

# HIGHWAY WORK PROPOSAL

Wisconsin Department of Transportation  
DT1502 10/2010 s.66.29(7) Wis. Stats.

Proposal Number:

23

COUNTY	STATE PROJECT ID	FEDERAL PROJECT ID	PROJECT DESCRIPTION	HIGHWAY
Waukesha	2380-00-73	WISC 2013 270	Janesville Road CTH Y to Lannon Drive	CTH L

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, \$ 100,000.00 Payable to: Wisconsin Department of Transportation	Attach Proposal Guaranty on back of this PAGE.
Bid Submittal Due Date: May 14, 2013 Time (Local Time): 9:00 AM	Firm Name, Address, City, State, Zip Code
Contract Completion Time June 14, 2014	<b>SAMPLE NOT FOR BIDDING PURPOSES</b>
Assigned Disadvantaged Business Enterprise Goal 15%	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)

\_\_\_\_\_  
(Print or Type Name, Notary Public, State Wisconsin)

\_\_\_\_\_  
(Date Commission Expires)

Notary Seal

\_\_\_\_\_  
(Bidder Signature)

\_\_\_\_\_  
(Print or Type Bidder Name)

\_\_\_\_\_  
(Bidder Title)

## For Department Use Only

Type of Work Excavation, base aggregate, breaker run, HMA pavement, concrete pavement at specified intersections, concrete curb and gutter, storm sewer, storm sewer detention pond, pipe underdrain, signing, pavement marking, traffic signals, lighting, landscaping, and incidentals.	Date Guaranty Returned
Notice of Award Dated	

**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.

## 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 <http://www.dot.wisconsin.gov/business/engrserv/bid-letting-information.htm>. 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 P.M. local time on the Thursday before the letting. Check the department's web site after 5:00 P.M. 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 P.M. 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](http://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 <http://www.dot.wisconsin.gov/business/engrserv/bid-letting-information.htm> 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, Room 601, 4802 Sheboygan Avenue, Madison, WI, during regular business hours.

#### 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 <http://www.dot.wisconsin.gov/business/engrserve/bid-letting-information.htm>. 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

DT1303 1/2006

Wisconsin Department of Transportation

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)

## 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**

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

\_\_\_\_\_  
(Signature of Attorney-in-Fact)

## 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

DT1305 8/2003

Wisconsin Department of Transportation

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)



**FEBRUARY 1999**

**LIST OF SUBCONTRACTORS**

Section 66.29(7), Wisconsin Statutes, provides that a bidder, as a part of his proposal, shall submit a list of the subcontractors he proposes to contract with and the class of work to be performed by each, provided that to qualify for such listing each subcontractor must first submit his bid in writing to the general contractor at least 48 hours prior to the time of bid closing. It further provides that a proposal of a bidder shall not be invalid if any subcontractor, and the class of work to be performed by such subcontractor, has been omitted from a proposal.

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.

<b>Name of Subcontractor</b>	<b>Class of Work</b>	<b>Estimated Value</b>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



**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.



## **fSpecial Provisions**

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## **SPECIAL PROVISIONS**

### **1. General.**

Perform the work under this construction contract for Project 2380-00-73, Janesville Road, CTH Y to Lannon Drive, CTH L, Waukesha 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, 2013 Edition, as published by the department, the latest edition of the Standard Specifications for Sewer and Water Construction Wisconsin (Green Book) hereinafter called *State Standard Specifications* and in accordance to these special provisions.

In the event of a conflict, the Wisconsin Department of Transportation Standard Specifications will take precedence.

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.

### **2. Mandatory Pre-Bid Meeting.**

*Supplement standard spec 102.3.1 with the following:*

Prospective bidders are required to attend a mandatory pre-bid meeting at 9:00 AM on April 24 at the Waukesha County Administration Center, located at 515 W. Moreland Blvd., Waukesha, WI, Room G55/59.

No meeting minutes will be prepared. Issues discovered at the meeting will be handled by addendum.

102-010 (20041504)

### **3. Scope of Work.**

The work under this contract shall consist of excavation, base aggregate, breaker run, HMA pavement, concrete curb and gutter, storm sewer, storm sewer detention pond, pipe underdrain, signing, pavement marking, traffic signals, lighting, landscaping, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

#### **4. 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.

Submit a Progress Schedule as defined in standard spec 108.4 at the preconstruction conference indicating schedule and work plan to complete contract within specified time frames.

The contract time for completion is based on an expedited work schedule and may require extraordinary forces and equipment.

Paving done after October 15 shall be completed in accordance to standard spec 450.

*Supplement standard spec 108.11 as follows:*

If the contractor fails to complete all work through Stage 4 on CTH L (Janesville Road) project 2380-00-73 prior to 12:01 AM November 16, 2013, the department will assess the contractor \$1,605.00 in interim liquidated damages for each calendar day that contract work remains incomplete.

The department will not grant time extensions to the interim completion dates specified above for the following:

1. Severe weather as specified in standard spec 108.10.2.2.
2. Labor disputes that are not industry wide.
3. Delays in material deliveries.
4. Utility Coordination/Construction

If contract time expires prior to completing all work specified in the contract, additional liquidated damages will be affixed according to standard spec 108.11.

The contractor is advised that there may be multiple mobilizations for such items as traffic control, temporary pavement marking, pavement marking, erosion control, salvaged topsoil, asphaltic surface temporary, seeding/sodding, mulching, fertilizer, temporary seeding, drainage items and other incidental items related to staging required to complete the work under this contract. No additional payment will be made by the department for said mobilizations.

## **A Schedule of Operations**

The department anticipates that the schedule for each stage shall be as follows below, unless modifications are approved in writing by the engineer.

### **Project 2380-00-73**

One lane in each direction along CTH L (Janesville Road) shall remain open throughout this contract. Maintain access to all businesses and residences and to all side roads at all times.

#### **Stage 1 - Pulverize, grade and shape locations of the existing Westbound shoulder**

- Remove existing curb at specific locations shown on plan.
- Place Temporary Asphalt Pavement and Grade and Shape the shoulders.
- Install Temporary Traffic Signals at Racine Avenue and Lannon Drive.
- Clearing and Grubbing on the project only in areas not conflicting with the widening work.
- Construct pond in Northwest quadrant of CTH L (Janesville Road) and Park Drive.
- Install Storm Sewer pipes and structures in this stage.
- Install temporary concrete barrier.

Construct the Cross overs and portions of shoulders as shown in the plans. Provide gaps in the work zone as needed to maintain local traffic to properties along this contract.

#### **Stage 2 - Construct the new Eastbound lanes of CTH L (Janesville Road)**

- Remove Existing Pavement Markings in conflict with Stage 2 Traffic Control.
- Place Temporary Striping and switch traffic to the North lane and shoulder.
- Saw Cut pavement along entire length of project at stage line.
- Remove existing pavement in this stage.
- Install Storm Sewer and Inlets in this stage.
- Excavate and place sub base and base course.
- Place curb and gutter and storm sewer laterals to stage line and set inlets in this stage.
- Backfill behind curb, finish grade and place topsoil.
- Place Asphaltic Pavement to top of binder course.
- Place sidewalk this stage.
- Complete restoration of disturbed areas south of the new South curb line.

Do not begin work on Stage 2 until Stage 1 is open to traffic. Minor items not impacting traffic from Stage 1 may remain at the start of Stage 2.

Provide gaps in the work zone as needed to maintain local traffic to properties along roads closed under this contract.

**Stage 3 - Construct the new Westbound lanes of CTH L (Janesville Road)**

- Place Temporary Striping and switch traffic to the new South lanes.
- Remove remaining pavement.
- Install Storm Sewer laterals and Inlets in this stage.
- Excavate and place sub base and base course.
- Place curb and gutter and set inlets in this stage.
- Backfill behind curb and finish grade.
- Place Asphaltic Pavement to top of binder course.
- Place sidewalk this stage.
- Complete restoration of disturbed areas north of the new North curb line.

Do not begin work on Stage 3 until Stage 2 is open to traffic. Minor items not impacting traffic from Stage 2 may remain at the start of Stage 3.

Provide gaps in the work zone as needed to maintain local traffic to properties along roads closed under this contract.

**Stage 4 – Median and finishing work**

- Construct the median and left turn lanes of CTH L (Janesville Road).
- Place Temporary Striping and switch traffic to the outside of the new lanes.
- Excavate and place sub base and base course.
- Place curb and gutter and temporarily set inlets in this stage.
- Backfill behind curb and finish grade.
- Place Asphaltic Pavement to top of binder course.
- Place sidewalk this stage.
- Complete restoration of disturbed areas in the median.
- Install Permanent Signing.
- Install Permanent Traffic Signals.
- Activate the permanent traffic signals at Racine Avenue and Lannon Drive.
- Install epoxy pavement marking prior to winter shut-down.

Do not begin work on Stage 4 until Stage 3 is open to traffic. Minor items not impacting traffic from Stage 3 may remain at the start of Stage 4.

Provide gaps in the work zone as needed to maintain local traffic to properties along roads closed under this contract. Complete Stage 4 work prior to 12:01 AM November 16, 2013.

**Winter Shut Down:**

- Remove barricades and barrels.
- Cover unneeded construction traffic control signs.
- Open all lanes of traffic.



**Stage 5:**

- Complete decorative streetscaping.
- Plant trees and shrubs.
- Adjust inlets and manholes to final grade.
- Place final asphaltic surface layer on CTH L (Janesville Road).
- Place final permanent pavement marking on CTH L (Janesville Road).

Provide gaps in the work zone as needed to maintain local traffic to properties along CTH L (Janesville Road).

**C Work Restrictions**

Comply with all local ordinances that apply to work operations, including those pertaining to working during nighttime work hours. Any ordinance variance issued by the municipality or required permits shall be furnished to the engineer, by the contractor, in writing three working days before performing such work.

Park equipment and store material only at work sites approved by the engineer.

Maintain access to all commercial and private properties along CTH L (Janesville Road) at all times unless otherwise noted in the plan and except during construction of the driveways. During driveway construction, do not close any driveway approach or remove from service without providing a minimum of three days notice to the occupants of the premises to remove their vehicles prior to driveway removal or closing of the driveway approach access. Replace the driveway as expeditiously as possible to minimize the inconvenience to the occupants whose driveway has been removed or closed.

Submit all traffic control change requests to the engineer at least 48 hours prior to an actual traffic control change. A request does not constitute approval.

**5. Traffic.****General**

The construction sequence, including the associated traffic control, shall be substantially accomplished as detailed in the Traffic Control Plans, and as described herein.

Utilize flaggers, signs, barricades, and drums as may be necessary to safeguard and direct traffic at all locations where construction operations may interfere with or restrict the smooth flow of traffic.

Use drums, barricades and temporary concrete barrier to direct vehicular and pedestrian traffic in the work zone and to protect and delineate hazards such as open excavations, abrupt drop-offs, and exposed manholes, inlets, and hydrants.

Coordinate traffic requirements under this contract with other adjacent and concurrent Department of Transportation, Waukesha County or local municipality projects. Implement and coordinate with other contractors all traffic control as shown on the plans.

Modifications to the traffic control plan may be required by the engineer to be safe and consistent with adjacent work by others.

Unless detailed in the plans, do not begin or continue any work that closes traffic lanes outside the allowed time periods specified in this article.

### **Traffic Control Deficiency Response Time Penalty**

*Supplement standard spec 643.3.1 with the following:*

Upon receiving written notification from the engineer, clean, repair or replace traffic control devices not performing as intended to the satisfaction of the engineer within 12 hours. Failure to clean, repair or replace required traffic control within the time limits specified above will result in daily monetary deductions of \$500 for each 24-hour period (or portion thereof starting 12 hours after time of notification) in which the traffic control deficiency exists.

### **Emergency Vehicle Access**

*Maintain emergency vehicular access at all times to all through roadways located along CTH L (Janesville Road) and to all businesses located along CTH L (Janesville Road).*

### **Local Vehicle Access**

Maintain local vehicular access at all times to all driveways within the project limits unless otherwise noted in the plans. Notify the property occupant 3 days in advance of the driveway reconstruction to verify closure or staged driveway construction methods. Construct driveway approaches to commercial businesses in stages or provide temporary access such that access to commercial property is provided at all times during the life of the project. Temporary access may be constructed with base course at the contract unit price for Base Aggregate Dense 1 1/4-inch. Maintain at least one access to businesses at all times.

### **Contractor Coordination**

Hold weekly scheduling meetings to discuss the near term schedule activities, address any long-term schedule issues, and discuss any relevant technical issues. Provide sufficient detail to include actual and planned activities and all the subcontractors. Submit plans for all traffic control for review by the engineer and approval a minimum of one week prior to implementation.

### **Advanced Notification**

Provide the following minimum advance notification to the engineer.

Local street openings/closings	7 calendar days
Project start	14 calendar days
Construction stage changes	14 calendar days
Detours	14 calendar days

Notify the engineer if there are any changes in the schedule, early completions, or cancellations of scheduled work.

### **Staging**

#### **Project 2380-00-73 Staging**

Perform construction operations on CTH L (Janesville Road) in stages as shown in the traffic control/construction staging plan and in the Prosecution and Progress article. The requirements for closing and keeping roadways open in the stages are:

**Stage 1:** Close the Westbound shoulder of CTH L (Janesville Road) and widen and improve the shoulders. Keep both directions of the through traffic open.

**Stage 2:** Move traffic to the westbound lane and shoulder and close the eastbound lane. Keep one lane of traffic in each direction of CTH L (Janesville Road) open to traffic. Keep all side roads open.

**Stage 3:** Move traffic to the newly constructed eastbound lanes and close the westbound lane and shoulder. Keep one lane of traffic in each direction of CTH L (Janesville Road) open to traffic. Keep all side roads open.

**Stage 4:** Move traffic to the outside westbound lane and the outside eastbound lane and close the inside lanes and median. Keep one lane of traffic in each direction of CTH L (Janesville Road) open to traffic. Keep all side roads open.

**Stage 5:** The final surface and permanent pavement marking will be placed in the spring of 2014 under traffic. This will be accomplished using short term lane closures and flaggers.

Coordinate traffic requirements under this contract with other ongoing Wisconsin Department of Transportation construction projects, other Waukesha County projects, and other City of Muskego projects. Contractor is responsible for implementing and coordinating traffic control measures with other contractors.

Do not store equipment, vehicles, or materials on adjacent streets beyond the project limits without specific approval of the engineer.

## **6. Traffic Control.**

*Supplement standard spec 643.3.1 with the following:*

Have available at all times sufficient experienced personnel to promptly install, remove and reinstall the required traffic control devices to route traffic in order to perform the operations.

Provide the Muskego Police Department, Waukesha County Dispatch and the engineer a current telephone number with which the contractor or his representative can be contacted during non-working hours in the event a safety hazard develops.

Do not park or store equipment, vehicles or construction materials within the clear zone as designated in the plans on any roadway carrying traffic during non-working hours except at locations and periods of time approved by the engineer.

Equip all construction vehicles and equipment operating on or near roadways open or closed to traffic, with at least one flashing amber light. Activate the flashing amber light when vehicles or equipment are operated on the roadway, parked in close proximity to the roadway, and when entering or exiting live lanes of traffic. Mount the flashing amber light approximately midway between the transverse extremities of the vehicles or machinery and at the highest practical point that provides visibility from all directions. The light shall be of the flashing strobe or revolving type meeting the following minimum requirements:

**Flashing Strobe Type Light**

360-degree lens  
60 to 90 flashes per minute  
5-inch minimum height  
3-3/4 inch minimum diameter

**Revolving Type Light**

360-degree lens  
45 to 90 flashes per minute  
4-5/8 inch minimum height  
3-3/4 inch minimum diameter

Equip the light with bulbs of 50 candlepower minimum. Use magnetic or permanent mounting. No compensation for furnishing and installing the flashing amber light to contractor owned construction equipment or vehicles will be provided for in the contract.

Do not disturb, remove or obliterate any traffic control signs, advisory signs, shoulder delineators, sand barrel array or beam guard in place along the traveled roadways not shown on the plans without the approval of the engineer.

The traffic requirements are subject to change at the direction of the engineer in the event of an emergency.

## **7. Holiday and Other Work Restrictions.**

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying CTH L (Janesville Road) 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 24, 2013 to 6:00 AM Tuesday, May 28, 2013 for Memorial Day;
- From 3:00 PM Friday, June 7, 2013 to 6:00 AM Saturday, June 8, 2013;
- From noon Wednesday, July 3, 2013 to 6:00 AM Monday, July 8, 2013 for Independence Day;
- From 3:00 PM Friday, August 2, 2013 to 6:00 AM Saturday, August 3, 2013;
- From noon Friday, August 30, 2013 to 6:00 AM Tuesday, September 3, 2013 for Labor Day;

- From noon Wednesday, November 27, 2013, to 6:00 AM Monday, December 2, 2013 for Thanksgiving;
- From noon Tuesday, December 24, 2013, to 6:00 AM Thursday, December 26, 2013 for Christmas;
- From noon Tuesday, December 31, 2013, to 6:00 AM Thursday, January 2, 2014 for New Year's Day;
- From noon Friday, May 23, 2014 to 6:00 AM Tuesday, May 27, 2014 for Memorial Day.

107-005 (20050502)

## 8. Utilities.

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

107-065 (20080501)

Underground and overhead utility facilities are located within the project limits. Utility adjustments are required for this construction project as noted below. Coordinate construction activities with a call to Diggers Hotline or a direct call to utilities that have facilities in the area as required per statutes. Use caution to ensure the integrity of underground facilities and maintain code clearances from overhead facilities at all times.

Contact each utility company listed in the plans, prior to preparing bids, to obtain current information on the status of existing and any new utility relocation work.

The following utility companies have facilities along the project. A summary of their proposed utility alteration work to accommodate construction is summarized below.

**We Energies – Electric** has overhead facilities along the length of the project. These facilities are located along both the eastbound and the westbound lanes. There are a number of roadway crossings throughout the length of the project, and services to residential and commercial buildings along the project corridor.

We Energies proposes to remove all of their overhead facilities and replace them with underground cables. The underground facility will be part of an underground duct package that is to be placed in an open cut along the right side of the project between the back of the proposed sidewalk and the right-of-way line. The duct package will be in conjunction with the We Energies – Gas and Time Warner Cable relocations.

Electric Cable crossing CTH L occur at approximately Station 19+15, 22+60, 26+75, 44+15, 50+25, 53+00, 55+45, 66+25, 72+50, and 74+40. Additional crossings crossing the side roads occur at Racine Avenue (south of CTH L), Lions Park Drive (South of CTH L), Kelly Drive (South of CTH L), Valley Drive (South of CTH L), Janesville Court (North of CTH L), Pioneer Drive (South of CTH L); and at Station 18+50, Kristin Drive (South of CTH L), Westwood Drive (South of CTH L), Lannon Drive (South of CTH L).

Additional lines run along the east side of Lions Park Drive to the north, east side of Lincoln Drive to the north, east side of Kelly Drive to the south, east side of Kristin Drive to the south, east side of Park Drive to the north, east side of Westwood Drive to the south, and on the west side of Center Drive to the north.

We Energies plan to begin this work by February 4, 2013 and complete the work by June 10, 2013. The field contact for We Energies Electric is Mr. Phil McDonnell (414) 944-5620.

**We Energies – Gas** has a 6-inch steel line currently located along the project under the eastbound lanes from CTH Y to Lannon Drive. Service laterals extend from this line with numerous crossing under CTH L. The 6-inch steel gas mains found in this project was installed during an ear with “coal tar: wrap was common. Some coal tar wrap products where supplemented with a small percentage of asbestos fibers. The fibers are imbedded in the coal tar and do not present a hazard during normal handling. We Energies will work along with the road reconstruction contractors at the time of construction to dispose of any steel pipe, that is coated with coal tar wrap that contains asbestos fibers, where the pipe is in conflict with grading or storm sewer work. We Energies will be testing the existing main for the presence of asbestos in the wrap. If asbestos is found We Energies will notify the County, and WisDOT.

We Energies propose to replace these facilities as follows:

Install a new main in a joint duct package (See We Energies – Electric, and Time Warner Cable) to be located along the right side of the project from CTH Y to Lannon Drive generally between the back of the new sidewalk and the right-of-way line.

A 2-inch gas line will run behind the sidewalk in the left side of CTH L from approximately Station 37+25 to Station 49+00. Connections to this line cross CTH L at Station 44+25

A 6-inch gas line crosses under CTH L at Station 21+80 and continues north along the back of curb on the left side of Lions Park Drive.

A 2-inch gas line crosses under CTH L at Station 26+55 and continues north along the right-of-way line on the right side of Lincoln Drive.

A 2-inch gas line runs along the right-of-way line on the left side of Valley Drive towards the south.

A 6-inch gas line runs south along the back of sidewalk on the left side of Pioneer Drive. At approximately Station 18+50 on Pioneer Drive, it crosses Pioneer Drive, and connects to an existing gas line along the back of curb on the right side of Pioneer Drive.

A 2-inch gas line crosses CTH L at approximately Station 56+00.

A 2-inch gas line runs along the right-of-way line on the right side of Westwood Drive and connecting to an existing line at approximately Station 132+00 of Westwood Drive.

A 2-inch gas line crosses CTH L at Station 75+00 and continues to the north along the right-of-way line on the right side of Center Drive.

A 4-inch gas line runs south along the right side of Lannon Drive along the right-of-way line. This line crosses Lannon Drive at approximately Station 156+35 and connects to a round 78-inch test stand.

A 4-inch gas line crosses CTH L at Station 78+05 and connects to an existing test stand located behind the right curb and the right-of-way line at Station 161+75 on Lannon Drive.

We Energies plans to begin this work by February 4, 2013 and relocation work is anticipated to last 80 days. The field contact for We Energies Gas is Mr. Joe Dable (414) 944-5543.

Highway contractor shall contact We Energies before removing any gas facilities or electrical underground cables, to verify that they have been abandoned and carry no natural gas or electrical current. Contractor must call the We Energies 24 hour dispatch lines to arrange for this verification. We Energies Gas Dispatch, (800) 261-5325.

**AT&T Wisconsin** has an existing duct package that runs east along CTH L on the south side of the road. On the east side of Lions Park Drive, the duct package crosses CTH L and continues north on Lions Park Drive. Another duct package runs along the north side of CTH L from Racine Avenue to the east terminal of the project. Additional lines run north along the east side of Park Drive.

Another line comes into the project limits from the south at approximately Station 27+00 and continues east towards the east side of Kelly Drive, then heads south, leaving the project limits.

Another line crosses CTH L from the duct on the north side of CTH L, and continues south on Valley Drive on the west side of Valley Drive, eventually leaving the project limits.

A duct package crosses Lannon Drive at approximately Station 157+50, then heads north along the west side of Lannon Drive. This duct crosses CTH L at approximately Station 76+60, and ties into the duct package that runs parallel to the north side of CTH L.

Another duct package continues north on Lannon Drive along the west side of Lannon Drive.

AT&T proposes to relocate their facilities to accommodate the expansion roadway project. Their proposed relocation is along the right-of-way line on the south side of

CTH L from approximately Station 68+50 to Lannon Drive. This duct consists of 15 conduits encased in concrete. A vault is located on the southwest corner of CTH L and Lannon Drive (in the roadway limits). A duct package continues north, crossing CTH L, along the west side of Lannon Drive to another vault near the project limits at approximately Station 163+00. From the vault in the southwest corner of CTH L and Lannon Drive, another duct package runs south along the west side of Lannon Drive.

Another relocated duct package runs from the western limits of the project, along the back of the sidewalk on the north side of CTH L to approximately Station 68+31.

A duct package crosses Lannon Drive at approximately Station 15+47, 30+90, 48+95, 57+70, 68+32.

Additional ducts run on the east side of Lions Park Drive to the north, and on the west side of Pioneer Drive to the south.

The placement of the new duct packages are anticipated to be completed prior to construction. Splicing of the cabling from the old ducts to the new ducts will extend into the roadway construction schedule. The existing facility between the western limits of the project and Station 68+32 will remain intact and operational until splicing operations are completed.

Coordination between the roadway contractor and the AT&T contractor will be needed in order to determine schedules and work locations.

AT&T anticipates a starting date of January 18, 2013, and relocations are expected to be completed by July 15, 2013.

The field contact for AT&T Wisconsin is Mr. Mark Eder, (262) 896-7434.

**Time Warner Cable** has overhead facilities along the length of the project on We Energies' poles. These facilities are located along both the eastbound and the westbound lanes. There are a number of roadway crossings throughout the length of the project, and services to residential and commercial buildings along the project corridor.

Time Warner Cable plans to replace all of their overhead facilities by installing new underground cables in the proposed duct package being constructed by We Energies Gas and Electric, as described above. This work is anticipated to be performed in coordination with We Energies' construction/completion schedule.

Time Warner Cable's relocated facilities will have lines crossing CTH L at Stations 19+13, 22+50, 26+50, 44+20, 53+00, 55+50, 66+00, 72+50, and 74+50. The relocated facilities generally run along the southern side of CTH L near the right-of-way line from the beginning of the reconstruction project to the end of construction limits.



In addition to the lines that run along CTH L, Time Warner Cable will relocate facilities along east side of the north approach of Lions Park Drive, east side of Lincoln Drive, east side of Kelly Drive, east side of Kristin Drive, east side of Park Drive, east side of Westwood Drive, and the west side of Center Drive.

Time Warner Cable anticipates a starting date of February 4, 2013, and relocations are expected to take 57 working days to complete.

The field contact for Time Warner Cable is John Bourdo, (414) 430-6282 (cell).

**City of Muskego – Sanitary Sewer** has facilities along the length of the project with services to residential and commercial buildings along the project corridor. The existing sanitary sewer is running along the north edge of the existing roadway and in the westbound travel lanes from the west outside of the project and ending at approximately Station 31+00. At approximately Station 32+00 the sanitary sewer line begins on the south side of the road in the eastbound travel lanes to Lannon Drive. At this location the sanitary sewer line turns and shifts to the north side of CTH L, eventually leaving the limits of the project.

Sanitary sewer manholes will be adjusted during roadway construction by the roadway contractor as part of this contract.

**City of Muskego – Water** has facilities along the length of the project with services to residential and commercial buildings along the project corridor. The existing water main is running along the south edge of the existing roadway and in the terrace of the eastbound travel lanes. At approximately Station 31+75, the waterline shifts to the north side of the road and continues along CTH L, eventually leaving the project limits to the east.

Water valves will be adjusted and hydrants relocated during roadway construction by the roadway contractor as part of this contract.

The field contact for the City of Muskego is Mr. Dave Simpson, (262) 679-4145.

## **9. Municipality Acceptance of Sanitary Sewer and Water Main Construction.**

Both the department and City of Muskego personnel will inspect construction of sanitary sewer and water main under this contract. However, construction staking, testing, and final acceptance of the sanitary sewer and water main construction will be by the City of Muskego.

105-001 (20061009)

## **10. Construction Over or Adjacent to Navigable Waters.**

*Supplement standard spec 107.19 with the following:*

The Pilak Creek is classified as a navigable waterway. Contractor shall not be permitted to operate equipment on the bed or banks of Pilak Creek. There shall be no disturbance of Pilak Creek as a result of construction activity under this contract.

107-060 (20040415)

## **11. Former Muskego Village Cemetery Archeology.**

The former Muskego Village Cemetery is located between Station 53+00 and 110+00. The burials were relocated in 1955, and today the former cemetery is a landscaped area associated with a condominium development. As all burial sites in Wisconsin are protected under Wisconsin Statute 157.70, a qualified archaeologist, provided by the department, shall be on site during construction in the area of the former cemetery. The engineer will contact James Becker, (608) 261-0137 or Lynn Cloud, (608) 266-0099, a minimum of ten calendar days prior to working in this area of the former cemetery. Contact the State Historical Society a minimum of 5 working days prior to work beginning in the area of the former cemetery. If any findings are encountered, the contractor could be delayed until further investigation is completed.

## **12. Erosion Control.**

*Supplement standard spec 107.20 with the following:*

Do not implement Erosion Control Implementation Plan (ECIP) until the ECIP has been granted approval from the department. Provide the ECIP 14 days prior to the pre-construction meeting. Dust Control and dewatering shall be addressed in the ECIP.

Pursue operations in a timely and diligent manner, continuing all construction operations methodically from the initial topsoil stripping operation through the subsequent grading and re-topsoiling to minimize the period of exposure to possible erosion.

Do not place any fills in waterways or wetlands for any purpose. Contractor shall not be permitted to operate equipment on the bed or banks of Pilak Creek. There shall be no disturbance of Pilak Creek as a result of construction activity under this contract.

Re-topsoiling of graded areas, as designated by the engineer, shall be done immediately after grading is completed within those areas. All topsoiled areas shall be seeded, or sodded, fertilized, and mulched within 5 calendar days after placement of topsoil. Any disturbed areas left inactive for a period of 14 working days or longer shall be temporarily stabilized as directed by the engineer.

### **13. Removing Pavement.**

The work under this item shall be in accordance to the requirements of standard spec 204, as shown on the plans, and as hereinafter provided.

Remove existing concrete pavement in a manner that causes minimal disturbance to the underlying base material.

The contractor may use material removed under this item as aggregates for Base Aggregate Dense or Breaker Run. Should the contractor elect to use this material, the material shall conform to standard spec 305 or 311, respectively.

Any surplus salvaged material or unusable material shall become the property of the contractor and shall be disposed of by the contractor in an environmentally acceptable manner. The cost to dispose of all excess materials, including steel reinforcement, shall be included in the item of Removing Pavement.

The crushing, screening, and processing of the removed concrete pavement shall not be measured and paid for separately, but shall be considered as included and incidental to the cost of the item into which the produced aggregates are incorporated.

### **14. Excavation Below Subgrade.**

Areas of buried topsoil and/or other unsuitable soils have been identified within the project limits. The location and estimated limits of these areas are not shown on the cross sections, but are estimated to be accounted for in the excavation common required for the placement of the granular sub-base course. The actual limits to be excavated shall be determined in the field based upon the observed presence of unsuitable soils or on the basis of the results of proof rolling the earth subgrade. The quantity of EBS may be adjusted depending on the conditions found in the field and the proof rolling results. The cost of proof rolling shall be considered incidental to the cost of excavation common.

To gain acceptance of the subgrade, the contractor, in the presence of the engineer, shall proof roll all roadways with a heavily-loaded rubber-tired vehicle, such as a tandem-axle dump truck or scraper.

Excavation below subgrade found necessary after and required after the completion of the rough grading operations shall be in accordance to the pertinent requirements of standard spec 205.4.1 and standard spec 205.5.2.

*Change standard spec 205.5.2(2) to read as follows:*

“Excavation Below Subgrade performed after rough grading operations are complete will be paid for at the contract unit price for “Excavation Common.”

## **15. Erosion Control at Borrow and Disposal Sites.**

*Replace standard spec 628.4.1.1 as follows:*

The department will not measure erosion control items acceptably furnished and placed on borrow sites and material disposal sites in accordance to the contractor's erosion control implementation plan, and at the request of the engineer.

*Replace standard spec 628.5.1 (2) as follows:*

The department will not pay for the erosion control items acceptably furnished and placed on borrow sites and material disposal sites in accordance to the contractor's erosion control implementation plan, and at the request of the engineer. This work of furnishing and placing these erosion control measures shall be included in the bid item "Excavation Common".

## **16. Base Aggregate Dense 1 1/4-Inch for Lower Base Layers.**

*Replace standard spec 305.1.1 with the following:*

- This section describes constructing a dense graded base using crushed limestone obtained from quarries.

*Replace standard spec 305.2.2.1(2) with the following:*

- Use 1 1/4-inch base throughout the full base depth.
- Use 3/4-inch base in the top 3 inches of the unpaved portion of shoulders.
- Use 3/4-inch base or 1 1/4-inch base elsewhere in shoulders.

## **17. Temporary Sidewalks and Driveways.**

There are businesses located along Janesville Road whose primary pedestrian and and/or vehicular access is from Janesville Road. Pedestrian and vehicular access to these businesses is to be maintained during business hours. Any disruption to the building accesses needs to be coordinated with the department and the business owners. Temporary sidewalks and driveways will need to be provided in order to provide continuous access to the businesses.

Construct and maintain, in satisfactory condition, temporary sidewalks and driveways at locations noted in the plans and specified by the engineer. Construct temporary sidewalks and driveways of base aggregate dense 1 1/4 -inch to dimensions determined by the engineer.

Base aggregate for construction of the temporary sidewalks and driveways will be paid for under the item Base Aggregate Dense 1 1/4 -Inch. Include the cost of labor and equipment necessary to place and remove the temporary sidewalks and driveways in the contract unit price for Base Aggregate Dense 1 1/4 -Inch.

## **18. Notice To Contractor – Muskego Elementary School Parking Lot.**

Work associated with restriping the Muskego Elementary School parking lot shall be included with standard bid items for pavement marking 4-inch, pavement marking symbols.

Expansion of the Muskego Elementary School parking lot to the east towards Michi Drive shall be included with associated standard bid items for curb and gutter, asphaltic pavement, base aggregate, and permanent pavement marking.

## **19. Excavation, Hauling, and Disposal of Petroleum Contaminated Soil, Item 205.0501.S.**

### **A Description**

#### **A.1 General**

This special provision describes excavating, loading, hauling, and disposing of petroleum contaminated soil at a DNR approved bioremediation facility. The closest DNR approved bioremediation facilities are:

Veolia Environmental Services Emerald Park Landfill  
10629 S. 124th St.  
Muskego, Wisconsin 53150

Waste Management Metro Recycling and Disposal Facility  
10712 S. 124th St.  
Franklin, Wisconsin 53132

Perform this work in accordance 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.

#### **A.2 Notice to the Contractor – Contaminated Soil Location(s)**

The department completed testing for soil and groundwater contamination for locations within this project where excavation is required. Testing indicated that petroleum-contaminated soil is present at the following location(s) as shown on the plans:

- Janesville Road Station 19+00 to 22+00, from the reference line to the project limits left, from approximately 1 to 5 feet bgs.
- Janesville Road Station 53+50 to 54+00, from the reference line to the project limits right, from approximately 5 to approximately 12 feet bgs.
- Janesville Road Station 64+00 to 66+00, from reference line to project limits left – groundwater contains metals above the NR 140, WAC PALs here.
- Janesville Road Station 75+50 to 76+50, from reference line to project limits left, from approximately 5 to 12 feet bgs. Groundwater is also contaminated with PVOCs, naphthalene and lead here.

- Janesville Road Station 74+00 to 77+00, from reference line to project limits right, from approximately 3 to 7.5 feet bgs. Groundwater near here is contaminated with benzene.

A review of available information for the construction corridor indicates that contaminated soil is or may be present beyond the construction limits at the locations listed below:

- Janesville Road Station 52+00 to 53+50, right of project limits right; and,
- Janesville Road Station 74+00 to 77+00, beyond project limits right and left.

Contaminated soil at the above locations are expected to be beyond the excavation limits necessary to complete the work under this project. Control construction operations at these locations to ensure that they do not extend beyond the excavation limits indicated in the plans.

If contaminated soils are encountered elsewhere on the project, terminate excavation activities in the area and notify the engineer.

For further information regarding previous investigation and remediation activities at these sites contact:

Name: Todd Becker, PE  
 Address: 325 E. Chicago Street, Suite 500, Milwaukee, WI 53202  
 Phone: (414) 935-4359  
 Fax: (414) 225-9826  
 E-mail: todd.becker@daarcorp.com

### **A.3 Coordination**

Coordinate work under this contract with the environment consultant:

Consultant: TRC Environmental Corporation  
 Address: 150 N. Patrick Blvd. Suite 180, Brookfield, WI 53045  
 Contact: Ken Yass  
 Phone: (262) 901-2145  
 Fax: (262) 879-1220  
 E-mail: kyass@tresolutions.com

The role of the environmental consultant will be limited to:

1. Determining the location and limits of contaminated soil to be excavated based on soil analytical results from previous investigations, visual observations, and field screening of soil that is excavated;
2. Identifying contaminated soils to be hauled to the bioremediation facility;
3. Documenting that activities associated with management of contaminated soil are in conformance with the contaminated soil management methods for this project as specified herein; and

4. Obtaining the necessary approvals for disposal of contaminated soil from the bioremediation facility.

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 areas of contamination 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 activities in the contaminated areas. Perform excavation work in each of the contaminated areas on a continuous basis until excavation work is completed.

Identify the DNR approved bioremediation facility that will be used for disposal of contaminated soils, 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 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 contaminated with gasoline, diesel fuel, fuel oil, 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 soil excavated.

The environmental consultant will periodically evaluate soil excavated from the contaminated areas to determine if the soil will require offsite bioremediation. The environmental consultant will evaluate excavated soil based on field screening results, visual observations, and soil analytical results from previous environmental investigations. Assist the environmental consultant in collecting soil samples for evaluation using excavation equipment. The sampling frequency shall be a maximum of one sample for every 20 cubic yards excavated.

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

- Excavation Common – clean soil, construction and demolition fill (such as clean soil, boulders, concrete, reinforced concrete, bituminous pavement bricks building stone, unpainted or untreated wood), which under NR 500.08 are exempt materials.
- Contaminated soil for disposal at the WDNR-licensed disposal facility, or
- Potentially contaminated for temporary stockpiling and additional characterization prior to disposal.

If during excavations outside the areas of known contamination, materials are encountered that exhibit characteristics of municipal wastes or contain significant quantities of industrial-type wastes, such as fly ash, foundry sand, and cinders, or when conditions such as unknown underground storage tanks or soil/fill material with noticeable impacts from petroleum or chemical products, or other obvious potentially contaminated materials are encountered, suspend excavation in that area and notify the engineer and the environmental consultant.

Some material may require additional characterization prior to disposal. Provide for the temporary stockpiling of up to 200 cubic yards of contaminated soil on-site that require additional characterization. Construct and maintain a temporary stockpile of the material in accordance to NR 718.05(3), including, but not limited to, placement of the contaminated soil/fill material on an impervious surface and covering the stockpile with material to prevent infiltration of precipitation. The department's environmental consultant will collect representative samples of the stockpiled material, laboratory analyze the samples, and advise the contractor, within 10 business days of the construction of the stockpile, of disposal requirements. The stockpiled material shall be disposed either at the WDNR licensed disposal facility by contractor or if characterized as a hazardous wastes, by the department. As an alternative to temporarily stockpiling contaminated soil/fill material that requires additional characterization, the contractor has the option of suspending excavation in those areas where such soil is encountered until such time as characterization is completed.

Directly load and haul soils designated by the environmental consultant for offsite bioremediation to the DNR approved bioremediation facility. Use loading and hauling practices that are appropriate to prevent any spills or releases of petroleum-contaminated



soils or residues. Prior to transport, sufficiently dewater soils designated for off-site bioremediation so as not to contain free liquids.

Verify that the vehicles used to transport material are licensed for such activity in accordance to applicable state and federal regulations. Obtain the necessary disposal facility approvals and DNR approvals for disposal. Do not transport regulated solid waste off-site without obtaining the approval of the environmental consultant and engineer and notifying the disposal facility.

If dewatering is required in area of known contamination, water generated from dewatering activities may contain petroleum vocs and/or metals. Based on the limited groundwater testing performed in the Phase 2.5 investigation, the water generated may meet the effluent limits specified in “Contaminated Groundwater from Remedial Action Operations” (WPDES Permit No. WI-0046566-5), Table 3.1, once standard construction sediment removal is employed. Notify the engineer of any dewatering activities, and obtain any permits necessary to discharge water. Provide copies of such permit to the engineer. Ensure continuous dewatering and excavation safety at all times. Provide, operate, and maintain adequate pumping equipment and drainage and disposal facilities. Meet any requirements and pay any costs for obtaining and complying with such permit use. Follow all applicable legislative statutes, judiciary decisions, and regulations of the State of Wisconsin. Costs associated with excavation dewatering in a contaminated area listed above are considered incidental to this pay item.

Costs associated with excavation dewatering in the contaminated area are considered incidental to this pay item. The Wisconsin Department of Transportation will be the generator of regulated solid waste from this construction project.

#### **D Measurement**

The department will measure Excavation, Hauling, and Disposal of Petroleum Contaminated Soil in tons of contaminated soil accepted by the bioremediation facility as documented by weight tickets generated by the bioremediation facility.

#### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
205.0501.S	Excavation, Hauling, and Disposal of Petroleum Contaminated Soil	Ton

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

205-003 (20080902)

## 20. Clearing and Grubbing, Emerald Ash Borer.

### Clearing and Grubbing

This applies to projects in the emerald ash borer (EAB) quarantined zones to include Fond du lac, Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Washington and Waukesha counties.

*Supplement standard spec 201.3 with the following:*

The emerald ash borer (EAB) has resulted in a quarantine of ash trees (*Fraxinus, sp*) by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and the Wisconsin Department of Natural Resources (DNR).

Ash trees species attacked by emerald ash borer include the following:

Green ash (*F. pennsylvanica*) is found throughout the state, but is most common in southern Wisconsin. It may form pure stands or grow in association with black ash, red maple, swamp white oak, and elm. It grows as an associate in upland hardwood stands, but is most common in and around stream banks, floodplains, and swamps.

Black ash (*F. nigra*) is distributed over the entire state but is most frequently found in northern Wisconsin. It is most common in swamps, but is also found in other wet forest types.

Blue ash (*F. quadrangulata*) is a threatened species that is currently found only at a few sites in Waukesha county. The species is at the edge of its range in Wisconsin, but is common in states farther south. The species is not of commercial importance. Blue ash twigs are 4-sided.

White ash (*F. americana*) tends to occur primarily in upland forests, often with *Acer saccharum*

Includes all horticultural cultivars of these species.

(Note: blue ash twigs are 4-sided. All other Wisconsin ash trees have round stems.)

Mountain ash (*Sorbus Americana* and *S. decora*) is not a true ash and is not susceptible to EAB infestation.

The contractor shall be responsible for hiring a certified arborist to identify all ash trees that will be cleared and grubbed for the project. In addition, prior to scheduled clearing and grubbing activities, the arborist shall mark all ash trees with flagging tied around the trunk perimeter (fluorescent lime is suggested as it isn't identified with other project activities).

**Follow and obey the following Wisconsin Department of Agriculture, Trade, and Consumer Protection order:**

ATCP 21.17 Emerald ash borer; import controls and quarantine.

IMPORTING OR MOVING REGULATED ITEMS FROM INFESTED AREAS; PROHIBITION. Except as provided in sub. (3), no person may do any of the following:

- (a) Import a regulated item under sub. (2) into this state if that item originates from an emerald ash borer regulated area identified in 7CFR 301.53-3.
- (b) Move any regulated item under sub. (2) out of an emerald ash borer regulated area that is identified in 7CFR 301.53-3 and located in this state.

Note: the United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) periodically updates the list of regulated areas in 7CFR 301.53-3. Subsection (1) applies to new regulated areas as those areas are identified in the CFR.

REGULATED ITEMS. The following are regulated items for purposes of sub. (1):

- (a) The emerald ash borer, *Agrilus planipennis* Fairmaire in any living stage.
- (b) Ash trees.
- (c) Ash limbs, branches, and roots.
- (d) Ash logs, slabs or untreated lumber with bark attached.
- (e) Cut firewood of all non-coniferous species.
- (f) Ash chips and ash bark fragments (both composted and uncomposted) larger than one inch in diameter.
- (g) Any other item or substance that may be designated as a regulated item if a DATCP pest control official determines that it presents a risk of spreading emerald ash borer and notifies the person in possession of the item or substance that it is subject to the restrictions of the regulations.

**Regulatory considerations**

The quarantine means that ash wood products may not be transported out of the quarantined area.

Clearing and grubbing includes all ash trees that are to be removed from within the Project footprint. If ash trees are identified within clearing and grubbing limits of the Project, the following measures are required for the disposal:

**Chipped ash trees**

- 1. May be left on site if used as landscape mulch within the project limits. If used as mulch on site, chips may not be applied at a depth greater than standard mulch applications as this will impede germination of seeded areas.
- 2. May be buried on site within the right-of-way in accordance to standard spec 201.3 (14).

3. May be buried on adjacent properties to projects within the quarantined zone with prior approval of the engineer in accordance to standard spec 201.3 (15).
4. May be trucked to a licensed landfill within the quarantined zone with the engineer's approval in accordance to standard spec 201.3 (15).
5. Burning chips is optional if in compliance with standard spec 201.3.
6. Chips must be disposed of immediately if not used for project mulching and may not be stockpiled and left on site for potential transport by others. Chips may be stockpiled temporarily if they will be used for project mulching and are not readily accessible to the public.
7. Chipper equipment must be cleaned following post-chipping activities to ensure no spread of wood chip debris into non-quarantined counties.

#### **Ash logs, branches, and roots**

1. May be buried without chipping within the existing right-of-way or on adjacent properties in accordance to standard spec 201.3 (14)(15).
2. May be trucked to a licensed landfill within the quarantined zone with the engineer's approval in accordance to standard spec 201.3 (15).
3. Burning is optional if in compliance with standard spec 201.3.
4. Ash logs, branches, and roots must be disposed of immediately and may not be stockpiled.

All additional costs will be incidental to clearing and grubbing items.

Do not bury or use mulch in an area that will be disturbed again during later phases of the project.

Anyone moving firewood or ash products from the state or these counties is subject to state and federal fines up to \$1,000.00. All fines are the responsibility of the contractor. Obtain updated quarantine information at the DNR Firewood Information Line at (800) 303-WOOD.

#### **Furnishing and Planting Plant Materials**

This applies to projects in the emerald ash borer (EAB) quarantined zones to include, Fond du lac, Kenosha, Milwaukee, Ozaukee, Racine, Sheboygan, Washington, and Waukesha, counties.

*Supplement standard spec 632.2.2 with the following:*

The emerald ash borer (EAB) has resulted in a quarantine of ash trees (*Fraxinus, sp*) by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and the Wisconsin Department of Natural Resources (DNR).

Ash trees may be obtained from inside or outside the quarantine area and planted within the quarantined area. Ash trees from within the quarantine area may not be transported and planted into the non-quarantined area.

### **Updates for compliance**

Each year, as a service, the Wisconsin department of agriculture, trade and consumer protection distributes an updated federal CFR listing to nursery license holders and other affected persons in this state. More frequent updates, if any, are available on the department's website at [www.datcp.state.wi.us](http://www.datcp.state.wi.us). Subsection (1) applies to new regulated areas as those areas are identified in the CFR, regardless of whether affected persons receive update notices from the department. Persons may request update notices by calling (608) 224-4573, by visiting the department's website, or by writing to the following address:

Wisconsin Department of Agriculture, Trade and Consumer Protection  
Division of Agricultural Resource Management  
P.O. Box 8911  
Madison WI 53708-8911

### **REGULATED ITEMS.**

More frequent updates, if any, are available on the department's website at [www.datcp.state.wi.us](http://www.datcp.state.wi.us). Subsection (1) applies to new regulated areas as those areas are identified in the CFR, regardless of whether affected persons receive update notices from the department. Persons may request update notices by calling (608) 224-4573, by visiting the department's website, or by writing to the above address.

## **21. Work By Others and Coordination with Adjacent Projects.**

### **County Project 06-2380(12)**

The schedule of operations will conform to the requirements described below, unless modifications are approved in writing by the engineer. Janesville Road mainline traffic from Lannon Road to Moreland Road shall not be impacted by the work in this contract. Activities on Project 062380(12) shall include:

- Manhole and inlet adjustments
- Asphalt overlay
- Permanent pavement marking

The final surface and permanent pavement marking will be placed in the spring of 2014 under traffic. This will be accomplished using short term lane closures and flaggers.

Traffic stage construction on County Project 06-2380(12) shall not be interrupted by construction on Project 2380-00-73.

Waukesha County Project 06-2380(13) includes the expansion of Janesville Road from Lannon Drive to CTH O (Moorland Road). This project is being constructed during the 2012 and 2013 construction season. Work anticipated to be completed during the 2013 construction season includes placement of asphaltic surface, permanent pavement marking, landscaping and decorative streetscape elements. The contractor for Project 2380-00-73 is responsible for coordinating activities with the contractor for Project

06-2380(13). The contractor for Project 2380-00-73 will be required to attend weekly coordination meetings of Project 06-2380(13) to coordinate work schedules, traffic control devices and any other issues that may arise between the two projects.

## **22. Coordination with Businesses.**

The department will arrange and conduct a meeting between the contractor, the department, local officials and business people to discuss the project schedule of operations including vehicular and pedestrian access during construction operations. Hold the first meeting prior to the start of work under this contract and hold two meetings per month thereafter.

108-060 (20030820)

## **23. Breaker Run.**

*Delete and replace standard spec 311.2 with the following:*

Materials shall be in accordance to standard spec 312.2.

*Delete and replace standard spec 311.3 (1) with the following:*

Place breaker run where the plans show or as the engineer directs.

## **24. QMP Base Aggregate.**

### **A Description**

#### **A.1 General**

- (1) This special provision describes contractor quality control (QC) sampling and testing for base aggregates, documenting those test results, and documenting related production and placement process changes. This special provision also describes department quality verification (QV), independent assurance (IA), and dispute resolution.
- (2) Conform to standard spec 301, standard spec 305, and standard spec 310 as modified here in this special provision. Apply this special provision to material placed under all of the Base Aggregate Dense and Base Aggregate Open Graded bid items, except do not apply this special provision to material classified as reclaimed asphaltic pavement placed under the Base Aggregate Dense bid items.
- (3) Do not apply this special provision to material placed under the Aggregate Detours, Salvaged Asphaltic Pavement Base, Breaker Run, Select Crushed, Pit Run, Subbase, or Riprap bid items.
- (4) Provide and maintain a quality control program, defined as all activities related to and documentation of the following:
  1. Production and placement control and inspection.
  2. Material sampling and testing.

- (5) Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes required sampling and testing procedures. The contractor may obtain the CMM from the department's web site at:

<http://roadwaystandards.dot.wi.gov/standards/cmm/index.htm>

## A.2 Contractor Testing for Small Quantities

- (1) The department defines a small quantity, for each individual Base Aggregate bid item, as a plan quantity of 9000 tons or less of material as shown in the schedule of items under that bid item.
- (2) The requirements under this special provision apply equally to a small quantity for an individual bid item except as follows:
1. The contractor need not submit a full quality control plan but shall provide an organizational chart to the engineer including names, telephone numbers, and current certifications of all persons involved in the quality control program for material under affected bid items.
  2. Divide the aggregate into uniformly sized sublots for testing as follows:

Plan Quantity	Minimum Required Testing
$\leq 1500$ tons	One test from production, load-out, or placement at the contractor's option <sup>[1]</sup>
$> 1500$ tons and $\leq 6000$ tons	Two tests of the same type, either from production, load-out, or placement at the contractor's option <sup>[1]</sup>
$> 6000$ tons and $\leq 9000$ tons	Three placement tests <sup>[2][3]</sup>

<sup>[1]</sup> If using production tests for acceptance, submit test results to the engineer for review prior to incorporating the material into the work. Production test results are valid for a period of 3 years.

<sup>[2]</sup> For 3-inch material, obtain samples at load-out.

<sup>[3]</sup> If the actual quantity overruns 9000 tons, create overrun sublots to test at a rate of one additional placement test for each 3000 tons, or fraction of 3000 tons, of overrun.

3. No control charts are required. Submit aggregate load-out and placement test results to the engineer within one business day of obtaining the sample. Assure that all properties are within the limits specified for each test.
  4. Department verification testing is optional for quantities of 6000 tons or less.
- (3) Material represented by a subplot with any property outside the specification limits is nonconforming. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

## **B Materials**

### **B.1 Quality Control Plan**

- (1) Submit a comprehensive written quality control plan to the engineer at or before the pre-construction meeting. Do not place base before the engineer reviews and comments on the plan. Construct the project as that plan provides.
- (2) Do not change the quality control plan without the engineer's review. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in each of the contractor's laboratories as changes are adopted. Ensure that the plan provides the following elements:
  1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.
  2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication means that will be used, and action time frames.
  3. A list of source and processing locations, section and quarter descriptions, for all aggregate materials requiring QC testing.
  4. Test results for wear, sodium sulfate soundness, freeze/thaw soundness, and plasticity index of all aggregates requiring QC testing. Obtain this information from the region materials unit or from the engineer.
  5. Descriptions of stockpiling and hauling methods.
  6. Locations of the QC laboratory, retained sample storage, and where control charts and other documentation is posted.
  7. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.

### **B.2 Personnel**

- (1) Have personnel certified under the department's highway technician certification program (HTCP) perform sampling, testing, and documentation as follows:

<b>Required Certification Level:</b>	<b>Sampling or Testing Roles:</b>
Aggregate Technician IPP Aggregate Sampling Technician Aggregate Assistant Certified Technician (ACT-AGG)	Aggregate Sampling <sup>[1]</sup>
Aggregate Technician IPP Aggregate Assistant Certified Technician (ACT-AGG)	Aggregate Gradation Testing, Aggregate Fractured Particle Testing, Aggregate Liquid Limit and Plasticity Index Testing

<sup>[1]</sup> Plant personnel under the direct observation of an aggregate technician certified at level one or higher may operate equipment to obtain samples.

- (2) A certified technician must coordinate and take responsibility for the work an ACT performs. Have a certified technician ensure that all sampling and testing is performed correctly, analyze test results, and post resulting data. No more than one ACT can work under a single certified technician.



### **B.3 Laboratory**

- (1) Perform QC testing at a department-qualified laboratory. Obtain information on the Wisconsin laboratory qualification program from:

Materials Management Section

3502 Kinsman Blvd.

Madison, WI 53704

Telephone: (608) 246-5388

<http://www.dot.state.wi.us/business/engrserv/lab-qualification.htm>

### **B.4 Quality Control Documentation**

#### **B.4.1 General**

- (1) Submit base aggregate placement documentation to the engineer within 10 business days after completing base placement. Ensure that the submittal is complete, neatly organized, and includes applicable project records and control charts.

#### **B.4.2 Records**

- (1) Document all placement observations, inspection records, and control adjustments daily in a permanent field record. Also include all test results in the project records. Provide test results to the engineer within 6 hours after obtaining a sample. For 3-inch base, extend this 6-hour limit to 24 hours. Post or distribute tabulated results using a method mutually agreeable to the engineer and contractor.

#### **B.4.3 Control Charts**

- (1) Plot gradation and fracture on the appropriate control chart as soon as test results are available. Format control charts according to CMM 8.30. Include the project number on base placement control charts. Maintain separate control charts for each base aggregate size, source or classification, and type.
- (2) Provide control charts to the engineer within 6 hours after obtaining a sample. For 3-inch base, extend this 6-hour limit to 24 hours. Post or distribute charts using a method mutually agreeable to the engineer and contractor. Update control charts daily to include the following:
  1. Contractor individual QC tests.
  2. Department QV tests.
  3. Department IA tests.
  4. Four-point running average of the QC tests.
- (3) Except as specified under B.8.2.1 for nonconforming QV tests, include only QC tests in the running average. The contractor may plot process control or informational tests on control charts, but do not include these tests, conforming QV tests, or IA tests in the running average.

### **B.5 Contractor Testing**

- (1) Test gradation, fracture, liquid limit and plasticity index during placement for each base aggregate size, source or classification, and type.

- (2) Test gradation once per 3000 tons of material placed. Determine random sample locations and provide those sample locations to the engineer. Obtain samples after the material has been bladed, mixed, and shaped but before compacting; except collect 3-inch samples from the stockpile at load-out. Do not sample from material used to maintain local traffic or from areas of temporary base that will not have an overlying pavement. On days when placing only material used to maintain local traffic or only temporary base that will not have an overlying pavement, no placement testing is required.
- (3) Split each contractor QC sample and identify it according to CMM 8.30. Retain the split for 7 calendar days in a dry, protected location. If requested for department comparison testing, deliver the split to the engineer within one business day.
- (4) The engineer may require additional sampling and testing to evaluate suspect material or the technician's sampling and testing procedures.
- (5) Test fracture for each gradation test until the fracture running average is above the lower warning limit. Subsequently, the contractor may reduce the frequency to one test per 10 gradation tests if the fracture running average remains above the warning limit.
- (6) Test the liquid limit and plasticity index for the first gradation test. Subsequently, test the liquid limit and plasticity index a minimum of once per 10 gradation tests.

## **B.6 Test Methods**

### **B.6.1 Gradation**

- (1) Test gradation using a washed analysis conforming to the following as modified in CMM 8.60:  
 Gradation..... AASHTO T 27  
 Material finer than the No. 200 sieve..... AASHTO T 11
- (2) For 3-inch base, if 3 consecutive running average points for the percent passing the No. 200 sieve are 8.5 percent or less, the contractor may use an unwashed analysis. Wash at least one sample out of 10. If a single running average for the percent passing the No. 200 sieve exceeds 8.5 percent, resume washed analyses until 3 consecutive running average points are again 8.5 percent passing or less.
- (3) Maintain a separate control chart for each sieve size specified in standard spec 305 or standard spec 310 for each base aggregate size, source or classification, and type. Set control and warning limits based on the standard specification gradation limits as follows:
  1. Control limits are at the upper and lower specification limits.
  2. There are no upper warning limits for sieves allowing 100 percent passing and no lower control limits for sieves allowing 0 percent passing.

3. Dense graded warning limits, except for the No. 200 sieve, are 2 percent within the upper and lower control limits. Warning limits for the No. 200 sieve are set 0.5 percent within the upper and lower control limits.
4. Open graded warning limits for the 1-inch, 3/8-inch, and No. 4 sieves are 2 percent within the upper and lower control limits. Upper warning limits for the No. 10, No. 40, and No. 200 sieves are 1 percent inside the upper control limit.

#### **B.6.2 Fracture**

- (1) Test fracture conforming to CMM 8.60. The engineer will waive fractured particle testing on quarried stone.
- (2) Maintain a separate fracture control chart for each base aggregate size, source or classification, and type. Set the lower control limit at the contract specification limit, either specified in another special provision or in table 301-2 of standard spec 301.2.4.5. Set the lower warning limit 2 percent above the lower control limit. There are no upper limits.

#### **B.6.3 Liquid Limit and Plasticity**

- (1) Test the liquid limit and plasticity according to AASHTO T 89 and T 90.
- (2) Ensure the material conforms to the limits specified in standard spec table 301-2.

### **B.7 Corrective Action**

#### **B.7.1 General**

- (1) Consider corrective action when the running average trends toward a warning limit. Take corrective action if an individual test exceeds the contract specification limit. Document all corrective actions both in the project records and on the appropriate control chart.

#### **B.7.2 Placement Corrective Action**

- (1) Do not blend additional material on the roadbed to correct gradation problems.
- (2) Notify the engineer whenever the running average exceeds a warning limit. When 2 consecutive running averages exceed a warning limit, the engineer and contractor will discuss appropriate corrective action. Perform the engineer's recommended corrective action and increase the testing frequency as follows:
  1. For gradation, increase the QC testing frequency to at least one randomly sampled test per 1000 tons placed.
  2. For fracture, increase the QC testing frequency to at least one test per gradation test.
- (3) If corrective action improves the property in question such that the running average after 4 additional tests is within the warning limits, the contractor may return to the testing frequency specified in B.5.3. If corrective action does not improve the property in question such that the running average after 4 additional individual tests is

still in the warning band, repeat the steps outlined above starting with engineer notification.

- (4) If the running average exceeds a control limit, material starting from the first running average exceeding the control limit and ending at the first subsequent running average inside the control limit is nonconforming and subject to pay reduction.
- (5) For individual test results significantly outside the control limits, notify the engineer, stop placing base, and suspend other activities that may affect the area in question. The engineer and contractor will jointly review data, data reduction, and data analysis; evaluate sampling and testing procedures; and perform additional testing as required to determine the extent of potentially unacceptable material. The engineer may direct the contractor to remove and replace that material. Individual test results are significantly outside the control limits if meeting one or more of the following criteria:
  1. A gradation control limit for the No. 200 sieve is exceeded by more than 3.0 percent.
  2. A gradation control limit for any sieve, except the No. 200, is exceeded by more than 5.0 percent.
  3. The fracture control limit is exceeded by more than 10.0 percent.

## **B.8 Department Testing**

### **B.8.1 General**

- (1) The department will conduct verification testing to validate the quality of the product and independent assurance testing to evaluate the sampling and testing. The department will provide the contractor with a listing of names and telephone numbers of all QV and IA personnel for the project, and provide test results to the contractor within 2 business days after the department obtains the sample.

### **B.8.2 Verification Testing**

#### **B.8.2.1 General**

- (1) The department will have an HTCP technician, or ACT working under a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified in B.2 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.
- (2) The department will conduct QV tests of each base aggregate size, source or classification, and type during placement conforming to the following:
  1. One non-random test on the first day of placement.
  2. At least one random test per 30,000 tons, or fraction of 30,000 tons, placed.
- (3) The department will sample randomly, at locations independent of the contractor's QC work, collecting one sample at each QV location. The department will collect QV samples after the material has been bladed, mixed, and shaped but before compacting;

except, for 3-inch aggregates, the department will collect samples from the stockpile at load-out. The department will split each sample, test half for QV, and retain half.

- (4) The department will conduct QV tests in a separate laboratory and with separate equipment from the contractor's QC tests. The department will use the same methods specified for QC testing.
- (5) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to the specification, the department will take no further action. If QV test results are nonconforming, add the QV to the QC test results as if it were an additional QC test.

### **B.8.3 Independent Assurance**

- (1) Independence assurance is unbiased testing the department performs to evaluate the department's QV and the contractor's QC sampling and testing including personnel qualifications, procedures, and equipment. The department will perform an IA review according to the department's independent assurance program. That review may include one or more of the following:
  1. Split sample testing.
  2. Proficiency sample testing.
  3. Witnessing sampling and testing.
  4. Test equipment calibration checks.
  5. Reviewing required worksheets and control charts.
  6. Requesting that testing personnel perform additional sampling and testing.
- (2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in B.9.

### **B.9 Dispute Resolution**

- (1) The engineer and contractor should make every effort to avoid conflict. If a dispute between some aspect of the contractor's and the engineer's testing program does occur, seek a solution mutually agreeable to the project personnel. The department and contractor may review the data, examine data reduction and analysis methods, evaluate sampling and testing procedures, and perform additional testing. Use ASTM E 178 to evaluate potential statistically outlying data.
- (2) Production test results, and results from other process control testing, may be considered when resolving a dispute.
- (3) If the project personnel cannot resolve a dispute, and the dispute affects payment or could result in incorporating non-conforming product, the department will use third party testing to resolve the dispute. The department's central office laboratory, or a mutually agreed on independent testing laboratory, will provide this testing. The engineer and contractor will abide by the results of the third party tests. The party in

error will pay service charges incurred for testing by an independent laboratory. The department may use third party test results to evaluate the quality of questionable materials and determine the appropriate payment. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

**C (Vacant)**

**D (Vacant)**

**E Payment**

- (1) Costs for all sampling, testing, and documentation required under this special provision are incidental to this work. If the contractor fails to perform the work required under this special provision, the department may reduce the contractor's pay. The department will administer pay reduction under the non-performance of QMP administrative item.
- (2) For material represented by a running average exceeding a control limit, the department will reduce pay by 10 percent of the contract price for the affected Base Aggregate bid items listed in subsection A. The department will administer pay reduction under the Nonconforming QMP Base Aggregate Gradation or Nonconforming QMP Base Aggregate Fracture Administrative items. The department will determine the quantity of nonconforming material as specified in B.7.2.

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**25. QMP Ride; Incentive IRI Ride, Item 440.4410.S.**

**A Description**

- (1) This special provision describes profiling pavements with a non-contact profiler, locating areas of localized roughness, and determining the International Roughness Index (IRI) for each wheel path segment.
- (2) Profile the final riding surface of all mainline pavements, bridges, approaches, and railroad crossings. Roundabouts, and pavements within 150 feet of the points of curvature of roundabout intersections, are excluded from the testing requirements of this provision.
- (3) Pavements that are excluded from localized roughness according to C.5.2(1), bridges, and roundabout intersections are subject to engineer-directed straightedging according to the standard specifications. All other surfaces being tested under this provision are exempt from straightedging requirements.

**B (Vacant)**

## **C Construction**

### **C.1 Quality Control Plan**

- (1) Submit a written quality control plan to the engineer at or before the pre-construction conference. Ensure that the plan provides the following elements:
  1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of all quality control personnel.
  2. The process by which quality control information and corrective action efforts will be disseminated to the appropriate persons. Include a list of recipients, the communication means that will be used, and action time frames.
  3. The methods and timing used for monitoring and/or testing ride quality throughout the paving process.
  4. The evaluation process that will be used to make improvements to the construction operations if poor ride quality is found during the process control testing.
  5. The methods that will be used to ensure a smooth pavement transition when matching into existing surfaces such as bridges, bridge approaches, or railroad crossings.
  6. The segment locations of each profile run used for acceptance testing.
  7. The approximate timing of acceptance testing in relation to the paving operations.

### **C.2 Personnel**

- (1) Have a profiler operator, certified under the department's highway technician certification program (HTCP), operate the equipment, collect the required data, and document the results using the methods taught in the HTCP profiling course.

### **C.3 Equipment**

- (1) Furnish a profile-measuring device capable of measuring IRI from the list of department-approved devices published on the department's web site:  
<http://roadwaystandards.dot.wi.gov/standards/qmp/index.htm>
- (2) Unless the engineer and contractor mutually agree otherwise, arrange to have a calibrated profiler available when paving the final riding surface. Calibrate the profiler according to the manufacturer's recommendations. Provide the engineer with a copy of the most recent calibration results, signed by the certified profiler operator.
- (3) Perform daily calibration verification of the profiler using test methods according to the manufacturer's recommendations. Notify the engineer prior to performing the calibration verification. If the engineer requests, arrange to have the engineer observe the calibration verification and operation. Maintain records of the calibration verification activities, and provide the records to the engineer upon request.

### **C.4 Testing**

#### **C.4.1 Run and Reduction Parameters**

- (1) Enter the equipment-specific department-approved filter settings and parameters listed on the department's ride web site.

#### C.4.2 Contractor Testing

- (1) Operate profilers within the manufacturer's recommended speed tolerances. Perform all profile runs in the direction of travel. Measure the longitudinal profile of each wheel track of each lane. The wheel tracks are 6.0 feet apart and centered in the traveled way of the lane.
- (2) Coordinate with the engineer to schedule profile runs for acceptance. The department may require testing to accommodate staged construction or if corrective action may be required.
- (3) Measure the profiles of each standard or partial segment. Define primary segments starting at a project terminus and running contiguously along the mainline to the other project terminus. Field-locate the beginning and ending points for each profile run. When applicable, align segment limits with the subplot limits used for testing under the QMP Concrete Pavement specification. Define segments one wheel path wide and distinguished by length as follows:
  1. Standard segments are 500 feet long.
  2. Partial segments are less than 500 feet long.
- (4) Treat partial segments as independent segments.
- (5) The department will categorize each standard or partial segment as follows:

<b>Segments with a Posted Speed Limit of 55 MPH or Greater</b>	
<b>Category</b>	<b>Description</b>
HMA I	Asphalt pavement with multiple opportunities to achieve a smooth ride. The following operations performed under this contract are considered as opportunities: a layer of HMA, a leveling or wedging layer of HMA, and diamond grinding or milling of the underlying pavement surface.
HMA II	Asphalt pavement with a single opportunity to achieve a smooth ride.
HMA III	Asphalt pavement segments containing any portion of a bridge, bridge approach, railroad crossing, or intersection. An intersection is defined as the area within the points of curvature of the intersection radii.
PCC II	Concrete pavement including all gaps.
PCC III	Concrete pavement segments containing any portion of a bridge, bridge approach, railroad crossing, or intersection. An intersection is defined as the area within the points of curvature of the intersection radii.

<b>Segments with Any Portion Having a Posted Speed Limit Less Than 55 MPH</b>	
<b>Category</b>	<b>Description</b>
HMA IV	Asphalt pavement including intersections, bridges, approaches, and railroad crossings.
PCC IV	Concrete pavement including gaps, intersections, bridges, approaches, and railroad crossings.



### **C.4.3 Verification Testing**

- (1) The department may conduct verification testing (QV) to validate the quality of the product. A certified HTCP profiler technician will perform the QV testing. The department will provide the contractor with a listing of the names and telephone numbers of all verification personnel for the project.
- (2) The department will notify the contractor before testing so the contractor can observe the QV testing. Verification testing will be performed independent of the contractor's QC work using separate equipment from the contractor's QC tests. The department will provide test results to the contractor within 1 business day after the department completes the testing.
- (3) The engineer and contractor will jointly investigate any testing discrepancies. The investigation may include additional testing as well as review and observation of both the department's and contractor's testing procedures and equipment. Both parties will document all investigative work.
- (4) If the contractor does not respond to an engineer request to resolve a testing discrepancy, the engineer may suspend production until action is taken. Resolve disputes as specified in C.6.

### **C.4.4 Documenting Profile Runs**

- (1) Compute the IRI for each segment and analyze areas of localized roughness using the ProVAL software. Within 5 business days after completing a final acceptance profile run, submit a copy of the ProVAL smoothness assurance report showing the IRI for each segment and the areas of localized roughness exceeding an IRI of 175 in/mile. The ProVAL software and department-specified inputs are available on the department's web site:

<http://roadwaystandards.dot.wi.gov/standards/qmp/index.htm>

- (2) As part of the profiler software outputs and ProVAL reports, document the areas of localized roughness and the locations of individual features including construction joints, structure limits, design features, utility fixtures, and other features that might affect the department's evaluation of ride quality. Field-locate the areas of localized roughness prior to the engineer's assessment for corrective actions.
- (3) Within 5 business days after completing profiling of the pavement covered under this special provision, unless the engineer and contractor mutually agree to a different timeline, submit the electronic ProVAL project file containing the .ERD files for each profiler acceptance run. Submit profile data using the department's Materials Reporting System (MRS) software available on the department's web site:

<http://www.atwoodsystems.com/mrs>

## C.5 Corrective Actions

### C.5.1 General

- (1) Correct the ride as the engineer directs. The department will independently assess whether a repair will help or hurt the long-term pavement performance and/or public perception of the ride before deciding on corrective action.

### C.5.2 Corrective Actions for Localized Roughness

- (1) Apply localized roughness requirements to all pavements, including HMA III, PCC III, HMA IV, and PCC IV; except localized roughness requirements will not be applied to pavements within 25 feet of the following surfaces if they are not constructed under this contract: bridges, bridge approaches, or railroad crossings. The department may direct the contractor to make corrections to the pavement within the 25-foot exclusionary zones and will compensate the contractor for the extra work.
- (2) The engineer will review each individual wheel track for areas of localized roughness. The engineer will assess areas of localized roughness that exceed an IRI of 175 in/mile and do one of the following for each location:
  1. Direct the contractor to correct the area to minimize the effect on the ride.
  2. Leave the area of localized roughness in place with no pay reduction.
  3. Except for HMA IV and PCC IV segments, assess a pay reduction as follows for each location in each wheel path:

Localized Roughness IRI (in/mile)	Pay Reduction <sup>[1]</sup> (dollars)
> 175	(Length in Feet) x (IRI – 175)

<sup>[1]</sup> A maximum \$250 pay reduction may be assessed for locations of localized roughness that are less than or equal to 25 feet long. Locations longer than 25 feet may be assessed a maximum pay reduction of \$10 per foot.

- (3) The engineer will not direct corrective action or assess a pay reduction for an area of localized roughness without independent identification of that area as determined by physically riding the pavement. For corrections, use only techniques the engineer approves.
- (4) Re-profile corrected areas to verify that the IRI is less than 140 in/mile after correction. Submit a revised ProVAL smoothness assurance report for the corrected areas to validate the results.

### C.5.3 Corrective Actions for Excessive IRI

- (1) If an individual segment IRI exceeds 140 in/mile for HMA I, HMA II, and PCC II pavements after correction for localized roughness, the engineer may require the contractor to correct that segment. Correct the segment final surface as follows:

HMA I:	Correct to an IRI of 60 in/mile using whichever of the following methods the engineer directs: Mill and replace the full lane width of the riding surface excluding the paved shoulder. Correct the full lane width using techniques approved by the engineer.
HMA II:	Correct to an IRI of 85 in/mile using whichever of the following methods the engineer directs: Mill and replace the full lane width of the riding surface excluding the paved shoulder. Correct the full lane width using techniques approved by the engineer.
PCC II:	Correct to an IRI of 85 in/mile using whichever of the following methods the engineer directs: Continuous diamond grinding of the full lane width of the riding surface including adjustment of the paved shoulders Correct the full lane width using techniques approved by the engineer.

- (2) Re-profile corrected segments to verify that the final IRI meets the above correction limits and there are no areas of localized roughness. Submit a revised ProVAL smoothness assurance report for the corrected areas to validate the results. Segments failing these criteria after correction are subject to the engineer's right to adjust pay for non-conforming work under standard spec 105.3.

## **C.6 Dispute Resolution**

- (1) The engineer and contractor should make every effort to avoid conflict. If a dispute between some aspect of the contractor's and the engineer's testing program does occur, seek a solution mutually agreeable to the project personnel. The department and contractor may review the data, examine data reduction and analysis methods, evaluate testing procedures, and perform additional testing.
- (2) If the project personnel cannot resolve a dispute and the dispute affects payment or could result in incorporating nonconforming pavement, the department will use third party testing to resolve the dispute. The department's Quality Assurance Unit, or a mutually agreed on independent testing company, will provide this testing. The engineer and contractor will abide by the results of the third party tests. The party in error will pay service charges incurred for testing by an independent tester. The department may use third party tests to evaluate the quality of questionable pavement and determine the appropriate payment.

## **D Measurement**

- (1) The department will measure Incentive IRI Ride by the dollar, adjusted as specified in E.2.

## **E Payment**

### **E.1 Payment for Profiling**

- (1) Costs for furnishing and operating the profiler, documenting profile results, and correcting the final pavement surface are incidental to the contract.

### **E.2 Pay Adjustment**

- (1) The department will pay incentive for ride under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
440.4410.S	Incentive IRI Ride	DOL

- (2) Incentive payment is not limited, either up or down, to the amount the schedule of items shows.
- (3) The department will administer disincentives for ride under the Disincentive IRI Ride administrative item.
- (4) The department will not assess disincentive on HMA III or PCC III segments. Incentive pay for HMA III and PCC III segments will be according to the requirements for the category of the adjoining segments.
- (5) The department will adjust pay for each segment based on the initial IRI for that segment before any corrective action is taken. The department will base disincentives on the IRI after correction for pavement meeting the following conditions:
  - All Pavement: The corrective work is performed in a contiguous, full lane width section 500 feet long, or a length as agreed with the engineer.
  - HMA Pavements: The corrective work is a mill and inlay or full depth replacement and the inlay or replacement layer thickness conforms to standard spec 460.3.2.
  - Concrete Pavements: The corrective work is a full depth replacement and conforms to standard spec 415.
- (6) The department will adjust pay for 500-foot long standard segments nominally one wheel path wide using equation “QMP 1.03” as follows:

<b>HMA I</b>	
<b>Initial IRI (inches/mile)</b>	<b>Pay Adjustment<sup>[1]</sup> (dollars per standard segment)</b>
< 30	250
≥ 30 to < 35	1750 – (50 x IRI)
≥ 35 to < 60	0
≥ 60 to < 75	1000 – (50/3 x IRI)
≥ 75	-250

<b>HMA II and PCC II</b>	
<b>Initial IRI (inches/mile)</b>	<b>Pay Adjustment<sup>[1][2]</sup> (dollars per standard segment)</b>
< 50	250
≥ 50 to < 55	2750 – (50 x IRI)
≥ 55 to < 85	0
≥ 85 to < 100	(4250/3) – (50/3 x IRI)
≥ 100	-250

<b>HMA IV and PCC IV</b>	
<b>Initial IRI (inches/mile)</b>	<b>Pay Adjustment<sup>[1][2]</sup> (dollars per standard segment)</b>
< 50	250
≥ 50 to < 75	750 – (10 x IRI)
≥ 75	0

<sup>[1]</sup> If the engineer directs placing upper layer asphaltic mixtures between October 15 and May 1 for department convenience as specified in standard spec 450.3.2.1(5), the department will not adjust pay for ride on pavement the department orders the contractor to place when the temperature, as defined in standard spec 450.3.2.1(2), is less than 36 F.

<sup>[2]</sup> If the engineer directs placing concrete pavement for department convenience, the department will not adjust pay for ride on pavement the department orders the contractor to place when the air temperature falls below 35 F.

(7) The department will prorate the pay adjustment for partial segments based on their length.

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## **26. QMP HMA Pavement Nuclear Density.**

### **A Description**

Replace standard spec 460.3.3.2 (1) and standard spec 460.3.3.2 (4) with the following:

- (1) This special provision describes density testing of in-place HMA pavement with the use of nuclear density gauges. Conform to standard spec 460 as modified in this special provision.
- (2) Provide and maintain a quality control program defined as all activities and documentation of the following:
  1. Selection of test sites.
  2. Testing.
  3. Necessary adjustments in the process.
  4. Process control inspection.

- (3) Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes required procedures. Obtain the CMM from the department's web site at:

<http://roadwaystandards.dot.wi.gov/standards/cmm/index.htm>

- (4) The department's Materials Reporting System (MRS) software allows contractors to submit data to the department electronically, estimate pay adjustments, and print selected reports. Qualified personnel may obtain MRS software from the department's web site at:

<http://www.atwoodsystems.com/mrs>

## **B Materials**

### **B.1 Personnel**

- (1) Perform HMA pavement density (QC, QV) testing using a HTCP certified nuclear technician I, or a nuclear assistant certified technician (ACT-NUC) working under a certified technician.
- (2) If an ACT is performing sampling or testing, a certified technician must coordinate and take responsibility for the work an ACT performs. Have a certified technician ensure that all sampling and testing is performed correctly, analyze test results, and post resulting data. No more than one ACT can work under a single certified technician.

### **B.2 Testing**

- (1) Conform to ASTM D2950 and CMM 8.15 for density testing and gauge monitoring methods. Perform nuclear gauge measurements using gamma radiation in the backscatter position. Perform each test for 4 minutes of nuclear gauge count time.

### **B.3 Equipment**

#### **B.3.1 General**

- (1) Furnish nuclear gauges from the department's approved product list at <http://www.dot.wisconsin.gov/business/engrserve/approvedprod.htm>.
- (2) Have the gauge calibrated by the manufacturer or an approved calibration service within 12 months of its use on the project. Retain a copy of the manufacturer's calibration certificate with the gauge.
- (3) Prior to each construction season, and following any calibration of the gauge, the contractor must perform calibration verification for each gauge using the reference blocks located in the department's central office materials laboratory. To obtain information or schedule a time to perform calibration verification, contact the department's Radiation Safety Officer at:

Materials Management Section  
3502 Kinsman Blvd.  
Madison, Wisconsin 53704  
Telephone: (608) 243-5998

### **B.3.2 Correlation of Nuclear Gauges**

#### **B.3.2.1 Correlation of QC and QV Nuclear Gauges**

- (1) Select a representative section of the compacted pavement prior to or on the first day of paving for the correlation process. The section does not have to be the same mix design.
- (2) Correlate the 2 or more gauges used for density measurement (QC, QV). The QC and QV gauge operators will perform the correlation on 5 test sites jointly located. Record each density measurement of each test site for the QC, QV and back up gauges.
- (3) Calculate the average of the difference in density of the 5 test sites between the QC and QV gauges. Locate an additional 5 test sites if the average difference exceeds 1.0 lb/ft<sup>3</sup>. Measure and record the density on the 5 additional test sites for each gauge.
- (4) Calculate the average of the difference in density of the 10 test sites between the QC and QV gauges. Replace one or both gauges if the average difference of the 10 tests exceeds 1.0 lb/ft<sup>3</sup> and repeat correlation process from B.3.2.1 (2).
- (5) Furnish one of the QC gauges passing the allowable correlation tolerances to perform density testing on the project.

#### **B.3.2.2 Correlation Monitoring**

- (1) After performing the gauge correlation specified in B.3.2.1, establish a project reference site approved by the department. Clearly mark a flat surface of concrete or asphalt or other material that will not be disturbed during the duration of the project. Perform correlation monitoring of the QC, QV, and all back-up gauges at the project reference site.
- (2) Conduct an initial 10 density tests with each gauge on the project reference site and calculate the average value for each gauge to establish the gauge's reference value. Use the gauge's reference value as a control to monitor the calibration of the gauge for the duration of the project.
- (3) Check each gauge on the project reference site a minimum of one test per day if paving on the project. Calculate the difference between the gauge's daily test result and its reference value. Investigate if a daily test result is not within 1.5 lb/ft<sup>3</sup> of its reference value. Conduct 5 additional tests at the reference site once the cause of deviation is corrected. Calculate and record the average of the 5 additional tests. Remove the gauge from the project if the 5-test average is not within 1.5 lb/ft<sup>3</sup> of its reference value established in B.3.2.2(2).
- (4) Maintain the reference site test data for each gauge at an agreed location.

## **B.4 Quality Control Testing and Documentation**

### **B.4.1 Lot and Sublot Requirements**

#### **B.4.1.1 Mainline Traffic Lanes, Shoulders, and Appurtenances**

- (1) A lot consists of the tonnage placed each day for each layer and target density specified in standard spec 460.3.3.1. A lot may include partial sublots.
- (2) Divide the roadway into sublots. A sublot is 1500 lane feet for each layer and target density.
- (3) A sublot may include HMA placed on more than one day of paving. Test sublots at the pre-determined random locations regardless of when the HMA is placed. No additional testing is required for partial sublots at the beginning or end of a day's paving.
- (4) If a resulting partial quantity at the end of the project is less than 750 lane feet, include that partial quantity with the last full sublot of the lane. If a resulting partial quantity at the end of the project is 750 lane feet or more, create a separate sublot for that partial quantity.
- (5) Randomly select test locations for each sublot as specified in CMM 8.15 prior to paving and provide a copy to the engineer. Locate and mark QC density test sites when performing the tests. Perform density tests prior to opening the roadway to traffic.
- (6) Use Table 1 to determine the number of tests required at each station, depending on the width of the lane being tested. When more than one test is required at a station, offset the tests 10 feet longitudinally from one another to form a diagonal testing row across the lane.

<b>Lane Width</b>	<b>No. of Tests</b>	<b>Transverse Location</b>
5 ft or less	1	Random
Greater than 5 ft to 9 ft	2	Random within 2 equal widths
Greater than 9 ft	3	Random within 3 equal widths

**Table 1**

#### **B.4.1.2 Side Roads, Crossovers, Turn Lanes, Ramps, and Roundabouts**

- (1) A lot represents a combination of the total daily tonnage for each layer and target density.
- (2) Each side road, crossover, turn lane, ramp, and roundabout must contain at least one sublot for each layer.
- (3) If a side road, crossover, turn lane, or ramp is 1500 feet or longer, determine sublots and random test locations as specified in B.4.1.1.



- (4) If a side road, crossover, turn lane, or ramp is less than 1500 feet long, determine sublots using a maximum of 750 tons per subplot and perform the number of random tests as specified in Table 2.

<b>Side Roads, Turn Lanes, Crossovers, Ramps, Roundabouts: Sublot/Layer tonnage</b>	<b>Minimum Number of Tests Required</b>
25 to 100 tons	1
101 to 250 tons	3
251 to 500 tons	5
501 to 750 tons	7

**Table 2**

## **B.4.2 Pavement Density Determination**

### **B.4.2.1 Mainline Traffic Lanes and Appurtenances**

- (1) Calculate the average subplot densities using the individual test results in each subplot.
- (2) If all subplot averages are no more than one percent below the target density, calculate the daily lot density by averaging the results of each random QC test taken on that day's material.
- (3) If any subplot average is more than one percent below the target density, do not include the individual test results from that subplot when computing the lot average density and remove that subplot's tonnage from the daily quantity for incentive. The tonnage from any such subplot is subject to disincentive pay according to standard spec 460.5.2.2.

### **B.4.2.2 Mainline Shoulders**

#### **B.4.2.2.1 Width Greater Than 5 Feet**

- (1) Determine the pavement density as specified in B.4.2.1.

#### **B.4.2.2.2 Width of 5 Feet or Less**

- (1) If all subplot test results are no more than 3.0 percent below the minimum target density, calculate the daily lot density by averaging all individual test results for the day.
- (2) If a subplot test result is more than 3.0 percent below the target density, the engineer may require the unacceptable material to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine the limits of the unacceptable material according to B.4.3.

### **B.4.2.3 Side Roads, Crossovers, Turn Lanes, Ramps, and Roundabouts**

- (1) Determine the pavement density as specified in B.4.2.1.

### **B.4.2.4 Documentation**

- (1) Document QC density test data as specified in CMM 8.15. Provide the engineer with the data for each lot within 24 hours of completing the QC testing for the lot.

### **B.4.3 Corrective Action**

- (1) Notify the engineer immediately when an individual test is more than 3.0 percent below the specified minimum in standard spec 460.3.3.1. Investigate and determine the cause of the unacceptable test result.
- (2) The engineer may require unacceptable material specified in B.4.3(1) to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine limits of the unacceptable area by measuring density of the layer at 50-foot increments both ahead and behind the point of unacceptable density and at the same offset as the original test site. Continue testing at 50-foot increments until a point of acceptable density is found as specified in standard spec 460.5.2.2(1). Removal and replacement of material may be required if extended testing is in a previously accepted subplot. Testing in a previously accepted subplot will not be used to recalculate a new lot density.
- (3) Compute unacceptable pavement area using the product of the longitudinal limits of the unacceptable density and the full subplot width within the traffic lanes or shoulders.
- (4) Retesting and acceptance of replaced pavement will be according to standard spec 105.3.
- (5) Tests indicating density more than 3.0 percent below the specified minimum, and further tests taken to determine the limits of unacceptable area, are excluded from the computations of the subplot and lot densities.
- (6) If 2 consecutive subplot averages within the same paving pass and same target density are more than one percent below the specified target density, notify the engineer and take necessary corrective action. Document the locations of such sublots and the corrective action that was taken.

## **B.5 Department Testing**

### **B.5.1 Verification Testing**

- (1) The department will have a HTCP certified technician, or ACT working under a certified technician, perform verification testing. The department will test randomly at locations independent of the contractor's QC work. The department will perform verification testing at a minimum frequency of 10 percent of the sublots and a minimum of one subplot per mix design. The sublots selected will be within the active work zone. The contractor will supply the necessary traffic control for the department's testing activities.
- (2) The QV tester will test each selected subplot using the same testing requirements and frequencies as the QC tester.
- (3) If the verification subplot average is not more than one percent below the specified minimum target density, use the QC tests for acceptance.

- (4) If the verification subplot average is more than one percent below the specified target density, compare the QC and QV subplot averages. If the QV subplot average is within 1.0 lb/ft<sup>3</sup> of the QC subplot average, use the QC tests for acceptance.
- (5) If the first QV/QC subplot average comparison shows a difference of more than 1.0 lb/ft<sup>3</sup> each tester will perform an additional set of tests within that subplot. Combine the additional tests with the original set of tests to compute a new subplot average for each tester. If the new QV and QC subplot averages compare to within 1.0 lb/ft<sup>3</sup>, use the original QC tests for acceptance.
- (6) If the QV and QC subplot averages differ by more than 1.0 lb/ft<sup>3</sup> after a second set of tests, resolve the difference with dispute resolution specified in B.6. The engineer will notify the contractor immediately when density deficiencies or testing precision exceeding the allowable differences are observed.

### **B.5.2 Independent Assurance Testing**

- (1) Independent assurance is unbiased testing the department performs to evaluate the department's verification and the contractor's QC sampling and testing including personnel qualifications, procedures, and equipment. The department will perform the independent assurance review according to the department's independent assurance program.

### **B.6 Dispute Resolution**

- (1) The testers may perform investigation in the work zone by analyzing the testing, calculation, and documentation procedures. The testers may perform gauge correlation according to B.3.2.1.
- (2) The testers may use correlation monitoring according to B.3.2.2 to determine if one of the gauges is out of tolerance. If a gauge is found to be out of tolerance with its reference value, remove the gauge from the project and use the other gauge's test results for acceptance.
- (3) If the testing discrepancy cannot be identified, the contractor may elect to accept the QV subplot density test results or retesting of the subplot in dispute within 48 hours of paving. Traffic control costs will be split between the department and the contractor.
- (4) If investigation finds that both gauges are in error, the contractor and engineer will reach a decision on resolution through mutual agreement.

### **B.7 Acceptance**

- (1) The department will not accept QMP HMA Pavement Nuclear Density if a non-correlated gauge is used for contractor QC tests.

### **C (Vacant)**

**D (Vacant)**

**E Payment**

**E.1 QMP Testing**

- (1) Costs for all sampling, testing, and documentation required under this special provision are incidental to the work. If the contractor fails to perform the work required under this special provision, the department may reduce the contractor's pay. The department will administer pay reduction under the Non-performance of QMP administrative item.

**E.2 Disincentive for HMA Pavement Density**

- (1) The department will administer density disincentives according to standard spec 460.5.2.2.

**E.3 Incentive for HMA Pavement Density**

- (1) Delete standard spec 460.5.2.3.
- (2) If the lot density is greater than the minimum specified in standard spec table 460-3 and all individual air voids test results for that mixture are within +1.0 percent or -0.5 percent of the design target in standard spec table 460-2, the department will adjust pay for that lot as follows:

<b>Percent Lot Density Above Minimum</b>	<b>Pay Adjustment Per Ton</b>
From -0.4 to 1.0 inclusive	\$0
From 1.1 to 1.8 inclusive	\$0.40
More than 1.8	\$0.80

- (3) The department will adjust pay under the Incentive Density HMA Pavement bid item. Adjustment under this item is not limited, either up or down, to the bid amount shown on the schedule of items.
- (4) If a traffic lane meets the requirements for disincentive, the department will not pay incentive on the integrally paved shoulder.
- (5) Submit density results to the department electronically using the MRS software. The department will validate all contractor data before determining pay adjustments.  
460-020 (20100709)

**27. Railing Pipe, Item 513.2050.S.**

**A Description**

This special provision describes furnishing and installing a pipe railing system for pedestrians as shown on the plans, and according to the applicable provisions of standard spec 513 and as hereinafter provided.

**B (Vacant)**

### **C Construction**

Weld the posts and rails together.

### **D Measurement**

The department will measure Railing Pipe in length by the linear foot along the top rail.

### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
513.2050.S	Railing Pipe	LF

Payment is full compensation for furnishing all materials; installing all materials; and painting.

513-005 (20030820)

## **28. Wall Modular Block Gravity, Item 532.0200.S.**

### **A Description**

This special provision describes designing, furnishing materials, and erecting a permanent earth retention system in accordance to the lines, dimension, elevations and details as shown on the plans and provided in the contract. The design life of the wall and all wall components shall be 75 years.

### **B Materials**

#### **B.1 Proprietary Modular Block Gravity Wall Systems**

The department specifies approved modular block gravity wall products on the department's approved products list.

Proprietary wall systems may be used for this work, but must conform to the requirements of this specification and be pre-approved for use by the departments' Bureau of Structures, Structures Development Section. The name of the companies supplying pre-approved material shall be furnished within 25 days after the award of contract. The department maintains a list of pre-approved systems of retaining walls. To be eligible for use on this project, a system must have been pre-approved and added to that list prior to the bid opening date.

Applications for pre-approval may be submitted at any time. Applications must be prepared in accordance to the requirements of chapter 14 of the department's Bridge manual. Information and assistance with the pre-approval process can be obtained by contacting the Structures Development Section in Room 601 of the Hill Farms State Transportation Building in Madison or by calling (608) 266-8494.

## **B.2 Design Requirements**

It is the responsibility of the contractor to supply a design and supporting documentation as required by this special provision for review by the department to show that the proposed wall design is in compliance with the design specifications. The following shall be submitted to the engineer for review and acceptance no later than 21 days before wall construction will begin.

The design/shop plans shall be prepared on reproducible sheets 11 inch x 17 inch, including borders. Each sheet shall have a title block in the lower right corner. The title block shall include the project identification number and structure number. Design calculations and notes shall be on 8½ inch x 11 inch sheets, and shall contain the project identification number, name or designation of the wall, date of preparation, initials of designer and checker, and page number at the top of the page. All plans and calculations shall be signed, sealed, and dated by a professional engineer licensed in the State of Wisconsin. Four copies of the shop drawings and two copies of the design calculations and supporting materials shall be submitted.

The design of the Modular Block Gravity Wall shall be in conformance to the latest edition of the AASHTO Standard Specifications for Highway Bridges including interim specifications, the standard specifications, and standard engineering design procedures as determined by the department. The design must include analyses that clearly show the factors of safety for overturning, sliding, and soil bearing stress. The width of the modular block from front face to back face of the wall shall be given in the design computations and shown on the wall shop drawings.

The minimum embedment to the bottom of the modular block shall be 1 foot 6 inches, or as specified in the plan.

## **B.3 Wall System Components**

Materials furnished under this contract shall conform to the requirements hereinafter provided.

### **B.3.1 Backfill**

Wall Backfill, Type A, shall comply with the requirements for coarse aggregate No. 1 as given in standard spec 501.2.5.4. All backfill placed within a zone from the base of the leveling pad to the top of the final layer of wall facing units and within 1 foot behind the back face of the wall shall be Wall Backfill, Type A. This includes all material used to fill openings in the wall facing units.

A layer of Geotextile Fabric Type “DF” (Schedule B) shall be placed vertically between the retained soil and the Type A backfill. The geotextile fabric shall extend from the top of the leveling pad to 6 inches below the surface of the retained soil. The geotextile shall then wrap across the top of the Type A backfill to the back of block wall facing.

### B.3.2 Wall Facing

Provide wall facing units that consist of precast modular concrete blocks. All units shall incorporate a mechanism or devices that will develop a mechanical connection between vertical block layers. Units that are cracked, chipped or have other imperfections in accordance to ASTM C1372 or excessive efflorescence shall not be used within the wall. A single block type and style shall be used throughout each wall. The color and surface texture of the block shall be as given on the plan, or chosen by the engineer.

The top course of facing units shall be a solid precast concrete unit designed to be compatible with the remainder of the wall. The finishing course shall be bonded to the underlying facing units with a durable, high strength, flexible adhesive compound compatible with the block material. A formed cast-in-place concrete cap may also be used to finish the wall. A cap of this type shall be designed to have texture, color, and an appearance that complements the remainder of the wall. The vertical dimension of the cap shall not be less than 3½ inches. Expansion joints shall be placed in the cap to correspond with each 24-inch change in vertical wall height or at a maximum spacing of 10 feet. Concrete for all cast-in-place caps shall be Grade A and shall conform to the requirements of standard spec 501.3.

Block dimensions may vary no more than ±1/8 inch from the standard values published by the manufacturer, in accordance to ASTM C1372. Blocks must have a minimum depth (front face to back face) of 8 inches. The minimum front face thickness of blocks shall be 4 inches measured perpendicular from the front face to inside voids greater than 4 square inches. Also the minimum allowed thickness of any other portion of the block is 2 inches. The front face of the blocks shall conform to plan requirements for color, texture, or patterns.

Cementitious materials and aggregates for modular blocks shall conform to the requirements of ASTM C1372 section 4.1 and 4.2. Modular blocks shall meet the following requirements:

Test	Method	Requirement
Compressive Strength (psi)	ASTM C140	5000 min.
Water Absorption (%)	ASTM C140	6 max.
Freeze-Thaw Loss (%)	ASTM	
40 cycles, 5 of 5 samples	C1262 <sup>(1)</sup>	1.0 max. <sup>(2)</sup>
50 cycles, 4 of 5 samples		1.5 max. <sup>(2)</sup>

<sup>(1)</sup> Test shall be run using a 3% saline solution.

<sup>(2)</sup> Test results that meet either of the listed requirements for Freeze-Thaw Loss are acceptable

All blocks shall be certified as to strength, absorption, and freeze-thaw requirements unless, due to contract changes after letting, certified blocks are not available when required. At the time of delivery of the certified blocks, furnish the engineer a certified test report from a department-approved independent testing laboratory for each lot of modular blocks. The certified test report shall clearly identify the firm conducted the

sampling and testing, the type of block, the date sampled, name of the person conducting the sampling, the represented lot, the number of blocks in the lot, and the specific test results for each of the stated requirements of this specification. A lot shall not exceed 5000 blocks. The certified test results will represent all blocks within the lot. Each pallet of blocks delivered shall bear lot identification information. Block lots that do not meet the requirements of this specification or blocks without supporting certified test reports will be rejected and shall be removed from the project at the contractor's expense.

A department-approved independent testing laboratory shall control and conduct all modular block sampling and testing for certification. Prior to sampling, the manufacturer's representative shall identify all pallets of modular blocks contained in each lot. All pallets of blocks within the lot shall be numbered and marked to facilitate random sample selection. The representative of the independent testing laboratory shall identify five pallets of blocks by random numbers and shall then select one block from each of these pallets. Solid blocks used as a finishing or top course shall not be selected. The selected blocks shall remain under the control of the person who conducted the sampling until shipped or delivered to the testing laboratory. All pallets of blocks within a lot shall be strapped or wrapped to secure the contents and tagged or marked for identification. The engineer will reject any pallet of blocks delivered to the project without intact security measures. The contractor shall remove all rejected blocks from the project at no expense to the department.

The department may conduct testing of certified or non-certified modular blocks lots delivered to the project. The department will not do freeze-thaw testing on blocks less than 45 days old. If a random sample of five blocks of any lot tested by the department fails to meet any of the requirements of this specification (nonconforming), the contractor shall remove from the project site all blocks from the failed lot that have not been installed in the finished work, at no cost to the department, unless the engineer allows otherwise. Nonconforming blocks installed in the finished work will be considered approved by the department as stated in standard spec 106.5(2) and any adjustment to the contract price will not exceed the price of the blocks charged by the supplier.

### **B.3.3 Leveling Pad**

For all walls over 5 feet tall measured from the top of the leveling pad to the top of the wall, the wall leveling pad shall consist of a poured concrete masonry pad made from Grade A concrete conforming to standard spec 501 as modified in standard spec 716. Provide QMP for class II concrete as specified in standard spec 716. The depth of the leveling pad shall be as shown on the plans or 6-inches minimum. The leveling pad shall be as wide as the blocks plus 6-inches. Six inches of leveling pad shall extend beyond the front face of the blocks. The bottom of the blocks shall be horizontal and 100% of the block surface shall bear on the leveling pad. A concrete leveling pad shall be used for the entire length of the wall. All walls with a Structure Number assigned (such as R-XX-XXX) shall be built using the concrete leveling pad given above. The leveling pad shall step to follow the general slope of the ground line. The leveling pads steps shall keep the bottom of the wall within one block's thickness of the minimum embedment, i.e.



minimum embedment plus up to the thickness of one block. Additional embedment may be detailed but will not be measured for payment.

On walls less than or equal to 5 feet in height without a wall number assigned, a compacted leveling pad made from base aggregate dense 1¼ inch as given in standard spec 305 may be used. The depth of the aggregate leveling pad shall be as shown on the plans or 12-inches minimum. The aggregate leveling pad shall be as wide as the blocks plus 12 inches with 12 inches of pad extending beyond the front face of the wall.

## **C Construction**

### **C.1 General**

Construct the modular block gravity wall in accordance to the manufacturer's instructions, at the locations and to the dimensions shown on the plan and as directed by the engineer. At the end of each working day, provide good temporary drainage such that the backfill shall not become contaminated with run-off soil or water if it should rain. Do not stockpile or store materials or large equipment within 10 feet of the front face of the wall.

Place materials in the areas as indicated on the plans and as detailed in this specification. Backfill lifts shall be no more than 8-inches in depth. Backfilling shall closely follow erection of each course of wall facing units.

Compact each layer of wall backfill Type A with at least three passes of lightweight manually operated compaction equipment acceptable to the engineer.

Conduct backfilling operations in such a manner as to prevent damage or misalignment of the wall facing units. At no expense to the department, correct any such damage or misalignment as directed by the engineer.

Do not operate tracked or wheeled equipment within 3 feet of the back face of the blocks. The engineer may order the removal of any large or heavy equipment that may cause damage or misalignment of the wall facing units.

After construction of the wall, restore the surrounding area located above and below all precast block retaining wall sites to its original condition and to the finished details on the plans.

### **C.2 Geotechnical Information**

Geotechnical data to be used in the design of the wall is given on the wall plan. The allowable soil bearing capacity is given on the plan. After completion of excavation, the department's Regional Soils Engineer will inspect the site and determine if the foundation is adequate for the intended loads. Allow the region's Soils Engineer two working days to perform the inspection.

## **D Measurement**

The department will measure Wall Modular Block Gravity in area by the square foot of face on a vertical plane between the top of the leveling pad and a line indicating the top of wall including wall cap or copings as required and shown on the plans. Unless directed by the engineer, wall area constructed above or below these limits will not be measured for payment.

## **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
532.0200.S	Wall Modular Block Gravity	SF

Payment is full compensation for supplying a design and shop drawings; preparing the site, including all necessary excavation and disposal of surplus materials; supplying all necessary wall components to produce a functional system including cap and copings; constructing the retaining system; providing backfill, backfilling, and compacting the backfill; and furnishing and installing geotextile fabric. Parapets, railings, and other items above the wall cap or coping will be paid for separately.

Any required topsoil, fertilizer, seeding or sodding and mulch will be paid for at the contract unit price of topsoil, fertilizer, seeding or sodding and mulch, respectively.

532-030 (20120615)

## **29. Adjusting Manhole Covers.**

This work shall be according to the pertinent provisions of standard spec 611, as shown on the plans, and as hereinafter provided.

Adjust manhole covers located in pavement areas in two separate operations. Initially, remove designated manhole covers along with sufficient pavement to permit installation of temporary cover plate over the opening. Fill the excavated area with asphaltic pavement mixture, which shall remain in place until contract milling and paving operations permit setting the manhole frames to grade. During the second phase, remove the asphaltic pavement mixture surrounding the manhole plus the temporary cover plate, and set the manhole cover to final grade. The department will measure and pay for the items of asphaltic pavement mixture, temporary cover plate, milling, and paving separately.

Revise standard spec 611.3.7 by deleting the last paragraph.

Set the manhole frames so that they comply with the surface requirements of standard spec 450.3.2.9. At the completion of the paving, a 6-foot straightedge shall be placed over the centerline of each manhole frame parallel to the direction of traffic. A measurement shall be made at each side of the frame. The two measurements shall be averaged. If this average is greater than 5/8 inches, reset the manhole frame to the correct plane and elevation. If this average is 5/8 inches or less but greater than 3/8 inches, the

manhole frame shall be allowed to remain in place but shall be paid for at 50 percent of the contract unit price.

If the manhole frame is higher than the adjacent pavement, the two measurements shall be made at each end of the straightedge. These two measurements shall be averaged. The same criteria for acceptance and payment as above, shall apply.

Payment is full compensation for furnishing, installing, removing, all items associated with adjusting manhole covers. Providing E-Z Stic, internal adaptor seal ring, and mortar are incidental to the unit bid price for this item.

611-005 (20030820)

### **30. Cover Plates Temporary, Item 611.8120.S.**

#### **A Description**

This special provision describes furnishing, installing and removing a steel plate to cover and support asphaltic pavement and traffic loading at manholes, inlets and similar structures during milling and paving operations.

#### **B Materials**

Provide a 0.25-inch minimum thickness steel plate that extends to the outside edge of the existing masonry.

#### **C (Vacant)**

#### **D Measurement**

The department will measure Cover Plates Temporary as units, acceptably completed in place.

#### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
611.8120.S	Cover Plates Temporary	Each

Payment is full compensation for furnishing, installing, and removing the cover plates.

The steel plates shall become the property of the contractor when no longer needed in the contract work.

611-006 (20030820)

### **31. Crash Cushions Temporary.**

*Supplement standard spec 614.2.7 as follows:*

Temporary crash cushions shall have a maximum width of 2 feet.

## **32. Fence Safety, Item 616.0700.S.**

### **A Description**

This special provision describes furnishing and installing a plastic fence at locations shown on the plans and as hereinafter provided.

### **B Materials**

Furnish notched conventional metal “T” or “U” shaped fence posts.

Furnish fence fabric meeting the following requirements.

Color:	International orange (UV stabilized)
Roll Height:	4 feet
Mesh Opening:	1 inch min to 3 inch max
Resin/Construction:	High density polyethylene mesh
Service Temperature:	-60° F to 200° (ASTM D648)
Tensile Yield:	Avg. 2000 lb per 4 ft. width (ASTM D638)
Ultimate Tensile Strength:	Avg. 3000 lb per 4 ft. width (ASTM D638)
Elongation at Break (%):	Greater than 100% (ASTM D638)
Chemical Resistance:	Inert to most chemicals and acids

### **C Construction**

Drive posts into the ground 12 to 18 inches. Space posts at 7 feet.

Use a minimum of three wire ties to secure the fence at each post. Weave tension wire through the top row of strands to provide a top stringer that prevents sagging.

Overlap two rolls at a post and secure with wire ties.

### **D Measurement**

The department will measure Fence Safety by the linear foot along the base of the fence, center-to-center of posts.

### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
616.0700.S.	Fence Safety	LF

Payment is full compensation for furnishing and installing fence and posts; maintaining the fence and posts in satisfactory condition; and for removing and disposing of fence and posts at project completion.

616-030 (20070510)

### 33. Landscape Planting Surveillance and Care Cycles.

If the care specialist fails to perform any of the required care cycles as specified in standard spec 632.3.19, the department will assess daily damages in the amount of \$600 to cover the cost of performing the work with other forces. The department will assess these damages for each day the requirements of the care cycle remain incomplete, except when the engineer extends the required time period.

### 34. General Provisions for Water Main (Project 2380-00-73).

**Utility Standard Specifications:** Perform work in accordance to these provisions and *State Standard Specifications*. References to the standard specifications shall mean the State of Wisconsin Standard Specifications for Highway and Structure Construction.

**Work by Others:** Work on the water main which will be executed and may be concurrent to this contract and which is excluded from this contract is as follows:

Hydrants and valves are not to be operated except as directly instructed to do so by City of Muskego Water Utility personnel.

**Bedding / Backfill:** Due to the possibility of wet conditions, the engineer may require the water pipe to be bedded and covered with clear stone. Clear stone shall only be required when ordered by the engineer unless otherwise shown or specified. The cost of this additional select fill required to provide a proper bedding for the pipe shall be paid as Washed Stone, 3/4-inch.

All trenches shall be backfilled with mechanically compacted Select Fill.

**Work Sequence:** As construction staging and sequence allows, removal and relocation of water services, valves, and hydrants will be connected to existing water main promptly as not to adversely affect water users.

As construction staging and sequence allows, the contractor shall disinfect the new mains. The city water utility will flush and test newly installed water main. Coordinate as necessary with city water utility. After water main has passed bacteriological testing, install replacement water services and make connections to existing water system.

Valves at connections of the new water main to the existing water main shall remain closed until the new water main has passed all testing. Where new valves need to be opened to fill new water main for testing and flushing, sequence shall be so arranged to preclude backflow of water from new water main to existing water main.

Following installation of replacement water services and connection of replacement water main to existing water main at locations noted on the plans, the existing water main shall be cut off, drained, open ends plugged or bulkheaded with concrete, and the pipe abandoned in place.

Station and offset, as given on the water main plans, for fire hydrants shall not be used exclusively for final layout of the hydrant. The curb line and sidewalk limits in the area of the hydrant shall be determined prior to installation of the hydrant to assure proper location of the hydrant relative to the curb line.

**Protection of Water Mains and Sewers:** Take adequate measures to prevent impairment of operation of existing water mains, sanitary sewer and storm sewer systems. Prevent construction material, concrete, earth, or other debris from entering sewers or sewer structures. Sanitary sewer, water main, or storm sewer damaged or removed during construction, which is to remain in service, shall be restored or replaced to original material and workmanship used for original construction.

**Existing Water Service Laterals:** The horizontal location and size of all water laterals indicated on the plans is taken from surveys, approximate measurements, and the city's available records. These records are not guaranteed to be accurate in all cases and do not indicate at what depths these laterals are located. As such, the contractor shall determine the location and size of the existing laterals before making a tap into the new water main. The contractor shall follow notes on plans to determine which services are to be abandoned, reconnected, extended, offset vertical, or replaced to the property line. Vertical offsets of water service laterals should be verified for depth with the elevations of the proposed roadway. Vertical offset locations were necessary and shown on plans assuming a current depth of 6 feet. At each location shown on plan verify depth of current water main from proposed conflict. The engineer shall be notified of locations where alteration of the lines and grades shown are necessary so that an acceptable solution can be determined.

**Location of Existing Facilities:** The horizontal and vertical location and size of all existing water mains indicated on the plans is taken partially from surveys, approximate measurements, and the city's available records. These records are not guaranteed to be accurate in all cases. Water services shall be placed at a minimum depth of 6-feet below finished grade. Due to the unverified depth and location of existing pipelines, alteration of the lines and grades shown on the plans for new pipelines where connections are to be made to existing pipelines or vertical offsets made around conflicting utilities may be necessary. The engineer shall be notified of locations where alteration of the lines and grades shown are necessary so that an acceptable solution can be determined.

## **35. Lighting Systems, General.**

### **A General**

Append standard spec 651, 652, 653, 654, 655, 656, 657 and 659 as follows.

### **B Materials**

#### **B.1 Lighting Units**

Splices shall accept (4) #14-#2 conductors, be underground/overhead rated and include gel filled hinged splice closure with snap-lock to assure cover remains closed. Wrap closure with electrical tape. Split bolts are not allowed. The final color and finish of the pole system shall be approved by the city.

**B.2 Pull boxes (conductors 6AWG and larger):**

Splices shall accept quantity and size of conductors required at individual pull boxes (which may be of differing configurations), be direct burial and UL50 submersible rated. Split bolts are not allowed. No splices are allowed in pull boxes, unless indicated on the plans.

**B.3 Concrete bases**

Provide concrete base in accordance to standard spec 654.2 and as shown on the plans.

**C Branch Circuit Tagouts**

Any circuit which the contractor does not personally tag out at the disconnect shall be considered live and is subject to being activated by another person with no notice to the contractor. Tagouts shall be made with manufactured tags, and shall be endorsed with the date and the name of the contractor. Tagouts shall be cleared at the end of the work day.

**D Threaded Fasteners**

All threaded fasteners (i.e. anchor bolts, screws, bolts, etc.) shall be liberally coated with an approved anti-seize compound, excess shall be wiped off. Excepting fasteners inside control cabinets, fasteners up to half an inch in diameter shall be stainless steel.

**E Circuit Identification**

Color coding shall be accomplished by use of cable jackets' of the proper color. All tails of all splices shall be coded. Secondary distribution circuits shall be color-coded as shown on the plans; the ground conductor shall be green.

Each and every accessible location of underground cable in control cabinets, pull boxes and pole bases (handholes) shall have a permanent weather proof white nylon tag with TYPED ¼" black lettering identifying the cabinet, conductor circuit number and load type ("LUM" or "RECPT") – i.e. DA-1,3-LUM.

**36. Traffic Signals, General.**

Work under this item shall consist of furnishing and installing all materials for traffic signals at the following intersections in Waukesha County, WI, in accordance to the plans and the State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, 2013 Edition, and these special provisions.

CTH L (Janesville Road) and CTH Y (Racine Avenue)

CTH L (Janesville Road) and Lannon Drive

The contractor shall furnish all materials, which include but are not limited to, the traffic signal cabinet and controller, and traffic signal control equipment as listed in the plans (such as, pedestal bases, transformer bases, traffic signal standards, poles, trombone arms, monotube poles and arms, traffic signal faces, backplates, pedestrian signal faces, pedestrian push buttons, traffic signal mounting hardware, video detection system, emergency vehicle preemption system, concrete foundations, etc.). Certain materials may

be removed and reinstalled; if such items are included in this project, these items are identified as “SALVAGED” in the Miscellaneous Quantities tables in the plans.

Furnish the engineer with material lists and specifications of all traffic control equipment for approval prior to installation.

The contractor is responsible for requesting the electrical service installation or relocation from the power company and the County shall pay the installation costs. The contractor shall coordinate with the County to verify a County contact person and address to be listed in the electrical service application.

The contractor shall stake the proposed locations of traffic signal items 10 days prior to starting work so that the locations of the proposed facilities can be approved by the County. Any field changes regarding the location of the signal poles, pull boxes, etc. shall be approved either by the County or by the County’s on-site construction management representative.

The contractor shall request an inspection of the underground wiring upon completion of its installation and a full inspection of the completed signal installation prior to, or at the time of, signal start up testing. This request shall be made to the County at least 3 working days prior to the time of the requested inspection.

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.

**37. Traffic Signal Face 3-12 Inch Vertical, Item 658.0110; Traffic Signal Face 5-12 Inch Vertical, Item 658.0120; Pedestrian Signal Face 16-Inch, Item 658.0416.**

*Replace standard spec 658.2.2.1 (4) with the following:*

Furnish vehicular traffic signal face housings and doors made of an approved polycarbonate manufactured from 100 percent virgin material. The signal face housing shall be dull black. The door face and visor shall be dull black unless the contract specifies otherwise. Ensure that the door is held shut with stainless steel eyebolts secured with stainless steel wing nuts. Use cut away or tunnel type visors as the plans show.

*Replace standard spec 658.2.3.1 (3) with the following:*

Furnish pedestrian signal face made of an approved polycarbonate resin. Polycarbonate pedestrian signal face housing and door shall be manufactured from virgin material only. Reclaimed material is unacceptable. The pedestrian signal face housing shall be dull black.



**38. Temporary Traffic Signals for Intersections (CTH L and Lannon Dr.), Item 661.0200.001; Temporary Traffic Signals for Intersections (CTH L and Racine Ave.), Item 661.0200.002.**

*Replace standard spec 661.3.1.4 (4) with the following:*

Maintain and reposition all video detection traffic zones during the construction staging process to ensure there are no obstructions in the view of the detection zones and that the detection zones lie within the appropriate areas of the roadway as specified in the plans.

**39. Nighttime Work Lighting-Stationary.**

**A Description**

Provide portable lighting as necessary to complete nighttime work that has been approved by the engineer. 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 prior to 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.

643-010 (20100709)

**40. Backfill for Plant Beds, Item SPV.0035.200.**

**A Description**

This special provision describes furnishing and installing Backfill for Plant Beds as shown on the plans, and as hereinafter provided. Construction work includes the excavation and removal of existing material and placement of new plant bed backfill mix.

**B Materials**

Backfill for Plant Beds shall be a blended mix consisting of the following ingredients and ratios:

70% topsoil as defined in standard spec 625.2 (1).

30% compost as defined in standard spec 632.2.

Provide fertilizer at levels for trees, shrubs and perennial plants as recommended by soil analysis.

Backfill for Plant Beds shall be free of debris, rocks larger than ½-inch and having a pH range of 5.5 to 6.5.

**Product Data:** Submit data on topsoil and compost used in Backfill for Plant Beds to Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136, for approval prior to construction.

**C Construction**

The installation of the Backfill for Plant Beds shall be in accordance to the plans and details. Install backfill to a minimum depth of 18-inches, but not less than required to meet finish grades after natural settlement. Thoroughly blend backfill off-site before spreading. Do not spread if planting soil or subgrade is frozen, muddy or excessively wet. Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions to meet finish grades.

**D Measurement**

The department will measure Backfill for Plant Beds by the cubic yard, 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.0035.200	Backfill for Plant Beds	CY

Payment is full compensation for furnishing and delivering all Backfill for Plant Beds.

#### **41. Temporary Crosswalk/Sidewalk, Item SPV.0045.101.**

##### **A Description**

This special provision describes maintaining accessible crosswalks/sidewalks crossing the construction zone. Maintaining accessible crosswalks/sidewalks consists of maintaining a crosswalk/sidewalk on existing pavement, new pavement, or temporary surface material.

##### **B Materials**

Furnish a hard temporary surface material consisting of asphaltic surface temporary in accordance to standard spec 465, any grade of concrete, skid resistant steel plating, or alternative material as approved by the engineer. Gravel or base course material is not acceptable.

##### **C Construction**

Install, maintain, move, and remove temporary surface material at temporary crosswalk/sidewalk locations as shown on the plans and as directed by the engineer. Level and compact the surface prior to placing temporary surface material. Provide a minimum clear width of 4 feet; be located outside the immediate work area, as approved by the engineer; meeting the requirements of the current Americans with Disabilities Act Accessibility Guidelines (ADAAG). Reconstruct or relay temporary crosswalk/sidewalk when disturbed by construction operations or utility trenches.

##### **D Measurement**

The department will measure Temporary Crosswalk/Sidewalk by the day acceptably completed. The measured quantity will equal the number of calendar days a crosswalk/sidewalk through the work area, as shown on the traffic control plans, is open to pedestrian traffic. A crosswalk is defined as an accessible crossing of a single leg of an intersection. A sidewalk is defined as an accessible path between two intersections. A crossing of a street with an island within the route will be considered a single crosswalk. Each day that the crosswalk/sidewalk is out of service for more than 2 hours will result in one day being deducted from the quantity measured for payment.

##### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0045.101	Temporary Crosswalk/Sidewalk	Day

Payment is full compensation for furnishing, loading, hauling; for preparing the foundation; for furnishing, placing, maintaining, and removing temporary surface material; and for reconstructing or relaying the temporary surface material.

**42. Furnish and Install 1-Inch Valve and Box, Item SPV.0060.001; Furnish and Install 2-Inch Valve and Box, Item SPV.0060.002; Furnish and Install 45 Degree Bend (6-Inch), Item SPV.0060.003; Furnish and Install 90 Degree Bend (6-Inch), Item SPV .0060.004.**

**A Description**

This special provision describes furnishing and installing water main fittings as shown on the plans, and as hereinafter provided. Work for new valves that are installed also includes furnishing, installing, and adjusting valve boxes.

**B Materials**

Furnish ductile iron mechanical joint fittings complying with AWWA C153 or C110 with a 250 psi working pressure. Provide fittings with a standard thickness cement mortar lining and interior bituminous coating conforming to AWWA C104. Apply bituminous seal coat on exterior of pipe and fittings conforming to AWWA C151. Coatings shall be smooth, tough and tenacious and impervious to water without tendency to scale off, and shall not be brittle.

Provide polyethylene encasement conforming to AWWA C105. Film shall be Class "C", black with a minimum nominal thickness of 8 mils. Use a thermoplastic material tape with a pressure sensitive adhesive face capable of bonding to metal, bituminous coating, and polyethylene for securing the film. Use tape with a minimum thickness of 8 mils, and a minimum width of 1 in.

Curb stops serving as shutoff valves on both 1-inch and 2-inch copper services shall conform to AWWA C800 and shall have flared flanged or compression type joints. Curb boxes shall be Minneapolis pattern, with 7 to 8 feet extension. Riser pipes shall be black iron and parts shall be coated with black asphaltum paint. Provide Mueller "Mark II Oriseal", Ford ball style, McDonald ball style, or approved equal.

Valves shall be provided with a valve box adaptor to prevent settling or shifting of valve box; Adaptor, Inc. ([www.adaptorinc.com](http://www.adaptorinc.com)), or approved equal.

Valve boxes shall be cast iron screw type suitable for type of valve, allowing adjustment up to 2 ft, with sections sufficient to extend up and terminate at finished grade. Stay put covers shall be marked "Water".

Fittings for copper tubing shall be cast brass having an alloy of 85% copper, 5% tin, 5% zinc and 5% lead, uniform in wall thickness and strength, and free of defect which may affect serviceability. Connections shall be made with flared flanged joints or compression type joints. Fittings shall be permanently and plainly marked with name or trademark of manufacturer.

Corporation stops serving as shutoff valves on service taps on main shall conform to AWWA C800 and shall have flared flanged or compression joints; Mueller, Ford, McDonald, or approved equal. For ductile iron water main, provide conductive-type

service clamp or saddle if thickness of water main does not allow three full threads engagement by corporation stop. For PVC plastic water main, provide saddle for all service taps.

Provide electrical conductivity across joints and fittings in accordance to manufacturer's recommendations. Devices may be cable bond type or a copper conductivity strip, capable of carrying 500 amperes continuously. Metal wedges are not permitted.

Tracer wire shall be No. 12 AWG solid single copper wire with blue plastic coating. Tracer wire splices shall be made with inline resin splice kits.

Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length of each side of fittings, shall have wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe; Ebaa Iron, Sigma, Star Pipe Products, or approved equal.

## **C Construction**

### **C.1 General**

PVC plastic water main shall be installed in accordance to the requirements of AWWA C605, the special provisions for the general installation of water main fittings, and the following:

**Mechanical Joints:** Joint surfaces shall be thoroughly brushed and cleaned. Rubber gasket shall be cleaned with soapy water and placed on plain end while still wet. Secure fittings by means of restrained joints. Blocking with concrete shall not be used to restrained joints. Tighten bolts for mechanical joints alternatively to provide even pressure on gland. Apply torque according to manufacturer's recommendation. Wrench handle shall be at least 8 in. long and not more than 10 in.

Joints shall be resilient seal compression type securely tightened against fitting with sleeve nut. Connections of copper to existing lead services or repair of lead services shall be soldered and wiped joint made according to standard plumbing procedures.

Install valves where shown, unless otherwise designated. Provide valve box for each buried valve. Box shall not transmit shock or stress to valve and shall be centered and plumb over wrench nut of valve, with box cover flush with finished surface.

## **D Measurement**

The department will measure Furnish and Install (Inch) Valve and Box and Furnish and Install (Degree) Bend (6-Inch) as each individual unit, 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.0060.001	Furnish and Install 1-Inch Valve and Box	Each
SPV.0060.002	Furnish and Install 2-Inch Valve and Box	Each
SPV.0060.003	Furnish and Install 45 Degree Bend (6-Inch)	Each
SPV.0060.004	Furnish and Install 90 Degree Bend (6-Inch)	Each

Payment is full compensation for furnishing and installing all materials and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

#### **43. Remove and Relocate Hydrant, Item SPV.0060.005.**

##### **A Description**

This special provision describes the removing and re-installing water hydrants meeting approval of both the department and the owner, the Muskego Water Utility, in accordance to the *State Standard Specifications*, as shown on the plans, and as hereinafter specified.

##### **B Materials**

Existing hydrants, fittings, tracer wire access boxes, and standpipe are to be used.

Furnish tracer wire, No. 12 AWG solid single copper wire with blue plastic coating. Tracer wire splices shall be made with inline resin splice kits.

Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length of each side of fittings, shall have wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe; Ebaa Iron, Sigma, Star Pipe Products, or approved equal. Standard mechanical joint retainer glands will not be acceptable.

Granular backfill shall meet the requirements of standard spec 209.

##### **C Construction**

Remove and set aside existing hydrants. Hydrant shall be removed at connection with valve. Install all necessary fittings, joint restraints, and 6-Inch pipe as described in the appropriate section of the special provisions so that hydrant can be installed in the proposed location.

Thoroughly clean hydrants of dirt or other foreign matter before setting. Connect the hydrant to the hydrant lead piping with the appropriate fittings/joint restraint. Brace and block hydrant to prevent disturbance during backfilling and operation. Stand hydrant plumb on hardwood blocking with the pumper nozzle perpendicular to the roadway.

Connect to existing tracer wire with resin splice kits. Relocate tracer wire access box and connect it to newly installed tracer wire. Bond tracer wire to each hydrant and valve with a conductivity strap and brass bolt and nut. Test tracer wires to verify conductivity. Repair wires not showing conductivity.

Place one-half cubic yard of 3/4-inch washed stone under the hydrant base for drainage and extend backfill to 6-inches above the drain holes in the hydrant stem. Hydrants shall be solidly buttressed against the trench wall.

Back fill remaining area with appropriate granular backfill. Each layer of backfill to be placed in the void shall not exceed 12 inches in thickness and shall be thoroughly compacted means of approved tampers, rollers or vibrators.

#### **D Measurement**

The department will measure Remove and Relocate Hydrant by each individual unit, 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.0060.005	Remove and Relocate Hydrant	Each

Payment is full compensation for excavating; removing existing hydrant, installing in new location; backfilling and compaction; and for properly disposing of all surplus materials; cleanup. Granular fill material used for backfilling will be considered part of Remove and Relocate Hydrants, and will not be measured and paid for separately.

### **44. Adjusting Water Valve Boxes and Lids Temporary, Item SPV.0060.006; Adjusting Water Valve Boxes and Lids Final, Item SPV.0060.007.**

#### **A Description**

This special provision describes adjusting to temporary and finished grade all existing and relocated water main valve boxes including furnishing valve box extensions as necessary, meeting approval of both the department and the owner, the Muskego Water Utility, in accordance to the *State Standard Specifications*, as shown on the plans, and as hereinafter specified.

#### **B Materials**

Existing valve boxes are to be used.

When existing valve boxes lack the ability to be adjusted to the elevation as shown on the plan provide cast iron screw type valve box stem extensions and valve adaptor to connect to valve allowing adjustment up to 2 feet, with sections sufficient to extend up and terminate at finished grade. Stay put covers shall be marked "Water".

Granular backfill shall meet the requirements of standard spec 209.

#### **C Construction**

Adjust water valve boxes located in the pavement areas in two separate operations:



**Adjusting Water Valve Boxes and Lids Temporary, Item SPV.0060.006:**

Initially, excavate to a depth to completely expose the valve box adjusting extension. Raise or lower the valve box to the temporary elevation as indicated on the plans and in the Miscellaneous Quantities table. Add or remove an extension as needed. Backfill with compacted granular material and pave with asphalt pavement in accordance to the requirements for the adjacent roadway base course and pavement construction, which shall remain in place until contract milling and paving operations permit setting the water valve boxes and lids to final grade. Final paving operation may not occur until Spring 2014.

**Adjusting Water Valve Boxes and Lids Final, Item SPV.0060.007:**

During the second and final operation, remove the asphaltic pavement mixture and aggregate surrounding the valve box and adjust the valve box to final grade as indicated on the plans and in the Miscellaneous Quantities table. Backfill with compacted granular material and pave with asphalt pavement in accordance to the requirements for the adjacent roadway base course and pavement construction.

For water valve boxes located out of the pavement areas, e.g. terrace, sidewalk, etc., excavate and expose the existing water main valve box to the depth needed to adjust the valve box to final grade as shown on the plans. Add or remove an extension as needed and backfill with compacted granular material in accordance to the requirements for the adjacent sidewalk base course construction or with granular backfill in accordance to the requirements for the adjacent terrace area.

**D Measurement**

The department will measure Adjust Water Valve Boxes and Lids Temporary and Adjust Water Valve Boxes and Lids Final by each individual unit, 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.0060.006	Adjusting Water Valve Boxes and Lids Temporary	Each
SPV.0060.007	Adjusting Water Valve Boxes and Lids Final	Each

Payment is full compensation for excavating; removing/furnishing any extensions, installing and adjusting the water main valve boxes; backfilling and compaction; properly disposing of all surplus materials; cleanup. Granular fill material used for backfilling will be considered part of Adjust Water Valve Boxes, and will not be measured and paid for separately.

Upon completion of the contract, the city will inspect all water facilities to ensure the valve boxes are clean, properly aligned, and accessible. The contractor shall be responsible to make identified repairs and adjustments, and if any repairs or adjustments are made by the city, the cost will be charged to the contractor.

**45. Adjusting Sanitary Manholes Temporary, Item SPV.0060.008;  
Adjusting Sanitary Manholes Final, Item SPV.0060.009.**

**A Description**

This special provision describes adjusting the existing chimney of the block, precast, or brick round manholes; furnishing, installing and removing protection of the manhole during adjustment operations. Perform work in accordance to the standard specifications, the provisions of the article Adjusting Manhole Covers, as shown on the plans, and as hereinafter specified.

**B Materials**

Provide pre-cast eccentric cone manhole top. Where space does not permit a cone top, substitute a minimum 6-in. thick (48-in. diameter) or 8-in. thick (60-in. or greater diameter) slab top, with eccentric opening. Use circular O-ring joins conforming to ASTM C443, Ram Nek, Mas-Stik, butyl rubber gasket or butyl rubber rope. Provide M.A. Industries, Inc No PS1-PF or equal manhole steps conforming to ASTM C478.

Furnish and external, flexible rubber sleeve chimney seals and stainless steel compression bands designed to prevent leakage of water into manhole in adjusting ring area between manhole frame and top of cone or flat top. Seal shall remain flexible, allowing repeated vertical movements of frame due to frost lift, ground movement, or other causes of up to 2 in. and/or repeated horizontal movements of frame due to thermal movement of pavement or other causes of up to 1/2 in. for a 20 year design life. Provide Cretex Specialty Products "External Manhole Chimney Seal" conforming to ASTM-C923.

Provide manhole frame-chimney seals designed to prevent leakage of water into the manhole continuously throughout a 20-year design life. Do not allow the manhole chimney seal to restrict access into or out of the manhole. The seal must remain flexible, allowing repeated vertical movement of the frame due to frost lift, ground movement, or other cause up to 2 inches and/or repeated horizontal movements of the frame due to thermal movement of the pavement or other cause of up to 1/2 inch, both rates of movement occurring at rates not less than 0.10 inch per minute. The seal must be made of materials that have been successfully used in sanitary sewer for at least 10 years and have proven to be resistant to sanitary sewerage; corrosion or rotting under wet or dry conditions; the gaseous environment in sanitary sewers and at road surfaces including common levels of ozone, carbon monoxide and other trace gases at the sites of installation; the biological environment in soils and sanitary sewers; chemical attacks by road salts, road oil and common street spillages or solvents used in street construction or maintenance; the temperature ranges, variations and gradients in and between manhole frames and chimneys in the climate of the location of construction; variations in moisture conditions and humidity; fatigue failure caused by a minimum of 30 freeze-thaw cycles per year; or vibrations due to traffic loadings; fatigue failure due to repeated variations of tensile, compressive and shear stresses and repeated elongation and compression; and any combination of the foregoing. The materials used shall be compatible with each other and the manhole materials.

Provide precast concrete adjustment rings with diameter matching manhole frame and in accordance to the construction details. Adjust castings in work area to within plus 0.00 feet to minus 0.05 feet of required elevation by removing or adding adjusting rings.

Salvage and reinstall existing covers on the manholes.

### **C Construction**

This work shall be in accordance to the pertinent provisions of standard spec 611, as shown on the plans, and as hereinafter provided.

Adjust manhole covers located in pavement areas in two separate operations:

#### **Adjusting Sanitary Manholes Temporary, Item SPV.0060.008:**

Initially, remove designated manhole covers along with the required portion of the chimney section to have sufficient room to permit installation of temporary cover plate over the opening. Chimney removed should be in an amount suitable to allow for a minimum of 4-inches of precast concrete adjustment rings below the manhole casting to be installed during the final adjustment. Fill the excavated area with asphaltic pavement mixture, which shall remain in place until contract milling and paving operations permit setting the manhole frames to grade. Manhole frames and covers shall be delivered to the City of Muskego Department of Public Works (DPW) for storage until final adjustment occurs.

Chimneys removed for adjustment become the property of the contractor and must be properly disposed of off-site.

#### **Adjusting Sanitary Manholes Final, Item SPV.0060.009:**

During the second and final operation, remove the asphaltic pavement mixture surrounding the manhole plus the temporary cover plate, and adjust the manhole cover to final grade using a minimum of 6-inches of precast concrete adjustment rings if necessary.

If the total adjustment is greater than 1 vertical foot manhole shall be reconstructed. All existing concrete adjustment rings shall be removed and a new pre-cast eccentric cone top shall be installed. A minimum of 4 inches of precast adjustment rings shall be installed on top of precast cone with a maximum of 1 foot of adjustment rings. If the adjustment is less than 1 foot remove or add precast concrete adjustment rings.

Revise standard spec 611.3.7 by deleting the last paragraph.

Set the manhole frames so that they comply with the surface requirements of standard spec 450.3.2.9. At the completion of the paving, a 6-foot straightedge shall be placed over the centerline of each manhole frame parallel to the direction of traffic. A measurement shall be made at each side of the frame. The two measurements shall be averaged. If this average is greater than 5/8 inches, reset the manhole frame to the correct plane and elevation. If this average is 5/8 inches or less but greater than 3/8 inches, the

manhole frame shall be allowed to remain in place but shall be paid for at 50 percent of the contract unit price.

If the manhole frame is higher than the adjacent pavement, the two measurements shall be made at each end of the straightedge. These two measurements shall be averaged. The same criteria for acceptance and payment as above, shall apply.

#### **D Measurement**

The department will measure Adjusting Sanitary Manholes (Type) as each individual unit, 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.0060.008	Adjusting Sanitary Manholes Temporary	Each
SPV.0060.009	Adjusting Sanitary Manholes Final	Each

Payment is full compensation for furnishing all required materials, exclusive of frames, grates, or lids available and designated for adjusting; for removing, stockpiling, reinstalling, and adjusting the covers. Covers to be adjusted and which are rendered unfit for use by the contractor through the contractor's operations will be replaced by the contractor in kind at the contractor's own cost and expense.

Upon completion of the contract, the city will inspect all sanitary sewer facilities to ensure the manholes are clean, properly aligned, and accessible. The contractor shall be responsible to make identified repairs and adjustments, and if any repairs or adjustments are made by the city, the cost will be charged to the contractor.

### **46. Adjusting Water Manholes Temporary, Item SPV.0060.010; Adjusting Water Manholes Final, Item SPV.0060.011.**

#### **A Description**

This special provision describes adjusting the existing water manholes block, precast, or brick round manholes; furnishing, installing and removing protection of the manhole during adjustment operations. Perform work in accordance to the standard specifications, the provisions of the article Adjusting Manhole Covers, as shown on the plans, and as hereinafter specified.

#### **B Materials**

Provide pre-cast eccentric cone manhole top. Where space does not permit a cone top, substitute a minimum 6-in. thick (48-in. diameter) or 8-in. thick (60-in. or greater diameter) slab top, with eccentric opening. Use circular O-ring joins conforming to ASTM C443, Ram Nek, Mas-Stik, butyl rubber gasket or butyl rubber rope. Provide M.A. Industries, Inc No PS1-PF or equal manhole steps conforming to ASTM C478.

Provide precast concrete adjustment rings with diameter matching manhole frame and in accordance to the construction details. Adjust castings in work area to within plus 0.00 feet to minus 0.05 feet of required elevation by removing or adding adjusting rings.

Salvage and reinstall existing covers on the manholes.

### **C Construction**

This work shall be in accordance to the pertinent provisions of standard spec 611, as shown on the plans, and as hereinafter provided.

Adjust manhole covers located in pavement areas in two separate operations:

#### **Adjusting Water Manholes Temporary, Item SPV.0060.010:**

Initially, remove designated manhole covers along with the required portion of the chimney section to have sufficient room to permit installation of temporary cover plate over the opening. Chimney removed should be in an amount suitable to allow for a minimum of 4-inches of precast concrete adjustment rings below the manhole casting to be installed during the final adjustment. Fill the excavated area with asphaltic pavement mixture, which shall remain in place until contract milling and paving operations permit setting the manhole frames to grade. Manhole frames and covers shall be delivered to the City of Muskego Department of Public Works (DPW) for storage until final adjustment occurs.

Chimneys removed for adjustment become the property of the contractor and must be properly disposed of off-site.

#### **Adjusting Water Manholes Final, Item SPV.0060.011:**

During the second and final operation, remove the asphaltic pavement mixture surrounding the manhole plus the temporary cover plate, and adjust the manhole cover to final grade using a minimum of 4-inches of precast concrete adjustment rings if necessary.

If the total adjustment is greater than 1 vertical foot manhole shall be reconstructed. All existing concrete adjustment rings shall be removed and a new pre-cast eccentric cone top shall be installed. A minimum of 4 inches of precast adjustment rings shall be installed on top of precast cone with a maximum of 1 foot of adjustment rings. If the adjustment is less than 1 foot remove or add precast concrete adjustment rings.

Revise standard spec 611.3.7 by deleting the last paragraph.

Set the manhole frames so that they comply with the surface requirements of standard spec 450.3.2.9. At the completion of the paving, a 6-foot straightedge shall be placed over the centerline of each manhole frame parallel to the direction of traffic. A measurement shall be made at each side of the frame. The two measurements shall be averaged. If this average is greater than 5/8 inches, reset the manhole frame to the correct plane and elevation. If this average is 5/8 inches or less but greater than 3/8 inches, the

manhole frame shall be allowed to remain in place but shall be paid for at 50 percent of the contract unit price.

If the manhole frame is higher than the adjacent pavement, the two measurements shall be made at each end of the straightedge. These two measurements shall be averaged. The same criteria for acceptance and payment as above, shall apply.

#### **D Measurement**

The department will measure Adjusting Water Manholes (Type) as each individual unit, 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.0060.010	Adjusting Water Manholes Temporary	Each
SPV.0060.011	Adjusting Water Manholes Final	Each

Payment is full compensation for furnishing all required materials, exclusive of frames, grates, or lids available and designated for adjusting; for removing, stockpiling, reinstalling, and adjusting the covers. Covers to be adjusted and which are rendered unfit for use by the contractor through the contractor's operations will be replaced by the contractor in kind at the contractor's own cost and expense.

Upon completion of the contract, the city will inspect all water facilities to ensure the manholes are clean, properly aligned, and accessible. The contractor shall be responsible to make identified repairs and adjustments, and if any repairs or adjustments are made by the city, the cost will be charged to the contractor.

### **47. Adjusting Hydrants, Item SPV.0060.012.**

#### **A Description**

This special provision describes removing, extending or cutting hydrant standpipe, and re-installing water hydrants meeting approval of both the department and the owner, the Muskego Water Utility, in accordance to the *State Standard Specifications*, as shown on the plans, and as hereinafter specified.

#### **B Materials**

Existing hydrants, fittings, tracer wire access boxes, are to be reused.

Furnish water main pipe in the size as indicated on the drawings conforming to the *State Standard Specifications* and the bid item SPV.0090.004 Furnish and Install 6-Inch Water Pipe.

Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length of each side of fittings, shall have wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe; Ebaa Iron, Sigma, Star Pipe Products, or approved equal.

Granular backfill shall meet the requirements of standard spec 209.

### **C Construction**

Remove and set aside existing hydrants. Based on proposed elevation as marked on plan the hydrant will be either raised or lowered. Remove and replace hydrant stand pipe from hydrant bulb to hydrant and replace with the appropriately sized standpipe. Final elevation of hydrant shall be 2 inches above proposed grade as indicated on plans. *See Construction Detail.*

Thoroughly clean existing hydrant of dirt or other foreign matter before setting. Connect the hydrant to the hydrant lead piping with the appropriate fittings/joint restraint. Brace and block hydrant to prevent disturbance during backfilling and operation. Stand hydrant plumb on hardwood blocking with the pumper nozzle perpendicular to the roadway.

If disturbed, place one-half cubic yard of 3/4-inch washed stone under the hydrant base for drainage and extend backfill to 6-inches above the drain holes in the hydrant stem. Hydrants shall be solidly buttressed against the trench wall.

Back fill remaining area with appropriate granular backfill. Each layer of backfill to be placed in the void shall not exceed 12 inches in thickness and shall be thoroughly compacted means of approved tampers, rollers or vibrators.

### **D Measurement**

The department will measure Adjusting Hydrants by each individual unit, 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.0060.012	Adjusting Hydrants	Each

Payment is full compensation for excavating; removing existing hydrant, for adjusting, installing new standpipe; backfilling and compaction; properly disposing of all surplus materials; cleanup. Granular fill material used for backfilling will be considered part of Adjusting Hydrants, and will not be measured and paid for separately.

## **48. Traffic Signal Controller and Cabinet Fully Actuated 8-Phase, Item SPV.0060.013.**

### **A Description**

This specification describes furnishing and installing a fully equipped and operational NEMA TS2 Type 2 traffic signal control cabinet.

### **B General Requirements**

#### **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, as supplemented or modified in this specification.

Provide cabinets designed for TS2 Type 2 operation. Pre-wire cabinets for a minimum of sixteen phases as specified herein.

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.

#### **B.2 Definitions**

Contractor or vendor: The firm under contract with the County or other entity for furnishing and installing the traffic signal cabinet

Construction contractor: The firm under contract with the County or another entity to construct a roadway facility. The construction contractor may designate a subcontractor, such as an electrical subcontractor, to represent them with regards to the signal cabinet installation.

County: Waukesha County

Manufacturer: The firm that builds or produces the traffic signal equipment other than the cabinet; for example, the “controller manufacturer”

### **C Cabinet**

#### **C.1 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 and installed by others as listed in the description 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.

## **C.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.

### **C.3 Shelves and Mountings**

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 Malfunction Management Unit (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.

#### **C.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.

#### **D Terminals and Facilities**

##### **D.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 sixteen load switch sockets: eight phases of vehicular, four phases of pedestrian, and four phases of overlap operation; eight flash transfer relay sockets; one flasher socket; and two terminal facility Bus Interface Unit (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 eight sockets each. Support the load switches and flasher by a bracket or shelf extending at least three 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 each 16-channel, 8-position, TS2 detector racks, each with an integrally mounted BIU mounting. Racks shall be addressable. Power each detector rack by the cabinet power supply. Fasten the loop detector racks 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 Wisconsin State Electrical Code (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 in all cabinets furnished in one order.

## **D.2 Auxiliary Panels**

### **D.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.

### **D.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:

1. Control coil
2. L1 in
3. L2 in
4. Neutral in and control coil
5. L1 out
6. 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.

## **D.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.

#### **D.4 Cabinet Switches**

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

- a. Controller On/Off
- b. Cabinet Light
- c. Stop Time (Three Position)
- d. Manual Detector Switches (Three Position)

<b>Position</b>	<b>Switch Label</b>	<b>Function</b>
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:

- a. Signal/Off
- b. Flash/Normal
- c. Hand/ auto
- d. Coiled hand control and cable

The above switches shall function as follows:

Off: Signals Dark

Signal: Signals On and operating as follows:

Auto

Flash:

Signals Flash

Normal:

Signals Normal

Hand

Signals Flash

Signals Advance by use of hand control

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	Detector Disabled
Center	Detector Enabled
Down	Detector Called

## **E Power Panel**

### **E.1 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.

### **E.2 Bus Bar**

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



### **E.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. Streetlights will be powered from outside the cabinet in the meter breaker pedestal. 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 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.

### **E.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, single-phase circuits, and to meet the standards of UL or a NRTL and Radio Manufacturer's Association.

### **E.5 Bus Relay**

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

### **E.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.

### **E.7 Power receptacles**

Mount a 120 VAC 20 amp, NEMA 5-20R GFCI duplex 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.

### **E.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.

## **F Auxiliary Devices**

### **F.1 Load Switches**

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

### **F.2 Flashers**

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

### **F.3 Flash Transfer Relays**

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

### **F.4 Inductive Loop Detector Units**

Provide the quantity of inductive loop detector units required by the plans and conforming to the requirements of section 6.5 of the NEMA TS2 Standard for 2-channel, rack mount detector units, type C. Install all required units in one detector rack.

### **F.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.

## **G 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.

## **H 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 simultaneously active 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 an 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.

## **I Traffic Signal Controller**

The traffic signal controller provided shall be a Siemens m50 series model EPAC3108M52, compatible with the NEMA TS2 Type 2 specifications.

### **I.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 County, 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.
- County PC laptop and desktop computers with Windows XP and Windows 7 operating systems.
- Backwards compatibility with older traffic signal controllers and software produced by the controller manufacturer and installed in County traffic signals since 2000.
- The supplier's multi-level central operation software programs for potential future Application.

## **I.2 Features/ Functions**

### **I.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 in accordance 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 thirty 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.

### **I.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

### **I.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 in accordance 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
- Emergency vehicle 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.

#### **I.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.

#### **I.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)

#### **I.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.

#### **I.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.

### **I.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.

### **I.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.

## **J Documentation**

### **J.1 Cabinet Intersection Wiring Diagrams**

For each individual cabinet ordered, within 10 calendar days after receipt of the procurement order, furnish to the County's traffic 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 County's traffic 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 County's traffic engineer two sets of as-built printed cabinet wiring diagrams per cabinet. If no changes were made from time of cabinet delivery, notify the County's traffic engineer in writing.

### **J.2 MMU and Controller Programming**

At the time of cabinet delivery, furnish to the County's traffic 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 County's traffic engineer two copies per cabinet. If no changes were made from time of cabinet delivery, notify the County's traffic engineer in writing.

### **J.3 Manuals**

At the time of the cabinet delivery, furnish to the County's traffic 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 crossreferences 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.

### **K Cabinet Delivery**

The construction contractor will provide the traffic signal specifications and plans, including the sequence of operation, to the vendor. The vendor shall determine the required cabinet equipment and assembly requirements from the plans and specifications and provide the County's traffic engineer a list of procurement items. The County's traffic 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 County's traffic 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 County's traffic engineer approves the procurement item list.

If the County 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 County 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 County, except if an additional equipment item is added at the County'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 County or the project construction contractor. The contractor is responsible for arranging the unloading of the cabinet.

When the County exercises its right to test a cabinet in the County's shop as described in the Acceptance Testing section of this specification, deliver the cabinet to the location specified by the County's traffic engineer. When the testing is complete, pick up the cabinet from the shop within 3 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.

#### **L Acceptance Testing**

Complete on-site traffic signal acceptance testing in the presence of the County. 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 County 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 County, 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 County, 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 County. 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 County 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 County reserves the right to perform its own tests on the traffic signal cabinet at any time using the County'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 County 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 County.

### **M 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.

### **N Warranty**

Provide a warranty and guarantee statement which stipulates that the cabinet and all supplied equipment, including add-on accessory items, to be, individually and as a cabinet system, free from defects in materials and workmanship for a period of at least two years from the date of cabinet installation and acceptance in the field, or in the case of a cabinet that is not installed in the field, from the date of delivery of an accepted cabinet to the County. Delivery of a cabinet for testing does not constitute acceptance of the cabinet. Turn over to the County warranties and guarantees that are offered by the manufacturer as a customary trade practice. Name the County as the obligee on all manufacturers' warranties and guarantees. Shipping costs, both to the actory or an Authorized Repair Depot, and return, shall be paid by the contractor.

The warranty shall provide for full repair or replacement, as determined by the County, of the failed item or cabinet system, including removal and installation, at no cost to the County.

Contractor warranty service response times after notification by the County:

- 4 hours to have qualified service personnel on site at the intersection
- 12 hours to have the signal safely operational, including all phases and enough detection to run the intersection phasing (minimum 8 detectors)
- 48 hours on business days to restore the signal to full original operations

If a malfunction in the controller unit, MMU, module, or any auxiliary equipment occurs during the warranty period, the contractor shall, within 24 hours after notification (excluding Saturday and Sunday), furnish and install an identical, programmed, controller unit, MMU, module, or auxiliary equipment, for use while the warranted unit is being

repaired or replaced. The isolation of any malfunction during the warranty period shall be the responsibility of the contractor.

The County reserves the right to make repairs to malfunctioning cabinets and equipment that are under warranty, up to and including complete replacement of the cabinet, when in the County's determination the safety of the traveling public is best served. Such repair work will not in any way void or limit the contractor's warranty and guarantee specified above. The County will notify the contractor in writing of the repair. The contractor shall within five business days after notification replace all cabinets, equipment, and supplies used by the County in making repairs, with new parts meeting the requirements of this specification.

If any cabinet has three or more equipment or cabinet system failures, resulting from poor workmanship, within the first six months of operation after County acceptance, an entirely new cabinet exactly matching the existing cabinet shall be furnished and installed in the field by the contractor at no additional cost to the County. Any traffic control, including but not limited to signing, channelizing devices, temporary signals, police control, and flaggers, that becomes necessary as determined by the County in order to safely replace the cabinet, is the full responsibility of the contractor. The original cabinet becomes the property of the contractor.

Provide, at no additional cost, firmware/software maintenance, problem resolution phone technical support, problem resolution technical support in the supplier's facility, firmware/software patches, and firmware/software upgrades for a minimum of three (3) years. The lead for technical support and primary department contact for support shall be a qualified person employed by the contractor's local office who is personally familiar with the County's software and signal operations. Help desks and manufacturer's representatives may be utilized by the lead technical support person as resources, but are not acceptable for lead technical support.

Maintain an inventory of the firmware / software version on each controller provided. Notify the County's traffic engineer in writing when a firmware / software patch or upgrade is available. The County will direct the contractor when to install the patch or upgrade for each controller. Install the patch or upgrade and provide a usable copy of the patch or upgrade to the County. Alternatively, when requested by the County, provide the patch or upgrade to the County for installation by the County.

#### **O Measurement**

The department will measure Traffic Signal Controller and Cabinet Fully Actuated 8-Phase as each individual unit, acceptably completed.

#### **P Payment.**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.013	Traffic Signal Controller and Cabinet Fully Actuated 8-Phase	Each

Payment is full compensation for furnishing and installing a complete traffic signal cabinet, including the signal controller and conflict monitor together with cabinet, all required control units, all necessary wiring, switches, and fittings to assure that the controller will perform the functions required in the plans.

#### **49. Lighting Utility LED 175 Watts, Item SPV.0060.014.**

##### **A Description**

This special provision describes furnishing and installing luminaires utility in accordance to standard spec 659, as shown on the plans, as approved by the engineer, and as hereinafter modified.

##### **B Materials**

The Luminaire shall have 120 light emitting diodes for a total maximum system wattage of 175 watts.

##### **B.1 Housing**

The housing shall be a one-piece diecast, low copper ( $< 0.6\%Cu$ ) aluminum alloy with integral cooling ribs over the electrical compartment. A solid barrier wall shall separate optical and electrical compartments. A single diecast aluminum cam-latch shall provide positive locking and sealing of the optical chamber. A one piece extruded and vulcanized silicone gasket shall be used to seal the housing against the lens surface.

##### **B.2 Electric Drive Module**

The electronic drive module shall be a one-piece die-cast, low copper ( $< 0.6\%Cu$ ) aluminum alloy with integral cooling ribs over exposed bottom surface. Integral hinges and slide latch with stainless steel hardware shall provide a no-tool mounting and removal from housing installation. All electronic components shall be UL and CSA recognized and mounted directly to the driver tray for maximum heat dissipation.

##### **B.3 Lens**

The lens shall be clear 3/16-inch thick tempered glass retained by a stainless steel piano hinge and a single die-cast aluminum cam-latch. The edges shall be camouflaged to conceal the outer portion of the housing.

##### **B.4 Optical Module**

The optical module shall have precision injection molded, high specular reflectors positioned to achieve directional control toward desired task. Secondary high specular reflector 95% Miro4 panels shall surround the module to redirect light downward. Fasteners shall not be placed on the reflective surface. The entire assembly shall fasten to the housing as a one-piece module.

**B.5 Finish**

The finish shall be super TGIC thermoset polyester powder coat paint, 2.5 mil nominal thickness, applied over a titanated zirconium conversion coating; 2500 hour salt spray test endurance rating. The finish color shall be natural silver.

**B.6 Light Distribution**

The luminaire shall provide a full cutoff Type III light distribution.

**B.7 Electrical Module**

The color temperatures shall be 5100K. The luminaires shall be suitable for a 240 V electrical system.

**B.8 Horizontal Slipfitter Mount**

A cast aluminum fitter shall be provided to mount to a standard WisDOT luminaire arm. The casting shall have a 5-degree adjustment. The finish color shall be natural silver.

**B.9 Terminal Block**

An 85 amp, 600 volt box clamp terminal block shall be mounted to the housing inside the electrical compartment. The terminal block shall accept #14 to #4 wire sizes.

The Luminaires Utility LED 175 Watts shall be WARP9 LED Luminaires Utility 120 Count LED, 175 Watt Type III, Catalog Number WP9LE3/L5K240.

**C Construction**

Keep the luminaire lamps in their shipping cartons and protect against contamination until use. Wear clean gloves when installing luminaire lamps. Furnish and install circuit identification plaques and luminaire sequence decals suitable for outdoor construction on the support poles as the plans show.

**D Measurement**

The department will measure Lighting Utility LED 175 Watts as each individual luminaire, 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.0060.014	Lighting Utility LED 175 Watts	Each

Payment is full compensation for providing and installing all materials including luminaires, ballasts, lamps, fittings, brackets, hardware and attachments.

**50. Spread Spectrum Radio Antenna, 12dB Gain, Yagi, Item SPV.0060.015.**

**A Description**

Furnish and install a Yagi spread spectrum radio antenna. Provide mast brackets and U-bolts to hold the antenna to the mast. It has a pigtail for connection to the antenna cable. Provide lag screws for mounting to a wood pole, or stainless steel bands for mounting to a steel pole or sign structure.

**B Materials**

Mast brackets must be ones recommended by the antenna manufacturer.

**C Construction**

Connect the antenna drop cable to the antenna. The connection shall be fully sealed using methods and materials recommended by the radio manufacturer.

The antenna shall be placed in the southeast quadrant of Lannon Drive, aimed to Bay Lane Drive. Use the signal strength indicator on the radio to find the optimum position.

**D Measurement**

The department will measure Spread Spectrum Radio Antenna, 12dB Gain, Yagi as each individual unit, 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.0060.015	Spread Spectrum Radio Antenna, 12dB Gain, Yagi	Each

Payment is full compensation for furnishing and installing each spread spectrum radio antenna completely installed and operational.

**51. Spread Spectrum Radio Assembly, Shelf Mount, Item SPV.0060.016.**

**A Description**

Provide a shelf-mounted spread spectrum radio, set-up software (if required), a lightning protector for the antenna connection and a shielded EIA-232 cable to connect the radio to the traffic signal controller in the same cabinet.

**B Materials**

The radio shall be a spread spectrum radio with the following features:

- Frequency hopping technology.
- Up to 115,000 bits per second sustained throughput.
- 1-mile minimum range.

- Built-in set up and diagnostic capabilities.
- Forward error correction with 16-bit CSC.
- Variable transmitter power, up to 1 Watt.
- Suitable for both point-to-point and multipoint networks.
- Configurable with respect to frequency groups and hop patterns.
- EIA-232 interface to equipment.
- 902-928 MHz operating frequency band.
- 62 hop patterns.
- 139 RF channels.
- 32-bit encryption.
- Receiver sensitivity of -110 dB with a bit error rate of  $10^{-6}$  or better.
- System gain of 152 dBm.
- RP TNC-F antenna port.
- Operating temperature range: -40 to +80 degrees C.
- Enclosure volume under 100 cubic inches.
- Aluminum enclosure.
- Integral signal strength indicator for antenna aiming.
- Indicators for transmit data, receive data, received signal strength, and power.

### **C Construction**

Use the manufacturer's set-up software to configure the radio for its intended use.

Following installation of the spread spectrum radio assembly, power divider (if required at this location), antennas, and cables, perform the following tests:

V.S.W.R test from the connection at the radio, with a fully configured antenna system (antenna, cable, and all connections). The V.S.W.R. shall not exceed 1.5:1 at 900 MHz.

Perform a Bit error rate test. Test at 5600 bps from the radio to the matching radio shown on the block diagram in the plans. Test for 4 hours at a 2048 bit pattern. The contractor shall provide a hard copy output of results of each test to the engineer. The maximum error rate shall be 1 erroneous bit every 106 bits.

Bond the surge protector to the cabinet grounding system.

#### **D Measurement**

The department will measure Spread Spectrum Radio Assembly, Shelf Mount as each individual unit, 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.0060.016	Spread Spectrum Radio Assembly, Shelf Mount	Each

Payment is full compensation for furnishing and installing each spread spectrum radio assembly, shelf mount, completely installed and operational.

### **52. Utility Line Opening (ULO), Item SPV.0060.17.**

#### **A Description**

This special provision describes excavating and uncovering utilities for the purposes of determining elevation and potential conflicts, as shown on the plans or as directed by the engineer, and as hereinafter provided.

#### **B (Vacant)**

#### **C Construction**

The excavation shall be done in such a manner that the utility in question is not damaged and the safety of the workers is not compromised.

The utility line openings shall be performed as soon as possible and at least 10 days in advance of proposed utility construction to allow any conflicts to be resolved with minimal disruption. Where utilities are within 6 feet of each other at a potential conflict location, only 1 utility line opening shall be called for. In these cases, a single utility line opening will be considered full payment to locate multiple utilities. Utility line openings shall include a trench up to 10 feet long as measured at the trench bottom, and of any depth required to locate the intended utility.

All utility line openings shall be approved and coordinated with the engineer. The utility engineers or their agents shall be notified of this work a minimum of 3 days prior to the work so they may be present when the work is completed.

**D Measurement**

The department will measure Utility Line Opening (ULO) by the unit, 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.0060.17	Utility Line Opening (ULO)	Each

Payment is full compensation for the excavation required to expose the utility line, backfilling with existing material removed from the excavation, compacting the backfill material, restoring the site, and for cleanup.

**53. Grate for Stormwater Pond Outlet Control Structure, Item SPV.0060.018.****A Description**

This special provision describes the grate covering for the stormwater pond outlet control structure located in the northeast corner of the proposed stormwater pond within the right-of-way in the northeast quadrant of CTH L and Park Drive. Construct and install in accordance to the pertinent provisions of standard spec 611 and as hereinafter provided.

**B Materials**

Grate shall be Madison Concrete Pipe Model 48P grate; Neenah Foundry R-4796-4 (2 sections); American Concrete Cone Grate 48"; or approved equal.

Submit shop drawings of proposed grate a minimum of 30 days prior to installation.

Ensure compatibility of proposed grate with body of outfall structure.

**C Construction**

Install grate to cover the top opening of the 48" diameter manhole (Type 1) that forms the body of the outlet control structure. Secure grate to manhole per manufacturer's recommendations. Repair or repaint any areas damaged during handling or installation.

**D Measurement**

The engineer will measure Grate for Stormwater Pond Outlet Control Structure as each individual unit, 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.0060.018	Grate for Stormwater Pond Outlet Control Structure	Each



Payment is full compensation for furnishing, delivery, installation and attachment of grate.

#### **54. Stormwater Pond Outlet Control Structure, Item SPV.0060.019.**

##### **A Description**

This special provision describes furnishing and installing components that make up the stormwater pond outlet control structure as shown on the plans, and as hereinafter provided. The outlet control structure is located in the stormwater pond within the right-of-way in the northeast quadrant of CTH L and Park Drive. Construct and install in accordance to the pertinent provisions of standard spec 611 and as hereinafter provided.

The outlet control structure will include all items within the limits of the stormwater pond with exception of the grate. The discharge pipe from the outlet structure to the storm sewer system will be paid for in the standard storm sewer schedule. The discharge pipe from the outlet structure will be included in the miscellaneous quantities for storm sewer pipe reinforced concrete.

##### **B Materials**

Submit shop drawings to the DOT construction engineer representative for each component listed below and of the completed structure a minimum of 30-days prior to installation.

##### **B.1 Manhole**

Furnish standard Manhole, Type 1 conforming to standard spec 611.2.1. Drill orifices at the elevations shown on the plans.

##### **C Construction**

##### **C.1 Excavation**

The contractor shall excavate to the required depth. The foundation upon which the structure is to be placed shall be compacted to a firm and level surface.

##### **C.2 Outlet Control Structure**

Drill the orifices into the manhole structure at the elevations and diameters as shown on the plans.

Do not install the Outlet Control Structure until turf cover is established within the pond, or until directed by DOT construction representative. The installation of the Outlet Control Structure shall be performed as late in the construction process as possible. Perform work in ordinance with standard spec 205.2.2.

Excess fill generated by installation of the Outlet Control Structure shall become the responsibility of the contractor. Suitable fill may be used in highway or embankment construction.

**D Measurement**

The department will measure Stormwater Pond Outlet Control Structure as each individual unit, 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.0060.019	Stormwater Pond Outlet Control Structure	Each

Payment is full compensation for excavating, backfilling, furnishing and installing the Stormwater Pond Outlet Control Structure as a completed unit, which includes associated appurtenances such as the standard manhole, type 1 with the orifices drilled at the elevations shown on the plans.

**55. Construction Staking Curb Ramp, Item SPV.0060.020.****A Description**

Perform this work in accordance to the applicable provisions of standard spec 650.

**B (Vacant)****C Construction**

Set and maintain construction stakes or marks as necessary to achieve the required accuracy and to support the method of operations. Set additional construction stakes as necessary to establish location and grade of the curb map including points of change in alignment grade. Locate stakes to within 0.02 feet horizontally and establish the grade elevation to within 0.01 feet vertically.

**D Measurement**

The department will measure Construction Staking Curb Ramp as each individual curb ramp, 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 .0060.020	Construction Staking Curb Ramp	Each

Payment is full compensation for locating and setting all construction stakes; and for relocating and resetting damaged or missing construction stakes.

- 56. Vertical Offset (1-Inch Copper), Item SPV.0060.021; Vertical Offset (2-Inch Copper), Item SPV.0060.022; Vertical Offset (6-Inch PVC), Item SPV.0060.023; Vertical Offset (8-Inch PVC), Item SPV.0060.024; Vertical Offset (10-Inch PVC), Item SPV.0060.025; Vertical Offset (12-Inch PVC), Item SPV.0060.026; Vertical Offset (16-Inch PVC), Item SPV.0060.027; Vertical Offset (16-Inch Ductile Iron), Item SPV.0060.028.**

**A Description**

This special provision describes furnishing and installing water main piping and fittings in conformance with *State Standard Specification* and standard specifications as shown on the detail drawing, at locations shown on the plans, and as hereinafter provided.

**B Materials**

Furnish the appropriate materials to match existing water main in work area:

Water main and water services 2-inches or smaller in diameter shall be type “K” soft annealed seamless copper tubing conforming to ASTM B88. Name or trademark of manufacturer and type shall be permanently and plainly marked on tubing at intervals not greater than 18 in.

Furnish polyvinyl chloride (PVC) plastic water main, AWWA C900/C905, Pressure Class 235 (formerly Class 150), DR-18, cast iron O.D., with elastomeric gasket bell and spigot joints. Use only pipe stamped or indelibly marked with its type and class and the manufacturer's name or mark.

Furnish ductile iron water main pipe, AWWA C151, Class 52 unless otherwise shown. Pipe sections shall be straight and true circular sections with inner and outer surfaces concentric. Pipe shall have standard thickness cement mortar lining and interior bituminous coating conforming to AWWA C104. Apply bituminous seal coat on exterior of pipe conforming to AWWA C151. Coatings shall be smooth, tough and tenacious and impervious to water without tendency to scale off, and shall not be brittle. Pipe joints shall be either push-on type (slip joint) or mechanical joint conforming to AWWA C111.

Furnish ductile iron mechanical joint fittings complying with AWWA C153 or C110 with a 250 psi working pressure. Provide fittings with a standard thickness cement mortar lining and interior bituminous coating conforming to AWWA C104. Apply bituminous seal coat on exterior of pipe and fittings conforming to AWWA C151. Coatings shall be smooth, tough and tenacious and impervious to water without tendency to scale off, and shall not be brittle.

Provide polyethylene encasement conforming to AWWA C105. Film shall be Class "C", black with a minimum nominal thickness of 8 mils. Use a thermoplastic material tape with a pressure sensitive adhesive face capable of bonding to metal, bituminous coating,

and polyethylene for securing the film. Use tape with a minimum thickness of 8 mils, and a minimum width of 1 in.

Fittings for copper tubing shall be cast brass having an alloy of 85% copper, 5% tin, 5% zinc and 5% lead, uniform in wall thickness and strength, and free of defect which may affect serviceability. Connections shall be made with flared flanged joints or compression type joints. Fittings shall be permanently and plainly marked with name or trademark of manufacturer.

Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length of each side of fittings, shall have wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe; Ebaa Iron, Sigma, Star Pipe Products, or approved equal.

Provide crushed stone chip bedding from sound limestone, dolomite ledge rock, or other rock materials on regional significance.

## **C Construction**

### **C.1 General**

The horizontal location and size of all water laterals indicated on the plans is taken from surveys, approximate measurements, and the city's available records. These records are not guaranteed to be accurate in all cases and do not indicated at what depths these lateral are located. As such, the contractor shall determine the location and size of the existing laterals before making a tap into the new water main. The contractor shall follow notes on plans to determine the location of possible conflicts with other utilities or conflicts with depth of cover. Vertical offsets of water service laterals should be verified for depth with the elevations of the proposed roadway for depth of cover and elevations of utility inverts for conflicts. Vertical offset locations were necessary and shown on plans assuming a current depth of 6 feet. At each location shown on plan verify depth of current water main and proximity from proposed conflict. The engineer shall be notified of locations where alteration of the lines and grades shown are necessary so that an acceptable solution can be determined.

Secure fittings for offsets by means of tie-rods and/or restrained joints. After tie rod installation, apply two coats of coal tar base coating to straps, tie rods, bolts, nuts and washers. Blocking with concrete shall not be used to restrain joints.

#### **C.1.1 Excavation**

Use construction methods conforming to standard spec 607.3.1 except as modified here.

*Replace standard spec 607.3.1.1 (6) with the following:*

- (6) Keep the trenches dewatered while pipe bedding, piping, or other associated work is being constructed.

*Substitute water main for sewers, standard spec 607.3.1.1 (7).*

*Delete standard spec 607.3.1.1 (8).*

*Substitute water main for storm sewers standard spec 607.3.1.2.*

### **C.1.2 Constructing Bedding**

Install bedding material prior to laying of pipe. Shape bedding by hand to fit the entire bottom quadrant of the pipe. Shape bell holes to prevent the bell from supporting the backfill load. Bell holes shall be large enough to permit proper making of the joint but not larger than necessary to make the joint. Adjust line and grade of water main by scraping away or filling bedding material under the body of the pipe. Depth of bedding shall be 4-inches minimum depth under pipe barrel.

Bedding material shall conform to the following:

<b>Sieve Size</b>	<b>Percentage by Weight Passing</b>
1/2 Inch	100
3/8 Inch	90-100
No. 8	0-15
No. 30	0-3

Do not use material native to the trench for bedding.

### **C1.3 Laying Water Main**

Maintain or exceed minimum depth of cover for water main. Additional depth may be required to clear other utilities.

Maintain minimum vertical separation as required by state and local codes when water main and services cross over or under sewers or force main.

Lower water main materials carefully into trench individually by means of a derrick, ropes or other suitable means to prevent damage to protective coatings and linings. Under no circumstances may water main materials be dumped into trench.

Where water mains pass under sewers or force mains, the length of water pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the sewer.

Insulate water main where water main crosses under storm sewer with polystyrene boards. Install bedding material to a height of 6 inches over the top of the pipe, level and compact prior to placement of the polystyrene boards. Install the insulating boards on the bedding material above the pipe with the long side parallel to the centerline of the water main for a minimum width of the outside diameter of the storm sewer pipe plus 24 inches. Install a minimum of two layers of insulation. Place each layer as to cover the joints of the layer immediately below. Place 6 inches of bedding material on the

insulation board. Do not operate equipment directly on the insulation board. Compact first layer over the insulation with equipment that exerts a compact stress of 70 to 80 psi. Compact subsequent layers of backfill by conventional means.

Remove all foreign matter and dirt from inside of pipe and fittings before lowering materials into position in trench. Keep materials clean during and after laying. Securely close openings along main during construction and when work is suspended, install suitable stoppers to prevent soil, water or other substances from entering main.

Install bedded uniformly throughout the entire length of pipe. No pipe shall be laid in water or when trench conditions are unsuitable.

Protect ductile iron pipe, fittings, valves, and accessories from corrosion by use of polyethylene encasement. Install polyethylene in accordance to AWWA C105. Encase hydrants to ground line.

#### **C1.4 Joints**

Joint materials and methods shall conform to manufacturer recommendations and the following provisions. Thoroughly clean and wipe resilient joint filler or sealer and joint surfaces before assembly. Use a nontoxic lubricant material that does not support growth of bacteria, has no deteriorating effects on gasket material, and is recommended by pipe manufacturer.

Granular backfill shall meet the requirements of standard spec 209.

Joints shall be restrained on Vertical Offsets 6-Inch to 16-inch.

Brush and clean joint surfaces thoroughly. Clean rubber gasket with soapy water and placed on plain end while still wet.

Tighten bolts for mechanical joints alternately to provide even pressure on gland. Apply torque according to manufacturer's recommendation. Wrench handle shall be at least 8 inches long and not more than 10 inches.

Connect pipe to fittings, valves, and hydrants for required restraint length on each side of fittings by a mechanical joint restraint using eastboundBA Iron Series 1100 Megalug.

Joints for copper services shall be resilient seal compression type securely tightened against fitting with sleeve nut. Connections of copper to existing lead services or repair of lead services shall be soldered and wiped joint made according to standard plumbing procedures.

#### **C1.5 Backfilling**

Use construction methods conforming to standard spec 607.3.5 except as modified here.

*Add standard spec 607.3.5 (2) with the following:*

(2) Immediately above piping cover material of the same material as the bedding shall be placed around the sides of the pipe and up to a level 6 inches above pipe barrel.

*Add standard spec 607.3.5 (7) with the following:*

(7) Install backfill material in uniform layers not exceeding 12” and compact after each layer with suitable mechanical equipment ramming or compacting tools. Compact granular backfill materials using vibratory mechanical equipment and compact non-granular backfill material using weighted sheeps-foot type equipment.

*Add standard spec 607.3.5 (8) with the following:*

(8) Uniformly spread each layer of material and uniformly compact to the required percentage of maximum density. Determine maximum density of the material by a laboratory compaction test in accordance to ASTM Test Designation D1557-64T, Method D.

#### **D Measurement**

The department will measure Vertical Offset (Size) (Type) by each individual unit, 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.0060.021	Vertical Offset (1-Inch Copper)	Each
SPV.0060.022	Vertical Offset (2-Inch Copper)	Each
SPV.0060.023	Vertical Offset (6-Inch PVC)	Each
SPV.0060.024	Vertical Offset (8-Inch PVC)	Each
SPV.0060.025	Vertical Offset (10-Inch PVC)	Each
SPV.0060.026	Vertical Offset (12-Inch PVC)	Each
SPV.0060.027	Vertical Offset (16-Inch PVC)	Each
SPV.0060.028	Vertical Offset (16-Inch Ductile Iron)	Each

Payment is full compensation for furnishing and installing all materials.

### **57. Bury Water Valve Boxes and Lids, Item SPV.0060.029.**

#### **A Description**

This special provision describes the abandonment of water valve boxes by methods of burying with fill materials meeting approval of both the department and the owner, the Muskego Water Utility, in accordance to the *State Standard Specifications*, as shown on the plans, and as hereinafter specified.

## **B Materials**

Granular backfill shall meet the requirements of standard spec 209.

## **C Construction**

Excavate to a depth in which the top frame and lid can be removed and salvaged. Continue excavation around the vertical stem of the portion of the valve box that remains in the ground. Expose the existing valve stem to a point 3 feet below the proposed grade in the terrace area and 4 feet below the proposed grade in the roadway. Cut the stem and remove the piece.

Backfill the existing water valve box of the removed water valve box with granular fill in accordance to the requirements for the adjacent roadway base course and pavement construction.

If valve is located in pavement, backfill with compacted granular material and pave with asphalt pavement in accordance to the requirements for the adjacent roadway base course and pavement construction.

For water valve boxes located out of the pavement areas, e.g. terrace, backfill with compacted granular material in accordance to the requirements for the adjacent terrace area.

For valve boxes that are used for portions of water main to be abandoned excavate to a depth in which the top frame and lid can be removed and salvaged. Top frame and lid should be stockpiled and ultimately delivered to the City of Muskego City Yard.

## **D Measurement**

The department will measure Bury Water Valve Boxes and Lids by each individual unit, 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.0060.029	Bury Water Valve Boxes and Lids	Each

Payment is full compensation for excavating; removing existing valve box, installing in new location; backfilling and compaction; properly disposing of all surplus materials; cleanup. Granular fill material used for backfilling will be considered part of Bury Water Valve Boxes and Lids, and will not be measured and paid for separately.

## **58. Posts Tubular Steel, 1 3/4" x 1 3/4"- 14', Item SPV.0060.101.**

### **A Description**

This section describes furnishing and erecting tubular steel posts to support signs.



## B Materials

Furnish tubular steel sign post assemblies consisting of two telescoping square steel tubes consisting of a breakaway upper tube for mounting the sign and an outside anchor tube.

Fabricate the tubular components using structural quality 12-gauge strip steel conforming to ASTM designation A570, grade 50 with an average minimum yield strength, after cold-forming, of 55,000 psi. Punch holes on all 4 sides for the full length as the plans show. Provide corner radii of approximately 5/32 inches and conform to other dimensions and tolerances as follows:

COMPONENT	OUTSIDE DIMENSIONS inches	OUTSIDE DIMENSION TOLERANCE inches <sup>[1]</sup>	ALLOWABLE TWIST <sup>[2]</sup> inches/3 feet
UPPER TUBE	1.75 x 1.75	+/-0.008	+/-0.062
OUTSIDE ANCHOR TUBE	2.00 x 2.00	+/-0.008	+/-0.062

<sup>[1]</sup> Measure at least 2 inches from the ends of the tubes.

<sup>[2]</sup> Hold one side on a flat surface plate and measure the twist at the corner 3 feet away.

Hot-dip galvanize each tube according to ASTM A 653 grade 90. Treat corner welds and cut ends with cold-galvanized organic zinc paint as manufacturer recommends.

The engineer will inspect sign post assemblies before installation. Ensure that the assemblies fit together without damaging the coatings. Replace scratched or otherwise damaged components at no expense to the department.

Furnish upper tubes fabricated to the lengths the plans show.

For all installations use a 36-inch outer tube without soil stabilization fins.

## C Construction

Obtain the engineer's approval and locate all underground facilities before installing the tubular steel sign post assemblies. Install assemblies oriented to the direction of traffic as the plan details show to ensure that the system meets the yielding breakaway design requirements. Locate assemblies where the plans show or where the engineer directs. Do not install until the finished grade is established.

For installations in concrete or asphalt, use 12-inch inside diameter PVC pipe box outs. Position the PVC pipe so the top of pipe is flush with the adjacent concrete or asphalt. Install the post in the center of the box-out.

Install all anchor sections so that a length of one to 2 inches remains above the finished grade. Leave one hole of the anchor system exposed 1 inch above grade for connecting the upper tube with a 3/8-inch zinc plated corner bolt and nut.

Attach the required sign panels as the plans show or as the engineer directs. Mount the signs on the upper tube with the end 1/2 inch lower than the top of the sign. Place the entire tubular steel sign post assembly in a true vertical position and correctly align for proper visibility for the direction of traffic. Cut upper tubes to provide the sign height the plans show or the engineer directs. Treat all exposed post surfaces after installation with cold-galvanized organic zinc paint according to the manufacturer's instructions.

#### **D Measurement**

The department will measure Posts Tubular Steel 1 3/4" x 1 3/4" – 14' as each individual post assembly, 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.0060.101	Posts Tubular Steel, 1 3/4" x 1 3/4"- 14'	Each

Payment for the Posts Tubular Steel bid items is full compensation for providing, hauling, and placing the posts; including each section and anchor; treating cut post ends; and providing hardware and anchors. The department will not pay for replacing damaged posts or upper tube cut-offs.

### **59. Bench, Item SPV.0060.200.**

#### **A Description**

This special provision describes furnishing and installing Benches as shown on the plans, and as hereinafter provided.

#### **B Materials**

Benches shall be the Lakeside Bench, by Landscapeforms, Inc. with back and Grass Panel Design options, surface mountable.

Color to be RAL Custom Color #8012 "Tribo Red Brown SD" with graffiti resistant clearcoat added.

Shop Drawings: Include on shop drawings, dimensions, bench options, mounting hardware and color.

Approval of shop drawings by Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136, is required prior to beginning construction.

#### **C Construction**

The installation of the Bench shall be in accordance to the manufacturer's instructions. The benches are to be surface-mounted as indicated on streetscape detail number 7.

#### **D Measurement**

The department will measure Benches as each individual unit, 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.0060.200	Bench	Each

Payment is full compensation for furnishing and delivering all materials, including stainless anchors, non-corrosive pins, and non-corrosive mounting hardware; for furnishing all necessary excavation; for installing each Bench as per the plan details, manufacturer's instructions, and these special provisions.

**60. Trash Receptacle, Item SPV.0060.201.****A Description**

This special provision describes furnishing and installing Trash Receptacle as shown on the plans, and as hereinafter provided.

**B Materials**

Trash Receptacles shall be the Lakeside Litter, by Landscapeforms, Inc. with side opening option, Grass Panel Design options; black polyethylene liner, surface mountable option. Color to be Silver with graffiti resistant clearcoat added.

Shop Drawings: Include on shop drawings, dimensions, trash receptacle options, mounting hardware and color.

Approval of shop drawings by Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136, is required prior to beginning construction.

**C Construction**

The installation of the Trash Receptacles shall be in accordance to the manufacturer's instructions. The Trash Receptacles are to be surface-mounted as indicated on streetscape detail number 7.

**D Measurement**

The department will measure Trash Receptacles as each individual unit, 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.0060.201	Trash Receptacle	Each

Payment is full compensation for furnishing and delivering all materials, including stainless anchors, non-corrosive pins, non-corrosive mounting plate; for furnishing all necessary excavation; for installing each Trash Receptacle as per the plan details, manufacturer's instructions, and these special provisions.

**61. Bike Rack, Item SPV.0060.202.**

**A Description**

This special provision describes furnishing and installing Bike Racks as shown on the plans, and as hereinafter provided.

**B Materials**

Bike Racks shall be the Bola Bike Rack by Landscapeforms, Inc. with surface mountable option. Color to be Silver with graffiti resistant clearcoat added.

Shop Drawings: Include on shop drawings, dimensions, mounting hardware and color.

Approval of shop drawings by Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136, is required prior to beginning construction.

**C Construction**

The installation of the Bike Racks shall be in accordance to the manufacturer's instructions. The Bike Racks are to be surface-mounted as indicated on streetscape detail number 7.

**D Measurement**

The department will measure Bike Racks as each individual unit, 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.0060.202	Bike Rack	Each

Payment is full compensation for furnishing and delivering all materials, including stainless anchors, non-corrosive pins, non-corrosive mounting plate; for furnishing all necessary excavation; for installing each Bike Rack as per the plan details, manufacturer's instructions, and these special provisions.

**62. Decorative Roadway Lighting Unit "Type A" Double fixture, Item SPV.0060.203.**

**A Description**

This work consists of furnishing and installing concrete base and wiring and installing special ornamental light pole, arms, luminaries, and accessories, such as banner arms and flag holder, as shown on the plans, and as hereinafter provided.

## **B Materials**

### **B.1 Poles, arms, fixture, and accessories**

The pole, arms, luminaries and accessories to the pole will be provided by the City of Muskego and stored in a warehouse no further than twenty miles from the jobsite, and will be made available for pickup by the contractor beginning no later than September 3, 2013. The following light fixture assembly part number is for information only.

All materials will conform to the following Sternberg Part number for light pole, arm, fixture and accessories as modified in this section and on the drawings.

Part Number:

2-1480CA/OGPT/150MHP240/LO3-S/MHP150/MED/CM 97/25/S/RTS/2FH/CM

### **B.2 Pole Wiring**

Conductors in pole connected to underground cable network to the luminaire shall be #12 AWG Type XHHW (XLP) individual conductors. In each utilized phase conductor in the handhole, there shall be installed a 1-pole secondary inline 600 VAC fuse assembly with #12 AWG copper crimp connections at each end, and a fast acting, current limiting type CC fuse. Conductors shall have sufficient length to permit removal of the fuse assembly through the handhole of the pole.

### **B.3 Concrete bases**

Provide concrete base in accordance to standard spec 654.2 and as shown on the plans.

## **C Construction**

### **C.1 Poles, arms, fixture and accessories**

All construction methods shall conform to all recommended factory installation requirements as well as standard spec 657.3.

### **C.2 Pole wiring**

Provide wiring in accordance to standard spec 657.3.7.

### **C.3 Concrete bases**

Provide concrete base in conformance with standard spec 654.3 and as shown on the plans.

## **D Measurement**

The department will measure Decorative Roadway Lighting Unit "Type A" Double Fixture, by the unit for each individual lighting pole system, 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.0060.203	Decorative Roadway Lighting Unit "Type A" Double Fixture	Each

Payment is full compensation for providing and installing all materials including concrete bases, pole wiring, and all necessary hardware; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

**63. Decorative Roadway Lighting Unit “Type B” Single Fixture, Item SPV.0060.204.**

**A Description**

This work consists of furnishing and installing concrete base and wiring and installing special ornamental light pole, arms, luminaries, and accessories, such as banner arms and flag holder, as shown on the plans, and as hereinafter provided.

**B Materials**

**B.1 Poles, arms, fixture and accessories**

The pole, arms, luminaries and accessories to the pole will be provided by the City of Muskego and stored in a warehouse no further than twenty miles from the jobsite, and will be made available for pickup by the contractor beginning no later than September 3, 2013. The following light fixture assembly part number is for information only.

All materials will conform to the following Sternberg Part number for light pole, arm, fixture and accessories as modified in this section and on the drawings.

Part Number:

1-1480CA/OGPT/150MHP240/LO3-S/MHP150/MED/CM 7716T5/DBA/CM/GFI

**B.2 Pole wiring**

Conductors in pole connected to underground cable network to the luminaire shall be #12 AWG Type XHHW (XLP) individual conductors. In each utilized phase conductor in the handhole, there shall be installed a 1-pole secondary inline 600 VAC fuse assembly with #12 AWG copper crimp connections at each end, and a fast acting, current limiting type CC fuse. Conductors shall have sufficient length to permit removal of the fuse assembly through the handhole of the pole.

**B.3 Concrete bases**

Provide concrete base in accordance to standard spec 654.2 and as shown on the plans.

**C Construction**

**C.1 Poles, arms, fixture and accessories**

All construction methods shall conform to all recommended factory installation requirements as well as standard spec 657.3.

**C.2 Pole wiring**

Provide pole wiring system in accordance to standard spec 655.3.7.

### **C.3 Concrete bases**

Provide concrete base in conformance with standard spec 654.3 and as shown on the plans.

### **D Measurement**

The department will measure, Decorative Roadway Lighting Unit “Type B” Single Fixture, by the unit for each individual lighting pole system, 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.0060.204	Decorative Roadway Lighting Unit “Type B” Single Fixture	Each

Payment is full compensation for providing and installing all materials including concrete bases, pole wiring, accessories and all necessary hardware.

## **64. Decorative Median Pole Unit “Type C”, Item SPV.0060.205.**

### **A Description**

This work consists of furnishing and installing concrete base and installing special ornamental pole, and accessories, such as banner arms and flag holder, as shown on the plans, and as hereinafter provided.

### **B Materials**

#### **B.1 Poles, and accessories**

The pole, and accessories to the pole will be provided by the City of Muskego and stored in a warehouse no further than twenty miles from the jobsite, and will be made available for pickup by the contractor beginning no later than September 3, 2013. The following light fixture assembly part number is for information only.

All materials will conform to the following Sternberg Part number for light pole, accessories as modified in this section and on the drawings.

Part Number: 9725SRTS/RC/2DBA/2FH/CM/GFI

#### **B.3 Concrete bases**

Provide concrete base in accordance to standard spec 654.2 and as shown on the plans.

### **C Construction**

#### **C.1 Poles and accessories**

All construction methods shall conform to all recommended factory installation requirements as well as standard spec 657.3.

## **C.2 Concrete bases**

Provide concrete base in conformance with standard spec 654.3 and as shown on the plans.

## **D Measurement**

The department will measure, Decorative Median Pole Unit “Type C”, by each individual lighting pole system, 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.0060.205	Decorative Median Pole Unit “Type C”	Each

Payment is full compensation for providing and installing all materials including concrete bases, and all necessary hardware.

## **65. Community Identity Monument, Station 19+41, Item SPV.0060.206; Community Identity Monument, Station 80+50, Item SPV.0060.207.**

### **A Description**

This special provision describes furnishing and installing Community Identity Monument which includes a central stone veneer column, a rectangular stone veneer base and a lighted and colored semi-translucent panel on each side. Construction work includes the excavation and removal of existing material from project site in order to construct the concrete foundation.

### **B Materials**

#### **B.1 Concrete Masonry Units – 8-inch and 1/2 height 8-inch**

Concrete Masonry Unit compressive strength f'm 1,500 psi; ASTM C90 normal weight.

Wall ties: ASTM A580; Type 304 stainless steel.

Weeps: Open head joints.

Submit mortar, grout and any other material for approval by Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136.

#### **B.2 Stone Masonry – Limestone Veneer, Smooth Limestone Veneer, 3-inch at central column, and Limestone Wall Coping**

Stone shall be durable, sound dolomitic limestone and free from cracks. Stone shall be jointed in mortar with no air pockets, and all joints shall be completely filled. Stone shall be laid free from mortar stains and kept as clean as possible. Should the stone become soiled with mud or mortar, it shall be cleaned with a soft bristle brush and water (NO ACID). No stone work shall be set in cold weather unless the temperature at the job site is no lower than 30 degrees and rising. For stone mortar joints, mortar shall be composed



of 1 part of specified mortar color cement and 3 parts of clean sharp sand, free from iron and impurities, using only sufficient water to effect thorough mixing of masonry ingredients in accordance to standard spec 518.

### **Limestone Veneer**

Stone veneer pattern shall be installed in a random, broken coursed ashlar pattern and comprised of stone sizes ranging as follows:

Height: Sawn heights of 2-1/4in., 5-inch, 7-3/4 inches  
Length: 6-inches to 30-inches  
Thickness: 4-inch nominal

Stone texture shall consist of the following surfaces:

30 percent Split and Rockface  
70 percent Buff Bedface

Smooth Limestone Veneer, 3-Inch at central column:

Stone shall be Lisbon Bianco Limestone, 3-inches thick, as provided by Halquist Stone Company, or approved equal.

Limestone Wall Coping:

Buff Indiana limestone with honed top finish and rock faced front edge

Mortar to be ASTM C270 type-N, color to be #165 Delorean Gray as defined by Polyblend (800 272 8786). Color to match this standard Polyblend color as closely as possible.

Grout mixes:

- Grout color to be #165 Delorean Gray as defined by Polyblend (800) 272 8786, or approved equal. Color to match this standard Polyblend color as closely as possible.
- Grout for non structural masonry: 2,000 psi strength at 28 days; 8-11 inches slump; mixed in accordance to ASTM C476.

Application:

- Coarse Grout: For grouting spaces with minimum 4-inches dimension in every direction
- Fine Grout: For grouting other spaces

Mix grout in accordance to ASTM C94, modified to use ingredients complying with ASTM C476.

Shop Drawings: Indicate on shop drawings, layout and dimensions for all Limestone Veneer, Smooth Limestone Veneer at central column and Wall Coping and affected adjacent construction.

Samples: Submit one 24-inch x 24-inch x 3-inch sample piece of Smooth Limestone Veneer at central column showing finish and to demonstrate color. Submit one set of sample stone veneer units illustrating each different size and each representative color and texture as specified above. Submit two 6-inch x 6-inch pieces of Limestone Wall Coping showing honed top finish and rock faced front edge. Submit two samples of mortar and grout, illustrating mortar color and color range. Submit samples to Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136, for approval prior to construction..

Mock-up: Construct a minimum of one full half of one monument to include: stone veneer base, stone veneer central column, wall coping, LED bar light fixture and semi-translucent panel. Mock-up to include mortar and grout.

Approval of mock-up by Jeff Muenkel, City of Muskego Community Development Director, (262) 679-4136, is required prior to beginning construction. Failure to receive mock-up approval may result in rejection of work. The approved mock-up will be the standard from which the work will be judged and approved by the City of Muskego. Incorporate accepted mock-up as part of work.

Locate mockup where directed by owner's representative.

Notify the owner's representative and the City of Muskego 7 days in advance of dates and times when mock ups will be constructed.

### **B.3 Semi-Translucent Panel**

Panel material to be Chroma as manufactured by 3form. Contact Dan Borowski at (815) 474-5645.

Thickness to be 1-inch.

Style and Color to be Cobalt centered x5.

Edge treatment to be sanded.

Finish to be Renewable Matte on front and back of panel.

Product Data: Submit data on semi-translucent panel.

Shop Drawings: Indicate on shop drawings, layout and dimensions for Semi-Translucent Panel and affected adjacent construction.

Samples: Submit one 8-inch x 8-inch piece of Semi-Translucent Panel showing style, finish, edge treatment and to demonstrate color. Submit samples to Jeff Muenkel, City of Muskego Community Development Director, for approval prior to construction.

Mock-up: See mock-up requirements for B2 Stone Masonry.

### **B.4 16-Inch x 12-Inch x 6-Inch Junction Box**

Junction box shall be Hoffman Enclosure Model AFM16126SS (16-inch x 12-inch x 6-inch). Paint to match stone veneer monument base. Provide quarter turn latch with key

lock. Equals by APX Enclosures or Cooper B-Line shall match and be approved by Owner prior to construction.

Product Data: Submit data on junction box.

Shop Drawings: Indicate on shop drawings, model, and exact dimensions.

### **B.5 LED Bar Light Fixture**

HP LED Cool White LED Bar lights as manufactured by 3form; I.D. #111288. Contact Dan Borowski (815) 474-5645. Size as indicated on drawings.

Product Data: Submit data on bar light fixture.

Shop Drawings: Indicate on shop drawings, model, lamping, options and accessories.

Mock-up: See mock-up requirements for B2 Stone Masonry.

### **B.6 Ground Rod**

Ground rod shall be 8-ft long, 3/8" diameter copper-clad steel rod. Shall meet the requirements as specified in standard spec 616.3.5

### **B.7 Aluminum Frame**

1/4-Inch plate H32 aluminum with brushed aluminum finish, clear anodized. Provide stainless steel fasteners as indicated on drawings.

Product Data: Submit data on aluminum frame.

### **B.8 Stainless Steel Tapered Plate, Variable Width**

1/4"-Inch type 304 stainless steel with stainless steel fasteners as indicated on drawings.

Product Data: Submit data on Stainless Steel Tapered Plate, Variable Width.

## **C Construction**

### **C.1 Concrete Masonry Units – 8-inch and 1/2 height 8-inch**

Concrete Masonry Unit shall be constructed as shown on the contract documents. Lay Concrete Masonry Unit in a running bond. Place reinforcing as indicated on construction documents and support from displacement.

### **C.2 Stone Masonry – Limestone Veneer, Smooth Limestone Veneer, 3-inch at central column, and Limestone Wall Coping**

The stone masonry for the monument shall be constructed at the location, grade and dimensions shown on the plan and as directed by the engineer.

### **C.3 Semi-Translucent Panel**

The semi-translucent panels and fastening hardware shall be constructed at the locations, grade and dimensions shown on the drawings.

**C.4 16-Inch x 12-Inch x 6-Inch Junction Box**

Construct at the location and dimensions shown on the drawings and install per manufacturer recommendations.

**C.5 LED Bar Light Fixture**

Construct at the location and dimensions shown on the drawings and install per manufacturer recommendations.

**C.6 Ground Rod**

Construct at the location and dimensions shown on the drawings and install per manufacturer recommendations.

**C.7 Stainless Steel Bent Plate, 9-Inch**

The stainless steel bent plate, 9-inch shall be constructed at the locations, grade and dimensions shown on the Drawings.

**C.8 Stainless Steel Tapered Plate, Variable Width**

The stainless steel tapered plate, variable width shall be constructed at the locations, grade and dimensions shown on the drawings.

**D Measurement**

The department will measure Community Identity Monument (Station) as each individual unit, 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.0060.206	Community Identity Monument, STA 19+41	Each
SPV.0060.207	Community Identity Monument, STA 80+50	Each

Payment is full compensation for furnishing. Delivering and installing all materials, equipment, product data, shop drawings, samples and mock-ups; for furnishing all necessary excavation and removal of existing material. Incidentals to include: steel reinforcing, concrete foundation, mortar, grout, wall ties, fastening hardware and electrical wiring and conduit.

**66. Lighting Control Cabinet, Item SPV.0060.208.****A Description**

This special provision describes furnishing and installing lighting control cabinet as shown on the plans and hereinafter provided. The meter pedestal and concrete base shall be paid for under a separate item.

## **B Materials**

### **B.1 Contactors**

Provide contactors all of same manufacturer which are the magnetically latched type in a NEMA 1 enclosure with 2-wire control relay and cover mounted Hand-Off-Auto Switch with metal legend plate. Provide white 1" high engraved plaque on the appropriate contactor cover with "STREET LIGHTING" in ½" black text.

### **B.2 Photocells**

Provide a button type photocell that is rated for 1500W with 30-60 second delay between "on-off" operations.

### **B.3 Panelboards**

The panelboard shall be in a NEMA 1 enclosure (size not to exceed 20"W x 48"H x 5.75"D). The panel shall be rated as indicated on the plans. Provide copper ground and split neutral bus bars in addition to copper bus bars. Provide bolt-on, thermal-magnetic circuit breakers that clearly indicate ON, OFF or TRIPPED position in the panel.

### **B.4 Enclosures**

Provide a cabinet and door that is constructed from 5052-H32 sheet aluminum alloy which has a thickness of 0.125 inch. External welds shall be made by using the Heliarc welding method; whereas, internal welds will be made by the wire welding method. All welds shall be neatly formed and free of cracks, blow holes and other irregularities. All inside and outside edges of the cabinet shall be free of burrs. The cabinet shall be designed with a sloped top to prevent the accumulation of water on its top surface. The door opening shall be double flanged on all four sides which increases strength around openings and keeps dirt and liquids from entering the enclosure when door is opened. Provide a door restraint to prevent door movement in windy conditions. Provide the enclosure interior back with a rigid 5052-H32 aluminum equipment mounting panel having a thickness of 0.125 inch. The cabinet door will be a minimum of 80% of the front surface area and shall be hinged on the right side when facing the cabinet. Furnish the door with a gasket that satisfies the physical properties as found in UL508 table 21.1 and forms a weathertight seal between the cabinet and door. The hinges shall be continuous and bolted to the cabinet and door utilizing 1/4-20 stainless steel carriage bolts and nylock nuts. The hinge will be made of 0.075 inch thick stainless steel and shall have 0.250 inch diameter stainless steel hinge pin. The hinge pin shall be capped top and bottom by weld to render it tamperproof. Hinge leaves will not be exposed externally when the door is closed, but hinge knuckles may protrude. Gasket all bolt holes. Provide a latching mechanism that is a 3-point draw roller type. Pushrods will be turned edgewise at the outwards supports and shall be 0.250 inch by 0.750 inch aluminum, minimum. Rollers shall have a minimum diameter of 0.875 inch and will be made of nylon. The center catch shall be fabricated from 0.187 aluminum, minimum. Furnish an operating handle. The handle will be stainless steel with a 3/4 inch diameter shank. The latching handle shall have a provision for padlocking in the closed position. Provide a lock that is keyed dead bolt Corbin Lock, or equivalent. Furnish 5 keys with each lock. The enclosure shall have a factory applied black powder coat finish. The cabinet doors and any other parts to be painted will be treated with an iron phosphate conversion technique.

After phosphatizing, bake the parts to eliminate any moisture in seams. The finish coat of a Polyester Powder will be baked 10 minutes at 400- 450 degrees F. Provide a finish that is commercially smooth, substantially free of flow lines, paint washout, streaks, blisters and other defects that would impair serviceability or detract from general appearance. No manufacturer identification plaques/tags shall be visible on the exterior of the cabinet. Cabinet not to exceed size shown on the plans.

### **B.5 Field wiring termination blocks**

Make all connections from the field wiring to equipment in the lighting control cabinet through termination blocks. Provide quantity of channel mount NEMA rated, box lug, single terminal blocks as indicated on plans that are capable of holding #12 to #1/0 wire for power, neutral and grounding connections. Mount the terminal blocks on a mounting channel with end anchors and an end barrier. Each terminal block shall have a label indicating the appropriate circuit number, neutral ('N') or ground ('G') wire connected to block; handwritten numbers and letters are not acceptable means of identification.

### **B.6 Surge arresters**

A surge suppressor shall protect the panelboard. The TVSS shall provide all modes of surge protection, meet UL1449 Second Edition with 26KA per mode and 78KA per phase surge current, contain LED line indicators, have 5-year warranty, and have dimensions of 7.5"H x 4.25"W x 4.0"D. Connect the surge suppressor to the branch circuit breaker as indicated on the plans.

### **B.7 Time clock**

The time clock shall be astronomical with 4-day capacitor clock backup, -40° F to 158° F operating range, 40 year program schedule retention, LCD display, daylight saving time and leap year correction. Program to allow pedestrian lights and receptacles to turn on 1 hour prior to sunset (actual on time is through the photocontrol) and turnoff at midnight as required by the city.

## **C Construction**

### **C.1 Assembly**

Use a UL 508 Listed Panel Builder to assemble the lighting control cabinet. Assemble the lighting control cabinet with all of its electrical components, wiring and parts in a neat and orderly fashion and as shown on the plans. Pretest the cabinet prior to shipment to the site. Panel Builder shall apply UL label inside cabinet.

Mount all equipment to panel in enclosure. Train the cables in straight horizontal and vertical directions and be parallel next to and adjacent to other cables whenever possible. Install wiring in slotted wireway between terminal strip, contactor and panelboard. Secure all remaining wiring using screw attachment type straps; adhesive type will not be allowed.

Install surge arresters to allow LED indicator(s) to be readily visible when viewing inside of cabinet. Connect the surge arrester to the branch circuit breaker as indicated on the plans.

Install photocell in the overhang of the control cabinet facing down and apply silicone caulk to maintain integrity of the enclosure.

Make all connections from the field wiring to equipment in the lighting control cabinet through termination blocks.

Make all connections from the underground field wiring to equipment in the lighting control cabinet through distribution blocks.

#### **D Measurement**

The department will measure Lighting Control Cabinet as each individual unit, 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.0060.208	Lighting Control Cabinet	Each

Payment is full compensation for providing and installing photocell, contactors, panelboard, termination blocks, surge arrester, enclosure, grounding, wiring, and electrical components.

### **67. Cattail Cutout Panel, Item SPV.0060.209.**

#### **A Description**

This special provision describes furnishing and installing Cattail Cutout Panels as shown on the plans, and as hereinafter provided.

#### **B Materials**

##### **B.1 Aluminum Panel**

The aluminum panel is to be a 6061-T6 aluminum plate with a 0.19" thickness. The tempered aluminum alloy shall provide the highest tempered strength, while suiting the industry standard fabrication process. Cattail cutout graphic and mounting holes to be shop-machined per drawings. All edges are to be square, smooth and free of burs. Completed cutout to be powder coated with Matthews Acrylic Polymer, color MP 10147 IMPULSE with light gloss finish.

##### **B.2 Aluminum Mounting Bracket**

Each panel is to be mounted to light pole on two 4" long aluminum contoured U-Type bracket matching pole radius, finish and capable of supporting panel. Each bracket to be connected to the pole with two 3/4" stainless steel straps. Connect panel to bracket with 3/8" stainless steel bolts, nuts, washers and black nylon insulating washers between dissimilar metals.

Shop Drawings: Indicate on shop drawings, layout and dimensions for each Cattail Cutout Panel; indicating graphics layout, size, color and finish.

Mock-up: Submit one full-sized Cattail Cutout Panel, illustrating color, graphics and mounting hardware for approval by Jeff Muenkel, City of Muskego Community Development Director (262) 679-4136.

Approval of mock-up by Jeff Muenkel, City of Muskego Community Development Director, is required prior to beginning construction. Failure to receive mock-up approval may result in rejection of Work. The approved mock-up will be the standard from which the Work will be judged and approved by the City of Muskego. Incorporate accepted mockup as part of Work.

### **C Construction**

The installation of the Cattail Cutout Panels shall be constructed in accordance to the plans and details.

### **D Measurement**

The department will measure Cattail Cutout Panels as each individual unit, 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.0060.209	Cattail Cutout Panel	Each

Payment is full compensation for furnishing and delivering all materials; for providing one full-sized Cattail Cutout Panel, illustrating color and graphics for approval by City of Muskego Community Development Director; for installing each Cattail Cutout Panel as per the plan details and these special provisions.

## **68. Tree Accent Light Unit “Type F”, Item SPV.0060.212.**

### **A Description**

This work consists of furnishing and installing fixture housing, horizontal flood, in-ground ballast box and accessories as shown on the plans, and as hereinafter provided.

### **B Materials**

#### **B.1 Fixture, lamp, base, and accessories**

All materials shall conform to the following Cooper Part number for light pole, accessories as modified in this section and on the drawings. Approval of shop drawings by the engineer is required prior to construction.

Part Number: 2001 MH39T6 240 EL MB BK



## **C Construction**

### **C.1 Fixture, base, and accessories**

All construction methods shall conform to all recommended factory installation requirements as well as standard spec 657.3.

## **D Measurement**

The department will measure, Tree Accent Light Unit “Type F”, by each individual lighting system, 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.0060.212	Tree Accent Light Unit “Type F”	Each

Payment is full compensation for providing and installing all materials including poles, concrete bases, accessories and all necessary hardware.

- 69. Perennials, Black-Eyed Susan, CG 6” HT, SPV.0060.220; Daisy, Alaska, CG 6” HT, SPV.0060.221; Daylily, Happy Returns, CG 6” HT, SPV.0060.222; Daylily, Martina Verhaert, CG 6” HT, SPV.0060.223; Daylily, Rosy Returns, CG 6” HT, SPV.0060.224; Daylily, Strawberry Candy, CG 6” HT, SPV.0060.225; New England Aster, Alma Potschke, CG 6” HT, SPV.0060.226; New England Aster, Purple Dome, CG 6” HT, SPV.0060.227; Prairie Smoke, CG 6” HT, SPV.0060.228; Sedum, Autumn Fire, CG 6” HT, SPV.0060.229; Sedum, Matrona, CG 6” HT, SPV.0060.230; Walker’s Low’Catmint, CG 6” HT, SPV.0060.231.**

## **A Description**

This section describes furnishing and planting plants of the species, varieties and sizes specified and includes furnishing all necessary materials, excavating plant holes, backfilling, mulching, watering, heeling in, disposing of surplus and waste materials, and as necessary, care and required replacements pending acceptance at the locations shown on the plans, in accordance to standard spec 632, and as hereafter provided.

## **B Materials**

All plant material shall conform to standard spec 632.2. All plants shall be from within the states of Wisconsin, Minnesota, Michigan or parts of northern Illinois located within Zone 4 of the “plant hardiness zone map” produced by the US Department of Agriculture, unless otherwise approved by engineer.

Conform to standard spec 632.2.2.4 regarding plant substitutions.

### **C Construction**

Prepare planting beds as directed in SPV.0035.200 Backfill for Plant Beds. Construction shall conform to the requirements of standard spec 632.3.

### **D Measurement**

The department will measure Perennials (Type) by the number of each individual Perennial, acceptably completed.

### **E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item (all Perennials to be one gallon container-grown stock):

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.220	Black-Eyed Susan, CG 6" HT	Each
SPV.0060.221	Daisy , Alaska, CG 6" HT	Each
SPV.0060.222	Daylily, Happy Returns, CG 6" HT	Each
SPV.0060.223	Daylily, Martina Verhaert, CG 6" HT	Each
SPV.0060.224	Daylily, Rosy Returns, CG 6" HT	Each
SPV.0060.225	Daylily, Strawberry Candy, CG 6" HT	Each
SPV.0060.226	New England Aster, Alma Potschke, CG 6" HT	Each
SPV.0060.227	New England Aster, Purple Dome, CG 6" HT	Each
SPV.0060.228	Prairie Smoke, CG 6" HT	Each
SPV.0060.229	Sedum, Autumn Fire, CG 6" HT	Each
SPV.0060.230	Sedum, Matrona, CG 6" HT	Each
SPV.0060.231	Walker's Low' Catmint, CG 6" HT	Each

Payment is full compensation for providing, transporting, handling, storing, placing and replacing plant materials; for excavating all plant holes, salvaging topsoil, mixing and backfilling; for providing and applying all required mulch; and for disposing of all excess and waste materials.

- 70. Ornamental Grasses, Maiden Grass, Graziella, CG 9" HT, SPV.0060.232; Maiden Grass, Silver Feather, CG 9" HT, SPV.0060.233; Prairie Dropseed, Tara Dwarf, CG 6" HT SPV.0060.234; Reed Grass, Overdam Feather, CG 9" HT, SPV.0060.235; Switch Grass, Northwind, CG 9" HT; SPV.0060.236.**

### **A Description**

This section describes furnishing and planting plants of the species, varieties and sizes specified and includes furnishing all necessary materials, excavating plant holes, backfilling, mulching, watering, heeling in, disposing of surplus and waste materials, and as necessary, care and required replacements pending acceptance at the locations shown on the plans, in accordance to standard spec 632, and as hereafter provided.

## **B Materials**

All plant material shall conform to standard spec 632.2. All plants shall be grown within the states of Wisconsin, Minnesota, Michigan or parts of northern Illinois located within Zone 4 of the "plant hardiness zone map" produced by the US Department of Agriculture, unless otherwise approved by engineer.

Conform to standard spec 632.2.2.4 regarding plant substitutions.

## **C Construction**

Prepare planting beds as directed in SPV.0035.200 Backfill for Plant Beds. Construction shall conform to the requirements of standard spec 632.3.

## **D Measurement**

The department will measure Ornamental Grasses (Type) by the number of each individual ornamental grass, acceptably completed.

## **E Payment**

The department will pay for measured quantities at the contract unit price under the following bid item (all Ornamental Grasses to be one gallon container-grown stock):

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.232	Maiden Grass, Graziella, CG 9" HT	Each
SPV.0060.233	Maiden Grass, Silver Feather, CG 9" HT	Each
SPV.0060.234	Prairie Dropseed, Tara Dwarf, CG 6" HT	Each
SPV.0060.235	Reed Grass, Overdam Feather, CG 9" HT	Each
SPV.0060.236	Switch Grass, Northwind, CG 9" HT	Each

Payment is full compensation for providing, transporting, handling, storing, placing and replacing plant materials; for excavating all plant holes, salvaging topsoil, mixing and backfilling; for providing and applying all required mulch; and for disposing of all excess and waste materials

## **71. Daffodil, Border Beauty Bulb, SPV.0060.237, SPV.0060.237; Daffodil, Dutch Master Bulb, SPV.0060.238; Daffodil, Yellow Jonquils Bulb, SPV.0060.239.**

### **A Description**

This section describes furnishing and planting Spring Bulbs of the species, varieties and sizes specified and includes furnishing all necessary materials, excavating plant holes, backfilling, mulching, watering, heeling in, disposing of surplus and waste materials, and as necessary, care and required replacements pending acceptance at the locations shown on the plans, in accordance to standard spec 632, and as hereafter provided.

### **B Materials**

All plant material shall conform to standard spec 632.2.

Conform to standard spec 632.2.2.4 regarding plant substitutions.

### **C Construction**

Construction shall conform to the requirements of standard spec 632.3.

### **D Measurement**

The department will measure Juanita Daffodil by the number of each individual Juanita Daffodils, 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.0060.237	Daffodil, Border Beauty Bulb	Each
SPV.0060.238	Daffodil, Dutch Master Bulb	Each
SPV.0060.239	Daffodil, Yellow Jonquils Bulb	Each

Payment is full compensation for providing, transporting, handling, storing, placing and replacing plant materials; for excavating all plant holes, salvaging topsoil, mixing and backfilling; for providing and applying all required mulch; and for disposing of all excess and waste materials.

## **72. Decorative Roadway Lighting Unit “Type G” Double Fixture, Item SPV.0060.240.**

### **A Description**

This work consists of furnishing and installing concrete base and wiring and installing special ornamental light pole, arms, luminaries, and accessories, such as banner arms and flag holder, as shown on the plans, and as hereinafter provided.

### **B Materials**

#### **B.1 Poles, arms, fixture, and accessories**

The pole, arms, luminaries and accessories to the pole will be provided by the City of Muskego and stored in a warehouse no further than twenty miles from the jobsite, and will be made available for pickup by the contractor beginning no later than September 3, 2013. The following light fixture assembly part number is for information only.

All materials will conform to the following Sternberg Part number for light pole, arm, fixture and accessories as modified in this section and on the drawings.

Part Number:

2-1480CA/OGPT/150MHP240/LO3-S/MHP150/MED/CM  
97/25/S/RTS/2DBA/2FH/CM

## **B.2 Pole wiring**

Conductors in pole connected to underground cable network to the luminaire shall be #12 AWG Type XHHW (XLP) individual conductors. In each utilized phase conductor in the handhole, there shall be installed a 1-pole secondary inline 600 VAC fuse assembly with #12 AWG copper crimp connections at each end, and a fast acting, current limiting type CC fuse. Conductors shall have sufficient length to permit removal of the fuse assembly through the handhole of the pole. Provide white 1" high engraved plaque on the inside of the handhole cover with 'LIGHT FED FROM LCC "B" RECEPTACLE FED FROM LCC "C"' in ½" black text.

## **B.3 Concrete bases**

Provide concrete base in accordance to standard spec 654.2 and as shown on the plans.

## **C Construction**

### **C.1 Poles, arms, fixture and accessories**

All construction methods shall conform to all recommended factory installation requirements as well as standard spec 657.3.

### **C.2 Pole wiring**

Provide wiring in accordance to standard spec 657.3.7.

### **C.3 Concrete bases**

Provide concrete base in conformance with standard spec 654.3 and as shown on the plans.

## **D Measurement**

The department will measure, Decorative Roadway Lighting Unit "Type G" Double Fixture, by each individual lighting pole system, 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.0060.240	Decorative Roadway Lighting Unit "Type G" Double Fixture	Each

Payment is full compensation for providing and installing all materials including concrete bases, pole wiring, accessories and all necessary hardware.

## **73. Concrete Curb and Gutter Integral 66-Inch Special, Item SPV.0090.001.**

### **A Description**

This special provision describes constructing Concrete Curb and Gutter Integral 66-Inch Special.

### **B Materials**

Furnish material that is in accordance to the pertinent requirements of standard spec 601.

**C Construction**

Construct in accordance to the pertinent requirements of standard spec 601.

**D Measurement**

The department will measure Concrete Curb and Gutter Integral 66-Inch Special by the linear foot, acceptably completed.

The length measured equals the distance along the base of the curb face, or 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.0090.001	Concrete Curb and Gutter Integral 66-Inch Special	LF

Payment is full compensation for furnishing all foundation excavation and preparation; all special construction required at curb ramps; for providing all materials, including concrete, expansion joints; for placing, finishing, protecting, and curing; for sawing joints; and for disposing of surplus excavation material, and restoring the work site.

**74. Concrete Curb and Gutter HES 30-Inch Special, Item SPV.0090.002; Concrete Curb and Gutter Integral HES 66-Inch Special, Item SPV.0090.003.**

**A Description**

This special provision describes constructing Concrete Curb and Gutter HES 30-Inch Special and Concrete Curb and Gutter Integral HES 66-Inch Special for use at driveway entrances.

**B Materials**

Furnish material that is in accordance to the pertinent requirements of standard spec 601. Concrete shall be high early strength concrete.

**C Construction**

Construct in accordance to the pertinent requirements of standard spec 601.

**D Measurement**

The department will measure Concrete Curb and Gutter HES 30-Inch Special and Concrete Curb and Gutter Integral HES 66-Inch Special by the linear foot, acceptably completed.

The length measured equals the distance along the base of the curb face, or 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.0090.002	Concrete Curb and Gutter HES 30-Inch Special	LF
SPV.0090.003	Concrete Curb and Gutter Integral HES 66-Inch Special	LF

Payment is full compensation for furnishing all foundation excavation and preparation; all special construction required at curb ramps; for providing all materials, including concrete, expansion joints; for placing, finishing, protecting, and curing; for sawing joints; and for disposing of surplus excavation material, and restoring the work site.

**75. Furnish and Install 6-Inch Water Pipe, Item SPV.0090.004.****A Description**

This special provision describes furnishing and installing water main as shown on the plans, and as hereinafter provided.

**B Materials**

Water main and water services 2-inches or smaller in diameter shall be type "K" soft annealed seamless copper tubing conforming to ASTM B88. Name or trademark of manufacturer and type shall be permanently and plainly marked on tubing at intervals not greater than 18 inches.

Furnish polyvinyl chloride (PVC) plastic water main, AWWA C900/C905, Pressure Class 235 (formerly Class 150), DR-18, cast iron O.D., with elastomeric gasket bell and spigot joints. Use only pipe stamped or indelibly marked with its type and class and the manufacturer's name or mark.

Fittings shall be ductile iron mechanical joint type and shall conform to AWWA C110 or C153, 250 psi working pressure. Fittings shall have standard thickness cement mortar lining and interior bituminous coating conforming to AWWA C104. Apply bituminous seal coat on exterior of fittings conforming to AWWA C151. Coatings shall be smooth, tough and tenacious and impervious to water without tendency to scale off, and shall not be brittle.

Provide polyethylene encasement conforming to AWWA C105 around fittings. Film shall be Class "C", black with a minimum nominal thickness of 8 mils. Use thermoplastic material tape with a pressure sensitive adhesive face capable of bonding to metal, bituminous coating, and polyethylene for securing the film. Use tape with a minimum thickness of 8 mils, and a minimum width of 1 in.

Joints connecting pipes to fittings, valves, and hydrants, and to other pipes for required restraint length of each side of fittings, shall have wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe; Ebaa Iron, Sigma, Star Pipe Products, or approved equal. Standard mechanical joint retainer glands will not be acceptable.

Provide tracer wire, No. 12 AWG solid single copper wire with blue plastic coating. Tracer wire splices shall be made with inline resin splice kits.

Provide electrical conductivity across joints and fittings in accordance to manufacturer's recommendations. Devices may be cable bond type or a copper conductivity strip, capable of carrying 500 amperes continuously; metal wedges are not permitted.

Provide crushed stone chip bedding from sound limestone, dolomite ledge rock, or other rock materials on regional significance.

## **C Construction**

### **C.1 General**

#### **C.1.1 Excavation**

Use construction methods conforming to standard spec 607.3.1 except as modified here.

*Replace standard spec 607.3.1.1 (6) with the following:*

- (9) Keep the trenches dewatered while pipe bedding, piping, or other associated work is being constructed.

*Substitute water main for sewers standard spec 607.3.1.1 (7).*

*Delete standard spec 607.3.1.1 (8).*

*Substitute water main for storm sewers standard spec 607.3.1.2.*

#### **C.1.2 Constructing Bedding**

Install bedding material prior to laying of pipe. Shape bedding by hand to fit the entire bottom quadrant of the pipe. Shape bell holes to prevent the bell from supporting the backfill load. Bell holes shall be large enough to permit proper making of the joint but not larger than necessary to make the joint. Adjust line and grade of water main by scraping away or filling bedding material under the body of the pipe. Depth of bedding shall be 4-inches minimum depth under pipe barrel.

Bedding material shall conform to the following:

<b>Sieve Size</b>	<b>Percentage by Weight Passing</b>
1/2 INCH	100
3/8 INCH	90-100
No. 8	0-15
No. 30	0-3

Do not use material native to the trench for bedding.



### **C.1.3 Laying Water Main**

Maintain or exceed minimum depth of cover for water main. Additional depth may be required to clear other utilities.

Maintain minimum vertical separation as required by state and local codes when water main and services cross over or under sewers or force main.

Except as otherwise indicated, install PVC water main in accordance to the requirements of AWWA C600.

Lower water main materials carefully into trench individually by means of a derrick, ropes or other suitable means to prevent damage to protective coatings and linings. Under no circumstances may water main materials be dumped into trench.

Where water mains pass under sewers or force mains, the length of water pipe shall be centered at the point of crossing so that the joints will be equidistant and as far as possible from the sewer.

Insulate water main where water main crosses under storm sewer with polystyrene boards. Install bedding material to a height of 6 inches over the top of the pipe, level and compact prior to placement of the polystyrene boards. Install the insulating boards on the bedding material above the pipe with the long side parallel to the centerline of the water main for a minimum width of the outside diameter of the storm sewer pipe plus 24 inches. Install a minimum of two layers of insulation. Place each layer as to cover the joints of the layer immediately below. Place 6 inches of bedding material on the insulation board. Do not operate equipment directly on the insulation board. Compact first layer over the insulation with equipment that exerts a compact stress of 70 to 80 psi. Compact subsequent layers of backfill by conventional means.

Remove all foreign matter and dirt from inside of pipe and fittings before lowering materials into position in trench. Keep materials clean during and after laying. Securely close openings along main during construction and when work is suspended, install suitable stoppers to prevent soil, water or other substances from entering main.

Install bedded uniformly throughout the entire length of pipe. No pipe shall be laid in water or when trench conditions are unsuitable.

Protect fittings, valves, and accessories from corrosion by use of polyethylene encasement. Install polyethylene in accordance to AWWA C105. Encase hydrants to ground line.

### **C.1.4 Joints**

Joint materials and methods shall conform to manufacturer recommendations and the following provisions. Do not exceed joint deflection recommendations by manufacturer.

Thoroughly clean and wipe resilient joint filler or sealer and joint surfaces before assembly. Use a nontoxic lubricant material that does not support growth of bacteria, has no deteriorating effects on gasket material, and is recommended by pipe manufacturer.

Brush and clean joint surfaces thoroughly. Clean rubber gasket with soapy water and placed on plain end while still wet.

Tighten bolts for mechanical joints alternately to provide even pressure on gland. Apply torque according to manufacturer's recommendation. Wrench handle shall be at least 8 inches long and not more than 10 inches.

Connect pipe to fittings, valves, and hydrants for required restraint length on each side of fittings by a mechanical joint restraint using wedge or grip-ring type restraining glands or harnesses suitable for use with PVC pipe.

Use mechanical type joint plugs only.

#### **C.1.5 Backfilling**

Use construction methods conforming to standard spec607.3.5 except as modified here.

*Add standard spec 607.3.5 (2) with the following:*

(2) Immediately above piping cover material of the same material as the bedding shall be placed around the sides of the pipe and up to a level 6 inches above pipe barrel.

*Add standard spec 607.3.5 (7) with the following:*

(10) Install backfill material in uniform layers not exceeding 12" and compact after each layer with suitable mechanical equipment ramming or compacting tools. Compact granular backfill materials using vibratory mechanical equipment and compact non-granular backfill material using weighted sheeps-foot type equipment.

*Add standard spec607.3.5 (8) with the following:*

(11) Uniformly spread each layer of material and uniformly compact to the required percentage of maximum density. Determine maximum density of the material by a laboratory compaction test in accordance to ASTM Test Designation D1557-64T, Method D.

#### **C.1.6 Testing**

During installation, place calcium hypochlorite granules in water main in accordance to AWWA C651. Upon completion notify the City of Muskego Water Utility 24 hours in advance of need for filling and flushing main. City of Muskego Water Utility personnel will operate all valves and hydrants. Provide dechlorination material and equipment. Stabilize splash zones for erosion. Test water for coliform bacteria in accordance to requirements of state and local codes. If test shows the presence of coliform bacteria,

rechlorinate main and repeat test until a satisfactory test is obtained. Provide fittings, taps, and extra work for sampling or rechlorinating as required to meet this requirement.

Pressure and leak test each valved section of water line in accordance to AWWA C605 as soon as possible after its construction. The test pressure at lowest point of the test section shall be 150 psi. Test shall last for two hours. Leakage allowed shall be 0.48 gph/mi/in. nominal diameter of pipe. If tests disclose greater leakage, locate and repair defects until leakage is within specified limit. Furnish necessary equipment and labor for test. Submit testing procedure for approval prior to testing.

#### **D Measurement**

The department will measure Furnish and Install 6-Inch Water Pipe 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.0090.004	Furnish and Install 6-Inch Water Pipe	LF

Payment is full compensation for furnishing and installing all materials.

### **76. Select Fill for Water Main, Item SPV.0090.005.**

#### **A Description**

This special provision describes furnishing and placing Select Fill backfill over the water main and water services along the entire length of the pipeline in accordance to the appropriate section the *State Standard Specifications* and the standard specifications and as described hereinafter.

#### **B Materials**

Select Fill for Water Main shall be granular backfill meeting the requirements of the *State Standard Specification* and the General Provisions for Water Main as provided.

#### **C Construction**

Place Select Fill for Water Main in accordance to standard spec 607.3.5 Backfilling.

#### **D Measurement**

The department will measure Select Fill for Water Main by the linear foot.

#### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.005	Select Fill for Water Main	LF

Payment is full compensation in accordance to the standard specifications.

**77. Spread Spectrum Radio Antenna Cable, 1/2-Inch, Item SPV.0090.006.**

**A Description**

Furnish and install 1/2-inch spread spectrum radio antenna cable between the radio or power divider and the antenna. Provide connectors and terminate the cable at each end. On wood poles, enclose the entire length of the cable in rigid metallic conduit. At steel poles and sign structures, run the cable inside the pole and through the traffic signal conduit system. If it is not practical to run the antenna inside the sign structure, then enclose the entire length of the cable in rigid and flexible metallic conduit.

**B Materials**

Connectors matching those on the associated radio and antenna.

**C Construction Methods**

The cable must enter the cabinet through the traffic signal conduit system. Do not violate the minimum bend radius of the cable, which is 5 inches.

Make the antenna cable shield electrically and mechanically secure to form a direct DC ground path. The antenna shield shall remain at the same electrical potential as the antenna mounting mast.

Perform a Metallic Time Domain Reflectometer (MTDR) test on the installed cable. The antenna cable shall not exhibit any discontinuities such as opens, shorts, crimps, or defects.

**D Measurement**

The department will measure Spread Spectrum Radio Antenna Cable, 1/2-Inch by the linear feet, 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.0090.006	Spread Spectrum Radio Antenna Cable, 1/2-Inch	LF

Payment is full compensation for furnishing and installing the spread spectrum radio antenna cable.

**78. Washed Stone 3/4-Inch, Item SPV.0090.007.**

**A Description**

Due to the possibility of wet conditions, the engineer may require the water pipe to be bedded and covered with clear stone. Clear stone shall only be required when ordered by the engineer, unless otherwise shown or specified.

**B Materials**

The material shall conform to the following gradation requirements:

Sieve Size	Percent of Mass Passing
1-Inch	100
3/4-Inch	20-50
3/8-Inch	0-10

**C Construction**

The width of the bedding shall be equal to the width of the trench. The depth of the bedding shall extend from an elevation of at least 6 inches below the bottom of the pipe to an elevation at least 12 inches above the top of the pipe.

**D Measurement**

The department will measure Washed Stone 3/4-Inch to the nearest linear foot, acceptably completed, measured along the centerline of the water main. The quantity to be paid for includes construction through valves and fittings.

**E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.007	Washed Stone 3/4-Inch	LF

Payment is full compensation for furnishing, hauling, placing, and compacting the specified material; excavating; properly disposing of surplus material from the excavation displaced by the specified material.

**79. Construction Staking Sidewalk, Item SPV.0090.008.****A Description**

This special provision describes furnishing and setting construction stakes or control points, including all calculations required, necessary to establish the horizontal and vertical position of the concrete sidewalk as shown on the plans.

**B (Vacant)****C Construction****C.1 General**

Obtain or calculate benchmark data, grades, and alignment from data in the plan and verify with the engineer prior to beginning the work. This work includes reestablishing the plan horizontal roadway alignment, alignment ties, and control points. Obtain approval from the engineer for methods of survey and prior to beginning the work. The degree of accuracy used in the survey work must be consistent with third order, Class II. Establish additional benchmarks and control points as necessary or as directed by the engineer. Check plan dimensions, alignment, and elevations for accuracy with existing field conditions. Notify the engineer immediately of any errors and apparent

discrepancies for correction or interpretation prior to proceeding with the work. Adjust elevations as necessary in order to match existing conditions and uphold positive drainage in compliance with the requirements of the American Disability Act (ADA) of 1990 and any subsequent revisions and amendments.

Maintain neat, orderly and complete survey notes and computations used in establishing the lines and grades. Make the survey notes and computations available to the engineer within 24 hours upon request as the work progresses.

## **C.2 Concrete Sidewalk**

Place construction stakes for concrete sidewalk at intervals of 25 feet. A minimum of three stakes per cross section are required. Set and maintain additional stakes per cross section as necessary to achieve the required accuracy and to satisfy the contractors' method of operations. Set additional stakes as necessary to establish location and grade along intersecting road radii; at all ADA accessible curb ramps, and for auxiliary lanes, vertical curves, horizontal curves, and curve transitions. Locate all concrete sidewalk construction stakes to within 0.25 feet of the true horizontal position and establish the grade elevation to within 0.01 feet of the true vertical position. Confirm that all sidewalk and curb ramps meet the requirements as set forth in the ADA of 1990 and notify the engineer of any discrepancies or changes in the field prior to the contractor placing concrete sidewalk.

## **D Measurement**

The department will measure Construction Staking Sidewalk, by the linear foot of work for construction staking, 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.0090.008	Construction Staking Sidewalk	LF

Payment is full compensation for work necessary to stake all concrete sidewalk along the entire project length including new sidewalk, replacing existing walk, and replacing curb ramps in accordance to ADA requirements; for providing all calculations and documentation required to verify compliance; to locate and set all concrete sidewalk construction stakes including additional stakes per cross section set to achieve the required accuracy and to satisfy the contractors' method of operations including intersecting road radii, curb ramps, auxiliary lanes, vertical curves, horizontal curves, and curve transitions; and for resetting damaged or missing concrete sidewalk construction stakes.

## **80. Decorative Rail Fence, Item SPV.0090.009.**

### **A Description**

This special provision describes furnishing and installing the decorative rail fencing in accordance to the pertinent plan details, standard spec 616, as directed by the engineer and as hereinafter provided.

### **B Materials**

Furnish fence material that is according to the pertinent requirements of standard spec 616. Specifications for the railings and posts shall meet the following requirements:

- A-36 steel, hot dipped galvanize, brush blast and epoxy prime black urethane enamel.

### **B.1 Design Requirements**

It is the responsibility of the contractor to supply a design and supporting documentation as required by this special provision for review by the department to show that the proposed fence design is in compliance with the design specifications and plan details. The following shall be submitted to the engineer for review and acceptance no later than 21 days before fence construction will begin.

The design/shop plans shall be prepared on reproducible sheets 11 inch x 17 inch, including borders. Each sheet shall have a title block in the lower right corner. The title block shall include the project identification number and structure number. Design calculations and notes shall be on 8½ inch x 11 inch sheets, and shall contain the project identification number, date of preparation, initials of designer and checker, and page number at the top of the page. All plans and calculations shall be signed, sealed, and dated by a professional engineer licensed in the State of Wisconsin. Four copies of the shop drawings and two copies of the design calculations and supporting materials shall be submitted.

Railings, posts, and base plates shall be designed to withstand a 200 pound point load and 50 pounds per linear foot on the top railing.

Provide manufactures certification that material used conforms to standards outlined.

### **B.2 Railing**

Furnish railing to the dimensions and design as shown in the plans. Railing material shall be ¾-inch solid steel material.

### **B.3 Posts**

Provide posts that are 2-inch square with 3/16-inch wall thickness.

#### **B.4 Concrete Footing**

Concrete footing shall consist of a poured concrete made from Grade A concrete conforming to standard spec 501 as modified in standard spec 716. Provide QMP for class II concrete as specified in standard spec 716.

#### **C Construction**

Install Decorative Rail Fence in accordance to the manufacturer's specifications at the locations and to the dimensions shown on the plan and as directed by the engineer. Touch up epoxy prime black urethane enamel surfaces marred by fencing installation.

#### **D Measurement**

The department will measure Decorative Rail Fence by the linear foot of fence, 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.0090.009	Decorative Rail Fence	LF

Payment is full compensation for design calculations, shop drawings, furnishing and installing concrete footings, fence railings, base plates, and excavating; properly disposing of surplus material from the excavation displaced by the specified material.

### **81. Aluminum Edger, Item SPV.0090.200.**

#### **A Description**

This special provision describes furnishing and installing Aluminum Edger as shown on the plans, and as hereinafter provided.

#### **B Materials**

Aluminum Edger to be 3/16-inch by 4-inch size, color to be black, stakes to be 15-inch length, maximum 5 foot spacing.

Samples: Submit two 6-inch long samples indicating size and color to Jeff Muenkel, City of Muskego Community Development Director, (262) 679-4136, for approval prior to construction.

#### **C Construction**

The installation of the Aluminum Edger shall be in accordance to the manufacturer's instructions. The Aluminum Edger is to be installed as indicated on streetscape detail number 13.

#### **D Measurement**

The department will measure Aluminum Edger 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.0090.200	Aluminum Edger	LF

Payment is full compensation for furnishing and delivering all materials and samples, including aluminum stakes, for installing aluminum edger as per the plan details, manufacturer's instructions, and these special provisions.

**82. Precast Concrete Curbing, Item SPV.0090.201.****A Description**

This special provision describes furnishing and installing fabricated precast concrete curbing and associated connection hardware in accordance to the dimensions, elevations and details as shown on the plans and provided in the contract. Construction work includes the excavation and removal of existing material from project site in order to accommodate placement of new precast concrete curbing.

**B Materials**

Precast concrete components shall include cement that is processed from ASTM C150 Type 1-Portland Cement. Sand shall be in accordance to ASTM C33. Water shall be in accordance to ASTM C330. Air entrainment admixture shall be in accordance to ASTM C260.

Color to be Dynamic Color Solutions #620, 7% color.

Reinforcement shall be epoxy coated in accordance to A775, with strength and size commensurate with precast concrete curbing design.

Surface finish aggregate: clean, smooth finish from single source throughout conforming to ASTM C33.

Sealant: Color to match precast concrete.

Related components include fabricated galvanized steel anchor bolts capable of anchoring precast concrete curbs to a minimum depth of 2 inches into substrate. Connection plates shall be fabricated from galvanized steel to the following dimensions of 1/4 inch by 4 inches by 6 inches.

Shop Drawings: Submit shop drawings of all precast concrete items showing detail sections and profile for all precast items. Details shall show all reinforcing and special hardware required for fastening curb sections together in the field.

Samples: Submit two 4-inch by 6-inch sample pieces of precast concrete curb illustrating color, surface finish and texture to Jeff Muenkel, City of Muskego Community Development Director, (262) 679-4136, for approval prior to construction.

Mock-up: Construct mock-up for one entire planter including connection hardware and joint sealer to be approved by Jeff Muenkel, City of Muskego Community Development Director.

Approval of mock-up is required prior to beginning construction. Failure to receive mock-up approval may result in rejection of work. The approved mock-up will be the standard from which the work will be judged and approved by the owner's representative. Incorporate accepted mockup as part of work.

Locate mockup where directed by owner's representative.

Notify the owner's representative and the City of Muskego 7 days in advance of dates and times when mock ups will be constructed.

Qualifications: Precast Concrete Manufacturer and Trade contractor must have a minimum of 5 years of successful experience on projects of similar magnitude and complexity to that of this project. Manufacturer and contractor to be prequalified by owner's representative prior to bidding. Failure to prequalify will void bid.

Manufacturer to supply a written Quality Assurance Program and Procedure Manual.

### **C Construction**

Factory fabrication shall be produced using fabricated steel forms for quality control of uniformity and dimensions to the detailed size as shown on the plans. Curbing shall be free of fins, honeycombing and other irregularities. Curbing shall be fabricated with straight and accurate edges and surfaces.

Precast Concrete Curb installation:

- Excavate area to required depth and dimensions as indicated on plans and remove spoils from project site.
- Compact placed aggregate materials to achieve compaction of 95 percent modified proctor density.
- Place units without damage to shape or finish. Replace damaged panels.
- Connect precast concrete curb units using galvanized steel plates with stainless steel anchors.
- Plates shall be rigidly secured to prevent any movements.
- Erect units level and plumb within allowable tolerances.
- Align and maintain uniform horizontal and vertical joints as erection progresses. Set vertical units dry, without grout, attaining joint dimension with lead or plastic spacers. Pack grout to base of unit.
- When units require adjustment beyond design or tolerance criteria, discontinue affected work; advise owner's representative.
- Seal perimeter and intermediate joints.
- Erection Tolerances:
- Exposed vertical joint dimension: 1/4-inch

- Exposed horizontal perimeter joint dimension: 1/2-inch
- Maximum variation from plane of location: 1/4-inch in 10 feet
- Maximum offset from indicated alignment between two connecting units: 1/8-inch.
- Joint tolerance: plus or minus 1/8-inch

#### **D Measurement**

The department will measure Precast Concrete Curbing 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.0090.201	Precast Concrete Curbing	LF

Payment is full compensation for furnishing all shop drawings, samples, mock-ups, labor, materials, equipment, tools, and incidentals necessary to complete the work as shown on the plans and as described herein. Incidentals to include excavation and removal of existing material from project site.

### **83. Irrigation Sleeve, Item SPV.0090.202.**

#### **A Description**

This special provision describes furnishing and installing a water irrigation sleeve and related appurtenances for irrigation as shown on the drawings, and as hereinafter provided.

#### **B Materials**

##### **B.1 PVC Pipe**

All PVC schedule 40 pipe shall be manufactured from Type I, Grade I polyvinyl chloride compound and shall conform to ASTM D1785 and D2665 (where applicable).

#### **C Construction**

The locations of the irrigation services shown on the drawings are general in nature. The contractor shall provide all fittings and piping as necessary to construct Irrigation Sleeves. Temporary PVC caps shall be placed at both ends of sleeves.

Coordinate Irrigation Sleeve installation with landscape planting and other roadway operations.

Maintain 24 inches of cover above sleeves at paved surfaces.

#### **D Measurement**

The department will measure Irrigation Sleeve 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.0090.202	Irrigation Sleeve	LF

Payment is full compensation for furnishing and installing the irrigation sleeve and related appurtenances in accordance to the drawings.

**84. Cable in Duct 3-8 AWG and 4-4 AWG, Item SPV.0090.203.****A Description**

This special provision describes cable in duct similar to the standard items.

**B Materials**

Conform to standard spec 655.2.1.

**C Construction**

Conform to standard spec 655.3.2.

**D Measurement**

The department will measure Cable In Duct 3-8 AWG and 4-4 AWG by the method of standard spec 655.4.(1).

**E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.203	Cable In Duct 3-8 AWG and 4-4 AWG	LF

Payment is full compensation according to standard spec 655.5(2).

**85. Cable in Duct 4-6 AWG and 3-10 AWG, Item SPV.0090.204.****A Description**

This special provision describes cable in duct similar to the standard items.

**B Materials**

Conform to standard spec 655.2.1.

**C Construction**

Conform to standard spec 655.3.2.

**D Measurement**

The department will measure Cable In Duct 4-6 AWG and 3-10 AWG by the method of standard spec 655.4.(1).

**E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.204	Cable In Duct 4-6 AWG and 3and10 AWG	LF

Payment is full compensation according to standard spec 655.5(2).

**86. Removing Roadway Signs, Item SPV.0105.001.****A Description**

This special provision describes removing county owned signs and supports on CTH L.

**B (Vacant)****C Construction**

Under this special provision, the contractor shall remove existing signs from their supports.

Aluminum Type II signs along CTH L are the property of the Waukesha County Department of Public Works. The contractor shall return these signs to the Waukesha County Department of Public Works facility located at 1641 Woodburn Road, Waukesha, WI 53188. Signs shall be palletized for handling with a forklift. Contact the shop at least 3 business days in advance to coordinate the shipment. No deliveries shall occur on Friday.

The contractor shall remove wood supports, and flanged, steel channel or other supports. The supports are to become the contractor's property. The contractor shall satisfactorily dispose of these supports off the right-of-way.

Restore the site to repair any damage caused by removing the signs. Dispose of any surplus materials or excavation. Remove all unused concrete footings resulting from the removing of the signs and fill the resulting holes with earth or other suitable material as required. Restore the area to a condition similar to the adjacent area.

**D Measurement**

The department will measure Removing Roadway Signs as a complete lump sum unit of work for removing signs, 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.0105.001	Removing Roadway Signs	LS

Payment is full compensation for removing the roadway signs and restoring the site. Payment does not include compensation for furnishing new wood posts, steel sign supports and concrete footings, if required. Waukesha County will pay for these items under the pertinent contract bid item, or as extra work if no bid item exists.

**87. Dewatering Project 2380-00-73, Item SPV.0105.002.**

**A Description**

This special provision describes furnishing and providing dewatering to mitigate the anticipated wet conditions associated with construction.

**B Materials**

Furnish pumps, hoses and dewatering sumps in sufficient quantity to handle wet conditions.

**C Construction**

All water shall be pumped to a filtration system approved by the engineer.

**D Measurement**

The department will measure Dewatering Project 2380-00-73 as a single lump sum unit of work for dewatering, 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.0105.002	Dewatering Project 2380-00-73	LS

Payment is full compensation for furnishing and installing the dewatering pumps, hoses, sump holes, and necessary equipment to complete the contract work. Lump sum amount shall include any and all locations where dewatering is encountered.

**88. Vehicle Video Detection System, Intersection of CTH L and Racine Avenue, Item SPV.0105.003; Vehicle Video Detection System, Intersection of CTH L and Lannon Drive, Item SPV.0105.004.**

**A Description**

This specification describes furnishing and installing a system that detects vehicles on a roadway using only video images of vehicle traffic. This item includes all materials and labor necessary to install a completely functional vehicle detection system including but not limited to cameras, processors, video monitor, mounting hardware, power cable, and coaxial cable.

## **B General Requirements**

### **B.1 System Hardware**

The video detection system (VDS) shall consist of up to four video cameras, a video detection processor (VDP) capable of processing from one to four video sources, either wired or wireless, wireless video transmission receiver, receiver antenna and a pointing device.

### **B.2 System Software**

The system shall include software that detects vehicles in multiple lanes using only the video image. Detection zones shall be defined using only an on board video menu and a pointing device to place the zones on a video image. Up to 24 detection zones per camera view shall be available. A separate computer shall not be required to program the detection zones.

## **C Functional Capabilities**

### **C.1 System Configuration**

The VDS will be deployed at locations where site conditions and roadway geometry vary. The VDS system may also be deployed at locations where existing cabinets or equipment exist. Existing site configurations will dictate the availability of cabinet space and VDS usage.

The proposed VDS shall be available in various configurations to allow maximum deployment flexibility. Each configuration shall have identical user interface for system setup and configuration. The communications protocol to each configuration shall be identical and shall be hardware platform independent. The proposed VDS shall have multiple configurations available for deployment.

**Table 1. VDS Configuration**

<b>Description</b>	<b>No. Video Inputs</b>	<b>No. Video Outputs</b>	<b>Mounting Configuration</b>	<b>Power Supply Requirements</b>
Single-Channel Rack Mounted	1	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12/24 VDC Power From Rack
Dual-Channel Rack Mounted	2	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12/24 VDC Power From Rack
Quad-Channel Rack Mounted	4	1	Rack Mount (Type 170 or NEMA TS-1, TS-2 Racks)	12/24 VDC Power From Rack

- An option to have wireless video transmission between the camera sensor and VDP shall also be available from the VDS manufacturer.
- Wired camera systems shall be able to transmit NTSC or PAL video signals, with minimal degradation, up to 1000 feet under ideal conditions.
- Wireless camera systems shall be able to transmit an NTSC video signal, with minimal signal degradation, up to 500 feet under normal conditions and up to 900 feet under ideal electromagnetic interference conditions. Adjacent sources of electromagnetic radiation, or the absence of a direct line of sight between transmitter and receiver antennas, may result in video signal degradation.

## **C.2 System Interfaces**

The following interfaces shall be provided for each of the configurations identified in Table 1.

- Video Input: Each video input shall accept RS170 (NTSC) or CCIR (PAL) signals from an external video source (camera sensor or VCR). The interface connector shall be BNC type and shall be located on the front of the video processing unit. The video input shall have the capability to select 75-ohm or high impedance (Hi-Z) termination.
- Video Lock LED: A LED indicator shall be provided to indicate the presence of the video signal. The LED shall illuminate upon valid video synchronization and turn off when the presence of a valid video signal is removed.
- Video Output: One video output shall be provided. The video output shall be RS170 or CCIR compliant and shall pass through the input video signal. For multi-channel video input configurations, a momentary push-button shall be provided on the front panel to toggle through each input video channel. In the absence of a valid video signal, the channel shall be skipped and the next valid video signal shall be switched. The video output shall have the capability to show text and graphical overlays to aid in system setup. The overlays shall display real-time actuation of detection zones upon vehicle detection or presence. Overlays shall be able to be turned off by the user. Control of the overlays and video switching shall also be provided through the serial communications port. The video output interface connector shall be BNC type.
- Serial Communications: A serial communications port shall be provided on the front panel. The serial port shall be compliant with EIA232 electrical interfaces and shall use a DB9 type connector. The serial communications interface shall allow the user to remotely configure the system and/or to extract calculated vehicle/roadway information. The interface protocol shall be documented or interface software shall be provided. The interface protocol shall support multi-drop or point-to-multipoint communications. Each VDS shall have the capability to be addressable.



- **Contact Closure Output:** Open collector contact closure outputs shall be provided. Four (4) open collector outputs shall be provided for the single, dual or quad channel rack-mount configuration. Additionally, the VDPs shall allow the use of extension modules to provide up to 24 open collector contact closures per camera input. Each open collector output shall be capable of sinking 30 mA at 24 VDC. The open collector output will be used for vehicle detection indicators as well as discrete outputs for alarm conditions.
- **Detection LEDs:** LEDs shall be provided on the front panel. The LEDs shall illuminate when a contact closure output occurs. Rack-mounted video processors shall have a minimum of 4 LEDs. Rack-mounted extension modules shall have 2 or 4 LEDs to indicate detection.
- **Mouse Port:** A Usouthbound mouse port shall be provided on the front panel of the rack mount video processing unit. The mouse port shall not require special mouse software drivers. The mouse port shall be used as part of system setup and configuration. A mouse shall be provided with each video processor.

### **C.3 General System Functions**

Detection zones shall be programmed via an on board menu displayed on a video monitor and a pointing device connected to the VDP. The menu shall facilitate placement of detection zones and setting of zone parameters or to view system parameters. A separate computer shall not be required for programming detection zones or to view system operation.

The VDP shall store up to three different detection zone patterns. The VDP can switch to any one of the three different detection patterns within 1 second of user request via menu selection with the pointing device.

The VDP shall detect vehicles in real time as they travel across each detection zone.

The VDP shall have an EIA232 port for communications with an external computer. The VDP EIA232 port shall be multi-drop capable.

The VDP shall accept new detection patterns from an external computer through the EIA232 port when the external computer uses the correct communications protocol for downloading detection patterns. A Microsoft Windows-based software designed for local or remote connection and providing video capture, real-time detection indication and detection zone modification capability shall be provided with the system.

The VDP system shall have the capability to automatically switch to any one of the stored configurations based on the time of day which shall be programmable by the user.

The VDP shall send its detection patterns to an external computer through the EIA232 port when requested when the external computer uses the correct communications protocol for uploading detection patterns.

The VDP shall default to a safe condition, such as a constant call on each active detection channel, in the event of unacceptable interference with the video signal.

The system shall be capable of automatically detecting a low-visibility condition such as fog and respond by placing all defined detection zones in a constant call mode. A user-selected output shall be active during the low-visibility condition that can be used to modify the controller operation if connected to the appropriate controller input modifier(s). The system shall automatically revert to normal detection mode when the low-visibility condition no longer exists.

#### **C.4 Vehicle Detection**

Up to 24 detection zones per camera input shall be supported and each detection zone can be sized to suit the site and the desired vehicle detection region.

The VDP shall provide up to 24 open collector output channels per camera input using one or more extension modules.

A single detection zone shall be able to replace multiple inductive loops and the detection zones shall be OR'ed as the default or may be AND'ed together to indicate vehicle presence on a single phase of traffic movement.

Placement of detection zones shall be done by using only a pointing device, and a graphical interface built into the VDP and displayed on a video monitor, to draw the detection zones on the video image from each video camera. No separate computer shall be required to program the detection zones.

Up to 3 detection zone patterns shall be saved for each camera within the VDP memory. The VDP's memory shall be non-volatile to prevent data loss during power outages.

The selection of the detection zone pattern for current use shall be done through a menu. It shall be possible to activate a detection zone pattern from VDP memory and have that detection zone pattern displayed within 1 second of activation.

The VDP system shall have the capability to automatically switch to any one of the stored configurations based on the time of day which shall be programmable by the user.

When a vehicle is detected within a detection zone, the corners of the detection zone shall activate on the video overlay display to confirm the detection of the vehicle. Detection shall be at least 98% accurate in good weather conditions, with slight degradation possible under adverse weather conditions (e.g. rain, snow, or fog) which reduce visibility. Detection accuracy is dependent upon site geometry, camera placement, camera quality and detection

zone location, and these accuracy levels do not include allowances for occlusion or poor video due to camera location or quality.

The VDP shall provide dynamic zone reconfiguration (DZR). DZR enables normal operation of existing detection zones when one zone is being added or modified during the setup process. The VDP shall output a constant call on any detector channel corresponding to a zone being modified.

Detection zone setup shall not require site specific information such as latitude and longitude to be entered into the system.

The VDP shall process the video input from each camera at 30 frames per second. Multiple camera processors shall process all video inputs simultaneously.

The VDP shall output a constant call for each enabled detector output channel if a loss of video signal occurs. The VDP shall output a constant call during the background learning period.

Detection zone outputs shall be configurable to allow the selection of presence, pulse, extend, and delay outputs. Timing parameters of pulse, extend, and delay outputs shall be user definable between 0.1 to 25.0 seconds.

Up to six detection zones per camera view shall have the capability to count the number of vehicles detected. The count value shall be internally stored for later retrieval through the EIA232 port. The zone shall also have the capability to calculate and store average speed and lane occupancy at bin intervals of 10 seconds, 20 seconds, 1 minute, 5 minutes, 15 minutes, 30 minutes and 60 minutes.

## **D Hardware**

### **D.1 General**

The VDP and extension module (EM) shall be specifically designed to mount in a standard detector rack, using the edge connector to obtain power and provide contact closure outputs. No adapters shall be required to mount the VDP or EM in a standard detector rack. Detector rack rewiring shall not be required.

The EM shall be available to avoid the need of rewiring the detector rack, by enabling the user to plug an extension module into the appropriate slot in the detector rack. The extension module shall be connected to the VDP by an 8 wire cable with modular connectors, and shall output contact closures in accordance to user selectable channel assignments. The EM is available in 2, 4, or 24 channel configurations.

### **D.2 Input Power**

The VDP and EM shall be powered by 12/24 volts DC. VDP power consumption shall not exceed 7 watts. The EM power consumption shall not exceed 2.5 watts.

### **D.3 Detection Outputs**

The VDP and EM shall include detector output pin out compatibility with industry standard detector racks. The 24-channel EM shall provide output through a 37-pin "D" connector on the front panel.

### **D.4 Video Inputs**

VDPs shall include one, two or four BNC video input connections suitable for composite video inputs. The video input shall include a switch selectable 75-ohm or high impedance termination to allow camera video to be routed to other devices, as well as input to the VDP for vehicle detection.

### **D.5 Video Outputs**

The front of the VDP shall include one BNC video output providing real time video output that can be routed to other devices.

### **D.6 Mechanical and Environmental**

The VDP shall operate satisfactorily in a temperature range from -34 °C to +74 °C and a humidity range from 0%RH to 95%RH, non-condensing as set forth in NEMA specifications.

The front panel of the VDP shall have detector test switches to allow the user to place calls on each channel. The test switch shall be able to place either a constant call or a momentary call depending on the position of the switch.

The front face of the VDP shall contain indications, such as LED displays, to enable the user to view real time detections for each channel of detection when the system is operational.

The VDP shall include an EIA232 port for serial communications with a remote computer. This port shall be a 9-pin "D" subminiature connector on the front of the VDP.

The VDP shall utilize non-volatile memory technology to enable the loading of modified or enhanced software through the EIA232 port and without modifying the VDP hardware.

### **D.7 Video Detection Camera**

Video detection cameras used for traffic detection shall be furnished by the video detection processor (VDP) supplier and shall be qualified by the supplier to ensure proper system operation.

The camera shall produce a useable video image of the bodies of vehicles under all roadway lighting conditions, regardless of time of day. The minimum range of scene luminance over which the camera shall produce a useable video image shall be the minimum range from nighttime to daytime, but not less than the range 1.0 lux to 10,000 lux.

The imager luminance signal to noise ratio (S/N) shall be more than 50 dB.

The camera shall be digital signal processor (DSP) based and shall use a CCD sensing element and shall output color video with resolution of not less than 470 TV lines. The CCD imager shall have a minimum effective area of 768(h) x 494(v) pixels.

The camera shall include an electronic shutter control based upon average scene luminance and shall be equipped with an auto-iris lens that operates in tandem with the electronic shutter.

The camera shall utilize automatic white balance.

The camera shall include a variable focal length lens with variable focus that can be adjusted, without opening up the camera housing, to suit the site geometry by means of a portable interface device designed for that purpose and manufactured by the detection system supplier.

The horizontal field of view shall be adjustable from 5.4 to 50.7 degrees. This camera configuration may be used for the majority of detection approaches in order to minimize the setup time and spares required by the user. The lens shall be a 10x zoom lens with a focal length of 3.8mm to 38.0 mm.

The lens shall also have an auto-focus feature with a manual override to facilitate ease of setup.

The camera shall incorporate the use of preset positioning that store zoom and focus positioning information. The camera shall have the capability to recall the previously stored preset upon application of power.

The camera electronics shall include automatic gain control (AGC) to produce a satisfactory image at night.

The camera shall be housed in a weather-tight sealed enclosure. The enclosure shall be made of 6061 anodized aluminum. The housing shall be field rotatable to allow proper alignment between the camera and the traveled road surface.

The camera enclosure shall be equipped with a sunshield. The sunshield shall include a provision for water diversion to prevent water from flowing in the camera's field of view. The camera enclosure with sunshield shall be less than 6" diameter, less than 18" long, and shall weigh less than 6 pounds when the camera and lens are mounted inside the enclosure.

The enclosure shall be design so that the pan, tilt and rotation of the camera assembly can be accomplished independently without affecting the other settings.

The camera enclosure shall include a proportionally controlled heater, where the output power of the heater varies with temperature, to assure proper operation of the lens functions

at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

The glass face on the front of the enclosure shall have an anti-reflective coating to minimize light and image reflections.

The glass face shall also employ a special coating to minimize the buildup of environmental debris such as dirt and water.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from -34 °C to +60 °C and a humidity range from 0% RH to 100% RH. Measurement of satisfactory video shall be based upon VDP system operation.

The camera shall be powered by 120-240 VAC 50/60 Hz. Power consumption shall be 45 watts or less under all conditions. An optional DC power configuration shall be available for 12 VDC operation.

Recommended camera placement height shall be 33 feet (or 10 meters) above the roadway, and over the traveled way on which vehicles are to be detected. The camera shall view approaching vehicles at a distance not to exceed 350 feet for reliable detection (height to distance ratio of 10:100). Camera placement and field of view (FOV) shall be unobstructed and as noted in the installation documentation provided by the supplier.

The camera enclosure shall be equipped with separate, weather-tight connections for power and video cables at the rear of the enclosure. These connections may also allow diagnostic testing and viewing of video at the camera while the camera is installed on a mast arm or pole using a lens adjustment module (LAM) supplied by the VDP supplier. Video and power shall not reside within the same connector.

The video signal shall be fully isolated from the camera enclosure and power cabling.

#### **D.8 Video Monitor**

The monitor shall be a flat screen color video monitor with a minimum 9" diagonal picture display. It shall support EIA standards RS-170 composite video signal (1.0 v p-p, 75 OHM).

It shall have a resolution of 900 lines at center. Video bandwidth shall be >11 MHz. Loop through connectors shall be provided, and both input and output connectors shall be BNCs.

The monitor power source shall be 120 VAC +/- 10%, 60 Hz. Power consumption shall not be greater than 18 W. Ambient operating temperature shall be +50 to +122 degrees Fahrenheit.

Located on the front panel, the controls shall be on/off, contrast, bright, vertical hold, and horizontal hold. Rear panel shall have controls for vertical size, vertical linearity and scan switch.

Dimensions shall not exceed 9" (W), 10" (H), and 7" (D). Weight shall not exceed 10 pounds.

#### **D.9 Coaxial Cable**

The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281. This cable shall be suitable for installation in conduit or overhead with appropriate span wire. BNC plug connectors should be used at both the camera and cabinet ends. The coaxial cable, BNC connector, and crimping tool shall be approved by the supplier of the video detection system, and the manufacturer's instructions must be followed to ensure proper connection.

#### **D.10 Power Cable**

The power cabling shall be 16 AWG three conductor cable with a minimum outside diameter of 0.325 inch and a maximum diameter of 0.490 inch. The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras may acquire power from the luminaire if necessary.

#### **E Installation**

The video detection camera shall be installed by factory-certified installers as recommended by the supplier and documented in installation materials provided by the supplier. Proof of factory certification shall be provided.

#### **F Manufacturer Warranty**

The supplier shall provide a three-year warranty on the video detection system.

During the warranty period, technical support shall be available from the supplier via telephone within 4 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.

During the warranty period, updates to VDP software shall be available from the supplier without charge.

#### **G Maintenance and Support**

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the video detection system. These parts shall be available for delivery within 30 days of placement of an acceptable order at the supplier's then current pricing and terms of sale for said parts.

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.

Installation or training support shall be provided by a factory-authorized representative and shall be a minimum IMSA-Level II Traffic Signal Technician certified.

All product documentation shall be written in the English language.

#### **H Measurement**

The department will measure Vehicle Video Detection System (Location) as each individual unit per intersection, acceptably completed.

#### **I Payment**

Video Vehicle Detection System will be paid for measured quantities at the contract lump sum price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.003	Vehicle Video Detection System, Intersection of CTH L and Racine Avenue	LS
SPV.0105.004	Vehicle Video Detection System, Intersection of CTH L and Lannon Drive	LS

Payment is full compensation for furnishing and installing control units, cameras, cabling, mounting brackets, testing and setting up the system.

### **89. Emergency Vehicle Preemption System, Intersection of CTH L and Lannon Drive, Item SPV.0105.005.**

#### **A Description**

This work shall consist of furnishing and installing an Emergency Vehicle Preemption (EVP) System at a single intersection, as shown on the plans and as hereinafter provided.

In coordination with the City of Muskego, the EVP System shall be compatible with existing EVP optical emitters currently deployed by the City of Muskego as confirmed by TAPCO. The contractor shall contact David Simpson, P.E. at (262) 679-5686 regarding the procurement and installation of the EVP detection system.

The Waukesha County Department of Public Works does not own or operate any EVP systems and only allows for local governments to own and operate EVP systems on county owned traffic signals. The contractor shall contact the City of Muskego to ensure the appropriate equipment is procured. As a part of the plans for this project, new EVP systems shall be installed at the intersection of CTH L and Lannon Drive.

#### **B Materials**

The Emergency Vehicle Preemption System shall include Opticom discriminator Model 454, Model 711 detectors, and Model 138 detector cable. This equipment shall be furnished and installed by the contractor.

#### **C Construction**

Detectors shall be mounted on the mast arms and signal poles as shown on the plans.



The traffic signal mast arms and poles shall be drilled, and tapped to accommodate the mounting of the detector units as shown in the plans. The installation method shall be approved by the county traffic engineer.

In the event, at installation, a noticeable obstruction is present in line with the detector, the contractor shall be obligated to advise the engineer before installation.

Unless otherwise directed by the County, the detector shield tube shall be installed with the drain hole at the bottom.

There shall be NO detector cable splices from the detector assembly to the controller terminations.

The EVP detector cables shall be routed to the controller. Each lead shall be appropriately marked as to which street or avenue it is associated. The contractor will perform all terminations inside the cabinet.

The EVP as specified and shown in the plans shall be complete in place, tested, and in full operation.

#### **D Measurement**

The department will measure Emergency Vehicle Preemption System (Location) as a single lump sum unit of work complete in place per intersection, 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.0105.005	Emergency Vehicle Preemption System, Intersection of CTH L and Lannon Drive	LS

Payment is full compensation for installing the complete unit; and for furnishing all labor, tools, equipment, services and incidentals necessary to complete the contract work. The card rack and discriminator shall be incidental to this provision.

### **90. Remove and Salvage Existing Traffic Signal Equipment (Racine Avenue) Item SPV.0105.006; Remove and Salvage Existing Traffic Signal Equipment (Lannon Drive), Item SPV.0105.007.**

#### **A Description**

This special provision describes removing and salvaging traffic signal materials in accordance to the pertinent provisions of standard spec 204 and as hereinafter provided. This work will generally consist of removing, temporarily stockpiling and hauling the existing controller cabinet, traffic signal faces, traffic signal poles, and trombone arms, at the intersection of CTH L and Lannon Drive as directed by the engineer. This work will generally consist of removing, temporarily stockpiling and hauling the existing controller

cabinet, select traffic signal faces, select traffic signal poles, and select trombone arms, at the intersection of CTH L and Racine Avenue as directed by the engineer.

## **B Materials**

The contractor shall carefully remove the designate traffic signal equipment so as to avoid any damage to the items. No existing signal equipment shall be reused in any new proposed signal installations.

The underground cable, wires, and conduits shall become the property of the contractor to be disposed of properly. Existing traffic signal conduit may be abandoned in place or removed and discarded as necessary if in conflict with proposed construction.

Existing signal materials listed above shall be salvaged and delivered to the county along with the other existing signal materials listed above.

## **C Construction**

### **C.1 Racine Avenue Traffic Signal System**

Inventory the quantity and condition of the traffic signals prior to removal. Provide the Waukesha County traffic engineer with a copy of the inventory.

Notify Mr. Michael Grulke, (262) 548-7748, or Mr. Fred Patzer, (262) 424-9129, from Waukesha County at least 3 working days prior to the desired starting date for the removal of the traffic signals.

Traffic signals affected by the reconstruction efforts related to the CTH L project shall be removed and salvaged back to the County. Remove the traffic signal standards and poles from their concrete bases. Remove the attached transformer bases and trombone arms from the standards or poles. Access hand hold doors and hardware shall remain intact. Remove the pull box frames and covers from the corrugated pipe. Provide the Waukesha County traffic engineer with a copy of the inventory.

The underground cable, wires, and conduits affected by the reconstruction efforts shall become the property of the contractor to be disposed of properly. Loop detectors and pull boxes not affected by reconstruction efforts shall be abandoned in place.

### **C.2 Lannon Drive Traffic Signal System**

Inventory the quantity and condition of the traffic signals prior to removal. Provide the Waukesha County traffic engineer with a copy of the inventory.

Notify Mr. Michael Grulke, (262) 548-7748, or Mr. Fred Patzer, (262) 424-9129, from Waukesha County at least 3 working days prior to the desired starting date for the removal of the traffic signals and lighting materials.

The existing traffic signal equipment shall be dismantled as soon as the contractor has verified that the system has been de-energized and the corresponding intersection roadways

have been closed down or, if work is progressing under traffic, that the proper temporary regulatory signs have been erected to control traffic within the intersection.

Remove the traffic signal standards and poles from their concrete bases. Remove the attached transformer bases and trombone arms from the standards or poles. Access hand hold doors and hardware shall remain intact. Remove the pull box frames and covers from the corrugated pipe. Provide the Waukesha County traffic engineer with a copy of the inventory.

Notify Waukesha County at least 3 working days prior, to make arrangements for delivering the salvaged traffic signals to the County Highway Operations shop located at 1641 Woodburn Road, Waukesha, Wisconsin. No deliveries shall be made on Fridays.

The underground cable, wires, and conduits shall become the property of the contractor to be disposed of properly.

#### **D Measurement**

The department will measure Remove and Salvage Traffic Signal Equipment (Location), 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.0105.006	Remove and Salvage Existing Traffic Signal Equipment (Racine Avenue)	LS
SPV.0105.007	Remove and Salvage Existing Traffic Signal Equipment (Lannon Drive)	LS

Payment is full compensation for inventorying; disconnecting the wiring of the traffic signals and lights; removing and disassembling the traffic signals and lights; removing the pull box frames and covers; loading, transporting and unloading the salvaged traffic signal, video detection, and lighting materials from the construction site to the designated location.

The removal of concrete bases and pull boxes will be paid for separately under the pertinent items provided in the contract.

### **91. Removing, Salvaging, and Reinstalling Emergency Vehicle Preemption Detection System, Intersection of CTH L and CTH Y, Item SPV.0105.008.**

#### **A Description**

This special provision describes removing, salvaging, and reinstalling the existing Emergency Vehicle Preemption (EVP) detection system. This work will generally consist of removing, salvaging, and reinstalling the EVP detection system at intersection as

directed by the engineer. In coordination with the City of Muskego, the EVP System shall be reinstalled in the newly installed traffic signal controller. The EVP Detector shall be compatible with existing EVP optical emitters currently deployed by the City of Muskego. Waukesha County does not own or operate any EVP systems and allow for local governments to own and operate EVP systems on county owned traffic signals.

## **B Materials**

The contractor shall carefully remove the designated EVP equipment so as to avoid any damage to the items. The existing EVP equipment shall be salvaged and reinstalled in the new proposed signal installation at the intersection of CTH L and CTH Y.

The cable and associated wire shall become the property of the contractor to be disposed of properly.

During construction staging of the project, the contractor may either provide an EVP detection system to use during construction staging efforts or utilize the existing EVP detection system at the intersection. In the event that the contractor uses the existing EVP detection system at the intersection, the contractor will be required to replace the system if it is damaged during construction staging efforts.

For the reinstallation of the EVP system, the detectors shall be mounted on the mast arms and signal poles as shown on the plans.

The traffic signal mast arms and poles shall be drilled, and tapped to accommodate the mounting of the detector units as shown in the plans.

In the event, at installation, a noticeable obstruction is present in line with the detector, the contractor shall be obligated to advise the engineer before installation.

Unless otherwise directed by the engineer, the detector shield tube shall be installed with the drain hole at the bottom.

There shall be NO detector cable splices from the detector assembly to the controller terminations.

The EVP detector cables shall be routed to the controller. Each lead shall be appropriately marked as to which street or avenue it is associated.

The EVP as specified and shown in the traffic signal construction staging plans shall be complete in place, tested, and in full operation during each stage of construction.

The EVP as specified and shown in the plans shall be complete in place, tested, and in full operation.

## **C (Vacant)**

#### **D Measurement**

The department will measure Removing, Salvaging, and Reinstalling Emergency Vehicle Preemption Detection System, Intersection of CTH L and CTH Y, 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.0105.008	Removing, Salvaging, and Reinstalling Emergency Vehicle Preemption Detection System, Intersection of CTH L and CTH Y	LS

Payment is full compensation for removing, salvaging and reinstalling the complete unit.

### **92. Stone Veneer Seat Wall Station 57+00, Item SPV.0105.200; Stone Veneer Seat Wall Station 67+50, Item SPV.0105.201; Stone Veneer Seat Wall Station 81+50, Item SPV.0105.202.**

#### **A Description**

This special provision describes furnishing and installing exterior stone wall veneer, limestone wall coping; furnish and install concrete wall footing, steel reinforcing, base aggregate, 4" PVC drain pipe, filter fabric and drainage; furnish and install precast concrete signage panel and pin-mounted letters. Construction work includes the excavation and removal of existing material from project site in order to construct the concrete foundation.

#### **B Materials**

##### **B.1 Stone Masonry – Limestone Veneer and Limestone Wall Coping**

Stone shall be durable, sound dolomitic limestone and free from cracks. Stone shall be jointed in mortar with no air pockets, and all joints shall be completely filled. Stone shall be laid free from mortar stains and kept as clean as possible. Should the stone become soiled with mud or mortar, it shall be cleaned with a soft bristle brush and water (NO ACID). No stone work shall be set in cold weather unless the temperature at the job site is no lower than 30 degrees and rising. For stone mortar joints, mortar shall be composed of 1 part of specified mortar color cement and 3 parts of clean sharp sand, free from iron and impurities, using only sufficient water to effect thorough mixing of masonry ingredients in accordance to standard spec 518.

Stone veneer pattern shall be installed in a random, broken coursed ashlar pattern and comprised of stone sizes ranging as follows:

Height: Sawn heights of 2-1/4in., 5-inch, 7-3/4 inches

Length: 6-inches to 30-inches

Thickness: 4-inches nominal

Stone texture shall consist of the following surfaces:

- 30 percent Split and Rockface
- 70 percent Buff Bedface

Limestone Wall Coping:

Buff Indiana limestone with honed top finish and rock faced front edge.

Mortar to be ASTM C270 type-N, color to be #165 Delorean Gray as defined by Polyblend (800 272 8786). Color to match this standard Polyblend color as closely as possible.

Grout mixes:

- Grout color to be #165 Delorean Gray as defined by Polyblend, (800) 272 8786, or approved equal. Color to match this standard Polyblend color as closely as possible.
- Grout for non structural masonry: 2,000 psi strength at 28 days; 8-11 inches slump; mixed in accordance to ASTM C476.

Application:

- Coarse Grout: For grouting spaces with minimum 4-inches dimension in every direction
- Fine Grout: For grouting other spaces
- Mix grout in accordance to ASTM C94, modified to use ingredients complying with ASTM C476.

Shop Drawings: Indicate on shop drawings, layout and dimensions of all Stone Veneer Seat Walls and affected adjacent construction.

Samples: Submit two samples of mortar and grout, illustrating mortar color and color range. Submit one set of sample stone veneer units illustrating each different size and each representative color and texture as specified above. Submit samples to Jeff Muenkel, City of Muskego Community Development Director, (262) 679-4136, for approval prior to construction.

Mock-up: Construct 22-inch high by 5-foot long full mock-up, including stone coping and mortar.

Approval of mock-up by Jeff Muenkel, City of Muskego Community Development Director is required prior to beginning construction. Failure to receive mock-up approval may result in rejection of work. The approved mock-up will be the standard from which the work will be judged and approved by the City of Muskego. Incorporate accepted mock-up as part of work.

Locate mockup where directed by owner's representative

Notify the owner's representative and the City of Muskego 7 days in advance of dates and times when mock ups will be constructed.

### **C Construction**

The Stone Veneer Seat Walls shall be constructed at the location, grade and dimensions shown on the plan and as directed by the engineer.

### **D Measurement**

The department will measure Stone Veneer Seat Wall (Station) 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.0105.200	Stone Veneer Seat Wall, Station 57+00	LS
SPV.0105.201	Stone Veneer Seat Wall, Station 67+50	LS
SPV.0105.202	Stone Veneer Seat Wall, Station 81+50	LS

Payment is full compensation for furnishing and installing stone veneer, concrete foundation, reinforcement steel and limestone wall coping; for furnishing all excavation and removal of existing material from site; for any staking necessary to layout the wall; and for furnishing all shop drawings, samples, mock-ups.

## **93. Irrigation Service #3, Item SPV.0105.203.**

### **A Description**

This special provision describes furnishing and installing a water service and related appurtenances for irrigation as shown on the Drawings near Station 82+72 and as hereinafter provided.

### **B Materials**

#### **B.1 Copper Pipe and Fittings**

Copper tubing shall be "soft annealed" and shall conform to the standards for "Type K," prescribed in ANSI/AWWA C800-89 Section A.2 for "Copper Water Tubing" and to ASTM, designation B42 and B88-99, and current revisions thereof.

It shall be free from grooving cracks, indentations, flaws or other defects. At intervals of not greater than one and one-half feet, the tubing shall bear clear, permanent markings indicating the type and manufacturer.

"Flared" type fittings shall be used.

Unions shall be extra heavy three-part unions. Each fitting shall bear a clear, permanent marking indicating the manufacturer. Fittings shall be of cast brass meeting the requirements of ASTM B62. They shall be well made to assure uniformity in wall thickness and strength and shall be free from any defect which may affect their serviceability.

**B.2 Service Saddle**

Service saddle shall be bronze with AWWA taper thread, double strap, and conforming to Milwaukee Water Works Specification No. 30-B-9c. Service saddle shall conform to AWWA C800 standard for underground service line valves and fittings.

**B.3 Galvanized Steel Piping and Fittings**

Galvanized Steel Piping shall be thoroughly zinc coated (galvanized), Schedule 40 or heavier.

All fittings shall be rated 125 psi or greater.

**B.4 Inverted Hose Bib with Vacuum Breaker**

The hose bib shall be an inverted brass bib with loose key and rated for 125 psi standard working pressure.

Vacuum breaker shall be a hose connection type vacuum breaker conforming to ASSE 1011. Body shall be brass and rated for 125 psi standard working pressure.

**B.5 Atmospheric Vacuum Breaker**

Atmospheric Vacuum breaker shall be pipe applied vacuum breaker conforming to ASSE 1001. Body shall be brass and rated for 125 psi standard working pressure.

**B.6 Irrigation Valve Box and Cover**

Valve box and cover shall be made of heavy duty plastic design. Size shall be “Jumbo”. Cover and box shall be green as manufactured by Ametek Inc.

**B.7 Bedding and Backfill Materials**

Bedding and backfill materials shall conform to Milwaukee Water Works Water Service Piping Specifications and City of Milwaukee Water Main Installation Specifications. Backfill for piping that is below vegetated areas and has less than 24” cover shall be bedding sand.

**B.8 Polyethylene Wrap**

Copper services shall be covered with a polyethylene envelope for a distance of six feet from the connection to the public water main along the service pipe.

Polyethylene film shall be manufactured and tested in accordance to AWWA C105/A21.5 and:

- Polyethylene wrap shall be Class “C” (black).
- The polyethylene envelope shall be free of gels, streaks, pinholes, particles of foreign matter, and undispersed raw materials. There shall be no visible defects such as holes, tears, blisters, or thinning out at folds.
- The tape shall be thermoplastic material with pressure sensitive adhesive face.



### **B.9 Pipe Location Materials**

Mark all non-conductive lateral pipes with a locating wire system.

Locating wire system consists of the following:

- Tracer Wire: 45-mil solid copper, No. 12 HMW-PE yellow jacket coating. Install to enable electronic locating of underground utility.
- Tracer Wire Locating Box: 2-1/2-inch diameter, minimum, ABS pipe with 2 point terminal box and cast iron cover.

### **C Construction**

Coordinate all construction with the City of Muskego Water Utility.

Construct and test water service in accordance to Chapter 3 of the Milwaukee Water Works Water Service Piping Specifications, Subchapter IV of Wisconsin Administrative Code Chapter Comm 82, and the City of Milwaukee Water Main Installation Specifications. Install polyethylene wrap in accordance to Appendix L of the Milwaukee Water Service Piping Specifications.

The locations of the irrigation services shown on the drawings are general in nature. The contractor shall provide all fittings and piping as necessary to construct the water services.

Contractor shall core existing phase 1 manhole and connect to existing water service constructed with Phase 1 for Phase 2 irrigation water feed. Provide watertight seal for manhole penetration.

Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil. Support all utilities that are exposed due to trenching and excavations. Provide excavation dewatering as needed to facilitate construction.

Coordinate irrigation service construction with landscape planting and roadway operations

### **D Measurement**

The department will measure Irrigation Service #3 as a single lump sum unit of work for the construction of the irrigation service and related appurtenances, 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.0105.203	Irrigation Service #3	LS

Payment is full compensation for furnishing and installing the irrigation service and related appurtenances in accordance to the drawings.

## **94. Irrigation Zones, Item 0105.204.**

### **A Description**

Design and install electric solenoid controlled irrigation system, with pressure blow out drain for areas shown on plans to irrigate all planting bed areas with drip line irrigation. Provide initial water for landscaped areas at a rate of 1 inch per week.

Each station zone will have a metered municipal service connection installed under separate bid item. The service will be varying diameter copper, with available static pressure of approximately 57 psi. Refer to irrigation plans. Piping shall be rated at 100 psi for Polyethylene or 160 psi for Poly Vinyl Chloride minimum. Provide isolation valves for each lawn/planting bed area (for each planting area separated by paving). battery powered controllers shall be used. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction. System Control: SVC 100 and SVC 200 shall be installed in existing irrigation service vault. Weather Sensor shall be installed on vacuum break at each station. Low Voltage Controls: 24 volts. Provide maintenance/service for irrigation system for one year after substantial completion to include one system start-up and one system shutdown.

Contractor shall be responsible for locating the existing irrigation sleeves installed during the roadway project prior to submitting an irrigation design for approval by the landscape architect.

### **B Materials**

#### **B.1 Pipe Materials**

Piping shall be from virgin parent material and shall be homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, deleterious wrinkles and dents. Pipe shall be National Sanitation Foundation (NSF) approved.

Piping on high-pressure side of solenoid control valves (main), shall be Polyvinyl Chloride (PVC) 1120 with a minimum class rating of 200 psi, SDR-21.

Pipe shall be marked at intervals (not to exceed 5 feet) with following information: Manufacturer's name or trademark, nominal pipe size, schedule, PVC type and grade (i.e., PVC 1120), SDR rating class, working pressure at 73 degrees F. and (NSF) approval.

Piping on low pressure side of solenoid control valves (laterals) shall be polyethylene (PE) with a minimum class rating of 100 psi.

Polyvinyl Chloride (PVC) 1120 with a minimum class rating of 160 psi, may be freely substituted for the specified polyethylene pipe.

Piping used as Sleeve Material shall be Polyvinyl Chloride (PVC) 1120, Schedule 40 rating.

## **B.2 Fittings**

Fittings shall be from virgin parent material and shall be homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, deleterious wrinkles and dents. Fittings shall be National Sanitation Foundation (NSF) approved.

Usage:

- Fittings specified for use on high-pressure side of solenoid control valves shall be PVC, Schedule 40.
- Fittings specified for use on low-pressure side of solenoid control valves shall be PVC Schedule 40 pipe.
- All threaded PVC shall be Schedule 80 pipe.
- Insert fittings specified for use with polyethylene pipe shall be Type 1 PVC, Schedule 40.

Solvent used for PVC pipe shall bear NSF approval.

Hose clamps used for PE pipe shall bear NSF approval and shall be stainless steel bands with stainless steel hex-head or irrigation crimp clamps.

## **B.3 Shut-Off Valves**

Shut-off valves shall be bronze double-disc wedge type gate valves, with integral taper seats and non-rising stems (same size as line).

## **B.4 Quick Couple Valves**

Quick Couple Valves shall be furnished with one valve key and fitted with 3/4-inch swivel hose. Acceptable manufacturers are as follows:

- Hunter
- Rain Bird
- Toro
- Or approved equal

## **B.5 Irrigation Valve Boxes**

Valve boxes and covers shall be molded of green temperature resistant thermoplastic materials suitable for enclosing main and lateral valves as detailed, as manufactured by Ametek Inc., (414) 457-9435.

## **B.6 Drip Irrigation**

Drip Line and Integral Drip Line Components: Drip line shall be pressure compensating continuous self-cleaning drip line, with check valves spaced at 24 inches on center with 18 inch emitter spacing and traced with metal tracing wire, as manufactured by Hunter, (760) 744-5240.

## **B.7 Controls And Control Valves**

Controller shall be SVC 100 and SVC 200 as manufactured by Hunter, (760) 744-5240.

Valves: PGV Globe valve with flow control pressure regulator in size capable of serving zone as manufactured by Hunter, (760) 744-5240. Utilize a stainless steel Y filter for valves serving drip irrigation.

Wire Conductors: Color coded, copper conductor, direct burial type.

### **B.8 Electrical Control Wiring**

Electrical Characteristics: In accordance to Division 26, National Electrical Code, and irrigation system manufacturer's requirements.

Wiring specified for low voltage solenoid valve operations shall be in compliance with local electrical codes, and UL approved for direct burial applications.

Solid copper wiring of varying color insulation shall be minimum 16 gauge, sized per current draw at longest run. Multi-conductor cable shall be 18 gauge Irrigation Direct Bury.

Common ground wire shall be white insulated, 14 gauge.

Wire splicing is permitted at intervals of 400 linear feet or greater, utilizing UL approved direct bury splice kit with gel-filled reservoir.

### **B.9 Pipe Location Materials**

Mark all non-conductive lateral pipes with a locating wire system.

Locating wire system consists of the following:

- Tracer Wire: 45-mil solid copper, No. 12 HMW-PE yellow jacket coating. Install to enable electronic locating of underground utility.
- Tracer Wire Locating Box: 2-1/2-inch diameter, minimum, ABS pipe with 2 point terminal box and cast iron cover.

## **C Construction**

Verify location of existing utilities before beginning work.

Verify required utilities are available, in proper location, and ready for use.

- Irrigation contractor shall carefully schedule his work with Landscape contractor and other roadway operations.

Layout irrigation equipment accurately to represent approved Shop Drawings.

Sleeves are required wherever piping or electrical wires are placed under paved surfaces. Sleeves are to be installed under separate bid item.

Full and complete coverage is required. Contractor shall make any necessary minor adjustments to layout as required to achieve full coverage of irrigated areas at no additional cost to Owner.

Contractor shall be responsible for establishing location of sprinkler heads in order to assure proper coverage of all areas. In no case shall spacing of sprinkler heads exceed distances shown on Drawings. Pipe sizes shall conform to those shown on Drawings. Pipe damaged or rejected because of defects shall be removed from site at time of said rejection.

Install irrigation system after completion of final site grading. Irrigation system shall be installed and completely operational three days prior to installation of any planting operations. See irrigation plans for local utility contact information.

#### **Point Of Connection**

Contractor to verify that adequate gpm and psi are available at irrigation supply points of connection.

#### **Trenching**

Perform excavations as required for installation of work included under this Section, including shoring of earth banks, if necessary. Restore surfaces and existing underground installations that may become damaged.

Should utilities not shown on Drawings be found during excavations, Contractor shall promptly notify Owner's Construction Representative for instructions regarding further action. Failure to do so will make contractor liable for any and all damage thereto arising from his operations subsequent to discovery of such utilities. Indicate such utility crossings on Record Drawings promptly.

Trenches shall be open, vertical sided construction wide enough to provide free working space around work installed and to provide ample space for backfilling and compacting.

When two pipes are to be placed in the same trench, maintain a 6-inch space between pipes. Contractor shall not install two pipes with one directly above the other.

Backfill trenches located under paving with No. 2 Stone as specified in Section 32 90 00, and compact in layers to 95 percent modified Proctor density.

Depth of trenching shall be sufficient to protect finished buried services, whereas the following minimum cover is required:

- 12 inches above lateral piping.
- 18 inches above main supply piping.
- 18 inches above low-voltage wiring.
- 24 inches above sleeves at paved surfaces.

**Pipe Installation**

Install plastic and Polyethylene pipe and fittings in a manner so as to provide for expansion and contraction as recommended by manufacturer.

Clean pipes and fittings of dirt, burrs, and moisture prior to assembly.

Pipe, fittings, valves, etc., shall be carefully placed in trenches. Keep interior of pipes free from dirt and debris and when pipe laying is not in progress, close open ends of pipe by approved means.

Polyvinyl chloride piping may be pulled with vibrator plow.

Make lateral connections to mainline, as well as all other connections, to side of pipes. No connections to top of pipe shall be allowed.

Connections and joints of PVC and PE pipe shall be performed as specified by manufacturer.

- Solvent weld products for PVC pipe is listed in specification. Enlarged view detail is provided on Irrigation Detail sheet.
- Threaded joints for PVC pipe shall be permitted with Schedule 80 pipe only.
- Use Teflon tape on threaded PVC fittings.
- Use strap-type friction wrench only. Do not use metal-jawed wrench.
- When connection is plastic to metal, male adaptors shall be used. Male adaptor shall be hand tightened, plus one turn with a strap wrench.
- Hose clamp products for PE pipe are listed in specification. Enlarged view detail is provided on Irrigation Detail sheet.
- Double clamp all connections 1-1/4-inch diameter and greater.
- Make connections between polyethylene pipes and metal valves or pipes with threaded fittings using male adaptors.

**Laying of Pipe:**

- Cut PVC pipe with pipe cutters or hacksaw in a manner so as to ensure a square cut. Remove burrs at cut ends prior to installation so that a smooth, unobstructed flow will be obtained.
- Plastic to plastic joints will be solvent-weld joints. Install plastic pipe and fittings as outlined and instructed by pipe manufacturer.
- Install PVC pipe and fittings in a manner so as to provide for expansion and contraction as recommended by manufacturer.
- Do not lay PVC pipe when there is water in trench.
- Snake PE pipe from side to side of trench bottom to allow for expansion and contraction. 4 additional feet per 100 feet of pipe is minimum allowance for snaking.

**Thrust Blocks:**

- Provide brick/concrete thrust blocks on thrust side of PVC pipe wherever pipe line:
- Changes direction, as at tees or bends.
- Dead ends.
- Any other spot where thrust is to be expected.
- A complete example of thrust block locations is provided on Irrigation Detail sheet.

**Valve Installation**

Install valves as nearly as possible in positions indicated on Drawings consistent with conveniences of operating the wrench. Valves shall be carefully erected and supported in their respective positions free from distortion and strain or appurtenances during handling and installation. Material shall be carefully inspected for defects in workmanship and material, debris and foreign material cleaned out of valve openings and seats, operating mechanisms operated to check their proper functioning, and nuts and bolts checked for tightness. Valves and other equipment which do not operate easily or are otherwise defective shall be repaired or replaced at contractor's expense. Set valves plumb and support adequately in conformance with instructions of manufacturer. Valves are to be located, as best as possible, to be concealed from view.

Install valve boxes on a suitable base of Number 2 stone for proper foundation of box and easy leveling of box to proper grade and to provide proper drainage of access box. Provide valve boxes with proper length and size extensions, wherever required, to bring valve boxes level with finished grade or 1-inch above when sited within ground cover and shrub bed areas.

**Shut-off Valves:**

- Locate bronze gate valves as shut-off valves within lawn areas, enclosed within valve box.

**Solenoid Station Valves:**

- Install control valves in existing irrigation service vaults.
- Pressure regulating control valves shall be adjusted so that most remote sprinkler heads operate at pressure specified.
- Install valves in accordance to manufacturer's instructions and specifications.

**Quick Coupling Valves:**

- Set quick coupling valves a minimum of 12 inches from walks, curbs, or paved areas where applicable or as otherwise noted. House quick coupling valves in same valve box with station valve.
- Install valves on a three elbow PVC Schedule 80 swing joint assembly.

Set sprinkler heads and quick coupling valves perpendicular to finished grades unless otherwise designated on Drawings, or otherwise specified. Set sprinkler heads adjacent to existing walls, curbs and other paved areas, to grade. Set sprinkler heads which are to be installed in lawn areas where turf has not yet been established 1-inch above proposed finish grade. Heads installed in this manner will be lowered to grade when turf is sufficiently established to allow walking on it without appreciable destruction. Such lowering of heads shall be done by contractor as part of original contract with no additional cost to Owner.

### **Dripline Installation**

Install drip line on top of finished grade, just below mulch, with soil clamps.

Place drip line a minimum of 2 feet away from building walls and foundations.

Locate drip line as shown on Drawings based on soil conditions, plant material locations, and designed precipitation rates.

Trace dripline pipes and accessories with tracer wire.

### **Controller Installation**

Install automatic controller in existing irrigation service vaults.

Connect solenoid station valves to controller in sequence to correspond with station setting beginning with Stations 1, 2, 3, and so on.

Important: It is Landscape contractor's responsibility to determine water application rates and timer cycling. Irrigation contractor will instruct Landscape contractor on operation and programming of controller and will assist Landscape contractor as necessary in such operations throughout the one year maintenance period. Any adjustments or repairs, other than programming, are responsibility of Irrigation contractor.

### **Control Wiring**

Electrical equipment and wiring shall comply with local and state codes and be installed by those skilled and licensed in the trade.

Wiring shall occupy same trench and be installed along same route as main supply or lateral piping wherever possible, and shall have a minimum of 18-inches cover.

Install control wires to side of main line whenever possible. Placement over pipes is not permitted.

Where more than one wire is placed in a trench, tape wiring together at intervals of 20 feet.



Provide an expansion curl within 3 feet of each wire connection and at least every 100 feet of wire length on runs of more than 100 feet in length. Form expansion curls by wrapping at least 5 turns of wire around a 1-inch diameter pipe, then withdrawing pipe.

Control wire splices at remote control valves to be crimped and sealed with specified splicing materials. Line splices will be allowed only on runs of more than 400 feet and they must be located in 10-inch round splice boxes which are green in color. Connector shall be 3M#DBY splice kit.

Main line shall have 6 spare wires or multi conductor cable installed its entire length and to automatic controller. Label each end "not used."

### **Flushing The System**

Thoroughly flush out water lines under a full head of water before installing heads, valves, quick coupler assemblies, etc. Maintain flushing for a minimum of 3 minutes at valve located furthest from water supply.

After flushing, cap or plug openings to prevent entrance of materials that would obstruct the pipe or clog heads. Leave in place until removal is necessary for completion of installation.

### **Testing**

Testing shall be done under the supervision of Construction Manager. Submit written requests for inspections to Owner's Construction Representative at least 3 days prior to anticipated inspection date.

Perform hydrostatic tests when welded PVC joints have cured as per manufacturer's instructions.

- Pressurized Mains: In accordance to National Irrigation Association Standards.
- Pressurized Laterals: In accordance to National Irrigation Association Standards.
- Pressurized Drip Lines:
- Test piping after drip lines and accessories have been installed, but before being covered with mulch.

Upon completion of testing, complete assembly and adjust sprinkler heads and drip lines for proper distribution.

### **Inspection**

Contractor shall maintain proper facilities and provide safe access for inspection to all parts of the work.

Irrigation inspection shall consist of a minimum of:

- Mainline pressure test.
- Coverage test.
- Final irrigation inspection.

In all cases where: specifications, Landscape Architect's instructions, laws, ordinances, or any public authority require any work to be specifically tested or approved by them; contractor shall give engineer, City Representative, and Landscape Architect 3 days notice of its readiness for inspection.

Contractor shall be solely responsible for notifying Owner's Construction Representative where and when such work is in readiness for testing.

No inspection will commence without accurate Record Drawings, without completing previously noted corrections, or without preparing system for inspection.

### **Backfilling And Compaction**

After system is operating and required tests and inspections have been made, backfill excavations and trenches.

Backfill for all trenches, regardless of type of pipe covered, shall be compacted to minimum 95 percent modified Proctor density under pavements, 85 percent modified Proctor density under planted areas.

Backfill material shall be approved soil. Unsuitable material, including clods and rocks over 2 inches in size shall be removed from site.

Place a fine granular material initially on all lines with a minimum of 3 inches cover. No foreign matter larger than ½ inch in size shall be permitted in initial backfill.

Backfill trenches located under paving with No. 2 Stone. Compacted in layers to 95 percent modified Proctor density.

Compact trenches in areas to be planted, by thoroughly flooding backfill through use of adjacent Quick Coupling Valves.

Within planting and lawn areas, restore existing 6 inches of topsoil and re-establish finish grade.

Contractor shall dispose of surplus earth on site and #2 stone remaining after backfilling at an off-site location.

**Adjusting**

Adjust control system to achieve time cycles required.

Change and adjust head types for full water coverage.

**Demonstration And Training**

Instruct Owner's personnel in operation and maintenance of system, including adjusting of sprinkler heads. Use operation and maintenance material as basis for demonstration.

**D Measurement**

The department will measure Irrigation Zones as a single lump sum unit of work for the construction of the irrigation system and related appurtenances, 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.0105.204	Irrigation Zones	LS

Payment is full compensation for furnishing and installing the irrigation system and related appurtenances in accordance to the Drawings.

**95. Concrete Paver Paving – 100 mm, Item SPV.0165.200; Concrete Paver Paving – 80 mm, Item SPV.0165.201.**

**A Description**

This special provision describes installing all of the concrete base and 18-inch concrete header at paver crosswalks, bituminous tack coat and paver setting bed; for cutting of the concrete pavers to fit and setting the concrete pavers as shown on the plans, provide and install tie bars at concrete paver crosswalks; provide PVC piping and filter fabric at weep holes as directed by the engineer, and has hereinafter provided. Construction work includes the excavation and removal of existing material from project site in order to construct the concrete base.

**B Materials**

18-inch concrete header and concrete base for roadway crosswalks, medians and pedestrian walkway areas to be provided as described in standard spec 602 Concrete Sidewalks.

Concrete Paver Manufacturer:

Belgard Hardscapes – Style: Urbana 80mm and 100mm or approved equal.

2200 S Main Street

West Bend, WI 53095

Contact Nate Gish, (262) 707 3974.

Paver Type:

Concrete pavers to be 'Urbana' 80mm and 100mm (or approved equal), in accordance to ASTM C936, Hydraulically pressed concrete of 8,000 psi minimum, 28 day compressive strength.

Freeze Thaw Cycles: Resistant to 50 freeze-thaw cycles when tested to ASTM C67.

Moisture absorption: Less than 5%.

Nominal Sizes:

Belgard – Urbana 80mm Pavers:

- 4 inches X 8 inches X 3.15 inches/80mm
- 8 inches X 8 inches X 3.15 inches/80mm
- 8 inches X 12 inches X 3.15 inches/80mm
- 12 inches X 12 inches X 3.15 inches/80mm
- 

Belgard – Urban 100mm Pavers:

- 4 inches X 8 inches X 4 inches/100mm
- 8 inches X 8 inches X 4 inches/100mm
- 8 inches X 12 inches x 4 inches/100mm
- 12 inches X 12 inches X 4 inches/100mm
- 

Style: Interlocking.

Surface Texture: Slate Cleft, 0-3mm.

Integral aggregate: Black and Brown Trap Rock/Trap Sand 100 percent.

Color: ASTM C979, a blend of brown to buff to charcoal as selected by owner from manufacturer's standard range.

Ashlar Pattern:

- Ashbury Haze – 30 percent
- Brookstone Slate – 5 percent
- Cotswold Mist – 15 percent
- Gascony Tan – 50 percent

Perimeter paver courses:

- Brookstone Slate – 100 percent

Paving Pattern: Provide Typical Ashlar Paving Pattern as indicated on streetscape details.

Bituminous Setting Bed for interlocking concrete pavers shall be made from the following materials:

- Asphalt cement to be used on the bituminous setting bed shall conform to ASTM Designation D-3381 the viscosity grade A.C. 10 or A.C. 20.
- The fine aggregate to be used in the bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coatings, lumps of clay, alkali salts and organic matter. It shall be uniformly grades from “course” to “fine” and all passing the No. 4 sieve and meet the gradation requirements when tested in accordance to the standard of test for sieve or screen analysis of fine and course aggregates ASTM Designation C-136-81.
- The dried fine aggregate shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees F at an asphalt plant. The approximate proportion of materials shall be seven (7) percent asphalt cement and ninety-three (93) percent fine sand. Each ton shall be apportioned by weight in the approximate ratio of 145 pounds asphalt to 1,855 pounds of sand. The contractor shall determine the exact proportions to produce the best possible mixture for construction of the bituminous setting bed to meet construction requirements.
- Neoprene-Modified Asphalt Adhesive Under Interlocking Concrete Pavers:  
Mastic (asphalt adhesive):  
Solids (base).....75+1%  
Pounds/Gallons.....8-8.5 pounds  
Solvent.....Varsol (over 100 F. Flash)
- BASE (2% Neoprene, 10% fibers, 88% Asphalt):  
Melting Point – ASTM D-36.....200 F.Min.  
Penetration.77 F. 100 Gram Load five Second (.1mm).....23-27  
Ductility-ASTM D-113-44 at 25 C. 5cm/per minute..... 125cm Min.

Sand for joints shall be polymeric sand consisting of quartz and crystalline silica, 80-95 percent of product by volume and a proprietary water-activated polymer/organic ingredient that acts as a binder between sand particles. Color shall be Ochre. Manufacturer to be TechniSeal or approved equal.

Paver edge restraint: 4000 Series heavy duty “L” shaped aluminum paver edge restraint, 3-inch x 3-inch as manufactured by Curv-Rite or approved equal; color to be black. Aluminum alloy 6061 with a T-6 hardness.

PVC Weeps: PVC schedule 40, 2-inch diameter.

Extra Materials: Provide enough material for paving as shown on drawings, including pieces to be cut.

Supply 20 of each paver size and color as replacement pavers for City of Muskego. Deliver to City of Muskego as directed by Jeff Muenkel.

Shop Drawings: Indicate on shop drawings, layout of pavers, special paving pattern layout, layout of curbs and borders, dimensions of paved areas, control joints, expansion joints, elevations and affected adjacent construction.

Product Data: Submit data on characteristics of paver unit, dimensions, special shapes and setting materials.

Samples: Submit two samples of each paver size, illustrating style, color range, surface finish and texture and one sample of paver edge restraint (minimum 12 inches long) to Jeff Muenkel, City of Muskego Community Development Director, (262) 679-4136, for approval prior to construction.

Mock-up: Construct mock-up, as scheduled below, including sand setting bed, concrete pavers, curbs and border, joint sealers, control joint, expansion joint and accessories to pattern indicated:

- Concrete paver paving layout as indicated on Streetscape Detail # 10 (Typical Crosswalk Layout Detail – Concrete Pavers), minimum 4 feet by 4 feet to show 45 degree typical ashlar paving pattern and perimeter concrete paver course.
- Concrete paver paving layout as indicated on Streetscape Detail # 18 (Typical Layout Plan – Concrete Pavers at Median Seat Wall), minimum 4 feet by 4 feet to show paver layout between back of curb and median seat wall and paver layout between adjacent lawn and median seat wall.
- Concrete paver paving layout as indicated on Streetscape Detail # 19 (Typical Layout Plan – Concrete Pavers at Medians), minimum 4 feet by 4 feet to show 16" wide plant bed perimeter pavers and typical ashlar paving pattern at median noses.
- Concrete paver paving layout as indicated on Streetscape Detail #23 (Typical Layout Detail – Concrete Pavers at Roadway Corner), minimum 6 feet by 6 feet to show typical ashlar paving pattern (repeated) and 8" x 8" x 3.15" perimeter paver course at edge of paver field and around truncated dome panels.

Approval of mock-up by Jeff Muenkel, City of Muskego Community Development Director is required prior to beginning construction. Failure to receive mock-up approval may result in rejection of work. The approved mock-up will be the standard from which the work will be judged and approved by the owner's representative. Incorporate accepted mockup as part of work.

Locate mockup where directed by owner's representative.

Notify the owner's representative and the City of Muskego, Jeffrey Muenkel, 7 days in advance of dates and times when mock ups will be constructed.

**Qualifications:**

Manufacturer: Company specializing in manufacturing products specified in this section with minimum of 10 years documented experience.

Paver Installation Contractor: Contractor must have a minimum of 5 years of documented, successful concrete paver experience on projects of similar magnitude and complexity to that of this project. Contractor to be prequalified by Waukesha County and Wisconsin Department of Transportation prior to bidding. Failure to prequalify will void bid.

**C Construction**

Install the 4-inch and 4.31-inch concrete base as described in standard spec 602.

Placing bituminous setting bed for interlocking concrete pavers:

- To install the setting bed over the base surface, place ½" deep control bars directly over the base. Grade must be adjusted by placing plastic shims under depth control bars to proper grade. Set two bars parallel to each other approximately 9 foot6 inches apart to serve as guides for striking board (10'x2"x4"). The depth control bars must be set carefully to bring the pavers, when laid, to proper grade.
- Place some bituminous bedding material between the parallel depth control bars. Pull this bed with the striking board over these bars several times. After each passage, low porous spots must be showered with fresh bituminous material to produce a smooth, firm and even setting bed. As soon as this initial panel is completed, advance the first bar to the next position, in readiness for striking the next panel.
- Carefully fill up any depressions that remain after removing the depth control bar and plastic shims while asphalt is still hot and before compaction.
- The setting bed shall be rolled with a power roller to a nominal depth of ¾" while still hot. The thickness shall be adjusted so that when the interlocking concrete pavers are placed, the top surface of the pavers will be at the required finished grade, approximately 3/16" above the adjacent surface.

Install aluminum paver edge restraint as indicated in the streetscape details before placing concrete paver paving. Use paver edge restraints along all unrestrained paver edges.

Installation of interlocking concrete pavers:

- After the neoprene modified asphalt adhesive is applied, carefully place the pavers by hand in straight courses with hand tight joints and uniform top surface. Good alignment must be kept and install the concrete pavers in patterns as shown in the plans.

Lay concrete pavers over concrete base, Base Aggregate Open Graded, 3/4" Bituminous Setting Bed, Tack Coat and Neoprene Modified Asphalt Adhesive. Pavers shall slope evenly and be flush with the surrounding masonry. The face of the pavers shall be flush with the finished street or sidewalk surface. Maximum variation of surface flatness: 1/8-inch. Maximum variation of brick joints: 1/32-inch.

Concrete Pavers:

Place paver units in pattern as shown in the plans from straight reference line. Place any cut pavers for perimeter courses in middle of runs. Machine saw partial units. Maintain tight joints between pavers and at abutting vertical surfaces and protrusions. Maintain uniform joint width of 1/16-inch between pavers and at abutting vertical surfaces and protrusions. Install full-depth expansion joints as indicated on Drawings. Form control and expansion joints as detailed with sealant and backing rod. Form control joints in concrete 3/8-inch wide. Form expansion joints in concrete pavers 3/8-inch wide. Place polymeric sand in accordance to sand manufacturer's written specifications.

Cleaning:

Do not clean pavers until pavers and mortar are dry for minimum of three days. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials or adjacent surfaces. Use non-metallic tools in cleaning operations. Rinse surfaces thoroughly with clean water. Broom clean paving surfaces. Dispose of excess sand.

Do not permit traffic over unprotected paver surface for seven days. Protect with plywood.

## **D Measurement**

The department will measure Concrete Paver Paving (mm) in area by the square 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.0165.200	Concrete Paver Paving – 100 mm	SF
SPV.0165.201	Concrete Paver Paving – 80 mm	SF

Payment is full compensation for furnishing and installing all Concrete Paver Paving, concrete base, concrete header, bituminous tack coat and setting bed; for furnishing all excavation and removal of existing material from site; and for furnishing all shop drawings, samples, mock-ups, labor, materials, equipment, tools, and incidentals necessary to complete the work as shown on the plans and as described herein.



Incidentals to include: bituminous tack coat and setting bed, polymeric joint sand, 2-inch PVC weeps, filter fabric, expansion joint materials, galvanized steel edge restraint and associated hardware.

## **96. Test Rolling, Item SPV.0170.01.**

### **A Description**

This special provision describes the testing of the stability of the finished earth subgrade by rolling with a tri-axle dump truck, the restoration of any soft or yielding areas evidenced by the test rolling, and retesting as determined by the engineer.

### **B Equipment**

Fully load a tri-axle dump truck to within 3 tons of the vehicle legal load limit and provide a minimum gross vehicle weight of 30 tons. Uniformly inflate all tires to the pressure recommended by the manufacturer for the applicable wheel load.

### **C Construction**

Completely compact and shape the subgrade to approximate grade and cross section; but not yet staked for blue top grades for areas to be tested. Test roll at normal walking speed under the direction of the engineer or his representative.

Roll the earth subgrade at a width equal to the finished base course width. Make multiple passes throughout the length of the subgrade test area. Center each pass on a proposed lane or applicable shoulder. When the shoulder width is less than 8 feet, the engineer will determine the number and location of passes required such that any wheel track will be within 3 to 4 feet of the previous adjacent wheel track.

Repair and consolidate any soft or yielding areas or depressions evidenced under the action of the test rolling to withstand retesting. Excavate and replace any unstable material from the roadbed with selected materials. Correct any yielding subgrade areas discovered during the test rolling operations prior to blue top staking and finish grading operations. Perform corrective work in accordance to the standard specifications.

### **D Measurement**

The department will measure Test Rolling by the station along the roadway centerline or reference line, acceptably completed. The department will measure two or more separate roadways by the station along each separate roadway as designated on the plans.

### **E Payment**

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0170.01	Test Rolling	STA

Payment is full compensation for performing the Test Rolling; for any preparation of the subgrade, including the furnishing and incorporation of water, if required; for retesting as determined by the engineer and for restoration of the subgrade.

## 97. Geogrid Reinforcement, Item SPV.0180.001.

### A Description

This special provision describes furnishing and installing geogrids for subgrade stabilization, base reinforcement, or pavement structure applications in accordance to the plans, standard spec 645, and as hereinafter provided.

### B Materials

Provide geogrid that consists of either single or joined multiple layers of a uniform rectangular grid of bonded, formed, or fused polymer tensile strands crossing with a nominal right angle orientation. The polymer shall consist of polyester, polypropylene, polyamide, or polyethylene. The grid shall maintain dimensional stability during handling, placing, and installation. The geogrid shall be insect, rodent, mildew, and rot resistant. Minimum geogrid width shall be 6.0 feet.

Provide geogrid that complies with the following physical properties:

Test	Method	Value <sup>(1)</sup>
Tensile Strength at 5% Strain, Both Principal Directions (lb/ft)	ASTM D 4595 <sup>(2)</sup>	450 min.
Flexural Rigidity Both Principal Directions (mg-cm)	ASTM D 1388 <sup>(3)</sup>	150,000 min.
Aperture Area (in <sup>2</sup> )	Inside Measurement <sup>(4)</sup>	5.0 max
Aperture Dimension (in)	Inside Measurement <sup>(4)</sup>	0.5 min.

<sup>(1)</sup> All numerical values represent minimum/maximum average roll values, i.e. the average minimum test results on any roll in a lot should meet or exceed the minimum specified value.

<sup>(2)</sup> The tensile strength (T) of a joined multi-layered geogrid shall be computed using the following equation:

$$T = n(f)t$$

where

$n$  = the number of individual layers in the joined multi-layered geogrid,

$t$  = the tensile strength of a single layer of geogrid as determined using testing method ASTM D4595, and

$f$  = reduction factor based on the number of layers comprising the multi-layered system and determined by the equation  $f=1.00 - [0.04(n - 1)]$ .

<sup>(3)</sup> Values shall be determined by Option “A” (Cantilever Test) of testing method ASTM D1388 using test specimens that are 36 inches  $\pm 0.04$  inch long. Test specimen widths for differing geogrids shall be variable and equal to 1 element plus  $\frac{1}{2}$  the aperture width on both sides of that element. An element is defined as the minimum number of parallel strands that form a distinguishable repeating pattern.

<sup>(4)</sup> Aperture Area and Aperture Dimension for joined multi-layer geogrids shall be determined based on measurement of a single layer of the geogrid.

Protect the geogrid from ultraviolet radiation and from damage due to shipping and handling. Keep the geogrid dry until it is installed. The geogrid rolls shall be clearly marked to identify the material contained.

Deliver a sample of the geogrid material to the engineer at least 10 days prior to its incorporation into the work. At the same time, furnish a manufacturer’s Certified Report of Test or Analysis that verifies that the geogrid delivered for use on the work meets the above requirements. Samples of geogrid for test purposes will be obtained from the job site for each 10,000 square yards or portions thereof used on the contract.’

## **C Construction**

Prior to placement of the geogrid, bring the indicated placement surface to the required lines, grades, and dimensions as shown on the plans. Smooth and shape the surface to eliminate any rocks, clods, roots, or other items that may cause damage to the geogrid during placement or covering.

Place the geogrid on the prepared surface at the locations and to the limits as shown on the plans. After placement, pull the geogrid taut and secure it using pins, clips, staples, or other devices to prevent movement or displacement. Place parallel strips of geogrid with a minimum overlap of 24 inches. Lap butt joints between roll ends a minimum of 12 inches. Fasten all lapped sections together by using ties, straps, clips, or other devices to develop a secure joint that meets the approval of the engineer. No vehicles or construction equipment shall be permitted to operate directly on the geogrid.

Cover small rips, tears, or defects in the geogrid with an additional section of geogrid; secure the additional geogrid in place so that it overlaps the damaged area by at least 3 feet in all directions. Remove and replace geogrid sections with large rips, tears, defects, or other damage at the direction of the engineer. All costs to repair or replace damaged or defective geogrid shall be the responsibility of the contractor.

After placement, cover the geogrid to the indicated depth with the type of material required on the plans or in the special provisions. Placing, spreading, and compacting of this material shall comply with the applicable sections of the standard specifications or special provisions except that the initial lift of material placed on the geogrid must be at least 4 inches. Place, spread, and compact the required backfill material so that the

geogrid is not displaced or damaged. The engineer may require changes in equipment and/or operations to prevent such damage or displacement.

**D Measurement**

The department will measure Geogrid Reinforcement by the square yard of surface area upon which the geogrid has been placed, 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.0180.001	Geogrid Reinforcement	SY

Payment is full compensation for furnishing, transporting, and installing the geogrid; and for furnishing and installing all devices and materials necessary to join or secure the geogrid in place.

**98. Geotextile Fabric, Type FF, Item SPV.0180.002.**

**A Description**

This special provision describes furnishing, installing and removing geotextile fabric and fabric hold down systems for filtering storm water as shown on the plans, as hereinafter provided, and as approved by the engineer.

**B Materials**

Provide type FF geotextile fabrics selected from the department's erosion control product acceptability list (PAL). Interested parties may obtain copies of the erosion control PAL and prequalification procedure from the Bureau of Technical Services.

**C Construction**

Geotextile Fabric, Type FF shall meet the pertinent requirements as set forth in standard spec 645.3 and as hereinafter provided: Install the Type FF geotextile fabric in accordance to the plan details for the intended use in such a manner to preclude ripping and tearing of the fabric, or otherwise rendering the fabric or assembly ineffective for its intended use.

**D Measurement**

The department will measure Geotextile Fabric, Type FF by the square yard, 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.0180.002	Geotextile Fabric, Type FF	SY

Price is full compensation for furnishing, transporting, installing and removing the fabric and fabric hold down systems.

**99. Shredded Hardwood Bark Mulch, Item SPV.0180.200.**

**A Description**

This special provision describes furnishing and installing Shredded Hardwood Bark Mulch as shown on the plans, and as hereinafter provided. Minimum mulch thickness to be 3-inches.

**B Materials**

Shredded Hardwood Bark Mulch shall be natural, shredded hardwood bark mulch, free of growth or germination inhibiting ingredients, and shall be no larger than 4-inches in any dimension, and suitable for top dressing of planting beds. No artificial coloration shall be added.

Samples: Submit sample demonstrating color, size and properties to Jeff Muenkel, City of Muskego Community Development Director, (262) 679-4136, for approval prior to construction.

**C Construction**

The installation of the Shredded Hardwood Bark Mulch shall be in accordance to the plans and details. Keep mulch minimum 2-inches away from all tree stems, woody stems and herbaceous shoots.

**D Measurement**

The department will measure Shredded Hardwood Bark Mulch by square yard of material, 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.0180.200	Shredded Hardwood Bark Mulch	SY

Payment is full compensation for furnishing, delivering and installing all Shredded Hardwood Bark Mulch.

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**ADDITIONAL SPECIAL PROVISION 1 (ASP 1)  
FOR TRANSPORTATION ALLIANCE FOR NEW SOLUTIONS (TrANS)  
PROGRAM EMPLOYMENT PLACEMENTS AND APPRENTICESHIPS**

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The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Section 5204(e) – Surface Transportation Workforce Development Training and Education, provides for 100 percent Federal funding if the core program funds are used for training, education, or workforce development purposes, including “pipeline” activities. The core programs includes: Congestion Mitigation and Air Quality Improvement (CMAQ) Program, Highway Bridge Program (HBP), Interstate Maintenance (IM), National Highway System (NHS), and Surface Transportation Program (STP). These workforce development activities cover surface transportation workers, including OJT/SS programs for women and minorities as authorized in 23 U.S.C. §140(b).

*TrANS* is an employment program originally established in 1995 in Southeastern Wisconsin. Currently TrANS has expanded to include TrANS program locations to serve contractors in Southeast (Milwaukee and surrounding counties), Southcentral (Dane County and surrounding counties including Rock County), and most Northeastern Wisconsin counties from locations in Keshena, Rhinelander and surrounding far Northern areas. TrANS attempts to meet contractor’s needs in other geographic locations as possible. It is an industry driven plan of services to address the outreach, preparation, placement and retention of women, minorities and non-minorities as laborers and apprentices in the highway skilled trades. These candidate preparation and contractor coordination services are provided by community based organizations. For a list of the TrANS Coordinators contact the Disadvantaged Business Enterprise Office at (414) 438-4583 in Milwaukee or (608) 266-6961 in Madison. These services are provided to you at no cost.

### ***I. BASIC CONCEPTS***

Training reimbursements to employing contractors for new placements, rehires or promotions to apprentice of TrANS Program graduates will be made as follows:

- 1) **On-the-Job Training, Item ASP.1T0G, ASP 1 Graduate.** At the rate of \$5.00 per hour on federal aid projects when TrANS graduates are initially hired, or seasonally rehired, as unskilled laborers or the equivalent.

Eligibility and Duration: To the employing contractor, for up to 2000 hours from the point of initial hire as a TrANS program placement.

Contract Goal: To maintain the intent of the Equal Employment Opportunity program, it is a goal that   4   (number) TrANS Graduate(s) be utilized on this contract.

- 2) **On-the-Job Training, Item ASP.1T0A, ASP 1 Apprentice.** At the rate of \$5.00 per hour on federal aid projects at the point when an employee who came out of the TrANS Program is subsequently entered into an apprenticeship contract in an underutilized skilled trade (this will include the Skilled Laborer Apprenticeship when that standard is implemented).

Eligibility and Duration: To the employing contractor, for the length of time the TrANS graduate is in apprentice status.

Contract Goal: To maintain the intent of the Equal Employment Opportunity program, it is a goal that 4 (number) TrANS Apprentice(s) be utilized on this contract.

- 3) The maximum duration of reimbursement is two years as a TrANS graduate plus time in apprentice status.
- 4) If a TrANS program is not available in the contractor's area and another training program is utilized, payment of On-the-Job Training hours may be approved by the Wisconsin Department of Transportation (WisDOT) if the training program meets the established acceptance criteria. Only On-the-Job Training Hours accumulated after WisDOT approval will be reimbursed as specified under Items ASP.1T0G and ASP.1T0A. For more information, contact the Disadvantaged Business Enterprise Office at the phone numbers listed above.
- 5) WisDOT reserves the right to deny payments under items ASP.1T0G and ASP.1T0A if the contractor either fails to provide training or there is evidence of a lack of good faith in meeting the requirements of this training special provision.

## ***I. RATIONALE AND SPECIAL NOTE***

The \$5.00 per hour now being paid for TrANS placements is intended to cover the duration of two years to allow for reaching entry-level laborer status. An additional incentive, the \$5.00 rate, would promote movement into the underutilized skilled trades' apprenticeships and applies until the individual completes their apprenticeship. These incentives benefit TrANS candidates by giving them a better opportunity to enter a skilled trade; benefits contractors who will be assisted in meeting their EEO profiles and goals; and benefits the public who will see the program reinforce larger public-private employment reform in Wisconsin. The pool of TrANS graduates was created for the purpose of addressing underutilization in the skilled trades, an objective that is further reinforced by a parallel retention pilot program, known as the Companywide Reporting. *Whether or not reimbursement is involved, the WisDOT reassures contractors who are in the Companywide Program that TrANS placements still contribute toward fulfilling the new hire goal of 50% women and minorities.* Based on data administered by United States Department of Labor (US DOL), the highway skilled trades remain underutilized for women statewide (less than 6.9%); and for minorities in all counties (% varies by county).

NOTE: *Unless using other advancement strategies, contractors are encouraged to use some or all of this monetary incentive to offset the cut in hourly wages an individual may incur when entering an apprenticeship if the full general laborer hourly rate has been previously paid. No special accounting measures are required.*

## ***II. IMPLEMENTATION***

The implementation of ASP 1 is intended to cover only the amount of time it takes for underutilization to be resolved across the trades. This will be measured annually at the county and/or state levels using data administered by WisDWD in relation to goals set by the USDOL-

OFCCP. With appropriate state and federal approvals, we may also do some measurement at the company level.

It is the contractor's responsibility to note on their Certified Payrolls if their employee is a TrANS graduate or a TrANS apprentice. The District EEO Coordinators utilize the information on the Certified Payrolls to track the hours accumulated by TrANS Graduates and TrANS apprentices on WisDOT contracts. Payment under this ASP 1 is made based on the hours recorded off of the Certified Payrolls. Tracking may eventually include improved linkages with the WisDWD apprentice database, information from company and committee level sources.

TrANS is nondiscriminatory by regulation, and is a tool for optional use by contractors to address the underutilization of women and minorities as laborers and apprentices in our industry's skilled trades.

#### **IV. TRANS TRAINING**

As part of the contractor's equal employment opportunity affirmative action program, training shall be provided to employees enrolled in apprenticeship and on-the-job training programs as follows:

The contractor shall provide on-the-job training aimed at developing full journey workers in the type of trade or job classifications involved. In the event the contractor subcontracts a portion of the contract work, the contractor shall determine how many, if any, of the trainees are to be trained by the subcontractor provided, however, that the contractor shall retain the primary responsibility for meeting the training requirements imposed by this special provision. The contractor shall also insure that this training special provision is made applicable to such subcontract.

Training and upgrading of minorities and women toward journey workers status is a primary objective of this training special provision. Accordingly, the contractor shall make every effort to enroll minority trainees and women (e.g., by conducting systematic and direct recruitment through public and private sources likely to yield minority trainees and women trainees); to the extent such persons are available within a reasonable area of recruitment. The contractor will be given an opportunity and will be responsible for demonstrating the steps that they have taken in pursuance thereof, prior to determination as to whether the contractor is in compliance with this training special provision. This training commitment is not intended, and shall not be used, to discriminate against any applicant for training, whether a member of a minority group or not.

No employee shall be employed as a trainee in any classification in which they have successfully completed a training course leading to journey workers status or in which they have been employed as a journey worker. The contractor should satisfy this requirement by including appropriate questions in the employee application or by other suitable means. Regardless of the method used, the contractor's records should document the findings in each case.

#### **V. APPRENTICESHIP TRAINING**

The Federal Highway Administration's (FHWA) policy is to require full use of all available training and skill improvement opportunities to assure increased participation of minority groups, disadvantaged persons and women in all phases of the highway construction industry. The FHWA On-the-Job Training (OJT) Program requires the State transportation agencies (STAs) to establish apprenticeships and training programs targeted to move women, minorities, and disadvantaged individuals into journey-level positions to ensure that a competent workforce is available to meet highway construction hiring needs, and to address the historical underrepresentation of members of these groups in highway construction skilled crafts.



The OJT Supportive Services (OJT/SS) Program was established in Title 23 Code of Federal Regulations (CFR), Part 230) to supplement the OJT program and support STA training programs by providing services to highway construction contractors and assistance to highway construction apprentices and trainees. The primary objectives of OJT/SS are:

- (1) To increase the overall effectiveness of the State highway agencies' approved training programs.
- (2) To seek other ways to increase the training opportunities for women, minorities, and disadvantaged individuals.

The STAs are responsible for establishing procedures, subject to the availability of Surface Transportation and Bridge Funds under 23 U.S.C. §140(b) (Nondiscrimination), for the provision of supportive services with respect to training programs approved under 23 CFR, Part 230(a) (Equal Employment Opportunity on Federal and Federal-aid Construction Contracts – including Supportive Services).

The contractor and subcontractor shall maintain records to demonstrate compliance with these apprenticeship requirements. Reasonable exemptions and modifications to and from any or all of these requirements will be determined by the Wisconsin Department of Transportation-Civil Rights Office. A request for an exemption or modification, with justification, shall be made in writing, addressed to WisDOT Civil Rights Office, 4802 Sheboygan Avenue, P.O. Box 7965, Rm. 451, Madison, WI 53707.

### ADDITIONAL SPECIAL PROVISION 3 DISADVANTAGED BUSINESS ENTERPRISE PROGRAM

#### 1. Description

##### General

- a. The disadvantaged business enterprise (DBE) requirements of 49 CFR Part 26 apply to this contract. The department's DBE goal is shown on the cover of the bidding proposal. The contractor can meet the specified contract DBE goal by procuring services or materials from a DBE or by subcontracting work to a DBE. The department calculates the DBE participation as the dollar value of DBE participation included in the bid expressed as a percentage of the total contract bid amount.
- b. Under the contract, the contractor agrees to provide the assistance to participating DBE's in the following areas:
  - i. Produce accurate and complete quotes.
  - ii. Understand highway plans applicable to their work.
  - iii. Understand specifications and contract requirements applicable to their work.
  - iv. Understand contracting reporting requirements.
- c. The department encourages the contractor to assist and develop DBE firms to become fully knowledgeable contractors to successfully perform on its contracts.
- d. For information on the disadvantaged business program, visit the department's Civil Rights and Compliance Section website at:

<http://www.dot.wisconsin.gov/business/engrserv/dbe-main.htm>

#### 2. Definitions

- a. Interpret these terms, used throughout this additional special provision, as follows:
  - i. **Bid Percentage:** The DBE percentage indicated in the bidding proposal at the time of bid.
  - ii. **DBE:** A disadvantaged business enterprise (DBE) certified as a DBE by the department and included on the department's list of certified DBE's who are determined to be ready, willing and able.
  - iii. **DBE goal:** The amount of DBE participation expected in the contract as shown on the cover of the Highway Work Proposal.
  - iv. **Discretionary Goal:** A contractor assigned DBE goal, typically abbreviated as "Disc" on the cover of the Highway Work Proposal, which is enforced as committed.
  - v. **Manufacturer:** A firm that operates or maintains a factory or establishment that produces, on the premises, the materials, supplies, articles, or equipment required under the contract.
  - vi. **Supplier:** A firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment required under the contract are bought, kept in stock, and regularly sold or leased to the public.
  - vii. **Voluntary Achievement:** The amount of DBE participation achieved and reported in the contract in excess of the assigned goal.

#### 3. DBE Percentage Required at Bid Submission

Indicate the bid percentage (i.e. 0% through 100%) of DBE participation on the completed bidding proposal, including projects with discretionary goals. For electronic submittals, show the percentage in the miscellaneous data folder, Item 3, DBE Percent. For paper submittals, show the percentage on the sheet included after the schedule of items. By submission of the bid, the bidder contractually commits to DBE participation at or above the bid percentage, or certifies that they have utilized

comprehensive good faith efforts to solicit and utilize DBE firms to meet the DBE participation requirements of this contract proposal, and that the bid percentage is reflective of these good faith efforts. If the bidder does not indicate the bid percentage of DBE participation on the completed bidding proposal, the department will consider the bid irregular and may reject the bid.

#### **4. Department's DBE Evaluation Process**

##### **a. Documentation Submittal**

Within 10 business days after the notification of contract award, the contractor is to identify, by name, the DBE firms whose utilization is intended to satisfy this provision, the items of work of the DBE subcontract or supply agreement and the dollar value of those items of work by completing the Commitment to Subcontract to DBE Form [DT1506] and all necessary attachment A forms, as well as, Good Faith Waiver Form [DT1202] and supporting documentation as necessary. If the contractor fails to furnish the required forms within the specified time, the department may cancel the award. Delay in fulfilling this requirement is not a cause for extension of the contract time and shall not be used as a tool to delay execution.

##### **i. Bidder Meets DBE Goal**

If the bidder indicates that the contract DBE goal is met, after award and before execution, the department will evaluate the Commitment to Subcontract to DBE Form DT1506 and attachment A(s) to verify the actual DBE percentage achieved. If the DBE commitment is verified, the contract is eligible for execution with respect to the DBE commitment.

##### **ii. Bidder Does Not Meet DBE Goal**

- (1) If the bidder indicates a bid percentage on the Commitment to Subcontract to DBE Form [DT1506] that does not meet the contract DBE goal, the bidder must submit a Good Faith Waiver Form [DT1202] and supporting documentation. After award and before execution, the department will evaluate the bidder's DBE commitment and consider the bidder's good faith waiver request.
- (2) The department will review the bidder's good faith waiver request and notify the bidder of one of the following:
  - a. If the department grants a good faith waiver, the bid is eligible for contract execution with respect to DBE commitment.
  - b. If the department rejects the good faith waiver request, the department may declare the bid ineligible for execution. The department will provide a written explanation of why the good faith waiver request was rejected. The bidder may appeal the department's rejection as allowed under 7 a. & b.

#### **5. Department's Criteria for Good Faith Effort**

The Code of Federal Regulations {CFR}, 49 CFR Part 26-Appendix A, is the guiding regulation concerning good faith efforts. However, the federal regulations do not define "good faith" but states that bidder must actively and aggressively attempt to meet the goal. The federal regulations are general and do not include every factor or effort that can be considered. As a result, each state must establish its own processes and consider the factors established in its own process when making a determination of good faith.

- a. The department will only grant a good faith waiver if the bidder has made the effort, given the relevant circumstances under the contract that a bidder actively and aggressively seeking to meet the goal would make. The department will evaluate the bidder's good faith effort to determine whether a good faith waiver will be granted. The bidder must demonstrate, on the DT1202 that they have aggressively solicited DBE participation in an attempt to meet the contract DBE goal and attaining the stated DBE goal is not feasible.

- b. The department, in conjunction with industry stakeholders, has developed the following guidance for contractor good faith effort. The guidance and the attached appendices provide a framework for the actions required by all parties in the processing and evaluation of bidder's total efforts to achieve the project specific DBE goal prior to the bid letting date.
- c. Prime Contractors should:
  - i. Document all efforts and decisions made toward achieving the DBE goal on the contract. The bidder should use the Civil Rights & Compliance System [CRCS] and related WisDOT-approved DBE outreach tools, including the Bid Express Small Business Network, to foster DBE participation on all applicable contracts.
  - ii. Request quotes by identifying potential items to subcontract and solicit. Prime contractors are strongly encouraged to include in their initial contacts a single page including a detailed list of items for which they are accepting quotes, by project, within a letting. *See attached sample entitled "Sample Contractor Solicitation Letter" in Appendix A.* Prime contractors should also indicate a willingness to accept quotes in areas they are planning to perform themselves, **as required by federal rules**. In some cases, it might be appropriate to use DBE's to do work in a prime contractor's area of specialization.
    - (1) Solicit quotes through all reasonable and available means from certified DBE firms who match 'possible items to subcontract' and send copies to DBESS office, highlighting areas in which you are seeking quotes. Email is acceptable.
    - (2) SBN is the preferred outreach tool. <https://www.bidx.com/wi/main>. Other acceptable means include postal mail, email, fax, phone call.
      - a. Primes must ask DBE firms for a response in their solicitations. *See Sample Contractors Solicitation Letter* in Appendix. This letter can be included as an attachment to the SBN sub-quote request.
      - b. Solicit quotes at least 10 calendar days prior to the letting date {ideally two Fridays before the letting} to allow DBE firms sufficient time to respond. Prime contractors should contact DBE firms early, asking them if they need help in putting together a quote, or helping to arrange for equipment needs, or solve other problems.
    - (3) Second solicitation should take place within 5 days
      - a. An email solicitation is highly recommended for this second solicitation
    - (4) Upon request, provide interested DBE firms with adequate information about plans, specifications and the requirements of the contract by letter, information session, email, phone call and/or referral.
    - (5) When potential exists, advise interested DBE firms on how to obtain bonding, line of credit or insurance as may be requested.
    - (6) Document DBE firm's interest in quoting by taking appropriate steps to follow up initial solicitation with:
      - a. Email to all prospective DBE firms in relevant work areas
      - b. Phone call log to DBE firms who express interest via written response or call.
      - c. Fax/letter confirmation
      - d. Copy of the DBE quotes
      - e. Signed copy of Bid Express SBN Record of Subcontractor Outreach Effort.
- d. Evaluate DBE quotes as documentation is critical if the prime does not utilize the DBE firm's quote for any reason.
  - i. Evaluate DBE firm's capability to perform 'possible items to subcontract' using legitimate reasons, including but not limited to, **a discussion with the DBE firm** regarding its

- capabilities prior to the bid letting. If lack of capacity is your reason for not utilizing the DBE quote, you are required to contact the DBE directly regarding their ability to perform the work indicated in the UCP directory as their work area [NAICS code]; only the work area and/or NAICS code listed in the UCP directory will be counted for DBE credit. Documentation of the conversation is required.
- ii. In striving to meet a DBE conscious contract goal, prime contractors are expected to use DBE quotes that are responsive and reasonable. This includes DBE quotes that are not the low quote.
  - iii. **Special Circumstance:** Evaluation of DBE quotes with tied bid items. "Tied quotes are the condition in which a subcontractor submits quotes including multiple areas of expertise across multiple work areas noting that the items and price are tied. Typically this type of quoting represents a cost saving to the prime but is not clearly stated as a discount; tied quotes are usually presented as 'all or none' quote to the prime." When non-DBE subcontractors submit tied bid items in their quotes to the prime, the DBE firms' quote may seem not competitive. In such a case, the following steps are taken in comparing the relevant quotes. These are qualitative examples.
    - (1) Compare bid items common to both quotes, noting the reasonableness in the price comparison.
    - (2) Review quotes from other firms for the bid items not quoted by the DBE firm to see if combining both can provide the same competitive advantage that the tied bid items offered.
- e. After notification of contract award, submit '**Commitment to Subcontract**' form within the time period specified in the contract.
    - i. Provide the following information along with department form DT1202:
      - (1) The names, addresses, e-mail addresses, telephone numbers of DBE's contacted. The dates of both initial and follow-up contact. A printed copy of SBN solicitation is acceptable.
      - (2) A description of information provided to the DBE's regarding the plans, specifications, and estimated quantities for portions of the work to be performed by that DBE.
      - (3) Photocopies or electronic copies of all written solicitations to DBE's.
      - (4) Documentation of each quote received from a DBE and, if rejected, the reason for that rejection.
      - (5) Bidder attendance at any pre-solicitation or pre-bid meetings the department held to inform DBE's of participation opportunities available on the project.
  - f. The department's DBE Support Services Office is available by phone, email or in writing to request assistance in meeting the DBE goal:

DBE Support Services Office  
6150 Fond du Lac Ave.  
Milwaukee, WI 53218  
Phone: 414-438-4583 / 608-266-6961  
Fax: 414-438-5392  
E-mail: [DOTDBESupportServices@dot.wi.gov](mailto:DOTDBESupportServices@dot.wi.gov)

## 6. Bidder's Appeal Process

- a. A bidder can appeal the department's decision to deny the bidder's good faith waiver request. The bidder must provide written documentation refuting the specific reasons for rejection as stated in the department's rejection notice. The bidder may meet in person with the department if so

requested. Failure to appeal within 7 calendar days after receiving the department's written notice of rejection of a good faith waiver request under constitutes a forfeiture of the bidder's right of appeal. If the bidder does not appeal, the department may declare the bid ineligible for execution.

- b. The department will appoint a representative, who did not participate in the original determination, to assess the bidder's appeal. The department will issue a written decision within 7 calendar days after the bidder presents all written and oral testimony. In that written decision, the department will explain the basis for finding that the bidder did or did not meet the contract DBE goal or make an adequate good faith effort to meet the contract DBE goal. The department's decision is final. If the department finds that the bidder did not meet the contract DBE goal or did not make adequate efforts to meet the DBE goal, the department may declare the bid ineligible for execution.

## **7. Department's Criteria for DBE Participation**

### **Department's DBE List**

- a. The department maintains a DBE list on the department's website at <http://app.mylcm.com/wisdot/Reports/WisDotUCPDirectory.aspx>
- b. The DBE office is also available to assist at 414-438-4583 or 608-266-6961.

## **8. Counting DBE Participation**

### **Assessing DBE Work**

- a. The department will only count the DBE usage towards the contract DBE goal if the DBE firm is certified as a DBE by one of the unified certification program agencies. If a firm becomes DBE certified before entering into a subcontract, the department may consider that DBE usage towards the contract goal. The department only counts the value of the work a DBE actually performs towards the DBE goal. The department assesses the DBE work as follows:
- b. The department counts work performed by the DBE's own resources. The department includes the cost of materials and supplies the DBE obtains for the work. The department also includes the cost of equipment the DBE leases for the work. The department will not include the cost of materials, supplies, or equipment the DBE purchases or leases from the prime contractor or its affiliate, except the department will count non-project specific leases the DBE has in place before the work is advertised.
- c. The department counts fees and commissions the DBE charges for providing a bona fide professional, technical, consultant, or managerial services. The department also counts fees and commissions the DBE charges for providing bonds or insurance. The department will only count costs the engineer deems reasonable based on experience or prevailing market rates.
- d. If a DBE subcontracts work, the department counts the value of the subcontracted work only if the DBE's subcontractor is also a DBE.
- e. The contractor shall maintain records and may be required to furnish periodic reports documenting its performance under this item.
- f. It is the prime contractor's responsibility to determine the DBE's ability to perform the work with the use of the UCP directory.

## **9. Commercially Useful Function**

- a. The department counts expenditures of a DBE toward the DBE goal only if the DBE is performing a commercially useful function on that contract.
- b. A DBE is performing a commercially useful function if the following conditions are met:
- c. For contract work, the DBE is responsible for executing a distinct portion of the contract work and it is carrying out its responsibilities by actually performing, managing, and supervising that work.
- d. For materials and supplies, the DBE is responsible for negotiating price, determining quality and quantity, ordering, and paying for those materials and supplies.

**10. Trucking**

All bidders are expected to adhere to the department's current trucking policy posted on the HCCI website at

<http://www.dot.wisconsin.gov/business/engrserv/docs/dbe-trucking-notice.pdf>

**11. Manufacturers and Suppliers**

The department counts material and supplies a DBE provides under the contract. The department will give full credit toward the DBE goal if the DBE is a manufacturer of those materials or supplies. The department will give 60 percent credit toward the DBE goal if the DBE is merely a supplier of those materials or supplies. It is the bidder's responsibility to find out if the DBE is considered a supplier or a manufacturer before listing them on Commitment to Subcontract to DBE form DT1506.

**12. DBE Prime**

If the prime contractor is a DBE, the department will only count the work the contractor performs with its own forces, the work DBE subcontractors perform, and the work DBE suppliers or manufacturers perform.

**13. Joint Venture**

If a DBE performs as a participant in a joint venture, the department will only count that portion of the total dollar value of the contract equal to that portion of the work that the DBE performs with its own forces.

**14. Mentor Protégé**

- a. If a DBE performs as a participant in a mentor protégé agreement, the department will credit the portion of the work performed by the DBE protégé firm
- b. On every other project that the mentor protégé team identifies itself on.
- c. For no more than one half of the total contracted DBE goal on any WisDOT project.

**15. DBE Replacement**

In the event a Prime Contractor needs to replace a DBE firm originally listed on the approved DBE Commitment Form DT1506, the Prime Contractor must comply with the department's DBE Replacement Policy located on the DBE page on the following web site:

<http://www.dot.wisconsin.gov/business/engrserv/docs/policyreplacingdbe.pdf>

**16. Changes to the approved DBE Commitment Form DT1506**

If there are any changes to the approved Commitment to Subcontract to DBE Form DT1506, the prime contractor must submit a revised DBE Commitment Form DT1506 and relevant attachment A(s) to the DBE Programs Office within 5 business days.

**17. Contract Modifications**

When additional opportunity is available by contract modifications, the Prime Contractor shall utilize DBE Subcontractors, that were committed to equal work items, in the original contract.

**18. Payment**

Costs for conforming to this Additional Special Provision (ASP) and any associated DBE requirements are incidental to the contract.

**APPENDIX A**  
**Sample Contractor Solicitation Letter Page 1**  
*This sample is provided as a guide not a requirement*

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GFW SAMPLE MEMORANDUM

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**TO:** DBE FIRMS  
**FROM:** POTENTIAL PRIME CONTRACTOR OR MAJOR SUBCONTRACTOR  
**SUBJECT:** REQUEST FOR DBE QUOTES  
LET DATE & TIME  
**DATE:** MONTH DAY YEAR  
**CC:** DBE OFFICE ENGINEER

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Our company is considering bidding on the projects indicated on the next page, as a prime and/or a subcontractor for the Wisconsin Department of Transportation Month- date -year Letting. Page 2 lists the projects and work items that we may subcontract for this letting. We are interested in obtaining subcontractor quotes for these projects and work categories. Also note that we are willing to accept quotes in areas we may be planning to perform ourselves as required by federal rules.

Please review page 2, respond whether you plan to quote, highlight the projects and work items you are interested in performing and return it via fax or email within 3 days. Plans, specifications and addenda are available through WisDOT at the DBE Support Services office or at the Highway Construction Contract Information (HCCI) site at <http://roadwaystandards.dot.wi.gov/hcci/>

Your quote should include all of the costs required to complete the items you propose to perform including labor, equipment, material, and related bonding or insurance. The quote should note items that you are DBE certified to perform, tied items, and any special terms. Page 2, with the indicated projects and items you plan to quote, should be used as a cover sheet for your quote.

Please make every effort to have your quotes into our office by time deadline the prior to the letting date. **Make sure the correct letting date, project ID and proposal number, unit price and extension are included in your quote.** We prefer quotes be sent via SBN but prime's alternative's are acceptable. Our office hours are include hours and days. Please call our office as soon as possible prior to the letting if you need information/clarification to prepare your quote at contact number.

If you wish to discuss or evaluate your quote in more detail, contact us after the contract is awarded. Status of the contract can be checked at WisDOT's HCCI site at <http://roadwaystandards.dot.wi.gov/hcci/>

All questions should be directed to:

Project Manager, John Doe,  
Phone: (000) 123-4567  
Email: [Joe@joetheplumber.com](mailto:Joe@joetheplumber.com)  
Fax: (000) 123- 4657



## Sample Contractor Solicitation Letter Page 2

*This sample is provided as a guide not a requirement*

### REQUEST FOR QUOTATION

Prime's Name: \_\_\_\_\_

Letting Date: \_\_\_\_\_

Project ID: \_\_\_\_\_

**Please check all that apply**

- ☐ Yes, we will be quoting on the projects and items listed below
- ☐ No, we are not interested in quoting on the letting or its items referenced below
- ☐ Please take our name off your monthly DBE contact list
- ☐ We have questions about quoting this letting. Please have some one contact me at this number

**Prime Contractor 's Contact Person**

Phone: _____
Fax: _____
Email: _____
_____

**DBE Contractor Contact Person**

Phone _____
Fax _____
Email _____
_____

**Please circle the jobs and items you will be quoting below**

Proposal No.	1	2	3	4	5	6	7
County							

**WORK DESCRIPTION:**

Clear and Grub	X		X	X		X	X
Dump Truck Hauling	X		X	X		X	X
Curb & Gutter/Sidewalk, Etc.	X		X	X		X	X
Erosion Control Items	X		X	X		X	X
Signs and Posts/Markers	X		X	X		X	X
Traffic Control		X	X	X		X	X
Electrical Work/Traffic Signals		X	X	X		X	
Pavement Marking		X	X	X	X	X	X
Sawing Pavement		X	X	X	X	X	X
QMP, Base	X	X		X	X	X	X
Pipe Underdrain	X			X			
Beam Guard				X	X	X	X
Concrete Staining							X
Trees/Shrubs	X						X

Again please make every effort to have your quotes into our office by time deadline prior to the letting date.

We prefer quotes be sent via SBN but prime's preferred alternative's are acceptable.

If there are further questions please direct them to the prime contractor's contact person at phone number.

## **APPENDIX B BEST PRACTICES FOR PRIME CONTRACTOR & DBE SUBCONTRACTOR GOOD FAITH EFFORT**

*This list is not a set of requirements; it is a list of potential strategies*

### **Primes**

- Prime contractor open houses inviting DBE firms to see the bid “war room” or providing technical assistance
- Participate in speed networking and mosaic exercises as arranged by DBE office
- Host information sessions not directly associated with a bid letting;
- Participate in a formal mentor protégé or joint venture with a DBE firm
- Participate in WisDOT advisory committees i.e. TRANSAC, or Mega Project committee meetings
- Facilitate a small group DBE ‘training session’ Clarifying how your firm prepares for bid letting, evaluates subcontractors, preferred qualifications and communication methods
- Encourage subcontractors to solicit and highlight DBE participation in their quotes to you
- Quality of communication, not quantity creates the best results. Contractors should do as thorough a job as possible in communicating with DBE firms before the bid and provide any assistance requested to assure best possible bid.

### **DBE**

- DBE firms should contact primes as soon as possible with questions regarding their quotes or bid; seven days prior is optimal.
- Continually check for contract addendums on the HCCI website through the Thursday prior to letting to stay abreast of changes.
- Review the status of contracts on the HCCI website reviewing the ‘apparent low bidder’ list, and bid tabs at a minimum.
- Prepare a portfolio or list of related projects and prime and supplier references; be sure to note transportation-related projects of similar size and scope, firm expertise and staffing.
- Participate in DBE office assessment programs
- Participate on advisory and mega-project committees
- Sign up to receive the DBE Contracting Update
- Consider membership in relevant industry or contractor organizations
- Active participation is a must. Quote as many projects as you can reasonably work on; quoting the primes and bidding as a prime with the department are the only ways to get work.

## APPENDIX C

### Types of Efforts considered in determining GFE

*This list represents concepts being assessed; analysis requires additional steps*

1. Whether the contractor attended any pre-solicitation or pre-bid meetings that were scheduled by WisDOT to inform DBEs of contracting and subcontracting opportunities;
2. Whether the contractor provided written notice to a reasonable number of specific DBEs that their interest in the contract was being solicited, in sufficient time to allow the DBEs to participate effectively;
3. Whether the contractor followed up initial solicitations of interest by contacting DBEs to determine if the DBEs were interested; returned the phone calls of interested DBE firms.
4. Whether the contractor selected portions of the work to be performed by DBEs in order to increase the likelihood of meeting the DBE goal;
5. Whether the contractor provided interested DBEs with adequate information about the plans, specifications and requirements of the contract;
6. Whether the contractor negotiated in good faith with interested DBEs, not rejected DBEs as unqualified without sound reasons based on a thorough investigation of their capabilities;
7. Whether the contractor made efforts to assist interested DBEs in being more competitive.
8. Whether the contractor effectively used the services of available minority community organizations: minority contractors groups, local, state, and Federal minority business assistance offices, and other organizations that provide assistance to small businesses and DBE firms.
9. Whether Prime used CRCS to identify DBE who specialize in relevant work areas.
10. Whether the contractor used available resources including contacting the DBE office, using WisDOT's website
11. Whether the contractor returned calls of firms expressing interest in a timely manner.

**APPENDIX D**  
**Good Faith Effort Evaluation Guidance**  
*Excerpt from Appendix A of 49 CFR Part 26*

**APPENDIX A TO PART 26 -- GUIDANCE CONCERNING GOOD FAITH EFFORTS**

- I. When, as a recipient, you establish a contract goal on a DOT assisted contract, a bidder must, in order to be responsible and/or responsive, make good faith efforts to meet the goal. The bidder can meet this requirement in either of two ways. First, the bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose. Second, even if it doesn't meet the goal, the bidder can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.
- II. In any situation in which you have established a contract goal, part 26 requires you to use the good faith efforts mechanism of this part. As a recipient, it is up to you to make a fair and reasonable judgment whether a bidder that did not meet the goal made adequate good faith efforts. It is important for you to consider the quality, quantity, and intensity of the different kinds of efforts that the bidder has made. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere pro forma efforts are not good faith efforts to meet the DBE contract requirements. We emphasize, however, that your determination concerning the sufficiency of the firm's good faith efforts is a judgment call: meeting quantitative formulas is not required.
- III. The Department also strongly cautions you against requiring that a bidder meet a contract goal (i.e., obtain a specified amount of DBE participation) in order to be awarded a contract, even though the bidder makes an adequate good faith efforts showing. This rule specifically prohibits you from ignoring bona fide good faith efforts.
- IV. The following is a list of types of actions which you should consider as part of the bidder's good faith efforts to obtain DBE participation. It is not intended to be a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.
  - A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.
  - B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.
  - C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

- D.
    - (1) Negotiating in good faith with interested DBEs. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
    - (2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.
  - E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non solicitation of bids in the contractor's efforts to meet the project goal.
  - F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.
  - G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.
  - H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.
- V. In determining whether a bidder has made good faith efforts, you may take into account the performance of other bidders in meeting the contract. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, you may reasonably raise the question of whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, you may view this, in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.

## Appendix E

### Small Business Network [SBN] Overview

The Small Business Network is a part of the Bid Express® service that was created to ensure that prime bidders have a centralized online location to find subs - including small and disadvantaged business enterprises (DBEs). It is available for prime bidders to use as part of their Basic Service subscription. Within the Small Business Network, **Prime Contractors** can:

1. Easily select proposals, work types and items:
  - a. After adding applicable work types, select items that you wish to quote. Enter the sub-quote quantities and add comments, if desired. Adding or removing items and work types can be done quickly. If needed, you can save the sub-quote for completion at a later time.
2. Create sub-quotes for the subcontracting community:
  - a. Create sub-quotes with ease using the intuitive sub-quote creator. In seven short steps, you can rapidly create a custom sub-quote directed to all subcontractors that bid on the applicable work types. Steps include: provide contact information and sub-quote expiration date, select letting and proposal, add work types and items, specify terms and conditions, upload attachments, and select vendors.
  - b. Create a sub-quote to send to subcontractors or suppliers that lists the items in a proposal that you want quoted
  - c. Create an unlimited number of sub-quotes for items you want quoted, and optionally mark them as a DBE-preferred request
  - d. Add attachments to sub-quotes
3. View sub-quote requests & responses:
  - a. After logging into the Bid Express service, you can quickly review all of your sub-quote requests and all unsolicited sub-quote requests from subcontractors. To simplify the Small Business Network home screen, sub-quote requests can be hidden with one click if they are not applicable.
  - b. View or receive unsolicited sub-quotes that subcontractors have posted, complete with terms, conditions and pricing
4. View Record of Subcontractor Outreach Effort:
  - a. For each sub-quote produced, a *Record of Subcontractor Outreach Effort* is generated that shows the response statistics for a particular sub-quote. If accepted by the letting agency, this report may serve as proof of a “Good Faith” effort in reaching out to the DBE community.
  - b. Easily locate pre-qualified and certified small and disadvantaged businesses
  - c. Advertise to small and disadvantaged businesses more efficiently and cost effectively
  - d. Document your interactions with subs/DBEs by producing an Outreach Report (may be accepted as proof of DBE outreach at the discretion of each agency)

The Small Business Network is a part of the Bid Express® service that was created to ensure that small businesses have a centralized area to access information about upcoming projects. It can help small businesses learn more about opportunities, compete more effectively, network with other contractors and subcontractors, and win more jobs.

1. View and reply to sub-quote requests from primes:
  - a. After logging into the Bid Express service, you can quickly review all incoming sub-quote requests and all unsolicited sub-quotes created by your company. Receive notifications by selected work type. To simplify on the Small Business Network home screen, sub-quote requests can be filtered by work types relevant to your interests, or hidden with one click if they are not applicable.
2. Select items when responding to sub-quote requests from primes:
  - a. You have the freedom to choose and price any number of items when responding to a sub-quote request. Quantities can be modified, and per-item comments are also available.
  - b. View requests for sub-quotes for work that primes have posted for projects they are bidding, add your pricing, terms, and conditions, and submit completed sub-quotes to the requesting primes
  - c. Add attachments to a sub-quote
3. Create and send unsolicited sub-quotes to specific contractors:
  - a. Create unsolicited sub-quotes with ease using the intuitive sub-quote creator. In eight short steps, you can rapidly create a custom sub-quote directed at any number of specific vendors of your choosing. Steps include: provide contact information and sub-quote expiration date, select letting and proposal, add work types and items, specify terms and conditions, upload attachments, and select vendors.
4. Easily select and price items for unsolicited sub-quotes:
  - a. After adding applicable work types, select items that you wish to quote. The extended price calculates automatically, cutting out costly calculation errors. Comments can be provided on an per-item basis as well.
  - b. Create an unsolicited sub-quote that lists the items from a proposal that you want to quote, include pricing, terms and conditions, and send it to selected prime/plan holder
  - c. Add attachments to a sub-quote
  - d. Add unsolicited work items to sub-quotes that you are responding to
5. Easy Access to Valuable Information
  - a. Receive a confirmation that your sub-quote was opened by a prime
  - b. View Bid Tab Analysis data from past bids, including the high, average and low prices of items.
  - c. View important notices and publications from DOT targeted to small and disadvantaged businesses
6. Accessing Small Business Network for WisDOT contracting opportunities
  - a. If you are a contractor not yet subscribing to the Bid Express service, go to **www.bidx.com** and select “Order Bid Express.” The Small Business Network is a part of the Bid Express Basic Service.
  - b. DBE firms can request a Bid Express Small Business Network Account at no cost by calling 414-438-4588

**ADDITIONAL SPECIAL PROVISION 4**

Payment to all Subcontractors. Within 10 calendar days of receipt by a contractor of a progress payment for work performed, materials furnished, or materials stockpiled by a subcontractor, the contractor shall pay that subcontractor for all work satisfactorily performed and for all materials furnished or stockpiled.

The contractor agrees further to release retainage amounts to each subcontractor within 10 calendar days after the subcontractor's work is satisfactorily completed. In addition, whenever the Department reduces the contract retainage amount, within 10 calendar days of receipt by a contractor of a retainage payment, the contractor must reduce the total amount retained from subcontractors to no more than remains retained by the Department.

The contractor shall pay the subcontractor within the time frames described above unless the contractor complies with both of the following within 10 calendar days of receiving the Department's progress payment:

- 1) The contractor notifies the subcontractor in writing that the work is not satisfactorily completed.
- 2) The contractor requests approval from the Department to delay payment because the subcontractor has not satisfactorily completed the work.

The contractor's request for approval should include the written notification to the subcontractor and shall provide sufficient documentation of good cause to assist the engineer in making a timely decision. If the engineer does not grant approval, the contractor shall pay the subcontractor within 10 calendar days of the Department's decision.

All subcontracting agreements made by a contractor shall include the above provisions and shall be binding on all contractors and subcontractors.

The contractor certifies compliance with the requirements of this Additional Special Provision by signing the contract. This clause applies to both DBE and non-DBE subcontractors.





**ADDITIONAL SPECIAL PROVISIONS 5****Fuel Cost Adjustment****A Description**

Fuel Cost Adjustments will be applied to partial and final payments for work items categorized in Section B as a payment to the contractor or a credit to the department. ASP-5 shall not apply to any force account work.

**B Categories of Work Items**

The following items and Fuel Usage Factors shall be used to determine Fuel Cost Adjustments:

(1) Earthwork.		Unit	Gal. Fuel Per Unit
205.0100	Excavation Common	CY	0.23
205.0200	Excavation Rock	CY	0.39
205.0400	Excavation Marsh	CY	0.29
208.0100	Borrow	CY	0.23
208.1100	Select Borrow	CY	0.23
209.0100	Backfill Granular	CY	0.23
350.0102	Subbase	CY	0.28
350.0104	Subbase	Ton	0.14
350.0115	Subbase 6-Inch	SY	0.05
350.0120	Subbase 7-Inch	SY	0.05
350.0125	Subbase 8-Inch	SY	0.06
350.0130	Subbase 9-Inch	SY	0.07
350.0135	Subbase 10-Inch	SY	0.08
350.0140	Subbase 11-Inch	SY	0.09
350.0145	Subbase 12-Inch	SY	0.09

**C Fuel Index**

A Current Fuel Index (CFI) in dollars per gallon will be established by the Department of Transportation for each month. The CFI will be the price of No. 2 fuel oil, as reported in U.S. Oil Week, using the first issue dated that month. The CFI will be the average of prices quoted for Green Bay, Madison, Milwaukee and Minneapolis.

The base Fuel Index (BFI) for this contract is \$2.90 per gallon.

#### **D Computing the Fuel Cost Adjustment**

The engineer will compute the ratio CFI/BFI each month. If the ratio falls between 0.85 and 1.15, inclusive, no fuel adjustment will be made for that month. If the ratio is less than 0.85 a credit to the department will be computed. If the ratio is greater than 1.15 additional payment to the contractor will be computed. Credit or additional payment will be computed as follows:

- (1) The engineer will estimate the quantity of work done in that month under each of the contract items categorized in Section B.
- (2) The engineer will compute the gallons of fuel used in that month for each of the contract items categorized in Section B by applying the unit fuel usage factors shown in Section B.
- (3) The engineer will summarize the total gallons (Q) of fuel used in that month for the items categorized in Section B.
- (4) The engineer will determine the Fuel Cost Adjustment credit or payment from the following formula:

$$FA = \left( \frac{CFI}{BFI} - 1 \right) \times Q \times BFI$$

(plus is payment to contractor; minus is credit to the department)

Where	FA	=	Fuel Cost Adjustment (plus or minus)
	CFI	=	Current Fuel Index
	BFI	=	Base Fuel Index
	Q	=	Monthly total gallons of fuel

#### **E Payment**

A Fuel Cost Adjustment credit to the department will be deducted as a dollar amount each month from any sums due to the contractor. A Fuel Cost Adjustment payment to the contractor will be made as a dollar amount each month.

Upon completion of the work under the contract, any difference between the estimated quantities and the final quantities will be determined. An average CFI, calculated by averaging the CFI for all months that fuel cost adjustment was applied, will be applied to the quantity differences. The average CFI shall be applied in accordance with the procedure set forth in Section D.

## ADDITIONAL SPECIAL PROVISION 6

### ASP 6 - Modifications to the standard specifications

*Make the following revisions to the 2013 edition of the standard specifications:*

---

#### 106.3.4.3.1 General

*Replace paragraph two with the following effective with the November 2012 letting:*

- (2) Required sampling and testing methodologies and documentation are specified in CMM chapter 8.
  - (3) If disputed, approval of materials and components, as well as acceptance of the work incorporating those materials or components, is subject to review under the QMP dispute resolution process.
- 

#### 107.17.3 Railroad Insurance Requirements

*Replace the entire text with the following effective with the August 2012 letting:*

- (1) If required by the special provisions, provide or arrange for a subcontractor to provide railroad protective liability insurance in addition to the types and limits of insurance required in 107.26. Keep railroad protective liability insurance coverage in force until completing all work, under or incidental to the contract, on the railroad right of way or premises of the railroad and until the department has accepted the work as specified in 105.11.2.4.
- (2) Provide railroad protective liability insurance coverage written as specified in 23 CFR part 646 subpart A. Provide a separate policy for each railroad owning tracks on the project. Ensure that the railroad protective liability insurance policies provide the following minimum limits of coverage:
  - 1. Coverage A, bodily injury liability and property damage liability; \$2 million per occurrence.
  - 2. Coverage B, physical damage to property liability; \$2 million per occurrence.
  - 3. An annual aggregate amount of \$6 million that shall apply separately to each policy renewal or extension.
- (3) Obtain coverage from insurance companies licensed to do business in Wisconsin that have an A.M. Best rating of A- or better. The cost of providing the required insurance coverage and limits is incidental to the contract. The department will make no additional or special payment for providing insurance.
- (4) Submit the following to each railroad owning tracks on the project as evidence of that railroad's respective coverage:
  - 1. A certificate of insurance for the types and limits of insurance specified in 107.26.
  - 2. The railroad protective liability insurance policy or other acceptable documentation to the railroad company.
- (5) Submit the following to the region as evidence of the required coverage:
  - 1. A copy of the letter to the railroad company transmitting the submittal documents specified in 107.17.3(4).
  - 2. A certificate of insurance for the required railroad protective liability coverages.
- (6) Do not begin work on the right of way or premises of the railroad company until the region receives the submittals specified in 107.17.3(5) and notification from the railroad company that the contractor has provided sufficient insurance information to begin work.
- (7) Notify the railroad and the region immediately upon cancellation or initiating cancellation, whichever is earlier, or any material change in coverage. Cease operations within 50 feet of the railroad right of way immediately if insurance is cancelled or reduced. Do not resume operations until the required coverage is in force.

**460.2.8.3.1.4 Department Verification Testing Requirements**

*Replace paragraph four with the following effective with the December 2012 letting:*

- (4) The department will randomly test each design mixture at the following minimum frequency:
- FOR TONNAGES TOTALING:
- Less than 501 tons ..... no tests required
- From 501 to 5,000 tons..... one test
- More than 5,000 tons..... add one test for each additional 5,000-ton increment

**501.2.1 Portland Cement**

*Replace paragraph one with the following effective with the March 2013 letting:*

- (1) Use cement conforming to ASTM specifications as follows:
- Type I portland cement; ASTM C150.
  - Type II portland cement; ASTM C150.
  - Type III portland cement; ASTM C150, for high early strength.
  - Type IP portland-pozzolan cement; ASTM C595, except maximum loss on ignition is 2.0 percent.
  - Type IS portland blast-furnace slag cement; ASTM C595.
  - Type IL portland-limestone cement; ASTM C595, except maximum nominal limestone content is 10 percent with no individual test result exceeding 12.0 percent.

**501.2.5.5 Sampling and Testing**

*Replace the entire text with the following effective with the January 2013 letting:*

- (1) Sample and test aggregates for concrete according to the following:
- |  |                           |
|--|---------------------------|
| Sampling aggregates .....  | AASHTO T2                 |
| Lightweight pieces in aggregate .....                                | AASHTO T113               |
| Material finer than No. 200 sieve .....                              | AASHTO T11                |
| Unit weight of aggregate .....                                       | AASHTO T19                |
| Organic impurities in sands .....                                    | AASHTO T21                |
| Sieve analysis of aggregates .....                                   | AASHTO T27                |
| Effect of organic impurities in fine aggregate .....                 | AASHTO T71                |
| Los Angeles abrasion of coarse aggregate .....                       | AASHTO T96                |
| Freeze-thaw soundness of coarse aggregate.....                       | AASHTO T103               |
| Sodium sulfate soundness of aggregates .....                         | AASHTO T104               |
| Specific gravity and absorption of fine aggregate .....              | AASHTO T84                |
| Specific gravity and absorption of coarse aggregate .....            | AASHTO T85                |
| Flat & elongated pieces based on a 3:1 ratio.....                    | ASTM D4791 <sup>[1]</sup> |
| Sampling fresh concrete .....  | AASHTO R60                |
| Making and curing concrete compressive strength test specimens ..... | AASHTO T23                |
| Compressive strength of molded concrete cylinders .....              | AASHTO T22                |

<sup>[1]</sup> As modified in CMM 8-60.

**501.2.6 Fly Ash**

*Replace paragraph three with the following effective with the March 2013 letting:*

- (3) Test fly ash using a recognized laboratory, as defined in 501.2.2(1), starting at least 30 days before its proposed use, and continuing at ASTM-required frequencies as the work progresses. The manufacturer shall test the chemical and physical properties listed in tables 1 and 2 of ASTM C618 at the frequencies and by the test methods prescribed in ASTM C311.

---

**501.3.1.1.1 Air-Entrained Concrete**

Replace paragraph one with the following effective with the March 2013 letting:

- (1) Prepare air-entrained concrete with type I, IL, II, IS, or IP portland cement and sufficient air-entraining admixture to produce concrete with the air content specified in 501.3.2.4.

---

**503.2.2 Concrete**

Replace paragraph five with the following effective with the March 2013 letting:

- (5) Furnish prestressed concrete members cast from air-entrained concrete, except I-type girders may use non-air-entrained concrete. Use type I, IL, IS, , IP, II, or III portland cement. The contractor may replace up to 30 percent of type I, IL, II, or III portland cement with an equal weight of fly ash, slag, or a combination of fly ash and slag, except for prestressed box girders and slabs, the contractor shall replace 20-30 percent of the cement with fly ash, slag, or a combination of fly ash and slag. Ensure that fly ash conforms to 501.2.6 and slag conforms to 501.2.7. Use only one source and replacement rate for work under a single bid item. Use a department-approved air-entraining admixture conforming to 501.2.2 for air-entrained concrete. Use only size No. 1 coarse aggregate conforming to 501.2.5.4.

---

**506.3.22 Shop Inspection**

Replace paragraph one with the following effective with the July 2010 letting:

- (1) The engineer or an independent inspection agency under department contract may inspect all structural steel and miscellaneous metals furnished. The department will provide the contractor with monthly consultant inspection invoices and identify any quality deficiencies at the fabrication facility.

---

**506.5 Payment**

Add paragraph nine as follows effective with the June 2010 letting:

- (9) The department will limit costs for inspections conducted under 506.3.2 to \$0.05 per pound of material and deduct costs in excess of that amount from payment due the contractor. The department will determine costs for in-house inspections based on hourly rates for department staff plus overhead and use invoiced costs for contracted-out inspections. The department will administer deductions for the contractor's share of the total inspection cost under the Excess Costs For Fabrication Shop Inspection administrative item.

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**507.2.2.1 General**

Replace paragraph four with the following effective with the December 2012 letting:

- (4) Ensure that there are no unsound knots or knot holes. Also ensure that there are no tight knots of a diameter exceeding one-quarter of the greater dimension at the point where they occur. Measure a knot by taking its diameter at right angles to the length of the timber. Ensure that the sum of sizes of all knots in any one-foot length does not exceed 2 times the size of the largest allowed single knot. The engineer will treat cluster knots as if they were a single knot. A cluster knot is 2 or more knots grouped together, with the fibers of the wood deflected around the entire unit.

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**512.3.1 Driving and Cutting Off**

Replace the entire text with the following effective with the December 2012 letting:

**512.3.1.1 General**

- (1) Coordinate driving operations to prevent damage or displacement of concrete in substructure units or damage to adjacent facilities due to vibrations.
- (2) Drive sheeting with a variation of 1/4 inch or less per foot from the vertical or from the batter the plans show. Ensure that the sheetpiles are within 6 inches of the plan position after driving. Do not damage sheetpiles attempting to correct for misalignment.

- (3) Remove and replace, or otherwise correct, sheetpiles the engineer deems unacceptable under 105.3. Submit details of planned corrections to the engineer for review and approval before initiating any corrective actions.
- (4) Drive sheetpiles to or beyond the required tip elevation the plans show.

#### **512.3.1.2 Driving System**

- (1) Furnish a sheetpile driving system capable of driving the sheetpiles to the required minimum tip elevation the plans show.
- (2) The engineer may order the contractor to remove a pile driving system component from service if it causes insufficient energy transfer or damages the sheetpiles. Do not return a component to service until the engineer determines that it has been satisfactorily repaired or adjusted.
- (3) Drive sheetpiles with diesel, air, steam, gravity, hydraulic, or vibratory hammers.

#### **512.3.1.3 Cut-Offs**

- (1) Cut off sheetpiles at the elevations the plans show or as the engineer directs. Pile cut-offs become the property of the contractor. Dispose of cut-offs not incorporated into the work.

### **518.2.1 General**

Replace paragraph one with the following effective with the March 2013 letting:

- (1) Furnish portland cement and water as specified in 501.2. Unless the engineer allows an alternate, use either type I, IL, IS, , or IP portland cement.

### **526.3.3 Temporary Structures**

Replace paragraphs two through four with the following effective with the January 2013 letting:

- (2) Inspect temporary structures conforming to the National Bridge Inspection Standards (NBIS) and the department's structure inspection manual before opening to traffic. Perform additional inspections, as the department's structure inspection manual requires, based on structure type and time in service. Submit inspection reports on department form DT2007 to the engineer and electronic copies to the department's bureau of structures maintenance section. Ensure that a department-certified active team leader, listed online in the department's highway structures information system (HSIS), performs the inspections.
- (3) Maintain temporary structures and approaches in place until no longer needed. Unless the engineer directs otherwise, completely remove and dispose of as specified in 203.3.4. Contractor-furnished materials remain the contractor's property upon removal.

### **614.2.5 Wood Posts and Offset Blocks**

Retitle and replace the entire text with the following effective with the July 2012 letting:

#### **614.2.5 Posts and Offset Blocks**

##### **614.2.5.1 Wood Posts and Offset Blocks**

- (1) Furnish sawed posts and offset blocks of one of the following species:
 

Douglas fir	Southern pine	Ponderosa pine	Jack pine	White pine
Red pine	Western hemlock	Western larch	Hem-fir	Oak
- (2) Ensure that posts are the size the plans show and conform to the nominal and minimum dimensions tabulated in 507.2.2.3. The contractor does not have to surface the posts. Provide posts of the net length the plans show after setting and cut off.
- (3) Use stress graded posts rated at 1200 psi  $f_b$  or higher. Determine the stress grade rating for douglas fir, western larch, and southern pine as specified in 507.2.2.4.
- (4) For hem-fir, hemlock, red pine, white pine, jack pine, ponderosa pine, and oak conform to the following:

TABLE 614-1 PROPERTIES FOR WOOD POSTS AND BLOCKS

SPECIES			WESTERN HEMLOCK, HEM-FIR, RED PINE, WHITE PINE, JACK PINE, PONDEROSA PINE		OAK	
MAXIMUM SLOPE OF GRAIN			1 in 15		1 in 12	
NOMINAL WIDTH OF FACE			6"	8"	6"	8"
SHAKES, CHECKS, AND SPLITS	GREEN		1"	1 3/8"	2 3/8"	3 1/8"
	SEASONED		1 1/2"	2"	2 5/8"	3 1/2"
MAXIMUM WANE			1"	1 3/8"	1 1/8"	1 5/8"
MAXIMUM ALLOWABLE KNOTS	NARROW FACE	MIDDLE 1/3 OF LENGTH	1 3/8"	1 5/8"	2 1/8"	2 3/8"
		END <sup>[1]</sup>	2 3/4"	3 1/4"	4 1/4"	4 3/4"
		SUM IN MIDDLE 1/2 OF LENGTH <sup>[2]</sup>	11"	13"	17"	19
	WIDE FACE	EDGE KNOT N MIDDLE 1/3 OF LENGTH	1 3/8"	1 5/8"		
		EDGE KNOT AT END <sup>[1]</sup>	2 3/4" 7	3 1/4"		
		CENTERLINE	1 3/8"	1 7/8"	2 1/4"	2 7/8"
		SUM IN MIDDLE 1/2 OF LENGTH	5 1/2"	7 1/2"	9"	11 1/2"

<sup>[1]</sup> But do not exceed the maximum allowable knot on the centerline of the wide face of the same piece.

<sup>[2]</sup> But do not exceed 4 times the maximum allowable knot on the centerline of the wide face of the same piece.

- (5) Pressure treat posts and offset blocks as specified in 507.2.2.6. Use one of the oil-soluble preservatives or chromated copper arsenate conforming to 507.2.3. Use the same material for offset blocks and posts and treat material used in each continuous installation with the same type of preservative.

#### 614.2.5.2 Steel Posts

- (1) Furnish steel posts conforming to AASHTO M270 Grade 36 and galvanized according to AASTHO M111.

#### 614.2.5.3 Plastic Offset Blocks

- (1) Furnish plastic offset blocks from the department's approved products list.

### 614.3.1 General

Replace the entire text with the following effective with the July 2012 letting:

- (1) Paint the ends of cut-off galvanized posts, rail, bolts, cut or drilled surfaces of galvanized components, and areas of damaged zinc coating with 2 coats of zinc dust/zinc oxide paint. Clean the damaged and adjacent areas thoroughly before applying paint.
- (2) Apply 2 coats of wood preservative to cut surfaces of wood components. Use the same preservative originally used to treat that component or use a 2-percent solution of copper naphthenate conforming to AWWA Standard P8 or P36.

#### 614.3.2.1 Installing Posts

Replace paragraph four with the following effective with the July 2012 letting:

- (4) Cut post tops to the finished elevation the plans show.



**628.2.13 Rock Bags**

Replace paragraph one with the following effective with the November 2012 letting:

- (1) Furnish rock bags made of a porous, ultraviolet resistant, high-density polyethylene or geotextile fabric that will retain 70% of its original strength after 500 hours of exposure according to ASTM D4355 and a minimum in-place filled size of 18-inches long by 12-inches wide by 6-inches high. Ensure that the fabric conforms to the following:

TEST REQUIREMENT	METHOD	VALUE
Minimum Tensile	ASTM D4632	
Machine direction		70 lb minimum
Cross direction		40 lb minimum
Elongation	ASTM D4632	
Machine direction		20% minimum
Cross direction		10 % min
Puncture	ASTM 4833	65 lbs minimum
Minimum Apparent Opening		0.0234 inches (No. 30 sieve)
Maximum Apparent Opening		0.0787 inches (No. 10 sieve)

**639.2.1 General**

Replace paragraph two with the following effective with the March 2013 letting:

- (2) For grout use fine aggregate conforming to 501.2.5.3 and type I, IL, IS, or IP portland cement.

**649.3.1 General**

Replace paragraphs three and four with the following effective with the March 2013 letting:

- (3) For pavements open to all traffic, apply centerline and no-passing barrier line markings as follows:
- On intermediate pavement layers, including milled surfaces, on the same day the pavement is placed or milled.
  - On the upper layer of pavement, on the same day the pavement is placed unless the contractor applies permanent marking on the same day the pavement is placed.

If weather conditions preclude same-day application, apply as soon as weather allows. Do not resume next-day construction operations until these markings are completed unless the engineer allows otherwise.

- (4) If required to apply no passing zone temporary pavement marking, reference the beginning and end of all existing no-passing barrier lines. Apply temporary no-passing barrier lines at those existing locations. If the contract contains the Locating No-Passing Zones bid item, relocate the no-passing zones as specified in section 648 for permanent marking.

**701.4.2 Verification Testing**

Replace paragraph two with the following effective with the December 2012 letting:

- (2) The department will sample randomly at locations independent of the contractor's QC tests and use separate equipment and laboratories. The department will conduct a minimum of one verification test for each 5 contractor QC tests unless specific QMP provisions specify otherwise.

**715.2.3.1 Pavements**

Replace paragraph two with the following effective with the March 2013 letting:

- (2) Provide a minimum cement content of 565 pounds per cubic yard, except if using type I, IL, or III portland cement in a mix where the geologic composition of the coarse aggregate is primarily igneous or metamorphic materials, provide a minimum cement content of 660 pounds per cubic yard.

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**715.3.1.3 Department Verification Testing**

Replace paragraph one with the following effective with the December 2012 letting:

- (1) The department will perform verification testing as specified in 701.4.2 except as follows:
  - Air content, slump, and temperature: a minimum of 1 verification test per lot.
  - Compressive strength: a minimum of 1 verification test per lot.

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**Errata**

Make the following corrections to the 2013 edition of the standard specifications:

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**102.12 Public Opening of Proposals**

Correct 102.12(1) errata by changing htm to shtm in the web link.

- (1) The department will publicly open proposals at the time and place indicated in the notice to contractors. The department will post the total bid for each proposal on the Bid Express web site beginning at 9:30 AM except as specified in 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 department's HCCI web site.

<http://roadwaystandards.dot.wi.gov/hcci/bid-letting/index.shtm>

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**107.22 Contractor's Responsibility for Utility Facilities, Property, and Services**

Correct errata by eliminating references to the department. Costs are determined by statute.

- (3) If the contractor damages or interrupts service, the contractor shall notify the utility promptly. Coordinate and cooperate with the utility in the repair of the facility. Determine who is responsible for repair costs according to Wisconsin statutes 66.0831 and 182.0175(2).
- 

**204.3.2.2 Removing Items**

Correct errata by changing the reference from 490.3.2 to 490.3.

- (5) Under the Removing Asphaltic Surface Milling bid item, remove and dispose of existing asphaltic pavement or surfacing by milling at the location and to the depth the plans show. Mill the asphaltic pavement or surfacing as specified for milling salvaged asphaltic pavement in 490.3.
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**501.2.9 Concrete Curing Materials.**

Correct errata by changing AASHTO M171 to ASTM C171.

- (4) Furnish polyethylene-coated burlap conforming to ASTM C171 for white burlap-polyethylene sheets.
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**506.2.6.5.2 Pad Construction**

Correct errata by changing ASTM A570 to ASTM A1011.

- (4) For the internal steel plates use rolled mild steel conforming to ASTM A36, or ASTM A1011 grade
- 

**512.3.3 Painting**

Correct errata by changing 511.3.5 to 550.3.11.3.

- (1) Paint permanent steel sheet piling as specified for painting steel piling in 550.3.11.3.

**513.2.2.8 Toggle Bolts**Correct errata by changing ASTM A570 to ASTM A1011.

- (1) Use toggle bolts made of steel, conforming to the plans. Make the assembly from the material specified below:

Toggle bolt and pin ..... Cold finished steel heat-treated Brinell 311-363 ASTM A354.  
 Toggle washer ..... Hot rolled steel ASTM A1011. Manufacturer's standard washer.  
 Spacer nut ..... Grade 1213, ASTM A108. Cold finished steel heat-treated ASTM A325.

**660.2.1 General**Correct errata by changing section 511 to 550.

- (1) Furnish materials conforming to the following:

Concrete ..... section 501  
 Concrete bridges ..... section 502  
 Luminaires ..... section 659  
 Steel piling ..... section 550  
 Steel reinforcement..... section 505

**660.3.2.3 Pile Type Foundations**Correct errata by changing section 511 to 550.

- (1) Drive piles as specified in for steel piling in section 550.

**701.3 Contractor Testing**Correct errata by updating AASHTO T141 to AASHTO R60 and changing AASHTO T309 to ASTM C1064.

- (1) Perform contract required QC tests for samples randomly located according to CMM 8-30. Also perform other tests as necessary to control production and construction processes, and additional testing enumerated in the contractor's quality control plan or that the engineer directs. Use test methods as follows:

**TABLE 701-2 TESTING STANDARDS**

TEST	TEST STANDARD
Washed P 200 analysis	AASHTO T11 <sup>[1]</sup>
Sieve analysis of fine and coarse aggregate	AASHTO T27 <sup>[1]</sup>
Aggregate moisture	AASHTO T255 <sup>[1]</sup>
Sampling freshly mixed concrete	AASHTO R60
Air content of fresh concrete	AASHTO T152 <sup>[2]</sup>
Concrete slump	AASHTO T119 <sup>[2]</sup>
Concrete temperature	ASTM C1064
Concrete compressive strength	AASHTO T22
Making and curing concrete cylinders	AASHTO T23
Standard moist curing for concrete cylinders	AASHTO M201

<sup>[1]</sup> As modified in CMM 8-60.

<sup>[2]</sup> As modified in CMM 8-70.

**ADDITIONAL SPECIAL PROVISION 7**

- A. Reporting 1<sup>st</sup> 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.



**ADDITIONAL SPECIAL PROVISION 9**  
**Electronic Certified Payroll Submittal**

(1) Use the department's Civil Rights Compliance System (CRCS) to submit certified payrolls electronically. Details are available online through the department's highway construction contractor information (HCCI) site on the Labor, Wages, and EEO Information page at: <http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm>

(2) Ensure that all tiers of subcontractors, as well as all trucking firms, submit their weekly certified payrolls electronically through CRCS. These payrolls 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 payrolls. The department will provide training either in a classroom setting at one of our regional offices or by telephone. Contact Tess Mulrooney at 608-267-4489 to schedule the training.

(4) The department will reject all paper submittals of forms DT-1816 and DT-1929 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 data from their computer system into CRCS should have their payroll coordinator send several sample electronic files to Tess two months before a payroll needs to be submitted. Not every contractor's payroll system is capable of producing export files. For details, see pages 17-22 of the CRCS System Background Information manual available online on the Labor, Wages, and EEO Information page at: <http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/crc-basic-info.pdf>

## REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

### ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

### I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.

3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.

4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

### II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

**1. Equal Employment Opportunity:** Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under

this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.

b. The contractor will accept as its operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: 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, pre-apprenticeship, and/or on-the-job training."

**2. EEO Officer:** The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

**3. Dissemination of Policy:** All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

**4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.

c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.

**5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

**6. Training and Promotion:**

a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are



applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.

**7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:

a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.

b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

**8. Reasonable Accommodation for Applicants / Employees with Disabilities:** The contractor must be familiar

with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.

**9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment:** The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.

a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.

b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

#### **10. Assurance Required by 49 CFR 26.13(b):**

a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.

b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.

**11. Records and Reports:** The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.

a. The records kept by the contractor shall document the following:

(1) The number and work hours of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;

b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on [Form FHWA-1391](#). The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor

will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

### III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color, religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or single-user restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

### IV. DAVIS-BACON AND RELATED ACT PROVISIONS

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

#### 1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions

of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b. (1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(ii) The classification is utilized in the area by the construction industry; and

(iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or

will notify the contracting officer within the 30-day period that additional time is necessary.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program. Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

## **2. Withholding**

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

## **3. Payrolls and basic records**

a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-

Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

b. (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..

(2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.

(4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### **4. Apprentices and trainees**

##### **a. Apprentices (programs of the USDOL).**

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly

rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

##### **b. Trainees (programs of the USDOL).**

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.



d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

**5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

**6. Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

**7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

**8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

**9. Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

**10. Certification of eligibility.**

a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

**V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

**1. Overtime requirements.** No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

**2. Violation; liability for unpaid wages; liquidated damages.** In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.

**3. Withholding for unpaid wages and liquidated damages.** The FHWA or the contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

**4. Subcontracts.** The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

## VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).

a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:

(1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;

(2) the prime contractor remains responsible for the quality of the work of the leased employees;

(3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and

(4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is

evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

## VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

## VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

## **IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.

2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

## **X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION**

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more – as defined in 2 CFR Parts 180 and 1200.

### **1. Instructions for Certification – First Tier Participants:**

a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this

covered transaction. The prospective first tier participant 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 first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

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

d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction 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 or agency entering into this transaction.

g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

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

j. Except for transactions authorized under paragraph (f) of these instructions, if a participant 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 or agency may terminate this transaction for cause or default.

\* \* \* \* \*

## **2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:**

a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:

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

(2) 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;

(3) 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 offenses enumerated in paragraph (a)(2) of this certification; and

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

b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

## **2. Instructions for Certification - Lower Tier Participants:**

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.

b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which

this transaction originated may pursue available remedies, including suspension and/or debarment.

c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.

d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction 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 or agency with which this transaction originated.

f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.

g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (<https://www.epls.gov/>), which is compiled by the General Services Administration.

h. 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 participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant 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 or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

\* \* \* \* \*

**Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:**

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

\* \* \* \* \*

**XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING**

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

**ATTACHMENT A - EMPLOYMENT AND MATERIALS  
PREFERENCE FOR APPALACHIAN DEVELOPMENT  
HIGHWAY SYSTEM OR APPALACHIAN LOCAL ACCESS  
ROAD CONTRACTS**

This provision is applicable to all Federal-aid projects funded under the Appalachian Regional Development Act of 1965.

1. During the performance of this contract, the contractor undertaking to do work which is, or reasonably may be, done as on-site work, shall give preference to qualified persons who regularly reside in the labor area as designated by the DOL wherein the contract work is situated, or the subregion, or the Appalachian counties of the State wherein the contract work is situated, except:

a. To the extent that qualified persons regularly residing in the area are not available.

b. For the reasonable needs of the contractor to employ supervisory or specially experienced personnel necessary to assure an efficient execution of the contract work.

c. For the obligation of the contractor to offer employment to present or former employees as the result of a lawful collective bargaining contract, provided that the number of nonresident persons employed under this subparagraph (1c) shall not exceed 20 percent of the total number of employees employed by the contractor on the contract work, except as provided in subparagraph (4) below.

2. The contractor shall place a job order with the State Employment Service indicating (a) the classifications of the laborers, mechanics and other employees required to perform the contract work, (b) the number of employees required in each classification, (c) the date on which the participant estimates such employees will be required, and (d) any other pertinent information required by the State Employment Service to complete the job order form. The job order may be placed with the State Employment Service in writing or by telephone. If during the course of the contract work, the information submitted by the contractor in the original job order is substantially modified, the participant shall promptly notify the State Employment Service.

3. The contractor shall give full consideration to all qualified job applicants referred to him by the State Employment Service. The contractor is not required to grant employment to any job applicants who, in his opinion, are not qualified to perform the classification of work required.

4. If, within one week following the placing of a job order by the contractor with the State Employment Service, the State Employment Service is unable to refer any qualified job applicants to the contractor, or less than the number requested, the State Employment Service will forward a certificate to the contractor indicating the unavailability of applicants. Such certificate shall be made a part of the contractor's permanent project records. Upon receipt of this certificate, the contractor may employ persons who do not normally reside in the labor area to fill positions covered by the certificate, notwithstanding the provisions of subparagraph (1c) above.

5. The provisions of 23 CFR 633.207(e) allow the contracting agency to provide a contractual preference for the use of mineral resource materials native to the Appalachian region.

6. The contractor shall include the provisions of Sections 1 through 4 of this Attachment A in every subcontract for work which is, or reasonably may be, done as on-site work.

SEPTEMBER 2002

**NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE  
EQUAL EMPLOYMENT OPPORTUNITY (EXECUTIVE ORDER 11246)**

1. The Offeror's or Bidder's attention is called to the "Employment Practices" and "Equal Opportunity Clause" set forth in the Required Contract Provisions, FHWA 1273.
2. The goals and timetables for minority and female participation expressed in percentage terms for the contractor's aggregate work force in each trade, on all construction work in the covered area, are as follows:

**Goals for Minority Participation for Each Trade:**

<u>County</u>	<u>%</u>	<u>County</u>	<u>%</u>	<u>County</u>	<u>%</u>
Adams	1.7	Iowa	1.7	Polk	2.2
Ashland	1.2	Iron	1.2	Portage	0.6
Barron	0.6	Jackson	0.6	Price	0.6
Bayfield	1.2	Jefferson	7.0	Racine	8.4
Brown	1.3	Juneau	0.6	Richland	1.7
Buffalo	0.6	Kenosha	3.0	Rock	3.1
Burnett	2.2	Kewaunee	1.0	Rusk	0.6
Calumet	0.9	La Crosse	0.9	St. Croix	2.9
Chippewa	0.5	Lafayette	0.5	Sauk	1.7
Clark	0.6	Langlade	0.6	Sawyer	0.6
Columbia	1.7	Lincoln	0.6	Shawano	1.0
Crawford	0.5	Manitowoc	1.0	Sheboygan	7.0
Dane	2.2	Marathon	0.6	Taylor	0.6
Dodge	7.0	Marinette	1.0	Trempealeau	0.6
Door	1.0	Marquette	1.7	Vernon	0.6
Douglas	1.0	Menominee	1.0	Vilas	0.6
Dunn	0.6	Milwaukee	8.0	Walworth	7.0
Eau Claire	0.5	Monroe	0.6	Washburn	0.6
Florence	1.0	Oconto	1.0	Washington	8.0
Fond du Lac	1.0	Oneida	0.6	Waukesha	8.0
Forest	1.0	Outagamie	0.9	Waupaca	1.0
Grant	0.5	Ozaukee	8.0	Waushara	1.0
Green	1.7	Pepin	0.6	Winnebago	0.9
Green Lake	1.0	Pierce	2.2	Wood	0.6

**Goals for female participation for each trade: 6.9%**

These goals are applicable to all the contractor's construction work, (whether or not it is federal or federally assisted), performed in the covered area. If the contractor performs construction work in the geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and nonfederally involved construction.

The contractor's compliance with the Executive Order and the Regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order and the Regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within ten (10) working days of award of any construction subcontract in excess of \$10,000.00 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number of the subcontractor, employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

As referred to in this section, the Director means:

Director  
Office of Federal Contract Compliance Programs  
Ruess Federal Plaza  
310 W. Wisconsin Ave., Suite 1115  
Milwaukee, WI 53202

The "Employer Identification Number" means the Federal Social Security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941.

4. As used in this notice, and in the contract resulting from solicitation, the "covered area" is the county(ies) in Wisconsin to which this proposal applies.

**APRIL 2012**

**ADDITIONAL FEDERAL-AID PROVISIONS**

**BUY AMERICA**

All steel and iron materials permanently incorporated in this project shall be domestic products and all manufacturing and coating processes for these materials 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.

Upon completion of the project certify to the engineer, in writing using department form WS4567, 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 WS4567 is available at:

<http://roadwaystandards.dot.wi.gov/standards/forms/hidden/ws4567.doc>

**NOTICE TO ALL BIDDERS**

To report bid rigging activities call:

**1-800-424-9071**

The U.S. Department of Transportation (DOT) operates the above toll-free "hotline" Monday through Friday, 8:00 a.m. to 5:00 p.m., Eastern Time. Anyone with knowledge of possible bid rigging, bidding collusion, or other fraudulent activities should use the "hotline" to report such activities.

The "hotline" is part of the DOT's continuing effort to identify and investigate highway construction contract fraud and abuse and is operated under the direction of the DOT Inspector General. All information will be treated confidentially and caller anonymity will be respected.

**Effective with September 2004 Letting**

**WISCONSIN DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS AND TRANSPORTATION FACILITIES**

**SUPPLEMENTAL REQUIRED CONTRACT PROVISIONS**

- I. Wage Rates, Hours of labor and payment of Wages
- II. Payroll Requirements
- III. Postings at the Site of the Work
- IV. Affidavits
- V. Wage Rate Redistribution
- VI. Additional Classifications

**I. WAGE RATES, HOURS OF LABOR AND PAYMENT OF WAGES**

The schedule of "Minimum Wage Rates" attached hereto and made a part hereof furnishes the prevailing wage rates that have been determined pursuant to Section 103.50 of the Wisconsin Statutes. These wage rates are the minimum required to be paid to the various laborers, workers, mechanics and truck drivers employed by contractors and subcontractors on the construction work embraced by the contract and subject to prevailing hours and wages under Section 103.50, Stats. If necessary to employ laborers, workers, mechanics or truck drivers whose classification is not listed on the schedule, they shall be paid at rates conformable to those listed for similar classifications. Apprentices shall be paid at rates not less than those prescribed in their state indenture contracts.

While the wage rates shown are the minimum rates required by the contract to be paid during its life, this is not a representation that labor can be obtained at these rates. It is the responsibility of bidders to inform themselves as to the local labor conditions and prospective changes or adjustments of wage rates. No increase in the contract price shall be allowed or authorized on account of the payment of wage rates in excess of those listed herein.

Pursuant to Section 103.50 of the Wisconsin Statutes, the prevailing hours of labor have been determined to be up to 10 hours per day and 40 hours per calendar week Monday through Friday. If any laborer, worker, mechanic or truck driver is permitted or required to work more than the prevailing number of hours per day or per calendar week on this contract, they shall be paid for all hours in excess of the prevailing hours at a rate of at least one and one-half (1 1/2) times their hourly rate of pay. All work on Saturday, Sunday and the following holidays is to be paid at time and a half: (1) January 1, (2) the last Monday in May, (3) July 4, (4) the first Monday in September, (5) the fourth Thursday in November, (6) December 25, (7) the day before if January 1, July 4 or December 25 falls on a Saturday and (8) the day following if January 1, July 4 or December 25 falls on a Sunday.

All laborers, workers, mechanics and truck drivers shall be paid unconditionally not less often than once a week. Persons who own and operate their own trucks must receive the prevailing truck driver rate for the applicable type of truck (i.e. 2 axle, 3 or more axle, articulated, eculid or dumptor) he or she operates, plus an agreed upon amount for the use of his or her truck. Every owner-operator MUST be paid separately for their driving and for the use of their truck.

For those projects subject to the requirements of the Davis-Bacon Act, the Secretary of Labor will also have determined "Minimum Wage Rates" for work to be performed under the contract. These rates are, for all or most of the labor, worker, mechanic or truck driver classifications, identical to those established under Section 103.50 of the Wisconsin Statutes. In the event the rates are not identical, the higher of the two rates will govern.

## **II. PAYROLL REQUIREMENTS**

All contractors and subcontractors must submit weekly Certified Payrolls and Compliance Statement verifying that all laborers, workers, mechanics and truck drivers working on the project have been paid the prevailing wage rates for all work performed under the contract required by Section 103.50 of the Wisconsin Statutes.

## **III. POSTINGS AT THE SITE OF THE WORK**

In addition to the required postings furnished by the Department, the contractor shall post the following in at least one conspicuous place at the site of work:

- a. "NOTICE TO EMPLOYEES," which provides information required to be posted by the provisions of Section 103.50 of the Wisconsin Statutes.
- b. A copy of the State of Wisconsin Minimum Wages Rates. (Four pages.)
- c. A copy of the contractor's Equal Employment Opportunity Policy.
- d. On any project involving federal aid, in addition to the furnished postings, the contractor shall post a copy of the "Davis-Bacon Act, Minimum Wage Rates". (Three pages.)

## **IV. WAGE RATE REDISTRIBUTION**

The amount specified as the hourly basic rate of pay and the amount(s) specified as the fringe benefit contribution(s), for all classes of laborers, workers, mechanics or truck drivers may be redistributed, when necessary, to conform to those specified in any applicable collective bargaining agreement, provided that both parties to such agreement

request and receive the approval for any such redistribution from both the Department of Transportation and the Department of Workforce Development prior to the implementation of such redistribution.

## **V. ADDITIONAL CLASSIFICATIONS**

Any unlisted laborer or mechanic classification that is needed to perform work on this project, and is not included within the scope of any of the classifications listed in the application prevailing wage rate determination, may be added after award only if all of the following criteria have been met:

1. The affected employer(s) must make a written request to WisDOT Central Office to utilize the unlisted classification on this project.
2. The request must indicate the scope of the work to be performed by the unlisted classification and must indicate the proposed wage/fringe benefit package that the unlisted classification is to receive.
3. The work to be performed by the unlisted classification must not be performed by a classification that is included in the applicable prevailing wage rate determination.
4. The unlisted classification must be commonly employed in the area where the project is located.
5. The proposed wage/fringe benefit package must bear a reasonable relationship to those set forth in the applicable prevailing wage rate determination.
6. The request should be made prior to the actual performance of the work by the unlisted classification.
7. DWD must approve the use of the unlisted classification and the proposed wage/fringe benefit package. USDOL also must approve the use of the unlisted classification and the proposed wage/fringe benefit package on federal aid projects.
8. WisDOT and DWD may amend the proposed wage/fringe benefit package, as deemed necessary, and may set forth specific employment ratios and scope of work requirements in the approval document.

The approved wage/fringe benefit package shall be paid to all laborers, workers, mechanics or truck drivers performing work within the scope of that performed by the unlisted classification, from the first day on which such work is performed. In the event that work is performed by the unlisted classification prior to approval, the wage/fringe benefit package to be paid for such work must be in conformance with the wage/fringe



benefit package approved for such work. Under this arrangement a retroactive adjustment in wages and/or fringe benefits may be required to be made to the affected laborers, workers, mechanics or truck drivers by the affected employer(s).

**ANNUAL PREVAILING WAGE RATE DETERMINATION  
FOR ALL STATE HIGHWAY PROJECTS  
WAUKESHA COUNTY**

Compiled by the State of Wisconsin - Department of Workforce Development  
for the Department of Transportation  
Pursuant to s. 103.50, Stats.  
Issued on May 1, 2013

**CLASSIFICATION:** Contractors are required to call the Department of Workforce Development if there are any questions regarding the proper trade or classification to be used for any worker on a public works project.

**OVERTIME:** Time and one-half must be paid for all hours worked over 10 hours per day and 40 hours per calendar week and for all hours worked on Saturday, Sunday and the following six (6) holidays: January 1; the last Monday in May; July 4; the 1st Monday in September; the 4th Thursday in November; December 25; the day before if January 1, July 4 or December 25 falls on a Saturday; the day following if January 1, July 4 or December 25 falls on a Sunday.

**FUTURE INCREASE:** If indicated for a specific trade or occupation, the full amount of such increase MUST be added to the "TOTAL" indicated for such trade or occupation on the date(s) such increase(s) becomes effective.

**PREMIUM PAY:** If indicated for a specific trade or occupation, the full amount of such pay MUST be added to the "HOURLY BASIC RATE OF PAY" indicated for such trade or occupation, whenever such pay is applicable.

**SUBJOURNEY:** Wage rates may be available for some of the classifications indicated below. Any employer that desires to use any subjourney classification on a project MUST request the applicable wage rate from the Department of Workforce Development PRIOR to the date such classification is used on such project. Form ERD-10880 is available for this purpose and can be obtained by writing to the Department of Workforce Development, Equal Rights Division, P.O. Box 8928, Madison, WI 53708.

<u>TRADE OR OCCUPATION</u>	<u>HOURLY BASIC RATE OF PAY</u>	<u>HOURLY FRINGE BENEFITS</u>	<u>TOTAL</u>
	\$	\$	\$
Bricklayer, Blocklayer or Stonemason	35.58	19.20	54.78
Carpenter	32.93	19.81	52.74
Future Increase(s): Add \$.75/hr on 6/3/2013. Add \$1.25/hr on 6/2/2014. Premium Pay: DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.			
Cement Finisher	30.69	17.53	48.22
Future Increase(s): Add \$1.87 on 6/1/13; Add \$1.87 on 6/1/14; Add \$1.87 on 6/1/15; Add \$1.75 on 6/1/16. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.40/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.			
Electrician	31.54	21.14	52.68
Fence Erector	28.00	4.50	32.50
Ironworker	31.31	21.99	53.30
Line Constructor (Electrical)	31.29	15.34	46.63
Painter	29.22	16.69	45.91
Pavement Marking Operator	29.22	16.69	45.91
Piledriver	30.66	15.31	45.97
Roofer or Waterproofer	29.40	15.05	44.45
Teledata Technician or Installer	23.10	10.11	33.21
Tuckpointer, Caulker or Cleaner	34.35	12.36	46.71
Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	16.95	46.59
Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	33.35	14.23	47.58
Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51

<b>TRADE OR OCCUPATION</b>	<b>HOURLY BASIC RATE OF PAY</b>	<b>HOURLY FRINGE BENEFITS</b>	<b>TOTAL</b>
	<b>\$</b>	<b>\$</b>	<b>\$</b>
Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	24.08	12.96	37.04
Groundman - ELECTRICAL LINE CONSTRUCTION ONLY	21.75	11.90	33.65

**TRUCK DRIVERS**

Single Axle or Two Axle	33.22	18.90	52.12
Three or More Axle	23.31	17.13	40.44
Future Increase(s): Add \$1.85/hr on 6/1/2013. Premium Pay: DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day.			
Articulated, Euclid, Dumptror, Off Road Material Hauler	27.77	19.90	47.67
Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: <a href="http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm">http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm</a> .			
Pavement Marking Vehicle	23.84	14.92	38.76
Shadow or Pilot Vehicle	33.22	18.90	52.12
Truck Mechanic	22.50	16.19	38.69

**LABORERS**

General Laborer	25.39	18.40	43.79
Future Increase(s): Add \$1.70/hr on 6/1/2013; Add \$1.60/hr on 6/1/2014. Premium Pay: Add \$.15/hr for air tool operator, joint sawer and filler (pavement), vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add \$.35/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add \$.50/hr for line and grade specialist; Add \$.65/hr for blaster and powderman; Add \$2.01/hr for topman; Add \$2.46/hr for bottomman; Add \$3.23/hr for pipelayer. / DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).			
Asbestos Abatement Worker	18.00	0.00	18.00
Landscaper	25.39	18.40	43.79
Future Increase(s): Add \$1.70/hr on 6/1/13; Add \$1.60/hr on 6/1/14. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr for work on projects involving temporary traffic control setup, for lane and shoulder closures, when work under artificial illumination conditions is necessary as required by the project provisions (including prep time prior to and/or cleanup after such time period).			
Flagperson or Traffic Control Person	21.88	18.40	40.28
Future Increase(s): Add \$1.70/hr on 6/1/2013; Add \$1.60/hr on 6/1/2014. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise.			
Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
Railroad Track Laborer	14.50	4.81	19.31

<u>TRADE OR OCCUPATION</u>	<u>HOURLY BASIC RATE OF PAY</u>	<u>HOURLY FRINGE BENEFITS</u>	<u>TOTAL</u>
	\$	\$	\$
<b>HEAVY EQUIPMENT OPERATORS</b>			
Crane, Tower Crane, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 176 Ft or Over; Crane, Tower Crane, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of Over 100 Tons, Self-Erecting Tower Crane With a Lifting Capacity Of Over 4,000 Lbs., Crane With Boom Dollies; Traveling Crane (Bridge Type). Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: <a href="http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm">http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm</a> .	35.22	19.90	55.12
Backhoe (Track Type) Having a Mfr.'s Rated Capacity of 130,000 Lbs. or Over; Caisson Rig; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With Boom, Leads &/or Jib Lengths Measuring 175 Ft or Under; Crane, Tower Crane, Portable Tower, Pedestal Tower or Derrick, With or Without Attachments, With a Lifting Capacity of 100 Tons or Under, Self-Erecting Tower Crane With A Lifting Capacity Of 4,000 Lbs., & Under; Dredge (NOT Performing Work on the Great Lakes); Licensed Boat Pilot (NOT Performing Work on the Great Lakes); Pile Driver. Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: <a href="http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm">http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm</a> .	34.72	19.90	54.62
Air Track, Rotary or Percussion Drilling Machine &/or Hammers, Blaster; Asphalt Heater, Planer & Scarifier; Asphalt Milling Machine; Asphalt Screed; Automatic Subgrader (Concrete); Backhoe (Track Type) Having a Mfr.'s Rated Capacity of Under 130,000 Lbs., Backhoe (Mini, 15,000 Lbs. & Under); Bituminous (Asphalt) Plant & Paver, Screed; Boatmen (NOT Performing Work on the Great Lakes); Boring Machine (Directional, Horizontal or Vertical); Bridge (Bidwell) Paver; Bulldozer or Endloader; Concrete Batch Plant, Batch Hopper; Concrete Breaker (Large, Auto, Vibratory/Sonic, Manual or Remote); Concrete Bump Cutter, Grinder, Planing or Grooving Machine; Concrete Conveyor System; Concrete Laser/Screed; Concrete Paver (Slipform); Concrete Pump, Concrete Conveyor (Rotec or Bidwell Type); Concrete Slipform Placer Curb & Gutter Machine; Concrete Spreader & Distributor; Crane (Carry Deck, Mini) or Truck Mounted Hydraulic Crane (10 Tons or Under); Crane With a Lifting Capacity of 25 Tons or Under; Forestry Equipment, Timbco, Tree Shear, Tub Grinder, Processor; Gradall (Cruz-Aire Type); Grader or Motor Patrol; Grout Pump; Hydro-Blaster (10,000 PSI or Over); Loading Machine (Conveyor); Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A- Frames. Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14.	34.22	19.90	54.12

<b><u>TRADE OR OCCUPATION</u></b>	<b><u>HOURLY BASIC RATE OF PAY</u></b>	<b><u>HOURLY FRINGE BENEFITS</u></b>	<b><u>TOTAL</u></b>
	<b><u>\$</u></b>	<b><u>\$</u></b>	<b><u>\$</u></b>
Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: <a href="http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm">http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm</a> .			
Belting, Burlap, Texturing Machine; Broom or Sweeper; Compactor (Self-Propelled or Tractor Mounted, Towed & Light Equipment); Concrete Finishing Machine (Road Type); Environmental Burner; Farm or Industrial Type Tractor; Fireman (Asphalt Plant, Pile Driver & Derrick NOT Performing Work on the Great Lakes); Forklift; Greaser; Hoist (Tugger, Automatic); Jeep Digger; Joint Sawyer (Multiple Blade); Launch (NOT Performing Work on the Great Lakes); Lift Slab Machine; Mechanical Float; Mulcher; Power Subgrader; Robotic Tool Carrier (With or Without Attachments); Roller (Rubber Tire, 5 Ton or Under); Self Propelled Chip Spreader; Shouldering Machine; Skid Steer Loader (With or Without Attachments); Telehandler; Tining or Curing Machine.	33.96	19.90	53.86
Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: <a href="http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm">http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm</a> .			
Air Compressor (&/or 400 CFM or Over); Air, Electric or Hydraulic Jacking System; Augers (Vertical & Horizontal); Automatic Belt Conveyor & Surge Bin; Boiler (Temporary Heat); Concrete Proportioning Plant; Crusher, Screening or Wash Plant; Generator (&/or 150 KW or Over); Heaters (Mechanical); High Pressure Utility Locating Machine (Daylighting Machine); Mudjack; Oilier; Prestress Machine; Pug Mill; Pump (3 Inch or Over) or Well Points; Rock, Stone Breaker; Screed (Milling Machine); Stump Chipper; Tank Car Heaters; Vibratory Hammer or Extractor, Power Pack.	33.67	19.90	53.57
Future Increase(s): Add \$2/hr on 6/1/13; Add \$1.75/hr on 6/1/14. Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add \$1.25/hr night work premium. See DOT's website for details about the applicability of this night work premium at: <a href="http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm">http://roadwaystandards.dot.wi.gov/hcci/labor-wages-eeo/index.shtm</a> .			
Fiber Optic Cable Equipment.	20.00	9.90	29.90

SUPERSEDES DECISION WI20070010  
U. S. DEPARTMENT OF LABOR  
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin

DECISION NUMBER: W1080010

DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

DATE: February 1, 2013

LABORERS CLASSIFICATION:	Basic Hourly Rates	Fringe Benefits	Truck Drivers:	Basic Hourly Rates	Fringe Benefits
Group 1: General Laborer; Tree Trimmer; Conduit Layer; Demolition and Wrecking Laborer; Guard Rail, Fence and Bridge Builder; Landscaper, Multiplate Culvert Assembler; Stone Handler; Bituminous Worker (Shoveler, Loader, Utility Man); Batch Truck Dumper; or Cement Handler; Bituminous Worker; (Dumper, Ironer, Smoother, Tamper); Concrete Handler .....	\$24.34.....	16.74	1 & 2 Axles .....	23.16 .....	17.13
Group 2: Air Tool Operator; Joint Sawyer and Filler (Pavement); Vibrator or Tamper Operator (Mechanical Hand Operated); Chain Saw Operator; Demolition Burning Torch Laborer.....	24.49.....	16.74	Three or More Axles; Euclids, Dumptor & Articulated, Truck Mechanic.....	23.31 .....	17.13
Group 3: Bituminous Worker (Raker and Luteman); Formsetter (Curb, Sidewalk, and Pavement); Strike Off man .....	24.69.....	16.74			
Group 4: Line and Grade Specialist .....	24.84.....	16.74			
Group 5: Blaster and Powderman .....	24.99.....	16.74			
Group 6: Flagperson traffic control person .....	20.83.....	16.74			

CLASSES OF LABORER AND MECHANICS

Bricklayer .....	35.58.....	16.07
Carpenter .....	30.52.....	14.41
Piledriverman .....	27.25.....	19.46
Ironworker .....	30.51.....	22.72
Cement Mason/Concrete Finisher .....	30.69.....	17.53
Electrician .....	See Page 3	
Line Construction		
Lineman.....	38.25.....	18.00
Heavy Equipment Operator .....	34.43.....	16.71
Equipment Operator.....	30.60.....	15.41
Heavy Groundman Driver.....	26.78.....	14.11
Light Groundman Driver .....	24.86.....	13.45
Groundsman.....	21.04.....	12.16
Millwrights.....	26.32.....	13.98
Painter, Brush.....	29.52.....	18.79
Painter, Spray and Sandblaster .....	30.27.....	18.79
Painter, Bridge .....	29.87.....	18.79
Well Drilling:		
Well Driller .....	16.52.....	3.70

Notes: Welders receive rate prescribed for craft performing operation to which welding is incidental. Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR, 5.5(a)(1)(ii)). Includes Modification #0, dated January 4, 2013; Modification #1 dated February 1, 2013.

SUPERSEDES DECISION WI20070010  
U. S. DEPARTMENT OF LABOR  
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin

DECISION NUMBER: W1080010

DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

DATE: February 1, 2013

<u>POWER EQUIPMENT OPERATORS CLASSIFICATION:</u>	<u>Basic Hourly Rates</u>	<u>Fringe Benefits</u>	<u>POWER EQUIPMENT OPERATORS CLASSIFICATION: (Continued)</u>	<u>Basic Hourly Rates</u>	<u>Fringe Benefits</u>
Group 1: Cranes, tower cranes and derricks, with or without attachments, with a lifting capacity of over 100 tons or cranes, tower cranes and derricks with boom, leads and/or jib lengths measuring 176 feet or longer .....	\$35.22	\$19.65	(scraper, dozer, pusher, loader); scraper - rubber tired (single or twin engine); endloader hydraulic backhoe (tractor-type); trenching machine; skid rigs; tractor, side boom (heavy); drilling or boring machine (mechanical heavy); roller (over 5 tons); percussion or rotary drilling machine; air track; blaster; loading machine (conveyor); tugger; boatmen; winches and A-frames; post driver; material hoist operator. ....	\$34.22	\$19.65
Group 2: Cranes, tower cranes and derricks, with or without attachments, with a lifting capacity of 100 tons or less or cranes, tower cranes and derricks with boom, leads and/or jib lengths measuring 175 feet or less, and backhoes (excavators) having a manufacturer's rated capacity of 3 cu. yds. and over, caisson rigs, pile driver, dredge operator, dredge engineer. ....	\$34.72	\$19.65	Group 4: Greaser, roller steel (5 tons or less); roller (pneumatic tired) - self-propelled; tractor (mounted or towed compactors and light equipment); shouldering machine; self-propelled chip spreader; concrete spreader; finishing machine; mechanical float; curing machine; power subgrader; joint saw (multiple blade) belting machine; burlap machine; texturing machine; tractor, endloader (rubber tired) - light; jeep digger; fork lift; mulcher; launch operator; fireman; environmental burner. ....	\$33.96	\$19.65
Group 3: Mechanic or welder - heavy duty equipment, cranes with a lifting capacity of 25 tons or less, concrete breaker (manual or remote); vibrator/sonic concrete breaker; concrete laser screed; concrete slipform paver; concrete batch plant operator; concrete pavement spreader - heavy duty (rubber tired); concrete spreader and distributor, automatic subgrader (concrete); concrete grinder and planing machine; concrete slipform curb and gutter machine; slipform concrete placer; tube finisher; hydro blaster (10,000 psi and over); bridge paver; concrete conveyor system; concrete pump; stabilizing mixer (self propelled); shoulder widener; asphalt plant engineer; bituminous paver; bump cutter and grooving machine; milling machine; screed (bituminous paver); asphalt heater, planer and scarifier; backhoes (excavators) having a manufacturers rated capacity of under 3 cu. yds.; grader or motor patrol; tractor			Group 5: Air compressor; power pack; vibratory hammer and extractor; heavy equipment, leadman; tank car heaters; stump chipper; curb machine operator; concrete proportioning plants generators; mudjack operator; rock breaker; crusher or screening plant; screed (milling machine); automatic belt conveyor and surge bin; pug mill operator; oiler; pump (over 3 inches); drilling machine helper. ....	\$33.67	\$19.65
			Group 6: Off - road material hauler with or without ejector.....	\$27.77	\$19.65
			Premium Pay: EPA Level "A" protection - \$3.00 per hour EPA Level "B" protection - \$2.00 per hour EPA Level "C" protection - \$1.00 per hours		

SUPERSEDES DECISION WI20070010  
U. S. DEPARTMENT OF LABOR  
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin

DECISION NUMBER: W1080010

DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

DATE: February 1, 2013

LABORERS CLASSIFICATION: Rates Benefits

			Area 4 -	BROWN, DOOR, KEWAUNEE, MANITOWOC (except Schleswig), MARINETTE (Wausauke and area south thereof), OCONTO, MENOMINEE (East of a line 6 miles West of the West boundary of Oconto County), SHAWANO (except area North of Townships of Aniwa and Hutchins) COUNTIES.
Electricians				
Area 1	\$27.80	16.52		
Area 2:				
Electricians.....	29.13	17.92	Area 5 -	ADAMS, CLARK (Colby, Freemont, Lynn, Mayville, Sherman, Sherwood, Unity), FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, MARINETTE (Area North of the town of Wausauke), MENOMINEE (Area West of a line 6 miles West of the West boundary of Oconto County), ONEIDA, PORTAGE, SHAWANO (Area North of the townships of Aniwa and Hutchins), VILAS AND WOOD COUNTIES
Area 3:				
Electrical contracts under \$130,000 .....	26.24	16.85		
Electrical contracts over \$130,000 .....	29.41	16.97		
Area 4:	28.10	17.24		
Area 5	28.61	16.60		
Area 6	35.25	19.30	Area 6 -	KENOSHA COUNTY
Area 8				
Electricians.....	30.00	17.76	Area 8 -	DODGE, (Emmet Township only), GREEN, JEFFERSON, LAFAYETTE, RACINE (Burlington township), ROCK and WALWORTH COUNTIES
Area 9:				
Electricians.....	32.94	18.71	Area 9 -	COLUMBIA, DANE, DODGE, (area west of Hwy. 26, except Chester & Emmet Townships), GREEN LAKE (except townships of Berlin, Seneca and St. Marie), IOWA, MARQUETTE (except townships of Neshkoka, Crystal Lake, Newton and Springfield), and SAUK COUNTIES
Area 10	28.97	19.55		
Area 11	31.27	23.12		
Area 12	32.87	19.23		
Area 13	32.20	21.64	Area 10 -	CALUMET (Township of New Holstein), DODGE (East of Hwy. 26 including Chester Township), FOND DU LAC, MANITOWOC (Schleswig), and SHEBOYGAN COUNTIES
Teledata System Installer				
Area 14			Area 11 -	DOUGLAS COUNTY
Installer/Technician .....	21.89	11.83		
Sound & Communications			Area 12 -	RACINE (except Burlington township) COUNTY
Area 15				
Installer .....	16.47	14.84	Area 13 -	MILWAUKEE, OZAUKEE, WASHINGTON and WAUKESHA COUNTIES
Technician.....	24.75	16.04	Area 14 -	Statewide.
Area 1 -			Area 15 -	DODGE (East of Hwy 26 including Chester Twp, excluding Emmet Twp), FOND DU LAC (Except Waupun), MILWAUKEE, OZAUKEE, MANITOWOC (Schleswig), WASHINGTON, AND WAUKESHA COUNTIES.
CALUMET (except township of New Holstein), GREEN LAKE (N. part, including Townships of Berlin, St. Marie and Seneca), MARQUETTE (N. part, including Townships of Crystal Lake, Neshkoro, Newton & Springfield), OUTAGAMIE, WAUPACA, WAUSHARA and WINNEBAGO COUNTIES.				
Area 2 -				
ASHLAND, BARRON, BAYFIELD, BUFFALO, BURNETT, CHIPPEWA, CLARK (except Mayville, Colby, Unity, Sherman, Fremont, Lynn and Sherwood), CRAWFORD, DUNN, EAU CLAIRE, GRANT, IRON, JACKSON, LA CROSSE, MONROE, PEPIN, PIERCE, POLK, PRICE, RICHLAND, RUSK, ST. CROIX, SAWYER, TAYLOR, TREMPLEAU, VERNON and WASHBURN COUNTIES				
Area 3 -				
FLORENCE (townships of Aurora, Commonwealth, Fern, Florence and Homestead), MARINETTE (Niagara township)				



**FEBRUARY 1999**

**NOTICE TO BIDDERS  
WAGE RATE DECISION**

The wage rate decision of the Secretary of Labor which has been incorporated in these advertised specifications is incomplete in that the classifications may be omitted from the Secretary of Labor's decision.

Since the bidder is responsible, independently, for ascertaining area practice with respect to the necessity, or lack of necessity, for the use of these classifications in the prosecution of the work contemplated by this project, no inference may be drawn from the omission of these classifications concerning prevailing area practices relative to their use. Further, this omission will not, per se, be construed as establishing any governmental liability for increased labor cost if it is subsequently determined that such classifications are required.

There may be omissions and/or errors in the federal wage rates. The bidder is responsible for evaluating and determining the correct applicable rate. The higher of state or federal rate will apply.



## SCHEDULE OF ITEMS

REVISED:

CONTRACT:  
20130514023PROJECT(S):  
2380-00-73FEDERAL ID(S):  
WISC 2013270

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS

## SECTION 0001 ROADWAY ITEMS

0010	201.0105 CLEARING	81.000				
		STA	.		.	
0020	201.0205 GRUBBING	81.000				
		STA	.		.	
0030	203.0100 REMOVING SMALL PIPE CULVERTS	19.000				
		EACH	.		.	
0040	203.0200 REMOVING OLD STRUCTURE (STATION) 001. 45+80	LUMP	LUMP			.
0050	204.0100 REMOVING PAVEMENT	31,798.000				
		SY	.		.	
0060	204.0125 REMOVING ASPHALTIC SURFACE MILLING	81.000				
		TON	.		.	
0070	204.0150 REMOVING CURB & GUTTER	3,821.000				
		LF	.		.	
0080	204.0155 REMOVING CONCRETE SIDEWALK	887.000				
		SY	.		.	
0090	204.0170 REMOVING FENCE	625.000				
		LF	.		.	
0100	204.0185 REMOVING MASONRY	65.000				
		CY	.		.	

## SCHEDULE OF ITEMS

REVISED:

CONTRACT:  
20130514023PROJECT(S):  
2380-00-73FEDERAL ID(S):  
WISC 2013270

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0110	204.0190 REMOVING SURFACE DRAINS	1.000 EACH	.		.	
0120	204.0195 REMOVING CONCRETE BASES	13.000 EACH	.		.	
0130	204.0210 REMOVING MANHOLES	18.000 EACH	.		.	
0140	204.0220 REMOVING INLETS	30.000 EACH	.		.	
0150	204.0245 REMOVING STORM SEWER (SIZE) 001. 12-INCH	613.000 LF	.		.	
0160	204.0245 REMOVING STORM SEWER (SIZE) 002. 18-INCH	590.000 LF	.		.	
0170	204.0245 REMOVING STORM SEWER (SIZE) 003. 24-INCH	2,314.000 LF	.		.	
0180	204.0250 ABANDONING MANHOLES	2.000 EACH	.		.	
0190	204.0280 SEALING PIPES	56.000 EACH	.		.	
0200	205.0100 EXCAVATION COMMON	101,286.000 CY	.		.	

## SCHEDULE OF ITEMS

REVISED:

CONTRACT:  
20130514023PROJECT(S):  
2380-00-73FEDERAL ID(S):  
WISC 2013270

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0210	205.0501.S EXCAVATION, HAULING, AND DISPOSAL OF PETROLEUM CONTAMINATED SOIL	2,000.000 TON	.		.	
0220	209.0100 BACKFILL GRANULAR	4,500.000 CY	.		.	
0230	213.0100 FINISHING ROADWAY (PROJECT) 001. 2380-00-73	1.000 EACH	.		.	
0240	305.0110 BASE AGGREGATE DENSE 3/4-INCH	40.000 TON	.		.	
0250	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH	47,005.000 TON	.		.	
0260	305.0500 SHAPING SHOULDERS	63.000 STA	.		.	
0270	310.0110 BASE AGGREGATE OPEN GRADED	14,963.000 TON	.		.	
0280	311.0110 BREAKER RUN	64,355.000 TON	.		.	
0290	325.0100 PULVERIZE AND RELAY	6,447.000 SY	.		.	
0300	415.0090 CONCRETE PAVEMENT 9-INCH	2,124.000 SY	.		.	
0310	416.0270 CONCRETE DRIVEWAY HES 7-INCH	3,097.000 SY	.		.	

## SCHEDULE OF ITEMS

REVISED:

CONTRACT:  
20130514023PROJECT(S):  
2380-00-73FEDERAL ID(S):  
WISC 2013270

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0320	440.4410.S INCENTIVE IRI RIDE	10,000.000 DOL	1.00000		10000.00	
0330	455.0115 ASPHALTIC MATERIAL PG64-22	545.000 TON	.		.	
0340	455.0120 ASPHALTIC MATERIAL PG64-28	386.000 TON	.		.	
0350	455.0505 ASPHALTIC MATERIAL SEAL COAT	290.000 GAL	.		.	
0360	455.0605 TACK COAT	1,275.000 GAL	.		.	
0370	460.1103 HMA PAVEMENT TYPE E-3	16,877.000 TON	.		.	
0380	460.2000 INCENTIVE DENSITY HMA PAVEMENT	10,802.000 DOL	1.00000		10802.00	
0390	465.0120 ASPHALTIC SURFACE DRIVEWAYS AND FIELD ENTRANCES	509.000 TON	.		.	
0400	465.0125 ASPHALTIC SURFACE TEMPORARY	1,643.000 TON	.		.	
0410	465.0315 ASPHALTIC FLUMES	8.000 SY	.		.	
0420	513.2050.S RAILING PIPE	184.000 LF	.		.	

## SCHEDULE OF ITEMS

REVISED:

CONTRACT:  
20130514023PROJECT(S):  
2380-00-73FEDERAL ID(S):  
WISC 2013270

CONTRACTOR : \_\_\_\_\_

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE		BID AMOUNT	
			DOLLARS	CTS	DOLLARS	CTS
0430	520.4012 CULVERT PIPE TEMPORARY 12-INCH	150.000 LF	.		.	
0440	520.7000 CLEANING CULVERT PIPES	36.000 EACH	.		.	
0450	520.8000 CONCRETE COLLARS FOR PIPE	36.000 EACH	.		.	
0460	522.1015 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 15-INCH	4.000 EACH	.		.	
0470	522.1018 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 18-INCH	1.000 EACH	.		.	
0480	522.1024 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH	4.000 EACH	.		.	
0490	522.1030 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 30-INCH	1.000 EACH	.		.	
0500	522.1036 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 36-INCH	1.000 EACH	.		.	
0510	532.0200.S WALL MODULAR BLOCK GRAVITY	194.000 SF	.		.	
0520	601.0411 CONCRETE CURB & GUTTER 30-INCH TYPE D	16,129.000 LF	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
0530	601.0600 CONCRETE CURB PEDESTRIAN	394.000 LF	.		.	
0540	602.0410 CONCRETE SIDEWALK 5-INCH	62,313.000 SF	.		.	
0550	602.0515 CURB RAMP DETECTABLE WARNING FIELD NATURAL PATINA	848.000 SF	.		.	
0560	603.8000 CONCRETE BARRIER TEMPORARY PRECAST DELIVERED	6,142.000 LF	.		.	
0570	603.8125 CONCRETE BARRIER TEMPORARY PRECAST INSTALLED	6,142.000 LF	.		.	
0580	606.0100 RIPRAP LIGHT	12.000 CY	.		.	
0590	608.0312 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 12-INCH	3,131.000 LF	.		.	
0600	608.0315 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 15-INCH	938.000 LF	.		.	
0610	608.0318 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 18-INCH	3,148.000 LF	.		.	
0620	608.0321 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 21-INCH	799.000 LF	.		.	
0630	608.0324 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 24-INCH	4,086.000 LF	.		.	



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			DOLLARS	CTS	DOLLARS	CTS
0640	608.0330 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 30-INCH	546.000 LF	.		.	
0650	608.0336 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 36-INCH	238.000 LF	.		.	
0660	610.0119 STORM SEWER PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL CLASS HE-III 19X30-INCH	40.000 LF	.		.	
0670	611.0530 MANHOLE COVERS TYPE J	59.000 EACH	.		.	
0680	611.0642 INLET COVERS TYPE MS	20.000 EACH	.		.	
0690	611.0652 INLET COVERS TYPE T	2.000 EACH	.		.	
0700	611.0660 INLET COVERS TYPE WM	142.000 EACH	.		.	
0710	611.2004 MANHOLES 4-FT DIAMETER	44.000 EACH	.		.	
0720	611.2005 MANHOLES 5-FT DIAMETER	1.000 EACH	.		.	
0730	611.2006 MANHOLES 6-FT DIAMETER	19.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
0740	611.3225 INLETS 2X2.5-FT	139.000				
	EACH		.		.	
0750	611.3901 INLETS MEDIAN 1 GRATE	21.000				
	EACH		.		.	
0760	611.8110 ADJUSTING MANHOLE COVERS	59.000				
	EACH		.		.	
0770	611.8115 ADJUSTING INLET COVERS	44.000				
	EACH		.		.	
0780	611.8120.S COVER PLATES TEMPORARY	78.000				
	EACH		.		.	
0790	612.0106 PIPE UNDERDRAIN 6-INCH	13,214.000				
	LF		.		.	
0800	612.0206 PIPE UNDERDRAIN UNPERFORATED 6-INCH	20.000				
	LF		.		.	
0810	612.0406 PIPE UNDERDRAIN WRAPPED 6-INCH	140.000				
	LF		.		.	
0820	614.0905 CRASH CUSHIONS TEMPORARY	28.000				
	EACH		.		.	
0830	616.0204 FENCE CHAIN LINK 4-FT	140.000				
	LF		.		.	
0840	616.0700.S FENCE SAFETY	1,690.000				
	LF		.		.	

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			DOLLARS	CTS	DOLLARS	CTS
0850	619.1000 MOBILIZATION	1.000 EACH	.		.	
0860	620.0300 CONCRETE MEDIAN SLOPED NOSE	1,674.000 SF	.		.	
0870	623.0200 DUST CONTROL SURFACE TREATMENT	108,042.000 SY	.		.	
0880	625.0100 TOPSOIL	15,295.000 SY	.		.	
0890	628.1104 EROSION BALES	150.000 EACH	.		.	
0900	628.1504 SILT FENCE	7,558.000 LF	.		.	
0910	628.1520 SILT FENCE MAINTENANCE	11,337.000 LF	.		.	
0920	628.1905 MOBILIZATIONS EROSION CONTROL	15.000 EACH	.		.	
0930	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL	15.000 EACH	.		.	
0940	628.1920 CLEANING SEDIMENT BASINS	20.000 CY	.		.	
0950	628.6505 SOIL STABILIZER TYPE A	3.000 ACRE	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
0960	628.7005 INLET PROTECTION TYPE A	4.000 EACH	.		.	
0970	628.7015 INLET PROTECTION TYPE C	130.000 EACH	.		.	
0980	628.7504 TEMPORARY DITCH CHECKS	2,265.000 LF	.		.	
0990	628.7560 TRACKING PADS	6.000 EACH	.		.	
1000	629.0210 FERTILIZER TYPE B	980.000 CWT	.		.	
1010	630.0175 SEEDING MIXTURE NO. 75	9.000 LB	.		.	
1020	630.0200 SEEDING TEMPORARY	372.000 LB	.		.	
1030	631.0300 SOD WATER	326.000 MGAL	.		.	
1040	631.1000 SOD LAWN	13,795.000 SY	.		.	
1050	632.0101 TREES (SPECIES, ROOT, SIZE) 001. BALDCYPRESS B&B 2.5 INCH CAL	6.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1060	632.0101 TREES (SPECIES, ROOT, SIZE) 002. COFFEETREE KENTUKY (MALE SEEDLESS) ONLY B&B 2.5 INCH CAL	13.000 EACH	.		.	
1070	632.0101 TREES (SPECIES, ROOT, SIZE) 003. CORKTREE MACHO AMUR (MALE SEEDLESS ONLY) B&B 2.5-INCH CAL	1.000 EACH	.		.	
1080	632.0101 TREES (SPECIES, ROOT, SIZE) 004. ELM FONTIER B&B 2.5 INCH CAL	16.000 EACH	.		.	
1090	632.0101 TREES (SPECIES, ROOT, SIZE) 005. ELM TRIUMPH B&B 2.5 INCH CAL	11.000 EACH	.		.	
1100	632.0101 TREES (SPECIES, ROOT, SIZE) 006. GINKGO AUTUMN GOLD (MALE SEEDLESS ONLY) B&B 2.5 INCH CAL	10.000 EACH	.		.	
1110	632.0101 TREES (SPECIES, ROOT, SIZE) 007. HACKBERRY PRAIRIE PRIDE B&B 2.5 INCH CAL	19.000 EACH	.		.	
1120	632.0101 TREES (SPECIES, ROOT, SIZE) 008. HONEYLOCUST SKYLINE B&B 2.5 INCH CAL	14.000 EACH	.		.	
1130	632.0101 TREES (SPECIES, ROOT, SIZE) 009. LINDEN STIRLING SILVER B&B 2.5 INCH CAL	24.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1140	632.0101 TREES (SPECIES, ROOT, SIZE) 010. MAPLE NORWEGIAN SUNSET SHANTUNG HYBID B&B 2.5 INCH CAL	EACH 13.000	.		.	
1150	632.0101 TREES (SPECIES, ROOT, SIZE) 011. MAPLE RED SUNSET B&B 2.5 INCH CAL	EACH 4.000	.		.	
1160	632.0101 TREES (SPECIES, ROOT, SIZE) 012. MAPLE SIENNA GLEN B&B 2.5 INCH CAL	EACH 23.000	.		.	
1170	632.0101 TREES (SPECIES, ROOT, SIZE) 013. MAPLE STATE STREET MIYABEI B&B 2.5 INCH CAL	EACH 12.000	.		.	
1180	632.0101 TREES (SPECIES, ROOT, SIZE) 014. OAK BUR B&B 2 INCH CAL	EACH 17.000	.		.	
1190	632.0101 TREES (SPECIES, ROOT, SIZE) 015. OAK NORTHERN RED B&B 2 INCH CAL	EACH 8.000	.		.	
1200	632.0101 TREES (SPECIES, ROOT, SIZE) 016. OAK SWAMP WHITE B&B 2 INCH CAL	EACH 17.000	.		.	
1210	632.0101 TREES (SPECIES, ROOT, SIZE) 017. CRABAPPLE RED JEWEL B&B SIGNLE STEM 6 FEET-8 FEET HT	EACH 3.000	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1220	632.0101 TREES (SPECIES, ROOT, SIZE) 018. CRABAPPLE ROYAL RAINDROPS B&B SINGLE STEM 6 FEET-8 FEET HT	EACH 8.000	.		.	
1230	632.0101 TREES (SPECIES, ROOT, SIZE) 019. HAWTHORN COCKSPUR B&B CLUMP 8 FEET - 10 FEET HT	EACH 8.000	.		.	
1240	632.0101 TREES (SPECIES, ROOT, SIZE) 020. HAWTHORN WINTER KING B&B CLUMP 8 FEET - 10 FEET HT	EACH 23.000	.		.	
1250	632.0101 TREES (SPECIES, ROOT, SIZE) 021. LYLAC CHINA SNOW PEKING B&B CLUMP 8 FEET - 10 FEET HT	EACH 24.000	.		.	
1260	632.0101 TREES (SPECIES, ROOT, SIZE) 022. LYLAC IVORY SILK JAPANESE TREE B&B CLUMP 8 FEET - 10 FEET HT	EACH 16.000	.		.	
1270	632.0101 TREES (SPECIES, ROOT, SIZE) 023. PEAR CHANTICLEER CALLERY B&B SINGLE STEM 2" CAL	EACH 20.000	.		.	
1280	632.0101 TREES (SPECIES, ROOT, SIZE) 024. PEAR KOREAN SUN B&B CLUMP 8 FEET HT	EACH 20.000	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1290	632.0101 TREES (SPECIES, ROOT, SIZE) 025. SERVICEBERRY PRINCESS DIANA B&B CLUMP 8 FEET - 10 FEET HT	9.000 EACH	.		.	
1300	632.0201 SHRUBS (SPECIES, ROOT, SIZE) 001. CHOKEBERRY BRILLIANT RED CG 36 INCH HT	26.000 EACH	.		.	
1310	632.0201 SHRUBS (SPECIES, ROOT, SIZE) 002. COTON EASTER CRANBERRY CG 18 INCH HT	112.000 EACH	.		.	
1320	632.0201 SHRUBS (SPECIES, ROOT, SIZE) 003. HYDRANGEA WHITE DOME CG 36 INCH HT	8.000 EACH	.		.	
1330	632.9101 LANDSCAPE PLANTING SURVEILLANCE AND CARE CYCLES	10.000 EACH	.		.	
1340	637.0202 SIGNS REFLECTIVE TYPE II	1,030.100 SF	.		.	
1350	637.0402 SIGNS REFLECTIVE FOLDING TYPE II	38.880 SF	.		.	
1360	642.5201 FIELD OFFICE TYPE C	1.000 EACH	.		.	
1370	643.0100 TRAFFIC CONTROL (PROJECT) 001. 2380-00-73	1.000 EACH	.		.	
1380	643.0300 TRAFFIC CONTROL DRUMS	13,780.000 DAY	.		.	



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			DOLLARS	CTS	DOLLARS	CTS
1390	643.0410 TRAFFIC CONTROL BARRICADES TYPE II	356.000 DAY	.		.	
1400	643.0420 TRAFFIC CONTROL BARRICADES TYPE III	6,880.000 DAY	.		.	
1410	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A	14,116.000 DAY	.		.	
1420	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C	2,351.000 DAY	.		.	
1430	643.0900 TRAFFIC CONTROL SIGNS	5,477.000 DAY	.		.	
1440	643.1050 TRAFFIC CONTROL SIGNS PCMS	244.000 DAY	.		.	
1450	645.0111 GEOTEXTILE FABRIC TYPE DF SCHEDULE A	9,250.000 SY	.		.	
1460	645.0120 GEOTEXTILE FABRIC TYPE HR	25.000 SY	.		.	
1470	646.0103 PAVEMENT MARKING PAINT 4-INCH	1,850.000 LF	.		.	
1480	646.0106 PAVEMENT MARKING EPOXY 4-INCH	31,497.000 LF	.		.	
1490	646.0126 PAVEMENT MARKING EPOXY 8-INCH	4,239.000 LF	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1500	646.0600 REMOVING PAVEMENT MARKINGS	33,562.000 LF	.		.	
1510	647.0156 PAVEMENT MARKING ARROWS EPOXY TYPE 1	2.000 EACH	.		.	
1520	647.0166 PAVEMENT MARKING ARROWS EPOXY TYPE 2	23.000 EACH	.		.	
1530	647.0206 PAVEMENT MARKING ARROWS BIKE LANE EPOXY	26.000 EACH	.		.	
1540	647.0356 PAVEMENT MARKING WORDS EPOXY	15.000 EACH	.		.	
1550	647.0406 PAVEMENT MARKING WORDS BIKE LANE EPOXY	55.000 EACH	.		.	
1560	647.0456 PAVEMENT MARKING CURB EPOXY	376.000 LF	.		.	
1570	647.0566 PAVEMENT MARKING STOP LINE EPOXY 18-INCH	1,103.000 LF	.		.	
1580	647.0606 PAVEMENT MARKING ISLAND NOSE EPOXY	34.000 EACH	.		.	
1590	647.0726 PAVEMENT MARKING DIAGONAL EPOXY 12-INCH	206.000 LF	.		.	
1600	647.0766 PAVEMENT MARKING CROSSWALK EPOXY 6-INCH	4,868.000 LF	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1610	649.0100 TEMPORARY PAVEMENT MARKING 4-INCH	34,400.000 LF	.		.	
1620	649.0400 TEMPORARY PAVEMENT MARKING REMOVABLE TAPE 4-INCH	14,720.000 LF	.		.	
1630	649.0801 TEMPORARY PAVEMENT MARKING REMOVABLE TAPE 8-INCH	2,390.000 LF	.		.	
1640	649.1100 TEMPORARY PAVEMENT MARKING STOP LINE 18-INCH	460.000 LF	.		.	
1650	649.1700 TEMPORARY PAVEMENT MARKING ARROWS	2.000 EACH	.		.	
1660	649.1800 TEMPORARY PAVEMENT MARKING ARROWS REMOVABLE TAPE	7.000 EACH	.		.	
1670	650.4000 CONSTRUCTION STAKING STORM SEWER	224.000 EACH	.		.	
1680	650.4500 CONSTRUCTION STAKING SUBGRADE	13,428.000 LF	.		.	
1690	650.5000 CONSTRUCTION STAKING BASE	29,554.000 LF	.		.	
1700	650.5500 CONSTRUCTION STAKING CURB GUTTER AND CURB & GUTTER	28,382.000 LF	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1710	650.8500 CONSTRUCTION STAKING ELECTRICAL INSTALLATIONS (PROJECT) 001. 2380-00-73	LUMP	LUMP			.
1720	650.9910 CONSTRUCTION STAKING SUPPLEMENTAL CONTROL (PROJECT) 001. 2380-00-73	LUMP	LUMP			.
1730	650.9920 CONSTRUCTION STAKING SLOPE STAKES	16,126.000 LF		.		.
1740	652.0205 CONDUIT RIGID NONMETALLIC SCHEDULE 40 3/4-INCH	1,027.000 LF		.		.
1750	652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	371.000 LF		.		.
1760	652.0235 CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH	1,474.000 LF		.		.
1770	652.0615 CONDUIT SPECIAL 3-INCH	552.000 LF		.		.
1780	653.0125 PULL BOXES STEEL 18X30-INCH	2.000 EACH		.		.
1790	653.0135 PULL BOXES STEEL 24X36-INCH	3.000 EACH		.		.
1800	653.0140 PULL BOXES STEEL 24X42-INCH	18.000 EACH		.		.

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			DOLLARS	CTS	DOLLARS	CTS
1810	653.0905 REMOVING PULL BOXES	30.000 EACH	.		.	
1820	654.0101 CONCRETE BASES TYPE 1	8.000 EACH	.		.	
1830	654.0102 CONCRETE BASES TYPE 2	14.000 EACH	.		.	
1840	654.0215 CONCRETE CONTROL CABINET BASES TYPE 9	1.000 EACH	.		.	
1850	654.0217 CONCRETE CONTROL CABINET BASES TYPE 9 SPECIAL	2.000 EACH	.		.	
1860	655.0144 CABLE IN DUCT 4-4 AWG	3,916.000 LF	.		.	
1870	655.0146 CABLE IN DUCT 4-6 AWG	2,162.000 LF	.		.	
1880	655.0150 CABLE IN DUCT 4-10 AWG	411.000 LF	.		.	
1890	655.0240 CABLE TRAFFIC SIGNAL 7-14 AWG	2,287.000 LF	.		.	
1900	655.0260 CABLE TRAFFIC SIGNAL 12-14 AWG	3,180.000 LF	.		.	
1910	655.0290 CABLE TRAFFIC SIGNAL 21-14 AWG	591.000 LF	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
1920	655.0305 CABLE TYPE UF 2-12 AWG GROUNDED	1,766.000 LF	.		.	
1930	655.0515 ELECTRICAL WIRE TRAFFIC SIGNALS 10 AWG	4,570.000 LF	.		.	
1940	655.0610 ELECTRICAL WIRE LIGHTING 12 AWG	2,613.000 LF	.		.	
1950	655.0615 ELECTRICAL WIRE LIGHTING 10 AWG	3,087.000 LF	.		.	
1960	655.0900 TRAFFIC SIGNAL EVP DETECTOR CABLE	1,689.000 LF	.		.	
1970	656.0100 ELECTRICAL SERVICE METER SOCKET (LOCATION) 001. LANNON DRIVE	LUMP	LUMP		.	
1980	656.0100 ELECTRICAL SERVICE METER SOCKET (LOCATION) 002. RACINE AVENUE	LUMP	LUMP		.	
1990	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 001. LANNON DRIVE	LUMP	LUMP		.	
2000	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 002. RACINE AVENUE	LUMP	LUMP		.	

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			DOLLARS	CTS	DOLLARS	CTS
2010	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 003. LIGHTING	LUMP	LUMP		.	
2020	657.0100 PEDESTAL BASES	8.000 EACH	.		.	
2030	657.0255 TRANSFORMER BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE	14.000 EACH	.		.	
2040	657.0305 POLES TYPE 2	6.000 EACH	.		.	
2050	657.0315 POLES TYPE 4	8.000 EACH	.		.	
2060	657.0430 TRAFFIC SIGNAL STANDARDS ALUMINUM 10-FT	8.000 EACH	.		.	
2070	657.0590 TROMBONE ARMS 20-FT	3.000 EACH	.		.	
2080	657.0595 TROMBONE ARMS 25-FT	3.000 EACH	.		.	
2090	657.0610 LUMINAIRE ARMS SINGLE MEMBER 4 1/2-INCH CLAMP 6-FT	8.000 EACH	.		.	
2100	657.0709 LUMINAIRE ARMS TRUSS TYPE 4-INCH CLAMP 12-FT	6.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2110	658.0110 TRAFFIC SIGNAL FACE 3-12 INCH VERTICAL	8.000 EACH	.		.	
2120	658.0120 TRAFFIC SIGNAL FACE 5-12 INCH VERTICAL	13.000 EACH	.		.	
2130	658.0155 TRAFFIC SIGNAL FACE 3-12 INCH HORIZONTAL	3.000 EACH	.		.	
2140	658.0165 TRAFFIC SIGNAL FACE 5-12 INCH HORIZONTAL	5.000 EACH	.		.	
2150	658.0215 BACKPLATES SIGNAL FACE 3 SECTION 12-INCH	11.000 EACH	.		.	
2160	658.0225 BACKPLATES SIGNAL FACE 5 SECTION 12-INCH	18.000 EACH	.		.	
2170	658.0416 PEDESTRIAN SIGNAL FACE 16-INCH	22.000 EACH	.		.	
2180	658.0500 PEDESTRIAN PUSH BUTTONS	16.000 EACH	.		.	
2190	658.0600 LED MODULES 12-INCH RED BALL	29.000 EACH	.		.	
2200	658.0605 LED MODULES 12-INCH YELLOW BALL	29.000 EACH	.		.	
2210	658.0610 LED MODULES 12-INCH GREEN BALL	29.000 EACH	.		.	



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			DOLLARS	CTS	DOLLARS	CTS
2220	658.0620 LED MODULES 12-INCH YELLOW ARROW	18.000 EACH	.		.	
2230	658.0625 LED MODULES 12-INCH GREEN ARROW	18.000 EACH	.		.	
2240	658.0635 LED MODULES PEDESTRIAN COUNTDOWN TIMER 16-INCH	22.000 EACH	.		.	
2250	658.5069 SIGNAL MOUNTING HARDWARE (LOCATION) 001. LANNON DRIVE	LUMP	LUMP		.	
2260	658.5069 SIGNAL MOUNTING HARDWARE (LOCATION) 002. RACINE AVENUE	LUMP	LUMP		.	
2270	661.0200 TEMPORARY TRAFFIC SIGNALS FOR INTERSECTIONS (LOCATION) 001. CTH L & LANNON DRIVE	LUMP	LUMP		.	
2280	661.0200 TEMPORARY TRAFFIC SIGNALS FOR INTERSECTIONS (LOCATION) 002. CTH L & RACINE AVENUE	LUMP	LUMP		.	
2290	690.0150 SAWING ASPHALT	4,163.000 LF	.		.	
2300	690.0250 SAWING CONCRETE	393.000 LF	.		.	
2310	ASP.1T0A ON-THE-JOB TRAINING APPRENTICE AT \$5.00/HR	500.000 HRS	5.00000		2500.00	

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			DOLLARS	CTS	DOLLARS	CTS
2320	ASP.1T0G ON-THE-JOB TRAINING GRADUATE AT \$5. 00/HR	2,200.000 HRS	5.00000		11000.00	
2330	SPV.0035 SPECIAL 200. BACKFILL FOR PLANT BEDS	1,022.000 CY	.		.	
2340	SPV.0045 SPECIAL 101. TEMPORARY CROSSWALK/SIDEWALK	221.000 DAY	.		.	
2350	SPV.0060 SPECIAL 001. FURNISH AND INSTALL 1-INCH VALVE & BOX	22.000 EACH	.		.	
2360	SPV.0060 SPECIAL 002. FURNISH AND INSTALL 2-INCH VALVE & BOX	10.000 EACH	.		.	
2370	SPV.0060 SPECIAL 003. FURNISH AND INSTALL 45 DEGREE BEND (6-INCH)	6.000 EACH	.		.	
2380	SPV.0060 SPECIAL 004. FURNISH AND INSTALL 90 DEGREE BEND (6-INCH)	1.000 EACH	.		.	
2390	SPV.0060 SPECIAL 005. REMOVE AND RELOCATE HYDRANT	12.000 EACH	.		.	
2400	SPV.0060 SPECIAL 006. ADJUSTING WATER VALVE BOXES AND LIDS TEMPORARY	41.000 EACH	.		.	
2410	SPV.0060 SPECIAL 007. ADJUSTING WATER VALVE BOXES AND LIDS FINAL	67.000 EACH	.		.	
2420	SPV.0060 SPECIAL 008. ADJUSTING SANITARY MANHOLES TEMPORARY	28.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2430	SPV.0060 SPECIAL 009. ADJUSTING SANITARY MANHOLES FINAL	34.000 EACH	.		.	
2440	SPV.0060 SPECIAL 010. ADJUSTING WATER MANHOLES TEMPORARY	11.000 EACH	.		.	
2450	SPV.0060 SPECIAL 011. ADJUSTING WATER MANHOLES FINAL	13.000 EACH	.		.	
2460	SPV.0060 SPECIAL 012. ADJUSTING HYDRANTS	7.000 EACH	.		.	
2470	SPV.0060 SPECIAL 013. TRAFFIC SIGNAL CONTROLLER & CABINET FULLY ACTUATED 8-PHASE	2.000 EACH	.		.	
2480	SPV.0060 SPECIAL 014. LIGHTING UTILITY LED 175 WATTS	14.000 EACH	.		.	
2490	SPV.0060 SPECIAL 015. SPREAD SPECTRUM RADIO ANTENNA 12DB GAIN, YAGI	1.000 EACH	.		.	
2500	SPV.0060 SPECIAL 016. SPREAD SEPCTRUM RADIO ASSEMBLY SHELF MOUNT	1.000 EACH	.		.	
2510	SPV.0060 SPECIAL 017. UTILITY LINE OPENING	10.000 EACH	.		.	
2520	SPV.0060 SPECIAL 018. GRATE FOR STORM WATER POND OUTLET CONTROL STRUCTURE	1.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2530	SPV.0060 SPECIAL 019. STORM WATER POND OUTLET CONTROL STRUCTURE	1.000 EACH	.		.	
2540	SPV.0060 SPECIAL 020. CONSTRUCTION STAKING CURB RAMP	72.000 EACH	.		.	
2550	SPV.0060 SPECIAL 021. VERTICAL OFFSET (1-INCH COPPER)	1.000 EACH	.		.	
2560	SPV.0060 SPECIAL 022. VERTICAL OFFSET (2-INCH COPPER)	4.000 EACH	.		.	
2570	SPV.0060 SPECIAL 023. VERTICAL OFFSET (6-INCH PVC)	2.000 EACH	.		.	
2580	SPV.0060 SPECIAL 024. VERTICAL OFFSET (8-INCH PVC)	2.000 EACH	.		.	
2590	SPV.0060 SPECIAL 025. VERTICAL OFFSET (10-INCH PVC)	1.000 EACH	.		.	
2600	SPV.0060 SPECIAL 026. VERTICAL OFFSET (12-INCH PVC)	1.000 EACH	.		.	
2610	SPV.0060 SPECIAL 027. VERTICAL OFFSET (16-INCH PVC)	1.000 EACH	.		.	
2620	SPV.0060 SPECIAL 028. VERTICAL OFFSET (16-INCH DUCTILE IRON)	1.000 EACH	.		.	
2630	SPV.0060 SPECIAL 029. BURY WATER VALVE BOXES AND LIDS	32.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2640	SPV.0060 SPECIAL 101. POSTS TUBULAR STEEL 1 3/4 INCH X 1 3/4 INCH - 14 FEET	100.000 EACH	.		.	
2650	SPV.0060 SPECIAL 200. BENCH	6.000 EACH	.		.	
2660	SPV.0060 SPECIAL 201. TRASH RECEIPTAL	6.000 EACH	.		.	
2670	SPV.0060 SPECIAL 202. BIKE RACK	3.000 EACH	.		.	
2680	SPV.0060 SPECIAL 203. DECORATIVE ROADWAY LIGHTING UNIT "TYPE A" DOUBLE FIXTURE	49.000 EACH	.		.	
2690	SPV.0060 SPECIAL 204. DECORATIVE ROADWAY LIGHTING UNIT "TYPE B" SINGLE FIXTURE	14.000 EACH	.		.	
2700	SPV.0060 SPECIAL 205. DECORATIVE MEDIAN POLE UNITS "TYPE C"	4.000 EACH	.		.	
2710	SPV.0060 SPECIAL 206. COMMUNITY IDENTITY MONUMENT STA 19+41	1.000 EACH	.		.	
2720	SPV.0060 SPECIAL 207. COMMUNITY IDENTITY MONUMENT STA 80+50	1.000 EACH	.		.	
2730	SPV.0060 SPECIAL 208. LIGHTING CONTROL CABINET	1.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2740	SPV.0060 SPECIAL 209. CATTAIL CUTOUT PANEL	12.000 EACH	.		.	
2750	SPV.0060 SPECIAL 212. TREE ACCENT LIGHT UNIT "TYPE F"	40.000 EACH	.		.	
2760	SPV.0060 SPECIAL 220. BLACK-EYED SUSAN CG 6" HT	559.000 EACH	.		.	
2770	SPV.0060 SPECIAL 221. DAISY,ALASKA CG 6" HT	86.000 EACH	.		.	
2780	SPV.0060 SPECIAL 222. DAYLILLY HAPPY RETURNS CG 6" HT	410.000 EACH	.		.	
2790	SPV.0060 SPECIAL 223. DAY LILLY MARTINA VERHAERT CG 6" HT	278.000 EACH	.		.	
2800	SPV.0060 SPECIAL 224. DAY LILLY ROSEY RETURNS CG 6" HT	169.000 EACH	.		.	
2810	SPV.0060 SPECIAL 225. DAY LILLY STRAWBERRY CANDY CG 6" HT	721.000 EACH	.		.	
2820	SPV.0060 SPECIAL 226. NEW ENGLAND ASTER ALMA POTSCHKE CG 6" HT	96.000 EACH	.		.	
2830	SPV.0060 SPECIAL 227. NEW ENGLAND ASTER PURPLE DOME CG 6" HT	494.000 EACH	.		.	
2840	SPV.0060 SPECIAL 228. PRAIRIE SMOKE CG 6" HT	168.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2850	SPV.0060 SPECIAL 229. SEDUM AUTUMN FIRE CG 6" HT	671.000 EACH	.		.	
2860	SPV.0060 SPECIAL 230. SEDUM MATRONA CG 6" HT	342.000 EACH	.		.	
2870	SPV.0060 SPECIAL 231. WALKER'S LOW' CATMINT CG 6" HT	147.000 EACH	.		.	
2880	SPV.0060 SPECIAL 232. MAIDEN GRASS GRAZIELLA CG 9" HT	123.000 EACH	.		.	
2890	SPV.0060 SPECIAL 233. MAIDEN GRASS SILVER FEATHER CG 9" HT	20.000 EACH	.		.	
2900	SPV.0060 SPECIAL 234. PRAIRIE DROPSEED TARA DWARF CG 6" HT	318.000 EACH	.		.	
2910	SPV.0060 SPECIAL 235. REED GRASS OVERDAM FEATHER CG 9" HT	156.000 EACH	.		.	
2920	SPV.0060 SPECIAL 236. SWITCH GRASS NORTHWIND CG 9" HT	98.000 EACH	.		.	
2930	SPV.0060 SPECIAL 237. DAFFODIL BORDER BEAUTY BULB	1,203.000 EACH	.		.	
2940	SPV.0060 SPECIAL 238. DAFFODIL DUTCH MASTER BULB	2,709.000 EACH	.		.	
2950	SPV.0060 SPECIAL 239. DAFFODIL YELLOW JONQUILS BULB	945.000 EACH	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
2960	SPV.0060 SPECIAL 240. DECORATIVE ROADWAY LIGHTING UNIT "TYPE G" DOUBLE FIXTURE	4.000 EACH	.		.	
2970	SPV.0090 SPECIAL 001. CONCRETE CURB AND GUTTER INTEGRAL 66-INCH SPECIAL	9,444.000 LF	.		.	
2980	SPV.0090 SPECIAL 002. CONCRETE CURB AND GUTTER HES 30-INCH SPECIAL	723.000 LF	.		.	
2990	SPV.0090 SPECIAL 003. CONCRETE CURB AND GUTTER INTEGRAL HES 66-INCH SPECIAL	1,692.000 LF	.		.	
3000	SPV.0090 SPECIAL 004. FURNISH & INSTALL 6 INCH WATER PIPE	249.000 LF	.		.	
3010	SPV.0090 SPECIAL 005. SELECT FILL FOR WATERMAIN	249.000 LF	.		.	
3020	SPV.0090 SPECIAL 006. SPREAD SPECTRUM RADIO ANTENNA CABLE 1/2 INCH	243.000 LF	.		.	
3030	SPV.0090 SPECIAL 007. WASHED STONE 3/4 INCH	150.000 LF	.		.	
3040	SPV.0090 SPECIAL 008. CONSTRUCTION STAKING SIDEWALK	12,463.000 LF	.		.	
3050	SPV.0090 SPECIAL 009. DECORATIVE RAIL FENCE	520.000 LF	.		.	



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			DOLLARS	CTS	DOLLARS	CTS
3060	SPV.0090 SPECIAL 200. ALUMINUM EDGER	1,554.000 LF	.		.	
3070	SPV.0090 SPECIAL 201. PRECAST CONCRETE CURBING	728.000 LF	.		.	
3080	SPV.0090 SPECIAL 202. IRRIGATION SLEEVE	281.000 LF	.		.	
3090	SPV.0090 SPECIAL 203. CABLE IN DUCT 3-8 AWG & 4-4 AWG	1,338.000 LF	.		.	
3100	SPV.0090 SPECIAL 204. CABLE IN DUCT 4-6 AWG & 3-10 AWG	574.000 LF	.		.	
3110	SPV.0105 SPECIAL 001. REMOVING ROADWAY SIGNS	LUMP	LUMP		.	
3120	SPV.0105 SPECIAL 002. DEWATERING PROJECT 2380-00-73	LUMP	LUMP		.	
3130	SPV.0105 SPECIAL 003. VEHICLE VIDEO DETECTION SYSTEM INTERSECTION CTH L AND RACINE AVE	LUMP	LUMP		.	
3140	SPV.0105 SPECIAL 004. VEHICLE VIDEO DETECTION SYSTEM INTERSECTION CTH L AND LANNON DR.	LUMP	LUMP		.	
3150	SPV.0105 SPECIAL 005. EMERGENCY VEHICLE PREEMPTION SYS INTERSECTION OF CTH L & LANNON DR.	LUMP	LUMP		.	

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			DOLLARS	CTS	DOLLARS	CTS
3160	SPV.0105 SPECIAL 006. REMOVE AND SALVAGE EXISTING TRAFFIC SIGNAL EQUIPMENT (RACINE AVE)	LUMP	LUMP		.	
3170	SPV.0105 SPECIAL 007. REMOVE AND SALVAGE EXISTING TRAFFIC SIGNAL EQUIPMENT (LANNON DR)	LUMP	LUMP		.	
3180	SPV.0105 SPECIAL 008. REM SALV AND REINSTALL EMERGENCY VEHI PREEMP DET SYS CTH L & CTH Y	LUMP	LUMP		.	
3190	SPV.0105 SPECIAL 200. STONE VENEER SEATWALL STA 57+00	LUMP	LUMP		.	
3200	SPV.0105 SPECIAL 201. STONE VENEER SEATWALL STA 67+50	LUMP	LUMP		.	
3210	SPV.0105 SPECIAL 202. STONE VENEER SEATWALL STA 81+50	LUMP	LUMP		.	
3220	SPV.0105 SPECIAL 203. IRRIGATION SERVICE #3	LUMP	LUMP		.	
3230	SPV.0105 SPECIAL 204. IRRIGATION ZONES	LUMP	LUMP		.	
3240	SPV.0165 SPECIAL 200. CONCRETE PAVER PAVING - 100 MM	4,251.000 SF	.		.	
3250	SPV.0165 SPECIAL 201. CONCRETE PAVER PAVING - 80 MM	14,403.000 SF	.		.	

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			DOLLARS	CTS	DOLLARS	CTS
3260	SPV.0170 SPECIAL 001. TEST ROLLING	165.000 STA	.		.	
3270	SPV.0180 SPECIAL 001. GEOGRID REINFORCEMENT	10,000.000 SY	.		.	
3280	SPV.0180 SPECIAL 002. GEOTEXTILE FABRIC TYPE FF	425.000 SY	.		.	
3290	SPV.0180 SPECIAL 200. SHREADEDED HARDWOOD BARK MULCH	18,734.000 SY	.		.	
	SECTION 0001 TOTAL				.	
	TOTAL BID				.	



**PLEASE ATTACH SCHEDULE OF ITEMS HERE**