiers of subcontractors, including all trucking firms, either submit their weekly certified payroll reports (contracts with federal funds) or labor data (contracts with state funds only) electronically through CRCS. These payrolls or labor data are due within seven calendar days following the close of the payroll period. Every firm providing physical labor towards completing the project is a subcontractor under this special provision.

(3) Upon receipt of contract execution, promptly make all affected firms aware of the requirements under this special provision and arrange for them to receive CRCS training as they are about to begin their submittals. The department will provide training either in a classroom setting at one of our regional offices or by telephone. Contact Paul Ndon at (414) 438-4584 to schedule the training.

(4) The department will reject all paper submittals for information required under this special provision. All costs for conforming to this special provision are incidental to the contract.

(5) Firms wishing to export payroll/labor data from their computer system into CRCS should have their payroll coordinator contact Paul Ndon at paul.ndon@dot.wi.gov. Not every contractor's payroll system is capable of producing export files. For details, see Section 4.8 CPR Auto Submit (Data Mapping) on pages 49-50; 66-71 of the CRCS Payroll Manual at:

https://wisconsindot.gov/Documents/doing-bus/civil-rights/labornwage/crcs-payroll-manual.pdf

Non-discrimination Provisions

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. Compliance with Regulations: The contractor (hereinafter includes consultants) will comply with the Acts and the Regulations relative to Non-discrimination in Federally-assisted programs of the U.S. Department of Transportation, Federal Highway Administration, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. Non-discrimination: The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Acts and the Regulations, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. Solicitations for Subcontracts, Including Procurements of Materials and Equipment: In all solicitations, either by competitive bidding, or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials, or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Acts and the Regulations relative to Non-discrimination on the grounds of race, color, or national origin.

4. Information and Reports: The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Recipient or the Federal Highway Administration to be pertinent to ascertain compliance with such Acts, Regulations, and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Recipient or the Federal Highway Administration, as appropriate, and will set forth what efforts it has made to obtain the information.

5. Sanctions for Noncompliance: In the event of a contractor's noncompliance with the Non-discrimination provisions of this contract, the Recipient will impose such contract sanctions as it or the Federal Highway Administration may determine to be appropriate, including, but not limited to:

a. Withholding payments to the contractor under the contract until the contractor complies; and/or
b. Cancelling, terminating, or suspending a contract, in whole or in part.

6. Incorporation of Provisions: The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Recipient or the Federal Highway Administration may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, that if the contractor becomes involved in, or is threatened with litigation by a subcontractor, or supplier because of such direction, the contractor may request the Recipient to enter into any litigation to protect the interests of the Recipient. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

Pertinent Non-Discrimination Authorities:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252), (prohibits discrimination on the basis of race, color, national origin); and 49 CFR Part 21.
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Federal-Aid Highway Act of 1973, (23 U.S.C. § 324 et seq.), (prohibits discrimination on the basis of sex);
- Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 et seq.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 et seq.), (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by Department of Transportation regulations at 49 C.F.R. parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures Non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of Limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. 1681 et seq).

Effective November 2020 letting

BUY AMERICA PROVISION

All steel and iron materials permanently incorporated in this project shall be domestic products and all manufacturing and coating processes for these materials from smelting forward in the manufacturing process must have occurred within the United States. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to the requirements of Buy America. The exemption of this requirement is the minimal use of foreign materials if the total cost of such material permanently incorporated in the product does not exceed one-tenth of one percent (1/10 of 1%) of the total contract cost or $2,500.00, whichever is greater. For purposes of this paragraph, the cost is that shown to be the value of the subject products as they are delivered to the project. The contractor shall take actions and provide documentation conforming to CMM 2-28.5 to ensure compliance with this “Buy America” provision.

https://wisconsindot.gov/rdwy/cmm/cm-02-28.pdf

Upon completion of the project certify to the engineer, in writing using department form DT4567, that all steel, iron, and coating processes for steel or iron incorporated into the contract work conform to these "Buy America" provisions. Attach a list of exemptions and their associated costs to the certification form. Department form DT4567 is available at:

https://wisconsindot.gov/Documents/formdocs/dt4567.docx

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0002	204.0100 Removing Concrete Pavement	863.000 SY	_____.____	_____.____
0004	204.0150 Removing Curb & Gutter	310.000 LF	_____.____	_____.____
0006	204.0155 Removing Concrete Sidewalk	290.000 SY	_____.____	_____.____
0008	204.0195 Removing Concrete Bases	5.000 EACH	_____.____	_____.____
0010	204.0215 Removing Catch Basins	1.000 EACH	_____.____	_____.____
0012	205.0100 Excavation Common	440.000 CY	_____.____	_____.____
0014	213.0100 Finishing Roadway (project) 01. 3700-50-54	1.000 EACH	_____.____	_____.____
0016	305.0110 Base Aggregate Dense 3/4-Inch	131.000 TON	_____.____	_____.____
0018	305.0120 Base Aggregate Dense 1 1/4-Inch	65.000 TON	_____.____	_____.____
0020	310.0110 Base Aggregate Open-Graded	104.000 TON	_____.____	_____.____
0022	405.1000 Stamping Colored Concrete	61.000 CY	_____.____	_____.____
0024	415.0090 Concrete Pavement 9-Inch	132.000 SY	_____.____	_____.____
0026	415.0120 Concrete Pavement 12-Inch	48.000 SY	_____.____	_____.____
0028	415.5110.S Concrete Pavement Joint Layout	1.000 LS	_____.____	_____.____
0030	416.0160 Concrete Driveway 6-Inch	77.000 SY	_____.____	_____.____
0032	416.0610 Drilled Tie Bars	472.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0034	520.8000 Concrete Collars for Pipe	1.000 EACH	_____.____	_____.____
0036	601.0405 Concrete Curb & Gutter 18-Inch Type A	462.000 LF	_____.____	_____.____
0038	601.0409 Concrete Curb & Gutter 30-Inch Type A	400.000 LF	_____.____	_____.____
0040	601.0411 Concrete Curb & Gutter 30-Inch Type D	40.000 LF	_____.____	_____.____
0042	602.0405 Concrete Sidewalk 4-Inch	2,650.000 SF	_____.____	_____.____
0044	602.0415 Concrete Sidewalk 6-Inch	2,270.000 SF	_____.____	_____.____
0046	602.0515 Curb Ramp Detectable Warning Field Natural Patina	86.000 SF	_____.____	_____.____
0048	608.0412 Storm Sewer Pipe Reinforced Concrete Class IV 12-Inch	8.000 LF	_____.____	_____.____
0050	611.0639 Inlet Covers Type H-S	1.000 EACH	_____.____	_____.____
0052	611.3230 Inlets 2x3-FT	1.000 EACH	_____.____	_____.____
0054	612.0106 Pipe Underdrain 6-Inch	120.000 LF	_____.____	_____.____
0056	619.1000 Mobilization	1.000 EACH	_____.____	_____.____
0058	620.0300 Concrete Median Sloped Nose	159.000 SF	_____.____	_____.____
0060	624.0100 Water	2.700 MGAL	_____.____	_____.____
0062	625.0100 Topsoil	650.000 SY	_____.____	_____.____
0064	628.1905 Mobilizations Erosion Control	3.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0066	628.1910 Mobilizations Emergency Erosion Control	2.000 EACH	_____.____	_____.____
0068	628.2006 Erosion Mat Urban Class I Type A	650.000 SY	_____.____	_____.____
0070	628.7005 Inlet Protection Type A	3.000 EACH	_____.____	_____.____
0072	628.7020 Inlet Protection Type D	13.000 EACH	_____.____	_____.____
0074	629.0205 Fertilizer Type A	0.500 CWT	_____.____	_____.____
0076	630.0140 Seeding Mixture No. 40	13.000 LB	_____.____	_____.____
0078	630.0500 Seed Water	11.000 MGAL	_____.____	_____.____
0080	634.0614 Posts Wood 4x6-Inch X 14-FT	4.000 EACH	_____.____	_____.____
0082	634.0616 Posts Wood 4x6-Inch X 16-FT	2.000 EACH	_____.____	_____.____
0084	634.0811 Posts Tubular Steel 2x2-Inch X 11-FT	5.000 EACH	_____.____	_____.____
0086	637.2210 Signs Type II Reflective H	126.750 SF	_____.____	_____.____
0088	637.2215 Signs Type II Reflective H Folding	20.720 SF	_____.____	_____.____
0090	637.2230 Signs Type II Reflective F	30.640 SF	_____.____	_____.____
0092	638.2102 Moving Signs Type II	11.000 EACH	_____.____	_____.____
0094	638.2602 Removing Signs Type II	7.000 EACH	_____.____	_____.____
0096	638.3000 Removing Small Sign Supports	2.000 EACH	_____.____	_____.____
0098	638.4000 Moving Small Sign Supports	2.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0100	642.5201 Field Office Type C	1.000 EACH	_____.____	_____.____
0102	643.0300 Traffic Control Drums	10,185.000 DAY	_____.____	_____.____
0104	643.0410 Traffic Control Barricades Type II	350.000 DAY	_____.____	_____.____
0106	643.0420 Traffic Control Barricades Type III	644.000 DAY	_____.____	_____.____
0108	643.0705 Traffic Control Warning Lights Type A	1,478.000 DAY	_____.____	_____.____
0110	643.0715 Traffic Control Warning Lights Type C	1,238.000 DAY	_____.____	_____.____
0112	643.0900 Traffic Control Signs	2,580.000 DAY	_____.____	_____.____
0114	643.1050 Traffic Control Signs PCMS	14.000 DAY	_____.____	_____.____
0116	643.5000 Traffic Control	1.000 EACH	_____.____	_____.____
0118	644.1420 Temporary Pedestrian Surface Plywood	580.000 SF	_____.____	_____.____
0120	644.1601 Temporary Pedestrian Curb Ramp	70.000 DAY	_____.____	_____.____
0122	644.1810 Temporary Pedestrian Barricade	330.000 LF	_____.____	_____.____
0124	645.0111 Geotextile Type DF Schedule A	85.000 SY	_____.____	_____.____
0126	646.1020 Marking Line Epoxy 4-Inch	5,227.000 LF	_____.____	_____.____
0128	646.3020 Marking Line Epoxy 8-Inch	540.000 LF	_____.____	_____.____
0130	646.5020 Marking Arrow Epoxy	14.000 EACH	_____.____	_____.____
0132	646.5220 Marking Symbol Epoxy	4.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0134	646.5320 Marking Railroad Crossings Epoxy	5.000 EACH	_____.____	_____.____
0136	646.6120 Marking Stop Line Epoxy 18-Inch	106.000 LF	_____.____	_____.____
0138	646.7120 Marking Diagonal Epoxy 12-Inch	20.000 LF	_____.____	_____.____
0140	646.7420 Marking Crosswalk Epoxy Transverse Line 6-Inch	436.000 LF	_____.____	_____.____
0142	646.8120 Marking Curb Epoxy	106.000 LF	_____.____	_____.____
0144	646.8220 Marking Island Nose Epoxy	4.000 EACH	_____.____	_____.____
0146	646.8320 Marking Parking Stall Epoxy	133.000 LF	_____.____	_____.____
0148	646.9010 Marking Removal Line Water Blasting 4-Inch	3,550.000 LF	_____.____	_____.____
0150	646.9110 Marking Removal Line Water Blasting 8-Inch	160.000 LF	_____.____	_____.____
0152	646.9210 Marking Removal Line Water Blasting Wide	43.000 LF	_____.____	_____.____
0154	646.9310 Marking Removal Special Marking Water Blasting	13.000 EACH	_____.____	_____.____
0156	649.0150 Temporary Marking Line Removable Tape 4-Inch	4,161.000 LF	_____.____	_____.____
0158	649.0250 Temporary Marking Line Removable Tape 8-Inch	198.000 LF	_____.____	_____.____
0160	649.0850 Temporary Marking Stop Line Removable Tape 18-Inch	80.000 LF	_____.____	_____.____
0162	650.4000 Construction Staking Storm Sewer	1.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0164	650.5500 Construction Staking Curb Gutter and Curb & Gutter	160.000 LF	_____.____	_____.____
0166	650.8500 Construction Staking Electrical Installations (project) 01. 3700-50-54	LS	LUMP SUM	_____.____
0168	650.9000 Construction Staking Curb Ramps	8.000 EACH	_____.____	_____.____
0170	650.9910 Construction Staking Supplemental Control (project) 01. 3700-50-54	LS	LUMP SUM	_____.____
0172	652.0225 Conduit Rigid Nonmetallic Schedule 40 2-Inch	261.000 LF	_____.____	_____.____
0174	652.0235 Conduit Rigid Nonmetallic Schedule 40 3-Inch	310.000 LF	_____.____	_____.____
0176	652.0615 Conduit Special 3-Inch	576.000 LF	_____.____	_____.____
0178	653.0164 Pull Boxes Non-Conductive 24x42-Inch	10.000 EACH	_____.____	_____.____
0180	653.0900 Adjusting Pull Boxes	3.000 EACH	_____.____	_____.____
0182	653.0905 Removing Pull Boxes	1.000 EACH	_____.____	_____.____
0184	654.0101 Concrete Bases Type 1	6.000 EACH	_____.____	_____.____
0186	654.0102 Concrete Bases Type 2	3.000 EACH	_____.____	_____.____
0188	654.0110 Concrete Bases Type 10	1.000 EACH	_____.____	_____.____
0190	654.0113 Concrete Bases Type 13	1.000 EACH	_____.____	_____.____
0192	654.0217 Concrete Control Cabinet Bases Type 9 Special	1.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0194	655.0230 Cable Traffic Signal 5-14 AWG	730.000 LF	_____.____	_____.____
0196	655.0240 Cable Traffic Signal 7-14 AWG	382.000 LF	_____.____	_____.____
0198	655.0260 Cable Traffic Signal 12-14 AWG	950.000 LF	_____.____	_____.____
0200	655.0270 Cable Traffic Signal 15-14 AWG	531.000 LF	_____.____	_____.____
0202	655.0305 Cable Type UF 2-12 AWG Grounded	680.000 LF	_____.____	_____.____
0204	655.0515 Electrical Wire Traffic Signals 10 AWG	1,071.000 LF	_____.____	_____.____
0206	655.0610 Electrical Wire Lighting 12 AWG	600.000 LF	_____.____	_____.____
0208	655.0630 Electrical Wire Lighting 4 AWG	4,092.000 LF	_____.____	_____.____
0210	655.0900 Traffic Signal EVP Detector Cable	865.000 LF	_____.____	_____.____
0212	656.0200 Electrical Service Meter Breaker Pedestal (location) 01. STH 35 & STH 105	LS	LUMP SUM	_____.____
0214	657.0100 Pedestal Bases	6.000 EACH	_____.____	_____.____
0216	657.0255 Transformer Bases Breakaway 11 1/2-Inch Bolt Circle	3.000 EACH	_____.____	_____.____
0218	657.0310 Poles Type 3	2.000 EACH	_____.____	_____.____
0220	657.0315 Poles Type 4	1.000 EACH	_____.____	_____.____
0222	657.0351 Poles Type 10-Over Height	1.000 EACH	_____.____	_____.____
0224	657.0361 Poles Type 13-Over Height	1.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0226	657.0405 Traffic Signal Standards Aluminum 3.5-FT	2.000 EACH	_____.____	_____.____
0228	657.0420 Traffic Signal Standards Aluminum 13-FT	1.000 EACH	_____.____	_____.____
0230	657.0425 Traffic Signal Standards Aluminum 15-FT	2.000 EACH	_____.____	_____.____
0232	657.0430 Traffic Signal Standards Aluminum 10-FT	1.000 EACH	_____.____	_____.____
0234	657.0530 Monotube Arms 30-FT	1.000 EACH	_____.____	_____.____
0236	657.0550 Monotube Arms 50-FT	1.000 EACH	_____.____	_____.____
0238	657.0595 Trombone Arms 25-FT	2.000 EACH	_____.____	_____.____
0240	657.0609 Luminaire Arms Single Member 4-Inch Clamp 6-FT	3.000 EACH	_____.____	_____.____
0242	657.0806 Luminaire Arms Steel 6-FT	2.000 EACH	_____.____	_____.____
0244	658.0173 Traffic Signal Face 3S 12-Inch	10.000 EACH	_____.____	_____.____
0246	658.0174 Traffic Signal Face 4S 12-Inch	4.000 EACH	_____.____	_____.____
0248	658.0175 Traffic Signal Face 5S 12-Inch	2.000 EACH	_____.____	_____.____
0250	658.0416 Pedestrian Signal Face 16-Inch	8.000 EACH	_____.____	_____.____
0252	658.0500 Pedestrian Push Buttons	8.000 EACH	_____.____	_____.____
0254	658.5069 Signal Mounting Hardware (location) 01. STH 35 & STH 105	LS	LUMP SUM	_____.____
0256	659.1120 Luminaires Utility LED B	5.000 EACH	_____.____	_____.____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0258	690.0150 Sawing Asphalt	17.000 LF	_____._____	_____._____
0260	690.0250 Sawing Concrete	1,768.000 LF	_____._____	_____._____
0262	715.0415 Incentive Strength Concrete Pavement	500.000 DOL	1.00000	500.00
0264	SPV.0090 Special 01. Concrete Curb & Gutter 18-Inch Type G Special	440.000 LF	_____._____	_____._____
0266	SPV.0090 Special 02. Cure and Seal Treatment, Concrete Curb and Gutter	1,342.000 LF	_____._____	_____._____
0268	SPV.0090 Special 03. Marking Removal Line Water Blasting Crosswalk 6-Inch	500.000 LF	_____._____	_____._____
0270	SPV.0105 Special 01. Furnish and Install Battery Back-Up System STH 35 & STH 105	LS	LUMP SUM	_____._____
0272	SPV.0105 Special 02. Traffic Signal Cabinet and Controller STH 35 & STH 105	LS	LUMP SUM	_____._____
0274	SPV.0105 Special 03. Furnish and Install Emergency Vehicle Preemption System STH 35 & STH 105	LS	LUMP SUM	_____._____
0276	SPV.0105 Special 04. Vehicular Video Detection System STH 35 & STH 105	LS	LUMP SUM	_____._____
0278	SPV.0105 Special 05. Remove and Salvage Lighting Equipment STH 35 & STH 105	LS	LUMP SUM	_____._____
0280	SPV.0105 Special 06. Railroad Preemption System STH 35 & STH 105	LS	LUMP SUM	_____._____
0282	SPV.0165 Special 01. Concrete Apron 24-Inch	740.000 SF	_____._____	_____._____
0284	SPV.0165 Special 02. Concrete Apron 24-Inch Mountable	350.000 SF	_____._____	_____._____

Proposal ID: 20201110030 Project(s): 3700-50-54

Federal ID(s): N/A

SECTION: 0001 Contract Items

Alt Set ID: Alt Mbr ID:

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0286	SPV.0165 Special 03. Cure and Seal Treatment Concrete Sidewalk	4,920.000 SF	_____.____	_____.____
0288	SPV.0165 Special 04. Cure and Seal Treatment Concrete Apron 24-Inch	740.000 SF	_____.____	_____.____
0290	SPV.0165 Special 05. Cure and Seal Treatment Concrete Apron 24-Inch Mountable	350.000 SF	_____.____	_____.____
0292	SPV.0180 Special 01. Cure and Seal Treatment Concrete Pavement	180.000 SY	_____.____	_____.____
0294	SPV.0180 Special 02. Cure and Seal Treatment Concrete Driveway	77.000 SY	_____.____	_____.____
0296	SPV.0195 Special 01. Excavation, Hauling, and Disposal of Petroleum-Contaminated Soil and Managem	40.900 TON	_____.____	_____.____

Section: 0001 Total: _____.____

Total Bid: _____.____

PLEASE ATTACH ADDENDA HERE