HIGHWAY WORK PROPOSAL

Proposal Number: Ø 2

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

COUNTY	STATE PROJECT ID	FEDERAL PROJECT ID	PROJECT DESCRIPTION	HIGHWAY
Milwaukee	1060-33-72	WISC 2013 420	Zoo IC - Watertown Plank Interchange Wisconsin Avenue to Underwood Parkway	USH 45

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, $ 1,000,000.00 Payable to: Wisconsin Department of Transportation	Attach Proposal Guaranty on back of this PAGE.
Bid Submittal Due Date: September 10, 2013 Time (Local Time): 9:00 AM	Firm Name, Address, City, State, Zip Code **SAMPLE** **NOT FOR BIDDING PURPOSES**
Contract Completion Time November 30, 2014	
Assigned Disadvantaged Business Enterprise Goal 12 %	This contract is subject to 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 Removals, excavation common, base aggregate, concrete pavement, HMA pavement, concrete barrier, concrete curb and gutter, concrete sidewalk, storm sewer, storm water ponds, erosion control, traffic control, pavement marking, sign structures, permanent signing, street lighting, traffic signals, structures, retaining walls, restoration, streetscaping, and other incidental items.	
Notice of Award Dated	Date Guaranty Returned

PLEASE ATTACH
PROPOSAL GUARANTY HERE

Effective with November 2007 Letting

PROPOSAL REQUIREMENTS AND CONDITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

Effective with August 2007 Letting

BID PREPARATION

Preparing the Proposal Schedule of Items

A General

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

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

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

(3) The department will provide bidding information through the department's web site at 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 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/engrserv/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

Wisconsin Department of Transportation

DT1303 1/2006

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

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

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

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

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

PRINCIPAL

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

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

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

(Signature of Attorney-in-Fact)

NOTARY FOR PRINCIPAL

(Date)

State of Wisconsin)
) ss.
_____ County)

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

(Signature, Notary Public, State of Wisconsin)

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

(Date Commission Expires)

Notary Seal

NOTARY FOR SURETY

(Date)

State of Wisconsin)
) ss.
_____ County)

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

(Signature, Notary Public, State of Wisconsin)

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

(Date Commission Expires)

Notary Seal

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

CERTIFICATE OF ANNUAL BID BOND

Wisconsin Department of Transportation

DT1305 8/2003

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

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

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

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

(Signature of Authorized Contractor Representative) (Date)

March 2010

LIST OF SUBCONTRACTORS

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

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

Name of Subcontractor	Class of Work	Estimated Value

DECEMBER 2000

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

Instructions for Certification

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project Zoo IC - Watertown Plank Road Interchange, Wisconsin Avenue to Underwood Parkway, 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, and these special provisions.

Perform the sanitary sewer work in accordance to the Standard Specifications for Sewer and Water Construction in Wisconsin, latest Edition (SSSW). If there is a discrepancy or conflict between the referenced specification and the standard specifications regarding contract administration, part 1 of the standard specifications governs.

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. Scope of Work.

The work under this contract shall consist of removals, grading, base, concrete pavement, concrete barrier, asphaltic pavement, storm sewer, erosion control, permanent signing, traffic control, pavement marking, lighting, Structures, FTMS, Stone Walls, restoration and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.
104-005 (20090901)

3. Mandatory Pre-Bid Meeting.

Supplement standard spec 102.3.1 with the following:

Prospective bidders are required to attend a mandatory pre-bid meeting on Thursday, August 15, 2013 at 9:00 AM in the Fox Training Center Room of the Zoo Interchange Construction Field Office, located at 2424 S 102nd Street, West Allis, Wisconsin 53227.

The meeting agenda will include the following: (add/revise agenda items as needed)

- Corridor Overview

- Zoo IC – Watertown Plank Road Interchange, Wisconsin Avenue to Underwood Parkway

  The meeting will discuss project specific issues for ID 1060-33-72.

- The Owner Controlled Insurance Program (OCIP)

  The Zoo Interchange project will be constructed under the umbrella of an Owner Controlled Insurance Program (OCIP). Contractor/Consultant participation in this Corridor Project is mandatory and requires enrollment into the OCIP.

  This meeting will provide understanding of the coverage provided by the OCIP, the bid deduction process and the coverage needed outside of the OCIP. It is critical that CFO's, Risk Manager/Insurance Broker or Agent, and Estimators attend this meeting.

  Please contact Kevin Gehrmann at (608) 267-7722 with any questions regarding the OCIP.

- Safety

- Contractor Compliance

- DBE Business Outreach Provision

No meeting minutes will be prepared, but a published response will be sent out addressing all questions raised at the meeting.

SEF Rev. 13_0429

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.

The completion date is based on an expedited work schedule and may require extraordinary forces and equipment; work on Saturdays, Sundays, and nationally recognized legal holidays; and work at night.

Indicate on the proposed schedule of operations that a large force and adequate equipment will be needed to assure that the work will be completed within the established contract time.

Be advised that there may be multiple mobilizations and/or remobilizations to complete construction operations, for example such items as: concrete pavement repair/replacement, paving, traffic control, signing, pavement marking, finishing items and other incidental items. No additional payment will be made, by the department, for additional mobilizations.

Winter weather work, grading, excavation of frozen ground, high ground water, dewatering during winter months, and mitigation efforts for high water table elevations shall not be considered adverse weather delays to construction. Cost for dewatering is considered incidental to construction.

Anticipate cold weather, late fall and early spring concrete paving and ancillary concrete work (curb, median, etc), and winter concrete work. Plan to heat aggregates and water for mixes, and that the heating of the aggregate and water is considered incidental to those concrete items. There will be no adverse weather delay for cold weather construction.

After written notice to proceed, and prior to Final Acceptance of the work, assist with maintenance of existing roadways and bridges as specified in standard spec 104.6.1. This assistance may include performance of work covered under pay items or accommodating local repair forces within the work zones. Maintain all newly constructed work as specified in 104.6.1. Various pay items may be required to maintain the freeway and local streets during construction.

Milwaukee County will perform snow removal operations for freeway and ramp lanes that are open to traffic. The City of Milwaukee will perform snow removal operations for local streets that are open to traffic. Provide for snow removal in those areas closed to traffic as required to facilitate safe construction operations and as required to eliminate snow melt run-off from crossing active roadways. Provide Milwaukee County Highway Maintenance and Milwaukee County Sheriff's Department with a 24-hour emergency contact number for when maintenance is required.

Place topsoil in all graded areas as designated by the engineer immediately after grading has been completed and fertilize or sod all areas within 5 calendar days after placement of topsoil.

CPM Progress Schedule
Refer to the Baseline CPM Progress Schedule items elsewhere in these special provisions.

Schedule of Operations
Traffic shifts shown in a given stage may occur at different times during that stage depending on the controlling elements for a given traffic movement. The department anticipates that the schedule for each stage shall be as follows:

Anticipated schedule:

Stage 1A:	10/28/2013 to 1/05/2014
Stage 1B:	1/06/2014 to 6/1/2014
Stage 2A:	6/2/2014 to 7/14/2014
Stage 2B:	7/15/2014 to 9/1/2014
Stage 3A:	9/2/2014 to 10/15/2014
Stage 3B and3C:	10/16/2014 to 11/15/2014
Stage 4:	11/16/2014 to 11/30/2014

Stage 1A Construction:

Freeway and Ramp Construction

- Begin construction of abutments for B-40-777, B-40-780 and B-40-783
- Begin construction of north abutment for B-40-781
- Begin construction of south abutment for B-40-782
- Begin construction of east abutment for B-40-776 and B-40-783
- Begin partial construction of R-40-491 and R-40-492
- Begin construction of R-40-487 and R-40-490
- Begin storm sewer construction at south end along USH 45 NB and Ramp WA
- Construct storm sewer structures in existing median of USH 45 NB.

Local Road Construction

- W. Watertown Plank Road, Discovery Parkway, N. 92nd St. and N. 87th St.
- Construct Temporary Pavement

- Install the temporary traffic signal equipment at Swan Boulevard and Discovery Parkway as shown on the plan.

- N. 97th St.
- Construct roadway and R-40-488

Stage 1B Construction:

Freeway and Ramp Construction

- Construct portion of USH 45 NB
- Begin construction of ramps WA, WC, WD, WE, WG and WJ
- Begin construction of ramps WF and WH east of USH 45
- Construct B-40-780
- Construct abutments for B-40-781 and B-40-782
- Continue construction of abutments for B-40-777
- Continue construction of east abutments for B-40-776 and B-40-783
- Continue partial construction of R-40-491 and R-40-492
- Continue construction of R-40-487 and R-40-490
- Construct temporary crossover between USH 45 NB and Ramp WA
- Construct interim widening to the outside of USH 45 NB on north end
- Construct Ramp WG pond
- Construct outside pier of sign structure S-40-63

Local Road Construction

W. Watertown Plank Rd.

- Build temporary pavement in median
- Construct new lanes and median for WB roadway between N. 87th St. and Discovery Parkway
- Construct new roadway between Discovery Parkway and Swan Blvd.
- Begin construction of north and median abutments of B-40-784
- Construct Mental Health Complex Frontage Road and parking lots
- Ensure that the temporary traffic signal equipment at Swan Boulevard and Discovery Parkway is operational prior to closing Watertown plank Road between Swan Boulevard and Discovery Parkway.

N. 92nd St.

- Construct SB segment
-

N. 87th St.

- Construct temporary pavement NB

97th St.

- Continue construction of Roadway and R-40-488

Stage 2A Construction:

Freeway and Ramp Construction

- Construct inside northbound and southbound lanes of USH 45
- Continue construction of ramps WA, WC, WD, WE, WG and WJ
- Continue construction of ramps WF and WH east of USH 45
- Finish construction of B-40-781 and B-40-782
- Continue construction of B-40-776, B-40-777 and B-40-783
- Remove B-40-133 and part of B-40-132
- Finish construction of R-40-487 and R-40-490

- Continue partial construction of R-40-491 and R-40-492
- Begin construction of R-40-486
- Construct interim crossovers between USH 45 southbound and new northbound lanes

Local road construction
W. Watertown Plank Rd
- Same as previous stage

N. 92nd St. and N. 87th St.
- Construct northbound segments

Stage 2B Construction:

Freeway and Ramp Construction
- Same as previous stage

Local Road Construction
W. Watertown Plank Rd.
- Construct new lanes for eastbound roadway between N. 87th St. and Discovery Parkway
- Continue construction of new roadway between Discovery Parkway and Swan Blvd.
- Begin construction of B-40-778, B-40-779
- Complete construction of B-40-784 over Watertown Plank Road.
- Continue Construction of B-40-784 ramps

Stage 3A and 3C Construction:

Freeway and Ramp Construction
- Construct remaining southbound lanes of USH 45
- Continue construction of ramps WA, WE, and WJ
- Continue construction of ramps WF and WH east of USH 45
- Begin construction of ramps WC, WD, and WG
- Begin construction of ramps WF and WH west of USH 45
- Continue construction of B-40-776, B-40-777, B-40-778, B-40-779, and B-40-783
- Begin construction of west abutment for B-40-776
- Begin construction of southbound gore pier for B-40-783
- Remove remaining B-40-132
- Continue construction of R-40-486, R-40-491, and R-40-492
- Begin construction of R-40-489
- Construct remainder of interim pavement between USH 45 northbound and new ramp WJ.

Local Road Construction
W. Watertown Plank Rd.:
- Construct SE quadrant of N. 92nd St. and N. 87th St. intersections
- Finish construction of all lanes between Discovery Parkway and Swan Blvd
- Finish construction of eastbound lanes between n. 92nd St. and Discovery Parkway
- Finish construction of B-40-784

Stage 3B Construction:

Freeway and Ramp Construction
- Construct storm sewer along south end of interim ramp WJ
- Continue construction of remaining southbound lanes of USH 45
- Continue construction of ramps WA, WE, and WJ
- Continue construction of ramps WF and WH east of USH 45
- Continue construction of ramps WC, WD, and WG
- Continue construction of ramps WF and WH west of USH 45
- Finish construction of B-40-776, B-40-777, B-40-778, B-40-779, and B-40-783
- Continue construction of west abutment for B-40-776
- Continue construction of southbound gore pier for B-40-783
- Continue construction of R-40-486, R-40-491, and R-40-492
- Continue construction of R-40-489
- Remove southbound exit ramp connection to W. Wisconsin Ave.
- Remove remaining B-40-132

Local Road Construction
- None

Stage 4 Construction:

Freeway and Ramp Construction
- Construct entrance gore area on USH 45 northbound with W. Watertown Plank Rd.
- Construct parallel entrance lane on USH 45 southbound past W. Watertown Plank Rd. entrance ramp
- Remove temporary crossover on ramp WA to USH 45 northbound

Local Road Construction
- None

Advance Notification

Notify the engineer and WisDOT Region Work Zone Engineer, (262) 548-5933, if there are any changes in the schedule, early completions, or cancellations of scheduled work. Coordinate the locations of messages of portable changeable message sign with the engineer and WisDOT STOC. Notify WisDOT Signal Operations, (414) 750-2605, and

WisDOT Electrical Field Unit, (414) 266-1170, regarding changes for alternate routes and detours.

Provide the engineer with a schedule of lane and ramp closures for the following week by noon on Thursday of the previous week. In addition, provide the following minimum advance notification to the engineer for incorporation into the Wisconsin Lane Closure System.

Service Ramp Closures	3 business days
System Ramp Closures	7 calendar days
Lane Closures	3 business days
Full Freeway Closures	14 calendar days
Construction Stage Changes	14 calendar days
Detours	14 calendar days

Obtain prior acceptance from the engineer and the WisDOT Statewide Traffic Operations Center for Full Freeway Closures. Notify local emergency and police agencies seven calendar days prior to freeway closure.

Portable Changeable Message Signs
Obtain acceptance from the engineer all messages for all portable changeable message signs.

Freeway and Ramp Work Restrictions

Definitions
The following definitions apply to this contract for freeway work restrictions:

System Ramps	Freeway to freeway ramps
Service Ramps	Freeway to local road ramps

Peak Hours

5:30 AM – 9:00 AM	Monday, Tuesday, Wednesday, Thursday, and Friday
2:00 PM – 7:00 PM	Monday, Tuesday, Wednesday, and Thursday, and Friday

Weekend Peak Hours

10:00 AM – 7:00 PM	Saturday, Sunday

Weekend Off-Peak Hours

8:00 AM – 10:00 AM	Saturday, Sunday
7:00 PM – 11:00 PM	Saturday
7:00 PM – 9:30 PM	Sunday

Weekday Off-Peak Hours

9:00 AM – 2:00 PM	Monday, Tuesday, Wednesday, Thursday, and Friday
7:00 PM – 9:30 PM	Monday, Tuesday, Wednesday, Thursday
7:00 PM – 11:00 PM	Friday

Night Time Hours

9:30 PM – 5:30 AM (Sunday PM to Monday AM, Monday PM to Tuesday AM, Tuesday PM to Wednesday AM, Wednesday PM to Thursday AM, Thursday PM to Friday AM)

11:00 PM – 8:00 AM (Friday PM to Saturday AM, Saturday PM to Sunday AM)

Full Freeway Closure/Hours

11:00 PM – 4:30 AM (Sunday PM to Monday AM, Monday PM to Tuesday AM, Tuesday PM to Wednesday AM, Wednesday PM to Thursday AM, Thursday PM to Friday AM)

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No Weekday or Weekend Peak Hour lane closures are allowed. No Weekday Off-Peak two-lane closures are allowed.

Provide a minimum of three lanes in each direction of the freeways and ensure that the freeways are entirely clear for traffic during Weekday Peak Hours, Weekend Peak Hours, and during Weekday Off-Peak Hours, except as shown in the traffic control plans. Provide a minimum of two lanes in each direction of the freeways and ensure that the freeways are entirely clear for traffic during Weekend Off-Peak Hours. Provide a minimum of one lane in each direction of the freeway and ensure that the freeways are entirely clear for traffic during Night Time Hours except as allowed during full closure.

Follow plan details for closures. Lane restrictions of the freeway beyond that shown on the traffic control plans are subject to lane rental assessments and must be approved by the engineer. If plan details are not provided in the traffic control plan, furnish plans for review by the engineer and the WisDOT Statewide Traffic Operations Center (414-227-2142) so that approval, or disapproval, is obtained at least three business days prior coordination of roadway, lane, and ramp closures as identified in Contractor Coordination.

Do not, at any time, conduct construction operations in the median area and adjacent outside shoulder area of the freeway at the same time without obtaining prior permission of the engineer, beyond that shown on the traffic control plans.

Restrict work on freeway roads and freeway ramps to working in closed shoulders or closed lanes as allowed by the plans or engineer. Provide and utilize temporary access roads and ramps to access the work zones. Construct temporary access incidental to other items of work. Access into the work zones will not be allowed directly from freeway roads during Peak Hours. Access into the work zones from freeway roads will be allowed during Night Time hours and Off-Peak Hours, subject to approval by the engineer, if

operations can be safely accomplished and do not result in non-construction traffic entering the work zones. Provide parallel deceleration and acceleration lanes for freeway access into and out of the work zones per plan details at locations approved by the engineer. Access from ramps will be allowed as shown in the plans or as modified with written approval from the engineer. Exiting the work zones directly onto freeway roads will be allowed only when operations do not obstruct or slow traffic on the freeway.

Full closure and detouring of freeway roads will be restricted to Full Freeway Closure Hours. The freeway may be closed to facilitate the removal of structures and erection of girders and to perform work related to major traffic shifts. Provide signed detour routes, as shown in the plans, fully open and free of construction during all full freeway and system ramp closures.

Short-term freeway mainline rolling closures may be allowed for a maximum of 15 minutes for the removal and erection of sign structures, equipment moves across the road, or other required work as determined by the engineer. The department will allow short-term rolling closures only between 2:00 AM and 4:00 AM and they may only be performed by freeway law enforcement. Coordinate these closures with freeway law enforcement 14 days in advance after obtaining approval from the engineer. Present the scheduled time for the short term rolling closure at the weekly traffic meeting a minimum of one week prior to the closure.

Full closure of system ramps and service ramps will be restricted to Night Time Hours beyond that shown on the traffic control plans.

Do not close the following roadways prior to January 6, 2014, or as directed by the engineer:

- NB entrance ramp to USH 45
- SB exit ramp to Watertown Plank Road EB
- Watertown Plank Road underpass
- SB entrance ramp to USH 45
- NB exit ramp to Watertown Plank Road WB

Do not close the NB exit ramp to Watertown Plank Road EB prior to March 16, 2014, or as directed by the engineer

Do not close SB exit ramp to Watertown Plank Road WB prior to July 7, 2014, or as directed by the engineer

Do not close Watertown Plank Road park and ride lot (south of Watertown Plank Road) prior to November 1, 2014, or as directed by the engineer

Do not begin or continue any work that closes traffic lanes or ramps outside the allowed time periods specified in this contract. If the contractor fails to open freeway lanes of traffic and/or ramps to traffic by the specified times, deductions shown in the Lane Rental Assessment Table in the article Lane Rental Assessment will be made from the monies due to the contractor based on the hourly rental rate for the closure type and hourly definition that the non-compliant closure occurs. This reduction will be quarterly fraction of the hourly reduction for each 15-minute increment during which the roadway, lane or ramp closure violation occurs. The total reduction of monies due to the contractor will be the summation of the separate reductions for each lane and each ramp closure violation.

These sums will be considered and treated not as a penalty but as fixed, agreed liquidated damages due the department from the contractor caused by the inconvenience to the traveling public, additional costs incurred for engineering and supervision, additional maintenance of detours and other incidental items that collectively cause an increased expenditure of public funds by the contractor's failure to open freeway lanes and ramps in a timely manner.

Permitting the contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the department of any of its rights under the contract.

Work Zone Ingress/Egress.
Provide engineer approved signage and parallel deceleration and acceleration lanes for freeway access into and out of the work zones at locations approved by the engineer.

At the weekly traffic meetings, provide an Emergency Work Zone Access Plan and required updates, as approved by the engineer, to direct emergency responders accessing a mainline median barrier restricted work zone.

Locations of work zone egress or ingress for construction vehicles, other than as shown in the plans, is subject to approval from the engineer. Access into the work zones are not allowed directly from the freeway during peak and off-peak hours. Access into the work zones from the freeway will be allowed during night-time hours, subject to approval by the engineer, if operations can be safely accomplished and do not result in non-construction traffic entering the work zones. Exiting work zones directly onto the freeway are only allowed when operations do not obstruct or slow traffic on the freeway. All construction vehicles shall yield to all through traffic at all locations.
SEF Rev. 12_0330

Local Street Work Restrictions

Definitions

The following definitions apply to this contract for local street work restrictions:

Peak Hours

6:00 AM – 9:00 PM	Monday, Tuesday, Wednesday, Thursday
6:00 AM – 9:00 PM	Friday
11:00 AM – 8:00 PM	Saturday
1:00 PM – 5:00 PM	Sunday

Off-Peak Hours

9:00 PM – 6:00 AM	Monday, Tuesday, Wednesday, Thursday
9:00 PM – 11:00 AM	Friday PM to Saturday AM
8:00 PM – 1:00 PM	Saturday PM to Sunday PM
5:00 PM – 6:00 AM	Sunday PM to Monday AM

The Milwaukee County Sheriff's substation is located adjacent to the construction zone east of US 45. Maintain emergency access for Milwaukee County Sheriff's vehicles from the substation into the work site at all times. Make available work zone internal access roads for the Sheriff's vehicles to use from the substation to access US 45 southbound. Provide access for the Sheriff's that is clear of obstacles and traversable by a sheriff's squad car. Obtain approval from the engineer for Sheriff's access. Give the engineer seven days notice before the Sheriff's route on the internal work site access roads to US 45 southbound is changed. Allow the Sheriff's, at their request, to inspect the route through the work site so they become familiar with it.

The pedestrian bridge constructed in this contract over Watertown Plank Road between the Children's Hospital parking structure and the Ronald McDonald House will infringe upon medical center roadways. Maintain 89th Street access to and from Watertown Plank Road at all times. Maintain 11' of width for emergency vehicles and truck shipments at all times, other than during allowable nighttime closures, on the 89th Street access road adjacent to the new pedestrian bridge on the east side of the parking structure. Any improvements needed to maintain access on 89th Street to/from Watertown Plank Road and to maintain 11' of width on 89th Street is incidental to the new pedestrian bridge construction.

Contractor is allowed nighttime closures, from 10:00 PM – 5:00 AM, of the 89th Street access road between the south and north driveways that enter into the east side of the Children's Hospital parking structure. The access road nighttime closures are allowed only for material shipments and the staging of cranes to facilitate construction of the pedestrian bridge superstructure. Obtain approval from the engineer for scheduled nighttime closures of the access road. Offset nighttime closures of the access road from scheduled nighttime truck shipments to the Medical College of Wisconsin loading docks. Provide seven days notice to the engineer, the Wauwatosa Fire Department, and the Milwaukee Regional Medical Center before any nighttime closures of the 89th Street access road.

Contractor is allowed one continuous four month closure of the 89th Street access road's south driveway into the Children's Hospital parking structure to facilitate safe pedestrian bridge construction. Obtain approval from the engineer for the scheduled four month

closure of the south driveway. Provide 14 days notice to the engineer and the Milwaukee Regional Medical Center project liaison before closing the south driveway

Contractor is allowed nighttime closures between 10:00 PM and 5:00 AM for the north driveway into the parking structure to facilitate safe pedestrian bridge construction. Obtain approval from the engineer for scheduled nighttime closures of the north driveway. Provide seven days notice to the engineer and the Milwaukee Regional Medical Center project liaison for nighttime closures of the north driveway.

Maintain driving lanes on 92nd Street and 87th Street at all times unless otherwise permitted by the engineer.

Provide Milwaukee County Transit System - Coordinator of Street Supervision, Dave Ziarek, (414) 343-1764, with a schedule of Watertown Plank Road closure 14 calendar days prior to closure. Also coordinate the location of each Temporary Bus Stop Pad with Dave Ziarek 14 days prior to installation.

Comply with all local ordinances that apply to local street work operations, including those pertaining to working during night time hours. Furnish any ordinance variance issued by the municipality or required permits to the engineer in writing 3 days prior to performing such work.

Keep sidewalks open unless otherwise shown on the plans, or to facilitate the removal of structures and erection of girders or as approved by the engineer. Maintain pedestrian access to adjacent properties, businesses, schools, and at bus stops or provide where necessary, as directed by the engineer. Protect pedestrians from falling debris at all times when sidewalks are open.

Provide adequate temporary sidewalk and bridging between the curb and right-of-way line over freshly paved concrete or other obstructions in the sidewalk area, as directed by the engineer.

Construct temporary sidewalk surfaces with a minimum of 2 inches of asphaltic surface temporary or salvaged millings and a minimum of 4-feet wide. Compact the surface of temporary sidewalks until smooth and capable of supporting a wheelchair. The separate payment for the construction of temporary sidewalks including materials, labor, removal and restoration, will be made by the department under the bid item Temporary Crosswalk/Sidewalk, unless otherwise shown on the plans.

Inform property owners and tenants at least 48 hours prior to removing a driveway approach that serves that property. Schedule sidewalk and driveway approach removal and replacement so that the time lapse between removal and replacement is minimal.

Do not close residential approaches or remove from service without giving sufficient notice to the occupants of the premises to remove their vehicles prior to driveway removal or closing of the driveway approach access. If necessary, make other access

arrangements, agreed to in writing and signed by the contractor and the property owner serviced by the driveway. Obtain approval from the engineer prior to alternating construction sequencing.

Existing trees, street light poles, hydrants and other utility poles are to remain in place during construction unless otherwise noted in the plan. Conduct an on-site visit prior to bidding to determine any special measures required for proper clearance between the trees, hydrants and poles and the paving equipment.

All Work Restrictions
When engaged in roadway cleaning operations, use equipment having vacuum or water spray mechanisms to eliminate the dispersion of particulate matter into the atmosphere. If vacuum equipment is employed, it must have suitable self-contained particulate collectors to prevent discharge from the collection bin into the atmosphere.

Excavation material and cleared and grubbed material should be stockpiled on upland areas an adequate distance away from wetlands, storm sewer inlets, floodplains, and the waterways as determined by engineer.

Provide Milwaukee County Highway Maintenance and Milwaukee County Sheriff's Department with a 24-hour emergency contact number for when maintenance is required.

Traffic Control Deficiency Response Time Penalty
Supplement standard spec 643.3.1(7) with the following:

Upon receiving electronic notification from the engineer, clean, repair or replace all noted traffic control devices not performing as intended to the satisfaction of the engineer within 2 hours. Failure to clean, repair or replace each required traffic control item within the time limits specified above will result in daily monetary deductions of $500 for each 24-hour period (or portion thereof starting 2 hours after time of notification) in which the traffic control deficiency exists.

SEF 13_0422

Interim and Final Completion of Work
Modify standard spec 108.11 by adding the following to the end of the standard spec:

The department will not grant time extensions 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.

Each day is defined as a twenty-four hour period beginning at 12:01 AM.

Interim Completion of Work 03/15/2014
Complete all of the work necessary to open the Frontage Road and adjacent parking lots in the Mental Health Complex to traffic prior to 12:01 AM March 16, 2014.

Supplement standard spec 108.11 as follows.

If the contractor fails to complete all of the work necessary to open the Frontage Road and adjacent parking lots in the Mental Health Complex to traffic prior to 12:01 AM March 16, 2014, the contractor shall be liable to the department for a pay reduction in the amount of $1,605 per day, or portion thereof, for each calendar day after 12:01 AM March 16, 2014, that Frontage Road and adjacent parking lots remain closed.

Interim Completion of Work 07/10/2014
Complete all of the work necessary to open the pedestrian bridge B-40-784 between Ronald McDonald House parking structure and Children's Hospital parking structure to pedestrians prior to 12:01 AM July 11, 2014.

Supplement standard spec 108.11 as follows:

If the contractor fails to complete all of the work necessary to open the pedestrian bridge B-40-784 between Ronald McDonald House parking structure and Children's Hospital parking structure to pedestrians prior to 12:01 AM July 11, 2014, the contractor shall be liable to the department for a pay reduction in the amount of $1,605 per day, or portion thereof, for each calendar day after 12:01 AM July 11, 2014, that B-40-784 remains closed.

Interim Completion of Work 10/15/2014
Complete all of the work necessary to open eastbound and westbound Watertown Plank Road to traffic between Innovation Drive and 87th Street prior to 12:01 AM October 16, 2014.

Supplement standard spec 108.11 as follows:

If the contractor fails to complete all of the work necessary to open eastbound and westbound Watertown Plank Road to traffic between Innovation Drive and 87th Street prior to 12:01 AM October 16, 2014, the contractor shall be liable to the department for a pay reduction in the amount of $10,000 per day, or portion thereof, for each calendar day after 12:01 AM October 16, 2014, that eastbound and westbound Watertown Plank Road is not open to traffic between Innovation Drive and 87th Street.

Final Completion of Work 11/30/2014
Supplement standard spec 108.11 as follows:

If contract time expires prior to completing all contract work, prior to 12:01 AM December 1, 2014, the contractor shall be liable to the department for a pay reduction in the amount of $25,000 per calendar day, or portion thereof, for each calendar day after 12:01 AM December 1, 2014, that the project is not completed.

Migratory Birds
Swallow and other migratory birds' nests have been observed on or under the existing bridge. All active nests (when eggs or young are present) of migratory birds are protected under the federal Migratory Bird Treaty Act.

The nesting season for swallows and other birds is usually between May 1 and August 30. Either prevent active nests from becoming established, or apply for a depredation permit from the US Fish and Wildlife Service for work that may disturb or destroy active nests. The need for a permit may be avoided by removing the existing bridge structure prior to nest occupation by birds, or clearing nests from all structures before the nests become active in early spring. As a last resort, prevent birds from nesting by installing a suitable netting device on the remaining structure prior to nesting activity. Include the cost for preventing nesting in the cost of Removing Old Structure.
Birds (20090901)

5. Traffic.

A General
Keep W. Watertown Plank Road open to through traffic at all times for the duration of this project except where noted below and in the Prosecution and Progress article in these special provisions.

B Residential and Business Property Access
Maintain access to properties along W. Watertown Plank Road for local residents, businesses, and emergency vehicles. Maintain and keep open the access to all driveways and parking lots where alternative access is not available at all times by closing one driveway at a time, building half the driveway at a time and/or plating concrete work. Plating of concrete work, as directed by the engineer, is included in the item that is being plated. In parking lots that are being reconstructed, stage operations so that parking and access is maintained on existing or proposed base aggregate or pavement.

C Pedestrian Access
Maintain sidewalk at all times except under direction of the engineer. Provide a temporary surface for pedestrian access at all times in areas of sidewalk construction. Construct the temporary surface to meet Americans with Disabilities Act Accessibility Guidelines (ADAAG) requirements consisting of temporary asphaltic surface, any grade of concrete, skid resistant steel plating, or alternative material as approved by the engineer. Gravel or base course material is not acceptable. Maintain sidewalk access to all businesses and residences at all times. The Temporary Crosswalk/Sidewalk bid item is

payment for maintaining crosswalks and sidewalks through the construction zone at signalized intersections.

Maintain pedestrian movements crossing the construction zone at all intersections at all times, unless otherwise directed by the engineer. Construct pedestrian crossings of intersections to meet the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) consisting of temporary asphaltic surface, any grade of concrete, skid resistant steel plating, or alternative material as approved by the engineer. Gravel or base course material is not acceptable. Maintain ADAAG accessible pedestrian walkways that are free from mud, sand, and construction debris. The Temporary Crosswalk/Sidewalk bid item is payment for maintaining crosswalks through the construction zone where existing crosswalks exist. Closures of sidewalk must be approved by the engineer and conform to signing shown on the traffic control plan. At locations where crosswalks crossing W. Watertown Plank Road exist on both sides of the intersection, closure of one of the two crosswalks is permitted as long as all other crossings are completely open. At intersections where only one crosswalk exists crossing W. Watertown Plank Road, stage work to maintain the crosswalk at all times.

D Schedule of Operations

Traffic shifts shown in a given stage may occur at different times during that stage depending on the controlling elements for a given traffic movement. The department anticipates that the schedule for each stage shall be as follows:

Stage 1A Traffic:

- USH 45 (3 lanes in each direction)
- Shift northbound traffic to outside shoulder near Swan Blvd. for median work
- Close northbound entrance ramp from W. Watertown Plank Rd. concurrent with median work
- Close northbound outside shoulder at entrance ramp from Wisconsin Ave.
- Close left lane on northbound exit ramp to W. Watertown Plank Rd.

Stage 1B Traffic:

USH 45 (3 lanes in each direction)

- Shift northbound traffic to inside of existing
- Close W. Watertown Plank Rd. northbound exit ramp
- Close W. Watertown Plank Rd. southbound exit ramp to eastbound W. Watertown Plank Rd
- Complete USH 45 northbound connection from existing to proposed under night or weekend closure prior to opening to traffic

W. Watertown Plank Rd. (1 lane in each direction with left turn lane)

- Shift all traffic to existing westbound lanes and shoulder between N. 87th St. and Discovery Parkway
- Close W. Watertown Plank Rd. between Discovery Parkway and W. Innovation Drive and detour traffic to Discovery Parkway and Swan Blvd.
- Close entrance ramps to USH 45

N. 92nd St. and N. 87th St. (1 lane in each direction)

- Shift traffic to east half of roadways

W. Watertown Plank Rd. and Discovery Parkway intersection (1 lane in each direction)

- Nighttime lane closures for storm sewer trunk construction on W. Watertown Plank Rd.

Stage 2A Traffic:

USH 45 (3 lanes in each direction)

- Shift USH 45 northbound and southbound traffic to outside

W. Watertown Plank Rd. (1 lane in each direction with left turn lane)

- Same configuration as previous stage

N. 92nd St. and N. 87th St. (1 lane in each direction)

- Shift traffic to completed west half of roadway

Stage 2B Traffic:

USH 45 (3 lanes in each direction)

- Same configuration as previous stage
- Complete USH 45 southbound connection from existing to proposed under night or weekend closure prior to opening to traffic

W. Watertown Plank Rd. (1 lane in each direction with left turn lane)

- Shift traffic to completed westbound lanes between
- N. 87th Street and Discovery Parkway
- Watertown Plank Rd. to remain closed between Discovery Parkway and Swan Blvd. with detour along Discovery Parkway and Swan Blvd.
- All ramps remain closed to USH 45

N. 92nd St. and N. 87th St. (1 lane in each direction)

- Shift traffic to final configuration

Stage 3A Traffic:

USH 45 (3 lanes in each direction)

- Shift USH 45 southbound to new northbound lanes
- Close Watertown Plank Rd. southbound exit ramp

W. Watertown Plank Rd. (1 lane in each direction with left turn lanes)

- Same as previous stage

N. 92nd St. and N.87th St. (1 lane in each direction)

- Shift traffic at Watertown Plank Rd. intersection to the new southbound lanes.

Stage 3B Traffic:

USH 45 (3 lanes in each direction)

- Same as previous stage
- Open northbound exit ramp to W. Watertown Plank Rd.

W. Watertown Plank Rd. (3 lanes in each direction)

- Open roadway to traffic
- Open northbound entrance ramp to USH 45 northbound

N. 92nd St. and N. 87th St. (2 lanes in each direction)

- Open to traffic

W. Wisconsin Ave.

- Close northbound entrance ramp to USH 45 northbound

Stage 4 Traffic:

USH 45 (3 lanes in each direction)

- Close outside shoulder in work areas
- Open all lanes to traffic
- Open southbound exit ramp to W. Watertown Plank Rd.

W. Watertown Plank Rd. (3 lanes in each direction)

- Open remaining ramps to USH 45

W. Wisconsin Ave.

- Close USH 45 southbound exit ramp

6. Traffic Meetings and Traffic Control Scheduling.

Every Wednesday by 10:00 AM, submit a detailed proposed 2-week look-ahead traffic closure schedule to the engineer. Type the detailed proposed 2-week look-ahead closure schedule into an excel spreadsheet provided by the engineer. Enter information such as closure dates, duration, work causing the closure and detours to be used. Also enter

information such as ongoing long-term closures, emergency contacts and general 2-month look-ahead closure information into the excel spreadsheet.

Meet with the engineer between 11:00 - 11:30 AM on at the Zoo Interchange project office located at 2424 S. 102nd Street, West Allis, WI 53227 to discuss and answer questions on the proposed schedule. Edit, delete and add closures to the detailed proposed 2-week look-ahead schedule, as directed by the engineer, so that proposed closures meet specification requirements. Other edits, deletions or additions unrelated to meeting specification requirements may also be agreed upon with the engineer during the 11:00 AM meeting.

Every Wednesday at 2:00 PM, or as scheduled by the engineer, attend a weekly traffic meeting. The meeting will bring local agencies, project stakeholders, owner managers, owner engineers, contractors, document control and construction engineering personnel together to discuss traffic staging, closures and general impacts. Upon obtaining feedback from the meeting attendees, edit, delete and add information to the detailed 2-week look-ahead closure schedule, as needed. Submit the revised 2-week look-ahead to the engineer.

Obtain approval from the engineer for any mid-week changes to the closure schedule. Revise the 2-week look-ahead as required and obtain engineer approval.

Notify the engineer and affected stakeholders such as City of Milwaukee Police and Fire Departments, Milwaukee County Sheriff's Department, Milwaukee County Transit, School Districts, Milwaukee DPW, local business owners and residents at least 3 days (72 hours) in advance of all traffic switches and closures of existing streets.

Notify business owners and residents 2 days (48 hours) prior to restricting access and 3 days (72 hours) prior to closing access. See the traffic article of these special provisions for information on property access.

SEF Rev. 12_0810

7. Traffic Control.

The work under this item shall be in accordance to the requirements of standard spec 643, and as shown on the plans, or as approved by the engineer, except as hereinafter set forth.

No operation shall proceed until all traffic control devices for such work are in the proper location. Traffic Control is subject to change at the direction of the engineer in the event of an emergency.

Provide the Milwaukee County Sheriff's Department, City of Milwaukee Police Department, City of West Allis Police Department, City of Wauwatosa Police Department, Wisconsin State Patrol, the Statewide Traffic Operations Center, 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 traffic control safety hazard develops.

Do not park or store equipment, vehicles, or construction materials within 30 feet of the edge of freeway traffic lanes without barrier separation for any roadway carrying freeway traffic; or within 20 feet off the edge of a freeway service interchange ramp during any time except as approved by the engineer. At such locations, the materials and equipment involved shall not constitute a hazard to the traveling public.

Do not park personal vehicles within the access control limits of the freeway. Do not cross live freeway traffic lanes with equipment or vehicles.

Do not use flag persons to direct, control, or stop freeway traffic. Obtain approval from the engineer to use a flag person to direct, control, or stop local street traffic. Adhere to Manual of Uniform Traffic Control Devices chapter 6E standard requirements for flagger control.

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.

One flashing arrow board shall be placed in advance of each lane closure taper and one flashing arrow board shall be placed within each lane closure taper at locations directed by the engineer.

SEF Rev_13_0425

8. Holiday and Special Event Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway lanes carrying I-94/ US 45 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 Wednesday, November 27, 2013 to 6:00 AM Monday, December 2, 2013 for Thanksgiving;
- From noon Friday, December 20, 2013 to 6:00 AM Thursday, January 2, 2014 for Christmas and New Years;
- From noon Friday, May 23, 2014 to 6:00 AM Tuesday, May 27, 2014 for Memorial Day;
- From noon Thursday, July 3, 2014 to 6:00 AM Monday, July 7, 2014 for Independence Day;

- From noon Friday, August 29, 2014 to 6:00 AM Tuesday, September 2, 2014 for Labor Day;
- From noon Wednesday, November 26, 2014 to 6:00 AM Monday, December 1, 2014 for Thanksgiving.

Provide any proposals to work within the work zone(s) adjacent to the highway carrying I-94/ US 45 traffic during the established holiday periods to the engineer for approval. Proposals will include a plan that establishes work type, hours of operations, and will certify no ingress/egress to the site by construction or worker vehicles from US 45 consistent with the above restrictions for equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic as noted above.

Holiday work restrictions do not apply to roadways or ramps closed long/short term during construction as shown on the plans.

Special event work restrictions do not apply to roadways or ramps closed long/short term during construction as shown on the plans.

Freeway Restrictions
Do not perform work on, nor haul materials of any kind along or across any portion of the designated highway lanes carrying I-94/US 45 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 special event periods:

- On weekend days during the Milwaukee County Zoo's A la Carte event, August 16, 2014 to August 17, 2014 no closures allowed until two hours after the event.

- On Family Free Days at the Milwaukee County Zoo, no closures allowed until two hours after the event.

- During Summer Fest, maintain all lanes on I-94 and US 45 in both directions for the duration of the event.

- During Wisconsin State Fair, maintain all lanes on I-94 and US 45 in both directions for the duration of the event.

- On the Milwaukee Brewers season opener home game, no closures allowed three hours prior to the start of the game and until two hours after completion.

- On days with a Milwaukee Brewers home game against the Chicago Cubs or Chicago White Sox, no closures allowed three hours prior to the start of the game and until two hours after completion.

- On days with a Milwaukee Brewer home game at Miller Park, maintain all inbound travel lanes on I-94 and US 45 to Miller Park starting at three hours before the game until one hour after the start of the game. Maintain all outbound lanes on I-94 and US 45 from Miller Park starting at the end of the game until two hours after the end of the game.

- On days with a University of Wisconsin-Madison football home game at Camp Randall, maintain all outbound travel lanes on I-94 starting at three hours before the game until two hour after the start of the game. Maintain all inbound lanes starting at one hour after the end of the game until three hours after the end of the game.

- On days with a Green Bay Packers football home game at Lambeau Field, maintain all outbound travel lanes on US 45 starting at three hours before the game until three hour after the start of the game. Maintain all inbound lanes starting at two hours after the end of the game until four hours after the end of the game.

Local Road Restrictions
None

9. Utilities.

This contract comes under the provisions of Administrative Rule TRANS 220.

Provide an individual to serve as the contractor's sole point of contact for field utility coordination and communication for the duration of the project.

Additional information regarding recently relocated utility facilities may be available on permits issued to the utility companies. These permits can be viewed at the Region Office during normal working hours. Contact WisDOT SE Freeways Utility Coordinator Maria Rojas at (414) 750-4362 for further information.

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 the utilities that have facilities in the area as required per state statute. Use caution to ensure the integrity of underground facilities and maintain code clearances from overhead facilities at all times.

Some utility work, as described below, is dependent on prior work being performed by the contractor at a specific site. Provide the engineer and the affected utility a good faith notice of when the utility is to start work at the site. Notice shall be given 14 to 16 calendar days in advance of when the site will be available to the utility. Follow up with a confirmation notice to the engineer and the utility not less than 3 working days before the site will be ready for the utility to begin its work.

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

Utility companies will be performing utility work and adjustments within the limits and during the life of the project. The contractor shall cooperate and coordinate construction activities with these companies.

There may be abandoned utility facilities within the project limits. If a conflict with an abandoned utility facility is encountered, contact the appropriate utility owner/representative to coordinate construction activities and proper removal and disposal of said facility as necessary.

Utility working days shown herein are as defined in Wisconsin Administrative Code Chapter Trans 220.

Known utilities in the project area are as follows:

AT&T Wisconsin has existing underground communications facilities within the project limits in the following locations:

- An underground communications line beginning beyond the westerly project limits and running easterly in the eastbound lanes of Watertown Plank Road to a manhole at Station 59WWB+94, 51'RT and then continuing easterly in the eastbound lanes of Watertown Plank Road to a manhole at Station 83WWB+43, 73'RT. From there it turns and runs easterly along the south side of Watertown Plank Road to a manhole at Station 87WWB+26, 100'RT and continues to a manhole at Station 94WWB+75, 24'RT. From there it turns and runs easterly to beyond the easterly project limits. AT&T Wisconsin will abandon this line between a manhole at Station 44WWB+11, 54'RT and a manhole at Station 65WWB+27, 77'RT and also between a manhole at Station 75WWB+95, 64'RT and a manhole at Station 94WWB+75, 24'RT prior to and during construction. AT&T Wisconsin will also adjust this line at Station 38WWB+93, 54'RT, at Station 41WWB+77'RT, at Station 66WWB+60, 72'RT, between Station 69WWB+72'RT and a manhole at Station 71WWB+93, 70'RT, at Station 72WWB+26, 70'RT, and at Station 74WWB+51, 66'RT prior to and during construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 44WWB+11, 54'RT and running northerly, crossing Watertown Plank Road at Station 44WWB+18, and continuing northerly to Station 44WWB+29, 30'LT where it turns and runs easterly along the north side of Watertown Plank Road to Station 90WWB+14, 31'LT. From there it turns and runs southerly to a manhole at Station 90WWB+28, 39'RT. AT&T Wisconsin will abandon the line in place prior to and during construction.

- An underground communications line beginning at a manhole at Station 90WWB+28, 39'RT and running easterly along the median of Watertown Plank Road to beyond the easterly project limits. AT&T Wisconsin will adjust this line at Station 93WWB+24, 7'RT prior to and during construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 35WWB+86, 55'RT and running southerly to beyond the southerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 35WWB+86, 55'RT and running northerly, crossing Watertown Plank Road at Station 35WWB+86, and continuing northerly to Station 35WWB+86, 25'LT where it turns and runs northeasterly to beyond the northerly project limits. AT&T Wisconsin will abandon this line in place between a manhole at Station 35WWB+86, 25'LT and Station 36WWB+05, 41'LT prior to and during construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 59WWB+94, 52'RT and running northerly, crossing Watertown Plank Road at Station 59WWB+95, and continuing northerly to a manhole at Station 59WWB+95, 31'LT. AT&T Wisconsin will abandon this line in place prior to and during construction.
- An underground communications line beginning at a manhole at Station 65WWB+27, 77'RT and running southerly to beyond the southerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 67WWB+94, 74'RT and running northeasterly, crossing Watertown Plank Road at Station 68WWB+66, and continuing northeasterly to a manhole at Station 69WWB+23, 13'LT. AT&T Wisconsin will abandon this line in place prior to and during construction.
- An underground communications line beginning at a manhole 67WWB+94, 74'RT and running southeasterly to beyond the southerly project limits. AT&T Wisconsin will adjust this line at Station 68WWB+11, 138'RT prior to and during construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 75WWB+95, 65'RT and running southerly to beyond the southerly project limits. AT&T Wisconsin will adjust this line between Station 75WWB+95, 65'RT and Station 75WWB+97, 104'RT prior to and during construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 80WWB+20, 64'RT and running southerly to beyond the southerly project limits. AT&T Wisconsin will abandon this line between a manhole at Station 80WWB+20, 64'RT and Station 80WWB+08, 109'RT prior to and during construction. The remaining portions of this line will remain in place without adjustment.

- An underground communications line beginning at a manhole at Station 9THS+42, 197'RT and running westerly to Station 9THS+50, 78'RT where it turns and runs southerly along the east side of 92nd Street to beyond the southerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 80WWB+19, 64'RT and running northerly, crossing Watertown Plank Road at Station 80WWB+16, and continuing northerly to a manhole at Station 80WWB+15, 28'LT. AT&T Wisconsin will abandon this line in place prior to and during construction.
- An underground communications line beginning at a manhole at Station 80WWB+15, 28'LT and running northerly along the east side of 92nd Street to a manhole at Station 15THN+92, 29'RT. AT&T Wisconsin will abandon this line in place prior to and during construction.
- An underground communications line beginning at a manhole at Station 86WWB+54, 30'LT and running southerly, crossing Watertown Plank Road at Station 86WWB+31, and continuing southerly to beyond the southerly project limits. AT&T Wisconsin will abandon this line in place between a manhole at Station 86WWB+54, 30'LT and Station 86WWB+07, 88'RT prior to and during construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a manhole at Station 90WWB+28, 40'RT and running southeasterly to a We Energies steam vault at Station 91WWB+27, 89'RT where it enters the steam tunnel and continues southerly to beyond the southerly project limits. AT&T Wisconsin will abandon this line in place between the manhole at Station 90WWB+28, 40'RT and the We Energies Tunnel at Station 91WWB+27, 89'RT prior to and during construction.
- An underground communications line beginning at a manhole at Station 94WWB+76, 24'RT and running southerly to beyond the southerly project limits. AT&T Wisconsin will abandon this line in place prior to and during construction.

AT&T Wisconsin will relocate, construct and reconstruct underground communications facilities in the project area at the following locations prior to construction:

- A new underground communications line beginning at an existing manhole at Station 35WWB+90, 53'RT and running northerly and connecting to an existing line at Station 36WWB+05, 41'LT.
- A new underground communications line beginning at an existing manhole at Station 35WWB+90, 53'RT and running easterly to an existing manhole at Station 44WWB+11, 54'RT.
- A new underground communications line beginning at an existing manhole at Station 44WWB+11, 54'RT and running southeasterly approximately 8' inside the proposed westerly right of way of USH 45 to a new manhole at Station 746WF+50, 21'RT where it will turn and run northeasterly, crossing USH 45 at Station 356NS+54, to a new manhole at Station 758WJ+25, 18'RT. From there it will turn and run easterly in the eastbound lanes of Watertown Plank Road to an existing manhole at Station 65WWB+28, 77'RT and then it will continue easterly

in the eastbound lanes of Watertown Plank Road to an existing manhole at Station 75WWB+94, 64'RT.

- A new underground communications line beginning at a new manhole at Station 758WJ+25, 18'RT and running northerly, crossing Watertown Plank Road at Station 59WWB+76, and continuing northerly to beyond the northerly project limits.
- A new underground communications line beginning at an existing manhole at Station 67WWB+94, 74'RT and running westerly along the south side of Watertown Plank Road to Station 66WWB+71, 70'RT where it will turn and run northwesterly, crossing Watertown Plank Road at Station 66WWB+30, and continue northwesterly to beyond the northerly project limits.
- A new underground communications line beginning at an existing manhole at Station 75WWB+95, 64'RT and running northerly, crossing Watertown Plank Road at Station 75WWB+96, and continuing northerly to the north right of way of Watertown Plank Road where it will turn and run easterly along the right of way to a new manhole at Station 81WWB+51, 47'LT and then continue easterly to Station 88WWB+69, 27'LT. From there it will turn and run southeasterly to an existing manhole at Station 90WWB+28, 40'RT.
- A new underground communications line beginning at a new manhole at Station 81WWB+50, 49'LT and running westerly along the north right of way of Watertown Plank Road to Station 79WWB+66, 50'LT where it will turn and run northerly along the east side of 92nd Street to an existing manhole at Station 15THN92, 29'RT.
- A new underground communications line beginning at a new manhole at Station 81WWB+50, 49'LT and running westerly along the north right of way of Watertown Plank Road to Station 80WWB+04, 48'LT where it will turn and run southerly, crossing Watertown Plank Road at Station 80WWB+02, and continue southerly and connect to an existing line at Station 80WWB+08, 109'RT.
- A new underground communications line beginning at Station 86WWB+85, 36'LT and running southwesterly, crossing Watertown Plank Road at Station 86WWB+59, and continuing southwesterly to connect to an existing line at Station 86WWB+07, 90'RT.
- A new underground communications line beginning at an existing manhole at Station 90WWB+28, 40'RT and running southeasterly to connect to an existing We Energies steam tunnel at Station 91WWB+53, 58'RT. We Energies will transfer ownership of the tunnel to AT&T Wisconsin prior to construction.
- A new underground communications line beginning at an existing manhole at Station 90WWB+28, 40'RT and running easterly in the eastbound lanes of Watertown Plank Road to an existing manhole at Station 94WWB+76, 24'RT.

AT&T Wisconsin will also adjust manholes throughout the project limits during construction. Contact Mark Szymanski, (414) 535-7417 office / (414) 491-2853 cell, of AT&T Wisconsin 3 days prior to any paving operations to coordinate manhole adjustments.

Contact Mark Szymanski, (414) 535-7417 office / (414) 491-2853 cell, of AT&T Wisconsin 7 days in advance to coordinate locations and any excavation near their facilities.

Midwest Fiber Networks has existing underground communications facilities within the project limits in the following locations:

- An underground communications line in the WisDOT STOC conduit running along the west right of way of USH 45 throughout the project limits. Midwest Fiber Networks will vacate this line and move to the new STOC conduit path being constructed under Project 1060-33-70 (STH 100). That new path is anticipated to be completed prior to construction.
- An underground communications line beginning beyond the westerly project limits and running easterly along the south side of Watertown Plank Road to a handhole at Station 46WWB+54, 98' RT and continuing easterly to a handhole at Station 63WWB+01, 82' RT. Midwest Fiber Networks will abandon this line prior to and during construction.
- An underground communications line beginning at a handhole at Station 35WWB+65, 82' RT and running northerly, crossing Watertown Plank Road at Station 35WWB+67, and continuing northerly to the north side of Watertown Plank Road where it turns and runs westerly to beyond the westerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a handhole at Station 63WWB+01, 82' RT and running northerly, crossing Watertown Plank Road at Station 63WWB+04, and continuing northerly to beyond the northerly project limits. Midwest Fiber Networks will abandon this line in place throughout the project limits prior to and during construction.
- An underground communications line beginning at a handhole at Station 63WWB+01, 82' RT and running southerly to Station 63WWB+01, 95' RT where it turns and runs easterly along the south right of way of Watertown Plank Road to a handhole at Station 14XI+37, 27' RT where it turns and runs southerly along the east side of 95th Street to beyond the southerly project limits. Midwest Fiber Networks will relocate portions of this line prior to and during construction.

Midwest Fiber Networks will relocate, construct and reconstruct underground communications facilities in the project area at the following locations prior to and during construction:

- A new underground communications line beginning at a handhole at Station 35WWB+65, 82' RT and running easterly along the south right of way of Watertown Plank Road to Station 43WWB+75, 93' RT where it will turn and run southeasterly along the new westerly right of way of USH 45 to a new handhole at Station 752WC+88, 44' LT. From there it will turn and run northeasterly, crossing USH 45 at Station 353NS+17, and continue northeasterly to Station 754WJ+00, 17' RT where it will turn and run northerly along the east right of way of USH 45 to Station 60WWB+64, 85' RT. From there it will turn and run

easterly along the south side of Watertown Plank Road to a handhole at Station 63WWB+01, 82' RT.

- A new underground communications line beginning at a handhole at Station 63WWB+01, 82' RT and running northerly, crossing Watertown Plank Road at Station 63WWB+16 to beyond the northerly project limits.
- A new underground communications line beginning at a handhole at Station 63WWB+17, 44' LT and running easterly along the north right of way of Watertown Plank Road, crossing 92nd Street at Station 13THN+08, and continuing easterly to Station 86WWB+32, 47' LT where it will turn and run southerly, crossing Watertown Plank Road at Station 86WWB+27, to a handhole at Station 86WWB+15, 99' RT.

Contact Richard Trgovec, (414) 459-3554, of Midwest Fiber Networks 7 days in advance to coordinate locations and any excavation near their facilities.

Milwaukee County – Electrical & Communications has overhead and underground electrical and communications facilities within the project limits in the following locations:

Electric

- An underground electric facility beginning beyond the northerly project limits and running southerly, crossing Watertown Plank Road at Station 59WEB+91, and continuing southerly to a manhole at Station 59WEB+91, 38'RT where it turns and runs southeasterly to a manhole at Station 61WEB+38, 428'RT. From there the line runs southwesterly and ends at a pole at Station 752WJ+73, 42'RT. Portions of this line at Watertown Plank Road will be abandoned in place prior to construction.
- An overhead electric facility beginning at a pole at Station 752WJ+73, 42'RT and running southwesterly to a pole at Station 752WJ+71, 67'LT where it turns and runs southeasterly along the easterly right of way of USH 45 to beyond the southerly project limits. This line will be removed prior to construction.
- An underground electric facility beginning beyond the southerly project limits and running northerly along the east side of 95th Street to a manhole at Station 66WEB+33, 104'RT where it turns and runs easterly in an existing parking lot south of Watertown Plank Road to Station 75WEB+38, 99'RT. From there the line runs northeasterly and ends at a manhole Station 75WEB+85, 38'RT. This line will remain in place without adjustment.
- An underground electric facility beginning beyond the northerly project limits at a manhole at Station 76WEB+03, 280'LT and running southerly, crossing Watertown Plank Road at Station 75WEB+88, and continuing southerly to a manhole at Station 75WEB+85, 38'RT and then continuing to beyond the southerly project limits. This line will be abandoned in place between the manholes at Station 76WEB+03, 280'LT and Station 75WEB+85, 38'RT prior to construction.

- An underground electric facility beginning at a manhole located at Station 75WEB+85, 38'RT and running easterly in the eastbound lanes of Watertown Plank Road to a manhole at Station 79WEB+94, 17'RT where it turns and runs southerly to a manhole at Station 80WEB+36, 414'RT. From there the line runs westerly and ends at a manhole at Station 79WEB+08, 404'RT. The portions of this line in the project limits will be abandoned in place prior to construction.

Milwaukee County – Electrical & Communications also has abandoned underground electric facilities in the project area at the following locations:

- An abandoned underground electric facility beginning at a manhole located at Station 79WEB+94, 17'RT and running northwesterly, crossing Watertown Plank Road at Station 79WEB+87, and continuing northwesterly to a manhole at Station 78WEB+71, 269'LT and then continuing northwesterly along the west side of a driveway to the We Energies power plant to beyond the project limits.
- An abandoned underground electric facility beginning beyond the southerly project limits and running northerly to Station 81WEB+72, 79'RT where it turns and runs northeasterly to Station 85WEB+16, 104'RT. From there it runs easterly to beyond the project limits.
- An abandoned underground electric facility beginning beyond the westerly project limits and running northeasterly, crossing 87th Street at Station 6TPS+00, and continuing northeasterly to a manhole at Station 6TPS+04, 31'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 94WEB+03, and continuing northerly to a manhole at Station 94WEB+07, 69'LT. From there it runs northwesterly along the west side of 87th Street to beyond the northerly project limits.
- An abandoned underground electric facility beginning beyond the westerly project limits and running northeasterly, crossing 87th Street at Station 5TPS+79, and continuing northeasterly and ending at a manhole at Station 6TPS+04, 31'RT.

Milwaukee County – Electrical & Communications will relocate, construct and reconstruct underground electric facilities in the project area at the following locations prior to construction:

- A new underground electric facility beginning at a manhole connected to an existing electrical line at Station 59WEB+74, 371'LT and running southerly to Station 60WEB+37, 85'LT and then continuing southerly, crossing Watertown Plank Road at Station 60WEB+37, and continuing southerly to a manhole located at Station 60WEB+37, 155'RT where it connects to an existing underground electric line.
- A new underground electric facility beginning at a new manhole connected to an existing electric line beyond the southerly project limits at Station 748WJ+41, 77'RT and running northerly to Station 749WJ+83, 65'RT and then continuing northerly to Station 750WJ+95, 39'RT. From there it continues northerly to Station 752WJ+54, 44'RT where it turns and runs northeasterly to a new manhole connected to an existing underground electric line at Station 752WJ+84, 58'RT.

- A new underground electric facility beginning beyond the northerly project limits at a manhole at Station 76WEB+03, 280'LT and running southwesterly to Station 75WEB+77, 190'LT and then running southerly, crossing Watertown Plank Road at Station 75WEB+77, and continuing southerly to Station 75WEB+77, 19'RT where it turns and runs southeasterly to an existing manhole at Station 75WEB+85, 38'RT. From that manhole two lines run to new electrical switches at Station 75WEB+78, 75'RT and 75WEB+90, 75'RT.

Communications

- An underground communication line beginning beyond the southerly project limits and running northerly, crossing Watertown Plank Road at Station 41WWB+80, and continuing northerly to beyond the northerly project limits. This line will be abandoned in place prior to construction.
- An underground communication line beginning beyond the southerly project limits and running northerly along the east side of 95th Street to Station 65WEB+96, 104'RT where it turns and runs westerly to Station 62WEB+90, 81'RT. From there the line turns and runs northerly, crossing Watertown Plank Road at Station 62WWB+95, and continues northerly to a manhole at Station 62WEB+98, 68'LT and then continues to beyond the northerly project limits. This line will be abandoned in place prior to construction.

Milwaukee County – Electrical & Communications also has abandoned underground communications facilities in the project area at the following locations:

- An underground communication line beginning beyond the westerly project limits and running easterly, crossing Ramp WF at Station 744WF+44, and continuing easterly to Station 746WF+62, 93'LT where it turns and round southeasterly along the westerly right of way of USH 45 to beyond the southerly project limits.
- An underground communication line beginning beyond the northerly project limits and running southerly, crossing Ramp WH at Station 782WH+48, and continuing southerly to Station 782WH+52, 08'RT where it turns southeasterly to a manhole at Station 783WH+33, 8'RT. From there it runs southerly and southeasterly, crossing Ramp WA at Station 756WA+49, and continues southeasterly to Station 59WEB+76, 78'LT where it turns and runs easterly along the north side of Watertown Plank Road to a manhole at Station 62WEB+98, 68'LT. From there it continues easterly along the north side of Watertown Plank Road to an existing pedestal at Station 79WEB+25, 64'LT where it turns and runs northwesterly along the east side of a driveway to the We Energies power plant to beyond the northerly project limits.
- An underground communication line beginning at a manhole at Station 783WH+33, 8'RT and running northerly, crossing Ramp WH at Station 783WH+29, and continuing northerly to Station 783WH+23, 14'LT where it turns and runs northeasterly and easterly to beyond the easterly project limits.

- An underground communication line beginning beyond the southerly project limits and running northerly to a manhole at Station 91WEB+37, 29'RT and then continuing northerly, crossing Watertown Plank Road at Station 91WEB+36, and continuing northerly to beyond the northerly project limits.
- An underground communication line beginning at a manhole at Station 91WEB+37, 29'RT and running southerly to Station 91WEB+33, 50'RT where it turns and runs easterly along the south side of Watertown Plank Road to beyond the easterly project limits.
- An underground communication line beginning at Station 93WEB+37, 50'RT and running southeasterly to Station 93WEB+66, 75'RT where it turns and runs southerly along the west side of 87th Street to beyond the southerly project limits.

Milwaukee County – Electrical & Communications will relocate, construct and reconstruct underground communication facilities in the project area at the following locations prior to construction:

- A new underground communication line beginning beyond the southerly project limits and running northerly, crossing Watertown Plank Road at Station 41WWB+90, and continuing northerly to beyond the northerly project limits.

Milwaukee County will also adjust electric manholes throughout the project limits during construction. Contact John Bieganski, (414) 257-6418, of Milwaukee County 3 days prior to any paving operations to coordinate manhole adjustments.

Contact John Bieganski, (414) 257-6418, of Milwaukee County 7 days in advance to coordinate locations and any excavation near their electric facilities. Contact Francis Bleeker, (414) 651-3475, of Milwaukee County 7 days in advance to coordinate locations and any excavation near their communications facilities.

Milwaukee County – Sanitary has underground sanitary sewer facilities within the project limits in the following locations:

- An underground sanitary sewer beginning beyond the westerly project limits and running easterly along the north right of way of Watertown Plank Road to a manhole at Station 41WEB+22, 85'LT where it turns and runs northerly to beyond the project limits. This line will remain in place without adjustment.
- An underground sanitary sewer beginning at a manhole at Station 41WEB+22, 85'LT and running southeasterly to a manhole at Station 41WEB+54, 54'RT where it turns and runs easterly along the south right of way of Watertown Plank Road to a manhole at Station 43WEB+50, 54'RT where it turns and runs southeasterly to a manhole at Station 45WEB+27, 326'RT. From there the line runs southerly and ends at a manhole at Station 45WEB+26, 651'RT beyond the southerly project limits. This line will be abandoned in place prior to construction.

- An underground sanitary sewer beginning at a manhole beyond the project limits at Station 75WEB+95, 157'RT and running easterly, crossing 92nd Street at Station 10THS+27, and continuing easterly to a manhole beyond the project limits at Station 79WEB+37, 207'RT. This line will remain in place without adjustment.
- An underground sanitary sewer beginning beyond the southerly project limits and running northerly along the center of 89th Street to a manhole at Station 86WEB+10, 30'RT where it turns and runs northeasterly and connects to an MMSD manhole at Station 86WEB+28, 1'LT. This line will remain in place without adjustment.
- An underground sanitary sewer beginning beyond the project limits and running easterly to a manhole at Station 92WEB+86, 279'RT where it turns and runs southeasterly, crossing 87th Street at Station 6TPS+23, and continuing southeasterly to a manhole at Station 6TPS+20, 9'RT. From there the line runs easterly to beyond the project limits. This line will remain in place without adjustment.

Milwaukee County – Sanitary also has abandoned underground sanitary sewer facilities in the project area at the following locations:

- An underground sanitary sewer beginning at a manhole at Station 759WA+90, 3'LT and running easterly to beyond the easterly project limits of the northeast interchange ramp.
- An underground sanitary sewer beginning at Station 89WEB+04, 62'LT and running easterly along the north side of Watertown Plank Road to Station 90WEB+20, 49'LT where it turns and runs northeasterly to Station 90WEB+15, 137'LT. From there the line runs south and ends at the MMSD sewer in the median of Watertown Plank Road.

Milwaukee County also has abandoned underground steam facilities in the project area at the following locations:

- Steel steam lines in an underground concrete trench box beginning at Station 43WEB+83, 204'RT and running northwesterly to Station 41WEB+86, 73'LT where they turn and run northerly, crossing Watertown Plank Road at Station 41WEB+86, and continue northerly to beyond the northerly project limits.

Milwaukee County - Sanitary will also adjust and reconstruct sanitary manholes throughout the project limits during construction. Contact Tom Travia, (414) 339-0408, of Milwaukee County 3 days prior to any paving operations to coordinate sanitary manhole adjustments.

Contact Tom Travia, (414) 339-0408, of Milwaukee County 7 days in advance to coordinate locations and any excavation near their facilities.

Milwaukee, County – Water has existing underground water facilities within the project limits in the following locations:

- An 8" water main beginning at Station 36WWB+36, 30' LT and running easterly along the north side of Watertown Plank Road, crossing USH 45 at Station 363NS+35, and continuing easterly to Station 72WWB+22, 51' LT. Milwaukee County will abandon this line in place prior to and during construction.
- A 12" water main beginning at Station 36WWB+65, 30' LT and running southerly, crossing Watertown Plank Road at Station 36WWB+65, and continuing southerly to beyond the southerly project limits. This line will remain in place without adjustment.
- An 8" water main beginning at Station 36WWB+36, 30' LT and running northerly to beyond the northerly project limits. This line will remain in place without adjustment.
- An 8" water main beginning at Station 41WWB+46, 30' LT and running northerly to beyond the northerly project limits. This line will remain in place without adjustment.
- An 8" water main beginning beyond the westerly project limits and running easterly to Station 756WG+75, 0' LT where it turns and runs northerly to Station 49WWB+83, 3' RT. From there it turns and runs easterly in the median of Watertown Plank Road to Station 53WWB+08, 2' RT where it turns and runs southeasterly to Station 365NS+88, 122' RT. From there it turns and runs easterly to beyond the easterly project limits. Milwaukee County will abandon this line in place prior to and during construction.
- A 6" water main beginning beyond the southerly project limits and running northerly along the east side of 97th Street to Station 13TFA+59, 4' RT where it turns and runs easterly to beyond the easterly project limits. Milwaukee County will abandon this line in place between Station 11TFA+60, 6' RT and Station 12TFA+76, 7' RT prior to and during construction.
- A water main beginning at a water vault at Station 65WWB+48, 113' RT and running easterly along the south side of Watertown Plank Road to Station 62WWB+54, 133' RT where it turns and runs southerly to beyond the southerly project limits. This line will remain in place without adjustment.
- A water main beginning at a water vault at Station 65WWB+48, 113' RT and running northerly, crossing Watertown Plank Road at Station 65WWB+37, and continuing northerly to beyond the northerly project limits. Milwaukee County will abandon this line in place throughout the project limits prior to and during construction.
- A water main beginning at a water vault at Station 65WWB+48, 113' RT and running southerly along the west side of 95th Street to beyond the southerly project limits. This line will remain in place without adjustment.
- A 12" water main beginning at a water vault at Station 65WWB+48, 113' RT and running easterly along the south side of Watertown Plank Road, crossing 92nd Street at Station 11THS+27, and continuing easterly to Station 85WWB+66, 137' RT. Milwaukee County will abandon this line in place between Station

11THS+27, 62’ RT and Station 85WWB+66, 137’ RT prior to and during construction.

- An 8” water main beginning at Station 72WWB+21, 116’ RT and running northerly, crossing Watertown Plank Road at Station 72WWB+22, and continuing northerly to beyond the northerly project limits. Milwaukee County will abandon this line in place throughout the project limits prior to and during construction.
- An 8” water main beginning at Station 76WWB+03, 119’ RT and running northerly, crossing Watertown Plank Road at Station 76WWB+05, and continuing northerly to beyond the northerly project limits. Milwaukee County will abandon this line in place throughout the project limits prior to and during construction.
- A water main beginning at Station 77WWB+58, 122’ RT and running southerly along the west side of 92nd Street to Station 7THS+72, 39’ LT where it turns and runs westerly to beyond the westerly project limits. This line will remain in place without adjustment.
- A 16” water main beginning at Station 79WWB+02, 132’ RT and running northerly to Station 79WWB+02, 110’ RT where it turns and runs easterly along the south side of Watertown Plank Road to Station 93WWB+63, 74’ RT. Milwaukee County will abandon this line between Station 79WWB+02, 132’ RT and Station 85WWB+76, 76’ RT. The remaining portions of this line will remain in place without adjustment.
- A water main beginning at Station 79WWB+02, 110’ RT and running southerly along the east side of 92nd Street to beyond the southerly project limits. This line will remain in place without adjustment.
- A water main beginning at Station 9THS+32, 76’ RT and running easterly to beyond the easterly project limits. This line will remain in place without adjustment.
- A water main beginning at Station 81WWB+96, 75’ RT and running northerly, crossing Watertown Plank Road at Station 82WWB+03, and continuing northerly to Station 82WWB+07, 93’ LT where it turns and runs northwesterly to beyond the northerly project limits. Milwaukee County will abandon this line in place throughout the project limits prior to and during construction.
- A water main beginning beyond the project limits and running easterly, crossing 92nd Street at Station 15THN+58, and continuing easterly to beyond the project limits. This line will remain in place without adjustment.
- A 12” water main beginning beyond the northerly project limits and running southeasterly to Station 81WWB+96, 49’ LT where it turns and runs easterly along the north side of Watertown Plank Road to Station 87WWB+40, 58’ LT. From there it turns and runs northeasterly to beyond the northerly project limits. Milwaukee County will abandon this line from beyond the northerly project limits to Station 86WWB+62, 59’ LT prior to and during construction.
- An 8” water main beginning at Station 83WWB+84, 122’ RT and running northerly, crossing Watertown Plank Road at Station 84WWB+00, and continuing northerly to beyond the northerly project limits. Milwaukee County will abandon this line in place throughout the project limits prior to and during construction.

- A water main beginning at Station 85WWB+76, 76’ RT and running southerly to beyond the southerly project limits. This line will remain in place without adjustment.
- A water main beginning beyond the northerly project limits and running southeasterly along the west side of 87th Street, crossing 87th Street at Station 10TPN+50, and continuing southeasterly to Station 94WWB+49, 31’ LT where it turns and runs southerly, crossing Watertown Plank Road at Station 94WWB+47, and continuing southerly along the east side of 87th Street to beyond the southerly project limits. This line will remain in place without adjustment.
- A water main beginning at Station 7TPS+42, 58’ RT and running southwesterly, crossing 87th Street at Station 6TPS+75, and continuing southwesterly to beyond the southerly project limits. This line will remain in place without adjustment.
- A water main beginning at Station 6TPS+08, 25’ LT and running easterly, crossing 87th Street at 6TPS+08, and continuing easterly to beyond the easterly project limits. This line will remain in place without adjustment.
- A water main beginning at Station 6TPS+64, 22’ LT and running westerly to beyond the westerly project limits. This line will remain in place without adjustment.

Milwaukee County – Water anticipates completion of work by December 1, 2013. Milwaukee County will relocate, construct and reconstruct underground water facilities in the project area at the following locations:

- A new 6” water main beginning at Station 11TFA+60, 6’ RT and running northerly along the east side of 97th Street to Station 12TFA+76, 7’ RT.
- A new 12” water main beginning at Station 36WWB+66, 29’ LT and running easterly along the north side of Watertown Plank Road to Station 41WWB+46, 30’ LT.
- A new 12” water main beginning at Station 41WWB+46, 30’ LT and running southeasterly, crossing Watertown Plank Road at Station 41WWB+52, and continuing southeasterly to Station 41WWB+72, 65’ RT where it will turn and run easterly in the eastbound lanes of Watertown Plank Road to Station 60WWB+91, 75’ RT. From there it will turn and run easterly along the south side of Watertown Plank Road to a water vault at Station 65WWB+48, 113’ RT.
- A new 8” water main beginning at Station 72WWB+21, 116’ RT and running northerly, crossing Watertown Plank Road at Station 72WWB+21, and continuing northerly to beyond the northerly project limits.
- A new 16” water main beginning at Station 76WWB+13, 118’ RT and running northerly, crossing Watertown Plank Road at Station 76WWB+16, and continuing northerly to beyond the northerly project limits.
- A new 12” water main beginning at Station 81WWB+23, 108’ LT and running southeasterly to Station 81WWB+86, 38’ LT where it will turn and run easterly along the north side of Watertown Plank Road and connect to an existing water main at Station 86WWB+62, 59’ LT.

- A new 16" water main beginning at Station 79WWB+09, 138' RT and running easterly along the south right of way of Watertown Plank Road to Station 85WWB+56, 177' RT.
- A new 16" water main beginning at Station 84WWB+30, 146' RT and running northerly, crossing Watertown Plank Road at Station 84WWB+32, and continuing northerly to beyond the northerly project limits.
- A new 8" water main beginning at Station 85WWB+76, 76' RT and running northerly, crossing Watertown Plank Road at Station 85WWB+82, and continuing northerly to beyond the northerly project limits.

Milwaukee County also has abandoned water facilities within the project limits in the following locations:

- A water main beginning at Station 54WWB+51, 67' LT and running northerly to beyond the northerly project limits.
- A water main beginning at Station 15THN+25, 15' RT and running southerly to Station 14THN+29, 23' RT where it turns and runs southeasterly to Station 82WWB+90, 59' LT. From there it turns and runs northeasterly to beyond the northerly project limits.
- A water main beginning at Station 85WWB+48, 84' RT and running easterly along the south side of Watertown Plank Road to Station 86WWB+66, 93' RT where it turns and runs southerly to beyond the southerly project limits.
- A water main beginning at Station 90WWB+90, 27' LT and running southerly, crossing Watertown Plank Road at Station 90WWB+80, 98' RT where it turns and runs easterly along the south side of Watertown Plank Road to Station 93WWB+12, 101' RT. From there it turns and runs southerly along the west side of 87th Street to Station 6TPS+72, 51' LT where it turns and runs easterly, crossing 87th Street at Station 6TPS+77, to Station 6TPS+81, 23' RT. From there it turns and runs southerly to beyond the southerly project limits.

Milwaukee County will also adjust water valves throughout the project limits during construction. Contact Tom Travia, (414) 339-0408, of Milwaukee County 3 days prior to any paving operations to coordinate valve adjustments.

Contact Tom Travia, (414) 339-0408, of Milwaukee County 7 days in advance to coordinate locations and any excavation near their facilities.

MMSD has a 36" ductile iron force main beginning beyond the westerly project limits and running easterly along the south side of the median in the eastbound lanes of Watertown Plank Road, crossing USH 45 at Station 362NS+22, and continuing to a manhole at Station 61WEB+35, 2'RT. From there the line continues easterly as an underground gravity sewer along the median of Watertown Plank Road to beyond the easterly project limits. This force main and gravity sewer will remain in place without adjustment. Insulate portions of the force main and reconstruct MMSD manholes as shown in the plans.

MMSD will install a cured-in-place liner in the existing 36" force main between the westerly project limits and the manhole at Station 61WEB+35, 2'RT during construction. The lining project will be performed for a period between August 1 and October 15, 2014. The MMSD will install the liner in four segments. Access to the force main will occur using a series of five pits. Each pit will be approximately 20 feet long (as measured along the force main) by 15 feet wide. The MMSD contractor will occupy an additional 15' wide staging area (workzone) 50 feet to 80 feet in length along the force main on either side of each pit during the work. The approximate pit locations and workzones are summarized as follows:

Excavation Pit No. 1: Station 61WEB+22	Workzone No. 1: 60WEB+62 to 62WEB+12
Excavation Pit No. 2: Station 56WEB+42	Workzone No. 2: 55WEB+52 to 57WEB+02
Excavation Pit No. 3: Station 48WEB+14	Workzone No. 3: 47WEB+54 to 48WEB+74
Excavation Pit No. 4: Station 41WEB+04	Workzone No. 4: 41WEB+14 to 41WEB+64
Excavation Pit No. 5: Station 34WEB+66	Workzone No. 5: 34WEB+06 to 35WEB+56

Work will occur at two adjacent workzones / excavation pits as the cured-in-place liner is inserted in one pit and received in the next pit. Once a pipe line segment is completed, the MMSD contractor will mobilize to the next segment. Work within each segment will be completed within approximately seven days; however, work may be interrupted during wet weather to allow the force main to be placed back into service. The general sequence of work includes: 1) excavation of two pits encompassing one pipe segment, 2) cleaning and televising of the pipe segment, 3) insertion of the liner, which will include erection of a steel tower above the insertion pit, 4) curing of the liner material using hot water at approximately 180 degrees-F for a period up to 36 hours, 5) pressure testing and reconnection of the pipeline segments, and 6) backfill and restoration of the pit. Access to City water is required during the curing process. Access to a sanitary sewer is required during cleaning. Work will proceed up to 24 hours per day.

The MMSD contractor will begin work within Workzone Nos. 1 and 2 at the easterly end of the force main and work westward toward Mayfair Road, at successive Workzones.

Contact Debra Jensen, (414) 225-2143, of MMSD 7 days in advance to coordinate insulation of the force main, reconstruction of manholes and installation of the cured-in-place liner.

MMSD will also adjust manholes throughout the project limits during construction. Contact Robert Rebitski, (414) 225-2214, of MMSD 3 days prior to any paving operations to coordinate manhole adjustments.

TDS Metrocom has an underground communication line beginning beyond the westerly project limits and running easterly along the median of Watertown Plank Road to Station 51WWB+74, 12'RT where it turns and runs southerly and connects to an existing AT&T Wisconsin manhole at Station 51WWB+97, 35'RT. From there it turns and runs easterly in AT&T Wisconsin conduit in the eastbound lanes of Watertown Plank Road to beyond the easterly project limits. TDS Metrocom will abandon this line between a manhole at Station 43WWB+32, 22'RT and the AT&T Wisconsin manhole at Station 51WWB+97, 35'RT.

TDS Metrocom will adjust this line at Station 35WWB+93, 22'RT, at Station 37WWB+44, 23'RT, at Station 38WWB+93, 23'RT, at Station 41WWB+74, 18'RT, and at Station 43WWB+11, 21'RT prior to construction. TDS Metrocom will also construct a new conduit between an existing manhole at Station 43WWB+31, 21'RT and an existing AT&T Wisconsin manhole at Station 44WWB+11, 54'RT. TDS will also occupy the previously described new AT&T Wisconsin conduit path to beyond the easterly project limits.

Contact Michael Johnson, (262) 754-3052 office / (262) 939-6355 cell, of TDS MetroCom 7 days in advance to coordinate locations and any excavation near their facilities.

Voicestream has no utility facilities within the project limits.

Time Warner Cable has existing underground communications facilities within the project limits in the following locations:

- An underground communications line beginning beyond the westerly project limits and running easterly along the south right of way of Watertown Plank Road, crossing USH 45 at Station 361+75NS, and continuing easterly to beyond the easterly project limits. Time Warner cable will abandon this line in place prior to construction.
- An underground communications line beginning beyond the southerly project limits and running northerly to a handhole at Station 39WWB+30, 92'RT and then continuing northerly, crossing Watertown Plank Road at Station 39WWB+30, and continuing northerly to beyond the northerly project limits. Time Warner Cable will reset the handhole at Station 39WWB+30, 92'RT prior to construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a pedestal at Station 41WWB+77, 81'RT and running northerly, crossing Watertown Plank Road at Station 41WWB+77, and continuing northerly to beyond the northerly project limits. Time Warner Cable will abandon this line in place prior to construction.
- An underground communications line beginning at a handhole at Station 66WWB+01, 98'RT and running southerly along the east side of 95th Street to beyond the southerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a handhole at Station 66WWB+01, 98'RT and running northerly, crossing Watertown Plank Road at Station 66WWB+03, and continuing northerly to a handhole at Station 66WWB+03, 49'LT where it turns and runs westerly along the north right of way of Watertown Plank road to Station 64WWB+68, 49'LT. From there it turns and runs northerly to beyond the northerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a pedestal at Station 79WWB+34, 104'RT and running southerly along the east side of 92nd Street to beyond the southerly project limits. This line will remain in place without adjustment.

- An underground communications line beginning at a pedestal at Station 79WWB+34, 104'RT and running easterly to Station 79WWB+80, 103'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 79WWB+81, and continues northerly to a pedestal at Station 79WWB+58, 23'LT. From there it turns and runs northerly along the east side of 92nd Street to beyond the northerly project limits. Time Warner Cable will abandon this line in place throughout the project limits prior to construction.
- An underground communications line beginning at a pedestal at Station 86WWB+60, 84'RT and running southerly to beyond the southerly project limits. This line will remain in place without adjustment.
- An underground communications line beginning at a pedestal at Station 86WWB+60, 84'RT and running northerly, crossing Watertown Plank Road at Station 86WWB+64, and continuing northerly to a pedestal at Station 86WWB+68, 47'LT where it turns and runs westerly along the north right of way of Watertown Plank Road to Station 83WWB+08, 44'LT. From there it turns and runs northerly to beyond the northerly project limits. Time Warner Cable will abandon this line in place throughout the project limits prior to construction.
- An underground communications line beginning at a handhole at Station 95WWB+17, 67'RT and running westerly along the south side of Watertown Plank Road to Station 94WWB+28, 65'RT where it turns and runs southerly along the east side of 87th Street to beyond the southerly project limits. Time Warner Cable will relocate this line prior to construction.
- An underground communications line beginning at a handhole at Station 95WWB+17, 67'RT and running northerly, crossing Watertown Plank Road at Station 95WWB+19, and continuing northerly to a We Energies pole beyond the northerly project limits. This line will remain in place without adjustment.

Time Warner Cable will relocate, construct and reconstruct underground communications facilities in the project area at the following locations prior to construction:

- A new underground communications line beginning at an existing hand hole at Station 39WWB+30, 92'RT and running easterly to Station 43WWB+77, 89'RT where it will turn and run southeasterly to Station 752WC+88, 44'LT. From there it turns and runs northeasterly, crossing USH 45 at Station 353NS+19, to Station 754WJ+02, 17'RT where it will turn and run northerly along the east right of way of USH 45 to Station 60WWB+59, 85'RT. From there it will turn and run easterly along the south right of way of Watertown Plank Road to a handhole at Station 95WWB+18, 67'RT.
- A new underground communications line beginning at Station 80WWB+02, 97'RT and running northerly, crossing Watertown Plank Road at Station 80WWB+01, and continuing northerly to Station 80WWB+00, 48'LT where it will turn and run northwesterly along 92nd Street to beyond the northerly project limits.

- A new underground communications line beginning at Station 86WWB+48, 82'RT and running northerly crossing Watertown Plank Road at Station 86WWB+49, and continuing northerly to Station 86WWB+48, 50'LT where it will turn and run westerly along the north right of way of Watertown Plank Road to Station 83WWB+24, 49'RT. From there it will turn and run northerly to beyond the northerly project limits.
- A new underground communications line beginning at an existing handhole at Station 95WWB+18, 67'RT and running southerly along the east side of 87th Street to beyond the southerly project limits.

Time Warner Cable will adjust handholes and pedestals throughout the project limits during construction. Contact Lukas LaCrosse, (414) 908-4766 office / (414) 430-9321 cell, of Time Warner Cable 3 days prior to any paving or grading operations to coordinate handhole and pedestal adjustments.

Contact Lukas LaCrosse, (414) 908-4766 office / (414) 430-9321 cell, of Time Warner Cable 7 days in advance to coordinate locations and any excavation near their facilities.

TW Telecom has existing underground communications facilities within the project limits in the following locations:

- An underground communications line beginning beyond the westerly project limits and running easterly in the westbound lanes of Watertown Plank Road to a manhole at Station 37WWB+01, 8'LT where it turns and runs northerly to a handhole at Station 37WWB+01, 37'LT. From there it turns and runs easterly along the north side of Watertown Plank Road, crossing USH 45 at Station 363NS+00 and 92nd Street at Station 12THN+84, and continues easterly to a handhole at Station 87WWB+12, 35'LT and then continues easterly to Station 92WWB+97. From there it turns and runs southerly, crossing Watertown Plank Road at Station 93WWB+00, and continues southerly to a handhole at Station 6TPS+05, 33'LT and then continues southerly to beyond the southerly project limits. TW Telecom will abandon this line in place between the manhole at Station 37WWB+01, 8'LT and Station 93WWB+02, 73'RT prior to construction. The remaining portions of this line will remain in place without adjustment.
- An underground communications line beginning at a handhole at Station 87WWB+12, 35'LT and running southerly, crossing Watertown Plank Road at Station 87WWB+12, and continuing southerly to beyond the southerly project limits. This line will remain in place without adjustment.

TW Telecom will construct a new communications line beginning at the manhole at Station 37WWB+01, 8'LT and running easterly in the westbound lanes of Watertown Plank Road to Station 43WWB+50, 11'LT where it will turn and run northerly to Station 43WWB+50, 50'LT. From there it will turn and run easterly along the north side of Watertown Plank Road, north of the proposed USH 45 structure abutments, to a proposed handhole at Station 87WWB+12, 50'LT and it will then continue easterly to 92WWB+98, 56'LT. From there it will turn and run southerly, crossing Watertown Plank

Road near Station 93WWB+00, and will continue southerly and connect to the existing line at the south right of way of Watertown Plank Road. TW Telecom will also extend an existing line from an existing handhole at Station 87WWB+12 to the proposed handhole at Station 87WWB+12, 50'LT. All new TW Telecom facility construction will occur prior to construction.

TW Telecom also has an abandoned line beginning beyond the westerly project limits and running easterly along the south side of Watertown Plank Road to Station 36WWB+99, 82'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 37WWB+00, and continues northerly and ends at a handhole at Station 37WWB+01, 37'LT.

Contact John Cottrell, (414) 908-1011 office / (262) 894-1175 cell, of TW Telecom 7 days in advance to coordinate locations and any excavation near their facilities.

Wauwatosa Water Utility has existing underground water facilities within the project limits in the following locations:

- An underground water main beginning beyond the westerly project limits and running easterly in the westbound lanes of Watertown Plank Road, crossing USH 45 at Station 363NS+91, and continuing easterly to Station 64WWB+69, 7'LT. This line will remain in place without adjustment.
- An underground water main beginning beyond the westerly project limits and running easterly along the south side of Watertown Plank Road to Station 35WWB+38, 75'RT where it turns and runs northerly and connects to the previously described main at Station 35WWB+39, 11'LT. This line will remain in place without adjustment.
- An underground water main beginning at Station 64WWB+43, 7'LT and running northerly to beyond the northerly project limits. This line will remain in place without adjustment.
- An underground water main beginning at Station 33WWB+80, 12'LT and running northerly along in the northbound lane of Swan Boulevard to beyond the northerly project limits. This line will remain in place without adjustment.

Wauwatosa Water Utility will extend existing hydrant branches and relocate existing hydrants along the north side of Watertown Plank Road to beyond the pavement limits prior to construction. Existing hydrant locations are as follows:

- Station 38WWB+05, 29'LT
- Station 40WWB+67, 30'LT
- Station 42WWB+94, 29'LT
- Station 59WWB+23, 28'LT
- Station 61WWB+94, 19'LT
- Station 64WWB+68, 22'LT

Wauwatosa Water Utility will also adjust water valves throughout the project limits during construction. Contact Joe Marks, (414) 479-8931 office / (414) 322-8923 cell, of Wauwatosa Water Utility 3 days prior to any paving operations to coordinate valve adjustments.

Contact Jim Wojcehowicz, (414) 479-8965, of the Wauwatosa Water Utility 7 days in advance to coordinate locations and any excavation near their facilities.

Wauwatosa, City of – Lighting has overhead and underground street lighting facilities along Watertown Plank Road. Abandon, remove, leave in place, and reconstruct lighting facilities as shown in the plans.

Contact Joe Kroll, (414) 479-8934, of City of Wauwatosa 7 days in advance to coordinate locations and any excavation near their facilities.

Wauwatosa, City of - Sanitary has an underground sanitary line beginning beyond the northerly project limits and running southeasterly to a manhole at Station 66WWB+10, 41'LT where it turns and runs southerly, crossing Watertown Plank Road at Station 66WWB+11, and continues southerly to connect to a MMSD manhole at Station 66WWB+11, 55'RT. This line will remain in place without adjustment.

City of Wauwatosa - Sanitary will adjust a manhole cover during construction. Contact Mike Maki, (414) 497-8991, of City of Wauwatosa - Sewer 3 days prior to any paving or grading operations to coordinate manhole adjustment.

Contact Bill Wehrley, (414) 479-8929 office / (414) 471-8422 cell, of City of Wauwatosa 7 days in advance to coordinate locations and any excavation near their facilities.

Wauwatosa, City of – Signals has existing overhead and underground signal facilities at the Watertown Plank Road intersections with Innovation Drive, 92nd Street and 87th Street. Adjust, abandon, remove, leave in place, and reconstruct the signal facilities as shown in the plans. Construct a new signal at the Watertown Plank Road intersection with Discovery Parkway as shown in the plans.

Contact Bill Wehrley, (414) 479-8929 office / (414) 471-8422 cell, of City of Wauwatosa 7 days in advance to coordinate locations and any excavation near their facilities.

We Energies – Electric has existing underground electric facilities within the project limits in the following locations:

- An underground electric line beginning beyond the westerly project limits and running easterly to Station 37WWB+24, 153'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 37WWB+25, and continues northerly to beyond the northerly project limits. This line will remain in place without adjustment.

- An underground electric line beginning at the previously described line at Station 37WWB+24, 108'RT and running easterly to a switch fuse unit at Station 38WWB+88, 108'RT. This line will remain in place without adjustment.
- An underground electric line beginning a switch fuse unit at Station 38WWB+88, 108'RT and running northerly to Station 38WWB+88, 84'RT where it turns and runs easterly along the south side of Watertown Plank Road to Station 46WWB+44, 83'RT. From there it turns and runs southeasterly along the west side of the USH 45 southbound on ramp to Station 759WG+00, 53'LT. We Energies will abandon this line in place prior to construction.
- An underground electric line beginning at Station 45WWB+00, 81'RT and running northerly, crossing Watertown Plank Road at Station 45WWB+00, and continuing northerly to Station 45WWB+00, 32'LT where it turns and runs easterly to Station 45WWB+80, 32'LT. From there it turns and runs northerly along the west side of the USH 45 southbound off ramp to beyond the northerly project limits. We Energies will abandon this line in place prior to construction.
- Two direct buried cables running parallel and approximately 10 feet apart beginning beyond the southerly project limits and running northwesterly along the east right of way of USH 45 to Station 56WWB+39, 230'RT where they turn and run northeasterly to Station 57WWB+24, 88'RT. From there they turn and run easterly along the south side of Watertown Plank Road to Station 60WWB+92, 90'RT where they turn and run northerly, crossing Watertown Plank Road at Station 61WWB+10, and continue northerly to Station 61WWB+10, 55'LT. From there they turn and run easterly along the north side of Watertown Plank Road to Station 70WWB+54, 17'LT where they turn and run northerly to beyond the northerly project limits. We Energies will abandon these lines in place throughout the project limits prior to construction.
- An underground electric line beginning beyond the northerly project limits and running southerly, crossing Watertown Plank Road at Station 72WWB+38, and continuing southerly to a manhole at Station 72WWB+31, 109'RT where it turns and runs easterly along the south side of Watertown Plank Road, crossing 92nd Street at Station 11THS+25, and continuing easterly to a manhole at Station 10THS+95, 54'RT. From there it turns and runs southerly along the east side of Watertown Plank Road to beyond the southerly project limits. We Energies will abandon this line in place between from the northerly project limits to the manhole at Station 72WWB+31, 109'RT prior to construction. The remaining portions of this line will remain in place without adjustment.
- An underground electric line beginning at a manhole at Station 8THS+17, 44'RT, and running northeasterly to a manhole at Station 72THS+31, 120'RT where it turns and runs easterly to beyond the easterly project limits. This line will remain in place without adjustment.
- An underground electric line beginning beyond the northerly project limits and running southerly to a manhole at Station 72WWB+56, 72'LT where it turns and runs easterly along the north right of way of Watertown Plank Road, crossing 92nd Street at Station 13THN+16, and continues easterly to a manhole at 79WWB+70, 54'LT. From there it turns and runs southerly, crossing Watertown Plank Road at Station 79WWB+86, and continues southerly to Station 79WWB+90, 119'RT

where it turns and runs easterly to a manhole at Station 80WWB+89, 117'RT. From there it continues easterly along the south right of way of Watertown Plank Road to Station 94WWB+47, 82'RT where it turns and runs southerly along the east side of 87th Street to beyond the southerly project limits. We Energies will abandon this line in place between the manhole at Station 72WWB+56, 72'LT and the manhole at Station 80WWB+89, 117'RT prior to construction. The remaining portions of this line will remain in place without adjustment.

- Two electric cables running parallel and approximately 10' apart beginning beyond the northerly project limits and running southeasterly to Station 81WWB+86, 43'LT where they turn and run easterly along the north right of way of Watertown Plank Road to Station 93WWB+52, 49'LT. From there they turn and run northerly along the west side of 87th Street to beyond the northerly project limits. We Energies will abandon these lines in place from beyond the northerly project limits near 92nd Street to Watertown Plank Road to Station 11TPN+54, 63'LT prior to construction. The remaining portions of these lines will remain in place without adjustment.
- An underground electric line beginning at Station 11TPN+54, 63'LT and running easterly, crossing 87th Street at Station 11TPN+34, and continuing easterly to a pole line beyond the easterly project limits. This line will remain in place without adjustment.
- An underground electric line beginning at 81WWB+18, 104'LT and running westerly to a switch fuse unit at Station 80WWB+49, 76'LT. We Energies will abandon this line in place prior to construction.
- An underground electric line beginning at Station 82WWB+39, 46'LT and running northerly to a switch fuse unit at Station 82WWB+45, 144'LT. We Energies will abandon this line in place prior to construction.
- An underground electric line beginning beyond the easterly project limits and running westerly along the south side of Watertown Plank Road to Station 94WWB+45, 71'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 94WWB+40, and continues northerly to beyond the northerly project limits of 87th Street. We Energies will abandon this line in place between Station 94WWB+90, 71'RT and Station 11TPN+68, 21'RT prior to construction.
- An underground electric line beginning at a switch fuse unit at Station 95WWB+30, 76'RT and running northerly, crossing Watertown Plank Road at Station 95WWB+36, and continuing northerly to a pole beyond the northerly project limits. This line will remain in place prior to construction.

We Energies - Electric will relocate, construct and reconstruct underground electric facilities in the project area at the following locations prior to construction:

- A new underground electric line beginning from beyond the westerly project limits and running easterly along the north side of Watertown Plank Road to Station 36WWB+37, 53' LT where it will turn and run southerly, crossing Watertown Plank Road at Station 34WWB+95, and continue southerly to Station 34WWB+95, 115' RT. From there it will turn and run easterly to Station 43WWB+84, 126' RT where it will turn and run southeasterly around the west right of way of USH 45 to

Station 764WC+84, 62’ LT where it will turn and run southerly to beyond the southerly project limits.

- A new underground electric line beginning at a switch fuse unit at Station 38WWB+88, 109’ RT and running easterly along the south right of way of Watertown Plank Road to Station 44WB+51, 110’ RT where it will turn and run southeasterly to a cabinet at Station 44WWB+64, 142’ RT. From there it will turn and run northeasterly to a cabinet at Station 45WWB+50, 112’ RT where it will turn and run northerly, crossing Watertown Plank Road at Station 45WWB+51, to a pedestal at Station 45WWB+52, 65’ LT.
- Two new direct buried electric cables beginning from beyond the southerly project limits and running northerly along the center of 97th Street to Station 60WWB+30, 113’ RT where they will continue northerly, crossing Watertown Plank Road at Station 60WWB+30, and continue northerly to Station 60WWB+30, 77’ LT. From there they will turn and run easterly along the north right of way of Watertown Plank Road and connect to existing electric lines at Station 70WWB+67, 77’ LT.
- A new conduit and manhole system beginning from beyond the southerly project limits and running northerly along the center of 97th Street to Station 12TFA+25 where it will turn and run southwesterly, crossing USH 45 as six parallel conduits near Station 351NS+50, and then continue southwesterly to beyond the westerly project limits.
- A new underground electric line beginning from beyond the southerly project limits and running northerly along 97th Street to Station 60WWB+30, 113’ RT where it will turn and run northeasterly along the southeasterly side of 97th Street to Station 71WWB+03, 145’ RT. From there it will turn and run northerly, crossing Watertown Plank Road at Station 71WWB+11, and continue northerly to beyond the northerly project limits.
- A new underground electric line beginning from beyond the northerly project limits and running southerly, crossing Watertown Plank Road at Station 71WWB+21, and continuing southerly to Station 71WWB+12, 143’ RT where it will turn and run easterly along the south right of way of Watertown Plank Road, crossing 92nd Street at Station 11THS+09, and continue easterly to Station 11THS+06, 41’ RT. From there it will turn and run southerly in the northbound lane of 92nd Street to beyond the southerly project limits.
- A new underground electric line beginning at Station 72WWB+49, 123’ LT and running southerly, crossing Watertown Plank Road at Station 72WWB+35, and continuing southerly to an existing manhole at Station 72WWB+31, 108’ RT.
- A new underground electric line beginning at an existing manhole at Station 72WWB+56, 73’ LT and running easterly along the north right of way of Watertown Plank Road, crossing 92nd Street at Station 13THN+95, and continuing easterly to Station 13THN+94, 14’ LT where it will turn and run southeasterly to Station 80WWB+02, 28’ LT. From there it will turn and run southerly, crossing Watertown Plank Road at Station 80WWB+01, and continue southerly to Station 79WWB+97, 120’ RT where it will turn and run easterly to an existing manhole at Station 80WWB+89, 118’ RT.

- A new underground electric line beginning at Station 72WWB+60, 125' LT and running easterly along the north right of way of Watertown Plank Road, crossing 92nd Street at Station 14THN+05, and continuing easterly to Station 14THN+02, 71' RT where it will turn and run southeasterly to Station 80WWB+57, 28' LT. From there it will turn and run easterly along the north side of Watertown Plank Road to Station 82WWB+40, 33' LT where it will turn and run southeasterly to Station 83WWB+57, 2' LT. From there it will turn and run easterly along the WWB reference line of Watertown Plank Road to Station 94WWB+22, 10' LT where it will turn and run southerly in the northbound lane of 87th Street to beyond the southerly project limits.
- A new underground electric line beginning at Station 80WWB+64, 174' LT and running easterly to Station 82WWB+45, 145' LT.
- A new underground electric line beginning at Station 11TPN+64, 64' LT and running southeasterly to Station 11TPN+50, 53' LT.
- A new underground electric line beginning at Station 94WWB+89, 70' RT and running northerly, crossing Watertown Plank Road at Station 94WWB+85, and continuing northerly to Station 94WWB+83, 45' LT where it will turn and run northwesterly to Station 94WWB+39, 62' LT. From there it will turn and run northerly along the east side of 87th Street to Station 11TPN+67, 22' RT.

We Energies - Electric also has abandoned electric facilities within the project limits in the following locations:

- An underground electric line beginning beyond the westerly project limits and running easterly along the south right of way of Watertown Plank Road to Station 38WWB+88, 84'RT.
- An underground electric line beginning beyond the westerly project limits and running easterly along the north right of way of Watertown Plank Road to Station 38WWB+85, 58'LT where it turns and runs northerly to beyond the northerly project limits.
- Two direct buried cables running parallel beginning at Station 354NS+90, 132'RT and running northeasterly to Station 60WWB+81, 104'RT.

We Energies - Electric will also adjust manholes throughout the project limits during construction. Contact Ivan Keller, (920) 988-5770, of We Energies - Electric 3 days prior to any paving or grading operations to coordinate manhole adjustments.

Contact Jason Chapin, (414) 944-5575, of We Energies - Electric 7 days in advance to coordinate locations and any excavation near their facilities.

We Energies – Gas has existing underground gas facilities within the project limits in the following locations:

- An underground gas main beginning beyond the westerly project limits and running easterly, crossing Innovation Drive at Station 165NV+06, and continuing easterly to Station 36WWB+46, 147'RT where it turns and runs northerly to Station 36WWB+44, 25'LT. This line will remain in place without adjustment.
- An underground gas main beginning at Station 36WWB+44, 25'LT and running easterly along the north curb line of Watertown Plank Road to Station 47WWB+85, 27'LT where it turns and runs southeasterly in the westbound lanes of Watertown Plank Road to Station 55WWB+38, 20'LT. From there it turns and runs southerly, crossing Watertown Plank Road at Station 55WWB+38, and continues southerly to Station 55WWB+37, 54'RT where it turns and runs southeasterly along the south side of Watertown Plank Road to a pressure regulation pit at Station 76WWB+63, 94'RT. We Energies will abandon this line in place prior to construction.
- An underground gas main beginning at Station 40WWB+93, 25'LT and running northerly to beyond the northerly project limits. We Energies will abandon this line in place between Station 40WWB+93, 25'LT and Station 40WWB+93, 43'LT prior to construction.
- An underground gas main beginning at Station 43WWB+25, 24'LT and running southerly, crossing Watertown Plank Road at Station 43WWB+24, and continuing southerly to Station 43WWB+25, 85'RT where it turns and runs easterly along the south side of Watertown Plank Road to Station 43WWB+72, 86'RT. From there it turns and runs southerly to beyond the southerly project limits. We Energies will abandon this line in place prior to construction.
- An underground gas main beginning at Station 73WWB+85, 90'RT and running northerly, crossing Watertown Plank Road at Station 73WWB+84, and continuing northerly to beyond the northerly project limits. We Energies will abandon this line in place prior to construction.
- An underground gas main beginning at a pressure regulation pit at Station 76WWB+63, 94'RT and running southerly to Station 76WWB+65, 104'RT where it turns and runs easterly to Station 78WWB+01, 116'RT. From there it turns and runs southerly along the west side of 92nd Street to beyond the southerly project limits. We Energies will abandon this line in place between Station 76WWB+63, 94'RT and Station 78WWB+02, 149'RT prior to construction. The remaining portions of this line will remain in place without adjustment.
- An underground gas main beginning at a pressure regulation pit at Station 76WWB+63, 94'RT and running easterly along the south side of Watertown Plank Road to Station 77WWB+53, 95'RT where it turns and runs northerly to Station 77WWB+53, 79'RT. From there it turns and runs easterly to Station 78WWB+61, 74'RT where it turns and runs northerly to Station 78WWB+61, 43'RT. From there it turns and runs easterly along the median and eastbound lanes of Watertown Plank Road to beyond the easterly project limits. We Energies will abandon this line in place prior to construction.

- An underground gas main beginning at Station 80WWB+40, 46'RT and running northerly, crossing Watertown Plank Road at Station 80WWB+40, and continuing northerly to Station 80WWB+43, 72'LT where it turns and runs northwesterly to beyond the northerly project limits. This line will remain in place without adjustment.
- An underground gas main beginning at Station 79WWB+56, 39'RT and running southerly to a valve at Station 79WWB+52, 92'RT. We Energies will abandon this line in place prior to construction.
- An underground gas main beginning at Station 88WWB+48, 58'RT and running southerly to beyond the southerly project limits. We Energies will abandon this line in place between Station 88WWB+48, 58'RT and Station 88WWB+47, 64'RT prior to construction. The remaining portions of this line will remain in place without adjustment.

We Energies - Gas will relocate, construct and reconstruct underground gas facilities in the project area at the following locations prior to construction:

Distribution Gas Main (West Side)

- A new underground gas main beginning at Station 36WWB+43, 25'LT and running northerly to Station 36WWB+47, 55'LT where it will turn and run easterly along the north side of Watertown Plank Road and connect to an existing gas main at Station 40WWB+93, 44'LT.

Distribution Gas Main (East Side)

- A new underground gas main beginning beyond the easterly project limits and running westerly to Station 95WWB+10, 4'RT where it will turn and run southerly to Station 95WWB+10, 44'RT. From there it will turn and run westerly along the southerly eastbound lane of Watertown Plank Road to Station 74WWB+24, 73'RT where it will turn and run northwesterly to Station 73WWB+98, 60'RT. From there it will turn and run westerly along the northerly eastbound lane of Watertown Plank Road to Station 64WWB+75, 63'RT. From there it will turn and run southwesterly to Station 64WWB+46, 77'RT where it will turn and run southerly to beyond the southerly project limits.
- A new underground gas main beginning at Station 66WWB+29, 62'LT and running northerly, crossing Watertown Plank Road at Station 66WWB+30, and continuing northerly to beyond the northerly project limits.
- A new underground gas main beginning at Station 76WWB+35, 80'RT and running northerly, crossing Watertown Plank Road at Station 76WWB+40, and continuing northerly to beyond the northerly project limits.
- A new underground gas main beginning at Station 77WWB+95, 73'RT and running southerly an connecting to an existing gas main at Station 78WWB+03, 150'RT.
- A new underground gas main beginning at Station 80WWB+40, 71'RT and running northerly and connecting to an existing gas main at Station 80WWB+40, 47'RT.

High Pressure Gas Main

- A new underground gas main beginning beyond the easterly project limits and running westerly along the north side of Watertown Plank Road to Station 95WWB+05, 41'LT where it will turn and run southerly to Station 95WWB+05, 5'LT. From there it will turn and run southwesterly in the existing westbound lanes of Watertown Plank Road to Station 78WWB+65, 9'RT. From there it will turn and run northwesterly to Station 78WWB+44, 23'LT where it will turn and run westerly to Station 76WWB+32, 24'LT. From there it will turn and run northerly to beyond the northerly project limits.

We Energies - Gas also has abandoned gas facilities within the project limits in the following locations:

- An underground gas main beginning beyond the westerly project limits and running easterly along the north curb line of Watertown Plank Road to Station 36WWB+44, 25'LT.
- An underground gas main beginning at Station 36WWB+66, 25'LT and running northerly to beyond the northerly project limits.
- An underground gas main beginning at a valve at Station 79WWB+52, 92'RT and running southerly to beyond the southerly project limits.

Contact Paul Osmanski, (414) 315-1278, of We Energies - Gas 7 days in advance to coordinate locations and any excavation near their facilities.

We Energies – Steam has existing underground steam facilities within the project limits in the following locations:

- Steel steam lines in an underground concrete trench box beginning beyond the westerly project limits and running easterly to a manhole at Station 48WWB+03, 95'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 48WWB+23, and continues northerly to a manhole at Station 48WWB+35, 54'LT. From there it turns and runs northeasterly, crossing USH 45 at Station 365NS+00, and continues northeasterly to a manhole at Station 761WA+58, 3'LT where it turns and runs easterly to beyond the easterly project limits of the northeast interchange ramp. We Energies will abandon the existing steam facilities and abate the trench box in the project limits by exposing the trench box, sawcutting the box sides, and removing the top of the trench box. We Energies will then abate pipe insulation materials inside the trench box and abandon the existing steam lines and trench box in place. All steam abatement and abandonment activities will occur during construction. Contact Jay Maudlin (414-221-2303 office/ 414-994-7738 cell) of We Energies 21 days prior to any activities in the area of the existing steam facilities.

- Steel steam lines in an underground concrete trench box beginning at a manhole at Station 761WA+58, 3'LT and running northerly to beyond the northerly project limits of the northeast interchange ramp. We Energies will abandon the existing steam lines and abate the trench box in the project limits by exposing the trench box, sawcutting the box sides, and removing the top of the trench box. We Energies will then abate pipe insulation materials inside the trench box and abandon the existing steam lines and trench box in place. All steam abatement and abandonment activities will occur during construction. Contact Jay Maudlin (414-221-2303 office/ 414-994-7738 cell) of We Energies 21 days prior to any activities in the area of existing steam facilities.
- Steel steam lines in an underground concrete trench box beginning beyond the southerly project limits and running northerly to Station 72WWB+06, 113'RT where it turns and runs northeasterly, crossing Watertown Plank Road at Station 72WWB+92, and continues northeasterly to Station 73WWB+51, 78'LT. From there it turns and runs northerly to beyond the northerly project limits. This line will remain in place without adjustment.
- Steel steam lines in an underground concrete trench box beginning beyond the southerly project limits and running northwesterly to Station 80WWB+25, 105'RT where it turns and runs northerly, crossing Watertown Plank Road at Station 80WWB+28, and continues northerly to Station 80WWB+29, 14'LT. From there it turns and runs northwesterly to a manhole at Station 80WWB+03, 70'LT where it continues northwesterly to beyond the northerly project limits. We Energies will abandon this trench box between Station 80WWB+28, 4'LT and the manhole at Station 80WWB+03, 70'LT prior to construction. We Energies will extend the existing trench box starting at Station 80WWB+28, 4'LT and running northerly to Station 80WWB+29, 34'LT and then turning and running northwesterly and connecting to the existing manhole at Station 80WWB+03, 70'LT prior to construction.

We Energies - Steam will adjust steam manhole covers throughout the project limits during construction. Contact Jay Maudlin, (414) 221-2303 office / (414) 994-7738 cell, of We Energies 3 days prior to any paving or grading operations in the area of the steam facilities to coordinate manhole adjustments.

We Energies - Steam also has abandoned steam facilities within the project limits in the following locations:

- Two direct-buried steel steam lines beginning at an existing manhole at Station 44WWB+00, 254'RT and running northwesterly to Station 43WWB+56, 129'RT where they turn and run westerly to Station 42WWB+43, 124'RT. From there they turn and run northerly, crossing Watertown Plank Road at Station 42WWB+44, and continue northerly to beyond the northerly project limits.

- Steel steam lines in an underground concrete trench box beginning beyond the southerly project limits and running northerly to a manhole at Station 91WWB+35, 54'RT where it turns and runs northwesterly, crossing Watertown Plank Road at Station 91WWB+30, and continues northwesterly to a Milwaukee Regional Medical College building. We Energies will abandon the steam facilities, abate pipe insulation material inside the trench box and abandon the steam lines and trench box under Watertown Plank Road prior to construction. We Energies will transfer ownership of a portion of this tunnel to AT&T Wisconsin beginning at a manhole at Station 91WWB+35, 54'RT and running southerly to beyond the southerly project limits.

Contact Jay Maudlin, (414) 221-2303 office / (414) 944-7738 cell, of We Energies 7 days in advance to coordinate locations and any excavation near the steam facilities.

WisVest, the development branch of We Energies, operates chilled water lines emanating from the power plant on the north side of Watertown Plank Road. These chilled water lines providing cooling for the Milwaukee County Regional Medical Center and County facilities west of USH 45. WisVest is not a utility and the description of the lines contained herein is provided for informational purposes only. WisVest has existing underground chilled water lines within the project limits in the following locations:

- Two underground chilled water lines running parallel and approximately 5 feet apart beginning beyond the southerly project limits and running northerly along the east side of 95th Street to Station 66WEB+22, 122'RT. From there the lines continue northerly to Station 66WEB+22, 76'RT where they turn and run easterly along the south side of Watertown Plank Road to Station 69WEB+55, 69'RT where they turn and run northerly, crossing Watertown Plank Road at Station 69WEB+58, and continue northerly to Station 69WEB+58, 4'LT. From there the lines turn and run northeasterly to Station 74WEB+27, 280'LT beyond the northerly project limits. These lines will remain in place without adjustment.
- Two underground chilled water lines running parallel and approximately 5 feet apart beginning at Station 66WEB+22, 122'RT and running westerly to Station 62WEB+64, 107'RT where they turn and run westerly to Station 59WEB+96, 145'RT. From there the lines run southwesterly, crossing USH 45 at Station 355NS+25, and continuing southwesterly to Station 748WF+32, 74'RT where they turn and run westerly to beyond the westerly project limits. WisVest will abandon these lines in place prior to construction.
- Two underground chilled water lines running parallel and approximately 5 feet apart beginning at Station 78WEB+04, 218'LT beyond the northerly project limits and running southeasterly to Station 79WEB+39, 57'LT. From there the lines run southerly, crossing Watertown Plank Road at Station 79WEB+39, and continue southerly to Station 79WEB+38, 63'RT where they turn and run southerly along the east side of 92nd Street to Station 78WEB+95, 286'RT where they turn and run southerly along 92nd Street to beyond the southerly project limits. These lines will remain in place without adjustment.

- Two underground chilled water lines running parallel and approximately 5 feet apart beginning at Station 78WEB+95, 286'RT and running easterly to beyond the easterly project limits. These lines will remain in place without adjustment.

We Energies will adjust WisVest chilled water valves throughout the project limits during construction. Contact Dan Sande (414-221-4578) of We Energies 3 days prior to any paving operations to coordinate valve adjustments.

Contact Dan Sande, (414) 221-4578, of We Energies 7 days in advance to coordinate locations and any excavation near their facilities or with any questions.

WisDOT – Lighting has existing lighting facilities along USH 45 and along the interchange ramps throughout the project area. Abandon, remove, leave in place, and reconstruct these facilities as shown in the plans.

Contact Matt Pfeifer, (414) 266-1154, of WisDOT - Lighting 7 days in advance to coordinate locations and any excavation near their facilities.

WisDOT – Signals has existing signal facilities at Watertown Plank Road intersections with the northbound and southbound ramps of USH 45. Abandon, remove, leave in place, and reconstruct these facilities as shown in the plans.

Contact WisDOT Traffic Signal Operations, (414) 750-2605, 7 days in advance to coordinate construction.

WisDOT STOC has existing communication facilities located throughout the project limits. Abandon, remove, leave in place, and reconstruct these facilities as shown in the plans.

Contact Jeff Madson, (414) 225-3723, of WisDOT - STOC 7 days in advance to coordinate locations and any excavation near their facilities.

10. Milwaukee Metropolitan Sewerage District Acceptance of Sanitary Sewer Manhole Reconstruction.

Both the department and Milwaukee Metropolitan Sewerage District personnel will inspect the reconstruction of MMSD sanitary sewer manholes under this contract. However, testing, and final acceptance of the sanitary sewer manhole reconstruction will be by the Milwaukee Metropolitan Sewerage District.
105-001 (20061009)

11. Other Contracts.

A Description

Coordinate your work in accordance to standard spec 105.5.

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

It is expected that routine maintenance by the city and county personnel may be required at certain times concurrently with the work being done under this contract.

The following contracts are anticipated to be under construction within the time period of this contract, unless otherwise indicated:

Contract ID 1060-33-70, Zoo IC – Mayfair Road, from IH 94 to Watertown Plank Road. The WisDOT contact is Joshua LeVeque at (414) 750-1468; joshua.leveque@dot.wi.gov.

Contract ID 1060-33-71, Zoo IC - Glenview Avenue reconstruction from W. Bluemound Road to W. Wisconsin Avenue. The WisDOT contact is Joshua LeVeque at (414) 750-1468; joshua.leveque@dot.wi.gov

Contract ID 1060-33-73, Swan Boulevard construction from W. Watertown Plank Road to USH 45. The WisDOT contact is Jeff Bohen at (414) 750-2928; jeff.bohen@dot.wi.gov.

Contract ID 1060-33-75, UPRR and STH 100 Bridge reconstruction over IH 94 and the Hank Aaron State Trail. The WisDOT contact is Joshua LeVeque at (414) 750-1468; joshua.leveque@dot.wi.gov.

Contract ID 1060-33-77, Zoo IC - Greenfield Avenue Bridge reconstruction from S. 101st Street to S. 97th Street. The WisDOT contact is Jason Lynch at (414) 750-0538; jason.lynch@dot.wi.gov.

Contract ID 1060-33-78, Zoo IC - 76th Street Bridge over reconstruction from Kearney Street to O'Connor Street. The WisDOT contact is Jeff Bohen at (414) 750-2928; jeff.bohen@dot.wi.gov.

Contract ID 1060-33-93, Zoo IC – 2013 TMP Projects; various locations in Milwaukee County. The WsDOT contact is Christopher Hager at (414) 750-1487; christopher.hager@dot.wi.gov.

Contract ID 1060-33-96, Zoo IC – Advanced Signing Projects; various locations. The WsDOT contact is Christopher Hager at (414) 750-1487; christopher.hager@dot.wi.gov.

Contract ID 1060-33-99, Zoo IC - Integrated Corridors; various intersections in Milwaukee and Waukesha Counties. The WsDOT contact is Christopher Hager at (414) 750-1487; christopher.hager@dot.wi.gov.

12. Hauling Restrictions.

Hauling will not be permitted on:

- Innovation Drive
- Research Drive
- Discovery Parkway
- 97th St.
- 95th St.
- N. 92nd Street
- N. 87th Street
- Milwaukee Regional Medical Center Internal Road system

At all times, conduct operations in a manner that causes minimum disruption to traffic on existing roadways. Coordinate with the local authority.

This provision does not reduce or eliminate the contractor responsibility from restoring local roads under the item maintenance and repair of haul roads.

SEF Rev. 12_1004

13. Information to Bidders, U.S. Army Corps of Engineers Section 404 Permit.

The department has obtained a U.S. Army Corps of Engineers Section 404 permit. Comply with the requirements of the permit in addition to requirements of the special provisions. A copy of the permit is available from the regional office by contacting Karla Leithoff at (262) 548-6709.
107-054 (20080901)

14. Erosion Control.

Replace standard spec 107.20(3) with the following:

Prepare and submit an Erosion Control Implementation Plan (ECIP) for the project, including borrow sites and material disposal sites, in accordance to Chapter TRANS 401 requirements. The ECIP shall supplement information shown on the plans and shall not reproduce it. The erosion control implementation plan shall identify how the contractor intends to implement the project's erosion control plan. The erosion control plan shall include details for the methods of debris containment devices required, particularly during the removal of the old bridges and construction of the new structures.

Supplement standard spec 107.20 with the following:

Provide the Erosion Control Implementation Plan (ECIP) 14 days prior to the pre-construction conference. Provide one copy of the ECIP to WisDOT and one copy of the ECIP to the WDNR Liaison Mr. Michael Thompson @ michaelc.thompson@wisconsin.gov. Pursue operations in a timely and diligent manner, continuing all construction operations methodically from the initial removals and topsoil stripping operations through the subsequent grading, paving, and re-topsoiling to minimize the period of exposure to possible erosion. Do not implement the ECIP until it has been approved by the department.

Topsoil graded areas, as designated by the engineer, immediately after grading has been completed within those areas. Seed, fertilize and mulch/erosion mat, or sod all topsoiled areas within 5 days after placement of topsoil. If the graded areas will be left exposed for more than 14 calendar days, seed those areas with temporary seed within the first 7 days.

Furnish and apply water to sodded areas. After staking and cleanup, moisten the sod thoroughly by sprinkling with water. Keep all sodded areas thoroughly moist by watering or sprinkling if rainfall is not sufficient to achieve sod rooting to the earth bed. Water for 30 days after placement, or as the engineer directs. Apply water in a manner to preclude washing or erosion.

Do not pump water from the construction site to a storm water conveyance without the water first passing through a sediment trap.

Construct temporary sediment traps at locations that do not interfere with construction operations.

Stockpile excess material or spoils on upland areas away from wetlands, floodplains and waterways. Stockpiled soil shall be protected against erosion. If stockpiled material will be left exposed for more than 14 calendar days, seed those areas with temporary seed within the first 7 days.

15. Public Convenience and Safety.

Revise standard spec 107.8(6) as follows:

Check for and comply with local ordinances governing the hours of operation of construction equipment. Do not operate motorized construction equipment from 9:00 PM until the following 7:00 AM, unless prior written approval is obtained from the engineer.

Residential areas	Do not exceed 5 dB(A) over preconstruction ambient noise levels
All other areas outside WisDOT right-of-way	Do not exceed 5 dB(A) over preconstruction ambient noise levels

Noise level restrictions will be waived for four evenings to complete the removal of critical portions of each Removing Old Structure (Station) that are time restricted as described in the article Prosecution and Progress. Prior to waiving the noise compliance by the engineer, provide 48 hour advance notice to Mr. William Porter, Director of Public Works, City of Wauwatosa (414) 479-8933 regarding the evening noise generating construction operations.

107-001 (20060512)

16. Public Information Meetings.

Participate in department-sponsored public information meetings as the engineer requests. Ensure that representatives of subcontractors also participate in those meetings if the engineer requests.

SEF Rev. 12_0330

17. Milwaukee County Transit System.

The Milwaukee County Transit System (MCTS) maintains multiple bus routes throughout the project corridor along the project. Notify MCTS at least ten days prior to beginning work. The MCTS contact is Mr. Dave Ziarek, (414) 343-1764.

Invite MCTS to all coordination meetings 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.

MCTS will remove their existing bus stop signs and shelters. Notify MCTS at least ten days in advance. MCTS will install new bus stop signs and shelters prior to the opening of traffic on the new roadway pavement. Notify MCTS at least ten days prior to opening new pavement to vehicular traffic.

The contractor shall provide a safe boarding zone that is clear of debris and ADA compliant at each temporary bus stop. MCTS will install temporary bus stop signs if notified at least ten days in advance.

18. Available Documents.

The department will make all its information available to bidding contractors. The list of documents that are available for contractors' information includes but is not limited to:

Design Study Report

Pavement Type Selection Report

Environmental Impact Statement

Preconstruction survey

These documents are available from Jeff Bohen at 141 NW Barstow Street, Waukesha, WI 53187. He may be reached at (414) 750-2928.

Reproduction costs will be applied to any copies requested.

SEF Rev. 12_1212

19. Contractor Document Submittals.

A Description
This special provision describes minimum requirements for submitting project documents to the department. This special provision does not apply to shop drawing submittals.

B Contractor Submittals
Provide two paper originals and one electronic copy of all documents requiring department review, acceptance, or approval. Attach a completed engineer-provided transmittal sheet to each paper original and email submittal. The department will reject submittals with incomplete transmittal sheets and require re-submittal.

The department will return one reviewed, accepted, or approved paper original to the contractor. Additional return originals can be requested. Submit an additional original for each additional return original requested.

Submit electronic copies in Adobe Acrobat (.pdf) format via email to an account the engineer determines. If possible, translate original documents from their native format (e.g. Word, Excel, AutoCAD, etc.) using an Adobe Acrobat translation routine. Scan other documents to Adobe Acrobat format with a minimum resolution of 600 dpi.

All costs for contractor document submittals are incidental to the contract.

SEF Rev. 12_ 0920

20. Payment Tracking.

A Reporting Payments During Construction
Comply with reporting requirements specified in the department's civil rights and labor compliance management system manual.

Report payments to all first tier relationships including subcontractors, suppliers, and trucking firms within ten calendar days of receipt of a progress payment by the department or a contractor for work performed, materials furnished, or materials stockpiled by subcontractors, suppliers, and trucking firms. Report the payment as specified in A(1) for all work satisfactorily performed and for all materials furnished or stockpiled.

Require all first tier relationships including subcontractors, suppliers, and trucking firms in receipt of a progress payment by contractor to acknowledge receipt of payment as specified in A(1) and (2).

All agreements made by a contractor shall include the provisions in A(1) and (3), and shall be binding on all first tier relationships including subcontractors, suppliers, and trucking firms on the project.

B (Vacant)

C (Vacant)

D (Vacant)

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

SEF Rev. 12_1008

21. Labor Compliance Reporting – Payroll Requirements.

Submit weekly certified payrolls verifying prevailing wage rates for all work performed under the contract as directed in the civil rights and labor compliance management system manual. Submit weekly certified payrolls within seven calendar days of the week covered by the weekly certified payroll.

SEF Rev. 12_1008

22. Lane Rental Assessment.

A General
This contract includes a lane rental charge procedure under which a rental charge is assessed for each freeway shoulder closure, each freeway lane closure, each service ramp closure, each system ramp closure, and each full closure of a directional freeway roadway from the time of notice to proceed until the project is complete. If a lane is obstructed at any time due to operations, it is considered a closure. The purpose of lane rental is to discourage unnecessary short term closures, especially during time periods outside night time hours.

A.1 Lane Rental Assessment Table

The hourly rental rate will be assessed for each shoulder closure, each freeway lane closure, each service ramp closure, each system ramp closure, and each full closure of a freeway roadway as follows:

Lane Rental Assessment Table								
Freeway Closure Type	Peak Hours		Weekday Off-Peak and Weekend Peak Hours		Weekend Off-Peak Hours		Night Time Hours	
	Hourly Rental	Closure Hour Credits	Hourly Rental	Closure Hour Credits	Hourly Rental	Closure Hour Credits	Hourly Rental	Closure Hour Credits
Shoulder when at least 8 ft, shoulder is reduced to less than 8 ft.	$2,000	0	$400	16	$200	20	$20	504
Single Lane when 2 or more lanes next to closure are open to traffic	$20,000	0	$4,000	16	$2,000	20	$200	424
Single Lane when only 1 lane next to closure is open to traffic	$40,000	0	$8,000	0	$4,000	0	$400	0
2 Adjacent Lanes when 1 or 2 basic lanes next to closure are open to traffic	$40,000	0	$8,000	0	$4,000	20	$400	384
Service Ramp	$10,000	0	$2,000	0	$1,000	20	$100	312
System Ramp	$40,000	0	$8,000	0	$4,000	20	$400	344
Full Roadway Closure	$80,000	0	$16,000	0	$8,000	0	$800	48

The monetary amount represents the average hourly cost of the interference and inconvenience to the road user for each closure. Lane rental in excess of the maximum credited hours specified will be assessed. The assessment will be the total number of hours that each shoulder, lane, roadway, or ramp closure exceeds the "closure hour credits", multiplied by the "hourly rental" rate as defined in the Lane Rental Assessment Table.

The rental assessment will be 15-minute increments for closure time periods equal to or less than 60 minutes in length. All shoulder, lane, roadway, or ramp closure event durations will be rounded up or down to the nearest quarter hour for the purposes of this computation except where freeway shoulders or lanes of traffic and/or ramps are not opened to traffic by the specified times, as noted in the article Prosecution and Progress under Freeway Work Restrictions. Deductions will be made from the monies based on the hourly rental rate for the closure type and hourly definition that the non-compliant closure occurs. The deduction will be made based on the applicable rate for any and all closures whether work is being performed or not. The engineer, or designated representative, will be the sole authority in determining time period length for the lane rental charge.

Lane rental will not be assessed for closures noted in the plans under the title "Traffic Control/Construction Stage XX". Additional lane or ramp closures shown beyond those in the plans under the title "Traffic Control/Construction Stage XX" will be assessed if the closures exceed the credited hours.

Lane rental will not be assessed for ramp closures noted in the plans under the title "Traffic Control/Construction Stage XX" if the plans and construction operations already include such closures. Additional ramp closures shown beyond those in the plans under the title "Traffic Control/Construction Stage XX" will be assessed if the closures exceed the credited hours.

Lane rental will not be assessed for closure of auxiliary lanes noted in the plans under the title "Traffic Control/Construction Stage XX" if the plans and construction operations already include such closures. However, when closure of an auxiliary lane requires the closure of a ramp, then lane rental will be assessed for each service and/or system ramp closure. Additional ramp closures shown beyond those in the plans under the title "Traffic Control/Construction Stage XX" will be assessed if the closures exceed the credited hours.

Lane rental for shoulder shall only apply to shoulders along the traveled way of IH 94 westbound. A shoulder is considered closed when a paved shoulder area with 8 feet or more of width is reduced to a dimension less than 8-feet wide by contractor’s equipment or traffic control devices, excluding spot locations of advance traffic control devices "in use" for other lane or ramp closures. Lane rental for shoulder shall not apply to shoulders along ramps or along closed traffic lane(s).

Lane rental will not be assessed for maintenance of temporary surfaces, if in the opinion of the engineer, maintenance of the damaged pavement was completed expeditiously, and the lack of maintenance would cause safety concerns to the traveling public.

Lane rental will not be assessed for closures due to crashes, accidents or emergencies.

A1.1 Lane Rental Assessment and Liquidated Damages
On those days when charged with the liquidated damage fee; and a shoulder, ramp or lane closure is in effect to facilitate construction operations that are exceeding credited hours; both the lane rental assessment and the liquidated damages fee will be charged.

B (Vacant)

C (Vacant)

D Measurement
The department will assess Lane Rental Assessment by the dollar under the Administrative bid item Failing to Open Road to Traffic. The charge will be the total dollar amount of each freeway closure type category where the total number of hours that each shoulder, lane, ramp, or roadway closure exceeds the project maximum number of "closure hour credits," as defined in the Lane Rental Assessment Table, multiplied by the "hourly rental" as defined in the Lane Rental Assessment Table. The Lane Rental Assessment total will not be reduced or offset with freeway closure type categories where the total closure hours were less than "closure hour credits."

Lane Rental Assessment will be in effect from the time of notice to proceed until such time that the project is complete.

23. Notice to Contractor – Traffic Signal Equipment Lead Time.

Lead time for traffic signal equipment specified for this project has been ranging from 12-weeks to 18-weeks. Order equipment as soon as possible to assure the equipment is procured in a timely fashion and, therefore, installed, inspected, and ready for turn-on at the required date.

24. Notice to Contractor – Subsurface Contamination Beyond Construction Limits.

The department completed hazardous materials assessment for locations within this project where excavation is required. Results indicate that residual contamination is present at the approximate following locations:

Petroleum-Contaminated Soil and Ground Water
Ramp WG Station 779+25 to 780+00, greater than 150 left of centerline

Chlorinated Solvent-Contaminated Soil
Ramp WH Station 774+00 to 777+00, greater than 75 feet left of centerline

Metal-Contaminated Ground Water
Ramp WA Station 777+00 to 778+00, greater than 100 feet right of centerline

The contamination at the above locations is expected to be beyond the excavation limits necessary to complete the work under this project. Control construction operations in these areas to ensure that they do not extend beyond the excavation limits indicated in the plans. If contaminated soils and/or ground water are unexpectedly encountered anywhere on the project during excavation, terminate excavation in the area and notify the engineer immediately. Information regarding the hazardous materials assessment for this project is available by contacting:

Michael Cape, P.G.
WisDOT Technical Services
141 NW Barstow Street
Waukesha, WI 53187
(262) 548-5930
michael.cape@dot.wi.gov

25. Notice to Contractor – Former Railroad Crossing.

A former railroad crossing existed at the approximate location:

Watertown Plank Road Station 72+50 eastbound/westbound to 73+50 eastbound/westbound

The former railroad was previously abandoned. Control construction operations in these areas to ensure that they do not extend beyond the excavation limits indicated in the plans. If any signs of residual hazardous substances associated the former railway (underground storage tanks, stained soils, noxious odors and fumes, creosote-treated timbers) are encountered during construction, terminate excavation in the area and notify the engineer immediately. Others will manage the waste on an emergency basis.

26. 3D Model Data.

The department will provide for Project 1060-33-72 for informational purposes only (see following disclaimer) detailed 3D proposed and existing model data or portions of data which may include: roadways, temporary roadways, topography, grading, temporary grading, drainage, temporary drainage, structures, temporary structures, utilities, abandoned utilities, FTMS, signals, temporary signals, signs, temporary signs, lighting, temporary lighting, pavement markings, landscaping, wetlands, waterways, railways, geotech soil borings, parcels, fencing, and survey monumentation. The department will provide the above data or portions of the 3D model data electronically consisting of electronic 2D/3D files containing features, points, reference lines, breaklines, area extents lines, profiles, LandXML v1.2 files and/or TIN Civil 3D surfaces in Autocad 2012 dwg files with horizontal datum - NAD-83 (GRS-1980) (2007), vertical datum - NAVD-1988 (2007), and coordinate projection - Wisconsin County Coordinate System in U.S. survey ft. The department will provide the model data prior to project LET date within 5 business days of a contractor request submitted as follows: by email to jeff.bohen@dot.wi.gov.

The department is providing, by agreement with contractor and subcontractors, materials stored electronically. The parties recognize that data, plans, specifications, reports, documents, or other information recorded on or transmitted as electronic media (including but not necessarily limited to "CAD, CIM, BIM, GIS or other electronic documents") are subject to undetectable alteration, either intentional or unintentional, due to, among other causes, transmission, conversion, media degradation, software error, or human alteration. Accordingly, all such documents are provided to the parties for informational purposes only and not as an end product or as a record document. Any reliance thereon is deemed to be unreasonable and unenforceable. The signed and/or stamped hard copy of the engineer's Instruments of Service plans, specifications and estimates or other contract documents are the only true contract documents of record.

SEF13_0131

27. Geotechnical Investigation Information.

Replace standard spec 102.5(3) 2 with the following:

Available information relative to subsurface exploration, borings, soundings, water levels, elevations or profiles are available for review at the department's Regions office. Contact Bill Mohr, 141 NW Barstow Street, Waukesha, WI 53187, (262) 548-5666.

Report Title	Report Date
Technical Memorandum - Watertown Plank Road Pavement Design Parameters –Zoo Interchange Corridor Study	September 16, 2011
Watertown Plank Road Excavation Below Subgrade Recommendations – Zoo Interchange Corridor Study	November 16, 2011
Geotechnical Exploration and Bridge Foundation Evaluation Report, Zoo Interchange Reconstruction, Bridges B-40-777, B-40-778, B-40-779, B-40-780, B-40-781, B-40-782 (USH-45 over Watertown Plank Road)	February 1, 2013
Geotechnical Exploration and Retaining Wall Evaluation Report, Zoo Interchange Reconstruction, Retaining Walls R-40-491 and R-40-492	March 1, 2013
Geotechnical Exploration and Retaining Wall Evaluation Report, Zoo Interchange Reconstruction, Retaining Wall R-40-488	March 1, 2013
Geotechnical Exploration and Retaining Wall Evaluation Report, Zoo Interchange Reconstruction, Retaining Wall R-40-486 and R-40-487	February 28, 2013
Geotechnical Exploration and Retaining Wall Evaluation Report, Zoo Interchange Reconstruction, Retaining Wall R-40-489 and R-40-490	March 1, 2012
Geotechnical Exploration and Bridge Foundation Evaluation Report, Zoo Interchange Reconstruction, Bridge B-40-776,	January 28, 2013
Geotechnical Exploration and Bridge Foundation Evaluation Report, Zoo Interchange Reconstruction, Bridge B-40-783	February 26, 2013
Geotechnical Memo- Watertown Plank Road Service Ramps Over-Excavation Recommendations-Milwaukee County	April 26, 2013

Additional geotechnical information is available from studies and analyses that have been performed by Forward 45 for the Wisconsin Department of Transportation (WisDOT) for other aspects of this project. Review the available information to determine if it is of use. The use or not of the geotechnical information does not relieve performing the work in accordance to the plans and specifications.

Geotechnical Data Report for the tunneled pipe from W1482 to W1501 are presented in a separate report included in the contract documents titled “Storm Sewer North of Swan Blvd Geotechnical Data Report", dated April 30, 2013.

SEF Rev. 12_0813

28. Contract Award and Execution.

Supplement standard spec 103 as follows:

103.9 Bid Escrow Documentation

The department will require the lowest responsible bidder to submit documentation to be placed in escrow at a document storage facility. Bid Escrow Documentation (BED) consists of writings, working papers, computer printouts, charts, and data compilations that contain or reflect information, data, calculations or assumptions used by the bidder to determine the proposal submitted. If the apparent low bid is withdrawn or rejected, the second low bidder will provide the required documents as specified below within 72 hours of written notification by the department.

The BED shall clearly itemize the contractor’s estimated costs of performing the scope of work defined in the contract.

The BED shall include, but not be limited to, all quantity takeoffs, rate schedules for the direct costs of craft labor, construction (expendable materials), construction equipment ownership costs, construction equipment operating costs, permanent materials subcontractors and insurance. Also include development of rates of production including, where appropriate: estimate of crews, construction materials, construction equipment, and construction sequence and duration. Submit the BED for each subcontractor whose total subcontract costs exceed $500,000.

Identify the allocation of construction plant and equipment, time and non-time related indirect costs (including if applicable joint venture fees), home office overhead, contingencies and margin applicable to each bid item. Further, documentation shall include consultant’s reports, final estimate adjustment calculations, and all other information used by bidders to arrive at the estimate.

Any manuals standard to the industry used by the bidder in determining the proposal are also considered part of the BED. These manuals may be included in the proposal documentation by reference and shall show the name and date of the publication and the publisher.

It is not necessary to include documents provided by the department for the bidder's use in the preparation of the proposal.

The low bidder shall present authentic copies of their BED at the department's office, located at 1001 West St. Paul Avenue; Milwaukee, WI by September 13, 2013 at 10:00 AM.

At the time of submittal, only designated representatives of the apparent low bidder and the department will jointly examine the apparent low bidder's bid documentation to determine if it is authentic, legible, and generally meets the requirements of this special provision. The department will not share the BED information with, or in any other way divulge the contents of the apparent low bidder's BED to, their subcontractors or any other party.

The department, if requested by apparent low-bidder subcontractors, will also independently examine the BED submitted by the apparent low bidder's subcontractors in the same manner as the apparent low bidder's BED was examined. Only designated representatives of the individual subcontractor and the department will be present during this examination. The department will not share the BED information with, or in any other way divulge the contents of a subcontractor's BED to, the apparent low bidder or any other party.

The department's examination of the BED will not include review of, nor will it constitute approval of, proposed construction methods, estimating assumptions, or interpretation of the contract. The examination will not alter any conditions or terms of the contract. The department will determine if the BED complies with this special provision within 4 hours after the time the BED is submitted. If the BED does not meet the requirements of this special provision, the department may reject the bid.

If the BED of the apparent low bidder meets the requirements of this special provision, the department and bidder will jointly deposit the BED at an agreed document storage facility. Place the BED in a sealed envelope or container clearly marked with the bidder's name and address, date of submittal, project name and identification number. Representatives of the department and the bidder will deliver all bid escrow documentation and the original affidavit directly to a document storage facility, to be placed in escrow.
If the apparent low bid is withdrawn or rejected, the designated representative of the second low bidder and the department will examine and inventory the bid documentation of the second low bidder and their subcontractors in the manner specified above, then seal and deposit in escrow. If a subcontractor with a subcontract exceeding $500,000 is replaced, the contractor shall submit new BED for examination and escrow before the engineer will authorize the substitution.

The department will pay for the costs of the escrow document storage facility and will provide escrow instructions to the document facility consistent with this special provision.

The department acknowledges that the bidder considers that the BED constitutes trade secrets or proprietary information. This acknowledgment is based upon department's understanding that the information contained in the BED is not known outside each bidder's business, is known only to a limited extent and by a limited number of employees of bidder, is safeguarded while in bidder's possession, and may be valuable to bidder's construction strategies, assumptions and intended means, methods and techniques of design and construction. Except as set forth in the contract or as required by applicable Law, the department acknowledges that the BED will remain in the possession of the Escrow Agent at all times and will at no time be received by, or become the property of, the department.

Submit a copy of the affidavit below, signed under oath before a Notary Public by a representative of the bidder authorized to execute proposals. Department representatives will sign the affidavit after reviewing the BED.

The BED will remain in escrow until:

1. The bidder and the department mutually agree to release of the BED;

2. A court orders the department to provide the BED;

3. A dispute is referred to the Dispute Review Board or claims review panel; or

4. Either party seeks judicial review of a dispute.

If any of the events numbered 1-4 above occurs, the department will take possession of all relevant portions of the BED, as determined by the department, until complete resolution of the issue for which the request was made or the court order was issued. In absence of such actions, and provided the bidder signs an appropriate release, the unopened BED will be released to the bidder upon final acceptance and the expiration of all warranty periods provided by this contract.

BID ESCROW DOCUMENTATION CERTIFICATION

Using this BID ESCROW DOCUMENTATION CERTIFICATION, the bidder certifies that the material submitted below constitutes all the documentary information used in preparation of the bid and that said bidder has fully examined the contents of the container and that they are complete. The undersigned Wisconsin Department of Transportation representatives have reviewed the BED for compliance.

BIDDER

_____
(Name of Bidder)

By: _____
(Signature*)

Title _____

Date _____

WITNESS

_____
(Name of Witness)

By: _____
(Signature*)

Date: _____

WISCONSIN DOT

_____
(Name of Department Representative)

By: _____
(Signature*)

Title _____

Date _____

WISCONSIN DOT

_____
(Name of Department Representative)

By: _____
(Signature*)

Title: _____

Date: _____

(END OF BID ESCROW DOCUMENTS)

103.10 Mobilization Workshops

103.10.1 Workshop Schedule

After contract award, attend the following workshops. Each workshop is described below and will include but not be limited to the following topics.

Workshop Schedule

1. Project Kickoff and Initial Work Plan
2. Cost Reduction Incentives
3. Utility Coordination
4. Submittals
5. CPM Scheduling
6. Leadership Partnering (Initial Session)
7. Earthwork and Drainage
8. Work Force Opportunities
9. Notice to Proceed

The workshop dates will be scheduled after contract award.

If necessary, the engineer may modify the workshop schedule to ensure attendance by the necessary department and contractor personnel; however, all workshops will be completed prior to issuing the Notice to Proceed.

103.10.2 Workshops

103.10.2.1 Project Kickoff and Initial Work Plan

103.10.2.1.1 General

The Project Kickoff and Initial Work Plan Workshop will provide a forum to discuss and answer questions relative to the proposal, bid schedule, and other questions in the Project Questionnaire described in standard spec 103.10.2.1.2. The Initial Work Plan Workshop will include:

1. Contractor responses to the attached Project Questionnaire.
2. Department presentation of the use of CPM scheduling on the project and presentation of the department's Master Schedule to the contractor.
3. Contractor presentation of its conceptual work plan for the project.
4. Department and contractor discussion of the level of detail and features in the Initial Work Plan and the Baseline CPM Progress Schedule.

103.10.2.1.2 Project Questionnaire

Provide the following information in the order shown below. This information will constitute the "Project Questionnaire."

General Information
If a Joint Venture, provide information for each member of the Joint Venture.

1. Provide the following information about the company:
   - Firm Name
   - Address
   - Telephone and facsimile numbers; e-mail address
   - Contracting Specialties
   - Years performing work in contracting specialties
   - Geographic areas served
   - Total Management Employees and years of service
     - Project Managers
     - General Superintendents
     - Craft Superintendents
     - Engineers
     - Estimators
     - CPM Schedulers

Construction Engineering

- Provide/attach a copy of your Construction Project Manager's resume indicating the manager's experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
- Provide (if applicable) your third-party construction engineering firms.
- Provide plan for Construction surveying

Subcontractors

- Attach the list of all subcontractors that are intended for this Project and the items of work they shall perform.

Permanent Material Suppliers

- Attach the list of all permanent material suppliers that are intended for the project.

Quality Control (where applicable)

- Provide the name of your Construction Quality Control firm and qualifications indicating the firms' experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
- Provide/attach a copy of your Construction Quality Control Manager's resume indicating the manager's experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).
- List the major elements and/or Table of Contents of your Construction Quality Management Program.
- Provide the name of your Independent Quality Control Testing firm (Construction Quality Control Lab) and qualifications indicating the firm's experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).

Organization Chart

- Provide a functional and personnel Organization Chart showing the authority and responsibilities of each individual identified.

Work Rules

- Provide the plan for hours per day, days per week, and number of shifts for key elements of work; i.e. sewer tunnels, retaining wall construction, roadway excavation, bridge structures, and roadway structural section activities.

Maintenance of Traffic

- Provide the name of your Traffic Control Manager and qualifications indicating the firm's experience in similar major construction projects. The resume shall include similar projects with references. (Note: references are only for verification of work scope performed).

- Attach a copy of your Preliminary Schedule indicating your approach to achieving the substantial completion schedule.

- Include an outline of your approach to the maintenance of traffic and how you shall stage the construction to meet the substantial completion schedule including planned locations for local street and freeway access into and out of the work zones for each stage of construction.

Construction

- Provide the approach (type of equipment, number of crews, and where required ground support systems) for the following activities.

    1. Retaining wall construction by type of work
    2. Bridge demolition
    3. Roadway structural section
    4. Roadway excavation
    5. Office and yard facilities

103.10.2.2 Cost Reduction Incentives

The Cost Reduction workshop will identify value enhancing opportunities and consider modifications to the plans and specifications that will reduce either the total cost, time of construction or traffic congestion, without impairing, in any manner, the essential functions or characteristics of the project, including, but not limited to, service life, economy of operation, ease of maintenance, benefits to the traveling public, desired appearance, or design and safety standards.

Submit recommendations resulting from the workshop for approval by the engineer as cost reduction incentive proposals in conformance with the provisions in standard spec 104.10 “Cost Reduction Incentive,”.

The department and the contractor may be able to complete the CRI Concept process, as specified in 104.10.2, during the CRI workshop.

Submit CRIs after the CRI workshop that were not introduced at the CRI workshop.

103.10.2.3 Utility Coordination

The Utility Coordination Workshop will define the scope and schedule of utility relocation work and the respective roles and responsibilities of the project team.

1. At a minimum, the following key personnel will attend the Utility Coordination Meeting.

    1.1 Department’s Utility Coordinator.

    1.2 Contractor’s Utility Coordinator.

1.3 Designer Team's Utility Coordinator.

1.4 Key Utility Company Representative(s)

2. At a minimum, the Utility Coordination Meeting will include a review of the following:

2.1 Summary of all required utility relocations on the project.

2.2 Special provisions addressing utility work.

2.3 Sharing of contact information.

2.4 Scheduling of work for utility relocation including critical milestones and staging for the work.

103.10.2.4 Submittals

The Submittal Workshop will identify the key required submittals for the project, categorize submittals into functional areas, and develop a schedule for submittals and submittal reviews. The Workshop participants will at a minimum:

1. Review the project special provisions.

2. Categorize submittals into functional areas including but not limited to:

2.1 MSE Retaining Walls

2.2 Temporary Shoring

2.3 Falsework and Formwork

2.4 Girder Shop Drawings

2.5 Steel Transportation, Delivery and Erection

2.6 Structure Demolition Plans

2.7 Pile Hammers and High Capacity Piling

2.8 Concrete/ Asphalt

2.9 Materials

2.10 ITS / Lighting

2.11 Traffic Signals

2.12 Sanitary Sewer and Water

2.13 Permits

3. Develop a schedule for submittals.

103.10.2.5 CPM Schedule
See specification Baseline CPM Progress Schedule.

103.10.2.6 Leadership Partnering
The department will implement mandatory leadership partnering meetings on this contract.

Key members of the contractor project team, major subcontractors project team shall meet with department leadership on a bi-weekly basis. Attendance at this meeting shall include project level supervisory personnel, contractor/state level management personnel, and FHWA. Project design engineers, key project personnel of the contractor's principal subcontractors and suppliers, local government representatives, environmental regulators, emergency service personnel, utility companies, impacted business and/or landowners, and other stakeholders may also be invited to attend, as needed.

This meeting will facilitate communication between parties and review issues and issues resolution procedures, help resolve disputes timely, satisfactorily, and as near as possible to the originating level of the dispute.

All mobilization workshop costs are incidental to the contract work.

103.10.2.7 Earthwork and Drainage
The Earthwork and Drainage workshop will focus on removal, hauling, and placement jobsite waste material while maintaining existing drainage. Drainage will also focus on tie-in locations of the Honey Creek box culvert.

103.10.2.8 Work Force Opportunities
The Work Force Opportunities workshop will provide a venue for contractors to have meaningful dialogue with TrANS providers regarding the hiring of TrANS graduates. For the prime contractor and the nine largest subcontractors according to let value of work, provide staff with hiring authority to participate in a job-matching session during this workshop. The workshop will take place on the same day and in the same location as the pre-construction meeting. The workshop participants will at a minimum:

1. Review contractor hiring processes for general labor positions

2. Review and listen to presentation provided by TrANS providers regarding the training program including details regarding how contractors can hire TrANS graduates

3. Review TrANS graduate availability for working on project

4. Meet one-on-one for two minutes with each TrANS graduate in attendance at the meeting

103.10.2.9 Notice to Proceed
After all workshops are completed, the Notice to Proceed will be issued.

29. Contractor Notification.

Replace standard spec 104.2.2.2(2) with the following:

If the contractor discovers the differing condition, provide a written notice, as specified in 104.3.3, of the specific differing condition before further disturbing the site and before further performing the affected work.

104.3.2 (Vacant)

104.3.3 Contractor Initial Written Notice
Replace standard spec 104.3.2 and 104.3.3 with the following:

If required by standard spec 104.2, or if the contractor believes that the department's action, the department's lack of action, or some other situation results in or necessitates a contract revision, promptly provide a written notice to the engineer. At a minimum, provide the following:

1. A written description of the nature of the issue.
2. The time and date of discovering the problem or issue.
3. If appropriate, the location of the issue.

Provide the additional information specified in standard spec 104.3.5 as early as possible to assist the engineer in the timely resolution of an identified issue. The engineer will not require, in subsequent submissions, duplication of information already provided.

SEF Rev. 12_0823

30. Claims Process for Unresolved Changes.

Replace standard spec 105.13.5, 105.13.6, and 105.13.7 with the following:

105.13.5 Review by the Department
The department will conduct an initial review phase and a decision phase to resolve the claim. At any point in these two phases, the department may waive its review and request a dispute review board (DRB).

In the initial review phase the contractor and the department will have up to 30 calendar days from the contractor's submission of the claim to submit all additional information required and for the department to review the claim and conduct all meetings. The

department may request, in writing, that the contractor submit additional information related to the claim. Submit that additional information or notify the department, in writing, to base its decision on the information previously submitted. Either party may request a meeting to present its views. Before the meeting the department will distribute written ground rules for the meeting to both parties.

The contractor and the department can mutually agree to extend the 30-day review period. Upon completion of the review phase the department will notify the contractor, in writing, that it has begun the decision phase.

In the decision phase the department will have up to 30 calendar days to issue a written decision. The department will consider both parties' written and oral submissions and may consider other relevant information in the project records. The department and contractor can mutually agree to extend the 30-day decision period. The department will provide the following in its decision:

- A concise description of the claim.

- A clear contractual basis for its decision that includes a reference to 104.2 on revisions to the contract and as appropriate, specific reference to language regarding the bid items in question.

- Other facts the department relies on to support its decision.

- A concise statement of the circumstances surrounding the claim and reasons for its decision. If the department rejects the claim in whole or in part the department will explain why the claimed work is not a change to the contract work.

- The amount of money or other relief, if any, the department will grant the contractor.

In the appeal phase there will be up to 21 calendar days from the date of the department's decision to request a dispute review board hearing. If a written request is as specified in standard spec 105.13.6.1.2 within the 21 calendar days, the department's decision is final. If the department does not render a decision within the period allowed by standard spec 105.13.5, a dispute review board hearing may be requested.

105.13.6 Dispute Resolution

105.13.6.1 Dispute Review Board (DRB)

The purpose of a DRB is to resolve claims in a manner that complies with the contract, is impartial, and expedites the standard claims process. The DRB will do so by issuing recommendations that may be binding or non-binding depending on the claim amount.

105.13.6.1.1 Selection of Members and Agreement for Services

The department and the contractor will cooperatively establish the DRB promptly after contract execution. Each DRB will consist of one member appointed by the department

and approved by the contractor, one member appointed by the contractor and approved by the department, and a third member appointed by the first two members and approved by both. The third member will act as DRB chairperson.

If a DRB member is unable to perform the duties of the office, the department may declare the office vacant. The new DRB member will be selected in the same manner as the original member. If the vacancy occurs after the hearings begin the remaining DRB members may continue with the hearing and determination of that claim, unless the department and contractor agree otherwise.

After approval of the DRB members, the department, contractor, and the DRB members will enter into a three-party agreement that sets forth the terms and conditions that apply to services provided by the DRB including procedures for standard operation of the DRB, use of the DRB in an advisory role, periodic site visits, and any other pertinent terms. The department, contractor, and all three DRB members will execute the DRB agreement within 14 calendar days after the selection of the chairperson. Payment for the DRB shall be in accordance to standard spec 105.13.7.

105.13.6.1.2 Pre-Hearing Submissions

If the contractor intends to appeal the department's decision, prepare a written statement of position setting forth in detail the nature of, and factual and legal basis for the claim and all remedies sought from the DRB. The statement shall also include and identify all claims on behalf of subcontractors. Submit the statement of position with the request for a DRB hearing within the 21 calendar day appeal phase as specified in standard spec 105.13.5.

Within 14 calendar days (or a period mutually agreed by the department and contractor) of receipt of the contractor's written statement of position, the department will provide the DRB and the contractor its response to the contractor's written statement. The response will set forth the position of the department and any counterclaims the department has relating to the claim, including a detailed statement setting forth each factual and legal defense to the claim and all documentation that establishes each defense.

105.13.6.1.3 Preparation of Claim File

The department will prepare a claim file within 14 calendar days of either the contractor or the department requesting a DRB hearing. The department will include all previous documents and evidence submitted during the department review and decision phases. The department may add additional documents but not additional analysis or conclusions. The claim file may contain, but is not limited to the following:

- Contractor's notices and statements.
- Engineer's written statements.
- Engineer's decisions.

- Supplemental information from the contractor during the department claim review.
- Project photos.
- Meeting minutes, correspondence, and other documents related to the claim.
- Complete set of plans and specifications.
- Applicable shop drawings and submittals.
- The department's decision.
- Contractor request for a DRB hearing.

After the department has assembled the claim file it will provide a copy to the contractor. Provide additional documentation as specified above, to the claim file within seven calendar days. Return complete copy of the claim file, including any additional documentation added to the department.

105.13.6.1.4 DRB Claim Review

The department will provide a copy of the completed claim file to each board member for review. If the DRB requests additional information, the appropriate party will provide the information to the DRB. The DRB may also visit the site to become familiar with the project and claim.

105.13.6.1.5 Scheduling and Conduct of Hearing

The DRB will set a date and location for a hearing no earlier than 30 calendar days but no later than 60 calendar days after the receipt of a written request for a DRB hearing.

The department and the contractor will have representatives at all hearings. Present your position first, followed by the department. Each party will be allowed one rebuttal. The DRB members, department, and the contractor may ask questions, request clarification, or ask for additional data. Unless extended by agreement between the department and the contractor, the DRB will limit a hearing to two eight-hour days. Each party will have eight hours to present both its position and rebuttal.

Normally, the DRB will not prepare a formal transcript of the presentations. When requested be either party, the DRB may allow recordation and transcription by a court reporter with the cost allocated as agreed by both parties. This transcript will not constitute the official record of the DRB review. The record prepared by the DRB is the official record of the hearings.

105.13.6.1.6 Claims by the Subcontractor

If the contractor's claim includes one or more subcontractor claims, ensure that an authorized representative with actual knowledge of the facts underlying the subcontractor

claim assists in presenting the subcontractor's claim and answering questions raised by the DRB members or the department's representatives.

105.13.6.1.7 Findings and Recommendations
After all DRB hearings are concluded the DRB will formulate findings and recommendations. The DRB will conduct private and confidential deliberations and attempt to reach a unanimous decision. The DRB will base its findings and recommendations on the terms of the contract documents, established principles of law, statutes and regulations, the facts and circumstances of the claim, and the information provided by the parties.

Within 30 calendar days of the hearings the DRB will issue its final findings and recommendations. Claims resulting in a decision involving $250,000 or less will be binding on the parties to the extent permitted by Wisconsin law. For claims resulting in a decision involving more than $250,000, if accepted by the parties, the department will process the DRB decision for approval and will promptly process any required contract changes.

If the DRB is unable to reach unanimity in its findings and recommendations, both parties will be advised by the DRB report. At their discretion, a dissenting member may prepare a minority report to be included in the DRB.

105.13.6.1.8 Further Action on Decisions Exceeding $250,000
Each party will have 45 calendar days from receipt of a final decision of the DRB exceeding $250,000 to accept or reject, in writing, the decision. If either party fails to accept or reject, in writing, that final decision of the DRB within 45 calendar days of receipt of such decision, the DRB will notify the parties that non-response is considered to be acceptance of that decision and further administrative or judicial review will be barred. Provide notice of acceptance or rejection of the final decision to the DRB in a manner and form prescribed by the DRB. The DRB will reject any notice on a final decision not filed by either party in a timely manner. This 45-day appeal period may be extended if agreed to in writing prior to the 45-day expiration period.

105.13.6.1.9 Advisory Dispute Review Board
As an alternative to the standard DRB process, the department may elect to use the DRB in an advisory role to expedite the resolution of a dispute or claim. The DRB may review and hear disputes or claim issues during a regularly scheduled site visit. The DRB will offer its advice either during or promptly after the site visit.

105.13.7 Payment for DRB
Pay all labor and expenses for the DRB member appointed by the contractor.

The department will be responsible for paying all labor and expenses for the DRB member appointed by the department.

The department and contractor shall share equally in the labor and expenses for the DRB chairperson. The chairperson will submit all costs for his/her labor and expenses to the contractor for payment. Invoice the department for 50 percent of those costs.

SEF Rev. 12_0920

31. Information to Bidders, Use of Recovered Material

The department encourages the use of waste materials and recovered industrial byproducts as material substitutions (standard spec 106.2.1), provided they meet standard specification gradation requirements, conform to NR 538 requirements, and/or follow standard engineering practice for their intended use.

SEF Rev. 12_1212

32. Dust Control Implementation Plan.

A Description
Develop, update, and implement a detailed Dust Control Implementation Plan (DCIP) for all land-disturbing construction activities and associated impacts both within the project site boundaries and outside the project site boundaries. Incorporate contract bid items that this article specifies into the DCIP.

B (Vacant)

C Construction
C.1 General
Take responsibility for dust control on the project as specified in standard spec 107.18. Minimize dust emissions resulting from land disturbing activities. Do not generate excessive air borne particulate matter (PM) or nuisance dust conditions. Take direct responsibility for controlling dust at all times throughout the duration of the contract, 24 hours per day, 7 days per week, including non-working hours, weekends, and holidays.

Submit a DCIP to the engineer for review at least 14 calendar days before the preconstruction conference. Coordinate with the department, if requested, to resolve DCIP related issues before the preconstruction conference. The department will either approve the DCIP or request revisions. Do not initiate any land-disturbing activities without the department's approval of the DCIP.

C.2 Dust Control Implementation Plan Contents
Develop a DCIP tailored to the specific needs of the project. Consider potential impacts to businesses and residences adjacent to the job site. Describe in detail all land disturbing, dust generating activities. Identify strategies to prevent, mitigate, and collect excess dust. Establish clear lines of communication with the engineer to ensure that all dust control issues can be dealt with promptly.

The DCIP shall include, but not be limited to, all of the following:

1. A single contact person with overall responsibility for the DCIP development as well as surveillance and remediation of job related dust. Include the following:
    - Name, firm, address, and working-hours phone number.
    - Non-working-hours phone number.
    - Email address.
2. Individual contact persons and their respective areas of responsibility. Include the following:
    - Name, firm, address, and working-hours phone number.
    - Non-working-hours phone number.
    - Email address.
3. A site map locating project features, the job site boundaries, all ingress and egress points, air intakes and other dust-sensitive areas, and all public and private paved surfaces within and immediately adjacent to the job site. Show where specific land disturbing, dust generating activities will occur and, to the extent possible, where employing various dust control or prevention strategies.
4. A matrix showing, for each anticipated land disturbing, dust generating activity, the following:
    - Preventive measures that shall be employed.
    - The applicable contact person.
    - The contractor's timetable and/or surveillance measures used to determine when remediation is required.
    - The specific dust control and remediation measures that shall be employed. List the specific contract bid items that shall be used for payment. Also indicate costs that are incidental to the contract.
    - Both maintenance and cleanup schedules and procedures.
    - How excess and waste materials shall be disposed of.
5. A description of how off-site impacts shall be monitored and dealt with.

C.3 Updating the Dust Control Implementation Plan

Update the DCIP throughout the term of the contract as the engineer directs. Obtain the engineer's approval for all DCIP alterations. Also obtain the engineer's approval for DCIP routine adjustments for weather, job conditions, or emergencies that will have an impact on payment under the bid items listed in the approved DCIP.

C.4 Dust Control Deficiencies

Correct engineer identified dust control deficiencies within the time the engineer specifies. The engineer will allow from 30 minutes to 24 hours from the time the engineer notifies the contractor in writing of the deficiency. Deficiencies include, but are not limited to, actions or lack of actions resulting in excessive dust, failing to comply with the contractor's dust control implementation plan or associated special provisions, and failing to properly maintain equipment.

D Measurement

The department will measure the various bid items associated with dust control as specified in the applicable measurement subsections of either the standard specifications or other contract special provisions. The department will not measure work performed under a DCIP alteration unless the engineer specifically approves that alteration.

Measurement under the DCIP shall include, but is not limited to, the contract bid items listed below:

623.0200	Dust Control Surface Treatment
624.0100	Water
628.7560	Tracking Pads
SPV.0105.0002	Pavement Cleanup

The department will measure work completed under other existing contract bid items if approved as a part of the DCIP. The department will consider new bid items to the contract if proposed under the DCIP. The department will not measure work required under the DCIP that is not included in contract bid items.

E Payment

All costs associated with the development and updating of the DCIP are incidental to the contract. The department will pay separately for the work required to implement the actions approved in the DCIP under the contract bid items approved as a part of the DCIP. All other costs associated with work approved under the DCIP are incidental to the contract.

SEF Rev. 12_1004

33. Project Site Air Quality.

Because fine particulate matter levels for Milwaukee, Racine and Kenosha Counties are typically close to $PM_{2.5}$ limits and the project is in a non-attainment area for the federal 8-hour ozone standard, contributions from construction activities can have a major impact well beyond the project limits. Take practical measures to mitigate the impact of operating construction equipment on the air quality in and around the project site.

Voluntarily establishing the staging zones for trucks waiting to load and unload is encouraged by the department. Locate staging zones where idling of diesel powered equipment will have minimal impact on abutting properties and the general public. The department will make signs available to help identify these zones. Have truckers queue up in these zones whenever it is practical. The department further encourages drivers to shut down diesel trucks as soon as it appears likely that they will be queued up for more than ten minutes. Notify employees and sub-contractors about fueling and engine idling.

Portable Concrete Crusher Plants
Portable concrete crusher plants may need a NR 440 Concrete Crusher Plant Air Permit for air emissions. Please contact Mike Griffin, Wisconsin Department of Natural Resources, Air Compliance Engineer (414) 263-8554 to request additional information and permit application materials. Complete permit applications may take three months to process.

SEF Rev. 12_1008

34. Maintaining Drainage.

Maintain drainage at and through worksite during construction in accordance to standard spec 107.22, 204, and 520.

Use existing storm sewer, culvert pipes or existing drainage channels to maintain existing surface and pipe drainage. Pumps may be required to drain the surface and/or pipe/structure discharges during construction. Costs for furnishing, operating, and maintaining the pumps is considered incidental to storm sewer construction.

Dewatering
If dewatering or pumping is required, treat the water to remove suspended solids before allowing it to enter any waterway or wetland. Filter pumped water through a media such as washed stone or allow settling in a sedimentation basin with sufficient capacity and size to provide an efficient means to filter the water from the dewatering operation before it is discharged back into the waterway or wetland. As part of the Erosion Control Implementation Plan (ECIP) submittal, supply all pertinent information and calculations used to determine the best management practice for dewatering at each location it is required.

Refer to the dewatering guidelines of WisDNR Storm Water Management Technical Standards, Code #1061, "Dewatering". This document can be found at the WisDNR website: http://dnr.wi.gov/runoff/stormwater/techstds.htm.

35. Owner Controlled Insurance Program.

Standard spec 107.26, "Standard Insurance Requirements" is deleted in its entirety and the following standard spec 107.26 is substituted thereof:

107.26 Standard Insurance Requirements

107.26(1)(a) Owner Controlled Insurance Program

1. **Overview**. The State of Wisconsin, Department of Transportation ("the WisDOT") has arranged with Aon Risk Solutions, (the "OCIP administrator") for this Project to be insured under its Owner Controlled Insurance Program ("OCIP"). The OCIP is more fully described in the Zoo Interchange manual for the Owner Controlled Insurance Program (the "Insurance Manual") and the Safety and Health Plan Manual

that are incorporated in this Special Provision and the Contract by this reference. Parties performing labor or services at the Project Site (as defined by the OCIP Policies) are eligible to enroll in the OCIP unless the party is an excluded party (as defined below). The OCIP will provide to enrolled parties(as defined below) workers' compensation and employer's liability insurance, commercial general liability insurance, Builders Risk and Excess Liability insurance as summarily described below in connection with the performance of the Work ("OCIP coverage's").

2. **Enrolled Parties and Their Insurance Obligations.** OCIP coverage applies only to Enrolled Parties. Enrolled Parties include the WisDOT and its employees, non-excluded Contractors and Subcontractors of all tiers who enroll in the OCIP, all employees of Enrolled Contractor's and Subcontractor's who perform Work at the Project Site, and such other persons or entities that the WisDOT, in its sole discretion, may designate (each such party who is insured under the OCIP is collectively referred to as an "Enrolled Party").

   Enrolled Parties shall obtain and maintain, and shall require each of its Subcontractors to obtain and maintain, the insurance coverage specified in 107.26(1)(a) 8 below.

3. **Excluded Parties and Their Insurance Obligations.** OCIP coverage's do not apply to the following "Excluded Parties":

   a. Hazardous materials remediation, removal and/or transport companies;

   b. Vendors *, suppliers, fabricators, material dealers, truckers**, haulers, drivers and others who merely transport, pickup, deliver, or carry materials, personnel, parts or equipment or any other items or persons to or from the Project;

      * WisDOT is requiring all vendors who perform maintenance on an enrolled contractor's equipment to be enrolled in the OCIP. Please see "WisDOT OCIP Enrollment Guidance Relating to Service Vendors" to determine whether they will be enrolled per project id number or on a Miscellaneous blanket basis.

      ** Truckers that come on site must remain in the cab of the vehicle.

      Refer to the "Enrollment Matrix" which clearly outlines the requirements contingent upon the category that the entity falls under, such as: Contractor; Subcontractor; Consultant; Visitor; etc.

   c. Sanitary disposal facility providers, if the only function is to drop off the units and pick them up later, they are material suppliers and are excluded. If the company also services/cleans the units on site, that is no longer being a material supplier. (Refer to "Enrollment Matrix", Vendors Providing Maintenance On Site).

   d. Contractors and Subcontractors of any tier that do not perform any actual labor on the Project site;

   e. Any party or entity not specifically identified in this special provision or excluded by the WisDOT as permitted by law, even if otherwise eligible.

f. If you are not employed by an Enrolled Party, but performing services of an Excluded Party, you are not covered by the OCIP.

Excluded Parties and parties not enrolled in the OCIP shall obtain and maintain, and shall require each of its excluded Subcontractors to obtain and maintain, the insurance coverage specified in Section 107.26(1)(a) 8 below and in the Insurance Manual. Excluded Parties shall comply with all of the safety requirements pursuant to 107.26(1)(a) 16.

4. **OCIP Insurance Policies Establish OCIP coverage's**. The OCIP coverage's and exclusions summarized in this special provision and the other contract documents are set forth in full in their respective insurance policy forms. The summary descriptions of the OCIP coverage's in this special provision or the Insurance Manual are not intended to be complete or to alter or amend any provision of the actual OCIP coverage's. In the event any provision of this special provision, the Insurance Manual, or the contract documents, conflicts with the OCIP insurance policies, the provisions of the actual OCIP insurance policies shall govern.

5. **Summary of OCIP Coverage's**. OCIP coverage's will apply only to those operations of each Enrolled Party performed at the Project Site (as defined in the OCIP insurance Policies) in connection with the Work and only to Enrolled Parties that are eligible for the OCIP.

   The OCIP coverage's are primary insurance for all Enrolled Parties for occurrences during the policy period at the Project Site (as defined in the OCIP Policies). The OCIP will provide at least the following insurance to Enrolled Parties:

Summary of OCIP Coverages

This is a brief description of OCIP Insurance Coverage. Enrolled Parties should refer to the actual policies for details concerning coverage, exclusions and limitations.

a. Workers' Compensation Insurance - Statutory Limit including Jones Act and USL&H coverage, as applicable.

b. Employer's Liability Insurance

$1,000,000 Bodily Injury by Accident, each accident

$1,000,000 Bodily Injury by Disease, each employee

$1,000,000 Bodily Injury by Disease, policy limits

c. Commercial General Liability (ISO Occurrence Form – Limits Shared By All Insureds)

$2,000,000 Each Occurrence Limit (Annual Limit)

$2,000,000 Personal/Advertising Injury Aggregate

$4,000,000 General Aggregate Limit for all Enrolled Parties (Annual Limit)

$4,000,000 Products & Completed Operations Aggregate for all Enrolled Parties (Single Limit Applies to Entire Products & Completed Operations Extension)

10 yr. Products & Completed Operations Extension

d. The OCIP Commercial General Liability policy will not provide coverage for any claim that could be covered under a property policy or Builder's Risk policy.

e. Excess Liability insurance (over Employer's Liability & General Liability – Limits Shared by All Insureds)

$100,000,000 Each Occurrence Limit

$100,000,000 Aggregate (Annual Limit)

$100,000,000 Products & Completed Operations Aggregate Limit (Single Limit Applies to Entire Products & Completed Operations Extension).

f. Builder's Risk Insurance Coverage:

This is a brief description of Builder's Risk Insurance Coverage. Contractor should refer to the actual policies for details concerning coverage, exclusions and limitations.

The Builder's Risk insurance covers insures property, including materials, supplies, machinery, fixtures and equipment which will become a permanent part of the Work (excluding road work at grade level) in the course of construction.

The Builder's Risk coverage insures WisDOT and Enrolled Parties.

Builders Risk:

	Limit
Each Occurrence Limit	$100,000,000

*Builder's Risk Obligation**:***

Contractor or Subcontractor shall pay to the WisDOT's designee within five (5) days written notice a maximum of up to **twenty-five thousand dollars ($25,000.00)** for each loss payable under the Builder's Risk Policy attributable to Contractor's Work, acts or omissions, or the Work, acts or omissions of any of Contractor's Subcontractors, or any other entity or party for whom Contractor may be responsible ("builder's risk obligation").

6. The WisDOT's Insurance Obligations.

a. The WisDOT will pay the costs of premiums for the OCIP coverage's and WisDOT will receive or pay, as the case may be, all adjustments to such costs, whether by way of dividends, retroactive adjustments, return premiums, other moneys due, audits or otherwise.

b. The WisDOT assumes no obligation to provide insurance other than that specified in this special provision and the OCIP insurance policies.

c. Except as provided by applicable law. the WisDOT's furnishing of OCIP coverage's will in no way relieve or limit, or be construed to relieve or limit, Contractor or any of its Subcontractors of any responsibility, liability, or obligation imposed by the contract documents, the OCIP insurance policies, or by law, including without limitation any indemnification obligations which Contractor or any of its Subcontractors has to the WisDOT there under. The WisDOT reserves the right at its option, to furnish other insurance coverage of various types and limits provided that such coverage is not less than that specified in the contract documents.

7. Contractor's OCIP Obligations. Contractor shall:

a. Assign to WisDOT the right to receive all such adjustments, and shall require that each of its Subcontractors of every tier assigns to WisDOT the right to receive all such adjustments.

b. Incorporate the terms of this special provision in all subcontract agreements.

c. Enroll and maintain enrollment in the OCIP, and shall ensure that each non-Excluded subcontractor, enrolls and maintains enrollment in the OCIP. Enrollment shall take place within five (5) days of a receipt of a Notice to Proceed, and prior to commencement of work. d. Comply with all of the administrative, safety, insurance, and other requirements outlined in this special provision, the Insurance Manual, the OCIP insurance policies, the Safety and Health Plan Manual, or elsewhere in the contract documents.

d. Provide each of its Subcontractors with a copy of the Insurance Manual and ensure Subcontractor compliance with the provisions of the OCIP insurance policies, the Insurance Manual, this special provision, and the contract documents. The failure of (a) the WisDOT to include the Insurance Manual in the bid documents or (b) Contractor to provide each of its eligible Subcontractors with a copy of same shall not relieve Contractor or any of its Subcontractors from any of the obligations contained therein.

e. Acknowledge, and require all of its Subcontractors to acknowledge in writing, that the WisDOT and the OCIP administrator are not agents, partners or guarantors of the insurance companies providing coverage under the OCIP (each such insurer, an "OCIP insurer") and that the WisDOT is not responsible for any claims or disputes between or among Contractor, its Subcontractors, and any OCIP insurer(s). Any type of insurance coverage or limits of liability in addition to the OCIP coverage's that Contractor or any Subcontractor requires for its or their own protection, or that is required by applicable laws or regulations, shall be Contractor's or its Subcontractor's sole responsibility and expense and shall not be billed to the WisDOT.

f. Cooperate fully with the OCIP administrator and the OCIP insurers, as applicable, in its or their administration of the OCIP.

g. Provide, within five (5) business days of the WisDOT's or the OCIP administrator's request, all documents or information as requested of Contractor or its Subcontractors. Such information may include but not be limited to, payroll records, certified copies of insurance coverage's, declaration pages of coverage's, certificates of insurance, underwriting data, prior loss history information, insurance audits, safety records or history, OSHA citations, or such other data or information as the WisDOT, the OCIP administrator, or OCIP insurers may request in the administration of the OCIP, or as required by the Insurance Manual.

h. Pay to the WisDOT's designee within five (5) days of written notification, a sum of up to **$10,000** of each claim, including court costs, attorneys fees and costs of defense for property damage to the extent losses are insured under the OCIP Commercial General Liability policy for those losses that are attributable to Contractor's Work, acts or omissions, or the Work, acts or omissions of any of its Subcontractors, or any other entity or party for whom Contractor may be responsible ("contractor General Liability obligation"). The contractor General Liability obligation will not be insured by the OCIP Coverage's.

8. Additional Insurance Required From Enrolled Parties and Excluded Parties. Contractor shall obtain and maintain, and shall require each of its Subcontractors of every tier to obtain and maintain, the insurance coverage specified in this Section in a form and from insurance companies reasonably acceptable to the WisDOT. The insurance limits may be provided through a combination of primary and excess policies, including the umbrella form of policy. The insurance required by this Section shall conform to the WisDOT's requirements outlined in the Insurance Manual and be written by companies authorized to do business in the state of Wisconsin with an **AM Best rating of A- or better**. Contractor shall provide certificates of insurance coverage to the WisDOT as required below and by the Insurance Manual.

As to Enrolled Parties, the Workers' Compensation, Employer's Liability, and Commercial General Liability insurance required by this section shall only be for operations away from the Project Site (as defined by OCIP Policies) . 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.

TYPE OF INSURANCE MINIMUM LIMITS REQUIRED

1. Commercial General Liability insurance shall be endorsed to include Blanket Contractual Liability coverage.
    a. $2,000,000 Combined Single Limits per occurrence with an annual aggregate limit of not less than $4,000,000.
    b. The OCIP Coverage's shall exclude blasting or explosion operations. If blasting or explosion operations are used in connection with the Work, Commercial General Liability insurance shall not contain an exclusion for blasting or explosion and shall be provided in limits established by the WisDOT at the time such blasting or explosion methods are elected. Such coverage shall apply to operations whether the operations occur on the Project site or away from the Project site.
    c. Wisconsin Department of Transportation, their respective officers, agents and employees, and any additional entities as the WisDOT may request as additional insureds must be named as an Additional Insured which shall include: i) liability arising out of the Work performed by the named insured; ii) liability arising out of the supervision of the Work performed by or operations of the named insured; and iii) liability of the acts or omissions of the Additional Insureds relating to Work performed by the named insured for the Project, except for sole negligence of the Additional Insureds iv) will state that coverage is afforded on a primary and non-contributory basis.
    d. Ongoing Construction Operation(s) in effect at all times while work is being performed by Contractor;
    e. Subcontractors and Independent Contractors (if any);

f. Products and Completed Operations, including coverage applicable to additional insureds (as required by this agreement) with Completed Operations coverage to remain in force, whether by endorsement or renewal of coverage, including the Contractor, any party required to be indemnified by this Contract and any other party required by this Contract to be named as an additional insured, for at least two (2) years from the date of final completion of the Project and WisDOT's acceptance of the work; and

g. Explosion, collapse, and underground hazards.

h. Contractual Liability (insured contract) coverage sufficient to meet the requirements of this Contract (including defense costs and attorney's fees assumed under contract);

i. Personal and Advertising Injury Liability coverage (with the standard contractual and employee exclusions deleted);

j. Notice and Knowledge of Occurrence conditions limited to the knowledge of relevant corporate officers or risk managers with an Unintentional Errors and Omissions provision (providing that the insurer may not deny coverage unless it can show that it has been prejudiced by a failure of the insured to comply with a condition of the policy); and

k. CG 22 79 07 98 (or equivalent) is the only acceptable Professional Liability Exclusion.

l. Operations performed within 50' of railroad

2. Workers' Compensation and Employer's Liability insurance.

   a. Workers' Compensation Limits: Statutory Limits

   b. Employer's Liability limits:

      $1,000,000 Bodily Injury by Accident, each accident

      $1,000,000 Bodily Injury by Disease, each employee

      $1,000,000 Bodily Injury by Disease, policy limits

      Terms and conditions shall include:

      - USL&H – where applicable.
      - Jones Act – where applicable.
      - All states endorsement - where applicable.

3. Commercial Automobile Liability insurance as specified by Insurance Services Office (ISO), form CA 00 01, symbol 1 (any auto) with the following limits and endorsements:

   a. No Trucking or Hauling: $1,000,000 Each Accident

   b. Trucking or Hauling (Non Hazardous Materials): $2,000,000 Each Accident

   c. Trucking or Hauling Hazardous Materials: $5,000,000 Each Accident with an MCS 90 Endorsement and ISO Endorsement CA 99 48.

4. For any work over water, whether deemed navigable or otherwise, Contractors Pollution Liability insurance with $2,000,000 per occurrence and $2,000,000 aggregate policy limits.
5. Aviation and/or Watercraft Liability insurance, as appropriate, including hull and protection and indemnity for watercraft, or other insurance, in form and with limits of liability and from an insuring entity reasonably satisfactory to the WisDOT.

Contractor's failure to procure or maintain the insurance required by this Section and to assure all its Subcontractors of every tier maintain the required insurance during the entire term of the contract shall constitute a material breach of this contract under which the WisDOT may immediately suspend or terminate this contract or, at its discretion, procure or renew such insurance to protect the WisDOT's interests and pay any and all premiums in connection therewith, and withhold or recover all monies so paid from the Contractor.

Contractor shall provide the WisDOT with certificates of insurance as evidence that required coverage's for insurance detailed in this section are in force. The bidder shall provide certificates of insurance in their pre-qualification statement as specified in 102.1.

Contractor shall notify the WisDOT at least 60 calendar days before a cancellation or material change in coverage and only obtain coverage from insurance companies licensed to do business in the state that have an AM Best rating of A- or better. The cost of providing the required insurance coverage and limits is incidental to the contract. The WisDOT will make no additional or special payment for providing insurance.

The above insurance requirements shall apply with equal force whether the Contractor or a Subcontractor, or anyone directly or indirectly employed by either, performs the work under the Project.

9. Additional Insureds:

All insurance required by this agreement (excluding only workers compensation insurance) shall name WisDOT, all parties required to be indemnified by this Contract and all other parties as reasonably requested by the WisDOT, as additional insureds. All policies (including primary, excess and/or umbrella) must provide that coverage shall be primary and non-contributory to any insurance maintained by the Contractor or the additional insured, all of which shall be stated on the Certificate of Insurance provided by the Contractor. The Additional Insured Endorsement shall be on Form CG 20 10 11/85, or CG 20 33 10/01 plus CG 20 37 10/01, or equivalent, and shall include ongoing and completed operations coverage, which shall not contain any restrictions**.**

IN THE EVENT THAT THE LAW OF THE STATE IN WHICH THE PROJECT IS LOCATED (OR APPLICABLE LAW) LIMITS THE ADDITIONAL INSURED COVERAGE THAT WISDOT MAY REQUIRE FROM THE CONTRACTOR, THEN THE CONTRACTOR SHALL BE REQUIRED TO OBTAIN ADDITIONAL INSURED COVERAGE TO THE FULLEST EXTENT OF COVERAGE AND LIMITS ALLOWED BY APPLICABLE LAW AND THIS CONTRACT SHALL BE READ TO CONFORM TO SUCH LAW.

10. **Contractor Representations and Warranties to the WisDOT.** Contractor represents and warrants to the WisDOT or behalf of itself and its Subcontractors:

    a. That all information it submits to the WisDOT or the OCIP administrator shall be accurate and complete.

    b. That Contractor, on behalf of itself and its Subcontractors, has had the opportunity to read and analyze copies of the OCIP binders and specimen policies that are on file in the WisDOT's office. Any reference or summary in the contract, this special provision, the Insurance Manual, or elsewhere in any other contract document as to amount, nature, type or extent of OCIP coverage's and/or potential applicability to any potential claim or loss is for reference only. Contractor and its Subcontractors have not relied upon said reference but solely upon their own independent review and analysis of the OCIP coverage's in formulating any understanding and/or belief as to amount, nature, type or extent of any OCIP coverage's and/or its potential applicability to any potential claim or loss.

    c. That the costs of OCIP coverage's were not included in Contractor's bid or proposal for the Work, the contract price, and will not be included in any change order, change modification, or any request for payment for the Work or extra work. The "costs of OCIP coverage's" is defined as the dollar amount of premiums, costs and fees the Contractor and its Subcontractors would have paid its insurance carrier to insure the operations and exposures which are being insured under the OCIP.

    d. That Contractor acknowledges that the WisDOT will not pay or compensate Contractor or any Subcontractor, in any manner, for costs of OCIP coverage's or for "insurance costs" except as specifically required to be maintained by Contractor by the terms of this special provision.

11. **Severability of Interests (Cross Liability):**

    All insurance required by this agreement (excluding only workers compensation insurance) shall include a provision or be endorsed to provide that, inasmuch as the policy is written to cover more than one insured, all terms, conditions, insuring agreements and endorsements, with the exception of limits of liability, shall operate in the same manner as if there were a separate policy covering each insured. No cross liability exclusions are permitted and there may not be any restrictions in any policies that limit coverage for a claim brought by an additional insured against a named insured. Also, there shall not be any provision in any insurance policy which

excludes or conditions coverage on the existence of a contract or other agreement requiring insurance.

12. Breach of Insurance Requirements:

The Contractor's failure to obtain and maintain insurance coverages as required by this agreement shall constitute a material breach of the Contract. In such event WisDOT may at its option: (i) terminate the Contractor for default; or (ii) purchase such coverage and backcharge the premium and associated costs to the Contractor; or (iii) at their respective option, WisDOT and/or an additional insured can require the Contractor and/or its Subcontractors to pay for attorney's fees, expenses, damages and liability as a result of any claim or lawsuit to the extent coverage would have been provided to them under the Contractor's insurance but for the Contractor's breach WisDOT has the right to backcharge the Contractor for such sums. Furthermore, to the extent of their respective interest, the Insurers of those entities that were to be included as additional insureds are deemed to be third-party beneficiaries of the insurance procurement obligation.

13. Subcontractor:

Before permitting any Subcontractor to perform work under a subcontract, the Contractor shall require by written contract that the Subcontractor maintain insurance in like form and amounts to that required herein. The Contractor shall be responsible to ensure that each Subcontractor maintains insurance in like form and amounts and shall provide evidence of same if requested. Contractor shall provide copies of its Subcontractor's certificates of insurance coverage to WisDOT or the OCIP Administrator upon request.

14. Notice of Cancellation:

All insurance coverages required by this agreement shall contain a provision that the coverage afforded thereunder cannot be cancelled, non-renewed, allowed to lapse, or have any restricted modifications added unless at least thirty (30) days prior written notice has been given to WisDOT. The Contractor is responsible to provide replacement coverage conforming with the requirements of this agreement in the event of any cancellation, non-renewal or modification of any insurance coverages required by this agreement.

15. Limits of Insurance:

The Contractor's insurance coverage and any additional insured coverage provided to WisDOT and any additional insured shall be for the full amount of any loss up to the policy(s) limits of liability and shall not be limited to the minimum insurance requirements of this Contract. The Contractor is responsible for notifying its insurance carriers in the event of a loss or potential loss involving coverage for the additional insureds. However, this does not prohibit any additional insureds from reporting a claim directly to the Contractor's insurance carriers.

16. Deductibles/Denial of Claims:

The Contractor shall be responsible, at no additional cost to WisDOT, for the payment of any deductibles or self-insured retention in connection with the insurance coverages required by this agreement, both for itself and all additional insureds. Any self-insured retention or deductible must be declared in writing at the time the Contractor submits its bid and must be specifically approved by WisDOT prior to execution of the Contract. The Contractor shall be responsible for any loss arising out of coverage denial by its insurance carrier. The Contractor may not procure policies that limit who may pay the SIR or deductible; rather, any SIR shall be payable by either the Contractor or the Subcontractor and the Contractor may not have a policy that prevents WisDOT from accessing or triggering coverage unless the SIR is paid by the Contractor. Contractor shall also ensure that similar conditions are incorporated into all subcontracts. In the event that WisDOT is required to pay any deductible and/or SIR to access any insurance policy, Subcontractor shall promptly reimburse the Contractor for such payment.

17. No Waiver of Insurance Requirements:

IT IS EXPRESSLY AGREED BETWEEN WISDOT AND THE CONTRACTOR THAT THE FAILURE OF WISDOT TO REQUIRE OR VERIFY COMPLETE AND TIMELY PERFORMANCE OF THE CONTRACTOR'S OBLIGATIONS UNDER THIS CONTRACT SHALL NOT BE A WAIVER BY WISDOT OF ANY RIGHT OF WISDOT TO REQUIRE THE CONTRACTOR TO COMPLY WITH THESE INSURANCE REQUIREMENTS AND/OR TO SEEK DAMAGES BECAUSE OF THE CONTRACTOR'S FAILURE TO COMPLY WITH THE INSURANCE REQUIREMENTS IN THIS CONTRACT.

18. Audits. Contractor agrees that the WisDOT, the OCIP administrator, and/or any OCIP insurer may audit Contractor's or any of its Subcontractor's Project payroll records, books and records, insurance coverage's, insurance cost information, or any other information that Contractor provides to the WisDOT, the OCIP administrator, or the OCIP insurers to confirm their accuracy and to assure that costs of OCIP coverage's are not included in any payment for the work.

19. The WisDOT's Election to Modify or Discontinue OCIP. The WisDOT may, for any reason, modify the OCIP coverage's, discontinue the OCIP, or request that Contractor or any of its Subcontractors withdraw from the OCIP upon thirty (30) days written notice. Upon such notice Contractor and/or one or more of its Subcontractors, as specified by the WisDOT in such notice, shall obtain and thereafter maintain at the WisDOT's expense, Contractor Maintained Coverages (or a portion thereof as specified by the WisDOT) of the OCIP coverage's. The form, content, limits of liability, cost, and the insurer issuing such replacement insurance shall be subject to the WisDOT's approval.

20. **Withhold of Payments.** The WisDOT may withhold from any payment owing to Contractor the costs of OCIP coverage's if included in a request for payment. In the event the WisDOT audit of Contractor's records and information as permitted in the Contract, this special provision, or other contract documents reveals a discrepancy in the insurance, payroll, safety, or any other information required by the contract documents to be provided by Contractor to the WisDOT, or to the OCIP administrator, or reveals the inclusion of costs of OCIP coverage's in any payment for the work, the WisDOT will have the right to full deduction from the Contract Price of all such costs of OCIP coverage's and all audit costs. Audit costs will include but not be limited to the fees of the OCIP administrator, and the fees of attorneys and accountants conducting the audit and review. If the Contractor or its Subcontractors fail to timely comply with the provisions of this special provision or the requirements of the Insurance Manual, the WisDOT may withhold any payments due Contractor and its Subcontractors until such time as they have performed the requirements of this special provision. Such withholding by the WisDOT will not be deemed to be a default hereunder.

21. **Waiver of Claim and Waiver of Subrogation:**

    Where permitted by law, Contractor hereby waives all rights of recovery under subrogation because of deductible clauses, inadequacy of limits of any insurance policy, limitations or exclusions of coverage, or any other reason against the WisDOT, the State of Wisconsin and any of its Agencies or Officer's, Agents or employees including without limitation, the OCIP administrator, its or their officers, agents, shareholders or employees of each, if any, and any other Contractor or Subcontractor performing work or rendering services on behalf of the WisDOT in connection with the planning, development and construction of the Project, and Contractor shall require that all Contractor maintained insurance coverage related to the work include clauses providing that each insurer shall waive all of its rights of recovery by subrogation for claims described above.

22. **Waiver of Subrogation.** Where permitted by law, Contractor shall also require that all Contractor maintained insurance coverage related to the work include clauses providing that each insurer shall waive all of its rights of recovery by subrogation against the WisDOT, the State of Wisconsin and any of its Agencies or Officer's, Agents or employees including without limitation, the OCIP administrator, its or their officers, agents, shareholders or employees of each, if any . Contractor shall require similar written express waivers and insurance clauses from each of its Subcontractors. A waiver of subrogation shall be effective as to any individual or entity even if such individual or entity (a) would otherwise have a duty of indemnification, contractual or otherwise, (b) did not pay the insurance premium directly or indirectly, and (c) whether or not such individual or entity has an insurable interest in the property damaged.

24. **Conflicts**. In the event of a conflict, the provisions of this special provision shall govern, then the provisions of the contract and its other related contact documents, then the provisions of the Insurance Manual.

25. **Safety.** Contractor shall be solely responsible for safety on the Project and safety relating to the Work. Contractor shall establish a safety program that, at a minimum, complies with all local, state and federal safety standards, and any safety standards established by the WisDOT for the Project, including the Project Safety and Health Plan Manual.

SEF-ZOO IC 12_1031

36. Notice to Contractor – OCIP Exclusions.

The Owner Controlled Insurance Program (OCIP) insurance coverage excludes environmental/abatement work, including but not limited to hazardous materials/chemicals, lead and other materials considered hazardous – see Article – Owner Controlled Insurance Program for additional information. Environmental/abatement work must be performed by a qualified contractor who will not be enrolled in the OCIP. The qualified subcontractor must carry Construction Pollution Liability insurance with limits of at least $1,000,000 per Occurrence and $2,000,000 Aggregate.

Only payroll from non-environmental work shall be reported under the OCIP. All payroll generated from environmental/abatement work should not be reported.

Questions regarding this or any other aspects of OCIP should be directed to Kevin Gehrmann at (608) 267-7722, or Kevin.Gehrmann@dot.wi.gov.

SEF Rev. 13_0318

37. Pay Plan Quantity.

A Bid Items Designated as Pay Plan Quantity

Replace standard spec 109.1.1.2 with the following:

If the schedule of items designates a bid item with a **P** in the title, the department will not measure that bid item. The department will use the plan quantity, the approximate quantity shown on the schedule of items, for payment unless a contract revision affects a designated bid item.

If the engineer revises the contract under standard spec 104.2, the department will adjust the quantity of designated items that are affected by the revised work. The engineer will adjust the affected quantity, with a contract modification as defined in standard spec 101.3, regardless of the magnitude of the revised work, which may result in either an increase or a decrease from the quantity shown on the schedule of items. The department will measure revised work as specified in standard spec 109.1.1.1. If the engineer revises

the contract to eliminate a designated item, the engineer will not pay for the designated item, except as specified in standard spec 109.5.

The approximate quantity shown on the schedule of items for a designated item is for information only and only an estimate. The engineer makes no guarantee that the quantity, which can be determined by computations based on contract information, will equal the approximate quantity shown on the schedule of items. The engineer will not make a quantity adjustment for discrepancies.

SEF Rev. 12_0510

38. Clearing and Grubbing, Emerald Ash Borer.

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:

(a) 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.
(b) 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.
(c) 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.
(d) White ash (F. americana) tends to occur primarily in upland forests, often with Acer saccharum.

The quarantine of ash trees includes all horticultural cultivars of the species listed above.

Note that blue ash twigs are 4-sided. All other Wisconsin ash trees have round stems. Also, 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 florescent lime flagging tied around the trunk perimeter.

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 subparagraph (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 subparagraph (1):

The emerald ash borer, Agrilus planipennis Fairmaire in any living stage.

Ash trees.

Ash limbs, branches, and roots.

Ash logs, slabs or untreated lumber with bark attached.

Cut firewood of all non-coniferous species.

Ash chips and ash bark fragments (both composted and uncomposted) larger than one inch in diameter.

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
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.

May be buried on site within the right-of-way in accordance to standard spec 201.3 (14).

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).

May be trucked to a licensed landfill within the quarantined zone with the engineer's approval in accordance to standard spec 201.3 (15).

Burning chips is optional if in compliance with standard spec 201.3.

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.

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
May be buried without chipping within the existing right-of-way or on adjacent properties in accordance to standard spec 201.3 (14)(15).

May be trucked to a licensed landfill within the quarantined zone with the engineer's approval in accordance to standard spec 201.3 (15).

Burning is optional if in compliance with standard spec 201.3.

Ash logs, branches, and roots must be disposed of immediately and may not 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
Supplement standard spec 632.2.2 with the following:

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 of Agriculture, Trade, and Consumer Protection (DATCP) website at **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 DATCP. Persons may request update notices by calling (608) 224−4573, by visiting the DATCP 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 DATCP website at **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 DATCP. Persons may request update notices by calling (608) 224−4573, by visiting the DATCP website, or by writing to the above address.
201-SER1 (20100401)

39. Removing Old Culverts and Bridges

Supplement standard spec 203.3.1 with the following:

(5) Structure Removal Site Safety Plan
Prepare a Structure Removal Site Safety Plan covering all structure removal work included in the contract. Maintain posted copies of the Structure Removal Site Safety Plan at the site in the project field office. Provide two copies of the Structure Removal Site Safety Plan to the engineer at least four weeks prior to beginning removal work.

(6) Structure Removal Plans

Prepare a structure removal plan for each structure removal included in the contract indicating the methods and sequence of demolition. The contractor is strongly encouraged to examine existing structure plans and visit the site prior to preparing a structure removal plan. The contractor shall be responsible for the methods and sequence of demolition, including effects on the overall stability of each structure being removed. At a minimum, the plan shall include:

1. The name of the professional engineer, registered in the state of Wisconsin who will be on site and monitor the removal of existing structures as required in this specification.

2. The name of the contractor's on-site-employee designated in responsible charge of all removal operations.

3. The removal method and sequence of removal for each individual structure, including the staging of bridge removals.

4. Analysis of the stability of the structure based on the methods and sequence of demolition proposed, to ensure that the structure is demolished in a safe and controlled manner. The analysis computations shall be prepared, signed and sealed by a professional engineer registered in the State of Wisconsin.

5. Design and details of temporary supports, shoring or temporary bracing, if required to stabilize portions of partially remaining structures during the removal sequence or support partially remaining structures after staged removals. The removal plan shall include design computations and detail drawings for all temporary supports, shoring and bracing that indicate the exact placement of the temporary supports, shoring or bracing; verification of design loads; attachment details; and methods for the safe transfer of loads from existing structural elements to be removed to the temporary supports, shoring, or bracing. Temporary support, shoring, or bracing design computations and drawings details are to be prepared, signed and sealed by a professional engineer registered in the State of Wisconsin.

6. Design and details of temporary support foundations. Foundation design shall include evaluation of expected foundation settlement and the effect that this will have on the structure being supported. Temporary support foundation design computations and drawing details are to be prepared, signed and sealed by a professional engineer registered in the State of Wisconsin.

7. Equipment type and locations of equipment on the structure(s) or adjacent roadways during the removal operations

8. Locations and type of work to be performed directly adjacent to traffic.

9. Details and locations of protective covers and other measures to ensure that people, property and improvements will not be endangered or damaged as a result of the removal operations. This shall include methods for protecting any pavement surfaces including shoulders, concrete barriers, and other highway features.

10. Methods of removal, proposed haul route(s) and disposal, the proposed haul route, method of hauling, and proposed destination.

11. A schedule of anticipated roadway and lane closures to accommodate removal operations. Include the timing of individual lane or temporary roadway closures and the nature of removal operations that will be performed during the lane or roadway closures.

12. Acknowledgement that the contractor and removal design engineer responsible for preparing the removal plan have visited the site and reviewed the existing structure plans in preparing the removal plan.

(7) Structure Pre-Removal Meetings

After submission of the Structure Removal Site Safety Plan and Structure Removal Plan(s), schedule and conduct structure pre-removal meetings at a time agreed to by the engineer. Hold structure pre-removal meetings at least three working days prior to beginning structure removal activities. If the engineer agrees in advance, multiple structure removals can be combined and discussed at one structure pre-removal meeting. Otherwise schedule and conduct a separate structure pre-removal meeting for each structure to be removed.

Supplement standard spec 203.3.2.1 with the following:

(4) Perform structure removals in accordance to the submitted Structure Removal Site Safety Plan and Structure Removal Plans.

Supplement standard spec 203.5.1(2) with the following:

Payment includes preparation and submittal of a Structure Removal Site Safety Plan; preparation and submittal of Structure Removal Plans and performing all structure removal work in accordance to the submitted plans.

40. Pavement Breaking Equipment.

Use only hydraulic pavement breaking equipment for breaking pavement within 300 ft. of any building. Do not use guillotine, drop hammer, falling weight, gravity impact breakers or equivalent equipment.

SEF Rev. 13_0115

41. Removing Concrete Barrier.

Supplement standard spec 204.3.2.2 with the following:

Under the Removing Concrete Barrier bid item, remove barrier to the depth and location the plans show. Removal includes full-width and full-height vertical saw cutting. Removal includes sawing per standard spec 690.

Supplement standard spec 204.5.1(2) with the following:

Payment for Removing Concrete Barrier is full compensation for full-width and full-height saw cutting of existing barrier and sludge removal.

42. Removing or Abandoning Miscellaneous Structures.

Standard spec 204.5.1(3) is deleted in its entirety and replaced with the following:

When backfilling with Backfill Granular as specified in this special provision articles or as directed by the engineer, the item Backfill Granular is considered incidental to the appropriate bid item.

At locations where Backfill Granular is not specified, contractor may choose to use either Backfill or Backfill Granular and no separate payments will be made for using Backfill Granular.

SEF Rev. 13_0122

43. Roadway Excavation.

Add the following to standard spec 205.5.2(1):

Provide the department with an earth flow diagram within 30 calendar days of receiving the contract Notice to Proceed.

Identify all excavation required for the project, shrinkage and swell factors, anticipated material available for embankment if stockpiling or off-site disposal is required, and location of material to be placed in embankment on the earth flow diagrams.

The earth flow diagram will show placement of roadway embankment utilizing roadway and drainage excavation or excavation for structures in the following priority order:

1) Special excavation
2) Roadway excavation
3) Drainage excavation
4) Structure excavation

Any deviation from this priority placement due to sequencing of removals or other staged constraints will require approval from the engineer, and will require an update to the earth flow diagram.

(SEFZOO-20130430)

44. QMP Subgrade.

A Description

This special provision describes requirements for subgrade materials within the roadway as defined in standard spec 101.3. Conform to standard spec 207 as modified in this special provision for all work within the roadway and railway foundation at the following locations:

-USH 45, all ramps, local roads, and parking lots

Provide and maintain a quality control program. A quality control program is defined as all activities, including process control inspection, sampling and testing, documentation, and necessary adjustments in the process that are related to the construction of subgrade which meets all the requirements of this provision.

Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes 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

B Materials

B.1 Quality Control Plan

Submit a comprehensive written quality control plan to the engineer at or before the pre-construction meeting. Do not perform grading work before the engineer reviews and accepts the plan. Construct the project as the plan provides.

Do not change the quality control plan without the review and approval of the engineer. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in the contractor's laboratory 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 process that will be used, and action time frames.
3. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.
4. Location of the QC laboratory, retained sample storage, and control charts and other documentation.

5. A summary of the locations and calculated quantities to be tested under this provision.
6. An explanation regarding the basis of acceptance for material that cannot be tested by nuclear methods due to a high percentage of oversized particles.

B.2 Personnel

Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians. Have a grading technician certified under HTCP at level I present at the site during all subgrade preparation, fill placement, compaction, and nuclear testing activities. Have a nuclear density technician certified under HTCP at level I perform field density and field moisture content testing.

B.3 Laboratory

Perform quality control testing in a department-qualified laboratory. Obtain information on the Wisconsin laboratory qualification program from:

Materials Laboratory
3502 Kinsman Boulevard
Madison, Wisconsin 53704-2583
Telephone: (608) 246-7938
http://www.dot.state.wi.us/business/engrserv/lab-qualification.htm

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B.4 Equipment

Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and maintain a calibration record at the laboratory.

Furnish nuclear gauges from the department's approved product list at http://www.atwoodsystems.com/materials. Ensure that the gauge manufacturer or an approved calibration service calibrates the gauge within 12 months before using it on the project. Retain a copy of the calibration certificate with the gauge. Nuclear density gauge calibration verification is required daily when earthwork construction operations require testing under this special provision article. This calibration verification shall be performed using the department's "Validator" apparatus which is located at the Zoo Interchange Construction Field Office: 2424 S. 102nd St., West Allis, Wisconsin 53227. The contractor must establish a standard gauge reading for the "Validator" using the ten test average method. The source emitter depth for calibration verification, in the direct transmission mode, will be determined by the engineer. This procedure will establish the "Validator" apparatus, as the contractor's project reference site.

Conform to ASTM D 2950 and CMM 8.15 for density testing and gauge monitoring methods. Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Perform each test for 4 minutes of nuclear gauge count time.

B.5 Soil Source Study

Conduct and submit a soil source study before beginning of grading operations. Ensure that this study identifies each distinct soil type on the project within the top 15 feet of cut areas and all borrow material. Provide the in-bank natural moisture content for each soil. Develop moisture-density curves for each identified soil type by utilizing AASHTO T 99 with a minimum of 5 individual points, and a zero air voids curve at a specific gravity of 2.65. If the specific gravity is not considered to be equal to 2.65, use the specific gravity considered appropriate for the material. Specific gravity tests may need to be performed to confirm the value used for generation of the zero air voids curve. Determine the maximum density and corresponding optimum moisture level for each soil type. Develop a site-specific family of Proctor curves for this contract from the completed soil source study and submit to the engineer for review and acceptance.

Perform characterization tests on each of the soil types selected for the soil source study. The tests for roadway (and railway) include AASHTO T 89 (ASTM D4318), AASHTO T 90 (ASTM D4318), AASHTO T 27 (ASTM C136), and AASHTO T 11 (ASTM C117). Classify each soil type selected according to the AASHTO soil classification system based on the characterization tests. Do not begin grading operations until the engineer accepts the soil source study.

Use the soil types identified in the soil source study with corresponding maximum densities and optimum moisture values to determine the compaction compliance on the project. Continue the soil source study in those areas of cuts greater than 15 feet that were not accessible during the initial study. Include data on additional soil types if project conditions change. Ensure that tests of additional soil types are complete and the engineer accepts the results before incorporating the material into the roadway foundation.

Split each Proctor sample and identify so as to provide comparison with the department's test results. Unless the engineer directs otherwise, retain the QC split samples for 14 calendar days and promptly deliver the department’s split samples to the department at:

Regional Materials Laboratory
935 S. 60th Street
West Allis, Wisconsin 53214
Telephone: (414) 266-1158

Retain and identify 2 representative samples of each Proctor. Submit one sample to the engineer. Retain one sample on site for use when performing textural identification.

B.6 Quality Control Documentation

B.6.1 Control Charts

Maintain separate control charts for the field density and field moisture content of each grading area. Designate grading areas within the project as follows:

- Embankment portions of the project, except within 200 feet of bridge abutments.
- Embankment within 200 feet of bridge abutments.
- Subgrade cut portions of the project.

- Embankment in pipe culvert, sewer and waterline trenches.
- Structure and granular backfill placed at bridge abutments.
- Embankments of the project where embankments are 20 feet or higher regardless of location to be known as special compaction area.

Ensure that all tests are recorded and become part of the project records. Plot required test results on the control charts. Include random and engineer-requested testing but only include the contractor's randomly selected QC test results in the 4-point running average. The contractor may plot other contractor-performed process control or informational tests on the control charts, but do not include them in 4-point running averages.

Post control charts in an engineer-approved location and update daily. Ensure that the control charts include the project number, the test number, each test element, the applicable control limits, the contractor's individual test results, the running average of the last 4 data points, and the engineer's quality verification test data points. Use the control charts as part of a process control system for identifying potential problems and assignable causes. Format control charts according to the CMM.

Submit control charts to the engineer in a neat and orderly manner within 10 business days after completing subgrade construction.

B.6.2 Records

Document all observations, inspection records, adjustments to fill placement procedures, soil changes, and test results daily. Note the results of the observations and inspection records as they occur in a permanent field record. Density test locations shall be identified by a specific test number and include horizontal and vertical control for reference as noted in Section B.7.1.

Provide copies of the field density and field moisture running average calculation sheets, the one-point Proctor tests, records of procedure adjustments, and soil changes to the engineer daily.

Submit original testing records to the engineer in a neat and orderly manner within 10 business days after completing subgrade construction.

B.7 Contractor Testing

B.7.1 General

Have a grading technician certified under HTCP at level I present during all subgrade preparation, fill placement, compaction, and testing. Have a nuclear density technician certified under HTCP at level I perform the testing for field density and field moisture content. During subgrade construction, use sampling and testing methods identified in the CMM to perform the required tests at randomly selected locations at the indicated minimum frequency for each grading area.

Determine the cubic yards for testing based on a total load count system the engineer and contractor agree to.

For each test, provide the cubic yards represented and the test location to within 2 feet horizontally and 0.5 feet vertically. Use project stationing to determine horizontal location and grade stakes to determine vertical location.

Test areas of suspect compaction or areas which appear to be nonconforming as determined by the engineer.

B.7.2 Field Density and Field Moisture

Perform the field density and field moisture tests using the nuclear density meter method according to AASHTO T 310. Ensure that each field density test material is related to one of the specific soil types identified in the soil source study in determining the percent compaction. Use textural identification as the primary method of establishing this relationship. Utilize the representative samples retained from the soil source study when performing the textural identification. Use a coarse particle correction according to AASHTO T 224.

If field density and field moisture tests cannot be performed by the nuclear density method due to a high percentage of oversized particles as determined according to AASHTO T 99 for highway embankments, observe the placement of the embankment and document the basis of acceptance. Document daily quantities of untested embankment and locations where untested embankment is placed, and keep a cumulative quantity of untested embankment material for the duration of the project. Include the daily documentation and a summary of the cumulative quantity of untested embankment material with the project records.

B.7.3 One-Point Proctor

Obtain a representative sample of the fill material and test according to AASHTO T 272. Compare the sample to the curves developed in the soils source study to determine the maximum dry density and optimum moisture. Use the appendix for AASHTO T 272 as a guide in this determination.

B.7.4 Testing Frequency

B.7.4.1 Subgrade Embankment portions of the project, except within 200 Feet of bridge abutments

Perform the required tests at the following frequencies:

Test	Minimum Frequency
Field Density and Moisture (AASHTO T 310)	One per 2,000 cubic yards of fill per lift or one test per grading area per day whichever yields the most tests.
One-Point Proctor (AASHTO T 272)	One per 9,000 cubic yards or when a change in fill material occurs.

B.7.4.2 Subgrade Embankment Within 200 Feet of Bridge Abutments

Perform the required tests at the following frequencies:

Test	Minimum Frequency
Field Density and Moisture (AASHTO T 310)	One per 1,000 cubic yards of fill per lift or one test per grading area per day whichever yields the most tests.
One-Point Proctor (AASHTO T 272)	One per 9,000 cubic yards or when a change in fill material occurs.

B.7.4.3 Subgrade Cut

Perform the required tests at the following frequencies:

Test	Minimum Frequency
Field Density and Moisture (AASHTO T 310)	One test per 1,000 linear feet of cut or one test per cut area whichever yields the most tests. The testing will be completed at the finished subgrade elevation.

B.7.4.4 Subgrade Embankment in Pipe Culvert, Sewer and Waterline Trenches

Perform the required tests at the following minimum frequencies per trench run between structures. Test trenches individually at the frequency listed below. For example, lateral lines and trunk lines are to be considered individual trenches:

Test	Minimum Frequency
Field Density and Moisture (AASHTO T 310)	One test per 100 CY of backfill placed per lift or one test per day whichever yields the most tests.
One-Point Proctor (AASHTO T 272)	One per 3,000 cubic yards or when a change in fill material occurs.

B.7.4.5 Structure and Granular Backfill at Bridge Abutments

Perform the required tests at the following minimum frequencies:

Test	Minimum Frequency
Field Density and Moisture (AASHTO T 310)	One test per 2 feet of vertical backfill height per abutment.
One-Point Proctor (AASHTO T 272)	One per 3,000 cubic yards or when a change in fill material occurs.

B.7.4.6 Embankments of the project where embankments are 20 feet or higher regardless of location to be known as special compaction area
Perform the required tests at the following minimum frequencies but exclude MSE wall backfill:

Test	Minimum Frequency
Field Density and Moisture (AASHTO T 310)	One per 2,000 cubic yards of fill per lift or one test per grading area per day whichever yields the most tests.
One-Point Proctor (AASHTO T 272)	One per 6,000 cubic yards or when a change in fill material occurs.

B.7.5 Compaction Zones
B.7.5.1 Subgrade Embankment portions of the project, except within 200 Feet of bridge abutments

Embankment material placed within 6 feet of the finished subgrade elevation is classified as upper zone material. Material placed more than 6 feet below the finished subgrade elevation is classified as lower zone material.

B.7.5.2 Subgrade Embankment Within 200 Feet of Bridge Abutments
All embankment material placed within 200 feet of bridge abutments is subject to the quality controls for upper zone material.

B.7.5.3 Subgrade Cut
Subgrade material in cut areas is subject to the quality controls for upper zone material.

B.7.5.4 Subgrade Embankment in Culvert Pipe Trenches
Material placed within culvert pipe trenches is subject to the quality controls for the zone that the material is located in.

B.7.5.5 Structure and Granular Backfill at Bridge Abutments
All backfill material placed adjacent to bridge abutments is subject to the quality controls for upper zone material.

B.7.5.6 Embankments of the project where embankments are 20 feet or higher regardless of location to be known as special compaction area

All embankment material placed where embankments are 20 feet or higher regardless of location is subject to the quality controls for upper zone material. Exclude MSE wall backfill.

For this contract, the station ranges where embankments are 20 feet or higher and require higher levels of compaction (special compaction) are as follows:

- Station 762WE+19.27 TO Station 765WE+17.16
- Station 744WF+93.56 TO Station 749WF+71.03
- Station 753WF+41.50 TO Station 759WF+00.85
- Station 765WG+16.47 TO Station 769WG+49.04
- Station 762WH+93.85 TO Station 764WH+72.04
- Station 766WH+47.46 TO Station 771WH+99.98
- Station 775WH+42.07 TO Station 776WH+66.28
- Station 778WH+21.86 TO Station 779WH+67.08

Also see plan notes identifying special compaction

B.7.6 Control Limits

B.7.6.1 Field Density

The lower control limit for field density measurements in the upper zone is a minimum of 95.0% of the maximum dry density as determined by AASHTO T 99 or T 272 for the 4-point running average and a minimum of 92.0% of the maximum dry density for any individual test.

The lower control limit for field density measurements in the lower zone is a minimum of 93.0% of the maximum dry density as determined by AASHTO T 99 or T 272 for the 4-point running average and a minimum of 90.0% of the maximum dry density for any individual test. The lower zone lower control limit for field density measurements is a minimum of 93.0% of the maximum dry density as determined by AASHTO T 99 or T 272 for the 4-point running average and a minimum of 92.0% of the maximum dry density for any individual test.

B.7.6.1.1 Field Density

Embankments of the project where embankments are 20 feet or higher regardless of location to be known as special compaction area excluding MSE wall backfill

The lower control limit for field density measurements in the special compaction area is a minimum of 98.0% of the maximum dry density as determined by AASHTO T 99 or T 272 for the 4-point running average and a minimum of 95.0% of the maximum dry density for any individual test.

B.7.6.2 Field Moisture Content

The upper control limit for the field moisture content in the upper and lower zones is 105.0% of the optimum moisture as determined by AASHTO T 99 or T 272 for the 4-point running average.

The lower control limit for the field moisture content in the upper and lower zones is 90.0% of the determined optimum moisture for the 4-point running average. There is no lower control limit for the field moisture of material having less than 5% passing the No. 200 sieve.

B.7.6.2.1 Field Moisture Content

Embankments of the project where embankments are 20 feet or higher regardless of location to be known as special compaction area excluding MSE wall backfill

The upper control limit for the field moisture content in the special compaction area is 105.0% of the optimum moisture as determined by AASHTO T 99 or T 272 for the 4-point running average. The lower control limit for the field moisture content in the special compaction area is 90% of the determined optimum moisture for the 4-point running average.

B.7.7 Corrective Action

Notify the engineer if an individual field density test falls below the individual test control limit. The subgrade in this area is unacceptable. Perform corrective actions, acceptable to the engineer, to improve the density of the subgrade material. After corrective action, perform a randomly located retest within the represented quantity to ensure that the material is acceptable. Each embankment lift shall be tested for compaction compliance before the next lift is placed.

Notify the engineer if the field density or field moisture running average point falls below the running average control limit for field density or outside the control limits for field moisture. The subgrade in this area is unacceptable. Perform corrective actions, acceptable to the engineer, to improve the quality of the material represented by the running average point. Retest each corrected area at a new random location within its represented quantity and determine a new 4-point running average. If the new running average is not acceptable, perform further corrective actions and retest at new random locations.

If the contractor's control data is proven incorrect resulting in a field density or field moisture point falling below the control limit for field density or outside the control limits for field moisture, the subgrade is unacceptable. Employ the methods described above for unacceptable material.

B.8 Department Testing

B.8.1 General

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 verification and independent assurance personnel for the project.

The department will provide field density and field moisture test results to the contractor on the day of testing. Test results from Proctor split samples will be provided to the contractor within 7 business days after the sample has been received by the department.

B.8.2 Verification Testing

The department will have an HTCP technician, or ACT under the direction of a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified for contractor testing personnel for each test being verified. The department will notify the contractor before testing so the contractor can observe QV testing.

The department will test field density and field moisture randomly at locations independent of the contractor's QC work. The department will use split samples for verification of Proctor testing. In all cases, the department will conduct the verification tests in a separate laboratory and with separate equipment from the contractor's QC tests.

The department will perform verification testing as follows:

1. The department will conduct verification tests on Proctor split samples taken by the contractor. These samples may be from the Soil Source Study or the one-point Proctor or sample locations chosen by the engineer from anywhere in the process. The minimum verification testing frequency is one per 90,000 cubic yards, with at least one for each soil type identified in the Soil Source Study.
2. The department will test the first split sample obtained by the contractor for the one-point Proctor. The engineer may select any contractor-retained sample for verification testing.
3. The department will conduct at least one verification test for field density and field moisture per 30,000 cubic yards.

Plot verification tests on the contractor's quality control charts as specified in B.6.1. Do not include verification tests in the 4-point running average.

If verification tests are within specified control limits, no further action is required. If verification tests are not within specified control limits, 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 sampling and testing procedures and equipment. Both parties will document all investigative work.

Correct all deficiencies. If the contractor does not respond to an engineer request to correct a deficiency or resolve a testing discrepancy, the engineer may suspend grading work until action is taken. Resolve disputes as specified in B.9.

B.8.3 Independent Assurance Testing

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, which 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.

Plot the independent assurance tests on the contractor's quality control charts as specified in B.6.1. Do not include independent assurance tests in the 4-point running average.

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 grading work until action is taken. Resolve disputes as specified in B.9.

B.9 Dispute Resolution

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.

If the project personnel cannot resolve a dispute and the dispute affects payment or could result in incorporating nonconforming 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 tests 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.

B.10 Acceptance

The department will accept the material tested under this provision based on the contractor QC tests unless it is shown through verification testing or the dispute resolution process that the contractor's test results are in error.

C (Vacant)

D (Vacant)

E Payment

Costs for furnishing 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.

45. 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
≤ 1500 tons	One test from production, load-out, or placement at the contractor's option[1]
> 1500 tons and ≤ 6000 tons	Two tests of the same type, either from production, load-out, or placement at the contractor's option[1]
> 6000 tons and ≤ 9000 tons	Three placement tests[2] [3]

[1] 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.

[2] For 3-inch material, obtain samples at load-out.

[3] 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 sublot 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:

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

[1] 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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46. Asphaltic Base.

A Description
Furnish materials for and prepare the asphaltic base in accordance to standard spec 315, except as modified herein.

B Materials
Supplement standard spec 315.2 with the following:

Furnish asphaltic mixture meeting the requirements specified for E-1 under standard spec 460.2.

Provide asphaltic material (PG 64-22) for this mix in accordance to standard spec 455
.

C Construction
Replace standard spec 315.3.1 with the following:

Conform to the general requirements for asphaltic pavements specified in standard spec 450, except as modified here in standard spec 315.3. Place the mixture in a single 3-inch (75 mm) compacted layer unless the engineer directs otherwise. Standard spec 460.3.2 shall not apply to this item.

If automatics break down during string line controlled placement, stop and suspend placement of the asphaltic base until the line and grade controls are restored.

C.2 Foundation
Prepare the foundation according to standard spec 211. Before placing asphaltic base, repair and re-compact rutted or disturbed areas of the foundation resulting from hauling or paving operations as specified in standard spec 211. If the contractor fails or neglects to perform the required repair of damaged foundation, the engineer may suspend paving operations until the satisfactory reconditioning of the foundation is performed.

C.3 Pavers
If the automatics break down during ski controlled placement, manual control may be used only until the end of that working day.

C.4 Mixture and Density Testing
Perform QMP testing work as designated in standard spec 460 for this item.

Sample the HMA material as soon as plant operations have stabilized, the sample shall be collected within the first hour of mix delivery. Nuclear density testing may commence after HMA mix acceptance results have been satisfactorily reported for the sample.

Replace standard spec 460.3.3.1 and standard spec 460.3.3.2 with the following:

The determination of density for asphaltic base shall be done by the Control Strip Method. A control strip shall be constructed at the beginning of work for each contract. Each control strip when acceptably compacted, which meets finish and smoothness requirements shall remain in place and become part of the completed pavement. The asphaltic base shall be composed of the same material and shall be of the same design as the mixture to be used in the rest of the work.

The control strip shall consist of 1000 feet of the asphaltic base mixture that contains a minimum of one QC test and twelve sites for nuclear density testing. Within the control strip, the department, using random numbers for sample determination, will identify twelve locations for density testing. Upon completion of the desired compaction for the control strip, nuclear density tests will be performed at the twelve locations. The nuclear densities will be direct readings and shall be taken without additional materials to aid in seating the gauge.

The Control Strip accepted density will be determined by calculating the median value of the random twelve nuclear density locations. The average difference between the Department's gauge and contractor's gauge must not exceed 1.5 pcf. As long as the gauges meet the 1.5 pcf requirement, the median value of the contractor's gauge readings will determine acceptance. Provide to the department test results within 4 hours for the QC sample and Control Strip acceptance density. The QC sample shall be taken randomly within the first 300 tons of production not to include the first 50 tons. The Control Strip acceptance density of 89.5% will validate the rolling pattern to be used for the remainder of the contract if the air voids from the QC sample fall between 3.5% to 5.0%. If the test results do not meet these minimum requirements, an investigation will result and a new control test strip will be required.

Mixture production will be stopped and an investigation initiated if any of the following conditions occur:

- There is a change in binder source;
- The previous day's maximum specific gravity average from QC testing varies by 0.020 from the value of the initial QC test;
- The overall blend changes have deviated from the original mix design by 20% or an individual aggregate by 10% and no aggregate size shall be deleted; or

- Any other condition occurs which in the judgment of the engineer would warrant the establishment of a new control strip density. Core samples may also be requested by the engineer to verify compaction or to indicate the need for another control test strip.

Incentive and Disincentive for HMA Pavement Density are not included with this item

D (Vacant)

E Payment
Supplement standard spec 315.5 with the following:

The department will adjust payment for asphaltic base for non conforming QMP HMA Mixtures as specified in standard spec 460.2.8.2.1.7.

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47. Concrete Maturity Testing.

A Description
This special provision requires using concrete maturity testing to determine strength for project control of concrete pavement, falsework removal, and structural concrete under the designated subsections as follows:

Duration of the curing period	415.3.12
Duration of the cold weather protection period	415.3.13
Opening to service	415.3.15
Removing falsework	502.3.4.2
Duration of the required curing period	502.3.8
Duration of the cold weather protection period	502.3.9
Opening to service	502.3.10.1

The requirement for determining strength by the concrete maturity testing method supersedes all provisions for strength determination by other methods or provisions based on equivalent days within those designated subsections. The concrete maturity testing requirement also applies to all other provisions referencing strength determination under these designated subsections.

B Materials
Provide a maturity testing system that uses data-encrypted sensor devices permanently embedded in the field-placed concrete. Data-encrypted sensors have a chip that records both temperature and time information that can be downloaded to a reading device not permanently attached to those sensors.

Provide the department with a maturity reading device for each maturity testing system utilized on the project. Devices provided for the department use will become department property under the contract.

C Construction

Develop a strength/maturity relationship for each concrete mix design used under the contract. Base that relationship on strength results of cylinders from pavement, appurtenant construction, ancillary concrete, or structural masonry units incorporated into the work and using those same mixes. Submit the maturity test results to the engineer for approval before proceeding with the next pour using that mix. Develop a new strength/maturity relationship every time the mix changes, when average daily temperature changes by 30º F (17º C) or more, or if engineer verification cylinder strength varies more than 10 percent from the required opening strength when tested at the calibrated opening maturity.

Conform to the department's procedure for developing the strength/maturity relationship, field calibration of the resulting curve, and for all maturity testing. Use a mix-specific datum temperature per Annex A1 of ASTM C1074. Develop data points for the strength/maturity relationship up to 120 percent of the highest required opening strength for each mix design.

For mainline concrete pavement placements, place two probes at the beginning of the day's placement and two probes at the end of the day's placement. Place at least one sensor for each 100 cubic yards (76 m^3) of concrete placed under non-pavement bid items. Place additional probes as the engineer directs at no additional cost to the department. The resulting concrete maturity test data, after engineer verification, will apply to concrete on the same project conforming to the following:

1. The same mix design as the test location.
2. Cured under conditions similar to or move favorable than that of the test location.
3. Placed on or before the time the test location was placed.

Each work week provide a set of three verification cylinders to the engineer for each strength/maturity field calibration curve currently in use on the project. The engineer will designate the sampling location for the verification cylinders. Provide two cylinders for compressive strength testing and one with a data-encrypted sensor embedded in its center for maturity evaluation. Cast and cure these cylinders on-site as the engineer directs and conforming to the requirements of ASTM 31 for field curing. Deliver them to the engineer promptly after attaining 50 percent of their opening maturity so the engineer can perform verification testing as closely as possible to the opening maturity level.

D (Vacant)

E Payment
No additional payment will be made by the department for maturity testing

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48. QMP Drilled Shafts.

A General
Perform this work in accordance to the requirements of standard specifications standard spec 501, standard spec 502, standard spec 701, standard spec 710 and standard spec 715 (conform to QMP Concrete Structures) except as deleted or additionally stipulated herein. This specification applies to all drilled shaft concrete placed under the following bid item:

SPV.0090.4450	Drilled Shaft Foundation 47.25-Inch
SPV.0105.4540	Trial Drilled Foundation Shaft

B Materials
B.1 Concrete Mix Physical Requirements
For drilled shaft construction, use high compressive strength concrete, and relatively high cement content in the concrete mix with 590 to 675 pounds of cement per cubic yard. Additives or admixtures, when they are used, shall be clearly indicated. The concrete shall be a flowable, non-segregating concrete mix that does not exhibit rapid slump loss.

Unit Weight of Concrete, AASHTO T 121: Weight must be between 140 to 160 lb/ft^3.

Fine and course aggregate shall conform to the requirements of standard spec 501.2.5 except use only course aggregate size No. 1.

Any chemical admixture(s) to be used, other than air-entraining agents or water reducers from the department approved list, must be approved in advance by the engineer and meet the requirements of AASHTO M 194, as documented by independent laboratory test reports.

The adjustment of dosage rates of concrete admixtures will be permitted without requiring a new mix design.

B.2 Slump
The trial mix design for drilled shaft concrete shall include a Slump Loss Graph, or Slump versus Time after Batching. The Slump Loss Graph of a proposed drilled shaft mix design illustrates the slump reducing slowly and still exceeding a 5-inch slump two hours after batching. Careful attention to concrete mix designs made with retarders must be exercised, and a close monitoring shall be implemented during construction to preclude rapid slump loss, not given enough time for concreting completion before the concrete mix sets.

Adding water to a ready-mix truck is prohibited. In cases in which part of the water of the concrete mix is added at the batch plant and the remaining water is added at the job site, the amount of water to be added at the job site shall be stated on the mix design sheet carried by the ready-mix truck driver. Testing of concrete will then be conducted on the resulting mix, and further water cannot be added at any time to increase the mix slump or to bring the mix to a specific slump. If after all the water permitted in the mix design has been added and the slump is still out of these specifications, the contractor must reject the mix. Repair or replace drilled shafts of questionable concrete design mixes at no additional cost to the department.

The following table presents the ranges for the slump.

	Slump Range in Inches		
Installation Method	Concrete Placed by Free Falling	Concrete Placed by Tremie	Concrete Placed by Pump
Dry Installation Method Uncased or Cased Excavations	7 to 9	8 to 9½	7 to 9½
Wet Installation Method Uncased or Cased Excavations	NA	8 to 9½	7 to 9½

B.3 Slurry

B.3.1 General

Slurry shall be a stable suspension of mineral in potable water or polymer slurry. Maintain a stable suspension at all times. Bentonite slurry shall be mineral slurry of powdered Wyoming or Dakota bentonite, with density, viscosity, and pH as specified in the table below:

Property at 68°F Units	At the Time of Slurry Introduction into the Drilled Shaft	Before Concrete Placement in the Drilled Shaft	Test Method
Density in Fresh Water (lb/ft^3) (a)	64 to 69	64 to 75	Density Balance
Viscosity (seconds per quart)	28 to 45	28 to 45	Marsh Funnel
pH	7 to 11	7 to 11	pH paper or meter
Sand Content (%) (b)	4 maximum	10 maximum	200 Sieve Retain

(a) At time of concreting, sand content shall not exceed 10 percent (by volume) at any point in the drilled shaft excavation; test for sand content as determined by the American Petroleum Institute.

(b) Bentonite slurry shall be disposed of offsite in approved manner as accepted by the WDNR.

The contractor may adjust the range of slurry properties when field trials and field tests show that modifications are necessary to bring the slurry to specifications.

Polymer slurry shall be a suspension of powdered polyacrylamide or vinyl polymer with the following characteristics:

Property at 68°F Units	At the Time of Slurry Introduction into the Drilled Shaft	Before Concrete Placement in the Drilled Shaft	Test Method
Density in Fresh Water (lb/ft^3) (a)	63 or less	63 or less	Density Balance
Viscosity (seconds per quart)	50 minimum	50 minimum	Marsh Funnel
pH	8 to 11	8 to 11	pH paper or meter
Sand Content (%)	2 maximum	10 maximum	200 Sieve Retain

(a) At time of concreting, sand content shall not exceed 10 percent (by volume) at any point in the drilled shaft excavation; test for sand content as determined by the American Petroleum Institute.

Obtain slurry samples from the midpoint and bottom of each drilled shaft prior to the placement of the reinforcing steel. Correct the slurry as necessary to meet the specification requirements.

B.3.2 Tests

To ensure that the results are within the ranges stated in the table above, perform the following tests on the mineral slurry supplied to the drilled shaft excavation at different depths within the drilled shaft using a slurry sampler.

B.3.2.1 Wisconsin Method of Test for Density of Slurry (Mud Weight)

Density shall be measured at 68°F. This test is identical to ASTM D 4380 except that the mineral slurry to be tested shall consist of processed attapulgite or bentonite clays, and the temperature of the slurry (using a 0-105°C thermometer) shall be measured and recorded on the drilling Mud Report form.

B.3.2.2 Wisconsin Method of Test for Viscosity of Slurry

The viscosity shall be measured at 68°F or a constant temperature with the Marsh Cone Method.

B.3.2.2.1 Scope

The Marsh Funnel or Marsh Cone is used to measure viscosity of drilling fluids. This test method has been adapted from Section 2 of the American Petroleum Institute (API) Recommended Practice FM8-RP13B-1: Standard Procedure for Field Testing Water-Based Drilling Fluids (FM 8-RP13B-1). Use of a direct-reading viscometer has been eliminated.

B.3.2.2.2 Equipment

Marsh Funnel: A Marsh Funnel is calibrated to out-flow 946 mL (one quart) of fresh water at a temperature of 21 ±3°C (70 ±5°F) in 26 ±0.5 seconds. A graduated cup is used as a receiver.

Specifications:

Funnel Cone Length	305 mm (12.0 in.)
Diameter	152 mm (6.0 in.)
Capacity to bottom of screen	1500 mL
Orifice Length	50.8 mm (2.0 in.)
Inside Diameter	4.7mm (3/16 in.)
Screen	12 mesh

Has 1.6 mm (1/16 in.) openings and is fixed at a level 19.0 mm (3/4 in.)

B.3.2.3 Wisconsin Method of Test for Sand Content of Slurry

B.3.2.3.1 Scope

The sand content of mud is the volume percent of particles larger than 74 microns. It is measured by a sand-screen set. This test method has been adapted from Section 5 of the American Petroleum Institute (API) Recommended Practice 13B-1: standard Procedure for Field Testing Water-Based Drilling Fluids (RP13B-1).

B.3.2.3.2 Equipment

200-mesh sieve, 63.5 mm (2.5 in.) in diameter.
Funnel to fit sieve.
Glass measuring tube marked for the volume of mud to be added. The tube is graduated from 0 to 20 percent in order to read directly the percentage of sand.

B.3.2.3.3 Procedure

Fill the glass measuring tube with mud to the “mud” mark. Add water to the next mark. Close the mouth of the tube and shake vigorously. Pour the mixture onto the clean, wet screen. Discard the liquid passing though the screen. Add more water to the tube, shake, and again pour onto the screen. Repeat until the tube is clean. Wash the sand retained on the screen to free it of any remaining mud.

Put the funnel upside down over the top of the sieve invert. Slowly tip the assembly and insert the tip of the funnel into the mouth of the glass tube. Wash the sand into the tube by playing a fine spray of water through the screen. Allow the sand to settle. From the graduations on the tube, read the volume percent of the sand.

Report the sand content of the mud by percent volume. Report the source of the mud sample, i.e. above shaker, suction pit, etc. Coarse solids other than sand will be retained on the screen (e.g., lost circulation material) and the presence of such solids should be noted.

B.3.2.4 Wisconsin Method of Test for pH of Slurry

pH shall be measured by the Electric pH meter or pH indicator paper strips.

B.3.2.4.1 Scope
Field measurement of drilling fluid (or filtrate) pH and adjustments to the pH are fundamental to drilling fluid control. This test method has been adapted from Section 7 of the American Petroleum Institute (API) Recommended Practice 13B-1: Standard Procedure for Field Testing Water-Based Drilling Fluids (RP 13B-1).

The recommended method for pH measurement of drilling fluid is with a glass electrode pH meter. This method is accurate and gives reliable pH values, being free of interference if a high quality electrode system is used with a properly designed instrument. Rugged pH instruments are available that automatically temperature compensate the slope and are preferred over the manually adjusted instruments.

NOTE: Color matching pH paper and sticks are used for field pH measurements, but are not the methods recommended. These methods are reliable only in very simple water muds. Mud solids, dissolved salts and chemicals, and dark-colored liquids cause serious errors in pH paper values. Readability is normally about 0.5 pH unit.

B.3.2.4.2 Equipment
pH meter: millivolt range potentiometer calibrated to show pH units for measuring the potential between a glass-membrane electrode and a standard "reference" electrode. The instrument is (preferred) to be water, shock, and corrosion-resistant and portable.

Specifications are:
pH range: 0 to 14.
Electronics type: solid state (preferred).
Power source: batteries (preferred).
Operating temperature range: 0-66°C (32-150°F).
Readout: digital (preferred).
Resolution: 0.1 pH unit.
Accuracy: ±0.1 pH unit.
Repeatability: 0.1 pH unit.
Adjustments.
"Temperature" compensation of electrode system.
"Slope" of electrode system (preferred).
"Calibration" setting of readout. (Instrument with the above internal temperature compensation is preferred.)

Electrode system: A combination system of a glass electrode for sensing H^+ ions and a standard voltage reference electrode, constructed as a single electrode (preferred). Body of this probe should be constructed of durable material. A flat-end probe is preferred for better protection and easier cleaning of the electrode. Waterproof connection to the meter is recommended.

Specifications are:
Glass pH electrode response range: 0 to 14 pH unit.
Electrodes: a glass electrode and a silver/silver chloride electrode in combination, having a ceramic or a plastic single or double junction.
Electrolyte in reference electrode: KCl gel.
Glass composition: suitable for low sodium ion error.
Sodium ion error: at pH = 13 or at 0.1 mole Na^+ ion, an error less than 0.1 pH unit.
Buffer solutions: three solutions to calibrate and set slope of pH meter prior to sample measurement.
pH = 4.0: potassium hydrogen phthalate at 0.05 molar in water. Gives 4.01 pH at 24°C (75°F).
pH = 7.0: potassium dihydrogen phosphate at 0.02066 molar and disodium hydrogen phosphate at 0.02934 molar in water. Gives 7.00 pH at 24°C (75°F).
pH = 10.0: sodium carbonate at 0.025 molar and sodium bicarbonate at 0.025 molar in water. Gives 10.01 pH at 24°C (75°F).

NOTE: Buffers may be obtained from supply houses as pre-made solution, dry-powder packages, or a given formula, but must duplicate National Bureau of Standards primary or secondary buffers. Shelf life of all buffers not to exceed six months. Date of preparation of buffer should be shown on bottles used in the field. Bottles should be kept tightly stoppered.
Distilled or deionized water: in spray bottle.
Soft tissues: to blot electrodes.
Thermometer: glass, 0-150°C (32-220°F).

Accessory equipment: Soft-bristle test tube brush: to clean electrode.
Mild liquid detergent: Ivory, or equivalent.
Electrode storage vial: to keep electrode moist.
Sodium hydroxide: 0.1 molar (approximately); to recondition electrode.
Hydrochloric acid: 0.1 molar (approximately); to recondition electrode.
Ammonium bifluoride: 10% solution (approximately); to recondition electrode.
CAUTION: This is a strong and toxic acid.
Hydrofluoric acid: ACS reagent grade.
CAUTION: This is a strong acid.

B.3.2.4.3 Procedure – pH Measurement
Obtain sample of fluid to be tested. Allow it to reach 24±3°C (75±5°F). Allow buffer solution to also reach the same temperature as the fluid to be tested.

NOTE: For accurate pH measurement; the test fluid, buffer solution, and reference electrode must all be at the sample temperature. The pH of the buffer solution indicated on the container label is the correct pH only at 24°C (75°F). If attempting to calibrate at another temperature, the actual pH of the buffer at this temperature must be used. Tables of buffer pH values at various temperatures are available from the suppliers and should be used in the calibration procedure.

Clean electrodes by washing with distilled water and blot dry. Place probe into pH 7.0 buffer.

Turn on meter; wait 60 seconds for reading to stabilize. Measure temperature of pH 7 buffer solution. Set this temperature on “temperature” knob. Set meter reading to “7.0” using “calibration” knob. Rinse probe with distilled water and blot dry.

Repeat operations using either pH 4.0 or pH 10.0 buffer. Use pH 4.0 if “acidic” sample, or pH 10.0 if “alkaline” sample is to be tested. Set meter to number “4.0” or “10.0” respectively, using “slope” adjustment knob. (If no “slope” knob exists, use the “temperature” knob to set “4.0” or “10.0” on meter). Check the meter with pH 7 buffer again. If it has changed, reset to “7.0” with “calibration” knob. Repeat procedures to ensure equipment is properly calibrated.

NOTE: Discard and do not reuse the sample of buffer solutions used in calibration. Meter should be fully calibrated every day using two buffers. Check with pH 7 buffer every three hours. If meter calibrates properly, rinse electrode with distilled water and blot dry. Place electrode in sample to be tested and stir gently. Allow 60 to 90 seconds for reading to stabilize.

Record sample pH to nearest 0.1 pH unit and the temperature of sample tested. Carefully clean the electrode in preparation for next usage. Store in vial of pH 4 buffer. NEVER let the probe tip become dry. Turn meter off and close cover to protect instrument. Avoid storing instrument at extreme temperatures (below 0°C (32°F) or above 49°C (120°F)).

Care of Electrode: Cleaning the electrode will be necessary periodically, especially if oil or clay particles coat the face of the glass electrode or the porous frit of the reference electrode. Clean electrode with a soft-bristle brush and a mild detergent. Reconditioning the electrode may be necessary if plugging becomes sever, as indicated by slow response, drifting of readings, or if “slope” and “calibration” cannot be mutually set. Recondition by soaking electrode for 10 minutes in 0.l M HCl followed by rinsing in water and soaking for 10 minutes in 0.1 M NaOH and rinsing again. Check electrode for response by performing calibration. If electrode continues to perform poorly, soak electrode for two minutes only in 10% $NH_4F \cdot HF$ solution. (CAUTION: This is strong and toxic acid). Replace electrode system if above steps fail to recondition it.

C (Vacant)

D (Vacant)

E Payment

E.1 QMP Drilled Shafts

Costs for all sampling, testing, and documentation required under this special provision and all other associated work 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.

49. Contact Grouting.

A Description

Contact grouting is to fill any remaining voids outside of the jacked pipe and outside of shaft excavation support system. This section covers the work necessary for contact grouting including furnishing, mixing and placing grout; furnishing all labor, materials, equipment, and incidentals; and all other related work necessary for grouting, complete.

B Materials

Contact grout shall consist of a mixture of water, sand and Portland cement, with mineral fillers or admixtures as necessary to achieve a non-shrink, non-bleed, flowable grout. The grout shall have a minimum 24-hour compressive strength of 75 and a minimum 28-day compressive strength of 250 psi.

Portland cement, water and fly ash shall conform to the requirements of standard spec 501.2. Use Type I Portland cement.

Sand shall conform to the requirements for concrete aggregates specified in Section 501.2.5, except that it shall have a fines modulus between 1.5 and 2.0 and be graded as specified in the following table.

Sieve Size	Percent Passing Minimum
No. 8	100
No. 16	95 – 100
No. 30	60 – 85
No. 50	20 – 50
No. 100	10 – 30
No. 200	0 – 5

Fluidifier shall be a compound with characteristics that will hold the solid constituents of the grout in colloidal suspension, be compatible with the cement and water used in the grout mix, and contain a shrinkage compensator. Fluidifier shall not contaminate the groundwater. Fluidifier shall be furnished in moisture resistant paper sacks shipped in sealed containers and shall be handled and stored so as to avoid absorption of moisture, damage or waste. Material which has become caked due to moisture absorption will be rejected.

Suitable stop valves shall be provided at the collar of the grout hole for use in maintaining pressure as required until the grout has set

C Construction

C.1 Submittals

C.1.1 General

Prepare and submit Contact Grout Mix and Contact Grout Work Plan at least 21 calendar days prior to beginning grouting activities. WisDOT will accept the submittal as

submitted or return the submittal with requested revisions. Do not start any grouting work until WisDOT provides acceptance of Contact Grout Mix and Contact Grout Work Plan. Acceptance of the submittals does not relieve the contractor of responsibility for successful completion of the tunnels.

C.1.2 Submittals for Approval

Contact Grout Mix:

a. Submit mix designs for each contact grout mix proposed for use. Resubmit as appropriate if the mixes are modified during the course of the work. Each mix design shall show the ingredients of the mix and shall include:
    i. Type, brand, source, and amounts of cement, admixtures, and other additives.
    ii. Source and amount of water.
    iii. Representative samples of materials for materials test and mix proportion testing.
    iv. Combined grading of each mix design.
    v. Specific gravity of all materials.
    vi. Results of required tests.
b. Submit material specifications and instructions for use of any proposed concrete admixtures.
c. Submit certificates of compliance for each load of Portland cement and fly ash (if used) which is in accordance to ASTM C618 and certificates of compliance for all admixtures. Supporting test data shall be furnished when requested by WisDOT. All testing and sampling procedures shall be in accordance to ASTM C311.
d. Mill test reports for Portland cement.
e. Submit water quality test results.

Contact Grouting Work Plan: The work plan for placing contact grout shall cover each type of contact grouting required and shall include:

a. Contact grouting methods, procedures and sequences for each tunnel segment.
b. Grout hole locations and depth of injection ports.
c. Plans for grout port opening in advance of injection at a port and release of water disturbed soil or slurry.
d. Method of transporting grouting equipment, grout and materials into and within the tunnel.
e. Quantitative prediction of grout volumes required at each location, with consideration of volume of annular space due to difference between diameter excavated and outside diameter of initial support system or jacked pipe, ground loss volumes, soil stand-up time and diametrical closure.
f. Means for measuring grout takes (volume) per foot or segment of initial support system or pipe.
g. Means for measuring grout pressures and planned grout pressure limits for refusal criteria.
h. Timing of grout injection after completion of a drive for pipe jacking.

i. Contact Grouting Equipment: Manufacturer's specifications and operation instructions for grout conveyance equipment. Pump specifications. Grout hose, valve and port sizes and specifications. Grout pressure gages and pressure gauge calibration data.

C.1.3 Information Submittals

Contact Grouting Daily Records: Submit the following daily reports and records for jacked pipe contact grouting.

a. Daily logs of grouting operations at all contact grouting locations (station and position) of grout ports, including pressures, volumes, and grout mix pumped, times of injecting, locations where grout samples for test cylinders are taken, and grout slump results.
b. An analysis of overcut annulus volume at the time of grouting with consideration of soil stand-up time, diametrical closure and effects of injected bentonite slurry volumes. Provide a comparison of anticipated annulus volume with grout volume placed by contact grouting for each pipe.
c. Compressive strength tests reports from a certified testing laboratory.

C.1.4 Acceptance

The department will evaluate the Submittals for Approval with the requirements of these special provisions. Within 14 calendar days after receipt of the Submittals of Approval, WisDOT will notify the contractor of the acceptance of the submittal, or if additional information and/or changes are required. Any unacceptable part of the Submittals of Approval will require resubmission. The contractor must resubmit the Submittals of Approval for evaluation and review with the necessary changes or additional information provided. WisDOT will provide a written notice of acceptance or rejection of contractor's resubmitted Submittal for Approval within 14 calendar days after its receipt.

After WisDOT's acceptance of Submittal of Approval, no changes to the Submittal of Approval can be made without written consent of WisDOT.

All Information Submittals should be submitted to WisDOT. WisDOT can reject the submittals which do not adequate detail, as required herein. The contractor shall resubmit the rejected submittals within 7 days upon the receipt of WisDOT's rejection notice.

C.2 General Grouting Requirement

Notify WisDOT at least 24 hours in advance of the start of grouting operations.

If out of visible contact, continuous telephonic communication shall be maintained between the grout plant and the injection point.

Continuously agitate grout in the mixer and holding tanks. Remove Portland cement grout from the mixer, holding tank and supply line that is not injected into the hole within 2 hours after mixing and waste it.

Maintain grout at temperatures above 50 degrees F until injected. The temperatures of mixing water shall range from 50 degrees F to 100 degrees F when added to the grout mixer. Store grout materials at temperatures above freezing. Grouted ground shall be no colder than 40 degrees F when grout is injected and for a period of 5 days thereafter.

Protect grout holes from becoming clogged or obstructed prior to grouting by means of a cap or other suitable device on the collar of the hole. Clean out in a satisfactory manner or replace any hole that becomes blocked or otherwise unsuitable for its intended purpose at the expense of the contractor.

Flag and protect all grout hole locations. Clearly label grout locations for easy identification.

C.3 Contact Grout Injection

Perform contact grouting to reduce groundwater inflow, to fill voids, to minimize ground movement into the excavation, and to provide firm and uniform contact between the support system and the ground.

Equipment and lines shall be kept clean by constant circulation of grout and periodic flushing with water. Leakage from connections shall not be permitted. Plugs on ends of nearby grout holes or pipes shall be removed to permit escape of air and water and the filling of spaces with grout.

Once started, grouting of a hole shall not be interrupted. Grouting of a hole shall not be considered complete until that hole refuses to take grout as defined under article Refusal. After grouting of a hole or any stage of a hole has reached refusal, the pressure on the hole shall be maintained by means of a stopcock or other suitable device until the grout has set.

Grout progressively from pipe to pipe in the sequence submitted by the contractor or approved by WisDOT. If necessary to relieve premature stoppage, periodic applications of water under pressure shall be considered. Grout that cannot be placed prior to initial set shall be discarded. Check operating gauges daily to determine that they are in working order. Do not grout without appropriate gauges in place and in working order.

Inject grout in continuous progression of the grout holes along the length of the tunnel or perimeter of the shaft. Where grout holes extend around the tunnel periphery, connections to higher grout holes shall not be made until the grout has completely filled the void space below as indicated by escape of grout of normal consistency from the higher holes. Exercise particular care to completely fill the voids on each side of any obstruction which interferes with the passage of grout. Vent holes for the release of air and water during grouting of crown or invert cavities shall be provided as necessary.

Where grouting in soil, the grouting pressure at the injection point shall not exceed 0.6 psi per foot of depth of soil overburden, unless otherwise proposed by the contractor, with WisDOT's concurrence. In all cases, the grouting pressures shall be limited as necessary to avoid damage to the final lining.

The grouting of any hole shall not be considered complete until all voids have been filled to the maximum extent practicable. After the grouting of any hole is finished, the pressure shall be maintained by means of the stop valve until the grout has set to the extent that it will be retained in the hole.

C.4 Contact Grouting for Shaft

Perform contact grouting outside of initial support system where overcutting results in a 1/2-inch or wider void space between the ground and the excavation support system.

Locate grout holes as necessary to accomplish the work and to thoroughly fill the voids outside of the initial support system. Drill grout holes for contact grouting of initial supports through the initial supports and into the annular space between the initial support and surrounding ground.

Perform contact grouting at least once per day after the excavation support system has been advanced on that day.

Perform contact grouting to reduce groundwater inflow, to fill voids, to minimize ground movement into the excavation, and to provide firm and uniform contact between the support system and the ground. The contractor’s ground support design engineer shall determine a refusal criteria and the maximum grout pressure that is consistent with the design of the ground support system. WisDOT may periodically request that check holes be drilled to determine if unacceptable voids exist outside of the ground support system. Additional contact grouting shall be completed at no additional cost to the department where checking indicates the presence of unacceptable voids.

C.5 Contact Grouting after Pipe Jacking

The contractor shall commence contact grouting promptly (within 24 hours) following completion of each Tunnel drive. Once started for a tunnel drive, perform continuous contact grouting until contact grouting for the entire drive has been completed.

Grout holes for contact grouting of jacked pipe shall be pre-installed pipe nipples. New grout holes shall not be drilled through pipe walls unless specifically approved by WisDOT.

Inject grout in continuous progression of the grout holes along the length of the tunnel. At any time during the grouting operations, sufficient contact grout holes ahead of the hole to be grouted shall be opened, plugs removed, holes cleaned and valves attached for controlled discharge (venting) of lubrication slurry, disturbed soil and groundwater within the overcut annulus. Keep grout port valves in a fully open position within a maximum safe grout communication distance, as determined by the contractor and

accepted by WisDOT in the grouting submittal. This distance may vary along the tunnel with variations in adjacent soil and groundwater conditions. Close or regulate discharge at ports opened for venting, as necessary to prevent lost ground from squeezing, a blow-in or excessive groundwater seepage. Continue venting from each opened port until grout of normal consistency (not mixed with slurry, soil or water) is discharged from the vent holes. After an acceptable grout discharge is observed at a port, close the valve until a hook-up is made at the port for injection of grout.

Attempt to hook-up and pump grout at every port unless approval is granted by WisDOT to skip selected holes. In general, contact grouting at a port will be considered completed when less than one cubic foot of grout of the accepted mix and consistency can be pumped in 5 minutes under the specified maximum pressure. After the grouting is finished, the valve shall be closed until grout has set. After a valve is closed following injection, the grout header and hoses shall be moved to the next port in progression.

Volume of contact grout injected shall be measured, recorded and compared with the anticipated volume per foot of pipe grouted with compensation for grout wasted in lines and vented through ports.

At the completion of grouting, remove valves after grout has set and replace valves with screw type grout plugs.

C.6 Cleanup
Minimize spilling and prevent the setting of any grout that may escape upon finished pipe or structure surfaces. Remove any spilled grout and restore the pipe or structure surface to its original condition. Properly dispose or all waste materials. Remove all grouting equipment and accessories from the tunnel.

D (Vacant)

E Payment
Contact grout used to fill any remaining voids outside of the jacked pipe shall be included under pay item of Tunnel Excavation. Contact grout used to fill any remaining voids outside of shaft excavation support system shall be included under pay item of Shaft Excavation Support System.

50. Concrete Masonry Structures.

A Description
A.1 General
Work under this item applies to cast in place concrete for structures. Conform to standard specs 501, 502, 504, 701, 710 and 715 and as modified in this special provision. Apply this special provision to all cast in place concrete placed under the following bid items:

502.0100	Concrete Masonry Bridges
502.0200	Concrete Masonry Bridges HES
502.1100	Concrete Masonry Seal
504.0100	Concrete Masonry Culverts
504.0200	Concrete Masonry Culverts HES
504.0500	Concrete Masonry Retaining Walls
504.0600	Concrete Masonry Retaining Walls HES
504.0900	Concrete Masonry Endwalls

A.2 Concrete Masonry Bridges

Work under the item Concrete Masonry Bridges applies to cast in place concrete for bridge substructures, which includes abutments and piers. Cast in place concrete for bridge superstructures, which includes bridge decks, raised medians, sidewalks, and parapets, is covered under the special provision item HPC Masonry Superstructures.

B (Vacant)

C Construction

Replace standard spec 501.3.8.2 with the following:

The contractor is responsible for the quality of the concrete placed in hot weather. Submit a written temperature control plan at or before the pre-pour meeting. In that plan, outline the actions taken to control concrete temperature if the concrete temperature at the point of placement exceeds 80° F (27° C). Do not place concrete without the engineer's written acceptance of that temperature control plan. Perform the work as outlined in the temperature control plan.

If the concrete temperature at the point of placement exceeds 90° F (32° C), do not place concrete under the following bid items:

Concrete Masonry Bridges
Concrete Masonry Bridges HES
Concrete Masonry Retaining Walls
Concrete Masonry Retaining Walls HES
Concrete Masonry Culverts
Concrete Masonry Culverts HES
Concrete Masonry Endwalls

Notify the engineer whenever conditions exist that might cause the temperature at the point of placement to exceed 80º F (27º C). If project information is not available, obtain information from similar mixes placed for other nearby work.

Any additive or action taken to control the temperature of the Concrete Masonry to within the limits of this special provision, including but not limited to the addition of ice to the concrete mix, is considered incidental to the work and will not be measured or paid for separately.

Add the following standard spec 501.3.11:

501.3.11 Slip Forming
Do not place concrete by the slip-form method for any item covered by this special provision.

D (Vacant)

E (Vacant)

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51. Permanent Steel Bridge Deck Forms.

A Description
Work under this item applies to the optional use of permanent steel bridge deck forms to construct cast-in-place bridge decks on steel box girders. The permanent steel bridge deck forms may only be used in the interior bay of steel box girders as shown on the plans.

Conventional forming shall be used for deck areas indicated herein for which the use of permanent steel bridge deck forms is not allowed. If conventional forming is used over the steel box girders, all forming materials must be removed.

B Materials
Permanent steel bridge deck forms and supports shall be fabricated from steel conforming to ASTM A 653 having a galvanized coating designation of G235 according to ASTM A 653 any grade except Grade 50, Class 3.

Attachment form hardware to be galvanized shall conform to ASTM A 123. All damaged steel form panel galvanizing shall be cleaned and recoated prior to placement of deck concrete.

C Construction
C.1 General
The contractor may, at their option, use permanent steel bridge deck forms in lieu of conventional forms as the bottom forms for the cast-in-place concrete bridge decks supported on steel box girders. The use of the permanent steel bridge deck forms is subject to the limitations in this special provision and as indicated on the plans.

Transverse steel deck form panel construction joints shall be located at the bottom of a flute. Field drill ¼-inch diameter weep holes at 12-inch maximum spacing along the joint.

C.2 Submittals
Provide plans for each structure where the permanent steel bridges deck forms are to be used, signed and sealed by a registered professional engineer licensed in the State of Wisconsin. Submit three copies of the plans for review before ordering material and

starting construction. The drawings shall show the grade of steel, the physical and section properties for all deck members, the method of support and grade adjustment, deflections, accommodation for skew and methods of end sealing against concrete or grout leaks, and the method for handling, storage and erection of the permanent steel bridge deck panels. Review and acceptance of the installation plan by the department does not relieve the contractor of responsibility for properly designing and constructing the bridge decks with the use of permanent steel bridge deck forms.

C.3 Limitations

The use of permanent steel bridge deck forms for bridge deck construction is not permitted as follows:

- For bridges with steel I girder and prestressed girder superstructures.
- The bay between the steel box girders and the deck cantilever in multi steel box girder superstructures. The deck cantilever is the deck area that extends beyond any exterior flange and web of a steel box girder and is only supported on one side by the exterior flange and web.

C.4 Design

- Physical design properties shall be computed in conformance with the requirements of the latest edition of the AISI specification for the "Design of Cold Formed Steel Structural Members."

- Design the forms on the basis of deadload of form, reinforcement, and plastic concrete plus 20 lb/ft^2 for construction loads.

- Do not allow deflection under the weight of the forms, reinforcement and plastic concrete to exceed 1/180 of the form span, or ½-inch, whichever is less, for form spans of 10 feet or less.

- Use a design span of the form equal to the clear span of the form plus 2 inches.

- The clearance between the surface of permanent forms and any bar reinforcement shall be not less than 1 ½-inch.

- Do not consider the permanent steel bridge deck form as lateral bracing for compression flanges of supporting structural members.

- Secure forms to the supporting members by means other than welding directly to the member. Welding to the girder flanges will not be allowed.

D Measurement

If used, permanent steel deck forms will not be measured separately for payment and will be considered included in the work for other items in the contract.

E Payment
Payment to the contractor utilizing this option is based on the contract unit bid price and plan quantity for the items HPC Masonry Structures in the contract documents and shall include all work required in this special provision.

52. Railing Pipe B-40-784.

A Description
This special provision describes furnishing and installing steel pipe handrails in accordance to standard spec 513, as shown in the plans, and as hereinafter provided.

B (Vacant)

C Construction
Delete standard spec 513.3.1(6) and replace with the following:

After fabrication, blast clean railing pipe assemblies per SSPC-SP 6 and galvanize according to ASTM A 123. Steel preparation includes the chamfering of sharp edges. All sharp edges shall be flattened by a single pass of a grinder or suitable device along the sharp edge. Condition any thermal cut edges before blast cleaning by shallow grinding or other cleaning to remove any hardened surface layer. Remove all evident steel defects exposed in accordance to AASHTO M 160 prior to blast cleaning.

D (Vacant)

E Payment
Delete standard spec 513.5(2) and replace with the following:

Payment for Railing Pipe is full compensation for providing, fabricating transporting, and erecting the rail; for preparation, galvanizing, for providing and placing metal shims under the bases if required; for providing and placing the anchor bolts; and furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

53. Driven Piles Using Pile Dynamic Analyzer.

Where indicated in the structure plans, replace standard spec. 550.3.6 with the following:

550.3.6 Driving Resistance

(1) Drive piles to the depths necessary to obtain the required driving resistance per the driving resistance determination method called for in the plans.

(2) Driving resistance will be developed by the engineer from Pile Dynamic Analyzer (PDA) testing performed on the designated piles at each substructure unit as shown on the plans. The driving criteria will be given as blows per foot with hammer stroke and minimum penetration of the pile or as directed by the engineer.

The PDA test piles at each substructure unit are designated on the plans and will be monitored using a PDA. Pile installation for these test piles will be controlled by the PDA testing and the engineer per the Pile Dynamic Analyzer (PDA) Testing and Restrike Special Provision within this contract.

For the PDA driving resistance determination method, pile restrikes will be required per the PDA Testing and Restrike Special Provision, or as directed by the engineer. Accommodate a time delay in the pile driving sequence as defined in the PDA Testing Special Provision to allow the engineer time to develop the production pile driving criteria.

(3) If the required driving resistance is not met at the minimum tip elevation, driving shall continue until it is achieved. If the required driving resistance is achieved above the minimum tip elevation, driving shall continue until both the minimum tip elevation and required driving resistance criteria are met. If practical pile refusal is encountered prior to the minimum tip elevation, the engineer will determine if driving can be halted.

Where indicated in the structure plans, delete standard spec. 550.3.7.

54. Storm Sewer.

Supplement standard spec 607.3.1.1 General with the following:

(9) Review the Plans, Specifications, and existing site conditions prior to bidding to ascertain the extent of the work requiring shoring.
(10) Exercise additional caution when constructing sewers in close proximity to utilities, structures, and live traffic lanes.
(11) Proposed utilities are not shown on the plans. Review "Utilities" article for abandoned, relocated, adjusted, and/or new utility facilities prior to bidding.
(12) To facilitate drainage, maintain concrete barrier temporary precast drainage/lifting slot holes free from debris.
(13) Provide a shoring design and installation sequence for each location when shoring is used. Have a professional engineer, registered in the State of Wisconsin and knowledgeable of the specific site conditions and requirements, verify the adequacy of the design. Submit one copy of each shoring design, signed and sealed by the same professional engineer verifying the design, to the engineer for incorporation into the permanent project record.

Supplement standard spec 608.3 with the following:

(2) Provide rubber gasket joints for all storm sewer pipes.
(3) Place rubber gasket over the spigot end or tongue of the entering pipe. Clean the gasket and the ends of the pipe from sand and gravel. Immediately before making the joint, lubricate the outside of the gasket and the inside of the bell or groove of the last pipe with an approved vegetable lubricant. Place the spigot or tongue of the pipe being laid with the gasket in place into the bell or groove end of the previously

laid pipe. Set pipe carefully to line and grade, and push or jack home. The engineer can order the use of a jack or "come-along" if deemed necessary to ensure that the joints are completely tight.

Replace standard spec 607.3.5(1) Backfilling with the following:

(1) Backfill all trenches and excavations of all new storm sewer and storm sewer structures not occupied by Backfill Controlled Low Strength immediately after completing the sewer work with backfill material conforming to standard spec 209. Backfill locations where existing storm sewers and or existing storm sewer structures have been called for removal or abandoning, not occupied by the new roadway structure or occupied by Backfill Controlled Low Strength, immediately after completing the sewer work with backfill material conforming to standard spec 209.

Supplement standard spec 607.3.5 Backfilling with the following:

(8) Material placed within storm sewer trenches is subject to the quality control for the zone that the material is located in and shall conform to QMP Subgrade article listed elsewhere in this special provision document.

Replace standard spec 608.5(2) with the following:

(2) Payment for the Storm Sewer Pipe bid items is full compensation for providing all materials, including all special Y's, mitered sections, elbows and connections required; for excavating and wasting excess material, except rock excavation; for providing rubber gasket joints; for supporting utilities in storm sewer trench; for shoring design, providing a signed and sealed copy of the design; for installation, monitoring, and removal of shoring; for forming foundation; for laying pipe; for sealing joints and making connections to new or existing features; for providing granular backfill material, including bedding material; for backfilling; for QMP; for maintaining concrete barrier temporary precast drainage/lifting slot holes to keep free from debris; for cleaning out; and absent the pertinent contract bid items, for restoring the work site.

55. Storm Sewer Backfill.

Backfill all trenches and excavations of all new storm sewer and storm sewer structures not occupied by Backfill Controlled Low Strength immediately after completing the sewer work with backfill material conforming to standard spec 209. Backfill locations where existing storm sewers and or existing storm sewer structures have been called for removal or abandoning, not occupied by the new roadway structure or occupied by Backfill Controlled Low Strength, immediately after completing the sewer work with backfill material conforming to standard spec 209. Backfill granular is considered incidental to the respective pipe or storm sewer structure bid item, and no separate payment will be made.

Material placed within storm sewer trenches is subject to the quality control for the zone that the material is located in and shall conform to QMP Subgrade article listed elsewhere in this special provision document. QMP is considered incidental to respective pipe or storm sewer structure item and no additional payment will be made.

Replace standard spec 607.5.1(1) with the following:

Payment for the Storm Sewer Pipe bid items is full compensation for providing all materials, including all special Y's, mitered sections, elbows and connections required; for excavating and wasting excess material, except rock excavation; ground support system design, providing a signed and sealed copy of the design; for providing and removing sheeting and shoring; for forming foundation; for laying pipe; for sealing joints and making connections to new or existing features; for providing granular backfill material, including bedding material; for backfilling; for QMP; for cleaning out; and absent the pertinent contract bid items, for restoring the work site.

56. Catch Basins, Manholes, and Inlets.

Supplement standard spec 611.3.3 with the following:

(5) Use monolithic concrete shimming as shown on plans for final adjustment of drainage structures located within concrete pavement, concrete curb and gutter and concrete barrier wall.

Supplement standard spec 611.3.6.1 General with the following:

(3) Use a Grade "A" concrete collar for final adjustment of manhole cover.

(4) Conform to storm sewer concrete collar detail for storm sewer pipes to structure connections as shown on the plan.

(5) Provide a butyl rubber gasket or butyl rubber rope for joints of precast reinforced concrete manhole sections. Butyl Rubber gasket joint used for manholes conforms to 8.41.6 of the Standard Specification for Sewer and Water Construction in Wisconsin, latest Edition.

Supplement standard spec 611.3.7 with the following:

(4) Adjustments of 4-inches or more in height shall be constructed using concrete grade rings. Grade rings less than 2-inches in thickness are not allowed.

Replace standard spec 611.5.2 (1) with the following:

(1) Payment for Catch Basins, Manholes, and Inlets bid items is full compensation for providing all materials, including all masonry, for Grade "A" concrete adjustments and monolithic concrete shimming; conduit and sewer connections, steps, and other fittings; for providing and installing butyl rubber joints; for furnishing all excavating,

backfilling, disposing of surplus material, and for cleaning out and restoring the work site; except that the department will pay for covers, including frames, grates and lids separately.

57. Crash Cushions Permanent Low Maintenance.

Complete work in accordance to standard spec 614.

Replace standard spec 614.2.7 with the following:

Use Model SCI 100GM Crash Attenuator from Smart Cushion Innovations (SCI) Products for permanent crash cushions.

58. Furnishing and Planting Plant Materials.

Amend standard spec 632.2.2.1 to include the following:

All plants shall be grown within the states of Wisconsin, Minnesota, Michigan, or parts of northern Illinois located within Zones 5a or 5b as defined by the 2012 version of the "Plant Hardiness Zone Map" published by the United States Department of Agriculture, unless otherwise approved by the engineer.

Amend standard spec 632.3.3 to include the following:

The contractor shall mark all planting locations and notify the engineer. WisDOT's engineer or landscape architect shall visit the site within 3 days of notification and inspect marked planting locations. The engineer or landscape architect may modify marked plant locations if they deem it in the best interest for the plants long term survival.

59. Digging, Handling, and Packing of Plant Stock.

Amend standard spec 632.2.2.9.1 to include the following:

Plant materials specified for fall planting, that require spring digging, shall be reserved by the contractor in advance of the project to allow plant installation in conformance with the project schedule.

Spring dug plants shall be placed in a holding area where the root ball shall be covered to the existing soil line with hardwood bark mulch or a material approved by the Landscape Architect. Holding area shall allow for watering and protection from wind and full sun (40%-50% sun recommended). All plants in leaf shall be sprayed with an anti-descant in conformance with standard spec 632.2.11. Plants may be held by either the contractor or supplier.

60. Landscape Planting Surveillance and Care Cycles.

Amend standard spec 632.3.19.1 (2) to include the following:

Proper care of plants consists of watering, weeding, cultivating, mowing perennials in early November, removing mowing debris, pruning, spraying, tightening braces and guys, retying wrapping, re-mulching, and other work necessary to keep plants and planting beds in a neat appearance. Between May 15 and October 15, provide care for two years after completion of plant acceptance. Perform planting surveillance care cycles once every two weeks. Care cycle length may be extended beyond 14 days if weather conditions and soil moisture allow.

Amend standard spec 632.3.19.2 to include the following:

If the care specialist fails to perform any of the required care-cycles as specified in standard spec 632.3.19.1, the department will assess daily damages in the amount of $500 per day to cover the cost of performing the work with other forces.

61. Sign Supports Concrete Masonry.

Add the following to standard spec 636.3.2:

(3) Drill or excavate and maintain a stable open excavation for subsequent installation of drilled footings for sign structure foundations as shown in the plans. The subsurface conditions vary across the project site and are not necessarily the same at each sign structure foundation in the project. Anticipate the possibility of encountering randomly interlaced seams of loose, permeable sand or gravel of substantial thickness situated within glacial clays and till deposits; saturated soils; ground water; isolated cobbles or boulders; and nested cobbles and boulders at any sign structure foundation when selecting equipment and methods for drilling or otherwise excavating. Partial or full depth temporary casing may be required to maintain the stability of the excavation prior to placement of reinforcement and filling the excavation with concrete.

    It is strongly advised to obtain and review the Geotechnical Exploration and Foundation Evaluation Reports for the sign structures and as well as nearby structures to the sign structure foundation being constructed. See article "Geotechnical Investigation Information" in these special provisions for information on obtaining geotechnical reports.

Add the following paragraph to standard spec 636.3.3:

(8) For drilled foundations, no more than 3 inches of standing water is permitted in the bottom of the drilled excavation immediately prior to placing concrete masonry in the excavation.

Replace standard spec 636.5.2(1) with the following:

Payment for Sign Supports Concrete Masonry is full compensation for providing, transporting, placing and curing the concrete; for providing and removing casing if applicable; for providing required ground rods; for furnishing all required excavating; for placing post stubs or anchor bolts, and for providing and placing electrical conduit if required; for pumping of ground water seepage if applicable; for cleaning-up, repairing damage, and for disposing of excavation and surplus materials.

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62. Anchoring Signs To Overhead Sign Structure Supports.

A Description
This work consists of anchoring Type II signs to overhead sign structure supports in accordance to standard spec 637, as shown on the plans, and as hereinafter provided.

B Materials
Provide 3-inch stainless steel anchor bolts to mount signs. Provide all mounting and anchoring materials in accordance to standard spec 637.2.

C Construction
Install the sign in accordance to the plans and as directed by the engineer. Drill holes in the sign as required to install the sign in the correct lateral location.

D (Vacant)

E Payment
The department will not measure this work separately for payment. Anchoring signs to overhead sign structure supports is incidental to the signing items included in the contract.

63. Signs Type I and II.

Furnish and install mounting brackets per approved product list for type II signs on overhead sign supports incidental to sign. For type II signs on sign bridges use aluminum vertical support beams noted above incidental to sign.

Modify standard spec 637.2.4 with the following:
Use stainless steel bolts, washers and nuts for type I and type II signs mounted on sign bridges or type I signs mounted on overhead sign supports. Use clips on every joint for Sign Plate A 4-6 when mounted on a sign bridge or overhead sign support. Inspect installation of clips and assure bolts and nuts are tightened to manufacturers recommended torque values.

Use aluminum vertical sign support beams that have a 5-inch wide flange and weigh 3.7 pounds per foot, if the L-brackets are 4 inches wide then use 4 inch wide flange beams weighing 3.06 pounds per foot. Contractor shall measure the width of the L-brackets on existing structures of determine the width needed for sign support beams

Use beams a minimum of six feet in length or equal to the height of the sign to be supported, whichever is greater. Use U-bolts that are made of stainless steel, one-half inch diameter and of the proper size to fit the truss cords of each sign bridge. Install vertical sign support beams on each sign and use new U-bolts to attach each beam to the top and bottom cord of the sign bridge truss.

For type II signs on overhead sign supports follow the approved product list for mounting brackets.

Replace standard spec 637.2.4.1(2)2 with the following:

Clips may be either stainless steel or ASTM B 108, aluminum alloy, 356.0-T6.

Append standard spec 637.3.2.1(3) with the following:

Provide the engineer with 3 copies of drawings of the signs proposed to be furnished under this contract for approval.

Append standard spec 637.3.3.2(2) with the following:

Install Type I Signs at the offset stated in the plan, which shall be the clear distance between the edge of mainline pavement right edgeline and the near edge of the sign.

Append standard spec 637.3.3.3(3) with the following:

Furnish and install new aluminum vertical sign support beams on each sign and new U-bolts to attach each beam to the top and bottom cord of the sign bridge truss for Type I or Type II Signs and Type I signs on overhead sign supports incidental to sign.

637-SER1 (20120401)

64. Field Facilities.

Replace standard spec 642 with the following:

The department has procured its own Field Facilities located at 2424 S. 102nd Street; West Allis, WI 53227.

SEF-ZOO IC 12_0723

65. Work Zone Ingress/Egress.

Provide engineer approved signage and parallel deceleration and acceleration lanes for freeway access into and out of the work zones at locations approved by the engineer.

At the weekly traffic meetings, provide an Emergency Work Zone Access Plan and required updates, as approved by the engineer, to direct emergency responders accessing a mainline median barrier restricted work zone.

SEF Rev. 12_0330

66. Traffic Control Surveillance and Maintenance.

Replace standard spec 643.3.2(2) with the following:

Provide one person, certified by the American Traffic Safety Services Association (ATSSA) or equivalent, as a Traffic Control Specialist responsible for inspections and maintaining traffic control signs or devices; other personnel as may be needed to accomplish the inspection and maintenance; and all necessary vehicles, equipment, tools and repair materials. Supply the credentials of the Traffic Control Specialist to the engineer for approval by the department.

SEF Rev. 13_0404

67. Nighttime Work Lighting-Stationary.

A Description
Provide portable lighting as necessary to complete nighttime work. Nighttime operations consist of work specifically scheduled to occur after sunset and before sunrise.

B (Vacant)

C Construction
C.1 General
This provision shall apply when providing, maintaining, moving, and removing portable light towers and equipment-mounted lighting fixtures for nighttime stationary work operations, for the duration of nighttime work on the contract.

At least 14 days 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)

68. Freeway Lighting Systems.

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

Wet Location Splices
Modify standard spec 655.3.1 as follows:

Wet location splices are not anticipated on this project and not shown in the plans. In the event that the engineer allows wet location splices, make pull box splices with engineer approved epoxy kit.

Branch Circuit Tagouts
Any circuit that the contractor does not personally tag out at the disconnect shall be considered live, and will be subject to being activated by another person with no notice to the contractor. Make tagouts with manufactured tags, and endorse them with the date and the name of the contractor. Clear tagouts at the end of the workday.

Shop Locations
Materials indicated to be returned to the department shall be hauled to one of the following two locations:

- State Electrical Shop at 935 South 60th street, West Allis, as directed by Mr. Mike Prebish, (414) 266-1170.
- Milwaukee County Grounds, 10191 West Watertown Plank Road, Wauwatosa, as directed by Mr. Pat Stoetzel, (414) 750-5306.

Arrange pickups and deliveries 3 days in advance and during regular business hours (Monday – Thursday 7:00 AM to 3:45 PM).

Corrosion Protection
Corrosion protection measures described in standard specs 657.3.1 and 657.3.5 are invoked for breakaway transformer bases and aluminum light poles.

Wire Networks

Where two or more wire networks pass through a pull point, tag each circuit network (i.e. A/B/N and C/D/N) with approved all-weather tags.

At each pull point or access point, indicate the line side bundle with a lap of blue tape.

Lighting Pull Box Covers
This provision modifies the standard detail drawing for pull boxes and thereby both the standard items and SPV pay item for pull boxes. Lighting pull box covers shall read "LIGHTING".

69. General Requirements for Electrical Work.

Append standard spec 651.3.3 (3) with the following:

Notify the City of Wauwatosa Public Works Department at (414) 471-8422 to coordinate the inspection. The City of Wauwatosa will perform the inspection for the municipal owned traffic signal.

70. Traffic Signals, General.

All work shall be 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.

State Owned Traffic Signals
Work under this item shall consist of removing materials for the department owned traffic signals at the intersections of USH 45 Ramps and W. Watertown Plank Road in the City of Wauwatosa, WI.

City of Wauwatosa Owned Traffic Signals
Work under this item shall consist of furnishing and installing all materials included in the plans for the City of Wauwatosa owned traffic signals at the intersections of W. Watertown Plank Road and Swan Boulevard/Innovation Drive, W. Watertown Plank

Road and Discovery Parkway, W. Watertown Plank Road and N. 92nd Street, and W. Watertown Plank Road and N. 87th Street in the City of Wauwatosa, WI. The installation includes the construction of underground and above ground equipment. Portions of the W. Watertown Plank Road and Swan Boulevard/Innovation Drive traffic signal have already been constructed under previous construction projects. Obtain the necessary electrical permits from the City of Wauwatosa Building Department prior to beginning the work. Pay for any fines, penalties, damage done to property, etc. billed by the City of Wauwatosa. Stake the proposed locations of traffic signal items and notify the City of Wauwatosa Public Works Department at (414) 471-8422 at least 10 days prior to starting work so that the locations of the proposed facilities can be approved by the City of Wauwatosa. Any field changes regarding the location of the signal poles, pull boxes, etc. shall be approved by the City of Wauwatosa.

71. Electrical Service Meter Breaker Pedestal W. Watertown Plank Road and Swan Boulevard/Innovation Drive, Item 656.0200.3001; W. Watertown Plank Road and N. 92nd Street, Item 656.0200.3002; W. Watertown Plank Road and N. 87th Street, Item 656.0200.3003; W. Watertown Plank Road and Discovery Parkway, Item 656.0200.3004.

City of Wauwatosa Owned Traffic Signal
Arrange the electrical service installation in the name of City of Wauwatosa.

Electric utility company service installation and energy cost will be billed to and paid for by the City of Wauwatosa.

Append standard spec 656.3.4 with the following:

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

Append standard spec 656.5(3) with the following:

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

72. Pedestrian Signal Face 16-Inch.

Append standard spec 658.2.3.2(1) with the following:

Furnish 16 inch LED ready pedestrian signal housing, drilled for top/bottom pipe mount with the ability to rotate 270 degrees on poly mounting bracket.

Append standard spec 658.3.4 with the following:

Connect all ungrounded conductors with wire nuts in the appropriate sections of the signal heads. Connect the neutral conductors to the terminal strip. Be certain to twist wires prior to installing the wire nuts. All wire nuts must be installed facing up to prevent the entrance of water.

73. Pedestrian Push Buttons.

Append standard spec 658.2.5 with the following:

Furnish vandal resistant, pressure activated, pedestrian push buttons, with die cast body type, in unfinished aluminum or yellow. Button constructed shall be constructed of stainless steel, with a Piezo driven solid state switch, momentary LED display and beeper that sounds simultaneously with button push.

Furnish low profile, unfinished cast aluminum, vandal resistant, and flush mounting pole mount.

74. Traffic Signal Faces.

Append standard spec 658.3.2 with the following:

Connect all ungrounded conductors with wire nuts in the appropriate sections of the signal heads. Connect the neutral conductors to the terminal strip. Be certain to twist wires prior to installing the wire nuts. All wire nuts must be installed facing up to prevent the entrance of water.

75. Temporary Traffic Signals for Intersections W. Watertown Plank Road and Swan Boulevard/Innovation Drive, Item 661.0200.3001.

Append standard spec 661.2.1 with the following:

(1) Inspect the existing temporary traffic signal installation and inform the engineer of any defects or deficiencies. It shall be the 1060-33-70 contractor's responsibility to correct any defects or deficiencies prior to surrendering the temporary traffic signal to the contractor for project 1060-33-72. Assume ownership of all temporary traffic signal equipment as shown on the plan after all defects and deficiencies have been corrected. The signal controller shall be capable of operating with the video camera detection system and Emergency Vehicle Preemption (EVP) system. All wood poles shall be plumb and level. Provide primary and secondary temporary traffic signal contact names and phone numbers who will be responsible for implementing temporary traffic signal timing changes. The department may request traffic signal timing changes to an approved incident timing plan during the project. Implement any approved incident timing plan immediately upon notification of the change and immediately upon notification of switching the timing plan back to normal operation. Record the times of operation of the

incident timing and subsequent return to normal operation and provide this information to the department.

(3) The temporary electrical service has been installed under project 1060-33-70. The City of Wauwatosa will pay for all installation and energy costs associated with the operation of the temporary traffic signal.

(5) Assume ownership of the video image detector system consisting of video image detector cameras, mounting brackets and hardware, power cable, video image processor card, and auxiliary equipment to make the video detector system fully operational.

Append standard spec 661.3.1 with the following:

(4) Assume ownership of the temporary video detection cameras at the locations shown on the plans and according to the manufacturer's recommendations at a minimum 30-foot mounting height. Assume ownership of the power cable and signal cabinet equipment. Aim the video cameras to provide detection at the location shown on the plans and make the video detector system fully operational.

(5) In the event, at installation or turn on date, a noticeable obstruction is present in line with the video detection zone(s), advise the engineer before setting the zone.

(6) The video camera shall be mounted on a wooden pole. Relocate the video camera to a suitable location if there is impedance on the sensor operation, construction related or otherwise.

(7) The video detection system, as shown in the traffic signal construction plans, shall be complete, in place, tested, and in full operation during each stage and sub-stage of construction.

Append standard spec 661.3.1.1 with the following:

(2) Place the pole in the ground to no less than 1/5 of the pole's length as the plans show. Sawcut existing pavement and concrete curb and gutter as needed to install the wood poles and guy wire anchors. Sawcut existing pavement in accordance to the pertinent provisions in standard spec 690.3, Construction. Remove pavement and concrete curb and gutter as shown on the plans and if needed to install the wood poles and guy wire anchors. Remove only as much pavement as needed to install the wood poles. Remove pavement and curb and gutter in accordance to the pertinent provisions in standard spec 204.3, Construction. Hold any wood poles in place and/or move wood poles during construction due to conflicts with proposed work.

Append standard spec 661.3.1.4 with the following:

(1) Obtain all span wire checks from the contractor for project 1060-33-70. Arrange for every other week inspections with the engineer to check the height of the span wire above the roadways to ensure that the bottom of the traffic signal heads remain within the minimum and maximum heights allowed above the roadway. Make all height adjustments within 1-hour of an inspection indicating that adjustments are required. Notify the engineer in writing upon completion of all necessary adjustments. Maintain a written log to properly document the date of each every other week inspection, the heights above the roadway, the roadway clearance after adjustments have been made and acceptance by the engineer. Provide all documentation related to the every other week span wire height checks as well as all records related to maintenance performed on the temporary traffic signal installations to the engineer upon project completion.

(4) Maintain all temporary vehicle detection zones as the plans show or as the engineer directs. The temporary vehicle detection zones shall be set near the vicinity and within the approximate distance from the stop bar as shown on the plans. Check temporary vehicle detection zones every other week and at the opening of each stage of temporary traffic signal operation to ensure that they are working and are aimed properly. Periodic adjustment of the detection zones and/or moving of the temporary vehicle detection sensors may be required due to changes in traffic control, staging, or other construction operations.

Ensure that the temporary vehicular detection system stays in clean working order. Periodic cleaning of the equipment may be required due to dirt and dust build-up.

Append standard spec 661.3.2.6 with the following:

(6) Remove the video detection system from the temporary traffic signal poles and cabinet.

Append standard spec 661.5 with the following:

(2) Payment for the Temporary Traffic Signals for Intersections bid item is full compensation for assuming ownership, operating, maintaining, and repairing the complete temporary installation; and for removal. Payment also includes the following:

- Furnishing and installing the replacement equipment.
- The cost of delivery and pick-up of the cabinet assemblies.
- Removal of service and site restoration.

Payment is full compensation for drilling holes; assuming ownership of all materials, including bricks, and coarse aggregate; for excavation, bedding, and backfilling, including any sand or other required materials; furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; for making inspections; for checking and/or adjusting the temporary detection zones on an every other week basis; for maintaining and changing the temporary detection zones to

match the plans, traffic control, and construction staging; for relocating the temporary detection sensors due to construction activities, if required; for periodically cleaning all temporary vehicle detector equipment; for removing the temporary vehicle detector system; for cleaning up and properly disposing of waste; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

76. Temporary Traffic Signals for Intersections W. Watertown Plank Road and N. 92nd Street, Item 661.0200.3002; W. Watertown Plank Road and N. 87th Street, Item 661.0200.3003; Swan Boulevard and Discovery Parkway, Item 661.0200.3004.

Append standard spec 661.2.1 with the following:

(1) Furnish all temporary traffic signal equipment as shown on the plan. The signal controller shall be capable of operating with the video camera detection system and Emergency Vehicle Preemption (EVP) system. All wood poles shall be plumb and level. Provide primary and secondary temporary traffic signal contact names and phone numbers who will be responsible for implementing temporary traffic signal timing changes. The department may request traffic signal timing changes to an approved incident timing plan during the project. Implement any approved incident timing plan immediately upon notification of the change and immediately upon notification of switching the timing plan back to normal operation. Record the times of operation of the incident timing and subsequent return to normal operation and provide this information to the department.

(3) The department has initiated the installation of the temporary electrical service with the electrical utility at the intersections of IH 94 eastbound Ramps and STH 181 (S. 84th Street) and IH 94 westbound Ramps and STH 181 (S. 84th Street) to expedite the process. Contact Justin Effinger at (262) 548-5676 to coordinate the temporary electrical service. The department will pay for all installation and energy costs associated with the operation of the temporary traffic signal. Contact the electrical utility and arrange timely installation of the temporary service.

(5) Furnish a video image detector system consisting of video image detector cameras, mounting brackets and hardware, power cable, video image processor card, and auxiliary equipment to make the video detector system fully operational.

(6) Furnish pedestrian signal faces in accordance to standard spec 658.2.3.

(7) Furnish pedestrian push buttons in accordance to standard spec 658.2.5.

Append standard spec 661.3.1 with the following:

(4) Install temporary video detection cameras at the locations shown on the plans and according to the manufacturer's recommendations at a minimum 30-foot mounting height. Install power cable and signal cabinet equipment. Aim the video cameras to

provide detection at the location shown on the plans and make the video detector system fully operational.

(5) In the event, at installation or turn on date, a noticeable obstruction is present in line with the video detection zone(s), advise the engineer before setting the zone.

(6) The video camera shall be mounted on a wooden pole. Relocate the video camera to a suitable location if there is impedance on the sensor operation, construction related or otherwise.

(7) The video detection system, as shown in the traffic signal construction plans, shall be complete, in place, tested, and in full operation during each stage and sub-stage of construction.

(8) Install pedestrian signal faces on the wood pole or wood post as the plans show. Maintain the height to the bottom of the pedestrian signal face as indicated in SDD Traffic Signal Standard Poly Bracket Mountings (Typical) 13 FT. or 15 FT.

(9) Install pedestrian push buttons in accordance to standard spec 658.3.5. Mount push buttons so that they are wheelchair accessible from the temporary crossing areas and in accordance to MUTCD Chapter 4.

Append standard spec *661.3.1.1 with the following:*

(2) Place the pole in the ground to no less than 1/5 of the pole's length as the plans show. Sawcut existing pavement and concrete curb and gutter as needed to install the wood poles and guy wire anchors. Sawcut existing pavement in accordance to the pertinent provisions in standard spec 690.3, Construction. Remove pavement and concrete curb and gutter as shown on the plans and if needed to install the wood poles and guy wire anchors. Remove only as much pavement as needed to install the wood poles. Remove pavement and curb and gutter in accordance to the pertinent provisions in standard spec 204.3, Construction. Hold any wood poles in place and/or move wood poles during construction due to conflicts with proposed work.

Append standard spec *661.3.1.4 with the following:*

(1) Arrange for every other week inspections with the engineer to check the height of the span wire above the roadways to ensure that the bottom of the traffic signal heads remain within the minimum and maximum heights allowed above the roadway. Make all height adjustments within 1-hour of an inspection indicating that adjustments are required. Notify the engineer in writing upon completion of all necessary adjustments. Maintain a written log to properly document the date of each every other week inspection, the heights above the roadway, the roadway clearance after adjustments have been made and acceptance by the engineer. Provide all documentation related to the every other week span wire height checks as well as all records related to maintenance performed on the temporary traffic signal installations to the engineer.

(4) Maintain all temporary vehicle detection zones as the plans show or as the engineer directs. The temporary vehicle detection zones shall be set near the vicinity and within the approximate distance from the stop bar as shown on the plans. Check temporary vehicle detection zones every other week and at the opening of each stage of temporary traffic signal operation to ensure that they are working and are aimed properly. Periodic adjustment of the detection zones and/or moving of the temporary vehicle detection sensors may be required due to changes in traffic control, staging, or other construction operations.

Ensure that the temporary vehicular detection system stays in clean working order. Periodic cleaning of the equipment may be required due to dirt and dust build-up.

Append standard spec 661.3.2.6 with the following:

(6) Remove the video detection system from the temporary traffic signal poles and cabinet.

Append standard spec 661.5 with the following:

(2) Payment for the Temporary Traffic Signals for Intersections bid item is full compensation for providing, operating, maintaining, and repairing the complete temporary installation; and for removal. Payment also includes the following:

1. Furnishing and installing the replacement equipment.
2. The cost of delivery and pick-up of the cabinet assemblies.
3. Removal of service and site restoration.

Payment is full compensation for drilling holes; furnishing and installing all materials, including bricks, and coarse aggregate; for excavation, bedding, and backfilling, including any sand or other required materials; furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; for making inspections; for checking and/or adjusting the temporary detection zones on an every other week basis; for maintaining and changing the temporary detection zones to match the plans, traffic control, and construction staging; for relocating the temporary detection sensors due to construction activities, if required; for periodically cleaning all temporary vehicle detector equipment; for removing the temporary vehicle detector system; for cleaning up and properly disposing of waste; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

77. Intelligent Transportation Systems (ITS) – Control of Materials.

Standard spec 106.2 – Supply Source and Quality
Supplement standard spec 106.2 with the following:

The department will furnish a portion of equipment to be installed by the contractor. This department-furnished equipment includes the following:

Department-furnished Items
2070 Ramp Meter Controller
Dome Camera
50-Foot Camera Pole
Pole Mounted Camera
12-Count Fiber Optic Termination Panel
Ethernet Video Codec
Ethernet Switch
ITS Field Cabinet
Loop Amplifier Card
Microwave Detector Emulator Card

Pick-up small department-furnished equipment, such as communications devices, cameras, and controllers, from the department's Statewide Traffic Operations Center (STOC), 433 W. St. Paul Ave., Milwaukee, WI 53203 at a mutually agreed upon time during normal state office hours. Contact the department's STOC at (414) 227-2166 to coordinate pick-up of equipment.

Large department-furnished equipment, such as camera poles will be delivered by the supplier to a contractor-controlled site within Milwaukee County. Delivery will not necessarily be in a "just in time" manner. Store the equipment until field installation. Provide location details and a contact for delivery coordination upon receiving the contract's Notice to Proceed.

Transportation of the equipment between the electric shop and the field or interim location(s) shall be the responsibility of the contractor.

Standard spec 106.3 – Approval of Materials
Supplement standard spec 106.3 with the following:

Design/Shop Drawings
Prior to the purchase and/or fabrication of any of the components listed herein, and for any non-catalog item shown on the Material and Equipment List specified above, and no more than 30 days after notice to proceed, submit five copies of design drawings and shop drawings, as required, to the department for review. The items and the drawings that represent them shall meet the requirements of the standard specifications.

Design drawing submissions shall consist of signed and certified designs, design drawings, calculations, and material specifications for required items.

Shop drawings will be required for, but not limited to the following:

- Mounting assemblies for the vehicle speed and classification sensors, including their attachment to the structure.
- Mounting LED warning signs to the sign structure.
- Mounting detail for dynamic message signs.
- Any contractor-designed structure or foundation.

The department will complete its review of the material within 30 days from the date of receipt of the submission, unless otherwise specified. The department will advise the contractor, in writing, as to the acceptability of the material submitted. The department may determine that if no exceptions were taken for the item, it is approved, and no further action is required by the contractor; or the item may be partially or totally rejected, in which case modify and/or amend the submittal as required by the department and resubmit the item within 14 days. At this time, the review and approval cycle described above will begin again.
670-005 (20100709)

78. Intelligent Transportation Systems – General Requirements.

A Description

A.1 General

This contract includes furnishing and installing elements for an Intelligent Transportation System (ITS) in or along the existing roadway as shown on the plans.

Unusual aspects of this project include:

- The project includes working on cables and equipment that are carrying data between roadside equipment and the department's Statewide Traffic Operations Center (STOC). Interruption of this service is not expected to perform this work. If an interruption is determined necessary, it must be done on a weekend, and must be done in a way that minimizes communication outages for the existing equipment. Notify the department's STOC at least 48 hours in advance of the planned interruption.
- The department will furnish some of the equipment to be installed. Make a reasonable effort to discover defects in that equipment prior to installing it.

A.2 Surge Protection

Equip every ungrounded conductor wire entering or leaving any equipment cabinet with a surge protector. For purposes of this section, multiple cabinets on a single pole or foundation are considered a single cabinet.

B Materials

B.1 General

Only furnish equipment and component parts for this work that are new and have high quality workmanship. All controls, indicators, and connectors shall be clearly and permanently labeled in a manner approved by the engineer. All equipment of each type shall be identical.

All electrical equipment shall conform to the standards and requirements of the Wisconsin Electrical Code, the National Electrical Manufacturers Association (NEMA), National Electric Safety Council (NESC), Underwriter's Laboratory Inc. (UL) or the Electronic Industries Association (EIA), when applicable. All materials and workmanship shall conform to the requirements of the National Electrical Code (NEC), Rural Electrification Administration (REA), Standards of the American Society for Testing and Materials (ASTM), American Association of State Highway and Transportation Officials (AASHTO), requirements of the plans these special provisions, the standard specifications, and to any other codes, standards, or ordinances that may apply. All system wiring, conduit, grounding hardware and circuit breakers shall be in conformance with the National Electrical Code. Whenever reference is made to any of the standards mentioned, the reference shall be considered to mean the code, ordinance, or standard that is in effect at the time of the bid advertisement.

B.2 Outdoor Equipment

All conductive connectors, pins (except pins connected by soldering), and socket contacts shall be gold plated. Acrylic conformal coating shall protect each circuit board side that has conductive traces. Except for integrated circuits containing custom firmware, all components shall be soldered to the printed circuit board.

To prevent galvanic corrosion, all connections between dissimilar metals shall incorporate a means of keeping moisture out of the connection. Where the connection need not conduct electricity, interpose a non-absorbing, inert material or washer between the dissimilar metals. Use nonconductive liners and washers to insulate fasteners from dissimilar metals. Where the connection must conduct electricity, use a conductive sealant between the dissimilar metals. Alternatively, use an insulating gasket and a bond wire connecting the two metal parts.

B.3 Custom Equipment

Equipment that is not part of the manufacturer's standard product line, or that is made or modified specifically for this project, shall conform to the following requirements:

Where practical, electronics shall be modular plug-in assemblies to facilitate maintenance. Such assemblies shall be keyed to prevent incorrect insertion of modules into sockets.

All components shall be available from multiple manufacturers as part of the manufacturers' standard product lines. All must be clearly labeled with the value, part number, tolerance, or other information sufficient to enable a technician to order an exact replacement part.

Lamps used for indicator purposes shall be light-emitting diodes.

The printed circuit boards shall be composed of "two-ounce" copper on 1/16-inch thick fiberglass epoxy or equivalent type construction. Holes that carry electrical connections

from one side of the boards to the other shall be completely plated through. Multilayer printed circuit boards shall not be used. The name or reference number used for the board in the drawings and maintenance manuals supplied to the department shall be permanently affixed to each board.

All components shall be mounted so that the identifying markings are visible without moving or removing any part, if practical.

B.3 Environmental Conditions

Equipment shall continue to operate as specified under the following ranges of environmental conditions, except as noted in the specifications for individual pieces of equipment.

1. **Vibration and Shock:** Vehicle speed and classification sensors and any other equipment mounted atop poles or on structures shall not be impaired by the continuous vibration caused by winds (up to 90 mph with a 30 percent gust factor) and traffic.
2. **Duty Cycle**: Continuous
3. **Electromagnetic Radiation:** The equipment shall not be impaired by ambient electrical or magnetic fields, such as those caused by power lines, transformers, and motors. The equipment shall not radiate signals that adversely affect other equipment.
4. **Electrical Power**:
    a. **Operating power:** The equipment shall operate on 120-volts, 60-Hz, single-phase unless otherwise specified. It shall conform to its specified performance requirements when the input voltage varies from 89 to 135 volts and the frequency varies +3 Hz.
    b. **High frequency interference:** The equipment operation shall be unaffected by power supply voltage spikes of up to 150 volts in amplitude and 10 microseconds duration.
    c. **Line voltage transients:** The equipment operation shall be unaffected by voltage transients of plus or minus 20 percent of nominal line voltage for a maximum duration of 50 milliseconds. Equipment in the field shall meet the power service transient requirements of NEMA Standard TS-2 when connected to the surge protectors in the cabinets.
5. Temperature and Humidity:
    a. **Field equipment:** Equipment in the field shall meet the temperature and humidity requirements of NEMA Standard TS-2. Liquid crystal displays shall be undamaged by temperatures as high as 165 degrees F, and shall produce a usable display at temperatures up to 120 degrees F.
    b. **Equipment in Controlled Environments** shall operate normally at any combination of temperatures between 50 degrees F and 100 degrees F, and humidity's between 5 percent and 90 percent, non-condensing, and with a temperature gradient of 9 degrees F per hour.

B.4 Patch Cables and Wiring

All cables and wiring between devices installed in a single cabinet, or in separate cabinets sharing a single concrete base, will be considered incidental to the installation of the devices and no separate payment will be made for them. It is anticipated that this will include fiber optic patch cables between termination panels and Ethernet switches, 10 / 100 MBPS Ethernet cables, RS-232 cables between individual devices and terminal servers, and power cables between individual devices and power sources within the cabinets.

B.5 Surge Protection

Low-voltage signal pairs, including twisted pair communication cable(s) entering each cabinet shall be protected by two-stage, plug-in surge protectors and shall be installed on both ends of camera control cables. The protectors shall meet or exceed the following minimum requirements:

- The protectors shall suppress a peak surge current of up to 10k amps.
- The protectors shall have a response time less than one nanosecond.
- The protector shall clamp the voltage between the two wires at a voltage that is no more than twice the peak signal voltage, and clamp the voltage between each wire and ground at 50 volts.
- The first stage of protection shall be a three-element gas discharge tube, and the second stage shall consist of silicon clamping devices.
- The protector shall also contain a resettable fuse (PTC) to protect against excessive current.
- There shall be no more than two pairs per protector.
- It shall be possible to replace the protector without using tools.

Cables carrying power to curve signs shall be protected at the cabinet by grounded metal oxide varistors of appropriate voltages. The varistors must be at least 0.8 inch in diameter.

C Construction

C.1 Thread Protection

Provide rust, corrosion, and anti-seize protection at all thread assemblies of metallic parts by coating (non-spray) the mating surfaces with an approved compound. Failure to use an approved compound will result in no payment for the items to which coating was to have been applied.

C.2 Cable Installation

When installing new cables into conduits containing existing cables, remove the existing cables and reinstall the existing cables simultaneously with the new cables. Take every precaution necessary to protect the existing cables. In the event of avoidable damage to the existing cables, replace all damaged cables, in-kind, at no additional expense to the department. When cables are pulled into conduit, use a cable pulling lubricant approved by the cable manufacturer. Submit documentation supporting manufacturer approval of the lubricant to the engineer.

C.3 Wiring

Every conductor, except a conductor contained entirely within a single piece of equipment, must terminate either in a connector or on a terminal block. Provide and install the connectors and terminal blocks where needed, without separate payment. Use approved splice kits instead of connectors and terminal blocks for underground power cable splices.

Permanently label and key connectors to preclude improper connection. Obtain prior engineer approval for the labeling method(s) prior to use.

Terminal blocks must be affixed to panels that permanently identify the block and what wire connects to each terminal. This may be accomplished by silk screening or by installing a laminated printed card under the terminal block, with the labels on portions of the card that extend beyond the block. Installation of terminal blocks by drilling holes in the exterior wall of the cabinet is not acceptable.

Use barriers to protect personnel from accidental contact with all dangerous voltages.

Do not install conductors carrying AC power in the same wiring harness as conductors carrying control or communication signals.

Arrange wiring, including fiber optic pigtails, so that any removable assembly can be removed without disturbing wiring that is not associated with the assembly being removed.

Communication and control cables may not be spliced underground, except where indicated on the plans.

Cables in the Statewide Traffic Operations Center or in communication hubs, which are not contained within a single cabinet, shall have at least 10 feet of slack.

C.4 System Operations

If the contractor's operations unexpectedly interrupt Intelligent Transportation Systems (ITS) service, notify the engineer immediately and restore service within 24 hours. Repair all damaged facilities to the condition existing before the interruption. If service is not restored within 24 hours, the department may restore service to any operating device and deduct restoration costs from payments due the contractor.

C.5 Surge Protection

Arrange the equipment and cabinet wiring to minimize the distance between each conductor's point of entry and its protector. Locate the protector as far as possible from electronic equipment. Ensure that all wiring between the surge protectors and the point of entry is free from sharp bends.

D Measurement

No separate measurement will be made for the work described in this article.

E Payment
No separate payment will be made for the work described in this article. All work described in this article shall be included under the ITS items in the contract.
670-010 (20100709)

79. Intelligent Transportation Systems – Signal Assemblies.

Modify standard spec 676 with the following:

676.2.4 Signal Heads

(1) Furnish the housing, visor, lenses, LED modules, and other components consisting of an LED signal head assembly from the statewide approved electrical materials list.

80. Intelligent Transportation System – Communication Vault.

673.2 Materials

(3) Furnish a vault lid with a minimum design load of 15,000 pounds and that has permanent stamp that reads WISDOT COMMUNICATIONS or as the plans show. The vault lid will have 2 slots measuring ½ inch by 4 inches to use as a pull out. The vault lid will also be detectable through the inclusion of detectable metal incorporated into the lid.

81. QMP Concrete Pavement Special Requirements.

This is a specialized QMP Concrete Pavement specification modified for Zoo Interchange projects.

Supplement standard spec 701, 710, 715 with the following:

A Description
A.1 General
Conform to standard spec 320, 415, 416, and 501 as modified in this special provision. Apply this special provision only to the following bid items:

320.0100 - 0199 Concrete Base (inch)
320.0300 - 0399 Concrete Base HES (inch)
415.0060 - 0199 Concrete Pavement (inch)
415.1080 - 1199 Concrete Pavement HES (inch)
415.0410 Concrete Pavement Approach Slab
415.1410 Concrete Pavement Approach Slab HES
415.0310 Concrete Alley
415.1310 Concrete Alley HES
415.0210 Concrete Pavement Gaps

A.2 Contractor Testing for Small Quantities

The requirements under this special provision apply equally to a small quantity for a particular mix design and placement method, except as follows:

- A full quality control plan need not be submitted but provide an organizational chart to the engineer including names, telephone numbers and current certifications of all persons involved in the quality control program.
- The engineer may accept aggregate gradation based upon satisfactory records of previous testing.
- No concrete control charts are required. Submit test results to the engineer each day as they become available. Assure that all properties are within the limits specified in the standard specifications for each sublot tested.
- The department will not adjust the pay for sublots with conforming compressive strength.

B Materials

B.1 Quality Control Plan

Supplement standard spec 701.2.2 and 715.1.1.4 with the following:

Ensure that the plan provides the following elements:

- The locations of the QC laboratories for mix design, aggregate testing, cylinder curing, concrete testing, and compressive strength testing.
- The frequency of contractor quality control testing, if planning to perform more frequently than section B.5 specifies.
- The format for control charts and sampling, testing, and pay adjustment data documentation, if different from the forms provided in the CMM 8.35.

B.2 Laboratory Certification

Supplement standard spec 701.2.4 with the following:

Obtain information on the Wisconsin laboratory qualification program from:

Materials Management Section
935 S. 60th Street
West Allis, Wisconsin 53214
Telephone: (414) 266-1156

B.3 Class I Concrete Mixes

B.3.1 General

For concrete base, use a grade B, B-FA, B-S, B-IS, or B-IP concrete mix conforming to standard spec 501.

Use clean, hard, durable crushed limestone with 100% fractured surfaces and free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances or adherent coatings considered injurious.

Use virgin aggregates only.

B.3.2 Contractor Concrete Mix Design

Delete standard spec 501.2.5.3.4, 501.2.5.4.4, 501.3.1.1.2, 501.3.2.1, 501.3.2.2, and 501.3.2.3. Delete the maximum limit for percent passing the No. 200 (75 µm) sieve from standard spec 501.2.5.3.1 and 501.2.5.4.2.

B.3.2.1 Pavements

Replace standard spec 715.2.3.1(2) and 715.2.3.1(3) with the following:

Provide minimum cement content of 565 pounds per cubic yard (335 kg/m^3). Portland cement may be partially replaced with fly ash at a replacement ratio of not less than one pound (kg) of fly ash per one pound (kg) of cement up to a maximum fly ash content of 30% of total cementitious material. Alternatively, slag may be used as a partial replacement for cement at a replacement ratio of not less than one pound (kg) of slag per one pound (kg) of cement up to a maximum slag content of 30% of the total cementitious material. Alternatively, A combination of fly ash and slag may be used up to a maximum combined fly ash and slag content of 30 percent. Ensure that fly ash conforms to standard spec 501.2.6 and slag conforms to standard spec 501.2.7.

The amount of deleterious substances shall not exceed the following percentages:

DELETERIOUS SUBSTANCE	PERCENT BY WEIGHT
Shale	1.0
Coal	1.0
Clay lumps	0.3
Soft fragments	3.0
Any combination of above	3.0
Thin or elongated pieces based on a 3:1 ratio	15.0
Materials passing the No. 200 (75 µm) sieve	1.5
Chert[1]	3.0

[1] Material classified lithologically as chert and having a bulk specific gravity (saturated surface-dry basis) of less than 2.45. Determine the percentage of chert by dividing the weight of chert in the sample retained on a 3/8-inch (9.5 mm) sieve by the weight of the total sample.

B.3.2.2 Combined Aggregate Gradation

Replace standard spec 715.2.2(1) items 2 and 3 with the following:

2. The percent passing the 1 inch (25 mm) sieve is less than or equal to 95.
3. The percent passing the No. 4 (4.75 mm) sieve is less than or equal to 47.

B.4 Quality Control Program

B.4.1 Control Charts

Maintain control charts when required by the test reporting procedures. Ensure that all tests are recorded and become part of the project records. Plot required test results on the control charts. Include random, non-random, and engineer requested testing but only include the contractor's randomly selected QC test results in the 4-point running average.

Other process control or informational tests on the control charts may be plotted, but do not include them in 4-point running averages.

Post control charts in an engineer-approved location and update daily. Ensure that the control charts include the project number, the test number, each test element, the applicable warning and control limits, the contractor's individual test results, the running average of the last 4 data points, and the engineer's verification and independent assurance test data points. Use the control charts as part of a process control system for identifying potential problems and assignable causes. Format control charts according to CMM 8.30.

Submit control charts to the engineer in a neat and orderly manner within 10 days after completing concrete production.

B.4.2 Documentation
Replace standard spec 701.2.6(3) with the following:

Submit original paper copy testing records to the engineer in a neat and orderly manner within 10 days after completing concrete production.

B.5 Contractor Testing
B.5.1 General
Supplement standard spec 701.3 with the following:

Ensure that all test results are available for the engineer's review at any time during normal working hours.

B.5.2 Aggregate Testing
B.5.2.1 General
Supplement standard spec 710.5.6.1 with the following:

Ensure that only results of randomly selected QC tests are included in the 4-point running average.

Use control limits for sieve sizes as identified in the project concrete mix report or, if the concrete mix report is not published at the time of testing, in the contractor's quality control plan. Gradation warning limits are inside the upper and lower control limit values by one percentage point for all sieves except as follows:

1. The upper warning limits for percent passing the No. 100 (150 μm) and No. 200 (75 μm) sieves are inside the control limit by 0.5 percent.
2. For sieves allowing 100 percent passing, there is no upper warning limit. For sieves with 0 percent passing, there is no lower warning limit.

Replace standard spec 710.5.6.2(2) with the following:

Wash each sample of fine aggregate and the first 4 samples of each of the coarse aggregates. If the percent passing the No. 200 (75 μm) sieve for the combined gradation is less than the warning limit, wash at least every 10th sample of each of the coarse aggregates. If the percent passing the No. 200 (75 μm) sieve for the combined gradation is greater than or equal to the warning limit, wash each sample of the coarse aggregate until 4 consecutive tests are less than the warning limit.

B.5.2.2 Documentation
Maintain control charts at the laboratory for each aggregate stockpile. Maintain a chart for each control sieve for each material. Record contractor test results the same day tests are conducted.

B.5.2.3 Corrective Action
When the 4-point running average value approaches a warning limit, consider corrective action. Ensure that any corrective action is documented and becomes part of the project records.

Document whenever a 4-point running average exceeds the warning limits. When a second consecutive running average value exceeds the warning limits, take corrective action. Continue corrective action until 2 consecutive average points are within the warning limits.

Notify the engineer whenever an individual test value exceeds a control limit. Material is nonconforming when an individual test exceeds the control limit. The quantity of nonconforming material includes the material of the first test exceeding the control limit, continuing to but not including, the material from the first subsequent test that is within the control limits. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

B.5.3 Aggregate Percent Passing the No. 200 Sieve
B.5.3.1 Sampling and Testing
Measure and record the percent passing the No. 200 (75 μm) sieve of both the fine and course aggregates when producing concrete pavement. Conduct tests according to AASHTO T 11 as modified by the department. Test at least one sample as early as it is practical each day and as mix or material conditions change. This testing frequency may be reduced, if the engineer approves, but maintain at least one test per 5 days of concrete production.

Document testing as specified in B.6.1, B.7.2.1, and B.7.2.2, by developing a combined gradation control chart for the percent passing the No. 200 (75 μm) sieve. Use the control limits defined in the concrete pavement mix report. Ensure that only results of QC tests are included in the 4-point running average.

B.5.3.2 Corrective Action
When an individual test approaches a warning limit, consider corrective action. Document corrective actions and include that documentation in the project records.

Notify the engineer if an individual test exceeds the warning limits. If a second consecutive individual test exceeds the warning limits, the engineer will assist in determining the course of corrective action. If the corrective action improves the property in question such that additional individual tests are within the warning limits, production may continue. If the correction does not improve the property, and new individual tests stay in the warning band, repeat the steps outlined here in B.7.3.2(2) starting with notifying the engineer.

Notify the engineer whenever an individual test value exceeds a control limit. Material is nonconforming when an individual test exceeds the control limit. The quantity of nonconforming material includes the material of the first test exceeding the control limit, continuing to but not including, the material from the first subsequent test that is within the control limits. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

B.5.4 Lot and Sublot Definition
Supplement standard spec 715.3.1.2.1 with the following:

Ensure that no single lot contains concrete of more than one mix design, or more than one placement method, except for mainline pavement gaps.

B.5.4.1 Lots by Lane-Feet
Supplement standard spec 715.3.1.2.2 with the following:

Lots and sublots may include concrete from more than one day of paving.

A sublot is 350 linear feet for 3-lane paving width or 2-lane plus shoulder.

Sublots at either end of a paving pass may be greater than 1000 lane-feet in size to accommodate the actual project length and staging requirements. For ease of layout, begin the first sublot at the first even station of the project. Place the resulting partial quantity into the first full sublot.

Document the locations and quantities of integral shoulders, and identify the travel lane sublot tests used for acceptance. For a shoulder pavement placed in a separate paving pass, designate separate lots and sublots.

Ancillary concrete placed integrally with a pavement may be accepted using the tests from the pavement sublot. Document the locations and quantities of integral concrete, and identify the pavement sublot tests used for acceptance.

B.5.4.2 Non-Mainline Surfaces
Non-mainline surfaces shall be defined as all concrete surfaces under this special provision, which are not mainline travel lanes or mainline shoulders.

Lots and sublots may include concrete from more than one day of paving.

A lot consists of a minimum of 4 sublots and a maximum of 8 sublots.

All sublots within a lot shall have the same approximate size.

A sublot is a maximum of 250 cubic yards of concrete.

B.5.5 Strength Evaluation
B.5.5.1 General
Supplement standard spec 715.3.2.1(1) with the following:

Include tests of concrete base and high early strength concrete for all other QC testing, except no 28-day cylinders are required for concrete base or for high early strength concrete.

B.5.5.2 Removal and Replacement
B.5.5.2.1 Pavement
Replace standard spec 715.3.2.2.1 with the following:

If a sublot strength is less than 3000 psi (17.2 MPa), the department may direct that sublot to be cored to determine its structural adequacy and whether to direct removal. Cut and test cores according to AASHTO T 24 as and where the engineer directs. Have an HTCP certified PCC technician I perform or observe the coring. Bear all coring and testing costs, fill all core holes with an approved grout, and provide traffic control during coring at no cost to the department.

The sublot pavement is conforming if the compressive strengths of all cores from the sublot are 3000 psi (17.2 MPa) or greater or the engineer does not require coring.

The sublot pavement is nonconforming if the compressive strengths of any core from the sublot is less than 3000 psi (17.2 MPa). The department may direct removal and replacement or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

B.5.6 Air Content

Supplement standard spec 710.5.3 with the following:

The lower warning limit for air content is 0.5 percent above the lower control limit. There is no upper warning limit.

B.5.6.1 Documentation

Maintain a control chart at a fixed location on the project site. Ensure that all test results are recorded and become part of the project records. Chart all results on the same day tests are conducted. Only plot results of samples selected randomly in the 4-point running average.

B.5.6.2 Corrective Action

If an individual air test is between the lower warning limit and lower control limit, double the air content test frequency to 2 tests per compressive strength sublot. Perform one of these tests from the same concrete sample used for the QC strength cylinders. Select the second sample randomly from the half of the sublot not used for the QC strength cylinders. Determine both random test locations within a sublot before paving that sublot. Continue testing at increased frequency until an individual test point is above the lower warning limit and below the upper control limit.

When the 4-point running average value trend is towards the lower warning limit or the upper control limit, consider corrective action.

Notify the engineer if a 4-point running average is less than the lower warning limit. If a second consecutive running average is below the warning limit, the engineer will assist in determining the course of corrective action. If the corrective action improves the property in question such that the new running average, after four additional individual tests, is between the lower warning limit and upper control limit, production may continue. If the new running average is below the lower warning limit, repeat the steps outlined here in B.7.5.2(3) starting with notifying the engineer.

If an individual air test is outside the control limits, notify the engineer, and perform additional air tests as often as it is practical on subsequent loads until the air content is inside the control limits. The material is nonconforming when an individual test exceeds the control limit. Material from the load with the first test exceeding the control limit, continuing to but not including the load with the first subsequent test within the control limits, is nonconforming. The department may direct removal and replacement or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

B.6 Department Testing

B.6.1 Verification Testing

Supplement standard spec 701.4.2 with the following:

The department will perform verification testing as follows:

	Testing Frequency Guide[1]	Sampling Material and Location	Test Method	Alternate Test Methods
Air content	1 per lot	Plastic concrete, ahead or behind[2] the paver	AASHTO T 152 as modified	Hardened air content testing[2] after construction
28-day compressive strength	1 per lot	Cylinders	AASHTO T 22, T 23 and T 141 as modified	Random cores[2] after construction

[1] The engineer may increase the frequency at start-up or as necessary to validate the quality of the materials. The engineer may reduce the frequency based on a history of satisfactory contractor or material performance.

[2] Evaluation of test results shall account for systematic differences in testing methods or sampling locations.

The department will conduct verification testing for pavement thickness as specified in standard spec 415.3.16.

Plot verification tests on the contractor's quality control charts as specified in B.4.1. Do not include verification tests in the 4-point running average.

B.6.2 Independent Assurance Testing

Supplement standard spec 701.4.3 with the following:

Plot the independent assurance tests on the contractor's quality control charts as specified in B.6.1. Do not include independent assurance tests in the 4-point running average.

B.7 Dispute Resolution

The engineer and contractor shall 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.

If the project personnel cannot resolve a dispute and the dispute affects payment or could result in incorporating nonconforming 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 tests 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.

B.8 Acceptance
The department will accept concrete pavement based on the contractor QC tests unless it is shown through the verification or the dispute resolution process that the contractor's tests are in error.

C (Vacant)

D (Vacant)

E Payment
E.1 General
Replace standard spec 715.5.1(4) with the following:

The department will adjust pay for each lot using percent within limits (PWL) of the 28-day sublot average strengths for that lot. The department will measure PWL relative to the lower specification limit of 4500 psi.

E.2 Pavements
Replace standard specs 715.5.2(1) through 715.5.2(3) with the following:

The department will adjust pay for each lot using equation "QMP 3.02" as follows:

Percent Within Limits (PWL)	**Pay Adjustment***[1]* (dollars per square yard)
≥ 85 to 100	0
≥ 50 to < 85	(1.5/55 x PWL) – (127.5/55)
< 50	-1.5

[1] For lots with less than 4 sublots, the department will assess a disincentive based on the individual sublot average strengths. The department will reduce pay for sublots with an average strength below 4500 psi by $1.50 per square yard.

SEF Rev.12_1101

82. Abatement of Asbestos Containing Material Structure B-40-0132, Item 203.0210.S.0001; Structure B-40-0133, Item 203.0210.S.0002.

A Description

This special provision describes abating asbestos containing material on structures in accordance to the plans, the pertinent provisions of the standard specifications, and as hereinafter provided.

B (Vacant)

C Construction

Timothy G. Petrofske, License Number A11-115985, inspected Structure B-40-0132 and Structure B-40-0133 for asbestos on May 27, 2009 Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities:

Structure B-40-0132 and Structure B-40-0133				
Location	Description	Analytical Results and Method	Category	Quantity
Bridge Parapet	Electrical Box	ATC	Category II Non-Friable	2 (4 feet x 2 ft)
Underside on Bridge Column Support	Lights	ATC	Category II Non-Friable	2(1 feet x 1 ft)
Bridge Column	Electrical Box	ATC	Category II Non-Friable	2(1 feet x 1 ft)
Bridge Column	Conduit	ATC	Category II Non-Friable	2(40 feet x 1 in)
Bridge Column	Conduit	ATC	Category II Non-Friable	2(3 feet x 2 in)

Note: ATC = Assumed to Contain Asbestos

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from:
Name: Bill Mohr, P.E.
Address: 141 NW Barstow Street, Waukesha, WI 53187-0798
Phone: (262) 548-5666
Fax: (262) 548-6891
e-mail: Bill.mohr@dot.wi.gov

In accordance to NR447 and DHS159 , ensure that DNR or DHS receives a completed Notification of Demolition and/or Renovation (DNR Form 4500-113 (R 4/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days prior to beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Bill Mohr at (262) 548-5666 and DOT BTS-ESS attn: Hazardous Materials Specialist

PO Box 7965, Madison, WI. 53707-7965. In addition, comply with all local or municipal asbestos requirements.

Use the following information to complete WisDNR form 4500-113 :

- Site Name: Structure B-40-0132, USH 45 Southbound Zoo Freeway over Watertown Plank Road
  - Site Address:3.6M S JCT STH 190 to E, City of Wauwatosa (40291)
  - Ownership Information: WisDOT Transportation Southeast Region, 141 NW Barstow Street, PO Box 798, Waukesha, WI 53187-0798
  - Contact: Kurt Fleirl
  - Phone: (262) 548-8724
  - Age: 53 years old. This structure was constructed in 1961.
  - Area: 13,950 SF of deck

- Site Name: Structure B-40-0133, USH 45 Northbound Zoo Freeway over Watertown Plank Road
  - Site Address: 1.5M N JCT IH 894 TO W, City of Wauwatosa (40291)
  - Ownership Information: WisDOT Transportation Southeast Region, 141 NW Barstow Street, PO Box 798, Waukesha, WI 53187-0798
  - Contact: Kurt Fleirl
  - Phone: (262) 548-8724
  - Age: 53 years old. This structure was constructed in 1961.
  - Area: 13,880 SF of deck

Insert the following paragraph in Section 6.g.:

- If asbestos not previously identified is found or previously non-friable asbestos becomes crumbled, pulverized, or reduced to a powder, stop work immediately, notify the engineer, and the engineer will notify the department's Bureau of Technical Services at (608) 266-1476 for an emergency response in accordance to standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

D Measurement

The department will measure Abatement of Asbestos Containing Material (Structure) as a single complete unit of work, completed in accordance to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S.0001	Abatement of Asbestos Containing Material Structure B-40-0132	LS
203.0210.S.0002	Abatement of Asbestos Containing Material Structure B-40-0133	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; properly disposing of all waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.
203-005 (20120615)

83. Abandoning Sewer, Item 204.0291.S.

A Description
This special provision describes abandoning existing sewer by filling it with cellular concrete according to the pertinent requirements of standard spec 204 and 501, as shown in the plans, and as hereinafter provided.

B Materials
Provide cellular concrete meeting the following specifications: 1 part cement, 1 part fly ash, 8 parts sand, or an approved equal, and water. Provide cement meeting the requirements of standard spec 501.2.1 for Type 1 Portland Cement. Provide sand meeting the requirements of standard spec 501.2.5.3 Provide water meeting the requirements of standard spec 501.2.4.

C Construction
Fill the abandoned sewer pipe with cellular concrete as directed by the engineer. In the event that the sewer cannot be completely filled from existing manholes, tap the sewer where necessary and fill from these locations.

D Measurement
The department will measure Abandoning Sewer in volume by the cubic yard according to standard spec 109.1.3.

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

ITEM NUMBER	DESCRIPTION	UNIT
204.0291.S	Abandoning Sewer	CY

Payment is full compensation for furnishing all materials and excavating and backfilling where necessary.
204-050 (20080902)

84. Removing Flexible Tubular Marker Posts and Bases, Item 204.9060.S.0001.

A Description
This special provision describes removing Flexible Tubular Marker Posts and Bases in accordance to the pertinent provisions of standard spec 204 and as hereinafter provided.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Removing Flexible Tubular Marker Posts and Bases as each individual unit, acceptably completed.

E Payment
Supplement standard spec 204.5 to include the following:

ITEM NUMBER	DESCRIPTION	UNIT
204.9060.S.0001 204-025 (20041005)	Removing Flexible Tubular Marker Posts and Bases	Each

85. Removing Barricades Permanent Type III, Item 204.9060.S.0002.

A Description
This special provision describes removing Barricades Permanent Type III in accordance to the pertinent provisions of standard spec 204 and as hereinafter provided.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Removing Barricades Permanent Type III as each individual unit, acceptably completed.

E Payment
Supplement standard spec 204.5 to include the following:

ITEM NUMBER	DESCRIPTION	UNIT
204.9060.S.0002 204-025 (20041005)	Removing Barricades Permanent Type III	Each

86. Temporary Shoring, Item 206.6000.S.

A Description
This special provision describes designing and providing temporary shoring at locations the plans show.

B Materials
B.1 Shoring Design
Provide a shoring design for each location where the plan requires temporary shoring. Have a professional engineer, registered in the State of Wisconsin and knowledgeable of the specific site conditions and requirements, verify the adequacy of the design. Submit

one copy of each shoring design, signed and sealed by the same professional engineer verifying the design, to the engineer for incorporation into the permanent project record.

C Construction
Provide temporary shoring at each required location conforming to the design developed for that location.

Remove the shoring when it is no longer needed unless the engineer allows it to remain in place. Backfill the space that is excavated but not occupied by the new permanent construction conforming to standard spec 206.3.13.

D Measurement
The department will measure Temporary Shoring by the square foot, acceptably completed at locations the plans show, measured as the area of exposed face in the plane of the shoring from the ground line in front of the shoring to a maximum of one foot above the retained grade. Shoring used for staged construction in multiple configurations without removal and reinstallation will be measured once based on the configuration with the largest area of exposed face.

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

ITEM NUMBER	DESCRIPTION	UNIT
206.6000.S	Temporary Shoring	SF

Payment is full compensation for designing and providing shoring; for providing a signed and sealed copy of the design; and for backfilling and removing the shoring.

The department will not pay for temporary shoring, installed for contractor convenience, that is not required in the plans.
206-005 (20110615)

87. Backfill Controlled Low Strength, Item 209.0200.S.

A Description
This special provision describes furnishing and placing a controlled low strength material designed for use as backfill in trenches for culverts, sewers, utilities, or similar structures, as backfill behind bridges abutments, or as fill for the abandonment of culverts, pipes, or tanks.

B Materials
Provide controlled low strength backfill that consists of a designed cementitious mixture of natural or processed materials. Allowable materials include natural sand, natural gravel, produced sand, foundry sand, produced gravel, fly ash, Portland cement, and other broken or fragmented mineral materials. The designed mixture shall be self-leveling and shall be free of shrinkage after hardening. Design the mixture to reach a state of

hardening such that it can support foot traffic in no more than 24 hours. Provide a mixture that also meets the following requirements.

Test	Method	Value
Flow (inch)	ASTM D-6103	9 min
Compressive Strength (psi)	ASTM D-6024	20-40 @ 14 days 40-80 @ 28 days 80-120 @ 90 days

Chemical admixtures to control air content and setting time are allowable. Ten days prior to placement, furnish the engineer with a design mix detailing all components and their proportions in the mix. Also, provide documentation from the supplier of the industrial byproducts that the foundry sand and fly ash used in the mixture meet the requirements for Industrial Byproducts Categories 1, 2, 3, or 4 in NR 538 of the Wisconsin Administrative Code for use as a confined geotechnical fill.

C Construction

Place controlled low strength backfill at the locations and to the lines and grades as shown on the plan. Proportion and mix materials to produce a product of consistent texture and flow characteristics. The engineer may reject any materials exhibiting a substantial change in properties, appearance, or composition.

If the official Weather Bureau forecast for the construction site predicts temperatures at or below freezing within the next 24 hours after placement of controlled low strength backfill, protect the placed materials from freezing during that time period. If the temperature is not forecast to rise above 40º F for 72 hours after placement, the engineer may require protection from freezing for up to 72 hours.

No controlled low strength backfill shall be allowed to enter any stream, lake, or sewer system. The contractor shall be responsible for any clean up or remediation costs resulting from such occurrences.

D Measurement

The department will measure Backfill Controlled Low Strength in volume by the cubic yard of material placed and accepted. Such volume shall be computed from actual measurements of the dimensions of the area to be backfilled. In irregular or inaccessible areas, the engineer may allow volume to be determined by other appropriate methods.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
209.0200.S	Backfill Controlled Low Strength	CY

Payment is full compensation for designing the mix; supplying all materials; preparing the proportioned mix; hauling it to the construction site; placing the material; and protecting it from freezing.

88. 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 sublot 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:

Segments with a Posted Speed Limit of 55 MPH or Greater	
Category	**Description**
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.

Segments with Any Portion Having a Posted Speed Limit Less Than 55 MPH	
Category	**Description**
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[1] (dollars)
> 175	(Length in Feet) x (IRI – 175)

[1] 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:

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

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

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

[1] 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.

[2] 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.

440-010 (20100709)

89. Expansion Device, B-40-783; B-40-784; and B-40-776.

A Description

This special provision describes furnishing and installing an expansion device in accordance to standard spec 502, as shown on the plans, and as hereinafter provided.

B Materials

The minimum thickness of the polychloroprene strip seal shall be ¼-inch for non-reinforced elastomeric glands and 1/8-inch for reinforced glands. Furnish the strip seal gland in lengths suitable for a continuous one-piece installation at each individual expansion joint location. Provide preformed polychloroprene strip seals that conform to the requirements ASTM D3542, and have the following physical properties:

Property Requirements	Value	Test Method
Tensile Strength, min.	2000 psi	ASTM D412
Elongation @ Break, min	250%	ASTM D412
Hardness, Type A, Durometer	60 ± 5 pts.	ASTM D2240
Compression Set, 70 hours @212˚F, max.	35%	D395 Method B Modified
Ozone Resistance, after 70 hrs. at 100˚F under 20% Strain with 100 pphm ozone	No Cracks	ASTM D1149 Method A
Mass Change in Oil 3 after 70 hr. 212˚F Mass Change, max.	45%	ASTM D471

Install the elastomeric strip seal gland with tools recommended by the manufacturer, and with a lubricant adhesive conforming to the requirements of ASTM D4070.

The manufacturer and model number shall be one of the following approved strip seal expansion device products:

	Model Number Strip Seal Gland Size*		
Manufacturer	**4-Inch**	**5-Inch**	**6-Inch**
D.S. Brown	SSA2-A2R-400	SSA2-A2R-XTRA	SSA2-A2R-XTRA
R.J. Watson	RJA-RJ400	RJA-RJ500	RJA-RJ600
Watson Bowman Acme	A-SE400	A-SE500	A-SE800
Commercial Fabricators	A-AS400	-----	-----

*Expansion device strip seal gland size requirement of 4”, 5”, and 6” shall be as shown on the plans.

Furnish manufacturer's certification for production of polychloroprene represented showing test results for the cured material supplied, and certifying that it meets all specified requirements.

The steel extrusion or retainer shall conform to ASTM designation A 709 grade 36 steel. After fabrication, steel shall be galvanized conforming to the requirements ASTM A123.

Manufacturer's certifications for adhesive and steel shall attest that the materials meet the specification requirements.
502-020 (20110615)

90. Concrete Staining B-40-776, Item 517.1010.S.0001; Concrete Staining B-40-777, Item 517.1010.S.0002; Concrete Staining B-40-778, Item 517.1010.S.0003; Concrete Staining B-40-779, Item 517.1010.S.0004; Concrete Staining B-40-780, Item 517.1010.S.0005; Concrete Staining B-40-781, Item 517.1010.S.0006; Concrete Staining B-40-782, Item 517.1010.S.0007; Concrete Staining B-40-783, Item 517.1010.S.0008 ; Concrete Staining B-40-784, Item 517.1010.S.0009; Concrete Staining R-40-486, Item 517.1010.S.0010; Concrete Staining R-40-487, Item 517.1010.S.0011; Concrete Staining R-40-488, Item 517.1010.S.0012; Concrete Staining R-40-489, Item 517.1010.S.0013; Concrete Staining R-40-490, Item 517.1010.S.0014; Concrete Staining R-40-491, Item 517.1010.S.0015; Concrete Staining S-40-58, Item 517.1010.S.0016; Concrete Staining B-40-775, Item 517.1010.S.0017; Concrete Staining R-40-484, Item 517.1010.S.0018; Concrete Staining R-40-485, Item 517.1010.S.0019; Concrete Staining R-40-492, Item 517.1010.S.0020; Concrete Staining S-40-57, Item 517.1010.S.0021; Concrete Staining S-40-59, Item 517.1010.S.0022; Concrete Staining S-40-60, Item 517.1010.S.0023; Concrete Staining S-40-61, Item 517.1010.S.0024; Concrete Staining S-40-62, Item 517.1010.S.0025; Concrete Staining S-40-63, Item 517.1010.S.0026; Concrete Staining S-40-153, Item 517.1010.S.0027.

A Description
Furnish and apply a two coat concrete stain to the exposed concrete surfaces of the structure, as detailed in the plans and as hereinafter provided.

B Materials

B.1 Mortar

Use mortar for sack rubbing the concrete surfaces as given in standard spec 502.3.7.5 or use one of the following products:

Preblended, Packaged Type II Cement:	Tri-Mix by TK Products
	Thoroseal Pearl Gray by Thoro Products

The mortar shall contain one of the following acrylic bonding admixtures mixed and applied in accordance to manufacturer's recommendations:

Acrylic Bonding Admixture:	TK-225 by TK Products
	Achro 60 by Thoro Products
	Achro Set by Master Builders

B.2 Concrete Stain

Use concrete stain manufactured for use on exterior concrete surfaces, consisting of a base coat and a pigmented sealer finish coat. Use the following products, or equal as approved by the department, as part of the two coat finish system:

Tri-Sheen Concrete Surfacer, Smooth by TK Products
Tri-Sheen Acrylic by TK Products
TK-1450 Natural Look Urethane Anti-Graffiti Primers by TK Products
Safe-Cure and Seal EPX by Chem Masters
H + C Shield Plus by Sherwin-Williams

C Construction

C.1 General

Furnish, prepare, apply, cure, and store all materials in accordance to the product manufacturer's specifications for the type and condition of application required.

Match or exceed the stain manufacturer's minimum recommended curing time of the concrete or 28 days, whichever is greater, prior to staining.

C.2 Preparation of Concrete Surfaces

Provide a sack rubbed finish in accordance to standard spec 502.3.7.5, using mortar as indicated above on concrete surfaces with open voids or honeycombing.

Following the sack rubbing, clean all concrete surfaces that are to be coated to ensure that the surface is free of all laitance, dirt, dust, grease, efflorescence, and any foreign material and that the surface will accept the coating material according to product requirements. As a minimum, clean the surface using a 3000-psi water blast. Hold the nozzle of the water blaster approximately 6 inches from the concrete surface and move it continuously in a sweeping motion. Give special attention to smooth concrete surfaces to produce an acceptable surface texture. Correct any surface problems resulting from the surface preparation methods. Grit blasting of the concrete surface is not allowed.

C.3 Staining Concrete Surfaces
Apply the concrete stain in accordance to the manufacturer's recommendations.

Apply the concrete stain when the temperature of the concrete surface is 45º F or higher, or as given by the manufacturer.

The color of the stain shall be as given on the plan. Tint the base coat to match the finish coat; the two coats shall be compatible with each other.

Do not begin staining the structure until earthwork operations are completed to a point where this work can begin without receiving damage. Where this work is adjacent to exposed soil or pavement areas, provide temporary covering protection from overspray or splatter.

C.4 Test Areas
Prior to applying stain to the structure, apply the stain to sample panels measuring a minimum of 48-inches x 48-inches and constructed to demonstrate workmanship in the use of the form liner specified on the structure if applicable. Match or exceed the stain manufacturer's minimum recommended curing time of the concrete or 28 days, whichever is greater, prior to staining. Prepare the concrete surfaces of the sample panels and apply stain using the same materials and in the same manner as proposed for the structure, including staining of the joints between the stones produced by the form liner if applicable. Do not apply stain to the structure until the department approves the test panels.

C.5 Surfaces to be Coated.
Apply concrete stain to the surfaces in accordance to the plan.

D Measurement
The department will not measure Concrete Staining (Structure). The department will use pay plan quantities according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1010.S.0001	Concrete Staining B-40-776	SF
517.1010.S.0002	Concrete Staining B-40-777	SF
517.1010.S.0003	Concrete Staining B-40-778	SF
517.1010.S.0004	Concrete Staining B-40-779	SF
517.1010.S.0005	Concrete Staining B-40-780	SF
517.1010.S.0006	Concrete Staining B-40-781	SF
517.1010.S.0007	Concrete Staining B-40-782	SF
517.1010.S.0008	Concrete Staining B-40-783	SF
517.1010.S.0009	Concrete Staining B-40-784	SF

ITEM NUMBER	DESCRIPTION	UNIT
517.1010.S.0010	Concrete Staining R-40-486	SF
517.1010.S.0011	Concrete Staining R-40-487	SF
517.1010.S.0012	Concrete Staining R-40-488	SF
517.1010.S.0013	Concrete Staining R-40-489	SF
517.1010.S.0014	Concrete Staining R-40-490	SF
517.1010.S.0015	Concrete Staining R-40-491	SF
517.1010.S.0016	Concrete Staining S-40-58	SF
517.1010.S.0017	Concrete Staining B-40-775	SF
517.1010.S.0018	Concrete Staining R-40-484	SF
517.1010.S.0019	Concrete Staining R-40-485	SF
517.1010.S.0020	Concrete Staining R-40-492	SF
517.1010.S.0021	Concrete Staining S-40-57	SF
517.1010.S.0022	Concrete Staining S-40-59	SF
517.1010.S.0023	Concrete Staining S-40-60	SF
517.1010.S.0024	Concrete Staining S-40-61	SF
517.1010.S.0025	Concrete Staining S-40-62	SF
517.1010.S.0026	Concrete Staining S-40-63	SF
517.1010.S.0027	Concrete Staining S-40-153	SF

Payment is full compensation for furnishing and applying the two coat system; for preparing the concrete surface; and for preparing the sample panels.
517-110 (20100709)

91. Concrete Staining Multi-Color B-40-777, Item 517.1015.S.0001; Concrete Staining Multi-Color B-40-778, Item 517.1015.S.0002; Concrete Staining Multi-Color B-40-779, Item 517.1015.S.0003; Concrete Staining Multi-Color B-40-780, Item 517.1015.S.0004; Concrete Staining Multi-Color B-40-781, Item 517.1015.S.0005; Concrete Staining Multi-Color B-40-782, Item 517.1015.S.0006; Concrete Staining Multi-Color B-40-784, Item 517.1015.S.0007; Concrete Staining Multi-Color R-40-491, Item 517.1015.S.0008; Concrete Staining Multi-Color R-40-492, Item 517.1015.S.0009.

A Description
Furnish and apply a multi-color concrete stain to the exposed concrete surfaces of the structure, as detailed in the plans and as hereinafter provided.

B Materials
B.1 Mortar
Use mortar for sack rubbing the concrete surfaces as given in standard spec 502.3.7.5 or use one of the following products:

Preblended, Packaged Type II Cement:	Tri-Mix by TK Products Thoroseal Pearl Gray by Thoro Products

The mortar shall contain one of the following acrylic bonding admixtures mixed and applied in accordance to manufacturer's recommendations:

Acrylic Bonding Admixture:	TK-225 by TK Products Achro 60 by Thoro Products Achro Set by Master Builders

B.2 Concrete Stain

Use concrete stain manufactured for use on exterior concrete surfaces. Use the following products, or equal as approved by the department:

Tri-Sheen Concrete Surfacer, Smooth by TK Products
Tri-Sheen Acrylic by TK Products
TK-1450 Natural Look Urethane Anti-Graffiti Primers by TK Products
Safe-Cure and Seal EPX by Chem Masters
H + C Shield Plus by Sherwin-Williams

C Construction

C.1 General

Furnish, prepare, apply, cure, and store all materials in accordance to the product manufacturer's specifications for the type and condition of application required.

Match or exceed the stain manufacturer's minimum recommended curing time of the concrete or 28 days, whichever is greater, prior to staining.

C.2 Preparation of Concrete Surfaces

Provide a sack rubbed finish in accordance to standard spec 502.3.7.5, using mortar as indicated above on concrete surfaces with open voids or honeycombing.

Following the sack rubbing, clean all concrete surfaces that are to be coated to ensure that the surface is free of all laitance, dirt, dust, grease, efflorescence, and any foreign material and that the surface will accept the coating material according to product requirements. As a minimum, clean the surface using a 3000-psi water blast. Hold the nozzle of the water blaster approximately 6 inches from the concrete surface and move it continuously in a sweeping motion. Give special attention to smooth concrete surfaces to produce an acceptable surface texture. Correct any surface problems resulting from the surface preparation methods. Grit blasting of the concrete surface is not allowed.

C.3 Staining Concrete Surfaces

Apply the concrete stain in accordance to the manufacturer's recommendations.

Apply the concrete stain when the temperature of the concrete surface is 45º F or higher, or as given by the manufacturer.

The color of the staining shall produce a multi-color effect that consists of multiple colors replicating varying natural stone coloration. Stain the joints between stones produced by the form liner to create the appearance of grouted joints.

Do not begin staining the structure until earthwork operations are completed to a point where this work can begin without receiving damage. Where this work is adjacent to exposed soil or pavement areas, provide temporary covering protection from overspray or splatter.

C.4 Test Areas
Prior to applying stain to the structure, apply the stain to sample panels measuring a minimum of 48-inches x 48-inches construct the panels to demonstrate workmanship in the use of the form liner specified on the structure. Match or exceed the stain manufacturer's minimum recommended curing time of the concrete or 28 days, whichever is greater, prior to staining. Submit color samples to the department prior to staining the sample panels. Prepare the concrete surfaces of the sample panels and apply stain using the same materials and in the same manner as proposed for the structure, including staining of the joints between stones produced by the form liner. Do not apply stain to the structure until the department approves the test panels.

C.5 Surfaces to be Coated.
Apply concrete stain to the surfaces in accordance to the plan.

D Measurement
The department will not measure Concrete Staining Multi-Color (Structure). The department will use pay plan quantities according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1015.S.0001	Concrete Staining Multi-Color B-40-777	SF
517.1015.S.0002	Concrete Staining Multi-Color B-40-778	SF
517.1015.S.0003	Concrete Staining Multi-Color B-40-779	SF
517.1015.S.0004	Concrete Staining Multi-Color B-40-780	SF
517.1015.S.0005	Concrete Staining Multi-Color B-40-781	SF
517.1015.S.0006	Concrete Staining Multi-Color B-40-782	SF
517.1015.S.0007	Concrete Staining Multi-Color B-40-784	SF
517.1015.S.0008	Concrete Staining Multi-Color R-40-491	SF
517.1015.S.0009	Concrete Staining Multi-Color R-40-492	SF

Payment is full compensation for furnishing and applying the coloring system; for preparing the concrete surface; and for constructing and staining the sample panels.
517-115 (20100709)

92. Architectural Surface Treatment B-40-777, Item 517.1050.S.0001; Architectural Surface Treatment B-40-778, Item 517.1050.S.0002; Architectural Surface Treatment B-40-779, Item 517.1050.S.0003; Architectural Surface Treatment B-40-780, Item 517.1050.S.0004; Architectural Surface Treatment B-40-781, Item 517.1050.S.0005; Architectural Surface Treatment B-40-782, Item 517.1050.S.0006; Architectural Surface Treatment B-40-784, Item 517.1050.S.0007; Architectural Surface Treatment R-40-486, Item 517.1050.S.0008; Architectural Surface Treatment R-40-487, Item 517.1050.S.0009; Architectural Surface Treatment R-40-489, Item 517.1050.S.0011; Architectural Surface Treatment R-40-490, Item 517.1050.S.0012; Architectural Surface Treatment R-40-491, Item 517.1050.S.0013; Architectural Surface Treatment R-40-492, Item 517.1050.S.0014.

A Description

Construct a concrete masonry architectural surface treatment on the exposed concrete surfaces of the structure, as detailed in the plans and as hereinafter provided.

B Materials

Use form liners that attach easily to the forming system, and do not compress more than ¼-inch when poured at a rate of 10 vertical feet/hour.

Use a release agent that is compatible with the form liner and coloring materials.

Wall ties shall have set "break-backs" at a minimum of ¾-inches from the finished concrete surface.

C Construction

C.1 Equipment

Equipment and tools necessary for performing all parts of the work shall be satisfactory as to design, capacity, and mechanical condition for the purposes intended. Repair, improve, replace, or supplement all equipment that is not maintained in full working order, or which is proven inadequate to obtain the results prescribed.

C.2 Form Liner Preparation

Clean the form liner prior to each pour and ensure that it is free of any build-up. Visually inspect each liner for blemishes or tears, and repair if necessary per manufacturer's recommendations.

Apply form release per manufacturer's recommendations.

C.3 Form Liner Attachment
Place adjacent liners less than ¼-inch from each other, attach liner securely to forms in accordance to the manufacturer's recommendations, and coordinate wall ties with form liner and form manufacturer, e.g., diameter, size, and frequency.

C.4 Surface Finishing
Ensure that the textured surface is free of laitance; sandblasting is not permitted.

Grind or fill pouring blemishes.

D Measurement
The department will not measure Architectural Surface Treatment (Structure). The department will use pay plan quantities according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1050.S.0001	Architectural Surface Treatment B-40-777	SF
517.1050.S.0002	Architectural Surface Treatment B-40-778	SF
517.1050.S.0003	Architectural Surface Treatment B-40-779	SF
517.1050.S.0004	Architectural Surface Treatment B-40-780	SF
517.1050.S.0005	Architectural Surface Treatment B-40-781	SF
517.1050.S.0006	Architectural Surface Treatment B-40-782	SF
517.1050.S.0007	Architectural Surface Treatment B-40-784	SF
517.1050.S.0008	Architectural Surface Treatment R-40-486	SF
517.1050.S.0009	Architectural Surface Treatment R-40-487	SF
517.1050.S.0011	Architectural Surface Treatment R-40-489	SF
517.1050.S.0012	Architectural Surface Treatment R-40-490	SF
517.1050.S.0013	Architectural Surface Treatment R-40-491	SF
517.1050.S.0014	Architectural Surface Treatment R-40-492	SF

Payment is full compensation for producing the proposed architectural surface treatment including: preparing the foundation; finishing and protecting the surface treatment; and for properly disposing of surplus material.
517-150 (20110615)

93. Wall Modular Block Gravity 6THS+44 – 7THS+75LT, Item 532.0200.S.0001; and 8THS+25 -10THS+50LT, Item 532.0200.S.0002.

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[(1)]	1.0 max.[(2)]
50 cycles, 4 of 5 samples		1.5 max.[(2)]

[(1)] Test shall be run using a 3% saline solution.

[(2)] 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 not measure Wall Modular Block Gravity. The department will use pay plan quantity according to the Pay Plan Quantity article.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
532.0200.S.0001	Wall Modular Block Gravity 6THS+44 – 7THS+75 LT	SF
532.0200.S.0002	Wall Modular Block Gravity 8THS+25 – 10THS+50 LT	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.

94. 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)

95. Pipe Grates, Item 611.9800.S.

A Description
This special provision describes furnishing and installing pipe grates on the ends of pipes as shown in the plans, and as hereinafter provided.

B Materials
Furnish steel conforming to the requirements of standard spec 506.2.2.1. Furnish steel pipe conforming to the requirements of standard spec 506.2.3.6.

Furnish pipe grates galvanized according to ASTM A123.

Furnish angles and brackets galvanized according to ASTM A123.

Furnish required hardware galvanized according to ASTM A153.

C Construction
Repair pipes, rods, angles and brackets on which the galvanized coating has been damaged in accordance to the requirements of AASHTO M36M.

D Measurement
The department will measure Pipe Grates in units of work, where one unit is one grate, 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
611.9800.S	Pipe Grates	Each

Payment is full compensation for furnishing and installing all materials; and for drilling and connecting grates to pipes.

611-010 (20030820)

96. Pavement Marking Grooved Wet Reflective Contrast Tape 4-Inch, Item 646.0841.S; 8-Inch, Item 646.0843.S.

A Description

This special provision describes furnishing, grooving and installing preformed wet reflective pavement marking contrast tape for grooved applications as shown on the plans, according to standard spec 646, and as hereinafter provided.

B Materials

Furnish wet reflective pavement marking contrast tape and adhesive material, per manufacturer's recommendation if required, from the department's approved products list.

Furnish a copy of the manufacturer's recommendations to the engineer before preparing the pavement marking grooves.

C Construction

C.1 General

For quality assurance, provide the engineer and the region's Marking Section evidence of manufacturer training in the proper placement and installation of pavement marking contrast tape.

Plane the grooved lines according to details in the plan and per manufacturer's recommendations. Use grooving equipment with a free-floating, independent cutting head. Plane a minimum number of passes to create a grooved surface per manufacturer's recommendations.

C.2 Groove Depth

Cut the groove to a depth of 120 mils ± 10 mils from the pavement surface or, if tined, from the high point of the tined surface. To measure the depth, the contractor may use a depth plate placed in the groove and a straightedge placed across the plate and groove, or the contractor may use a straightedge placed perpendicular to the groove. The department may periodically check groove depths.

C.3 Groove Width – Longitudinal Markings
Cut the groove one-inch wider than the width of the tape.

C.4 Groove Position
Position the groove edge according to plan details. Groove a minimum of 4 inches, but not greater than, 12 inches from both ends of the tape segment. Achieve straight alignment with the grooving equipment.

C.5 Groove Cleaning
C.5.1 Concrete
Cooling the cutting head with water may be necessary for some applications and equipment. If cooling water is necessary, flush the groove immediately with high-pressure water after cutting to remove any build-up of cement dust and water slurry. If this is not done, the slurry may harden in the groove.

If water is used in the grooving process, allow the groove to dry a minimum of 24 hours after groove cleaning, and prior to pavement marking application. The groove surface shall be clean and dry before applying the adhesive, and the pavement marking tape. Use a high-pressure air blower with at least 185 ft^3/min air flow and 120 psi air pressure to clean the groove; use of the air blower does not decrease the amount of time required for the groove to dry.

C.5.2 New Asphalt
Groove pavement five or more days after paving.

Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.5.3 Existing Asphalt
Check for structural integrity in supporting grooving operations. If the structural integrity of the asphalt pavement is inadequate to support grooving operations, immediately notify the engineer.

Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.6 Tape Application
Apply the tape when both the air and surface temperature are 40 degrees F and rising.

Apply tape in the groove as per manufacturer's recommendations. If manufacturer's recommendations require surface preparation adhesive.

1) For the Southeast Region and the ozone non-attainment Northeast Region counties of Sheboygan, Manitowoc, and Kewaunee:

   · Apply SPA-60 during May 1 to September 30, both dates inclusive due to Volatile Organic Compound Limitations..

   · Apply P-50 during October 1 to April 30, both dates inclusive. –

2) For the remainder counties:

   · Apply either adhesive.

Refer to the manufacturer's instructions for determining when the surface preparation adhesive is set.

Tamp the wet reflective pavement marking contrast tape with a tamper cart roller, with a minimum of a 200-lb load, cut to fit the groove. Tamp a minimum of three complete cycles (6 passes) with grooved modified tamper roller cart.

D Measurement

The department will not measure Pavement Marking Grooved Wet Reflective Contrast Tape (Width). The department will use pay plan quantity according to the Pay Plan Quantity article.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
646.0841.S	Pavement Marking Grooved Wet Reflective Contrast Tape 4-Inch	LF
646.0843.S	Pavement Marking Grooved Wet Reflective Contrast Tape 8-Inch	LF

Payment is full compensation for cleaning and preparing the pavement surface; furnishing and installing the material; and for removing temporary pavement marking, if necessary.

97. Install Conduit Into Existing Item, Item 652.0700.S.

A Description

This special provision describes installing proposed conduit into an existing manhole, pull box, junction box, communication vault, or other structure.

B Materials
Use nonmetallic conduit, as provided and paid for under other items in this contract. Furnish backfill material, topsoil, fertilizer, seed, and mulch conforming to the requirements of pertinent provisions of the standard specifications.

C Construction
Expose the outside of the existing structure without disturbing existing conduits or cabling. Drill the appropriate sized hole for the entering conduit(s) at a location within the structure without disturbing the existing cabling and without hindering the installation of new cabling within the installed conduit. Fill void area between the drilled hole and conduit with an engineer-approved filling material to protect against conduit movement and entry of fill material into the structure. Tamp backfill into place.

D Measurement
The department will measure Install Conduit Into Existing System by the unit, acceptably installed. Up to five conduits entering a structure per entry point into the existing structure will be considered a single unit. Conduits in excess of five, or conduits entering at significantly different entry points into the existing pull box, manhole, or junction box will constitute multiple units of payment.

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

ITEM NUMBER	DESCRIPTION	UNIT
652.0700.S	Install Conduit Into Existing Item	Each

Payment is full compensation for excavating, drilling holes; furnishing and installing all materials, including bricks, coarse aggregate, sand, bedding, and backfill; for excavating and backfilling; and for furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; and for making inspections.
652-070 (20100709)

98. Anchor Assemblies Light Poles on Structures, Item 657.6005.S.

A Description
This special provision describes furnishing and installing anchor bolt assemblies for light poles as shown on the plans, and as hereinafter provided.

B Materials
Furnish anchors of the size and spacing as given on the plans, and that conform to ASTM A449 or AASHTO M314 GR 55. The upper 8 inches of the bolts, nuts, and washers shall be hot-dipped galvanized in accordance to ASTM A153, Class C. Provide enlarged threads on nuts for proper fit after galvanizing.

C Construction
Provide two nuts and two washers per anchor bolt, and install per light standard manufacturer's recommendations.

D Measurement
The department will measure Anchor Assemblies Light Poles on Structures as a unit for each individual anchor bolt assembly, 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
657.6005.S	Anchor Assemblies Light Poles on Structures	Each

Payment is full compensation for furnishing and installing the anchorages.
657-060 (20100709)

99. Install ITS Field Cabinet, Item 673.0200.S.

A Description
This special provision describes installing a state-furnished type 170, size 334 field cabinet.

B Materials
The department will furnish the type 170, size 334 field cabinet. Provide all necessary miscellaneous mounting hardware and internal power cables. With the field cabinet, the department will furnish cabinet bolts to anchor the cabinet to the concrete base.

C Construction
Install the field cabinet on a new or existing concrete base paid separately. Make all power connections to the cabinet, isolating the neutral bus from the cabinet and equipment ground.

Effectively ground all cable grounding shields and any spare or unused conductors in the field cabinet to the equipment grounding terminal strip.

D Measurement
The department will measure Install ITS Field Cabinet by the unit, installed according to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
673.0200.S	Install ITS Field Cabinet	Each

Payment is full compensation for installing the state-furnished field cabinet; making all connections; and grounding as necessary.

673-005 (20100630)

100. Install Pole Mounted Cabinet, 673.0225.S.

A Description

This special provision describes installing department furnished aluminum enclosures on poles for intelligent transportation systems equipment.

B Materials

Use stainless steel bolts, nuts, and washers unless otherwise specified.

All conductors, terminals, and parts that could be hazardous to maintenance personnel shall be protected with suitable insulating material.

The cabinet will be equipped with service panels. Two panels shall be provided and mounted on the cabinet sidewalls. The left side panel shall be designated as "Input/Communications," and the right side panel shall be designated as the "Service Panel."

The service panel will be equipped with a four-outlet handi-box. Wire the handi-box to the series portion of the filtering surge protector.

Use metallic conduit, fitting, and adapters required from the underground conduit transition point to the cabinet as part of this item. A typical installation requires on 2-inch conduit. Use metallic conduits according to standard spec 652.

C Construction

Fasten the field cabinet securely onto a pole. Provide bolted stainless steel connections with lock washers, locking nuts, or other engineer-approved means to prevent the connection nuts from backing off. Isolate dissimilar materials from one another using stainless steel fittings. Make all power connections to the cabinet as specified in standard spec 656.

Drill and tap the cabinet, as necessary, to mount the terminal blocks and other attachments to the services panel, to provided and entrance on the back of the cabinet for cable from the pole mounted intelligent transportation system equipment, and to mount the service panel to the cabinet as shown in the detail. Remove all sharp edges or burrs, or both, caused by cutting or drilling process. Seal all opening to prevent water from entering the cabinet. Mount the surge protector to the service panel.

Install metallic conduit on the exterior of the pole (for entrance to the cabinet from the ground) as shown in the plans, and according to the applicable requirements of standard spec 652.

D Measurement
The department will measure Install Pole Mounted Cabinet as each individual assembly, acceptably completed

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

ITEM NUMBER	DESCRIPTION	UNIT
673.0225.S	Install Pole Mounted Cabinet	Each

Payment is full compensation for installing the pole mounted cabinet; for making all connections conduit/wire entrances; and for furnishing all testing.
673-010 (20100630)

101. Install Ethernet Switch, Item 675.0400.S.

A Description
This special provision describes installing an Ethernet switch, and providing all necessary associated wiring.

B Materials
The department will furnish the Ethernet switch. Provide all necessary cables between the Ethernet switch and terminal server or other device.

C Construction
Install the Ethernet switch in a new or existing field cabinet. Connect it to devices as shown on the plans, or as directed by the engineer.

D Measurement
The department will measure Install Switch by the unit, installed in accordance to the contract, tested and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
675.0400.S	Install Ethernet Switch	Each

Payment is full compensation for installation of the Ethernet switch; furnishing all necessary incidental hardware; and making all necessary connections.
675-040 (20100630)

102. Removing Advance Flasher Assemblies Type 1, Item 676.9001.S; Type 2, Item 676.9002.S.

A Description

Remove advance flasher assemblies at the locations shown on the plan. Rewire and disconnect all wiring in the control cabinet as necessary and properly dispose of materials, according to the pertinent provisions of standard spec 204 and as hereinafter provided.

B Materials

Dispose of all materials resulting from removing the Advance Flasher Assemblies including but not limited to poles, break-a-way bases, signal assemblies, bulbs, and wire off the job site.

C Construction

Do not remove existing advance flasher assemblies until proper disconnects and wiring changes in the controller cabinet have been made.

Where an existing advance flasher assembly is mounted to a light pole, remove all signal hardware including wire, conduit, signal assemblies and mounts. Where existing conduit has been installed under concrete sidewalk or roadway, do not remove buried conduit unless directed otherwise by the engineer or unless it is not possible to install new wire through the existing conduit.

D Measurement

The department will measure Removing Advance Flasher Assemblies (Type) by the unit, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
676.9001.S	Removing Advance Flasher Assemblies, Type 1	Each
676.9002.S	Removing Advance Flasher Assemblies, Type 2	Each

Payment is full compensation for removing advanced flasher assemblies; for rewiring, as necessary; for disconnecting wiring as necessary in the controller cabinet; and for properly disposing of all materials.

Removal of concrete bases and signs associated with this item will be measured and paid for separately.

676-900 (20100630)

103. Install Video Encoder, Item 677.0300.S.

A Description
This special provision describes installing a state-furnished video encoder in a pole mounted cabinet or field cabinet as shown on the plans and as hereinafter provided.

B Materials
Provide Category 5 or better Ethernet cable to connect the Ethernet video encoder to the Ethernet switch. The department will furnish the video encoder or it will be an existing and salvaged encoder.

C Construction
Make the necessary electrical and communication network connections to the video encoder. Mount the video encoder in the cabinet or field cabinet. Program the video encoder according to the manufacturer's instructions.

D Measurement
The department will measure Install Video Encoder by each individual assembly, 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
677.0300.S	Install Video Encoder	Each

Payment is full compensation for installing the video encoder in a pole mounted cabinet or field cabinet; for making all connections; and for furnishing all programming.
677-030 (20100630)

104. Removing 50-Foot Camera Pole, Item 677.9051.S.

A Description
This special provision describes removing an existing camera pole.

B (Vacant)

C Construction
Disconnect all cables, wiring and equipment that are mounted on or in the poles, and remove the pole from the concrete footing. The department will pick up any antennae, cameras, or other equipment mounted on the pole; contact maintenance staff at (414) 227-2166 at the department's Statewide Traffic Operations Center, when the material is ready to be picked up. Properly dispose of the pole, conduit, cabling, and wiring away from the project site.

D Measurement
The department will measure Removing 50-Foot Camera Pole by the unit, acceptably removed.

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

ITEM NUMBER	DESCRIPTION	UNIT
677.9051.S	Removing 50-Foot Camera Pole	Each

Payment is full compensation for removing and disposing of the existing camera pole; disconnecting any necessary wiring; removing the equipment mounted on the poles; disposing of cabling and wiring; and transportation.
677-901 (20100630)

105. Removing CCTV Camera, Item 677.9200.S.

A Description
This special provision describes removing an existing CCTV camera from an existing camera pole as described in the plan.

B (Vacant)

C Construction
Disconnect all wiring at the control cabinet and at the top of the camera pole. Remove all fastening hardware and remove the existing camera and pan, tilt, and zoom mechanisms from the top of the pole. Salvage and store the cameras for pick up by the department; contact maintenance staff at (414) 227-2166 at the department's Statewide Traffic Operations Center to coordinate when the materials will be picked up.

The contractor may request a meeting with the engineer to assess the condition and operability of the camera prior to beginning work on removing the camera. Any damage or improper operation not noted at the meeting, or prior to the contractor starting work on the removal, will be assumed to be the fault of the contractor; repair or replace the camera at no additional cost to the department. Store the camera until the department picks up the camera.

D Measurement
The department will measure Removing CCTV Camera 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
677.9200.S	Removing CCTV Camera	Each

Payment is full compensation for removing an existing CCTV camera; for disconnecting all necessary cables and wiring; and properly storing the materials.
677-902 (20100630)

106. Rootstock Protection, SPV.0005.0010.

A Description

This special provision describes furnishing, installing, and maintaining Rootstock Protection according to the plan, and as directed by the engineer. Install Rootstock Protection prior to the rootstock planting. Maintain rootstock protection through the life of the contract, as needed, or within 24 hours of notification by the engineer.

B Materials

Use posts consisting of 1 inch by 2 inch by 5 foot wooden stakes. Cross members shall consist of biodegradable, natural organic fiber bailing twine.

C Construction

Install posts at a minimum of 2 feet into the ground or to a depth that secures the post and resists being pushed over. Install Rootstock Protection in such a manner as to provide a grid-like patterns 10 feet by 20 feet through the area of the rootstock plantings. Extend the perimeter of the Rootstock Protection a minimum of 5 feet in all directions beyond the limits of the rootstock plantings. Attach bailing twine for cross members to all posts as shown in the plan. Attach bailing twine to the posts using knots or any other means approved by the engineer such that no more than 3 cross members may be affected if any one cross member breaks or becomes unattached. Attach bailing twine attached to all intermediate posts by means approved by the engineer.

D Measurement

The department will measure Rootstock Protection, in accordance to standard spec 109.1.2.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0005.0010	Rootstock Protection	ACRE

Payment is full compensation for furnishing all materials, installing all posts, and cross members; disposal of surplus materials; maintaining the Rootstock Protection through the life of the contract; and for furnishing all labor, tools, equipment, and incidentals necessary to install the Rootstock Protection.

107. Excavation, Hauling, and Reuse of Solid Waste Soil, Item SPV.0035.0030.

A General

A.1 Description

This special provision describes excavating, relocating, and reusing solid waste soil on-site within the project limits.

Perform this work in accordance to the requirements of standard spec 205 and standard spec 207 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 impacted soil.

A.2 Notice to the Contractor – Impacted Soil Locations

The department completed testing for soil contamination for locations within this project where excavation is required.

Testing indicated that soil containing relatively low-level concentrations of sodium, chloride, metals, foundry wastes, pesticides and/or petroleum volatile organic compounds is present throughout the project limits. Once the areas of higher contamination have been excavated and transported to a solid waste landfill (refer to SPV.0195.0010), all other soils excavated by the project from Swan Boulevard Station 166BV+92 to 185BV+00, from project limits right to left are to be reused at the location indicated below. Approximately 45,000 cubic yards of excavation, other than hot spot areas for direct landfill (refer to SPV.0195.0010), will be excavated by the project and reused at the location specified in A.3.

A.3 Reuse of Solid Waste Soils

Low-level impacted soil described in A.2 is characterized as Solid Waste Soil and shall be reused as embankment beneath a minimum 2-foot of clay liner, except where shown on the Erosion Control plans beneath a waterproof membrane. The low-level impacted soil shall be reused at the following location:

- 768WD+00 to 775WD+00

Soils that are reused as project fill should not contain crushed asphalt or other exempt solid wastes.

A.4 Excavation Management Plan Approval

The excavation management plan for this project has been designed to minimize the off-site disposal of impacted material. The excavation management plan, including these special provisions, has been developed in cooperation with the WDNR. The WDNR concurrence letter is on file at the Wisconsin Department of Transportation. For further information regarding previous investigation and remediation activities in these areas contact:

Name:	Michael Cape, P.G.
Address:	141 NW Barstow Street, Waukesha, WI 53187-0798
Phone:	(262) 548-5930
Fax:	(262) 548-6891
E-mail:	michael.cape@dot.state.wi.us

A.5 Coordination

Coordinate work under this contract with the environmental consultant:

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

The role of the environmental consultant will be limited to:

1. Determining the location and limits of solid waste soil to be excavated and reused as fill based on soil analytical results from previous investigations, visual observations, and field screening of soil that is excavated;

2. Documenting that activities associated with management of solid waste soil are in conformance with the solid waste management methods for this project as specified herein; and,

3. Obtaining the necessary approvals for the reuse of solid waste soils from the WDNR.

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 to the environmental consultant. Coordinate with the environmental consultant to ensure that the environmental consultant is present during excavation activities in the impacted area. Notify the environmental consultant at least three calendar days prior to commencement of excavation activities. Perform excavation work in the impacted area on a continuous basis until excavation work is completed. Do not transport impacted soil offsite without prior approval from the environmental consultant.

A.6 Health and Safety Requirements

Supplement standard spec 107.1 with the following:

During excavation activities, expect to encounter soil impacted with sodium, chloride, metals, foundry wastes, pesticides and/or petroleum volatile organic compounds. 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 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 impacted area to minimize the quantity of impacted soil excavated.

The environmental consultant will periodically monitor soil excavated from the impacted areas identified in A.2 above. 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.

Verify that the vehicles used to transport material are licensed for such activity in accordance to applicable state and federal regulations. Do not transport regulated solid waste identified in A.2 above off-site.

During excavations, larger chunks of clean concrete (~2 cubic feet), asphalt and bricks will be segregated from the fill, to the extent practical and managed as common excavation. Under NR 500.08 this material is exempt from licensing and requirements of Wisconsin Administrative Code NR 500-538 of the solid waste regulations, and will be reused as designated by the engineer as fill on the project, or it will be disposed of off-site at the contractor's disposal site(s).

Given the relatively shallow depth of planned hot spot excavation, excavation dewatering is not anticipated.

Construct embankment in accordance to standard spec 207.3.

D Measurement

The department will not measure Excavation, Hauling, and Reuse of Solid Waste Soil. The department will use pay plan quantity according to the Pay Plan Quantity article.

E Payment

The department will pay for plan quantities specified herein at the contract unit price under the following item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0035.0030	Excavation, Hauling, and Reuse of Solid Waste Soil	CY

Payment is full compensation for excavating, segregating, loading, hauling, and reuse of solid waste soil identified in A.2 above; obtaining solid waste collection and transportation service operating licenses; assisting in the collection soil samples for field evaluation; dewatering of soils prior to transport, if necessary; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

108. HPC Masonry Structures, Item SPV.0035.4000.

This special provision describes specialized material and construction requirements for high-performance concrete used in bridge structures. Conform to standard spec 501, 502 and 509, as modified in this special provision. This special provision also describes QMP concrete pavement and structures. Conform to standard spec 715 as modified in this special provision.

MODIFY THE STANDARD SPECIFICATIONS AS FOLLOWS:

501.2.5.4.1 General

Replace the entire text with the following:

(1) Use clean, hard, durable crushed limestone with 100% fractured surfaces and free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances or adherent coatings considered injurious.

(2) Use virgin aggregates only.

501.2.5.4.2 Deleterious Substances

Replace paragraph one with the following:

(1) The amount of deleterious substances must not exceed the following percentages:

DELETERIOUS SUBSTANCE	PERCENT BY WEIGHT
Shale	1.0
Coal	1.0
Clay lumps	0.3
Soft fragments	5.0
Any combination of above	5.0
Thin or elongated pieces based on a 3:1 ratio	15.0
Materials passing the No. 200 sieve	1.5
Chert[1]	1.0

[1]Material classified lithologically as chert and having a bulk specific gravity (saturated surface-dry basis) of less than 2.45. Determine the percentage of chert by dividing the weight of chert in the sample retained on a 3/8-inch sieve by the weight of the total sample.

501.2.5.4.3 Physical Properties
Replace paragraph one with the following:

(1) The department will ensure that Los Angeles wear testing conforms to AASHTO T 96, soundness testing conforms to AASHTO T 104 using 5 cycles in sodium sulfate solution on aggregate retained on the No. 4 sieve, and freeze-thaw soundness testing conforms to AASHTO T 103. The percent wear must not exceed 30, the weighted soundness loss must not exceed 6 percent, and the weighted freeze-thaw average loss must not exceed 15 percent.

501.3.2.4.3.3 Extended Delivery Time
Delete paragraph one.

501.3.5.1 General
Replace paragraph one with the following:

(1) Use central-mixed concrete as defined in 501.3.5.1(2) for all work under this special provision.

501.3.5.2 Delivery
Replace paragraph three with the following:

(3) Deliver and completely discharge concrete within one hour beginning when adding water to the cement, or when adding cement to the aggregates. A decrease in air temperature below 60° F or the use of department-approved retarders does not increase the discharge time.

501.3.7.1 Slump
Replace the entire text with the following:

(1) Use a 2-inch to 4-inch slump.

(2) Perform the slump tests for concrete according to AASHTO T 119.

501.3.8.2.1 General
Replace paragraphs one and two with the following:

(1) The contractor is responsible for the quality of the concrete placed in hot weather. Submit a written temperature control plan at or before the pre-pour meeting. In that plan, outline the actions the contractor will take to control concrete temperature if the concrete temperature at the point of placement exceeds 80° F. Do not place concrete without the engineer's written acceptance of that temperature control plan. Perform the work as outlined in the temperature control plan.

(2) If the concrete temperature at the point of placement exceeds 80° F, do not place concrete for items covered in this special provision.

501.3.8.2.2 Bridge Decks
Replace the entire text with the following:

(1) Do not place concrete for bridge decks when the ambient air temperature is above 80° F.

(2) For concrete placed in bridge decks, submit a written evaporation control plan at each pre-pour meeting. In that plan, outline the actions the contractor will take to maintain concrete surface evaporation at or below 0.15 pounds per square foot per hour. Do not place concrete for bridge decks without the engineer's written acceptance of that evaporation control plan. If the engineer accepts an evaporation control plan calling for ice, the department will pay $0.75 per pound for that ice. Perform the work as outlined in the evaporation control plan.

(3) If predicting a concrete surface moisture evaporation rate exceeding 0.15 pounds per square foot per hour, do not place concrete for bridge decks.

(4) Provide evaporation rate predictions to the engineer 24 hours prior to each bridge deck pour.

(5) Compute the evaporation rate from the predicted ambient conditions at the time and place of the pour using the nomograph, or computerized equivalent, specified in CMM 5.25, figure 1. Use weather information from the nearest national weather service station. The engineer will use this information to determine if the pour will proceed as scheduled.

(6) At least 8 hours before each pour, the engineer will inform the contractor in writing whether or not to proceed with the pour as scheduled. If the actual computed evaporation rate during the pour exceeds 0.15 pounds per square foot per hour, at the sole discretion of the engineer, the contractor may be allowed to implement immediate corrective action and complete the pour. If the engineer allows the placement to continue, the department will pay $0.75 per pound for the quantity of ice required to maintain the concrete surface evaporation at or below 0.15 pounds per square foot per hour.

502.2.6.2 Burlap
Replace the entire text with the following:

(1) Furnish burlap conforming to AASHTO M 182, class 1, 2, 3 or 4.

502.3.2.1 Detailed Plans
Replace the entire text with the following:

(1) As specified in standard spec 105.2, submit four copies of detailed plans and computations for falsework, signed and sealed by a professional engineer registered in the State of Wisconsin, three weeks prior to erection of falsework for review and acceptance. Acceptance of the detailed plans and computations will in no way relieve the contractor of the responsibility of providing a safe and stable structure, and obtaining satisfactory results.

502.3.5.4 Superstructures
Delete paragraph six.

502.3.7.8 Floors
Replace paragraph five with the following:

(5) The contractor shall set the rails or tracks that the finish machine rides on, to the required elevation; and ensure they adjust to allow for settlement under load. The rails or tracks shall be supported outside the limits of the finished riding surface. Rails or tracks are not allowed to be supported on the tops of girders, or within the finished riding surface, without written permission of the engineer.

Delete paragraph thirteen, fourteen and fifteen.

Add the following to the end as paragraphs nineteen, twenty, twenty-one, twenty-two, and twenty three:

(19) Do not place bridge deck concrete more than 10 feet ahead of the finishing machine. If there is a delay of more than 10 minutes during the placement of a bridge deck, cover all concrete (unfinished and finished) with wet burlap to protect the concrete from evaporation until placement operations resume.

(20) Hand finishing, except for the edge of deck, must be kept to a minimum. The finishing machine must be equipped with a pan behind the screed. Apply micro texture using a broom or turf drag following the use of a 10-foot straight edge. Only finish by hand as necessary to close up finished concrete. Begin wet curing the deck immediately following the micro texture.

(21) For bridge decks with a design speed of 40 mph or greater, provide longitudinal grooving according to the provision included in this contract.

(22) Place HPC Masonry Structures for bridge decks during nighttime hours. Begin work no earlier than two hours before sunset and end no later than 2 hours after sunrise; unless alternate begin and end times are approved prior to the concrete placement by the engineer. To determine acceptable hours, use

the sunset and sunrise times published by the National Weather Service for the proposed date of the concrete placement or as mutually agreed to by the contractor and the engineer.

(23) Provide lighting as necessary to safely perform the required work and facilitate inspection during nighttime hours. Ensure that lighting does not interfere with or impede traffic on open roadways and does not cause glare, shine or directly face the eyes of oncoming drivers. After initial setup, drive through and observe the lighted work area from each direction on the main roadway. Adjust lighting alignment if lighting causes glare, shine or directly faces the eyes of oncoming drivers.

502.3.8.1 General

Replace paragraph one with the following:

(1) Maintain adequate moisture throughout the concrete mass to support hydration for at least 14 days.

502.3.8.2.1 General

Replace the entire text with the following:

(1) Wet-cure the concrete for bridge decks, structural approach slabs, sidewalks on bridges and raised medians on bridges for 14 days by use of a soaker hose system, or other engineer-approved methods. Cover the finished surface of bridge decks and overlays with one layer of wetted burlap or wetted cotton mats within 10 minutes after the finishing machine has passed. Apply the burlap/cotton gently so as to minimize marking of the fresh concrete. Keep the first layer of burlap/cotton continuously wet until the bridge deck or overlay is sufficiently hard to apply a second layer of wetted burlap/cotton. Immediately after applying the second layer of burlap/cotton, continue to keep the deck wet until placing and activating the soaker hose system. Throughout the remainder of the curing period, keep the burlap/cotton continuously wet with soaker hoses hooked up to a continuous water source. Inspect the burlap/cotton twice daily to ensure the entire surface is moist. If necessary, alter the soaker hose system as needed to ensure the entire surface is completely covered and stays moist. After 48 hours from the time of completion of the bridge deck or overlay pour, the soaker hose system and burlap/cotton may be covered with polyethylene sheeting. Provide a continuous flow of water through the soaker hose system for the entire curing period.

(2) Do not uncover any portion of the deck at any time for any reason during the first 7 days of the curing period except as permitted by the engineer.

(3) Set up and test the fogging system before each bridge deck, structural approach slab, bridge mounted sidewalk or bridge mounted raised median pour. The fogging system must remain set up and in operating condition for the duration of the pour.

502.3.8.2.3 Decks
Delete the entire text.

502.3.8.2.4 Parapets
Replace the entire text with the following:

(1) Cure the inside and outside concrete faces and tops of railings or parapets by covering with wetted burlap immediately after form removal and surface finish application. Keep the burlap thoroughly wet for at least 7 days; or by covering for the same period with thoroughly wet polyethylene-coated burlap conforming to standard spec 502.2.6.4

(2) Secure coverings along all edges to prevent moisture loss.

502.3.9.6 Bridge Decks
Replace paragraph two with the following:

(2) Protect the underside of the deck, including the girders, for bridge deck and overlay pours by housing and heating when the national weather service forecast predicts temperatures to fall below 32° F during the cold weather protection period. Maintain a minimum temperature of 40° F in the enclosed area under the deck for the entire 14-day curing period.

502.5.1 General
Replace paragraph one with the following:

(1) The department will pay for measured quantities at the contract unit price and incidentals necessary to complete the work under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0035.4000	HPC Masonry Structures	CY

Lighting for nighttime bridge deck placement is included in the item HPC Masonry Structures and will not be measured or paid for separately.

710.5 Sampling and Testing
Add the following subsection:

710.5.7 Chloride Penetration Resistance

(1) For each new or changed mix design, measure chloride penetration resistance according to AASHTO T 277 (Rapid Chloride Permeability Test) at a frequency of 1 test per 3 months (quarterly) of production.

(2) Permeability samples for AASHTO T 277 testing must be stripped of their molds and wet cured to an age of 7 days in a standard moist room or water tank. After 7 days, submerge the samples in water heated to 100° F until an age of 28 days. Upon completion of the curing process, obtain one sample from each cylinder and test according to AASHTO T 277.

(3) Ensure that the initial accepted mix designs meet the chloride penetration resistance limit of 1500 coulombs based on the AASHTO T 277 Rapid Chloride Permeability test. Chloride resistance testing conducted quarterly using AASHTO T 277 Rapid Chloride Permeability Test during production will not be used for acceptance of previously accepted mixes and concrete masonry mixed and placed according to the contract requirements. For quarterly chloride resistance test results exceeding 1500 coulombs, the department may require adjustment of the concrete mix going forward to improve the chloride penetration resistance.

715.2.3.2 Structures

Replace paragraph one with the following:

(1A) Develop and test each mix to be used for HPC Masonry Structures. Produce a laboratory trial mix for each mix, as well as a trial mix from each plant used to supply the project. Test all mixes at a department-qualified laboratory.

(1B) The laboratory trial mix data must include the results of the following tests:

1. AASHTO T 119 Slump of Hydraulic Cement Concrete.
2. AASHTO T 121 Mass per Cubic Foot, Yield
3. AASHTO T 152 Air Content.
4. AASHTO T 22 Compressive Strength.
5. AASHTO T 277 Rapid Determination of the Chloride Permeability of Concrete, using the modified curing procedure according to standard spec 710.5.7 (2) herein.
6. AASHTO T 309 Temperature.
7. Water Cement Ratio.

(1C) The 28-day compressive strength must be greater than or equal to 4000 psi. The 28-day results of the permeability test must be less than or equal to 1500 coulombs.

Replace paragraph two with the following:

(2) Provide a minimum cementitious content of 470 pounds per cubic yard and a maximum cementitious content of 540 pounds per cubic yard. For all superstructure and substructure concrete, unless the engineer approves otherwise in writing, conform to one of the following:

1. Use class C fly ash or grade 100 or 120 slag as a partial replacement for Portland cement. For binary mixes use 15% to 30% fly ash or 20% to 30% slag. For ternary mixes use 15% to 30% fly ash plus slag in combination. Percentages are stated as percent by weight of the total cementitious material in the mix.
2. Use a type IP or IS blended cement.

109. Detention Basin Clay Lining, Item SPV.0035.8001.

A Description

This section describes furnishing and installing clay lining to the interior surfaces of the detention basin.

B Materials

The clay material can be acquired on site or be furnished by the contractor from a borrow site. The contractor shall submit laboratory test results of the clay lining material from onsite or borrow source(s) documenting that the clay meets or exceeds the clay material specifications prior to the start of lining construction and prior to bringing borrow to the site. The laboratory tests shall be conducted on clay material from on site or borrow areas at the frequency listed below and be performed in accordance to ASTM standard methods as listed below. The test results shall be submitted to the engineer for review and approval prior to construction. The following tests are required:

- A minimum of 50 percent by weight which passes the 200 sieve.
- Liquid Limit (LL): 22 percent or greater.
- Plasticity Index (PI): 12 percent or greater.

Clay not meeting these three requirements shall be removed and disposed of by the contractor without additional payment.

In addition to the three above testing requirements, the contractor shall provide additional test results for any clay furnished to be used for informational purposes. These testing results are listed below.

Reference standards are listed as follows:

American Society for Testing and Materials (ASTM):

- **ASTM D698** Test for Moisture-Density Relations of Soils and Soil Aggregate Mixtures Using 5.5 lb Rammer and 12 in. Drop (Standard Proctor).
- **ASTM D2922** Test for Density of Soil In Place by Nuclear Method (Shallow Depth).
- **ASTM D1140** Test Method for Amount of Materials in Soils Finer than the No. 200 Sieve.
- **ASTM D422** Method for Particle-Size Analysis of Soils.
- **ASTM D4318** Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- **ASTM D2487** Classification of Soils for Engineering Purposes.

Table of Testing for Clay

Test	Number of Required Tests: One Borrow Source Only and Also For Onsite Clay	Number of Required Tests: Multiple Borrow Sources	Minimum Requirement
Grain Size Analysis	3 (Total)	1 test/2,500 cy or less/site[(a)]	≥ 50% by Wt. Passing 200 Sieve
Hydrometer Analysis	3 (Total)	1 test/2,500 cy or less/site[(a)]	Info. Only
Atterberg Limits (ASTM D4318)	3 (Total)	1 test/2,500 cy or less/site[(a)]	LL ≥ 22% PI ≥ 12%
USCS Classification (ASTM D2487)	3 (Total)	1 test/2,500 cy or less/site[(a)]	Info. Only
Standard Proctor Analysis 5-Point Curve (Minimum) (ASTM D698)	2 (Total)	1 test/10,000 cy or less/site[(b)]	Info. Only
Permeability Test (use falling head method)	2 (Total)	1 test/10,000 cy or less/site[(b)]	1 x 10^{-7} cm/sec

(a) For each clay borrow site to be used, one test shall be performed and provided to engineer for each 2,500 cubic yards or less of clay to be obtained from each of the borrow sources.
(b) For each clay borrow site to be used, one test shall be performed and provided to engineer for each 10,000 cubic yards or less of clay to be obtained from each of the borrow sources.

C Construction

C.1 Clay Lining Placement

C.1.1 Detention Basin Subgrade

The detention basin subgrade shall be compacted to a minimum compaction of 95 percent of Standard Proctor Maximum Density (ASTM D-698) prior to placing any required detention basin lining material.

C.1.2 Erosion Protection

The detention basin lining shall not be placed until after all adjacent site grading has been completed and only after silt fence has been installed completely around the perimeter of the detention basin.

C.1.3 Clay Lining

After the rough grading is complete, the contractor shall undercut, place and compact approved clay material in four 6-inch lifts for a total compacted thickness of two feet, including a height of one foot above the normal detention basin elevation.

Contractor shall notify the engineer at least three days prior to start of placing clay lining.

Lift thickness shall be 6 inches maximum after compaction.

Clay lining shall be a minimum of two feet thick measured perpendicular to the surface.

Compact clay to a minimum of 98% Standard Proctor Maximum Density (ASTM D698) with a sheepsfoot roller or other suitable equipment.

Placement of each lift shall not proceed until all required clay testing and documentation has been completed for the previous lift.

The moisture content of the clay during placement shall be:

- No drier than 1 % below the optimum moisture content as determined by ASTM D698.
- No wetter than 3% above the optimum moisture content as determined by ASTM D698.

Excessively dry or wet clay soil shall be properly moisture-conditioned to within the above range of values.

Provide all equipment necessary to adjust clay to the proper moisture content for compaction.

The maximum permeability of constructed clay lining material and tested under Section B shall be $1x10^{-7}$ cm/sec.

The contractor is responsible for construction of the clay lining per the plans. If the in-place clay lining fails to meet the requirements of this section, the contractor shall be responsible for the following:

- Removing and replacing or reworking any portion of the clay lining not meeting the project specifications until project specifications are met.
- The contractor shall not be compensated for removing, replacing and reworking clay lining not meeting the specification requirements.

C.1.4 Testing of Constructed Soils

As construction of the clay lining proceeds, the department will provide all required on-site quality control testing of installed materials as follows:

- Record thickness of clay lining.
- Density testing (ASTM D2922) on after the clay is placed and compacted. One (1) test per lift (minimum) or one test for every 25,000 sq. ft. of lift constructed, whichever is greater.
- HTCP certified person will perform all necessary sampling, testing, data analysis and documentation during all Pond Liner Clay placement and compaction.

- One Standard Proctor (ATM D698) for each soil type used but no less than one Proctor analysis for each 5,000 cubic yards of clay placed.
- After the lining is placed and compacted, one Shelby tube sample and bulk sample shall be retrieved and analyzed for the following:
    - Grain size distribution and hydrometer analysis.
    - Moisture content.
    - Dry density.
    - Atterberg Limits.
    - Permeability.

The contractor shall provide the following:

- Access for on-site testing, inspection, and documentation.
- Machinery required to grade/blade density test locations.
- Machinery required to obtain undisturbed clay samples (i.e., with Shelby tubes).
- Replace and recompact clay material removed for testing purposes.

C.1.5 Detention Basin Dewatering

The contractor is responsible for the temporary lowering of the water table to 2 feet below the clay liner below the detention basin bottom during construction and testing of

the detention basin as described in bid item Dewatering for Detention Basin Construction.

The pond is a wet pond.

D Measurement
The department will not measure Detention Basin Clay Lining. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0035.8001	Detention Basin Clay Lining	CY

Payment is full compensation for furnishing, undercutting for clay lining, excavation, hauling, placing compacting the detention basin clay lining, and all associated testing.

110. Temporary Crosswalk/Sidewalk, Item SPV.0045.0010.

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.0045.0010	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.

111. Truck Mounted Attenuator, Item SPV. 0045.0020.

A Description

This special provision describes furnishing, maintaining and operating a Truck Mounted Attenuator (TMA) during moving operations and short term stationary work in a closed lane of traffic as shown on the plans or when deemed necessary by the engineer.

B Materials

B.1 General

The TMA shall be a model that has been approved by the Federal Highway Administration for meeting NCHRP 350 Test Level 3 Crashworthiness. The attenuator shall be mounted to a suitable truck in a manner meeting the manufacturer's specifications with a minimum total gross weight of 25,000 pounds.

C Construction

Place the TMA in the closed lane in advance of the equipment and personnel, located as recommended by the manufacturer and approved by the engineer. If the TMA is not available when the work requires its use, postpone the work until the TMA is available.

If utilized in a mobile operation, the TMA support vehicle shall shadow the mobile operation and maintain a consistent distance from the mobile operation as recommended by the manufacturer. An operator shall be provided and remain with the vehicle at all times during mobile operations.

D Measurement

The department will measure Truck Mounted Attenuator by the day, acceptably completed. For this special provision, the number of days measured is defined as the number of calendar days that the truck, TMA and operator are used in moving operations or short-term stationary work. A calendar day begins with each deployment within a defined time period and exceeding two hours.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0045.0020	Truck Mounted Attenuator	DAY

Payment is full compensation for furnishing, maintaining and operating the TMA and its operator; and for furnishing all labor, tools, equipment, services, and incidentals necessary to complete the contract work.

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112. Removing High Mast Tower Concrete Bases, Item SPV.0060.0005.

A Description
This special provision describes removing high mast tower concrete bases.

B (Vacant)

C Construction
Conform to standard spec 204.3.

D Measurement
The department will measure Removing High Mast Tower Concrete Bases 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.0060.0005	Removing High Mast Tower Concrete Bases	Each

Conform to standard spec 204.5.1 (2).

113. Pavement Marking Grooved Preformed Thermoplastic Arrows Type 2, Item SPV.0060.0011; Arrows Type 3, Item SPV.0060.0012; Words, Item SPV.0060.0014.

A Description
This special provision describes grooving the pavement surface, and furnishing and installing preformed thermoplastic pavement marking as shown on the plans, in accordance to standard spec 647, and as hereinafter provided.

B Materials
Furnish preformed thermoplastic pavement marking and sealant material, if required, from the department's approved products list.

C Construction

C.1 General

For quality assurance, provide the engineer and the region's Marking Section evidence of manufacturer training in the proper placement and installation of preformed thermoplastic pavement marking.

Plane the grooved lines in accordance to the plan details. Use grooving equipment with a free-floating, independent cutting or grinding head. Plane a minimum number of passes to create a smooth groove.

C.2 Groove Depth

Cut the groove to a depth of 120 mils ±10 mils deeper than the thermoplastic thickness, from the pavement surface or, if tined, from the high point of the tined surface. Measure depth using a straightedge placed perpendicular to the groove. The department may periodically check groove depths.

C.3 Groove Width – Linear Markings

Cut the groove 1-inch wider than the width of the thermoplastic.

C.4 Groove Position

Position the groove edge in accordance to the plan details.

C.4.1 Linear Marking

Groove at a minimum of 4-inches, but not greater than, 12-inches from both ends of the line segment. Achieve straight alignment with the grooving equipment.

C.4.2 Special Marking

Groove a box around the special marking up to 4 inches from the perimeter of the special marking.

C.5 Groove Cleaning

C.5.1 Concrete

Cooling the cutting head with water may be necessary for some applications and equipment. If cooling water is necessary, flush the groove immediately with water after cutting to remove any build-up of cement dust and water slurry. If this is not done, the slurry may harden in the groove.

If water is used in the grooving process, allow the groove to dry a minimum of 24 hours after groove cleaning, after removal of excess water, and prior to pavement marking application. Clean and dry the groove for proper application of the sealant, and placement of the pavement marking. Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove; use of the air blower does not decrease the amount of time required for the groove to dry.

C.5.2 New Asphalt
Groove pavement 10 or more days after paving. Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.5.3 Existing Asphalt
Check for structural integrity in supporting grooving operations. If the structural integrity of the asphalt pavement is inadequate to support grooving operations, immediately notify the engineer.

C.5.4 Asphalt
Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.6 Preformed Thermoplastic Application
Preheat the surface if necessary based on manufacturer's recommendation.

Application of the preformed thermoplastic in the groove without sealant will be as follows:

- May 1 to September 30, both dates inclusive – the Southeast Region and the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.
- June 1 to August 31 – the Southwest Region, and the Northeast, North Central, and Northwest Regions except for the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.

Application of the preformed thermoplastic in the groove with sealant materials will be as follows:

- October 1 to April 30, both dates inclusive – the Southeast Region and the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.
- September 1 to May 31, both dates inclusive – the Southwest Region and the Northeast, North Central, and Northwest Regions, except for the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.

The sealant must be wet.

D Measurement
The department will not measure Pavement Marking Grooved Preformed Thermoplastic (Type). The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0011	Pavement Marking Grooved Preformed Thermoplastic Arrows Type 2	Each
SPV.0060.0012	Pavement Marking Grooved Preformed Thermoplastic Arrows Type 3	Each
SPV.0060.0014	Pavement Marking Grooved Preformed Thermoplastic Words	Each

Payment is full compensation for cleaning and preparing the pavement surface, furnishing and installing the material; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

114. Traffic Control Close-Open Freeway Entrance Ramp, Item SPV.0060.0015.

A Description

This item shall consist of furnishing the labor and equipment required for closing and subsequently opening a freeway entrance ramp in accordance to standard spec 643, the plans, and as directed by the engineer. Drums, barricades and signs may remain along the roadway when the exit ramp is open to traffic. Signs shall not be visible to traffic when the ramp is open. Drums, barricades and signs will be paid for separately under the various traffic control items.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Traffic Control Close-Open Freeway Entrance Ramp by each individual traffic control, close-open freeway 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.0060.0015	Traffic Control Close-Open Freeway Entrance Ramp	Each

Payment is full compensation for closing and subsequently opening a freeway entrance ramp; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work in accordance to the contract.

115. Traffic Control Close-Open Freeway to Freeway System Ramp, Item SPV.0060.0016.

A Description

This item shall consist of furnishing the labor and equipment required for closing and subsequently opening a freeway to freeway system ramp in accordance to standard spec 643, the plans, and as directed by the engineer. Drums, barricades and signs may remain along the roadway when the system ramp is open to traffic. Signs shall not be visible to traffic when the system ramp is open. Drums, barricades, lights, arrow boards and signs will be paid for separately under the various traffic control items.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Traffic Control Close-Open Freeway to Freeway System Ramp by each individual traffic control, close-open freeway system 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.0060.0016	Traffic Control Close-Open Freeway to Freeway System Ramp	Each

Payment is full compensation for closing and subsequently opening a freeway to freeway system ramp; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work in accordance to the contract.

116. Traffic Control Interim Freeway Lane Closure, Item SPV.0060.0017.

A Description

This item shall consist of adjusting existing traffic control items that have previously been placed on the freeway for a lane closure, intended lane closure or are in position for staged construction as shown on the plans into position for an additional lane or two lane closures, and for readjusting the traffic control items to their original state or position upon removal of the additional lane or two lane closure within a 24 hour period. All work shall be in accordance to standard spec 643, the plans, and as directed by the engineer.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Traffic Control Interim Freeway Lane Closure as each individual freeway lane or two-lane closure is setup and subsequently removed per direction of traffic within a 24-hour time period, 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.0060.0017	Traffic Control Interim Freeway Lane Closure	Each

Payment is full compensation for setup and subsequent removal per direction of traffic within a 24-hour time period of a freeway lane or two-lane closure; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

117. Traffic Control Uncovering Signs, Item SPV.0060.0018.

A Description
This special provision describes removing existing sign covers as shown on the plans

B (Vacant)

C Construction
Perform work in accordance to the pertinent provisions of standard spec 643.3, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Uncovering Signs by each individual sign cover acceptably removed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0018	Traffic Control Uncovering Signs	Each

Payment is full compensation for removing the existing sign covers and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

118. Removing Old Sign Structures S-40-196, Item SPV.0060.0030; S-40-197, Item SPV.0060.0031; S-40-231, Item SPV.0060.0032; S-40-232, Item SPV.0060.0033; S-40-233, Item SPV.0060.0034.

A General
Work under these items shall consist of removing existing sign structures and disposing of resulting materials in accordance to standard spec 203 and as hereinafter provided.

Removal of signs will be measured and paid for under other items.

B (Vacant)

C Construction
Remove and dispose of the existing superstructure (columns and overhead trusses) and concrete foundations of each sign structure.

D Measurement
The department will measure Removing Old Sign (Structure) as a unit for each individual specific sign structure removed, 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.0060.0030	Removing Old Sign Structures, S-40-196	Each
SPV.0060.0031	Removing Old Sign Structures, S-40-197	Each
SPV.0060.0032	Removing Old Sign Structures, S-40-231	Each
SPV.0060.0033	Removing Old Sign Structures, S-40-332	Each
SPV.0060.0034	Removing Old Sign Structures, S-40-333	Each

Payment is full compensation for removing and disposing of all materials as set forth above; for cutting off anchor bolts and conduits; for sealing conduits; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

119. Traffic Control Barricades Type III Left In Place, Item SPV.0060.0035.

A Description
This special provision describes furnishing, installing, and maintaining Traffic Control Barricades Type III Left In Place as shown on the plans.

Traffic Control Barricades Type III Left In Place becomes property of the department after final acceptance by the engineer.

B Materials
This work shall be in accordance to the pertinent provisions of standard spec 643.2.4 and as hereinafter provided.

C Construction
This work shall be in accordance to the pertinent provisions of standard spec 643.3, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Barricades Type III Left In Place as each individual barricade, acceptably left 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
SPV.0060.0035	Traffic Control Barricades Type III Left In Place	Each

Payment is full compensation for providing, installing, and maintaining the Traffic Control Barricades Type III and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

120. Traffic Control Warning Lights Type A Left In Place, Item SPV.0060.0036.

A Description
This special provision describes furnishing, installing, and maintaining Traffic Control Warning Lights Type A Left In Place as shown on the plans.

Traffic Control Warning Lights Type A Left In Place becomes property of the department after final acceptance by the engineer.

B Materials
This work shall be in accordance to the pertinent provisions of standard spec 643 and as hereinafter provided.

C Construction
This work shall be in accordance to the pertinent provisions of standard spec 643.3.5.2, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Warning Lights Type A Left In Place as each individual working light, acceptably left 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
SPV.0060.0036	Traffic Control Warning Lights Type A Left In Place	Each

Payment is full compensation for providing, installing, and maintaining the Traffic Control Warning Lights Type A and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

121. Traffic Control Signs Left In Place, Item SPV.0060.0037.

A Description
This special provision describes furnishing, installing, and maintaining Traffic Control Signs Left In Place as shown on the plans.

Traffic Control Signs Left In Place becomes property of the department after final acceptance by the engineer.

B Materials
This work shall be in accordance to the pertinent provisions of standard spec 643.2.9 and as hereinafter provided.

C Construction
This work shall be in accordance to the pertinent provisions of standard spec 643.3, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Signs Left In Place as each individual sign, acceptably left 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
SPV.0060.0037	Traffic Control Signs Left In Place	Each

Payment is full compensation for furnishing, installing, and maintaining the Traffic Control Signs and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

122. Traffic Control Drums Left In Place, Item SPV.0060.0038.

A Description
This special provision describes furnishing, installing, and maintaining Traffic Control Drums Left In Place as shown on the plans.

Traffic Control Drums Left In Place becomes property of the department after final acceptance by the engineer.

B Materials
This work shall be in accordance to the pertinent provisions of standard spec 643.2.3 and as hereinafter provided.

C Construction
This work shall be in accordance to the pertinent provisions of standard spec 643.3, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Drums Left In Place as each individual drum, acceptably left 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
SPV.0060.0038	Traffic Control Drums Left In Place	Each

Payment is full compensation for furnishing, installing, and maintaining the Traffic Control Drums and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

123. Concrete Barrier Transition Type G1, Item SPV.0060.0040; Type G2, Item SPV.0060.0041; Type G3, Item SPV.0060.0042; Type G4, Item SPV.0060.0043; Type G5, Item SPV.0060.0044; Type G6, Item SPV.0060.0045; Type G7, Item SPV.0060.0046.

A Description
Construct Concrete Barrier Transition Type G1, G2, G3, G4, G5, G6, G7 in accordance to standard spec 603, details shown in the plans and as hereinafter provided.

B Materials
Furnish materials conforming to standard spec 603.2.

C Construction
Use construction methods conforming to standard spec 603.3.

D Measurement
The department will measure Concrete Barrier Transition Type G1, G2, G3, G4, G5, G6, G7 by each individual unit, acceptably placed in accordance to the contract.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0040	Concrete Barrier Transition Type G1	Each
SPV.0060.0041	Concrete Barrier Transition Type G2	Each
SPV.0060.0042	Concrete Barrier Transition Type G3	Each
SPV.0060.0043	Concrete Barrier Transition Type G4	Each
SPV.0060.0044	Concrete Barrier Transition Type G5	Each
SPV.0060.0045	Concrete Barrier Transition Type G6	Each
SPV.0060.0046	Concrete Barrier Transition Type G7	Each

Payment will be made in accordance to standard spec 603.5. In addition,

124. Traffic Control Crash Cushions Temporary Left In Place, Item SPV.0060.0049.

A Description

This special provision describes furnishing, installing, and maintaining Crash Cushions Temporary Left In Place as shown on the plans.

Crash Cushions Temporary Left In Place becomes property of the department after final acceptance by the engineer.

B Materials

This work shall be in accordance to the pertinent provisions of standard spec 614.2.7 and as hereinafter provided.

C Construction

This work shall be in accordance to the pertinent provisions of standard spec 614.3.4, as shown on the plans, and as hereinafter provided.

D Measurement

The department will measure Traffic Control Crash Cushions Temporary Left In Place as each individual crash cushion, acceptably left 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
SPV.0060.0049	Traffic Control Crash Cushions Temporary Left In Place	Each

Payment is full compensation for providing, installing, and maintaining the Crash Cushions and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

125. Traffic Control Covering Signs Type I Left in Place, Item SPV.0060.0050.

A Description

This special provision describes furnishing, installing, and maintaining Traffic Control Covering Signs Type I Left In Place as shown on the plans

Traffic Control Covering Signs Type I Left In Place become property of the department after final acceptance by the engineer.

B Material
Use materials in accordance to the pertinent provisions of standard spec 643.2.9 and as hereinafter provided. Sign covers shall be covered with green high intensity sheeting.

C Construction
Perform work in accordance to the pertinent provisions of standard spec 643.3, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Covering Signs Type I Left in Place by each individual sign cover, 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.0060.0050	Traffic Control Covering Signs Type I Left in Place	Each

Payment is full compensation for furnishing, installing, and maintaining the Traffic Control Covering Signs Type I and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

126. Fixed Message Sign Portable Support, Item SPV.0060.0051.

A Description
This special provision describes the construction of portable sign supports for fixed message signs as shown on the plans.

B Materials
Use lumber and hardware conforming to standard spec 507.

C Construction
Construct the fixed message sign portable support in accordance to the detail on the plans.

D Measurement
The department will measure Fixed Message Sign Portable Support as each individual location, 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.0060.0051	Fixed Message Sign Portable Support	Each

Payment is full compensation for furnishing and installing fixed message sign portable supports; for removing the portable supports at the completion of the work; and for furnishing all labor materials, equipment, tools and incidentals necessary to complete the work.

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127. 24-Hour Baseline Vibration Monitoring , Item SPV. 0060.0052; Daily Vibration Monitoring, Item SPV. 0060.0053.

A Description

This special provision describes developing a vibration monitoring plan, deploying seismographs, documentation, and reporting for the entire project work site.

B (Vacant)

C Construction

C.1 Equipment

Monitor the following operations with a seismograph meeting the requirements of Wisconsin Department of Safety and Professional Services SPS307.43.:

- Bridge and sign bridge pile driving or bridge demolition
- Sheet pile installation and removal
- MSE wall compaction
- Asphalt compaction
- Pavement breaking
- All compaction activities utilizing large vibratory rollers
- Any other activities that may cause vibration damage to adjacent buildings, structures, or utilities.

C.2 Preconstruction Survey

The engineer will conduct preconstruction surveys of structures that may be potentially affected by vibration prior to any work. The engineer will visually inspect and record all existing defects in the structures before construction. Photographs and/or video may be used to assist in documentation.

The contractor has the option to conduct and document pre-construction surveys of any nearby buildings or structures that have a potential for vibration damage. Make these records available to the engineer for review. Any damage resulting from excessive vibration-causing operations is the responsibility of the contractor. The contractor may, at their own expense, monitor vibrations that are not part of the vibration monitoring plan for their own record keeping purposes.

C.3 Monitoring Plan

Submit a monitoring plan that includes the following:

- Copies of the contractor's pre-construction survey, if conducted, with discussion of findings.
- Location of each vibration inducing activity to be monitored
- Locations at which the approved seismograph will be placed
- Anticipated vibration levels at the closest building(s) or other sensitive facility
- Monitoring duration for baseline and daily vibration monitoring
- Maximum allowable vibration limits
- Mitigation plan to reduce potentially excessive vibration levels to acceptable limits.

Obtain the engineer's acceptance seven calendar days before any vibration inducing activity for the project.

C.4 Monitoring and Recording

Ensure that a trained person who has been approved by the engineer performs vibration monitoring. Obtain approval of seismograph locations from the engineer. Monitor between the vibration-causing work and the closest structure or other sensitive facility subject to vibration damage, and as close as practical to the subject structure or facility. Monitor vibration levels in accordance to the figures 1 and 2 and SPS 307.43:

If any vibration levels exceed the nuisance levels shown in Figure 1 and Figure 2, immediately halt the vibration-causing work and notify the engineer.

Nuisance Limit		Damage Limit	
Frequency (Hz or CPS)	Peak Velocity	Frequency (Hz or CPS)	Peak Velocity
		1	0.18
2	0.5		
		4	0.75
5	0.35		
10	0.35		
		15	0.75
20	0.27		
30	0.21		
		35	2.0
40	0.21	40	2.0
50	0.21	50	2.0
60	0.2	60	2.0
		70	2.0
		80	2.0
		90	2.0
		100	2.0

Figure 1

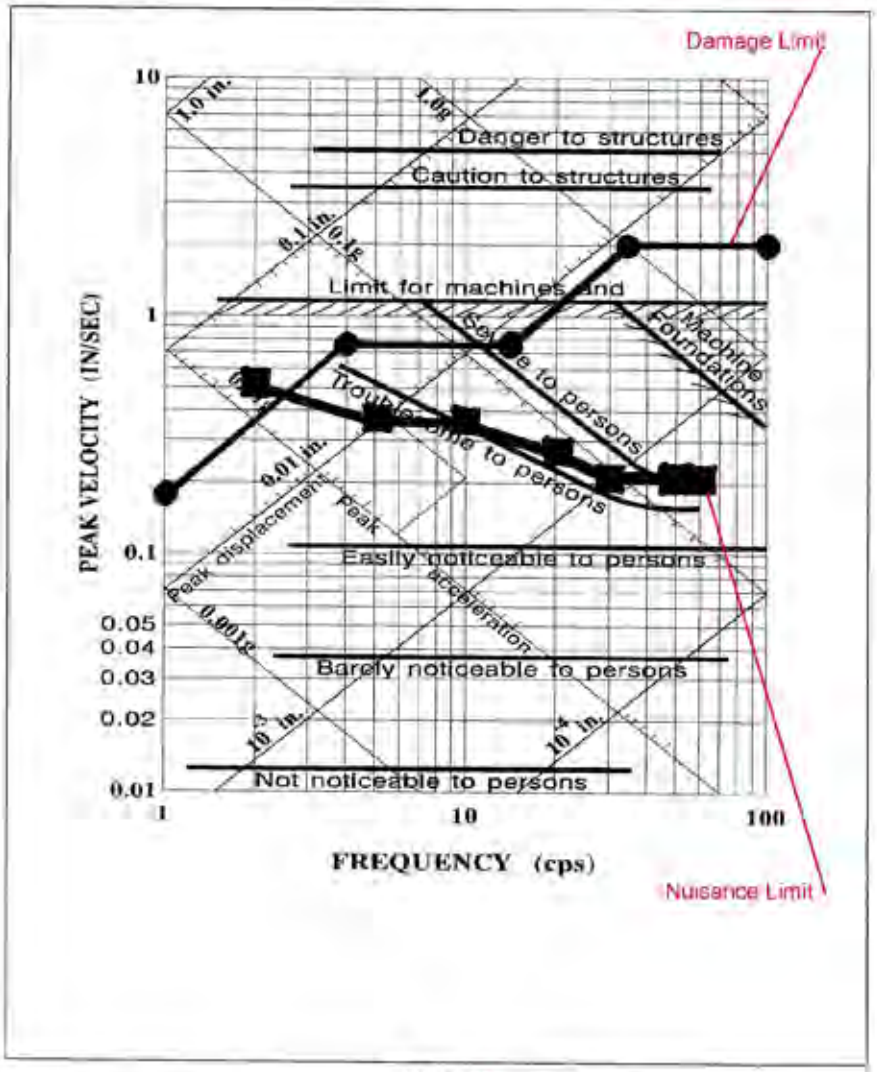

Figure 2
Amplitude of Vertical Vibrations

Perform 24-hour baseline vibration monitoring for the following construction operations at each seismograph recording location as described herein in accordance to the approved vibration monitoring plan to establish baseline vibrations:

- Bridge and sign bridge pile driving or bridge demolition
- Sheet pile installation and removal
- MSE wall compaction
- Asphalt compaction
- Pavement breaking
- All compaction activities utilizing large vibratory rollers
- Other activities not listed that may cause vibration damage to adjacent buildings, structures, or utilities

Compare the measured peak particle velocity and frequency data to the nuisance limits specified in Figures 1 and 2. Record peak particle velocity and frequency in three mutually perpendicular directions.

Furnish data recorded for each construction operation during the 24-hour baseline vibration monitoring to the engineer prior to the next vibration-causing workday. Include the following:

- Serial number of vibration monitoring instrument used and record of latest calibration.
- Description of contractor's equipment.
- Name of qualified observer and interpreter.
- Distance and direction of recording station from vibration-causing area.
- Type of ground, from boring log, at recording station and material on which the instrument is sitting.
- Principal frequency, amplitude and particle velocity in each component direction.
- Copy of records of seismograph readings, dated and signed by the person approved by engineer to perform vibration monitoring.
- Contractor documentation of any operational changes necessary to reducevibration levels below nuisance levels.

Identify the location(s) to begin or continue Daily Vibration Monitoring, and obtain approval from engineer prior to implementation. Complete Daily Vibration Monitoring following the recording and documentation procedure previously described for 24-hour baseline monitoring.

D Measurement

The department will measure 24 Hour Baseline Vibration Monitoring as each individual unit, acceptably completed.

The department will measure Daily Vibration Monitoring, 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. 0060.0052	24-Hour Baseline Vibration Monitoring	Each
SPV. 0060.0053	Daily Vibration Monitoring	Each

Payment of the item 24-Hour Baseline Vibration Monitoring is full compensation for an approved vibration monitoring plan, monitoring and recording vibrations

Payment of the item Daily Vibration Monitoring is full compensation for monitoring and recording vibrations, and reporting. No payment for daily monitoring will be paid for without 24-hour baseline vibration monitoring approval.

SEF 12_0411

128. Baseline CPM Progress Schedule, Item SPV.0060.0054; CPM Progress Schedule Updates and Accepted Revisions, Item SPV.0060.0055.

Replace standard spec 108.4 with the following:

108.4 Critical Path Method Progress Schedule
108.4.1 Definitions
The department defines terms used in standard spec 108.4 as follows:

Activity
An administrative or construction task performed during the course of the project with a defined duration, and scheduled (or actual) start and finish dates.

Critical Path
The longest continuous chain of activities through the CPM schedule that establishes the minimum overall project duration.

Construction Activity
Construction activities are discrete work activities performed by the contractor, subcontractors, utilities, or third parties within the project limits.

CPM Progress Schedule
A Critical Path Method (CPM) Progress Schedule is a network of logically related activities. The CPM schedule calculates when activities can be performed and establishes the critical or longest continuous path or paths of activities through the project.

Float
Float, as used herein, is the total float of an activity; i.e., it is the amount of time between the date when an activity can start (the early start), and the date when an activity must start (the late start). In cases where the total float of an activity has a different value when calculated based on the finish dates, the lower (more critical) value will govern.

Forecast Completion Date
The completion date predicted by the latest accepted CPM Update, which may be earlier or later than the contract completion date, depending on progress.

Fragnet
A group of logically-related activities, typically inserted into an existing CPM schedule to model a portion of the project, such as the work associated with a change order.

Initial Work Plan
The initial work plan is a time-scaled CPM schedule showing detailed activities for the first 90 calendar days of work and summary level activities for the remainder of the project.

Intermediate Milestone Date
A contractually required date for the completion of a portion of the work, so that a subsequent portion of the work or stage of traffic phasing may proceed.

Master Program Schedule
The department's schedule for the overall I-94 N-S Freeway Program, including intermediate milestone dates and contract completion dates, and containing codes for use as a template for the development of the contractor's schedule.

Master Project Schedule
The department's schedule for the contract work, developed during design, and provided to the contractor for informational purposes only.

Work Breakdown Structure (WBS)
A framework for organizing the activities that make up a project by breaking the project into successively greater detail by level. A WBS organizes the project work. It does not address the sequencing and scheduling of project activities.

108.4.2 Department's Master Schedules

108.4.2.1 Master Project Schedule

If requested by a bidder or by the contractor, the department will supply its Master Project Schedule for the contract work, developed during design. The Master Project Schedule is not a direction on how to perform the work. The Master Project Schedule reflects one possible approach to the work, consistent with the phasing requirements.

108.4.2.2 Master Program Schedule

Within five business days after award, the department will provide its current Master Program Schedule, containing intermediate milestone constraints, standard activity codes, and a standard WBS for the contractor to use to develop its schedule.

108.4.2.3 Use of Department's Master Schedules

The department's Master Schedules provide information to assist the contractor in preparing its schedule. The Master Schedules are not contract documents. The logic

contained in the Master Schedules is not intended to alter or supplement contract requirements for the phasing of the work, but to reflect those requirements.

108.4.3 Contractor's Scheduling Responsibilities

Prepare and submit a CPM progress schedule that accurately reflects the plan for the performance of the work, based on the physical requirements of the Work, and Traffic Phasing requirements. The CPM schedule is the contractor's committed plan to complete all work within the completion deadlines. Full responsibility is assumed for the prosecution of the work as shown. The CPM schedule is not part of the contract. Schedule the Work in the manner required to achieve the completion date and intermediate milestone dates specified in the Prosecution and Progress Special Provision.

Use the department-provided Master Program Schedule as a template to develop the Initial Work Plan and the Baseline CPM Progress Schedule. Use the Master Program Schedule's ID coding structure to categorize activities by Contract, Stage, Location, and Responsibility to ensure compatibility with the Master Program Schedule and with schedules prepared by other contractors. Add additional activity codes as necessary, but do not delete the coding structure provided.

To ensure compatibility with the Master Program Schedule, use the latest version of Primavera Project Planner (P6), by Primavera Systems, Inc., Bala Cynwyd, PA to prepare the Initial Work Plan, Baseline CPM Progress Schedule, and Monthly CPM Updates.

Designate a Project Scheduler who will be responsible for scheduling the Work and submit for approval a professional resume describing a minimum of three years of scheduling experience on urban, interstate-highway reconstruction work of similar size and complexity, including recent experience with P6.

108.4.4 Submittals

108.4.4.1 Initial Work Plan

Within ten business days after the Initial Work Plan Workshop, as scheduled in standard spec 103.10, submit an Initial Work Plan consisting of the following:

1. Develop the Initial Work Plan using the Master Program Schedule as a template.

2. Provide a detailed plan of activities to be performed within the first 90 calendar days of the contract. Provide construction activities with durations not greater than 28 calendar days (20 business days), unless the engineer accepts requested exceptions.

3. Provide activities as necessary to depict administrative work, including submittals, reviews, and procurements that will occur within the first 90 calendar days of the contract. Activities other than construction activities may have durations greater than 28 calendar days (20 business days). Allow 21 calendar days (15 business days) for department review of submittals.

4. Provide summary activities for the balance of the project. Summary activities may have durations greater than 28 calendar days (20 business days).

5. Submit three copies of the Initial Work Plan in a compressed (XER) format on three separate CDs.

6. The engineer will accept the contractor's Initial Work Plan or provide comments within five business days after receipt of the Initial Work Plan. Address comments and resubmit the Initial Work Plan as necessary. Do not begin work until the engineer accepts the Initial Work Plan. The department will use the initial work plan to monitor the progress of the work until the Baseline CPM Progress Schedule is accepted.

7. Submit an updated version of the Initial Work Plan on a monthly basis until the engineer accepts the Baseline CPM Progress Schedule. With each update, include actual start dates, completion percentages, and remaining durations for activities started but not completed. Include actual finish dates for completed activities.

108.4.4.2 Baseline CPM Progress Schedule

Within 15 business days after the CPM Scheduling Workshop, as scheduled in standard spec 103.10, submit a Baseline CPM Progress Schedule and written narrative consisting of the following:

Supplement standard spec 108.4.4.2(1) with the following:

4. Submit a temporary drainage plan showing the interface between various stages of a project as well as the interface with adjacent projects.

1. Develop the Baseline CPM using the Master Program Schedule as a template. The Baseline CPM is the contractor's committed plan to complete the Work within the time frames required to achieve the contract completion date and Intermediate milestone dates. The department will use the schedule to monitor the progress of the work. Include the following:

    1.1 Provide a detailed plan of activities to be performed during the entire contract duration, including all administrative and construction activities required to complete the work as described in the contract documents. Provide construction activities with durations not greater than 28 calendar days (20 business days), unless the engineer accepts requested exceptions.

    1.2 Provide activities as necessary to depict administrative work, including submittals, reviews, procurements, inspections, and all else necessary to complete the work as described in the contract documents. Activities other than construction activities may have durations greater than 28 calendar days (20 business days). Allow 21 calendar days (15 business days) for department review of submittals.

1.3 Provide activities as necessary to depict third party work related to the contract.

1.4 Make allowance for specified work restrictions, non-working days, time constraints, calendars, and weather; and reflect involvement and reviews by the department, and coordination with adjacent contractors, utility owners, and other third parties.

1.5 With the exception of the Project Start Milestone and Project Completion Milestone, all activities must have predecessors and successors. The start of an activity shall have a Start-to-Start or Finish-to-Start relationship with preceding activities. The completion of an activity shall have a Finish-to-Start or Finish-to-Finish relationship with succeeding activities. Do not use Start-to-Finish relationships. Do not use Finish-to-Start relationships with a lag unless the engineer accepts requested exceptions.

1.6 Schedule all intermediate milestones in the proper sequence and input as either a "Start-no-Earlier-Than" or "Finish-no-Later-Than" date. Provide predecessors and successors for each intermediate milestone as necessary to model each Stage of the Work. Unless the engineer accepts a requested exception, the schedule should encompass all the time in the contract period between the starting date and the specified completion date.

1.7 Using the bid quantities and unit prices, develop an anticipated cash-flow curve for the project, based on the Baseline CPM.

2. Provide three hard copies of a hand-drawn or electronically drafted logic diagram depicting the CPM network. Organize the logic diagram by grouping related activities, based on the activity codes in the CPM.

3. Provide a written narrative with the baseline CPM explaining the planned sequence of work, as-planned critical path, critical activities for achieving intermediate milestone dates, traffic phasing, and planned labor and equipment resources. Use the narrative to further explain:

3.1 The basis for activity durations in terms of production rates for each major type of work (number of shifts per day and number of hours per shift), and equipment usage and limitations.

3.2 Use of constraints.

3.3 Use of calendars.

3.4 Estimated number of adverse weather days on a monthly-basis.

3.5 Scheduling of permit and environmental constraints, and coordination of the schedule with other contractors, utilities, and public entities.

4. Submit three copies of the Baseline CPM in a compressed (XER) format on three separate CDs.

Within ten business days of receiving the Baseline CPM, the engineer will provide comments and schedule a meeting for the contractor to present its Baseline CPM and answer questions raised in the engineer's review.

At the meeting scheduled by the engineer, provide a presentation of the Baseline CPM. In the presentation, include a discussion of the staging and sequencing of the work, understanding of traffic phasing, and application of labor and equipment resources to the Work. Address comments raised in the engineer's review.

Within five business days after the meeting, the engineer will accept the contractor's Baseline CPM schedule or provide comments. Address the engineer's comments and resubmit a revised Baseline CPM within ten business days after the engineer's request. If the engineer requests justification for activity durations, provide information that may include estimated labor, equipment, unit quantities, and production rates used to determine the activity duration.

The engineer will accept the Baseline CPM based solely on whether the schedule is complete as specified in this section. The engineer's acceptance of the schedule does not modify the contract.

The department will not consider requests for contract time extensions as specified in 108.10 or additional compensation for delay specified in standard spec 109.4.7 until the department accepts the Baseline CPM schedule.

108.4.4.3 Monthly CPM Updates

Submit CPM Updates on a monthly basis after acceptance of the Baseline CPM. With each CPM Update, include the following:

1. Actual start dates, completion percentages, and remaining durations for activities started but not completed, and actual finish dates for completed activities, through the final acceptance of the project.

2. Additional activities as necessary to depict additions to the contract by changes and logic revisions as necessary to reflect changes in the contractor's plan for prosecuting the work.

3. Include a narrative report that includes a brief description of monthly progress, changes to the critical path from the previous update, sources of delay, potential problems, work planned for the next 30 calendar days, and changes to the CPM schedule. Changes to the logic of the CPM schedule include the addition or deletion of activities and changes to activity descriptions, original durations, relationships, constraints, calendars, or previously recorded actual dates. Justify changes to the CPM schedule in the narrative by describing associated changes in the planned methods or manner of performing the work or changes in the work itself.

4. Submit three copies of each CPM Update in a compressed (XER) format electronically, as agreed to with the department.

5. If additions or changes were made to the CPM schedule since the previous update, submit an updated hard copy of the revised logic diagram.

6. Within five business days of receiving each CPM Update, the engineer will provide comments and schedule a meeting as necessary to address comments raised in the engineer's review. Address the engineer's comments and resubmit a revised CPM Update within five business days after the engineer's request.

108.4.4.4 Three-Week Look-Ahead Schedules

Submit Three-Week Look-Ahead Schedules on a weekly basis after NTP. The schedule can be hand drawn or generated by computer. With each Three-Week Look-Ahead include:

Activities underway and as-built dates for the past week.

Provide actual as-built dates for completed activities through final acceptance of the project.

3. Planned work for the upcoming two-week period.

4. The activities of the Three-Week Look-Ahead schedule shall include the activities underway and critical RFIs and submittals, based on the CPM schedule. The Three-Week Look-Ahead may also include details on other activities not individually represented in the CPM schedule.

5. On a weekly basis, the department and the contractor shall agree on the as-built dates depicted in the Three-Week Look-Ahead schedule or document any disagreements. Use the as-built dates from the Three-Week Look-Ahead schedules for the month when updating the CPM schedule.

108.4.4.5 Weekly Production Data (WisDOT construction PM to provide input)

Provide estimated and actual weekly production rates for items of work on a weekly basis as follows:

1. Provide data on the following items by area or station:

    1.1 Retaining Walls
        a. Leveling Pads - LF
        b. Set Panels - SF
        c. Parapets - LF
        d. Wall Face - Bay
        e. Tie Backs – Each
        f. Anchor Slabs – LF
        g. Drilling - Each
        h. Coping – LF
        i. Footing - LF

    1.2 Bridge Construction
        a. Footings—Each
        b. Columns—Each
        c. Abutments—Each
        d. Pier Caps—Each
        e. Girder Spans – Each
        f. Decked Spans – Each
        g. Poured Spans – Each

    1.3 Roadway Excavation—CY per week

    1.4 Roadway Structural Section
        a. Grading/Subgrade Preparation—SY
        b. Base Material Placement—Ton
        c. Base Material Subgrade Preparation—SY
        d. Asphalt Pavement—Ton
        e. Concrete Pavement – SY

    1.5 Tunnels
        a. Drilled Shafts – Each
        b. Beam Seat/Cap - LF
        c. Girders - Each
        d. Deck – Percent

    1.6 Noise Walls
        a. Drill/Set Ground Mounted Posts - Each
        b. Install Ground Mounted Panels - Each
        c. Anchor/Set Structure Mounted Posts - Each
        d. Install Structure Mounted Panels - Each

2. For each item, indicate the actual daily production for the past week and the anticipated weekly production for the next week.

3. Submit the data in an electronic spreadsheet format at the same time the Three-Week Look-Ahead is submitted. On a weekly basis, the department and the contractor shall agree on the production data or document any disagreements.

108.4.5 Progress Review Meetings

Weekly Progress Review Meetings—After completing the weekly submittal of the Three-Week Look-Ahead and production data, attend a weekly meeting to review the submittals with the department. At the meeting, address comments as necessary, and document agreement or disagreement with the department.

Monthly Update Review Meetings—After submitting the monthly update and receiving the engineer's comments, attend a job-site meeting, as scheduled by the engineer, to review the progress of the schedule. At that meeting, address comments as necessary, and document agreement or disagreement with the department. The monthly meeting will be coordinated to take place on the same day and immediately before or after a weekly meeting, whenever possible.

108.4.6 CPM Progress Schedule Revisions

Revision by the contractor if necessary due to changes in the Work or project conditions and authorized by the engineer, a CPM Progress Schedule Revision may be submitted, although the next CPM Update is not yet due. Prepare the CPM Revision in the same format as required for CPM Updates, including justification for changes to the schedule. The process for comment and acceptance of a CPM Revision will be the same as for CPM Updates. If the CPM Revision is accepted, prepare the next monthly update based on the revised CPM. If the CPM Revision is rejected, prepare the next monthly update based on the previous month's update.

Engineer's Right to Request Revisions—The engineer will monitor the progress of the work and may request revisions to the CPM schedule. Revise the schedule as requested by the engineer, and submit a CPM Progress Schedule Revision within ten business days of the request. The process for comment and acceptance of a CPM Revision will be the same as for CPM Updates. The engineer may request that the contractor revise the CPM schedule for one or more of the following reasons:

1. The forecast completion date is scheduled to occur more than 14 calendar days after the contract completion date.

2. An intermediate milestone is scheduled to occur more than 14 calendar days after the date required by the contract.

3. The engineer determines that the progress of the work differs significantly from the current schedule.

4. A contract change order requires the addition, deletion, or revision of activities that causes a change in the contractor's work sequence or the method and manner of performing the work.

108.4.7 Documentation Required for Time Extension Requests

To request a time extension to an intermediate milestone date or the contract completion date associated with changes to the work, provide a narrative detailing the work added or deleted and the other activities affected, based on the latest accepted CPM Update. For added work, submit a proposed fragnet of activities to be added or revised in the CPM schedule, indicating how the fragnet is to be tied to the CPM schedule.

To request a time extension to an intermediate milestone date or the contract completion date associated with delays to the work, provide a narrative detailing the affected activities and the cause of the delay, based on the latest accepted CPM Update. Requests for time extensions due to delays should meet the following criteria:

1. For requests to extend the contract completion date, include a description of how the delay affected the project's critical path, based on the latest accepted CPM Update.

2. For requests to extend an intermediate milestone date, include a description of how the delay affected the controlling (longest) path to the milestone, based on the latest accepted CPM Update.

3. The department and the contractor agree that the float is not for the exclusive use or financial benefit of either party. Either party has the full use of the float on a first come basis until it is depleted.

108.4.8 Payment for CPM Progress Schedule

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0054	Baseline CPM Progress Schedule	Each
SPV.0060.0055	CPM Progress Schedule Updates and Accepted Revisions	Each

The department will only make progress payments for the value of materials, as specified in standard spec 109.6.3.2.1, until the Baseline CPM schedule has been submitted. The department will retain ten percent of each estimate until the department accepts the Baseline CPM schedule.

Payment is full compensation for furnishing all work required under these bid items. The department will pay the contract unit price for the Baseline CPM schedule after the department accepts the schedule. Thereafter, the department will pay the contract unit price for each monthly CPM Update acceptably completed. The department will pay the contract unit price for CPM Revisions, if the department accepts the revision. The department will not pay for proposed revisions that are not accepted.

SEF Rev. 13_0117

129. Temporary Bus Stop Pad, Item SPV.0060.0056.

A Description

This special provision describes furnishing, maintaining, moving, and removing temporary pavement for Temporary Bus Stop Pads in the median during construction and for Temporary Bus Stop Pads in the terrace, as shown on the plans.

B Materials

Furnish asphaltic surface temporary in accordance to standard spec 465.2 (2) or furnish concrete in accordance to standard spec 602.2.

C Construction

Construct temporary bus stop pads 10 feet long by 8 feet wide (or the width of the terrace) that meet the requirements of the current Americans with Disabilities Act Accessibility Guidelines (ADAAG).

Form the foundation by excavating at least 3 inches. Tamp or compact the foundation to ensure stability.

Place two inches of Asphaltic Surface Temporary in accordance to standard spec 465.3.1 or place three inches of concrete in accordance to standard spec 602.3.2.3, and as shown in the plan.

Separate temporary bus stop pads in the median from construction operations with temporary fencing with a minimum strength and height required to contain livestock, as approved by the engineer. Locate the temporary bus stop pads outside the immediate work area, as directed by the engineer. Connect temporary bus stop pads in the median to crosswalks, existing sidewalks, or permanent sidewalks.

Reconstruct or move temporary bus stop pads if required for utility installation or paving operations.

Temporary bus stop signs and poles will be furnished and installed by Milwaukee County Transit System.

D Measurement

The department will measure Temporary Bus Stop Pad 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.0060.0056	Temporary Bus Stop Pad	Each

Payment is full compensation for furnishing and installing all materials; for constructing; for reconstructing or moving; for removing; and for furnishing and installing temporary fence.

130. Traffic Control Local Road Lane Closures, Item SPV.0060.0057.

A Description
Furnish the labor and equipment required for closing and subsequently opening a local road lane or lanes in accordance to standard spec 643, the plans, and as directed by the engineer. Drums, barricades and signs may remain along the roadway when the local road is open to traffic. Make signs invisible to traffic when the local road is open. Drums, barricades, lights, arrow boards and signs will be paid for separately under the various traffic control items.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Traffic Control Local Road Lane Closures by each individual local road lane or two-lane closure that is set up and subsequently removed in each traffic direction within a 24 hour time period, 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.0060.0057	Traffic Control Local Road Lane Closures	Each

Payment is full compensation for closing and subsequently opening a local road lane or lanes; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work in accordance to the contract.

SEF 13_0315

131. Fixed Message Sign Portable Support Remove/Reinstall, Item SPV.0060.0058.

A Description
This special provision describes the disassembly, removal, relocation and reassembly of fixed message sign portable supports within the project limits. Work to be done with the intent of maintaining these signs during the course of the project while allowing construction operations to continue. Work shall be performed as directed by the engineer.

B Materials
Use lumber and hardware conforming to standard spec 507.

C Construction
Construct the fixed message sign portable support in accordance to the detail on the plans.

D Measurement
The department will measure Fixed Message Sign Portable Support Remove/Reinstall as each individual portable support reinstall, 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.0060.0058	Fixed Message Sign Remove/Reinstall	Each

Payment is full compensation for removing and reinstalling fixed message sign portable supports; for furnishing all disassembly, loading, transporting, unloading, reassembly, and setup; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

132. Mobilizations Emergency Pavement Repair, Item SPV.0060.0060.

A Description
Furnish and mobilize personnel, equipment, traffic control, and materials to the project site to repair the existing pavement or Asphaltic Surface Temporary on an emergency basis as the engineer directs.

B (Vacant)

C Construction
Mobilize with sufficient personnel, equipment, traffic control, materials and incidentals on the jobsite within 4 hours of the engineer's written order to repair the existing pavement on an emergency basis.

An emergency is a sudden occurrence of a serious and urgent nature, beyond normal maintenance of the existing pavement or the Asphaltic Surface Temporary. Under this definition, an emergency mobilization requires immediate action to move necessary personnel, equipment, and materials to the emergency site followed by immediate repairs of the existing pavement or the Asphaltic Surface Temporary.

D Measurement
The department will measure Mobilizations Emergency Pavement Repair as each individual mobilization, acceptably completed. The department will not include delivering and installing pavement repair or maintenance materials provided for in specific contract bid items. All traffic control items used for each Mobilization will be considered incidental to the Mobilization.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0060	Mobilizations Emergency Pavement Repair	Each

Payment is full compensation for the staged moving of personnel, moving equipment, setting up and removing traffic control, traffic control materials, and moving materials. The department will pay separately for delivery and installation of pavement repair materials under the other bid items in this contract. The department will not pay separately for traffic control items and materials even though they may be included in other bid items in this contract and will consider them incidental to each Mobilization.

SEF Rev. 12_1008

133. Barricade Rack (2 Barricade Unit), Item SPV.0060.0061; (3 Barricade Unit) SPV.0060.0062.

A Description
This special provision describes furnishing and erecting wood and tubular steel posts to support Type III barricades as shown on the plans.

B Materials
Conform to standard spec 634.2.1.

Conform to Upper Tube language in standard spec 634.2.5.

C Construction
Under the bid item Barricade Rack, furnish and install wood posts, perforated tubular steel posts, and all necessary miscellaneous hardware to complete the installation of the poles.

Install poles as specified in the plan details.

Conform to standard spec 634.3.1.

D Measurement
The department will measure Barricade Rack as each individual barricade rack, 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.0060.0061	Barricade Rack (2 Barricade Unit)	Each
SPV.0060.0062	Barricade Rack (3 Barricade Unit)	Each

Payment is full compensation for furnishing and installing all materials, including wood posts and tubular steel posts and all hardware and fittings necessary to install the barricade rack; providing corrosion prevention; and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

134. Permanent Barricades Type III, Item SPV.0060.0063.

A Description.
This special provision describes furnishing barricades with "RAMP CLOSED" signs attached in accordance to the requirements of standard spec 643, as shown on the plans and as hereinafter provided. In conjunction with this special provision, refer to the Barricade Rack special Provision.

B Materials
The barricades delivered to the project shall be new. The length of rails for the barricade shall be 8-feet.

C (Vacant)

D Measurement
The department will measure Permanent Barricades Type III 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.0060.0063	Permanent Barricades Type III	Each

Payment is full compensation for furnishing the barricades and signs and for furnishing all equipment, labor, and incidentals necessary to complete the work.

SEF Rev. 12_0611

135. Shallow Marsh Rootstock, Item SPV.0060.0110.

A Description
This special provision describes furnishing and planting wetland herbaceous plant rootstock of the species specified, complete in the Shallow Marsh Pond as designated on the plans or as directed by the engineer. It also includes furnishing all necessary materials and performing all necessary work such as excavating plant holes, anchoring rootstock, performing necessary care, such as trimming, and required replacements pending acceptance, and doing such work necessary and incidental thereto to complete the item in accordance to the plans, specifications and contract.

B Materials

The source of all plant materials is nursery-grown stock, not wild-collected, from an area not to exceed 150 linear miles from the project site and within the State of Wisconsin. All plants must be healthy, 1 to 2 years old, and have well-developed root systems. Plants that show evidence of mold, rot, freezing, or frost damage will be rejected. When evidence is submitted that a specified rootstock cannot be obtained, substitutions may be made with the specific approval of the engineer and wetland ecologist.

Shallow Marsh Pond Planting Zone (0.20 Acre);

Scientific Name	Common Name	Total
Scirpus fluviatilis	river bulrush	150
Scirpus atrovirens	green bulrush	50
Scirpus validus	soft stem bulrush	50
Total		**250**

C Construction

C.1 General

Install plants in the shallow marsh prior to any seeding and mulching operations and within the specified planting periods. Care should be taken to minimize disturbance of the Shallow Marsh Pond Planting Zones. Provide the engineer with 5 working days notice of the intended date of delivery of rootstock to the project site. Present all rootstock to the engineer for inspection and partial acceptance prior to planting.

C.2 Care

All rootstock shall be handled with care and skill to prevent damage and shall be packed in a manner to ensure arrival at the project site in good condition. The rootstock shall be kept moist and cool prior to planting. Do not disturb freshly installed plants with subsequent activities that would cause injury or uprooting.

C.3 Timing of Planting

Install wetland rootstock on the day of delivery at the project site. In the event that this is not possible, temporarily store plants by placing them in a well-ventilated, cool, shaded, moist storage space. This storage period shall not exceed 48 hours. Rootstock shall be planted between May 1 and June 15, or after October 30 and prior to November 15.

C.4 Planting Layout

Install plants at a density of approximately 1200 plants per acre (spacing approximately one plant per 3 feet) as shown on the plans or as directed by the engineer.

C.5 Planting Method

Install plants by hand with the use of a tree spud or other comparable method, or as directed by the engineer.

D Measurement

The department will measure Shallow Marsh Rootstock by each individual plant complete in place and accepted in accordance to the terms of the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.0110	Shallow Marsh Rootstock	Each

Payment is full compensation for furnishing, delivering, storing, and planting the plants and for furnishing all labor, tools, and equipment and incidentals necessary to complete the work.

136. Lamp Disposal High Intensity Discharge, Item SPV.0060.1010.

A Description

This special provision describes the packaging and delivering of high intensity discharge (mercury vapor, metal halide, and high-pressure sodium) lamps removed under this contract to the department for disposal as hazardous materials.

B Materials

Lamps turned in to the department will be considered the property of the department for proper future disposal, and the contractor will have no further obligation for their disposal.

C Construction

Pack intact lamps in the packaging of the new lamps used to replace them, or packaging affording the equivalent protection. Place in full, stackable cartons with the name of the contractor written on each carton. Segregate the lamps by type and wattage. Label each carton by the type and wattage contained (do not mix) and the quantity.

Pack broken lamps into thick plastic bags and place inside sturdy cardboard boxes or the equivalent. Mark the outer packaging with the term "broken lamps". Deliver all broken lamps to the department.

The department will not accept lamps improperly packaged or packed in metal containers. The department will reject any lamps not removed as part of this contract as shown on the plans.

Pile cartons no more than two high if palletized and secure them to prevent shifting or falling of the loads.

Deliver the lamps to the department at the South 60th Street office in West Allis. Consolidate all deliveries into a truckload or more, except when all the lamps removed under a contract measure less than a truckload, deliver as one load at one time. Contact Mike Prebish at (414) 266-1170, Monday through Thursday from 8:00 AM to 4:00 PM to set up an appointment for delivery.

D Measurement
The department will measure Lamp Disposal High Intensity Discharge as each individual unit delivered to the department properly packaged and delivered, acceptably completed. The department will not measure broken lamps that exceed a total of ten percent of all lamps to be delivered.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1010	Lamp Disposal High Intensity Discharge	Each

Payment is full compensation for handling, packaging, labeling and delivering the lamps; and for labor, tools, equipment and incidentals necessary to complete the work.

Payment will be in addition to payment for the work under which the lamps are removed from service.

137. Salvaging Light Poles Luminaires and Arms, Item SPV.0060.1020.

A Description
The work under this item shall consist of removing lighting pole, arm and luminaires from the locations shown in the plans, and reinstalling pole at a new location as shown in the plans, in accordance to the applicable provisions of standard specs 204, 655 and 659. New lamp of type and wattage to match existing for all non-LED luminaires shall be provided for all new installation.

B (Vacant)

C Construction
Inspect the pole prior to removing from the existing base. Inform the engineer of any items of concern or potential problems that may interfere with the reuse of the pole, arm or luminaire. Minimize the time between removal from the existing base and reinstallation on the new base.

D Measurement
The department will measure Salvaging Light Poles Luminaires and Arms by each individual light pole, 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.0060.1020	Salvaging Light Poles Luminaires and Arms	Each

Payment is full compensation for furnishing all the work required under this bid item.

138. Salvaging Luminaires - Wauwatosa, Item SPV.0060.1023.

A Description

The work under this item consists of removing existing lighting units as shown on the plans. Removal of pole, luminaire arms, transformer bases (if present) and concrete base (if not direct embedment) and removal of the used lamp from the luminaire will be paid under separate bid items. The luminaire shall be turned over and delivered to the City of Wauwatosa. Coordinate turning over the luminaires with Mr. Joe Kroll, phone number (414) 479-8934. Units shall be uninstalled, handled, packaged and delivered in a manner that does not damage the luminaire.

B (Vacant)

C Construction

Lamps shall be turned in to the department under a separate item, Lamp Disposal High Intensity Discharge, SPV.0060.1010 and luminaires shall be returned to the City of Wauwatosa. Dispose of all additional materials off site.

D Measurement

The department will measure Salvaging Luminaires - Wauwatosa as each individual unit, acceptably delivered.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1023	Salvaging Luminaires – Wauwatosa	Each

Payment is full compensation for furnishing all work and disposal of material; and for labor, tools, equipment and incidentals necessary to complete the work.

139. Salvaging Light Poles and Luminaires - Milwaukee County, Item SPV.0060.1024.

A Description

The work under this item consists of removing existing lighting units as shown on the plans. Removal of the concrete pole base will also be paid under a separate bid item. The pole and luminaire shall be turned over and delivered to the Milwaukee County DPW, Electrical Department at 10310 W. Watertown Plank Road, Wauwatosa. Coordinate turning over the light poles, arms and luminaires including lamps with Mr. John Bieganski, (414) 257-7072. The lighting units shall be uninstalled and disabled. The luminaire and lamp shall be handled, packaged and delivered in a manner that they do not damage both.

B (Vacant)

C Construction
Lamps shall be turned in to the department under a separate item, Lamp Disposal High Intensity Discharge, SPV.0060.1010. Concrete pole bases will be paid under Bid Item Remove Concrete Bases, 204.0195. Poles and luminaires shall be returned to the Milwaukee County Ground. Dispose of all additional materials off site.

D Measurement
The department will measure Salvaging Light Poles and Luminaires – Milwaukee County as each individual unit, acceptably delivered.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1024	Salvaging Light Poles and Luminaires – Milwaukee County	Each

Payment is full compensation for furnishing all work and disposal of material; and for labor, tools, equipment and incidentals necessary to complete the work.

140. Removing Concrete Light Poles and Arms, Item SPV.0060.1032.

A Description
The work under this item shall consists of removing concrete light poles and arms as shown on the plans. The luminaires shall be removed and turned over to the City of Wauwatosa. The salvaging of the luminaires will be paid under a separate bid item Salvaging Luminaires - Wauwatosa, SPV.0060.1023.

B (Vacant)

C Construction
Dispose of all materials offsite. Backfill the resulting hole from the pole extraction with a suitable material for the location. Do not disable the lighting unit until the temporary lighting system over the area is operational.

D Measurement
The department will measure Removing Concrete Light Poles and Arms as each individual pole and associated arms, acceptably removed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1032	Removing Concrete Light Poles and Arms	Each

Payment is full compensation for furnishing all work and disposal of material; and for labor, tools, equipment and incidentals necessary to complete the work

141. Removing Aluminum Light Poles, Arms and Luminaires, Item SPV.0060.1033.

A Description

The work under this item shall consists of removing aluminum light poles, arms and luminaires as shown on the plans. The concrete base removal will be under a separate bid item. The disposal of the lamps will be paid under a separate bid item Lamp Disposal High Intensity Discharge, SPV.0060.1010. Concrete bases are removed under a separate bid item 204.0195.

B (Vacant)

C Construction

Dispose of all materials offsite. Do not disable the lighting unit until the temporary lighting system over the area is operational.

D Measurement

The department will measure Removing Aluminum Light Poles, Arms, and Luminaires as each individual pole and associated arms, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1033	Removing Aluminum Light Poles, Arms and Luminaires	Each

Payment is full compensation for furnishing all work and disposal of material; and for labor, tools, equipment and incidentals necessary to complete the work

142. Wood Pole Lighting 60-FT, Item SPV.0060.1035.

A Description

The work under these items include furnishing and installing 60-foot wood pole, arm(s) and floodlight mounting bracket(s), junction box, grounding system, and lightning protection system, as shown on the plans, in accordance to standard specs 651 and 659, and as hereinafter provided.

B Materials

Furnish wood poles, Class 4 or larger with a 60-foot minimum overall length. The poles shall be western red cedar in accordance to ANSI standards 05.1. Pressure treatment shall be 5% pentachlorophenol with a minimum of 8 pounds per cubic foot net retention of the oil-borne preservative. All poles shall be shaved the entire length.

Floodlight mounting bracket arms for wood pole lighting units will be as shown on plan details. The floodlights are provided under separate bid item(s).

C Construction
This work shall be done in accordance to the pertinent provisions of standard spec 611.3.1.1 and as shown on the plans. Install #4 AWG equipment grounding wire exothermically bonded to a 5/8 inch by 8 foot copper clad grounding electrode. Install cable guard, NEMA 3R junction box near mounting arm, and NEMA 4X junction box at 3 feet above grade for fuses and splice on wood pole units. Install air terminal with #2 AWG grounding wire exothermically bonded to a 5/8-inch by 8-foot copper clad grounding electrode for lightning protection. Install #2 AWG bare copper exothermically bonding between grounding electrodes. Install conduit and wiring between junction boxes, wire racks, and required hardware as necessary and as shown on lighting plans and detail drawings.

Install floodlight mounting bracket for wood pole lighting units as shown on the plans and details and as per applicable portion of standard spec 657.3 and 659.3.

D Measurement
The department will measure Wood Pole Lighting 60-Foot as a unit for each individual item, installed, 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.0060.1035	Wood Pole Lighting 60-FT	Each

Payment is full compensation for furnishing and installing items as mentioned above; for furnishing all excavation and backfill; and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

143. Wood Pole 60-FT, Item SPV.0060.1036.

A Description
Furnish and install wood poles and other incidental items as required and as shown on the plans, in accordance to standard spec 651, and as hereinafter provided.

B Materials
Furnish wood poles that are Class 4 or larger with a 60-foot minimum overall length. The poles shall be western red cedar in accordance to ANSI standards 05.1. All poles shall be shaved the entire length.

Wood poles used for freeway lighting shall be pressure treated with a 5 percent pentachlorophenol mixture with a minimum of 8 pounds per cubic foot net retention of the oil-borne preservative.

C Construction
Install the pole in accordance to the pertinent provisions of standard spec 611.3.1.1, and as shown on the plans. As necessary, install #4 AWG grounding wire exothermically bonded to a 5/8-inch by 8-foot copper clad grounding electrode, cable guard, NEMA 3R junction box 3ft above grade level for splice, and incidentals as necessary.

D Measurement
The department will measure Wood Poles 60-Foot as a unit for each individual pole installed, 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.0060.1036	Wood Pole 60-FT	Each

Payment is full compensation for furnishing and installing a wood pole; all excavation and backfill and for furnishing all labor, equipment, tools, and incidentals necessary to complete the work.

144. Removing 60-Foot Wood Poles And Floodlights, Item SPV.0060.1040.

A Description
Remove 60-foot wood pole lighting units and attached conduit and wiring as shown on the plans and in accordance to standard spec 204, remove mast arm or bracket arm, luminaire, air terminal, and junction box, backfill openings or holes to the elevation of the surrounding ground, and landscape all disturbed areas from these removals. Separate payment will be made for lamp disposal.

B (Vacant)

C Construction
Dispose of all materials except lamps off site. Deliver the lamps to the department under a separate bid item, Lamp Disposal High Intensity Discharge, SPV.0060.1010.

The department will allow, at the contractor's discretion, to reuse removed wood pole lighting units at new location, if possible. The bid price is to reflect the salvage value of the removed wood pole lighting unit. The department will allow, at the contractor's discretion, to reuse removed temporary wood pole lighting units at new location, if possible.

D Measurement
The department will measure Removing 60-Foot Wood Poles And Floodlights by each indvidual unit removed and disposed of, or returned to the department, as directed by the engineer, 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.0060.1040	Removing 60-Foot Wood Poles And Floodlights	Each

Payment is full compensation for removing wood pole lighting units; all excavation and backfill; removal and disposal of material; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

145. Removing 60-Foot Wood Pole, Item SPV.0060.1041.

A Description

Remove 60-foot wood poles as shown on the plans.

B (Vacant)

C Construction

In addition to removing the attached conduit and wiring in accordance to standard spec 204, backfill all openings or holes to the elevation of the surrounding ground, and landscape all disturbed areas from these removals. Dispose of all materials off site.

D Measurement

The department will measure Removing Wood Pole 60-Foot as a unit for each individual pole, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1041	Removing 60-Foot Wood Pole	Each

Payment is full compensation for removing wood pole; all excavation and backfill; removal and disposal of material; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

146. Removing High Mast Lighting Tower 150 Foot, Item SPV.0060.1044.

A Description

This special provision describes removing existing high mast lighting towers.

B (Vacant)

C Construction

Dispose of materials off the site, except as noted below.

Return functioning luminaires to the department. Lamp Disposal will be separately measured and paid.

D Measurement
The department will measure Removing High Mast Lighting Tower (Various) by 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.0060.1044	Removing High Mast Lighting Tower 150 Foot	Each

Payment is full compensation for removing and properly disposing of materials; and for furnishing all labor, tools, materials, equipment and incidentals necessary to complete the contract work.

147. Abandoning High Mast Foundation, Item SPV.0060.1047.

A Description
This special provision describes abandoning or partially removing existing high mast lighting bases.

B (Vacant)

C Construction
At bases to be abandoned, burn off existing high mast anchor rods flush to the base. At bases shown in the plans to be partially removed, excavate the existing base to the depth which will accommodate the anchor rod and template cage for a new foundation. Dispose of materials off the site.

D Measurement
The department will measure Abandoning High Mast Foundation 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.0060.1047	Abandoning High Mast Foundation	Each

Payment is full compensation for removing, hauling, and properly disposing of materials; and for furnishing all labor, tools, materials, equipment and incidentals necessary to complete the contract work.

148. Pull Boxes Steel 24x36-Inch Grounded, Item SPV.0060.1050.

A Description

This special provision describes pull boxes similar to the standard pull box item of the same size, modified for Grounded Neutral wiring systems.

B Materials

Conform to materials requirements for standard pull box items in standard spec 653.

C Construction

Conform to construction requirements for standard pull box items in standard spec 653. In addition, drive a 5/8-inch x 8-foot copper grounding electrode at the bottom of the pull box. Bond the grounded neutral ("white") conductors, and the canister, frame and cover grounds to the grounding electrode with #6 AWG and connect with an exothermic weld.

D Measurement

The department will measure Pull Boxes Steel 24x36-Inch Grounded by the method of measurement for standard pull box items in standard spec 653.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1050	Pull Boxes Steel 24x36-Inch Grounded	Each

Payment will be on the same basis as standard pull box items in standard spec 653.

149. Pull Boxes Steel 24x42-Inch Grounded, Item SPV.0060.1051.

A Description

This special provision describes pull boxes similar to the standard pull box item of the same size, modified for Grounded Neutral wiring systems.

B Materials

Conform to materials requirements for standard pull box items in standard spec 653.

C Construction

Conform to construction requirements for standard pull box items in standard spec 653. In addition, drive a 5/8-inch x 8-foot copper grounding electrode at the bottom of the pull box. Bond the grounded neutral ("white") conductors, and the canister, frame and cover grounds to the grounding electrode with #6 AWG and connect with an exothermic weld.

D Measurement

The department will measure Pull Boxes Steel 24x42-Inch Grounded by the method of measurement for standard pull box items in standard spec 653.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1051	Pull Boxes Steel 24x42-Inch Grounded	Each

Payment will be on the same basis as standard pull box items in standard spec 653.

150. Luminaire LED, Item SPV.0060.1060.

A Description

This special provision describes furnishing and installing LED luminaires at the locations shown in the plan.

B Materials

B.1 Material Qualifications

Furnish a complete list of documentation in accordance to standard spec 651.2 and the following requirements. Be prepared to provide the following materials and/or data to the engineer and the City of Wauwatosa Public Works [Joe Kroll, 11100 W. Walnut Road, Wauwatosa, WI, (414) 471-8422, jkroll@wauwatosa.net] for review and approval:

One example luminaire matching what is proposed for use on the project. Example luminaire shall be available for evaluation for up to two weeks time. Furnish the following list of specific documentation detailing the characteristics of the LED luminaire:

- Fixture IES files (.ies format) for illumination modeling
- Cut sheets, warranty information and parts list for all equipment.
- Luminaire heat dissipation techniques.
- Energy usage information.
- Color spectrum with HID lamp comparison.
- Optical design features.
- Two references from municipalities currently using the same luminaires.

Do not order materials until the engineer approves the list.

B.2 Luminaire

Furnish LED luminaires with a slim, low profile design that minimizes wind loading. Luminaires shall be constructed of rugged cast and extruded aluminum with integral, weather-tight LED driver components with high performance aluminum heat-sinks. Each luminaire shall use a terminal block for power input suitable for #2 to #14 AWG wire. Luminaire shall be IESNA Type III Medium distribution without backlight control. The luminaire shall designed to mount on a 2” IP (2.375” O.D.) horizontal tenon and shall be adjustable +/- 5 degrees to allow for leveling. Luminaire shall include a leveling bubble visible from the underside of the unit.

B.2.1 Electronic Components
Luminaire shall accommodate varied lighting output from high brightness, 4300K (+/- 500K per full unit), minimum 70 CRI, long life LED sources. Drivers shall operate across 120-277V, 50/60 Hertz as standard. LED drivers shall have a power factor greater than 90% and THD less than 20% of full load. All luminaires shall come equipped with an integral 9kV surge suppression protection standard and a quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance.

B.2.2 Optical / Illumination Performance
Luminaire shall conform to the following:

- Luminaire tested and certified by an independent test laboratory to meet the photometric performance criteria established by IESNA LM-79.
- Luminaire shall be IESNA Type II or III Medium distribution.
- Luminaire shall deliver approximately 10,000 lumens and be rated to consume no more than 175 watts (+/- 15%) while operating for a minimum of 70,000 hours (+/- 10%).
- Nominal drive current to be set at 530 Ma. . Drive current shall be field adjustable.

B.2.3 Finish
The luminaire fixture finish shall feature an epoxy primer with an ultra-durable silver powder topcoat, providing resistance to corrosion, ultraviolet degradation and abrasion. Alternative equivalent finishes shall be approved by the engineer.

B.2.4 Ratings / Certifications
Luminaires shall be rated and/or certified as follows:

- U.L. listed for wet locations
- RoHS compliant for lead and mercury standards
- IP-65 minimum weather fastness rating
- IDA dark sky full cutoff compliant

Acceptable LED luminaires are:

- BetaLED Model: STR-LWY-2M-43-07-D-UL-525-43K
- Phillips Model: RVM-160W-96LED4K-LE2American Electric Model: ATB1-60LED-E53-MVOLT-R2

C Construction
Install LED Luminaire in accordance to the pertinent provisions of standard spec 659 and as the manufacturer directs.

D Measurement
The department will measure Luminaire LED as each individual LED 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.0060.1060	Luminaire LED	Each

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

151. Luminaire Utility LED Category B, Item SPV.0060.1062.

A Description
This special provision describes furnishing and installing Luminaires Utility LED Category B.

B Materials
Furnish Luminaires Utility LED from the department Qualified Product List. Luminaires shall conform to applicable portions of Section 659.2.2 and the WisDOT Specifications for LED Roadway Luminaires. The luminaire housing shall be all aluminum with factory finished durable corrosion and UV resistant gray/aluminum finish. Housing access shall be tool-free. The Luminaire/arm mounting configuration shall fit the specified pole fitter being used per the plan. The luminaire shall be UL listed, IP 66 rated.

LED lamps shall be in the 4000K color temperature range with a minimum of 70 CRI. A NEMA wattage label shall be fixed to the bottom of the luminaire.

The luminaire shall be equipped with a voltage-sensing LED driver, to accommodate 120-277V with 90% power factor and THD 20% max at full load. Surge protection shall be provided and tested in accordance to the specifications.

The acceptable luminaires are as follows:

Category B:

- Philips RVS-135W80LED4K-R-LE3-UNIV-DMG-GY3
- CREE_B STR-LWY-2S-HT-08-D-UL-SV-700-43K
- Leotek GC2-90E-MV-NW-2 (530MA)
- American Electric- ATB2_60B_LED_E53_R2

Furnish shop drawings as specified in standard spec 506.3.2, except submit 5 copies with the materials list. Ensure the drawings contain sufficient detail to allow satisfactory review and show the dimensions of all equipment shown in the plans.

C Construction
Furnish and install luminaires and all necessary miscellaneous accessories and hardware to complete the installation of the luminaires.

The contractor shall follow manufacturer's instructions regarding luminaire installation.

Three single-conductor No. 12 stranded wires shall be used to connect the luminaires to their respective branch conductors in the pole base. Each luminaire feeder wire shall be protected by one 5-amp fuse. Fuses and fuse holders shall be as per the details in the Plan.

All exposed threaded equipment mounting hardware shall be stainless steel.
All threaded stainless steel hardware and dissimilar metal, threaded hardware shall be coated with an approved zinc-based anti-seize compound (Loctite or Jet-Lube) by the contractor.

There shall be a sticker placed on the bottom of the luminaire to clearly identify the WisDOT Luminaire Category A, B, C, or D as applicable. The sticker should be visible from to a person standing on the ground.

D Measurement
The department will measure Luminaires Utility LED Category B as each individual lighting 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.0060.1062	Luminaire Utility LED Category B	Each

Payment is full compensation for furnishing and installing all materials, including luminaire, accessories, hardware and fittings necessary to install the luminaire workable first class condition, and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

152. Luminaire Utility LED Category C, Item SPV.0060.1063.

A Description
This special provision describes furnishing and installing Light Emitting Diode (LED) roadway luminaires Category C (LED-C).

B Materials
Furnish Luminaires Utility LED from the department qualified product list. Luminaires shall conform to applicable portions of standard spec 659.2.2 and the WisDOT Specifications for LED Roadway Luminaires. The luminaire housing shall be all aluminum with factory finished durable corrosion and UV resistant gray powder-coated

or anodized aluminum finish. Housing access shall be tool-free. The luminaire/arm mounting configuration shall fit the specified pole fitter being used per the plan. The luminaire shall be UL listed, IP 66 rated.

LED lamps shall be in the 4000K color temperature range with a minimum of 70 CRI. A NEMA sized "Category Label" label shall be fixed to the bottom of the luminaire and be visible from a passing vehicle.

The luminaire shall be equipped with a voltage-sensing LED driver, to accommodate 120-277V with 90% power factor and THD 20% max at full load. Surge protection shall be provided and tested in accordance to the specifications. The luminaire shall also be equipped with a quick-disconnect plug for connecting the pole riser wires to the terminal block. A strain relief shall retain the pole riser wires within the luminaire.

The acceptable luminaires are as follows:

Category C:

- Philips RVM-160W96LED4K-R-LE3-UNIV-DMG-GY3
- Cree STR-LWY-2S-HT-10-D-UL-SV-700-43K
- Leotek GCA2-100E-MV-NW-2-GY-700
- American Electric ATB2-60B-LED-E10-R2-N

Furnish shop drawings as specified in standard spec 506.3.2, except submit 5 copies with the materials list. Ensure the drawings contain sufficient detail to allow satisfactory review and show the dimensions of all equipment shown in the plans.

C Construction

Furnish and install luminaires and all necessary miscellaneous accessories and hardware to complete the installation of the luminaires.

The contractor shall follow manufacturer's instructions regarding luminaire installation.

Three single-conductor No. 12 stranded wires shall be used to connect the luminaires to their respective branch conductors in the pole base. Each luminaire feeder wire shall be protected by one 5-amp fuse. Fuses and fuse holders shall be as per the details in the Plan.

All exposed threaded equipment mounting hardware shall be stainless steel.
The contractor shall coat all threaded stainless steel hardware and dissimilar metal, threaded hardware with an approved zinc-based anti-seize compound (Loctite or Jet-Lube prior to assembly.

There shall be a sticker placed on the bottom of the luminaire to (paid separately) clearly identify the WisDOT Luminaire Category A, B, C, or D as applicable. The sticker should be visible from to a person standing on the ground.

D Measurement
The department will measure Luminaire Utility LED Category C as each individual lighting 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.0060.1063	Luminaire Utility LED Category C	Each

Payment is full compensation for furnishing and installing all materials, including luminaire, accessories, hardware and fittings necessary to install the luminaire workable first class condition, and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

153. Luminaire Utility LED Category D, Item SPV.0060.1064.

A Description
This special provision describes furnishing and installing Light Emitting Diode (LED) roadway luminaires category D (LED-D).

B Materials
Furnish Luminaires Utility LED from the department qualified product list. Luminaires shall conform to applicable portions of standard spec 659.2.2 and the WisDOT Specifications for LED Roadway Luminaires. The luminaire housing shall be all aluminum with factory finished durable corrosion and UV resistant gray powder-coated or anodized aluminum finish. Housing access shall be tool-free. The luminaire/arm mounting configuration shall fit the specified pole fitter being used per the plan. The luminaire shall be UL listed, IP 66 rated.

LED lamps shall be in the 4000K color temperature range with a minimum of 70 CRI. A NEMA sized “Category Label” label shall be fixed to the bottom of the luminaire and be visible from a passing vehicle.

The luminaire shall be equipped with a voltage-sensing LED driver, to accommodate 120-277V with 90% power factor and THD 20% max at full load. Surge protection shall be provided and tested in accordance to the specifications. The luminaire shall also be equipped with a quick-disconnect plug for connecting the pole riser wires to the terminal block. A strain relief shall retain the pole riser wires within the luminaire.

The acceptable luminaires are as follows:

Category D:

- Philips RVM-215W128LED4K-R-LE3-UNIV-DMG-GY3
- Cree STR-LWY-2S-HT-12-D-UL-SV-700-43K
- Leotek GCA2-120E-MV-NW-2-GY-700
- American Electric ATB2-80B-LED-E10-R2-N

Furnish shop drawings as specified in standard spec 506.3.2, except submit 5 copies with the materials list. Ensure the drawings contain sufficient detail to allow satisfactory review and show the dimensions of all equipment shown in the plans.

C Construction

Furnish and install luminaires and all necessary miscellaneous accessories and hardware to complete the installation of the luminaires.

The contractor shall follow manufacturer's instructions regarding luminaire installation.

Three single-conductor No. 12 stranded wires shall be used to connect the luminaires to their respective branch conductors in the pole base. Each luminaire feeder wire shall be protected by one 5-amp fuse. Fuses and fuse holders shall be as per the details in the Plan.

All exposed threaded equipment mounting hardware shall be stainless steel.

The contractor shall coat all threaded stainless steel hardware and dissimilar metal, threaded hardware with an approved zinc-based anti-seize compound (Loctite or Jet-Lube prior to assembly.

There shall be a sticker placed on the bottom of the luminaire to (paid separately) clearly identify the WisDOT Luminaire Category A, B, C, or D as applicable. The sticker should be visible from to a person standing on the ground.

D Measurement

The department will measure Luminaire Utility LED Category D as each individual lighting 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.0060.1064	Luminaire Utility LED Category D	Each

Payment is full compensation for furnishing and installing all materials, including luminaire, accessories, hardware and fittings necessary to install the luminaire workable first class condition, and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

154. Luminaires Floodlight 1000W HPS, Item SPV.0060.1070.

A Description

The work under this item shall consists of furnishing and installing 1000 watt HPS floodlight luminaires with photoelectric control, in a 240 Volt configuration. Luminaires shall to be installed in accordance to standard spec 659.

B Materials

Appropriate Floodlight Models include or approved equal:

- American Electric Lighting, Model 77X1SRNMT266TMLC1023PCSS
- Cooper Lighting, Model HPNKS1000LLOA/RA1016
- Lithonia, Model TFA1000SRBTBFTSC22PERLPI

Units shall have a 6X6 or 7X7 light distribution. Units shall have a photoelectric cell for control of the fixture operation.

C Construction

The contractor shall install the luminaire on the light poles at locations specified in lighting plan and in accordance to standard spec 659.2.1, 659.3.1, wired and fused in accordance to standard spec 659.3.2 and plan details. Luminaires shall be orientated (0 deg = North) as shown and at an angle of 45-degrees from the vertical

D Measurement

The department will measure Luminaires Floodlight 1000W HPS 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.0060.1070	Luminaires Floodlight 1000W HPS.	Each

Payment is full compensation for furnishing all the work and materials required under this bid item.

155. Luminaires Floodlight 400W HPS, Item SPV.0060.1071.

A Description

The work under this item shall consist of furnishing and installing 400 Watt HPS floodlight luminaires, with photoelectric control, in a 240 Volt configuration and in accordance to standard spec 659.

B Materials
Appropriate Floodlight Models include or approved equal:

- GE Turnpike, General Elec. Product Number: RPFS40S240VM2GLN3GRK.
- Holophane Predator, Holophane Product Number: PF-400HP-240V-BN1KR
- Lithonia Lighting, Lithonia Product Number: 170S 400S HPN 240V TS PER

Units shall have a 6x6 or 7x7 light distribution. Units shall have a photoelectric cell for control of the fixture operation.

C Construction
Install the luminaire on the light poles at locations specified in lighting plan in accordance to standard spec 659.2.1, and 659.3.1, and wired and fused in accordance to standard spec 659.3.2 of standard specifications and plan details. Luminaires shall be orientated (0 deg = North) as shown and at an angle of 45-degrees from the vertical. Units shall be suitable for mounting on the poles provided under bid item Poles Type A With Bullhorn Bracket.

D Measurement
The department will measure Luminaires Floodlight 400W HPS by 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.0060.1071	Luminaires Floodlight 400W HPS	Each

Payment is full compensation for furnishing all the work and materials required under this bid item.

156. Luminaire Flood Probeam LED, Item SPV.0060.1072.

A Description
The work under this item consists of installing Flood Probeam LED luminaires at locations specified in plans, in accordance to plan details, the applicable portions of standard spec 659, and as hereinafter provided.

B Materials
Flood Probeam LED luminaires shall be outdoor sign lighting suitable for wet locations up to 40°C ambient temperature. Electrical housing shall be IP65 rated. All hardware shall be stainless steel. Units shall be UL listed for WET LOCATIONS. Die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Units shall be dark bronze in color with a durable powder coat finish.

Example luminaire shall be available for evaluation for up to two weeks time. Furnish the following list of specific documentation detailing the characteristics of the LED luminaire:

- Fixture IES files (.ies format) for illumination modeling
- Cut sheets, warranty information and parts list for all equipment.
- Luminaire heat dissipation techniques.
- Energy usage information.
- Color spectrum with HID lamp comparison.
- Optical design features.

Do not order materials until the engineer approves the list.

B.2 Luminaire

Furnish LED luminaires with a slim, low profile design that minimizes wind loading. Luminaires shall be constructed of rugged cast and extruded aluminum with integral, weather-tight LED driver components with high performance aluminum heat-sinks. Each luminaire shall use a terminal block for power input suitable for #2 to #14 AWG wire. Luminaire shall be yoke mouned and caple of being locked in a position.

B.2.1 Electronic Components

Luminaire shall accommodate varied lighting output from high brightness, 4000K (+/- 500K per full unit), minimum 70 CRI, long life LED sources. Drivers shall operate across 120-277V, 50/60 Hertz as standard. LED drivers shall have a power factor greater than 90% and THD less than 20% of full load. All luminaires shall come equipped with an integral surge suppression protection standard.

B.2.2 Optical / Illumination Performance

Luminaire shall conform to the following:

- Luminaire tested and certified by an independent test laboratory to meet the photometric performance criteria established by IESNA LM-79.
- Luminaire shall deliver approximately 12,000 lumens and be rated to consume no more than 175 watts (+/- 15%) while operating for a minimum of 70,000 hours (+/- 10%).
- Luminaire shall have 6 x 6 or 6 x 7 light distribution.

B.2.3 Finish

The luminaire fixture finish shall feature an epoxy primer with an ultra-durable silver powder topcoat, providing resistance to corrosion, ultraviolet degradation and abrasion. Alternative equivalent finishes shall be approved by the engineer.

B.2.4 Ratings / Certifications
Luminaires shall be rated and/or certified as follows:

- U.L. listed for wet locations
- RoHS compliant for lead and mercury standards
- IP-65 minimum weather fastness rating

C Construction
Mount unit aimed at a 45 degree angle relative to traffic and 30 degree down from horizontal. Unit shall be installed per manufacturer's recommendations. Provide 4#12 AWG wiring from the fixture to junction box via to comprise a complete and functional lighting unit. Flood Probeam LED luminaires individual fuse (5 Amp type FNQ) to be installed/located in the lower structure junction box. Perform splices in the wireway or conduit body with gel-filled wire nuts. Prior to being placed in service, clean the units. Unit shall be installed on probeam mounting bracket as provided in the lighting plans.

D Measurement
The department will measure Luminaire Flood Probeam LED by 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.0060.1072	Luminaire Flood Probeam LED	Each

Payment is full compensation for furnishing and installing all materials including the luminaires, wiring, and fusing; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

157. Luminaire Sign LED, Item SPV.0060.1075.

A Description
The work under this item consists of installing Wayfinding Sign LED luminaires at locations specified in plans, in accordance to plan details, the applicable portions of standard spec 659, and as hereinafter provided. Grounding electrode conductor will be paid as quantified under a separate bid item 655.0625. Equipment grounding electrode and associated terminal bus bar cost is incidental to grounding electrode conductor.

B.1 Materials
Wayfinding Sign, LED luminaires shall be outdoor sign lighting suitable for wet locations up to 40°C ambient temperature. The Optical Housing shall be IP66 rated and the Electrical Housing shall be IP65 rated. All hardware shall be stainless steel. Units shall be UL listed for WET LOCATIONS. Reflectors shall be hydroformed to ensure consistency of photometric performance and long term durability. The reflector shall have a glass liner and an activated charcoal filter or the unit shall allow access to the

lamp while keeping the reflector area sealed with a shutter type mechanism for the lamp. Units shall have a heat and shock resistant tempered glass lens or a heat and shock resistant borosilicate glass lens with an optional lens "defrost" feature for climates with heavy snow and ice. Units shall be gray in color.

Example luminaire shall be available for evaluation for up to two weeks time. Furnish the following list of specific documentation detailing the characteristics of the LED luminaire:

- Fixture IES files (.ies format) for illumination modeling
- Cut sheets, warranty information and parts list for all equipment.
- Luminaire heat dissipation techniques.
- Energy usage information.
- Color spectrum with HID lamp comparison.
- Optical design features.

Do not order materials until the engineer approves the list.

B.2 Luminaire

Furnish LED luminaires with a slim, low profile design that minimizes wind loading. Luminaires shall be constructed of rugged cast and extruded aluminum with integral, weather-tight LED driver components with high performance aluminum heat-sinks. Each luminaire shall use a terminal block for power input suitable for #2 to #14 AWG wire. The luminaire shall designed to mount on a 2" IP (2.375" O.D.) horizontal tenon and shall be adjustable +/- 5 degrees to allow for leveling. Luminaire shall include a leveling bubble visible from the underside of the unit.

B.2.1 Electronic Components

Luminaire shall accommodate varied lighting output from high brightness, 5000K (+/- 500K per full unit), minimum 70 CRI, long life LED sources. Drivers shall operate across 120-277V, 50/60 Hertz as standard. LED drivers shall have a power factor greater than 90% and THD less than 20% of full load. All luminaires shall come equipped with an integral 9kV surge suppression protection standard and a quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance. Units shall have current driver set to 700 Ma. Driver is removable through access door.

B.2.2 Optical / Illumination Performance

Luminaire shall conform to the following:

- Luminaire tested and certified by an independent test laboratory to meet the photometric performance criteria established by IESNA LM-79.
- Luminaire shall deliver approximately 6,600 lumens and be rated to consume no more than 175 watts (+/- 15%) while operating for a minimum of 70,000 hours (+/- 10%).

- Luminaire shall perform a minimum range of 60 - 90 foot-candle at the face of the sign with average-minimum ratio equal or better than 3.5.

B.2.3 Finish
The luminaire fixture finish shall feature an epoxy primer with an ultra-durable silver powder topcoat, providing resistance to corrosion, ultraviolet degradation and abrasion. Alternative equivalent finishes shall be approved by the engineer.

B.2.4 Ratings / Certifications
Luminaires shall be rated and/or certified as follows:

- U.L. listed for wet locations
- RoHS compliant for lead and mercury standards
- IP-65 minimum weather fastness rating

C Construction
Mount unit square, true and properly aim to the wayfinding sign board. Unit shall be installed per manufacturer's recommendations (LED sign lights to be mounted 1' below and 4' out from the sign face) attached and bolted on 1 1/2" square channel as provided and shown in the wayfinding sign structural plans. Provide 3#12 AWG (Phase, Neutral, Ground) wiring from the fixture to junction box via fuse to comprise a complete and functional lighting unit. Luminaire sign LED individual fuse (5 Amp type FNQ) to be installed/located in the lower structure junction box. Provide grounding bus/lug and neutral terminal bus bar accessible through handhole junction box. One equipment grounding electrode per location is incidental to # 6 AWG ground wiring.

D Measurement
The department will measure Luminaire Sign LED by 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.0060.1075	Luminaire Sign LED	Each

Payment is full compensation for furnishing and installing all materials including the luminaires, wiring, and fusing; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

158. Salvage Distribution Centers, Item SPV.0060.1090.

A Description
The work under this item consists of removing distribution center from existing base at locations shown in the plans, and relocating it to a new base at location shown in plans, in

accordance to standard specs 654 and 655. Concrete control cabinet base removal and installation will be measured and paid for under a separate bid items.

B Materials

Provide small parts, fittings, fasteners, connectors, splice kits, and other appurtenances that are needed to complete the installation and are approved by the engineer.

C Construction

Install and connect the distribution center as shown in the plans. Perform work to meet all applicable codes and conform to good electrical construction practices. The work shall include making all connections for a complete and operable lighting system.

Ground the chain link fence if shown in the plans and electrically bond the gates to the fence with flexible copper jumpers whenever fences are crossed by an underground utility high-voltage service lateral, whether existing or installed for this project.

Coordinate all necessary arrangements with the utility for removal of electrical service to old base and providing new secondary service at 240/480 VAC isolated neutral to new base on behalf of the State of Wisconsin, which will be the billing customer. The department will pay all required utility service extension fees. Minimize the time between removal from the existing base and reinstallation on the new base. Concrete base removal and installation will be paid for as a separate items and are not included herein. Work to include connections to power existing lights at the new location as shown in the plans. Provide temporary utility power or generators to maintain illumination on the highway during the transference between locations. Highway lighting shall be maintained during all nightly hours.

D Measurement

The department will measure Salvage Distribution Centers by each individual relocation, 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.0060.1090	Salvage Distribution Centers	Each

Payment is full compensation for removing, hauling, removing the original concrete base, temporary power and installing distribution cabinet; for making connections; for providing and installing all parts, fittings, fasteners, connectors, and splice kits, for fence grounding; for restoration of WE Energies rough backfill; for coordination with the utility; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

159. Lighting Control Cabinet 240/480 VAC, Item SPV.0060.1096.

A Description

The work under this item shall consist of furnishing and installing 100 Ampere 240/480 VAC lighting control cabinets (distribution centers), as shown in the plans. To the extent possible, provide components from the same manufacturer. Conform to standard spec 651.2(4) regarding listed components. Electrical service, service entrance conductors, and concrete control cabinet base will be measured and paid separately. Two NEMA decals per installation, one for the meter pedestal and one for the cabinet door, to read DANGER 480 VOLTS, will each be paid as Plaques Sequence Identification.

B Materials

B.1 General

Furnish, deliver and install Lighting Control Cabinet 240/480 VAC from the department Qualified Product List to the project site. Notify the department lighting engineer Mr. Matt Pfeifer, (414) 750-2836 for approval before installation.

B.2 Contactors

The contactors shall be electrically held, specification grade, two-pole, with 30A contacts. Provide 1" high engraved plaque above each contactor indicating the circuit number in ½" text as appropriate.

B.3 Photocell

Provide photocell Receptacle to accommodate NEMA twist-lock photocell. Provide opening on side of housing to allow proper photocell operation.

B.4 HOA Switch

Provide a hand-off-auto switch that is accessible without opening dead-front door.

B.5 Panelboards

Provide a specification grade panelboard interior, Square D type NQ or equal. The panel shall be rated, sized, and configured as indicated on the attached drawings. Provide copper bus bars and copper ground and neutral bus bars. Provide thermal-magnetic circuit breakers that clearly indicate ON, OFF, or TRIPPED position in the panel.

Provide a separate or back-fed main circuit breaker.

B.6 Enclosures

The cabinet shall be of NEMA Type 3R rainproof construction and shall be UL listed as "Enclosed Industrial Control Equipment" (UL 508A). External construction shall comply with UL50 requirements. Cabinet dimensions shall be as indicated on the attached drawings.

Cabinet exterior shall be fabricated from 1/8" clear anodized 5052-H32aluminum.

All fasteners, latches and hardware shall be of stainless steel and all hinges shall be continuous piano type. No fasteners except sealing screws shall be removable by external access.

All edges and corners on both exterior and interior must be rounded and smooth to prevent injuries.

The distribution equipment compartment shall be behind an external lockable door with standard #2 key locking mechanism. A door keeper shall be provided to keep the door in the open position. Electrical equipment shall be located behind an internal dead-front door with a quarter turn securing latch and hinged to open a minimum of 120 degrees. The dead-front door shall be hinged on the same side as the customer door.

A metal print pocket shall be located on the inside of the customer door large enough to hold all circuit directories and instructions in a clear plastic 8”x10” weatherproof sleeve.

The cabinet mounting bolts shall not be externally accessible. Cabinet can be mounted to a concrete base with use of stainless steel anchors.

Cabinet shall be rated for operation at 22k minimum AIC amps interrupting. Series rating is acceptable.

All distribution and control equipment shall be factory wired using 600 volt wire.

Cabinet dimensions shall be as indicated on the attached drawings.

B.7 Field Wiring 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 #2 wire for power, neutral, and grounding connections. The terminal blocks shall be mounted 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.8 Surge Protection Devices (SPD)

SPD for 240V or 240/480V Power: Install a Type 1 SPD on distribution panelboard on the load side of a dedicated 2-pole, 30A circuit breaker.

SPDs shall be UL Listed and labeled to UL 1449 Third Edition. SPDs shall be posted on VZCA at UL.com.

The following ratings shall not be exceeded on any mode of protection:

- Short Circuit Current Rating (SCCR): 200kA or the available short circuit current, whichever is greater
- Nominal Discharge Current Rating (In): 20kA

- Voltage Protection Rating (VPR): 700V
- Maximum Continuous Operating Voltage (MCOV): 150V
- Peak surge current rating: 50kA per phase (sum of L-N plus L-G)

SPD's SPDs shall include directly connected MOVs exceeding 32mm in diameter from L-N and either L-G, N-G, or both. SPD shall at a minimum be rated as NEMA 1.

The acceptable Lighting Control Cabinet Manufactures are as follows:

- Milbank Manufacturing
- Povolny Specialties
- State Manufacturing Corporation

B.9 240-120/240V Transformer and 120V Duplex Receptacle

Provide a NEMA 1, 1.5 KVA or larger step down transformer, a 20A 1 pole circuit breaker and duplex, GFI receptacle. The primary voltage shall be 240V and secondary voltage shall be 120V with 5% tapping. The transformer shall be capable of mounting inside the cabinet.

SPST, 20 amp switch for the door shall be single pole single throw type heavy duty, temper resistant, rated for 125V, UL listed.

The incandescent lighting fixture shall be enclosed and gasketed with 60Watt, 120V lamp, UL listed.

Control power breaker shall be 15 amp, single pole 120V, bolt on, UL listed. The circuit breaker shall have 10K AIR rating at 120V, terminal for minimum wire size 14 AWG and maximum wire size 8 AWG.

Timer switch shall be astronomical microprocessor-based with 2-channels. Timer switch shall be UL listed, 120V or 240V as shown on the plans. The timer shall be set to enable the photocell 1 hour before dusk and to disable the photocell 1 hour after dawn. The timer switch shall be manufacturer TORK MODEL DZS200 or approved equal.

C Construction

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 parallel next to, and adjacent to other cables whenever possible. Install wiring in slotted raceway between terminal strip, contactor and panelboard. Secure all remaining wiring using screw attachment type straps; adhesive type will not be allowed.

Surge arresters shall be installed to allow LED indicator(s) to be readily visible when viewing inside of cabinet. Connect the surge arresters as indicated on the plans.

D Measurement
The department will measure Lighting Control Cabinet 240/480 VAC 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.0060.1096	Lighting Control Cabinet 240/480 VAC	Each

Payment is full compensation for furnishing and delivery of the lighting control cabinet; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

160. Concrete Control Cabinet Bases Special, Item SPV.0060.1101.

A Description
This special provision describes furnishing and installing concrete control cabinet bases special, as shown in the plans. These bases are for lighting control cabinets operating at 240/480 VAC, 3 phase.

B Materials
Materials shall confirm pertinent requirements of standard spec 654.2.

C Construction
Construction shall confirm pertinent requirement of standard spec 654.3. The concrete base size shall be as shown on the plans. Coordinate with the respective panel.

D Measurement
The department will measure Concrete Control Cabinet Bases Special, by each individual unit installed, 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.0060.1101	Concrete Control Cabinet Bases, Special	Each

The payment shall be made as described in standard spec 654.5(2).

161. Distribution Center Lighting Wauwatosa, Item SPV.0060.1120.

A Description

This special provision describes furnishing and installing a street lighting distribution center located as shown. The distribution center is to match the City of Wauwatosa standard distribution cabinets.

Work under this item consists of furnishing and installing 240/480 volt, 200 amp electrical service enclosure for power distribution. The distribution centers shall include but not limited to a NEMA 3R aluminum cabinet, panelboard, circuit breakers, lighting contactor with photoelectric control, wiring, all equipment and materials as shown in the plans.

The meter pedestal and concrete base will be paid under a separate bid items.

B Materials

The cabinet with all of its electrical components, wiring and parts shall be listed and labeled by Underwriters Laboratories (UL) or other Nationally Recognized Testing Laboratory as a complete assembled unit.

All materials furnished by the contractor for highway lighting installation under this contract are subject to approval by the engineer.

B.1 Enclosure

The enclosure shall be manufactured by Bison Pro Fab, (800) 825-3805, APX Enclosures, (717) 328-9399 or approved equal.

Control enclosure shall be NEMA-3R made from 12-gauge Type 304 stainless steel with #3 finish. Seams shall be continuously welded and ground smooth. All hardware shall be type 304 stainless steel.

Enclosure shall be free standing with an overall height of 54-inches, a width of 48-inches and a depth of 24-inches. Enclosure shall have a 2-inch wide inside flange at the front, back and sides for anchoring to base. Side and back walls shall be stiffened with two vertical stainless steel equipment mounting rails per wall. The door frame shall be double flanged.

The cabinet top shall be sloped to drain and shall have a drip shield over door. Provide screened vent slots (1/8” x 1”) under the cabinet overhang located in the top face above door opening.

Outer door shall be NEMA 3R, 12-gauge, with cellular neoprene gasket and a three position door stop rod. Door shall be hinged with a continuous 14-gauge stainless steel hinge secured with ¼-20 stainless steel carriage bolts.

Provide 3-point latching system with 3/4" diameter stainless steel padlocking handle. Also provide a Corbin No.2 deadbolt lock with two keys.

Enclosure shall have a 0.125-inch thick 5052-H32 aluminum mounting panel at back (interior) of enclosure.

Provide plastic print pocket attached to inside of door.

B.2 Main Disconnect
200A, 2-pole, 600VAC, Square-D #JGL26200. Provide a NEMA 4X stainless steel enclosure Model J250DS-SPLO. Unit shall lockable in the ON and OFF position. Mount unit on exterior of enclosure.

B.3 Contactor
200A, 2-pole, Mechanically Held, 120V Coil, Square-D #8903-SVO10-V02. Mount directly to back panel. Construct separate latching / unlatching circuit using 8-pin DPDT relay and socket (120V coil, 10A contacts) Square-D or equal.

B.4 Control Transformer
240VAC Primary, 120VAC Secondary, 1PH, 3KVA, Square-D #3S1F. Furnish Square-D #9080FB1211R fuse block assembly with 15A fuse to protect line side of transformer.

B.5 Secondary Load Center
Provide circuit breaker enclosure for secondary circuits, Square-D #QO24L70S with one 20A breaker (#QO120) for maintenance circuit, one 15A breaker (#QO115) for photocell circuit, and one #PK0GTA2 Ground Bar.

B.6 Photocell
The photocell shall be of the button type and installed in the sidewall of the control cabinet facing north. Apply silicon caulk to maintain the integrity of the enclosure. The photocell shall be rated for 120V, 1800W with 30-60 second delay between "on-off" operations and be warranted for 5-years. Intermatic #K4021C or approved equal.

B.7 Hand-Off-Auto Switch
Square-D #9001-KS43B switch body, #9001-KA1 contact block and #9001-KN760WP nameplate mounted in Hoffman #E-1PB one hole box.

B.8 Other Devices
Furnish one 120V GFI duplex service receptacle in surface mounted box, and one 120V incandescent light fixture. Light fixture shall be wall mount type with gasketed vapor tight globe, wire guard, lamp, and on / off switch in surface mounted box.

Duplex GFCI Receptacle:	Hubbell #GFR52521A
4” SQ Deep Box:	Appleton #4SDEK with #8362 Cover
Vapor Tight Fixture:	Epco #15000 with 15063 Wire Guard
4” Oct. Box:	Appleton #40D-1/2
Bulb:	GE 60W
Light Switch:	Hubbell #HBL1201
4” SQ Deep Box:	Appleton #4SDEK with #8361 Cover

Provide an insulated groundable neutral assembly, and service ground kit

B.9 Neutral Bar – 240V Circuits

1/4” x 4”x 18” Copper Bus Bar with Mounting Hardware, Square-D #SN225KA or equal. Provide copper mechanical lugs for all conductors to bus bar, Burndy #KA25 or equal.

B.10 Panelboard

Panelboard shall include 240/480 volt, 225A Square ‘D’ panel, 100A main circuit breaker, 30A branch circuit breakers and ground bar as follows:

Panelboard: (1) – Square-D 400A, 600V, I-Line, #HKA-225-S4
(Note: model based on need to maintain consistency with other distribution centers. Model is OEM)

Ground Bar: (1) – Square-D #PK0GTA2

Main Breaker: (1) – Square-D 2-Pole, 200A, 600V, I-Line, #JGA26200AB

Circuit Breakers: Square D I-Line 30A #FA-14040A
Square D I-Line 30A #FA-14040B
Provide quantity of breakers as shown on the drawings. Provide in pairs to allow 3-wire circuits

Provide fillers (Square-D #HNM1BL or #HNM4BL) as required.

All Materials and Methods of Construction shall be in accordance to the applicable provisions of standard spec 656.

C Construction

City of Wauwatosa to apply and pay for the electrical service. The contractor shall be responsible for coordinating the timely installation of the service lateral by the utility. Provide ground rods as shown with a minimum of four at 5/8" Dia. by 10' long separated by not less than 10'-0" and ground conductor meeting Table 259-94 of the N.E.C. Connections between the ground conductor and ground rod shall be via an exothermic type connection process.

All wire in a conduit shall be pulled through at the same time. If required to pull wire through an occupied conduit, the existing wire shall first be removed and examined. If defective, the old wire shall be replaced for separate payment. If not defective, the old wire shall be pulled through with the new. Removal, inspection, and repulling of old wire is an incidental to the pulling of new wire. The cables shall be trained in straight horizontal and vertical directions and be parallel next to and adjacent to other cables whenever possible, using cable clamps attached with #10 screw to mounting panel, Panduit CCH series or approved equal. Adhesive type clamps are not allowed. All equipment shall be mounted to panel in enclosure unless otherwise indicated. Cabinet interior shall be cleaned of all construction debris prior to final acceptance.

Electrical permits and all applications will be required.

D Measurement
The department will measure Distribution Center Lighting – Wauwatosa 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.0060.1120	Distribution Center Lighting Wauwatosa	Each

Payment is full compensation for furnishing and installing all materials including electrical enclosure and all contents, construction and required line and load side connections; for furnishing all incidentals; and for furnishing all labor, tools, equipment, materials and incidentals necessary to complete the work.

162. Pole, Fifteen-Feet Aluminum, Item SPV.0060.1122.

A Description
The work under this item consists of furnishing fifteen feet -Aluminum pole. The pole shall not interfere with vertical clearance required in the adjacent structures.
The pole shall conform to that required for a Concrete Base Type

B Materials
Conform to material requirements for pole in standard spec 657.2. The pole shall conform to the standard detail drawing.

C Construction
This work shall be in accordance to the provisions of standard spec 657.3, as shown on the plans and as herein modified.

Installation of the luminaire arms shall be accommodated the 4 ½ inch clamp to top of pole Pole bolt pattern shall be 11 ½" diameter with four bolt to align and match with standard type 5 base concrete base. Verify diameters of the pole top and bottom with respect luminaire arm clamp clamp and pole base respectively prior to start of work.

D Measurement
The department will measure Pole Modified Fifteen Feet - Aluminum as each individual pull box, furnished and acceptably installed.

E Payment
The department will pay for measured quantities at the contract unit price in accordance to standard spec 657.5 under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1122	Pole –Fifteen Feet Aluminum	Each

Payment is full compensation for furnishing and installing all materials for a complete installation.

163. Remove Electrical Service Meter Breaker Pedestal Lighting, Item SPV.0060.1153.

A Description
This special provision describes removing an existing electrical service meter breaker pedestal, supports and any additional electrical equipment associated with the service including disconnect switches and overall enclosure, disconnecting all connected power wires, and disposing of the equipment appropriately.

B (Vacant)

C Construction
Coordinate for removal of the existing electrical service meter breaker pedestal with WE Energies.

Disconnect all connected power wires, remove the pedestal, include existing electrical service meter breaker, supports and disconnect switches if present and dispose of all materials properly away from the project area.

D Measurement
The department will measure Remove Electrical Service Meter Breaker Pedestal Lighting by each individual unit, acceptably removed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1153	Remove Electrical Service Meter Breaker Pedestal Lighting	Each

Payment is full compensation for coordination with WE Energies; for disconnection of wires; for removal of the pedestal and any additional material of the service; and for furnishing all labor, tools, equipment, transportation, and incidentals necessary to complete the work.

164. Salvaged Lighting Unit Special, Item SPV.0060.1165.

A Description

The work under this item consists of installing salvaged lighting units, testing, cleaning and assembly of lamp as shown on the plans. The work includes furnishing and installing concrete base at locations shown in the plans. The concrete base type 1 shall be modified to accommodate salvageable parking lot lighting. This item to only be used on the relocated parking lot lighting pole in Behavioral Health Department. Removal of the concrete pole base and salvageable lamp will also be paid under a separate bid item.

The modified pole base concrete, anchor bolts and reinforcement shall conform to that required for a Type 1 pole base per S.D.D. 9 C 2-6.

B Materials

Conform to material requirements for concrete bases in standard spec 654.2. The pole base shall conform to the standard detail drawing.

C Construction

This work shall be in accordance to the provisions of standard spec 654.3, as shown on the plans and as herein modified.

Install the four bolt to match relocated pole approximately 6-7 inch diameter bolt circle. Verify bolt pattern in the field prior to start of work.

Install a 5/8-inch by 8-foot grounding electrode. Where the base is used for parking lot lighting utilizing the existing distribution centers with a grounded neutral, bond both the steel box, and the grounded neutral conductor, to the grounding electrode.

D Measurement

The department will measure Salvaged Lighting Unit Special as each individual unit, furnished and acceptably installed.

E Payment

The department will pay for measured quantities at the contract unit price in accordance to standard spec 654.5(2) under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.1165	Salvaged Lighting Unit Special	Each

Payment is full compensation for furnishing all work and disposal of material; and for labor, tools, equipment and incidentals necessary to complete the work.

165. Ground Rod, Item SPV.0060.2001.

A Description
This special provision describes installing a ground rod and ground wire.

B Materials
Ground rod shall be copper clad steel with cladding 13 mils thick. The minimum diameter is 5/8-inch and the minimum length is eight feet. Ground wire shall be AWG # 6 bare, solid copper.

C Construction
Use exothermic welding to connect the ground wire to the rod. Install the rod vertically, or as close to vertical as conditions permit. Select locations with moist soil, if available. Place the rod at least six feet from all other ground rods.

D Measurement
The department will measure Ground Rod by each individual unit, acceptably installed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2001	Ground Rod	Each

Payment is full compensation for installation of the ground rod and ground wire; welding and connections at both ends of the ground wire; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

166. Removing Ramp Control Signal Assembly Sidemount, Item SPV.0060.2002.

A Description
This special provision describes removing an existing sidemount ramp control signal assembly.

B Materials
Materials included in sidemount ramp control signal assemblies are:

1. Traffic signal standards.
2. Pedestal bases for traffic signal use.
3. Vehicular traffic signal heads.
4. Signal mounting brackets.
5. Sign mounting brackets.
6. Enforcement signal displays.

C Construction

Remove sidemount ramp control signal assemblies at the locations shown in the plans, or as directed by the engineer. Salvage the signal assemblies for the department to pick up, or dispose of them properly as directed by the engineer.

All work shall be in accordance to the applicable requirements of standard specs 655, 656, 657, and 658, the Wisconsin Electrical Code, these special provisions, and the details shown in the plans.

Salvage and store all removed materials for pickup by the department. Coordinate with the engineer on a schedule to have the removed items picked up. Maintain all materials in a condition suitable for reutilization. Replace all items damaged during construction operations.

Electrical work under this item shall be completed by a journeyman electrician or be completed under the supervision of a journeyman electrician. Legal status or standing as a journeyman electrician shall be certified or otherwise documented to the engineer before any electrical work may begin.

D Measurement

The department will measure Removing Ramp Control Signal Assembly Sidemount by each individual unit, acceptably removed, salvaged, and stored.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2002	Removing Ramp Control Signal Assembly Sidemount	Each

Payment is full compensation for removal and storage of the ramp control signal assembly; disconnecting all wiring connections; removing all conduit connections; for any necessary restoration, including backfill, topsoil, and seeding; and for furnishing all labor, tools, equipment, transportation, and incidentals necessary to complete the work.

167. Removing Ramp Control Signal Assembly Overhead, Item SPV.0060.2003.

A Description

This special provision describes removing an existing overhead ramp control signal assembly.

B Materials
Materials included in Overhead ramp control signal assemblies are:

1. Vehicular traffic signal heads.
2. Signal mounting brackets.
3. Sign mounting brackets.

C Construction
Remove overhead ramp control signal assemblies at the locations shown in the plans, or as directed by the engineer. Salvage the signal assemblies for the department to pick up, or dispose of them properly as directed by the engineer.

All work shall be in accordance to the applicable requirements of standard spec 655, 656, 657, and 658, the Wisconsin Electrical Code, these special provisions, and the details shown in the plans.

Salvage and store all removed materials for pickup by the department. Coordinate with the engineer on a schedule to have the removed items picked up. Maintain all materials in a condition suitable for reutilization. Replace all items damaged during construction operations.

Electrical work under this item shall be completed by a journeyman electrician or be completed under the supervision of a journeyman electrician. Legal status or standing as a journeyman electrician shall be certified or otherwise documented to the engineer before any electrical work may begin.

D Measurement
The department will measure Removing Ramp Control Signal Assembly Overhead by each individual unit, acceptably removed, salvaged, and stored.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2003	Removing Ramp Control Signal Assembly Overhead	Each

Payment is full compensation for removal and storage of the ramp control signal assembly; disconnecting all wiring connections; removing all conduit connections; for any necessary restoration, including backfill, topsoil, and seeding; and for furnishing all labor, tools, equipment, transportation, and incidentals necessary to complete the work.

168. Removing Controller Cabinet, Item SPV.0060.2004.

A Description
This special provision describes removing an existing controller cabinet.

B (Vacant)

C Construction
Remove controller cabinets at the locations shown on the plans, or as directed by the engineer. Salvage and store the cabinets and all contents for pick up by the department.

Do not remove the existing ITS control cabinets, or any other associated equipment until necessary, or as directed by the engineer. Carefully remove the existing cabinets from the concrete bases, together with all components in such a manner as to safeguard all parts and wiring from damage or loss. Salvage and store the cabinet and contents for pick up by the department.

Prior to removing the existing ITS control cabinets, remove all cables being terminated in the cabinet. Cut existing cables flush with cabinet base and cap existing conduits. Dispose of the cables properly away from the project area.

D Measurement
The department will measure Removing Controller Cabinet by each individual unit, acceptably removed, salvaged, and stored.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2004	Removing Controller Cabinet	Each

Payment is full compensation for removal and storage of the controller cabinet; disconnecting all associated wires and cables; for capping existing conduits, and for furnishing all labor, tools, equipment, transportation, and incidentals necessary to complete the work.

169. Removing Controller Cabinet Base, Item SPV.0060.2005.

A Description
This special provision describes removing an existing controller cabinet concrete base.

B Materials
Existing controller cabinet base, including concrete masonry, ground rods, masonry anchors, and restoration materials such as topsoil, seeding, mulch, and fertilizer in accordance to the pertinent provisions of standard spec 201, 625, 627, 629, 630, 636, and 640.

C Construction
Remove and dispose of the concrete foundation and all other pertinent materials, and restore the disturbed area by placing 4-inches of topsoil, and fertilize, seed, and mulch all disturbed areas in accordance to the pertinent requirements.

D Measurement
The department will measure Removing Controller Cabinet Base by each individual unit, removed from the ground, removed from the project site, and the disturbed area restored in accordance to the contract, acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2005	Removing Controller Cabinet Base	Each

Payment is full compensation for removing and disposing of a concrete controller cabinet base, including masonry anchors, ground rods, and concrete masonry; for topsoil, fertilizer, seed and mulch; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

170. Removing Controller Ramp Meter Processor Assembly, Item SPV.0060.2006.

A Description
This special provision describes removing existing controller ramp meter processor assembly at locations shown on the plan including; all materials needed, rewiring and/or disconnect of wiring in the cabinet and return of removed equipment to WisDOT.

B Materials
Materials include existing ITS cabinets and existing 170 ramp meter processor assemblies.

C Construction
Make all the proper disconnects and wiring changes in the controller cabinet.

Remove the existing controller ramp meter processor assembly as the plans show. Use caution not to damage any existing devices or processor assembly.

The department will pick up the controller ramp meter processor assembly. Contact Kurt Wilm, (414) 940-5570, Wisconsin Department of Transportation, Statewide Traffic Operations Center. Dispose of the cabling and wiring properly away from the project site.

D Measurement
The department will measure Removing Controller Ramp Meter Processor Assembly as each individual unit, acceptably removed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2006	Removing Controller Ramp Meter Processor Assembly	Each

Payment is full compensation for removing an existing controller ramp meter processor assembly; for disconnecting all necessary cables and wiring; and properly storing the materials.

171. Removing Electrical Service Meter Breaker Pedestal, Item SPV.0060.2007.

A Description

This special provision describes removing an existing electrical service meter breaker pedestal, disconnecting all connected power wires, and disposing of the equipment appropriately.

B Materials

Existing electrical service meter breaker pedestal.

C Construction

Coordinate for removal of the existing electrical service meter breaker pedestal with WE Energies.

Disconnect all connected power wires, remove the pedestal and dispose of all materials properly away from the project area.

D Measurement

The department will measure Removing Electrical Service Meter Breaker Pedestal by each individual unit, acceptably removed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2007	Removing Electrical Service Meter Breaker Pedestal	Each

Payment is full compensation for coordination with WE Energies; for disconnection of wires; for removal and disposal of the pedestal; and for furnishing all labor, tools, equipment, transportation, and incidentals necessary to complete the work.

172. Ramp Closure Gates Hardwired 30-FT, Item SPV.0060.2008.

A Description

This special provision describes providing freeway on-ramp closure gates on type 5 steel luminaire poles, and furnishing and delivering spare gate arms and flashers.

B Materials

B.1 General

Provide five user manuals and a listing of vendors and contact information for each manufactured component including flasher electrical components.

The engineer may allow alternate components equal to the manufactured components this special provision specifies. The engineer may require modification of the plan details to accommodate alternates. If the contractor provides an alternate arm and/or mounting adaptor, the engineer will reject that alternate if the contractor cannot demonstrate, to the engineer's satisfaction, that the department can easily remove and replace the arms.

B.2 Components

Furnish one Poles Type 5-Steel designed to carry twin 15-foot luminaire arms and conforming to standard spec 657 and with dimensions for acceptable installation of the ramp gate hardware as shown on the detail. Ensure a contiguous pole by eliminating the hand hole near base of pole, thus allowing uninhibited mounting of the gate pivot assembly.

Furnish galvanized steel nuts and galvanized bolts conforming to ASTM A307 except where designated as high strength (HS) conform to ASTM A325. For the ramp closure gate locking mechanism, furnish a handle nut to fit on a ¾" bolt (B&B Roadway Part Number 0605P0539 or approved equal).

Furnish grade A36 steel for the gate supports, gate pivot assembly, and associated hardware that is all galvanized after fabrication by either a mechanical or hot-dip process. Grind welded connections, rough edges, and burrs smooth before galvanizing to ensure a finished appearance. Ensure that the galvanized coating conforms to ASTM A 153.

Provide aluminum/fiberglass gate arms of the nominal length the bid item indicates and conforming to plan dimensions. Cover gate arms on two sides with alternating red and white shop-applied type H reflective sheeting conforming to standard spec 637. Also provide a shear pin base that is the manufacturer's "permanent pivot" style. Obtain components from:

B&B Roadway
15191 Hwy 243
Russellville, AL 35654
Tel: (888) 560-2060

Gate arm: model MU605

Furnish a worm gear winch with a single line vertical lift capacity of 2000 lbs. Ensure that the winch has hardened steel gears, a handgrip, permanently lubricated bearings, a reinforced arc-welded reel assembly, and mounting plate. Ensure that the winch can be mounted to the winch mount plate shown on the construction details and the handgrip can be operated without conflict with the pole or ramp gate assembly. Furnish a 2 inch

outdoor rated, rot resistant polyester strap for the connection between the worm gear winch and the gate arm pivot assembly.

Furnish hardwire power system and connections conforming to the following:

1. **Cabinet**
   Furnish cabinet assemblies, power wire terminal strips, and power supplies for the on-ramp closure gate systems.

   The cabinet shall be the following dimensions: 9-inches wide, 15-inches high, and 5-inches deep.

   Minimum wall thickness of the aluminum castings shall be 3/16-inch.

   Cabinet body shall have a cast rain hood over the top of the door opening.

   Door shall be manufactured to accept a Corbin No. 2 lock.

   Hinges shall consist of 3/6-inch diameter pins in cast hinge bosses that allow door to swing no less than 180º when open.

   Cabinet shall be capable of being field prepared for top, bottom, or rear mounting and wire entrance holes.

   Set screws shall be stainless steel.

   Assembly shall be water resistant by the door flange in full contact with and compressing a neoprene gasket held by an adhesive to a groove cast into the cabinet body.

   The cabinets shall consist of a cabinet body, door, and latch cast from aluminum alloy 319 or approved equivalent, and a Corbin No. 2 lock. The cast shall be free of voids, pits, dents, molding sand, and excessive foundry grinding marks. All radii shall be smooth and intact. Exterior and interior surfaces shall be smooth and cosmetically acceptable, free of molding fins, cracks, and other blemishes.

   The aluminum shall meet the following minimum requirements:
   - Yield Strength – 18 ksi
   - Tensile Strength – 27 ksi
   - Brinell Hardness – 70
   - Elongation (% in 2 inches) – 2

   The assembly shall have an alodine conversion coating to provide corrosion resistance and a proper base for paint adhesion.

Furnish a stainless steel or anodized steel mounting adapter plate to mount the cabinet to a pole with stainless steel banding straps.

2. **Power Converter**
   Furnish the cabinet with a 120 VAC to 12 VDC power converter.

   Furnish the cabinet with a 10 position terminal block for the 12 VDC power distribution. Power wire terminal strips 10 position feed-through terminal blocks UL-recognized for No. 22 AWG wire through No. 16 AWG wire and UL-rated for 15 amps. The terminals shall be tin-plated brass with brass clips and clamps.

Furnish gate flasher assemblies conforming to the following:

1. A 2-conductor connector, rated 12 volts at 5 amps minimum.

2. A 2-amp weather resistant in-line fuse and fuse holder.

3. Wiring harness made from 6-conductor 14 AWG stranded insulated control cable.

4. A 12-V flasher controller, capable of providing LED flashers with 5% to 100% duty cycle at a one-second pulse repetition rate.

5. A 4-conductor male/female electrical connector pair, 10 amp capacity for each connection, weather resistant, and mounted to allow rapid gate arm replacement.

6. A 5-amp mercury switch with less than 3 ohms “on” resistance and a 20- to 30-degree activation angle. Mount the switch on the gate arm to activate the flashers when the gate arm is lowered more than 45 degrees from vertical.

7. Furnish red LED flashers meeting the requirements of the MUTCD and/or AREMA standards for hue and brightness.

Power consumption	0.45 amp @ 10.5 V
Life expectancy	100,000 hrs
Directionality	0-degree cone orthogonal to face of flasher
Compliance temperature	-40° C to +70° C

Furnish electrical wires with jackets conforming to the following color scheme throughout the ramp closure gate system:

- Hot = Black or Red
- Neutral = White
- Ground = Green

Furnish structure identification plaques per WisDOT Standard Detail Drawing 12A4.

Furnish a 4-digit combination padlock (Master Lock Model 175DLH or approved equal) for the purpose of preventing unauthorized use of the ramp closure gate system.

C Construction

C.1 Ramp Closure Gates

Under the Ramp Closure Gates bid items, provide ramp closure gate at the locations the plans show. Apply corrosion protection material from the department's approved products list to the interface between the aluminum base and steel pole. The engineer may direct adjustment of the gate arm assembly to ensure the correct vertical and angular orientation of the completed closure gate.

Install cabinet with power supply, flasher controller, and other components. Connect the 120 VAC to 12 VDC power supply to the circuit breaker in the breaker disconnect box. Connect the 120 VAC to 12 VDC power supply to the 10-position terminal block and connect the 12 VDC components to the terminal block.

Connect the 12 VDC terminal strip to the wiring harness through the female side of a 2-terminal polarized electrical connector. Connect male side of this connector to the flasher controller and the female side of a weatherproof polarized 4-conductor electrical connector.

Attach the male side of the 4 conductor electrical connector, mercury switch, wiring harness and the three LED flasher units to the portion of the flasher assembly mounted on the breakaway portion of the gate arm. Adjust mercury switch so that as the gate arm is lowered to a maximum of 45 degrees from the vertical, the gate flasher assembly is energized, and the LEDs begin to flash. Ensure that when the gate arm is raised to a minimum of 15 degrees from vertical, the mercury switches the gate flasher assembly off.

Install structure identification plaques per WisDOT Standard Detail Drawing 12A4.

Location	Gate ID
RAMP WA and WH	G-40-63
RAMP WC and WF	G-40-62

D Measurement

The department will measure the Ramp Closure Gates Hardwired (30-Feet) as each individual installation, 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.0060.2008	Ramp Closure Gates Hardwired (30-Feet)	Each

Payment for the Ramp Closure Gate Hardwired is full compensation for providing ramp closure gates including support poles, gate arm assemblies, guides and collars, gate arms, cabinets, wiring and power converters, and gate flashers.

173. Install Portable Video Surveillance System, Item SPV.0060.2009.

A Description

This special provision describes deploying a portable trailer-mounted video surveillance system as shown in the plans to provide continuous video surveillance of the project area during permanent CCTV sites downtime.

B Materials

Materials will be state-furnished and will be an all inclusive unit consisting of a cable erected pole with a direct IP CCTV camera, a solar power system, a wireless Ethernet bridge, and stability outriggers, all mounted on a trailer.

C Construction

Pick up the state-furnished video surveillance system at the department facility at 531 W. Newhall Ave, Waukesha, WI.

Deploy the surveillance system in the initial location as shown on the plans and as directed by the engineer following all recommended procedures by the manufacturer.

Integrate the surveillance system with the new and existing communications system through the wireless Ethernet bridge. Installation of the backhaul end of the wireless Ethernet bridge will be compensated for with other pay items in this contract.

D Measurement

The department will measure Installing Portable Video Surveillance System as each individual unit, acceptably installed and tested.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2009	Installing Portable Video Surveillance System	Each

Payment is full compensation for picking up the surveillance system in Waukesha; for deploying it in the project area; for making functional; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

174. Relocating Portable Video Surveillance System, Item SPV.0060.2010.

A Description

This special provision describes moving a previously deployed portable video surveillance system to a new location as directed by the engineer or as made necessary by construction operations in the area.

B Materials
Portable video surveillance system and wireless Ethernet bridge previously deployed through other pay items in this contract.

C Construction

Coordinate all planned down-time of the portable video surveillance system with the STOC at (414) 227-2166. Notify the STOC an amount of time ahead of planned down-time equal to the planned down-time. Examples would be that a 4-hour temporary down-time of the system would require notification 4-hours ahead of time while an 8-hour planned down-time would require 8-hours of advance notification.

Per manufacturer's recommendations, prepare the surveillance system for towing, relocate to the new location, re-deploy, and make functional as directed by the engineer and as made necessary by construction operations.

No payment will be made for this work unless previously approved by the engineer. No payment will be made for this work for relocations made necessary by operations not previously planned with the engineer's approval.

D Measurement
The department will measure Relocating Portable Video Surveillance System by each individual unit, acceptably relocated and operational, including re-integrating the wireless Ethernet bridge as required by the relocation.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2010	Relocating Portable Video Surveillance System	Each

Payment is full compensation for taking the surveillance system down, moving to a new location, and re-deploying in a new location; for re-integrating the wireless Ethernet bridge into the communications system; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

175. Install Temporary Vehicle Detector Assembly, Item SPV.0060.2011.

A Description
This special provision describes assembling from a combination of state-furnished and contractor furnished materials a temporary vehicle detector assembly and installing, calibrating, and integrating the assembly into the existing system.

B Materials
Materials will include state-furnished materials and contractor furnished materials.

State-furnished materials include the following:

- One Electronic Integrated Systems, Inc. (EIS) Remote Traffic Microwave Sensor (RTMS) with integral 900 MHz serial radio.
- One solar power system consisting of 2-85W panels, 2-120 Amp-Hour batteries, a solar power controller, and one solar power cabinet to house the batteries and controller.

Contractor furnished materials include the following:

- One 30-foot type 4 or larger wood pole. The wood pole shall be western red cedar in accordance to ANSI standards 05.1. Pressure treatment shall be 5% pentachlorophenol with a minimum of 8 pounds per cubic foot net retention of the oil-borne preservative. Pole shall be shaved the entire length.
- Outdoor rated Power cable between solar power system output and state-furnished RTMS.
- Mounting hardware for solar power system and RTMS detector.

C Construction

RTMS Detector Installation:

Install the wood pole according to industry standards for supplied pole length.

Install the RTMS detector as required in standard spec 675. Additionally, integrate the integral serial communications radio with the radio installed at the field cabinet end. Installation of field cabinet radio is covered with other pay items in this contract.

Solar Power System Installation:

Install the solar panels facing south on the pole with the devices to be powered. If a compass is used, a correction must be made for the difference between magnetic north and true north. Install the solar panels at a tilt angle of approximately 60 degrees. The tilt angle shall be considered the angle from horizontal to the front, or face of the solar panel. Mount the cabinet to the pole by the two cast aluminum mounting brackets which are already attached to the back of the cabinet. The brackets shall be attached to the pole using stainless steel bands or U-bolts.

Install the cabling, ensuring that cables enter the cabinet only through the bottom, and that strain relief fittings are used to seal cable entrance points. Connect the panel to the charge controller, connecting the white wire to the positive (+) terminal and the black wire to the negative terminal (-).

D Measurement

The department will measure Install Temporary Vehicle Detector Assembly as each individual unit, with each assembly installed, focused on initial traffic lane configuration, functioning, and accepted in accordance to the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2011	Install Temporary Vehicle Detector Assembly	Each

Payment is full compensation for providing the contractor furnished materials, assembling the state-furnished and contractor furnished materials, installing the assembly, calibrating the detector, and making the assembly functional; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

176. Refocusing Temporary Vehicle Detector Assembly, Item SPV.0060.2012.

A Description

This special provision describes refocusing an existing microwave detector for operation with a new lane configuration when relocation of the Temporary Vehicle Detector Assembly (TVDA) pole is not required.

B Materials

Materials include the following existing items:

- One (1) Electronic Integrated Systems, Inc. (EIS) Remote Traffic Microwave Sensor (RTMS) with integral 900 MHz serial radio.
- Mounting hardware for solar power system and RTMS detector.

C Construction

Coordinate all planned down-time of the temporary vehicle detector assembly with the STOC at (414) 227-2166. Notify the STOC an amount of time ahead of planned down-time equal to the planned down-time. Examples would be that a 4-hour temporary down-time of the system would require notification 4-hours ahead of time while an 8-hour planned down-time would require 8-hours of advance notification.

Verify to the satisfaction of the engineer that the existing detector assembly is working properly. Inspect the vehicle detector assembly for damage.

Reinstall the RTMS detector as required in standard spec 675. Additionally, integrate the integral serial communications radio with the radio installed at the base-Station field cabinet, and return the TVDA to operation.

D Measurement

The department will measure Refocusing Temporary Vehicle Detector Assembly by each individual unit, acceptably refocused and operational.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2012	Refocusing Temporary Vehicle Detector Assembly	Each

Payment is full compensation for making the detector fully operational with a new lane configuration.

177. Speed Warning Sign System, Item SPV.0060.2013.

A Description

This special provision describes furnishing and installing speed warning system consisting of a non-intrusive to pavement vehicle speed sensor, electronic blank out message sign and any interface system needed between the sensor and sign to activate the sign.

B Materials

Provide electronic LED blank-out sign, vehicle speed sensor, and wiring and mounting hardware to make the system functional.

Provide an electronic LED blank-out sign meeting the following requirements:

- Operating temperature range of between -40º and +160º F;
- Operating humidity range of between 10% and 90%;
- Meets all applicable FCC regulations for radio interference and conducted line noise;
- Operates properly with no interference from any device meeting FCC regulations;
- LEDs shall be amber;
- LEDs shall have a 100,000 hour rated life;
- LEDs shall have a minimum viewing angle of 60º, both horizontally and vertically;
- Spacing between LEDs shall appear to be uniform;
- Provide a power supply to convert 120VAC to the proper voltage to operate the sign;
- Sign housing shall be weatherproof aluminum with TIG welded seems;
- Sign shall include a door or means on access to the components of the sign;
- Hinge, fasteners, and all mounting hardware shall be stainless steel;
- Sign shall include an automated dimming system with photocell;
- When deactivated, the sign shall not be legible;
- The door shall be sealed with a neoprene gasket;
- The sign shall be sized for the following message at “X”-inch, Type “X” text as show on the plans.

TOO FAST
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Provide a vehicle speed sensor meeting the following requirements:

- 300-foot detection range;
- User selectable speed trigger threshold;
- Power consumption less than 0.5W;
- FCC approved and operable with other FCC approved devices;
- Configurable RS-232 port for settings modification;

- Rotary switch or thumbwheel for speed threshold;
- No more than 3-inches in any dimension;
- Provisions for field update of firmware;
- Must include a self-test system;
- Must include any necessary power supply or adapter to make operational with 120VAC power supply;
- Operating temperature range of between -40º and +160º F;
- Operating humidity range of between 10% and 90%.

Provide any cabling and connectors, and ,if necessary, any adapters or translators from the speed sensor to the sign activation to make the system functional.

C Construction
Install the speed sensor and sign system on a pole with a static sign (pole and static sign paid for separately) as show on the plans or as directed by the engineer.

Connect the speed sensor to the sign as appropriate per both manufacturers' instructions and set the speed threshold per direction from the engineer.

Test the system and adjust as necessary.

D Measurement
The department will measure Speed Warning Sign System a as each individual unit, completely installed and operational.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2013	Speed Warning Sign System	Each

Payment is full compensation for testing and installing the speed sensor and sign system; and for furnishing all labor, tools, metallic conduit, mounting hardware, equipment, transportation, and incidentals necessary to complete the work.

178. Install Dynamic Message Sign, Item SPV.0060.2014.

A Description
This special provision describes installing a state-furnished dynamic message sign and controller on new concrete footings and sign support (paid for separately), integrating the sign and making it functional in the existing system.

B Materials
Materials will include state-furnished materials and contractor furnished materials.

State-furnished materials include the following:

- One Daktronics Vanguard Overhead Cantilever Mounted Arterial Dynamic Message Sign (DMS). The DMS is 9’ 10-13/32” long by 3’ 7-29/32” tall by 9-3/8” deep and weighs approximately 650 pounds.
- One Daktronics Vanguard VFC-3000 DMS Controller.
- Control cable from DMS Controller to DMS.

Contractor furnished materials include the following:

- AWG #6 copper wire or equivalent bonding straps to bond the sign to the structural steel.

C Construction

Install the state-furnished sign controller in the cabinet as shown on the plans using one of the power outlets included in the cabinet.

Connect the power and control cables in accordance to the manufacturer’s recommendations.

Bond the bottom of the sign structure to one or more ground rods. Use exothermic welding at each end of the ground wire (unless the steel structure has a suitable grounding lug). Use an AWG # 6 solid, bare copper wire to bond the sign structure to the ground rod(s). Use a device that measures resistance to ground using the three-point fall-of-potential method to ensure that the resistance from the sign’s ground bar to ground does not exceed 4 ohms. Add more ground rods if necessary to achieve this requirement.

D Measurement

The department will measure Install Dynamic Message Sign as each individual unit, acceptably installed and tested.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2014	Install Dynamic Message Sign	Each

Payment is full compensation for installation of the sign and controller; fabrication and installation of all mounting hardware; furnishing and installation of control and power cables; testing the sign and controller; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

179. Install Bluetooth Reader, Item SPV.0060.2015.

A Description

This special provision describes installing a state-furnished Bluetooth chip reader to track the chips to generate traffic data. Provide mounting hardware, stainless steel bands, a

Category 5 or better network cable between the reader and the associated Ethernet switch, and other incidentals necessary to complete the work.

B Materials

Bluetooth chip reader, range extension antenna, and mounting bracket as provided by the state.

Stainless steel bands to attach mounting bracket to pole.

Furnish Category 5 or better network cable, with RJ-45 connectors, of sufficient length to reach from the reader to the associated Ethernet switch as shown on the plans.

C Construction

Prior to beginning any work related to installing the Bluetooth chip readers, coordinate IP addresses and other network integration efforts with department staff at the Statewide Traffic Operations Center.

Install the Bluetooth chip reader per the manufacturer's recommendations for mounting heights to maximize effective range of the reader, and for all other mounting considerations.

Use existing or shared access holes in poles or sign structures to install the associate network cable in the pole or sign structure. Where necessary, drill a new hole for the cable and seal the hole using an appropriately sized grommet.

Install the network cable between the reader and the Ethernet switch and following the manufacturer's set-up instructions and the network settings information from the department to integrate the readers into the network and to make them functional.

D Measurement

The department will measure Install Bluetooth Reader as each individual unit, installed and operational, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.2015	Install Bluetooth Reader	Each

Payment is full compensation for testing and installing the Bluetooth chip reader, cable and connections; for network and integration setup and coordination; and for furnishing all labor, tools, mounting hardware, equipment, transportation, and incidentals necessary to complete the work.

180. Poles Type 9, Item SPV.0060.3010; Type 10, Item SPV.0060.3011; Type 12, Item SPV.0060.3012; Type 13, Item SPV.0060.3013.

A Description

Work under this item consists of furnishing and installing monotube poles at the intersections of W. Watertown Plank Road and Swan Boulevard/Innovation Drive, W. Watertown Plank Road and N. 92nd Street, and W. Watertown Plank Road and N. 87th Street.

B Materials

Design support structures conforming to the minimum wall thickness the plan details show and to AASHTO design and fabrication standards for structural supports for highway signs, luminaries, and traffic signals. Use a design life of 50 years. Design to withstand a 3 second gust wind speed of 90 mph (145 km/h). Do not use the methods of Appendix C of those AASHTO standards.

Use Category III criteria for Type 9 and Type 10 Poles. Use Category II criteria for Type 12 and Type 13 Poles.

For structures requiring a fatigue analysis, use 45 mph (72 km/h) for truck-induced gusts.

After welding and before zinc coating, clean the exterior surface of each steel pole free of all loose rust and mill scale, dirt, oil or grease, and other foreign substances.

Apply a zinc coating conforming to the process specified for steel sign bridges in standard spec 641.2.8. Ensure that the zinc coating is tight, free from rough areas or slag, and presents a uniform appearance.

After completing manufacturing, clean the exterior surfaces of each pole free of all loose scale, dirt, oil or grease, and other foreign substances.

Provide a reinforced hand hole measuring 4 inches by 6 inches (100 mm by 150 mm) as the plans show. Locate the hand hole 18 inches (450 mm) from the bottom of the pole base to the center of the door.

For the hand hole, include an access cover mounted to the pole by two ¼”-20 x ¾” (m6 x 1.00 x 19 mm) hex-head stainless steel bolts.

Provide a grounding lug complete with mounting hardware, as required, inside the pole as the plans show.

Provide access to the grounding lug from the hand hole. Weld the ground lug directly opposite the hand hole on the inside wall of the pole.

Equip the top of the shaft with a removable, ventilated cap held securely in place by at least 3 ¼” -20 x ¾” (m6 x 1.00 x 19 mm) hex-head stainless steel set screws.

Ensure that all castings are clean, smooth, and with all details well defined and true to pattern.

Attach base plates firmly to the pole shaft by welding or other approved method.

Provide anchor bolts meeting AASHTO standards applicable to the pole type and loading (see SDDs Type 9 Pole 15'-30' Monotube Arm, Type 10 Pole 15'-30' Monotube Arm, Type 12 Pole 35'-55' Monotube Arm, Type 13 Pole 35'-55'Monotube Arm, and General Notes and Hardware Details for Type 9, 10, 12, 13 Poles with Monotube Arms for specific pole types).

Provide anchor bolt templates as shown on the standard detail drawings for the concrete base to ensure correct alignment of anchor bolts in foundation (see SDD Concrete Base Type 10, Concrete Base Type 13, and Concrete Base Type 10 and Type 13 Extension for specific base types).

C Construction

Clean each pole before installation.

Install poles as specified in the plan details. Secure pole to anchor assembly and document tensioning procedures conforming to standard spec 641.3.1.2.

After completing erection using normal pole shaft raking techniques, ensure the centerline of the shaft is vertical.

Install identification plaques as the plans show.

D Measurement

The department will measure Poles (Type) as each individual pole, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3010	Poles Type 9	Each
SPV.0060.3011	Poles Type 10	Each
SPV.0060.3012	Poles Type 12	Each
SPV.0060.3013	Poles Type 13	Each

Payment is full compensation for providing and installing poles including all hardware and fittings necessary to install the poles; for installing identification plaques, if required; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

181. Monotube Arms 15-FT, Item SPV.0060.3014; 25-FT, Item SPV.0060.3015; 30-FT, Item SPV.0060.3016; 45-FT, Item SPV.0060.3017; 50-FT, Item SPV.0060.3018; 55-FT, Item SPV.0060.3019; 35-FT, Item SPV.0060.3026.

A Description
Work under this item consists of furnishing and installing monotube arms.

B Materials
Design support structures conforming to the minimum wall thickness the plan details show and to AASHTO design and fabrication standards for structural supports for highway signs, luminaires, and traffic signals. Use a design life of 50 years. Design to withstand a 3 second gust wind speed of 90 mph (145 km/h). Do not use the methods of appendix C of those AASHTO standards.

Use category III criteria for 15 to 30-foot arms. Use category II criteria for 35 to 55-foot arms.

For structures requiring a fatigue analysis, use 45 mph (72 km/h) for truck-induced gusts.

Base the designs on the completed maximum loading configuration the standard detail drawing shows. Along with the materials list, submit a certificate of compliance certifying that the arms as furnished, conform to the above structural performance requirements. Ensure that the certificate of compliance is on the manufacturer's letterhead, signed by an authorized company officer, and notarized. Send a copy of the certificate and a copy of the monotube arm shop drawings to the department electrical engineer.

Furnish monotube arms conforming to the following:

1. Consist of zinc coated steel round or oval members.

2. Have a mounting device welded to the pole end of the monotube arm that allows the attachment of the arm to a pole as the plans show.

3. Have stiffeners or gussets if required between the arm tube and the arm mounting device to provide adequate strength to resist side loads.

4. Have a clean, uniform natural finish. No paint or other corrosion preventive maintenance coating is required.

After welding and before zinc coating, clean exterior surfaces of each arm free of all loose rust and mill scale, dirt, oil or grease, and other foreign substances.

Apply zinc coating as specified for sign bridge components in standard spec 641.2.8. Ensure that the zinc coating is tight, free from rough areas or slag, and presents a uniform appearance.

After manufacturing is complete, clean the exterior surfaces of each pole free of all loose scale, dirt, oil, or grease, and other foreign substances.

C Construction
Construction of the monotube arm shall be in accordance to standard spec 657.

D Measurement
The department will measure Monotube Arm (Length) as each individual arm, acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3014	Monotube Arms 15-FT	Each
SPV.0060.3015	Monotube Arms 25-FT	Each
SPV.0060.3016	Monotube Arms 30-FT	Each
SPV.0060.3017	Monotube Arms 45-FT	Each
SPV.0060.3018	Monotube Arms 50-FT	Each
SPV.0060.3019	Monotube Arms 55-FT	Each
SPV.0060.3026	Monotube Arms 35-FT	Each

Payment is full compensation for providing and installing all materials, including all hardware, fittings, mounting devices, shims, and attachments necessary to completely install the arms; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

182. Luminaire Arms Steel 8-FT, Item SPV.0060.3020.

A Description
Work under this item consists of furnishing and installing steel luminaire arms.

B Materials
Design support structures conforming to the minimum wall thickness the plan details show and to AASHTO design and fabrication standards for structural supports for highway signs, luminaires, and traffic signals. Use a design life of 50 years. Design to withstand a 3 second gust wind speed of 90 mph (145 km/h). Do not use the methods of appendix C of those AASHTO standards.

Use category III criteria if mounted on top of a Type 10 pole and category II criteria if mounted on top of a Type 13 pole.

For structures requiring a fatigue analysis, use 45 mph (72 km/h) for truck-induced gusts.

Base the designs on the completed maximum loading configuration the standard detail drawing shows. Along with the materials list, submit a certificate of compliance certifying that the arms as furnished conform to the above structural performance requirements. Ensure that the certificate of compliance is on the manufacturer's letterhead, signed by an authorized company officer, and notarized. Send a copy of the certificate and a copy of the luminaire arm shop drawings to the department electrical engineer.

Furnish luminaire arms conforming to the following:

1. Consist of zinc coated steel round or oval members.

2. Have a mounting device welded to the pole end of the luminaire arm that allows the attachment of the arm to a pole as the plans show.

3. Have stiffeners or gussets if required between the arm tube and the arm mounting device to provide adequate strength to resist side loads.

4. Have a clean, uniform natural finish. No paint or other corrosion preventive maintenance coating is required.

After welding and before zinc coating, clean exterior surfaces of each arm free of all loose rust and mill scale, dirt, oil or grease, and other foreign substances.

Apply zinc coating as specified for sign bridge components in standard spec 641.2.8. Ensure that the zinc coating is tight, free from rough areas or slag, and presents a uniform appearance.

After manufacturing is complete, clean the exterior surfaces of each pole free of all loose scale, dirt, oil, or grease, and other foreign substances.

C Construction

Construction of the luminaire arm shall be in accordance to standard spec 657.

D Measurement

The department will measure Luminaire Arm Steel (Length) as each individual arm, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3020	Luminaire Arms Steel 8-FT	Each

Payment is full compensation for providing and installing all materials, including all hardware, fittings, mounting clamps, shims if required and attachments necessary to completely install arms; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

183. Concrete Bases Type 10 Contractor Supplied Anchor Bolts and Anchor Rod Template, Item SPV.0060.3021; Concrete Bases Type 13 Contractor Supplied Anchor Bolts and Anchor Rod Template, Item SPV.0060.3022.

A Description

This special provision describes constructing concrete bases, including the use of contractor supplied anchor bolts and anchor rod templates.

B Materials

B1. Concrete Bases

Furnish grad A, A-FA, A-S, A-T, A-IS, or A-IP concrete conforming to standard spec 501.2 as modified in standard spec 716 of the standard specification. Provide QMP for class III ancillary concrete as specified in standard spec 716.

Furnish bar steel reinforcement conforming to standard spec 505.2.

Use schedule 40 PVC electrical conduit conforming to the electrical conduit specified in standard spec 652.

B2. Anchor Bolts

Provide anchor bolts conforming to AASHTO M 314, grade 55 and Supplementary Specification S1, or ASTM F1554 Grade 55. Threads on bolts shall be formed by rolling.

Hot-dip galvanize the entire length of the anchor rods according to AASHTO M111. Hot-dip the nuts and washers according to AASHTO M232. Use zinc coated nuts manufactured with sufficient allowance to allow nuts to run freely on the threads.

B3. Anchor Rod Template

Furnish a steel top and bottom template conforming to ASTM A709, grade 36 as part of each anchor assembly. Provide a top template of sufficient gauge to hold the anchor rods securely in position at the top, and resist racking or twisting during the pour. Use a ½-inch thick bottom anchor plate-template and secure it to each anchor rod. Templates shall not be welded to the anchor rods.

C Construction

C1. Concrete Bases

Construct concrete bases, including necessary hardware, as specified in standard spec 501 and plan details, and provide the surface finish specified in standard spec 502.3.7.2. Inspect the forming and applicable reinforcement for concrete bases before pouring the concrete. Cure exposed portions of concrete bases as specified for concrete pavement in standard spec 415.3.12 except the contractor may use curing compound conforming to standard spec 501.2.9. Wait at least 7 days before installing poles.

C2. Anchor Bolts

Lubricate anchor bolt threads and nuts with bees wax or other high-wax lubricant. Set leveling nuts to the required elevation before installing the structure. Adjust top nuts and leveling nuts to align and plumb the structure. Ensure that all nuts are snug-tight with no gaps. Tighten each top nut 1/3 turn past snug for bolts 1 1/2 inch or smaller in diameter and 1/6 turn for larger diameter bolts conforming to the tightening sequence specified on department form DT 2321. If required, install jamb nuts wrench tight.

Complete department form DT 2321 for each structure. Indicate the parties responsible for the installation and submit the form to the engineer for inclusion in the permanent project record.

C3. Anchor Rod Templates

Secure the anchor rod template to all anchor rods at one time in its correct position as the plan details show. Ensure relative movement and misalignment does not occur. If any twisting, racking, or other movement of the anchor rods out of plumb, projection, or pattern, or any damage to the threads exists the engineer will reject the entire base.

Maintain the clear distance between the soil and the reinforcing steel cage using the means the plan detail shows. Do not weld the anchor rods to each other, the reinforcing steel cage, and the templates or to any other component of the foundation.

If an anchor rod template is located above the concrete surface, it may be removed 24 hours after placing the concrete.

D Measurement

The department will measure Concrete Bases (Type), Contractor Supplied Anchor Bolts and Anchor Rod Template by each individual unit, acceptably installed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3021	Concrete Bases Type 10 Contractor Supplied Anchor Bolts and Anchor Rod Template	Each
SPV.0060.3022	Concrete Bases Type 13 Contractor Supplied Anchor Bolts and Anchor Rod Template	Each

Payment for the Concrete Bases (Type), Contractor Supplied Anchor Bolts and Anchor Rod Template is full compensation for providing concrete, reinforcing steel, and electrical conduit; for providing anchor rods, templates, nuts, and washers; for excavating; for driving steel piling, if required; for installing electrical conduit, electrical ground, templates; for placing and curing concrete; for backfilling; and for disposing of surplus material and restoring the site; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

184. EVP Detector Type I, Item SPV.0060.3023.

A Description

This work shall consist of furnishing and installing EVP Detector Type I as shown on the plans and as hereinafter provided.

B Materials

The infrared EVP Detector Type I shall be lightweight, weatherproof device capable of sensing and transforming pulsed infrared energy into electrical signals for use by the signal discrimination equipment. The infrared EVP Detector Type I shall be designed for mounting at or near an intersection on mast arms, pedestals or pipes. Each infrared EVP Detector Type I shall be supplied with mounting hardware to accommodate installation on mast arms, poles, or traffic signal standards as shown in the plans. The EVP Detector Type I shall accept infrared signals from one direction and shall provide a single electrical output signal. The EVP Detector Type I shall have a built-in terminal block to simplify wiring connections. The infrared EVP Detector Type I shall receive power from the discriminator and shall have internal voltage regulation to operate from 18 to 37 volts DC. The infrared EVP Detector Type I shall respond to clear lens code secured emitter with 0.84 (+/- 10%) Joules of energy output per flash at a distance of 2,500 feet under clear atmospheric conditions. If the emitter is configured with a visible light filter, the EVP Detector Type I shall respond at a distance of 1,800 feet under clear atmospheric conditions. The noted distances shall be comparable day and night. The infrared detector shall produce an electrical signal to the discriminator via a detector cable up to 1,000 feet in length.

The EVP Detector Type I shall be a GTT Opticom Model #711, or approved equal.

C Construction

Furnish and install EVP Detector Type I for traffic signals. Set the initial aim angle at a distance of 1,800 feet from the stop bar or as specified by the engineer. Final adjustment shall be under the direction of the engineer.

D Measurement

The department will measure EVP Detector Type I as each individual unit, acceptably completed.

E Payment

EVP Detector Type I will be paid for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3023	EVP Detector, Type I	Each

Payment shall be full compensation for furnishing and installing the EVP Detector Type I on signal poles or mast arms as shown on the plans, including extensions to poles if required; for aiming the detector; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

185. EVP Discriminator Type IV, Item SPV.0060.3024.

A Description

This work shall consist of furnishing and installing an EVP Discriminator Type IV in the control cabinet as shown on the plans and as hereinafter provided.

B Materials

The EVP Discriminator Type IV shall be a plug-in, four channel, multiple priority device intended to be installed directly, into a rack located within the controller cabinet. The EVP Discriminator Type IV card edge connector shall include primary infrared detector inputs and power outputs. Two additional detector inputs per channel shall be provided on a front panel connector. An auxiliary function harness (#757) shall be included. The EVP Discriminator Type IV shall be powered from 115 volt (95 volts AC to 135 volts AC), 60 Hz mains and shall contain an internal, regulated power supply that supports up to four infrared detectors. The EVP Discriminator Type IV shall include several control timers that shall limit or modify the duration of a priority control condition and programmable security via jumper selection. The control timers shall be as follows:

- MAX CALL TIME: Shall set the maximum time a channel is allowed to be active. It can be set to 120, 240, or 65,535 seconds. Its factory default must be the maximum time.
- CALL HOLD TIME: Shall set the time a call is held on a channel after the priority signal is no longer being received. It can be set to either 6 or 12 seconds via jumper selects. Its factory default mist be six seconds.
- SECURITY ENCODED DATA: Shall require that an infrared signal contain an embedded vehicle ID code to be recognized as a valid request. The default jumper selection shall disable this requirement.

The EVP Discriminator Type IV default range values shall be re-settable by the operator using switches located on its front. The EVP Discriminator Type IV shall be capable of three levels of discrimination of security encoded infrared signals, as follows:

- Verification of the presence of the base infrared of either 14.03509 Hz +/- 0.01773 Hz for Command priority, or 9.63855 Hz +/- 0.00836 Hz for Advantage priority.
- Determination of when the vehicle is within the prescribed range.

- The EVP Discriminator Type IV card edge connector shall include primary infrared detector inputs and power outputs. The EVP Discriminator Type IV shall include one optoisolated NPN output per channel that provides the following electrical signal to the appropriate pin on the card edge connector:
- Hz +/- 0.1 Hz 50% on/duty square wave in response to an Advantage priority call.
- A steady ON in response to a Command priority call.

The EVP Discriminator Type IV shall accommodate two methods for setting intensity thresholds (emitter range) for high and low priority signals:

- Using an encoded emitter with range-setting capability.
- Using an encoded emitter while manipulating the front panel switches.

The EVP Discriminator Type IV shall have a solid state POWER ON LED indicator that flashes to indicate unit diagnostic mode and illuminates steadily to indicate proper operation. The EVP Discriminator Type IV shall have internal diagnostics to test for proper operation. If a fault is detected, the discriminator shall use the front panel LED indicators to display fault information. The EVP Discriminator Type IV shall have a Command (high) and Advantage (low) solid state LED indicator for each channel to display active calls. The EVP Discriminator Type IV shall have a test switch for each channel to test proper operation of Command or Advantage priority. The EVP Discriminator Type IV shall properly identify a Command priority call with the presence of 10 Advantage priority code secured emitter signals being received simultaneously on the same channel. The EVP Discriminator Type IV shall have write-on pads to allow identification of the phase and channel. The EVP Discriminator Type IV shall have the capability of functionally testing connected detector circuits and indicating via front panel LEDs non-functional detector circuits. An auxiliary interface panel shall be available to facilitate interconnections between the discriminator and traffic cabinet wiring.

Additional wiring harnesses may be required for auxiliary detector heads as shown on the plans.

The EVP Discriminator Type IV shall be a GTT Opticom Model #454, or approved equal.

C Construction
Furnish and install EVP Discriminator Type IV for traffic signals.

D Measurement
The department will measure EVP Discriminator Type IV as each individual unit, acceptably completed.

E Payment
EVP Discriminator Type IV will be paid for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3024	EVP Discriminator Type IV	Each

Payment shall be full compensation for furnishing and installing the EVP Discriminator Type IV in the control cabinets and any additional wiring harnesses required for auxiliary heads; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

186. EVP Confirmation Light Assembly Type I, Item SPV.0060.3025.

A Description
This work shall consist of furnishing and installing Confirmation Light Assemblies, Type I as shown on the plans and as hereinafter provided.

B Materials
Confirmation Light Assembly, Type I, shall consist of weatherproof, aluminum lamp holder with a single LED lamp as shown on the plans. In addition, mounting materials shall be provided as shown on the plans.

The Confirmation Light Assembly Type I shall be a GTT Opticom Model #575, or approved equal.

C Construction
Furnish and install Confirmation Light Assembly Type I for traffic signals.

D Measurement
The department will measure Confirmation Light Assembly Type I as each individual unit, acceptably completed.

E Payment.
Confirmation Light Assembly Type I will be paid for measured quantities at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.3025	Confirmation Light Assembly Type I	Each

Payment shall be full compensation for furnishing and installing the Confirmation Light Assembly Type I, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

187. Anchor Assemblies Light Poles Structures Special, Item SPV.0060.4100; Anchor Assemblies Canopy Posts, Item SPV.0060.4110; Anchor Assemblies Stair Towers, Item SPV.0060.4111; Anchor Assemblies Sign Bridge Structures, ItemSPV.0060.4115.

A Description

Furnish and install anchor bolt assemblies for light poles, noise barriers and signal poles that will be installed on bridges and retaining walls as shown on the plans.

B Materials

Anchor bolts shall be of size and spacing as given on the plans and conform to AASHTO M 314 GR 105. Provide heavy hex nuts conforming to AASHTO M 292 and hardened washers conforming to AASHTO M 293. Provide embedded anchor plates for anchor assemblies as shown on the plans conforming to AASHTO M 223. Provide six nuts and washers per anchor bolt for Anchor Assemblies Light Pole Structures. Provide five nuts and washers per anchor bolt for Anchor Assemblies Noise Barriers Structures. Provide four nuts and washers per anchor bolt for Anchor Assemblies Signal Poles Structures.

Hot dip galvanize the entire anchor assembly. Galvanize embedded anchor plates conforming to AASHTO M 111 and galvanize anchor bolts, nuts and washers conforming to AASHTO M 232. Provide enlarged threads on nuts for proper fit after galvanizing.

C Construction

Install embedded anchor assemblies in concrete structures at locations as shown on the plans. Mount anchor assemblies to formwork or otherwise provide positive support of anchor assembly within formwork as necessary to prevent movement, shifting or misalignment of the anchor assembly during subsequent concrete placement. Protect or clean exposed anchor bolt threads from concrete splatter.

Coordinate location and spacing of anchor assemblies embedded in bridges and retaining walls for mounting noise barriers on bridges and retaining walls with approved noise barrier shop drawings.

D Measurement

The department will measure Anchor Assemblies Light Poles Structures, Anchor Assemblies Canopy Posts, Anchor Assemblies Stair Towers, and Anchor Assemblies Sign Bridge Structures by each individual anchor assembly, 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.0060.4100	Anchor Assemblies Light Poles Structures Special	Each
SPV.0060.4110	Anchor Assemblies Canopy Posts	Each
SPV.0060.4111	Anchor Assemblies Stair Towers	Each
SPV.0060.4115	Anchor Assemblies Sign Bridge Structures	Each

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

188. Pile Dynamic Analyzer (PDA) Testing, Item SPV. 0060.4120; Pile Dynamic Analyzer (PDA) Restrikes, Item SPV. 0060.4130.

A Description

These items consist of providing means to perform Pile Dynamic Analyzer (PDA) load testing by the engineer, as outlined in the contract plans and this special provision. This Dynamic Pile Load Testing is being done to set pile resistance criteria. Production piles will be driven in accordance to pile resistance criteria produced by the engineer after PDA testing at each substructure unit. PDA Restrikes will be needed as described in this special provision and/or as directed by the engineer.

The piles and pile driving will be paid for under the appropriate special provision for piles and pile driving contained within this contract. This applies to both piles installed using the PDA criteria and for production piles installed using the criteria developed by the engineer from the PDA installations.

Data collected during the testing described herein will form the basis for the final driving criteria to be applied to production piles in the substructure unit under consideration.

B (Vacant)

C Construction

C.1 Test Locations

The engineer will perform dynamic pile load testing at the pile locations identified on the plans. These locations are referred to simply as ‘PDA Test Piles’ throughout the remainder of this specification. Piles noted as PDA Test Piles are a functional load-carrying part of the completed foundation unit and not solely used for testing.

C.2 Driving Sequence

The engineer will perform PDA testing on the first piles installed in the substructure. PDA Test Piles shall be located as shown on the footing plan. No other piles in the substructure unit shall be used for PDA testing unless agreed to by the engineer. Do not drive any other piles in the unit until all required testing has been completed and accepted by the engineer and the final driving criteria for that substructure unit has been determined and issued to the contractor in writing.

C.3 Pile Driving

Drive PDA Test Piles to penetration depths and/or penetration resistances as directed by the engineer. Drive PDA Test Piles using the accepted production driving equipment.

C.4 Scheduling

Provide a written schedule to the engineer showing all required PDA Test Piles activities for the following week. Submit this schedule a minimum of 2 working days prior to the first day included in the schedule. Schedule the work so that PDA testing activities of any kind - installation tests, or restrike tests - will occur at no more than two locations at any given time. Schedule a minimum of one complete working day after PDA testing, (which includes restrike testing, see section C 6) is complete at a substructure unit for the engineer to provide final driving criteria for that location. If testing is complete at multiple substructure units, final driving criteria will be provided at the maximum rate of one substructure unit per one working day and in the order specified by the contractor in the testing schedule.

C.5 Installation Testing

The engineer will take dynamic measurements following procedures set forth in ASTM D-4945 during the driving of piles designated as PDA Test Piles.

Prior to placement in the leads, make each designated PDA Test Pile available for predrilling the required instrument attachment holes. Support PDA Test Piles on blocking, and roll or re-position PDA Test Piles as required to facilitate the predrilling of attachment holes. The engineer will furnish the equipment, materials, and labor necessary for drilling holes in the piles. Allow a minimum of one hour per pile for this operation. Furnish vehicle access to the substructure unit to allow for PDA testing.

Attach and remove the instruments to and from the pile following the engineer's instructions. Take precautions and exercise care to ensure that gauges and sensors are not damaged during installation or pile movement. Check and reinstall gauges and sensors during pile driving operations at the direction of the engineer. The engineer has the option to access a pile in the leads prior to and during driving operations to ensure that the gauges and sensors have been properly installed. Make available to the engineer a safety line attached to the pile leads for the engineer's use. Provide the engineer with sufficient time to inspect, attach, and remove gauges and sensors on the pile, if it is necessary.

It is estimated that approximately one hour per pile will be needed for both instrument attachment and removal for a total of 2 hours per installation. Continuous PDA monitoring may require multiple installations of PDA testing equipment depending on the supplied pile length. If multiple pile lengths are used to produce the final installed pile, multiple PDA equipment installations will be required.

Furnish electric power for the dynamic test equipment. The power supply at the outlet shall be 10-amp, 115-volt, 55- to 60-cycle, alternating current (AC) only. Field generators used as the power source shall be equipped with functioning meters for monitoring voltage and frequency levels.

Pile-driving criteria for each substructure unit shall be determined from dynamic pile tests conducted on the total length of each pile noted for PDA Testing in the plans.

Driving on these piles shall continue until the required driving resistance is achieved for 30 consecutive hammer blows. Mark penetration per 10 consecutive hammer blows as directed by the engineer. The engineer will utilize the dynamic test data to establish the following pile driving criteria: (1) a minimum driven length below cutoff level, and (2) a maximum penetration rate per 10 hammer blows for 30 consecutive blows. Drive all remaining piles in that unit in accordance to the established criteria. The engineer may alter driving criteria as necessary to assure development of adequate pile capacity. In any pile where pile capacity or integrity is suspect, the engineer may order PDA testing.

With the PDA testing equipment attached, drive the pile as directed by the engineer.

C.6 Restrike Tests

An initial restrike test will be performed on all test piles as part of the initial dynamic pile load test as described in section C.5.

Wait a minimum of 6 hours, or a shorter time period as directed by the engineer, after initial pile installation is complete; then, restrike each test pile with the required dynamic testing instruments attached.

Warm the hammer before the restrike by applying at least 20 blows to a non-test pile, or by other means acceptable to the engineer.

The maximum amount of penetration required during the restrike test will be 6 inches, or the maximum number of hammer blows required will be 30, whichever occurs first.

The pre-approved pile-driving hammer used for restrike testing shall be capable of supplying enough energy to develop a minimum of twice the required driving resistance shown on the plans.

Required driving resistance for production piles will be determined by dynamic pile testing conducted by the engineer.

D Measurement

The department will measure Pile Dynamic Analyzer PDA Testing as each individual unit, acceptably completed, in which one unit includes all PDA-related effort on one pile during the initial driving. The department will measure PDA Restrikes as each individual unit, acceptably completed, in which one unit includes all of the restrike testing required each time the contractor sets up on a pile to do a restrike test.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.4120	Pile Dynamic Analyzer (PDA)Testing	Each
SPV.0060.4130	Pile Dynamic Analyzer (PDA) Restrikes	Each

Payment for PDA Testing is full compensation for facilitating the initial dynamic pile load test on a given pile, including the possible multiple sensor installations; and for furnishing all labor, tools, equipment, services, and incidentals necessary to provide means to perform the work.

Payment for PDA Restrikes is full compensation for facilitating and doing one restrike test, including the sensor installation; and for furnishing all labor, tools, equipment, services and incidentals necessary to provide means to perform the work.

F Delays and Standby Time

The department will assess a penalty if the contractor is not ready when the department/engineer is requested to perform the PDA tests on piles, and the department is unable to begin PDA testing on the same working day as scheduled, due to contractor delay. The penalty will be $1500/day for all working days that PDA Testing is scheduled on the project site, but no PDA testing is completed due to the contractor not being ready to perform the scheduled monitoring/driving.

189. Bearings High-Load Multi-Rotational Fixed, Item SPV.0060.4140; Bearings High-Load Multi-Rotational Guided, Item SPV.0060.4150

A Description

This special provision describes designing, manufacturing, furnishing, fabricating, and installing high-load multi-rotational bearing assemblies in accordance to the details shown on the plans, standard spec 506, as directed by the engineer, and as hereinafter provided. High-load multi-rotational bearings, where called for on the plans, shall be defined as pot or disc style bearings.

This work includes providing complete pot or disc bearing assemblies including sole plate, piston, sealing rings, elastomeric pad, pot, masonry plate, intermediate load distribution plates, polyether urethane disc, shear resisting mechanism, structural bolts for connecting upper portion of bearing assembly to the superstructure member, anchor bolts and non-shrink grout for attaching the masonry plate to the concrete pedestal placed on the substructure beam seat.

A.1 Qualifications of the Manufacturer

The manufacturer shall demonstrate a minimum of 5 years experience in the design and manufacture of high-load multi-rotational bearings of the type specified, and be certified under the American Institute of Steel Construction Quality Certification Program – Simple Steel Bridges.

B Materials

B.1 General

Materials shall be new and unused with no reclaimed material incorporated into the finished bearings, and shall conform to the applicable provisions of standard spec 506 and to the following standards. Any visual defects will be cause for rejection.

B.2 Bearing Types
Multi-Rotational Fixed bearings allow rotation in all directions but do not allow any horizontal movement.

Multi-Rotational Guided bearings allow rotation in all directions. Horizontal movement is allowed in only one direction as shown on the plans and must resist horizontal forces in constrained directions.

Multi-Rotational Non-Guided bearings allow rotation and horizontal movement in all directions.

B.3 Steel Plate
Steel plate shall conform to the requirements of ASTM A709, Grade 36, Grade 50, or Grade 50W.

B.4 Stainless Steel
Stainless steel shall conform to the requirements of ASTM A240, Type 304, Number 8 finish.

B.5 Brass
Brass for sealing rings used in pot bearings shall conform to the requirements of ASTM B36, half-hard alloy 260.

B.6 Polytetrafluoroethylene (PTFE)
PTFE shall be manufactured from pure virgin unfilled TFE resin conforming to ASTM D4894 or D4895. PTFE shall be resistant to acids, alkalis and petroleum products, non-absorbing to water, stable from -360 degrees F to +500 degrees F, and non-flammable. It shall meet the following test requirements:

Physical Property	ASTM Test Method	Requirement
Ultimate Tensile Strength, min.	D638	2800 psi
Ultimate Elongation, min.	D638	200%
Specific Gravity	D792	2.12

B.7 Adhesive
Adhesive used for bonding sheet PTFE shall be an epoxy material stable from -100 degrees F to +250 degrees F.

B.8 Elastomer
The elastomeric rotational element used in the construction of pot bearings shall contain only virgin crystallization-resistant polychloroprene (Neoprene) conforming to AASHTO M251 (ASTM D4014). The physical properties of Neoprene shall conform to the Specifications above with modifications as follows:

The Shore A Durometer hardness shall be 50 +/- 10 points

Samples for compression set tests shall be prepared using a Type 2 die

The Neoprene shall conform to minimum low temperature property Grade 4. An elastomer of a higher grade number may be used.

B.9 Polyether Urethane Disc

The disc bearing polyether urethane disc shall be molded from a polyether urethane compound. It shall be constructed per AASHTO LRFD Bridge Construction Specifications, Section 18.3.2.8 and shall meet the following test requirements:

Physical Property	**ASTM Test Method**	**Requirement**
Hardness, Shore D Durometer	D2240	45 min. 65 max.
Tensile Stress	D412	
At 100% Elongation, min.		1500 psi
At 200% Elongation, min.		2800 psi
Tensile Strength, min.	D412	4000 psi
Ultimate Elongation, min.	D412	220%
Compression Set After 22 Hours	D395 (Method B)	
Temperature		158 degrees F
Compression set, max.		40%

B.10 Connecting Bolts

All bolts shall be high strength bolts that conform to the requirements of standard spec 506. Lock washers shall be steel, regular, helical spring washers meeting ANSI B18.21.1. Lock washers shall be galvanized according to AASHTO M232. The bearing manufacturer shall coordinate the bolted connections with the structural steel fabricator for the steel superstructure members. Bolts that are used to connect the top plate of the bearing to the steel superstructure members shall be “snug tight” as defined in American Association of State Highway Transportation Officials (AASHTO) LRFD Bridge Construction Specifications, Section 11.5.6.4.

B.11 Anchor Bolts

Provide anchor rods as shown on the plans and in accordance to ASTM F1554 (Grade 105) and hot-dip galvanize in accordance to AASHTO M232.

B.12 Grout

Grout for filling anchor bolt blockouts shall be non-metallic, non-corrosive, non-shrink grout per ASTM C1107 with minimum 28-day compressive strength called for on the plans.

B.13 Bearing Pads

Provide a 1/8” thick bearing pad the same size as the masonry plate conforming to standard spec 506.2.6.

C Construction

C.1 Design Requirements

C.1.1 General

Bearings shall be designed for the loads and movements given on the plans and in accordance to AASHTO LRFD Bridge Design Specifications, Section 14. Bearing designs shall include a minimum rotation of 0.02 radians or the design rotation, whichever is greater. These rotations shall include all applicable service loads and movements shown on the plans, maximum rotations caused by fabrication and installation tolerances, and allowance for uncertainty. Designs shall assume that vertical and horizontal loads occur simultaneously. The design shall include all bearing components, load plates, sole plates, masonry plates, elastomeric pads, connection bolts, and concrete anchor bolts.

The design of the bearings shall meet the following additional requirements:

C.1.2 Pots

The pot shall be machined from a single piece of steel. The inside diameter of the pot cavity shall be nominally equal to the diameter of the elastomeric pad. The pot shall be deep enough to permit the seal and piston rim to remain in full contact with the vertical face of the pot wall under all design loads, movements, and rotations. Contact between metal components shall not prevent further displacements or rotation. The pot walls shall be designed to withstand both the internal pressures caused by the vertical loads (considering the elastomer to behave as a fluid) and the design lateral loads.

C.1.3 Pistons

The piston shall be machined from a single piece of steel. When at a maximum rotation, the piston thickness shall be sufficient to provide at least 0.125 inch vertical clearance between rotating and non-rotating components of the bearing assembly.

The outside diameter of the piston shall be at least 0.04 inches less than the inside diameter of the pot.

For bearings carrying horizontal loads, the piston face width shall be designed assuming a contact area with the pot wall of one-third the pot circumference and allowable compressive stress not exceeding 0.8 x Fy (Fy = yield stress of steel used).

C.1.4 Sole and Masonry Plates

The sole and masonry plates shall be designed to distribute the bearing loads into the surrounding substructure and/or superstructure. The allowable bending stress in sole or masonry plates shall be 0.55 x Fy, but the thickness shall not be less than that shown on the plans or 0.75 inch. Service or installations considerations specified by the engineer, such as weldability and bearing height, may require shim plates or thicker masonry and sole plates than are required due to strength considerations alone. The masonry plate shall have a machined recess sized to allow the snug placement of the piston, pot or lower bearing plates.

C.1.5 Upper and Lower Steel Plates

The provisions of AASHTO LRFD Bridge Design Specifications, Sections 3, 4, and 6 shall apply as appropriate to the design of the upper and lower steel plates used in disc bearings. The thickness of each of the upper and lower steel plates shall not be less and 0.045 x disc diameter.

C.1.6 Guide Bars

When necessary, guide bars shall be welded to the slide plates. Guide bars shall be designed for the specified horizontal loads, but not less than 10 percent of the vertical capacity of the bearing.

Guided members must have their contact area within the guide bars in all operating positions. The total clearance between guide bars and the guided member shall be 1/16 inch, +/- 1/32 inch.

C.1.7 Finish of Steel Components

All steel surfaces in contact with elastomer, PTFE, or other steel surfaces, shall be finished to a smoothness of 125 micro-inch (rms) or less.

C.1.8 Stainless Steel Sheet

Stainless steel sheets shall be of 16 gauge minimum thickness when the maximum dimension of the surface is less than or equal to 12.0 inches or it shall be a minimum of 13 gauge when the maximum dimension is larger than 12.0 inches. The stainless steel sheets shall be attached to their backing plates by continuous fillet welding along their edges. Bonding and/or mechanical fastening of sheets will not be permitted. The attachment of stainless steel sheets to their backing plates shall be capable of resisting the frictional force set up in the bearing. Welding shall be in accordance to AWS D1.6. The backing plates shall extend beyond the edge of the stainless steel sheets to accommodate the welds and the welds shall not protrude above the stainless steel sheets. It is essential that stainless steel sheets remain in contact with base metal throughout their service life such that interface corrosion cannot occur.

The stainless steel sheets shall face downward and shall completely cover the PTFE sheets in all operating positions, plus one additional inch in the direction of movement. The surfaces in contact with the PTFE shall be finished to a smoothness of 20 micro-inch (rms) or less.

C.1.9 Brass Sealing Rings

Flat brass sealing rings shall have a minimum width of 0.375 inch. The thickness of the rings shall be a minimum of 0.09375 inch. The number of rings shall be a minimum of 3 and a maximum of 4, depending upon the design load of the bearings. The rings shall be finished to a smoothness of 63 micro-inch (rms) or less.

The gap between the ring and the wall shall nowhere exceed 0.01 inch. Each ring shall have one vertical cut at 45 degrees to the tangent with a maximum gap of 0.05 inch. The

gaps shall be staggered a minimum of 90 degrees relative to one another when the rings are in place.

C.1.10 PTFE Sheets
PTFE sheets shall be a minimum of 0.125 inch thick, epoxy-bonded into a square-edged recess of a depth equal to one-half the PTFE sheet thickness. The shoulders of the recesses shall be sharp and square. After completion of the bonding operation, the PTFE surfaces shall be smooth and free from blisters and bubbles. Design shall be in accordance to AASHTO LRFD Bridge Design Specifications, Section 14.7.2.

C.1.11 Elastomeric Disc
All elastomeric discs shall be individually molded in one piece. No layering or stacking of discs will be permitted. Cuts, gouges, or nicks from machine cutting or flash trimming will be cause for rejection.

The sealing groove shall be molded integrally. It shall be square to the pad top surface and the same nominal dimension as the brass sealing rings.

The average stress on the elastomer at the service limit state should not exceed 3500 psi.

C.1.12 Polyether Urethane Disc
At the service limit state, the disc shall be designed so that its instantaneous deflection under total load does not exceed 10% of the thickness of the unstressed disc, and the additional deflection due to creep does not exceed 8% of the thickness of the unstressed disc.

The components of the bearing shall be designed as not to lift off each other at any location at the service limit state.

The average stress on the disc at the service limit state should not exceed 5000 psi. If the outer surface of the disc is not vertical, the stress shall be computed using the smallest plan area of the disc.

C.1.13 Translation Capacity
The translation capability for both guided and non-guided bearings shall be provided by means of a polished stainless steel sliding plate that bears on a PTFE sheet or other approved material.

C.1.14 Geometric Limitations
The horizontal dimensions shall be limited to the available bearing seat area of the concrete and the bottom flanges as detailed on the plans. Any modifications required to accommodate the bearings chosen shall be submitted to the engineer for approval prior to ordering materials. Modifications required shall be made at no additional cost to the department.

C.1.15 Future Maintenance

Bearings shall be designed and manufactured so that future maintenance of the bearings can be performed. The manufacturer must demonstrate in writing how individual components of the bearings or entire assemblies could be replaced. Vertical upward movement of the superstructure and structural steel, due to jacking, shall not exceed 0.5 inch. The procedures for future replacements of individual components shall meet the approval of the engineer prior to the manufacture of any bearings for this project.

C.2 Structural Steel Coordination

The bearing manufacturer shall coordinate all connections and fit up with the structural steel fabricator. Any modifications from details shown in the plans required to accommodate the bearings chosen shall be submitted to the engineer for approval prior to ordering materials. Modifications required shall be made at no additional cost to the department.

C.3 Submittals

Prior to fabrication of the bearing assemblies, the manufacturer shall submit the following items to the engineer for review and approval:

- Shop drawings for all components and assemblies, including general arrangements and large scale details. The shop drawings shall include tables showing load capacity and movement rating, if applicable, of each bearing, including initial offset required at various ambient temperatures. The shop drawings shall include the manufacturer's instructions for proper installation of the bearing assemblies. Shop drawings which lack manufacturer's installation instructions will be returned without approval.
- Calculations showing conformance of the bearings to the design loadings, movements and other specified requirements.
- Welding procedures. Shop welder, welding operators, welding equipment, and welding procedures to be used shall have been qualified according to the qualification procedure of AWS D1.5 and D1.6.
- Drawings indicating surfaces to be painted or zinc metalized in accordance to section C.7 of this special provision and type of coating used.

C.4 Responsibility

Review and approval of the manufacturer's calculations and shop drawings by the engineer does not relieve the manufacturer of complete responsibility for their accuracy and completeness.

C.5 Shop Inspection

The engineer reserves the right to visit the manufacturer's fabrication shop for purposes of inspecting the manufacturing, assembly, testing, and painting of the bearings. The inspectors shall be allowed free access to the necessary parts of the manufacturer's plant. The manufacturer shall notify the engineer at least two weeks in advance of manufacturing.

C.6 Fabrication Requirements

C.6.1 Tolerances

Fabrication and tolerances shall be in accordance to the requirements of the AASHTO LRFD Bridge Construction Specifications, and as herein specified.

C.6.2 Determination of Flatness

Flatness of bearings after welding and fabrication shall be determined by the following method:

- A precision straightedge that is longer than the nominal dimension to be measured shall be placed in contact with the plate surface to be measured.
- Select a feeler gage with a thickness corresponding to the flatness tolerances of the AASHTO code cited above and having a tolerance of +/-0.001 inch, and attempt to insert it under the straightedge.
- Flatness is acceptable if the feeler does not pass under the straightedge.

C.7 Painting or Metalizing

The bearing assemblies shall be painted or zinc metalized in accordance to AWS C2.18-93 and AWS C2.23:2003. Galvanizing will not be permitted. The pot cavity and all surfaces covered by stainless steel or PTFE sheet shall not be painted or metalized. Tapped holes shall be masked off during painting or metalizing.

C.8 Sampling, Testing, and Inspection

Sampling shall be in accordance to the AASHTO LRFD Bridge Construction Specifications, the standard specifications, or as determined by the engineer.

All testing shall be performed in the presence of a representative of the department or its designated inspection agency.

Three separate tests shall be performed. The first test shall be conducted on all bearing types with the bearing loaded to 150% of the vertical design capacity at the specified design rotation, but not less than 0.02 radians. All rotational elements shall maintain uniform contact during the test. The test load shall be maintained for at least 30 minutes.

The second test shall be conducted to measure the coefficient of friction on a representative sliding bearing. During this test, the bearing shall be loaded to 100% of the vertical design capacity while measuring the coefficient of friction. The coefficient of friction shall be measured at the bearing design capacity on the 5^{th}, 15^{th}, and 100^{th} cycles at a speed of 1-inch/minute. A total of 100 cycles shall be run. The sliding coefficient of friction shall be calculated as the horizontal load required to maintain continuous sliding at a given speed divided by the bearing's design capacity vertical load. The vertical load shall have been applied continuously for a minimum of one hour prior to testing. The measured sliding coefficient of friction shall not exceed 0.03 at 68 degrees F, except when approved by the engineer.

The third test shall be conducted on fixed and guided bearing assemblies to verify the horizontal load carrying capacity. During this test, the bearing shall be loaded to 100% of the vertical design capacity while a horizontal load equal to 150% of the horizontal design load capacity is applied to the assembly.

Any bearing showing failure of the sealing rings or other component parts during or after these load tests shall be replaced at no additional cost to the department.

Throughout the testing, at no time shall:

- Binding of bearing components or other movement restrictions occur under design displacements and / or rotations.
- There be any "lift-off" or separation between plates and PTFE or elastomer under rotation.
- The measured static and dynamic coefficient of friction exceed 3%.
- There be cracks or permanent deformation of the PTFE, stainless steel, other components, or welds.
- There be extrusion of the elastomer or signs of cold flow of the PTFE.
- The instantaneous compression deflection under total load exceed 10% of the thickness of the unstressed disc for disc bearings.

The bearing manufacturer shall furnish to the engineer certified copies of the test reports on the physical properties of the component materials for the bearings to be furnished and a certification by the bearing manufacturer stating the bearing assemblies furnished conform to all the requirements shown on the plans and specifications contained herein.

When directed by the engineer, the manufacturer shall furnish random samples of component materials used in the bearings for testing by the department. The department reserves the right to have the manufacturer perform the specified load tests on one or more of the furnished bearings. A furnished bearing is defined as a high-load multi-rotational bearing assembly that has been delivered to the site. If the tested bearing shows failure, it shall be replaced at no additional cost to the department. The remaining bearings shall be load tested by the manufacturer for acceptance at the manufacturer's expense.

C.9 Identification, Storage, and Handling

Each bearing shall be fully assembled at the manufacturing plant and delivered to the construction site as complete units. Submit copies of all delivery tickets to the engineer.

Each sole plate, intermediate load plate, and masonry plate shall be stamped on their edge faces with the manufacturer's name, bearing type or model number, structure number, bearing number as shown on the plans, the installed location, bearing orientation, centerlines for alignment in the field, upstation direction, and top surface location. The sole plate of each bearing assembly shall be stamped by the bearing manufacturer prior to shipping of the sole plates to the steel fabricator. The stamp shall be on a surface visible after installation and shall remain clearly visible after storage, painting, shipment to the fabricator, and delivery to the project field site.

Each bearing shall be stored in the fabrication shop or at an independent warehouse in a clean, dry, and covered facility until required at the project construction site. The bearings shall be transported and delivered to the project site when required for installation by others under a separate construction and erection contract. While in storage, the bearings shall be kept banded, wrapped, and secured in a condition suitable for shipment. The bearings shall be stored and shipped in moisture-proof and dust-proof covers. Wrapping material is subject to the engineer's approval. Bearings shall not be stacked. The bearings shall be held together with removable restraints so sliding surfaces are not damaged.

The bearing devices shall not be disassembled prior to installation without the knowledge and consent of the engineer and manufacturer.

Repair or replacement of damaged bearing assemblies, in part or in whole, will be at the discretion of the engineer with no additional cost to the department.

C.10 Installation

The bearings shall be installed in strict accordance to the manufacturer's instructions as approved by the engineer. The bearing manufacturer shall furnish technical assistance to the contractor and the engineer through the personal services of a technical representative who is a full time employee of the manufacturer during installation of the bearings. The manufacturer shall have its technical representative present for the placement of the first bearing. At the option of the engineer or contractor, the technical representative may be required to be present for the placement of any number of additional bearings. Measures shall be taken to limit bearing rotation to 0.02 radians during construction.

D Measurement

The department will measure Bearings High-Load Multi-Rotational Fixed, and Bearings High-Load Multi-Rotational Guided by the unit for each individual bearing, acceptably completed in accordance to the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.4140	Bearings High-Load Multi-Rotational Fixed	Each
SPV.0060.4150	Bearings High-Load Multi-Rotational Guided	Each

Payment is full compensation for designing, manufacturing, fabricating, galvanizing, metalizing, painting, testing, storing, furnishing, transporting, and installing acceptable bearings – including sole plate, bearing assembly, masonry plate, bearing pad, connection bolts, anchor bolts and non-shrink grout; for preparing shop drawings; for providing technical assistance at the project site; and for furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the work.

190. Stair Treads, Item SPV.0060.4160.

A Description

Fabricate and install metal grating stair treads on pedestrian bridge B-40-784 stair towers.

B Materials

B.1 General

Structural Performance: Gratings for stair treads shall be designed to withstand the effects of dead load and the following live load:

Stair Treads: Uniform Live Load of 90 lbs per square foot

Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual" and NAAMM MBG 532, "Heavy-Duty Metal Bar Grating Manual."

B.2 Manufacturers

Provide stair treads fabricated from metal grating panels from one of the following manufacturers:

McNichols
Amico Grating
Ohio Gratings

Grating from other manufacturer's that provide equivalent stair tread grating products may be used.

B.3 Product Components and Accessories

Ferrous Metals
Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

Steel Bars for Bar Gratings: ASTM A 36/A 36M or steel strip, ASTM A 1011/A 1011M or ASTM A 1018/A 1018M.

Welded Steel Grating:
Bearing Bar Spacing: 1-7/8 inches o.c.
Bearing Bar Depth: 1-1/2 inches.
Bearing Bar Thickness: 3/16 inch.
Crossbar Spacing: 2 inches o.c.
Traffic Surface: Plain
Steel Finish: Hot-dip galvanized per ASTM A153

Stair Tread Sections: Fabricate with banding bars attached by welding to entire perimeter of each section. Include anchors and fasteners of type indicated or, if not indicated, as recommended by manufacturer for attaching to supports.

Do not notch bearing bars at supports to maintain elevation.

B.2 Finishes
After fabrication hot-dip galvanize stair treads in accordance to ASTM A 153.

C Construction
Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the fence in conformance with the requirements of the contract. Do not begin fabrication prior to shop drawing review and acceptance.

All welding shall conform to the applicable requirements of standard spec 506. No field welding, field cutting, or drilling will be permitted.

Install units in accordance to plan details and approved shop drawings, plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction and adjacent structures.

Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

Attach toe plates to gratings by welding at locations indicated.

Attach removable units to supporting members with type and size of clips and fasteners indicated or, if not indicated, as recommended by grating manufacturer for type of installation conditions shown.

D Measurement
The department will measure Stair Treads by each individual unit, acceptably installed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.4160	Stair Treads	Each

Payment is full compensation for fabricating, fabricating, furnishing, and delivering, for preparing shop drawings and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

191. Fixed Ladder, R-40-491, Item SPV.0060.4180; Fixed Ladder, R-40-492, Item SPV.0060.4181.

A Description
This special provision describes furnishing and installing a fixed ladder with a swing gate that meets the requirements of OSHA 1910.27.

B Materials
Furnish galvanized steel that is in accordance to the pertinent requirements for Structural Steel, standard spec 506.

C Construction
Furnish a fixed ladder that meets the requirements of OSHA 1910.27 and the dimensions the plan details show. Install fixed ladder with stainless steel epoxy anchors per ladder manufacturer's requirements.

D Measurement
The department will measure Fixed Ladder, (Structure) as each individual ladder that is acceptably furnished and installed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.4180	Fixed Ladder, R-40-491	Each
SPV.0060.4181	Fixed Ladder, R-40-492	Each

Payment is full compensation for furnishing and installing a fixed ladder at the location shown on the plan details.

192. Floor Drain Special, Item SPV.0060.4190.

A Description
This work consists of furnishing and installing bridge floor drains in accordance to standard spec 514, as shown on the plans, and as hereinafter provided.

B Materials
All materials shall conform to standard spec 514.2 except as modified herein.

C Construction
All construction methods shall conform to standard spec 514.3.

D Measurement
The department will measure Floor Drain Special by the unit for each individual floor drain, acceptably completed, in accordance to standard spec 514.4(1).

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.4190	Floor Drain Special	Each

Payment will be made in accordance to standard spec 514.5(1).

193. Exposing Existing Utility Paved Area, Item SPV.0060.5000.

A Description

This work includes exposing existing utilities which are in direct conflict with proposed facilities. The location of existing utilities not in direct conflict with proposed construction is not included and shall be addressed using standard utility location procedures. The work includes exposing existing utilities under paved surfaces or within 6 feet of a paved surface, and providing both lateral and depth measurements for use in determining potential utility conflict solutions.

B Materials

B.1 Granular Backfill

Furnish granular backfill that conforms to standard spec 209.

B.2 Backfill Slurry

Use aggregates that conform to standard spec 501 for grade A concrete. Weigh aggregates at a batch plant suitable for batching concrete masonry. Mix and deliver to the project site using a truck mixer. Add enough water to enable the mixture to flow readily.

C Construction

C.1 General

Submit all requests for exposing existing utilities in writing to the engineer for approval prior to performing the work. Coordinate utility exposures with the engineer and notify the utility owner or their agents of this work 2 working days in advance so that they may be present when the work commences.

C.2 Excavation

Remove all paved surfaces at locations where the existing utility is being exposed. Saw or remove concrete and asphaltic pavements to the nearest joint. Remove all pavement surfaces in such a way that all existing edges consist of a true line having a perpendicular edge with no unraveling. Maintain drainage at all times in accordance to standard spec 205.3.3. Take precautions, including temporary shoring, in order to prevent any undermining of the existing roadway. Perform work in accordance to all applicable laws, ordinances, rules, regulations, and OSHA standards.

Expose all utility locations within a given location to a minimum depth of 18-inches below the bottom of each utility. Excavate in a manner that protects the integrity of the utilities and prevents any damage to wrappings or protective coatings such as by any mechanical method or hand digging. Notify the utility owner promptly if damage or

interruption of service occurs. Repair all damage caused to such utilities resulting from negligence or carelessness at own expense.

Take all lateral and depth measurements in US feet and tenths thereof. Identify horizontal locations of each exposed utility with a coordinate northing and easting referenced to the Wisconsin County Coordinate System (WCCS), Milwaukee County, NAD 83 (GRS-1980) (2007). Provide vertical elevations for each exposed utility and reference to NAVD 88 (2007).

The utility location shall remain exposed and available for visual inspection until the completion of all work in a given location. If the utility shall remain exposed overnight or for prolonged periods of time, protect the location with traffic-rated steel plating, safety barriers, and all necessary traffic control devices that may be required under applicable standards or as directed by the engineer.

C.3 Backfilling

Upon completion of the utility exposure, restore the location in kind to its original condition. Use granular backfill, conforming to standard spec 209, to backfill the exposed utility locations to the subgrade elevation except for areas located within local streets. All granular material placed to an elevation of 18-inches above each exposed utility shall consist substantially of sand with all particles retained on a one-inch (25.0 mm) sieve removed. The remaining granular material shall conform to the specifications for backfill for trench excavation. When exposed utility locations fall within local streets or city right-of-way, use slurry backfill to fill the entire location to the subgrade elevation.

Restore concrete pavement and concrete base course to the depth found in the existing roadway. Replace all locations that fall within live lanes of any roadway or pedestrian traffic with a high early-strength concrete pavement mix design having a depth equivalent to the existing pavement structure unless directed otherwise by the engineer. Locations that are closed to through traffic may use an approved concrete pavement mix conforming to standard spec 501. If directed by the engineer, tie concrete pavement and/or dowel it to the existing pavement according to the standard detail drawing for concrete pavement. All locations requiring asphaltic pavement shall consist of HMA Pavement Type E-3 unless otherwise directed by the engineer. Place the HMA pavement in lifts to a depth as directed by the engineer. Apply tack coat to composite pavement structures and between lifts.

Place base aggregate dense between the subgrade surface and the bottom of the pavement.

C.4 Documentation

Provide documentation to the engineer and include the coordinates, elevations, and sketches of the utility locations tied to known features in the plans. Each utility shall be referenced to a proposed alignment with a station and offset. Where near a ramp, reference the ramp alignment. The size and/or diameter, composition, and a description of each utility shall be documented and the location of the elevation with respect to each

utility noted. Supply digital photographs of the uncovered utility to the engineer in .jpeg format for future reference.

D Measurement

The department will measure Exposing Existing Utility, Paved Area as a unit for each individual location, acceptably completed. A location may have multiple utilities located within the same exposure area. An exposure area will include all utilities within 6 lateral feet of each other and payment will only be made for one unit regardless of the number of utilities exposed. If the distance from the existing ground elevation, located above the existing utility, to a point 18 inches below the exposed utility is between 0 and 6 feet, the department will measure each location as a single unit of work. If the distance from the existing ground elevation, located above the existing utility, to a point 18 inches below the exposed utility is greater than 6 feet and less than 12 feet, the department will pay for the item as two units of work. Exposures in depth greater than 12 feet are not covered under this item.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.5000	Exposing Existing Utility Paved Area	Each

Payment is full compensation for furnishing all excavation; for disposing of all materials; for locating all utilities within each respective location; for providing documentation and photographs of utility locations to the engineer; for furnishing all surveying associated with exposing existing utilities; for furnishing all maintenance of the location during construction; for furnishing all traffic control, safety barriers, and steel plating required; for temporary shoring, and all finishing items including, but not limited to, base aggregate dense, concrete pavement, HMA pavement, curb and gutter, and sidewalk located above the subgrade elevation.

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194. Exposing Existing Utility Unpaved Area Item SPV.0060.5001.

A Description

This work includes exposing existing utilities which are in direct conflict with proposed facilities. The location of existing utilities not in direct conflict with proposed construction is not included and shall be addressed using standard utility location procedures. The work includes exposing existing utilities under unpaved surfaces more than 6 feet outside a paved surface, and providing both lateral and depth measurements for use in determining potential utility conflict solutions.

B Materials

B.1 Granular Backfill

Furnish granular backfill that conforms to standard spec 209.

C Construction

C.1 General

Submit all requests for exposing existing utilities in writing to the engineer for approval prior to performing the work. Coordinate utility exposures with the engineer and notify the utility owner or their agents of this work 2 working days in advance so that they may be present when the work commences.

C.2 Excavation

Remove all unpaved surfaces at locations where the existing utility is being exposed. Maintain drainage at all times in accordance to standard spec 205.3.3. Take precautions, including temporary shoring, in order to prevent any undermining of the existing roadway. Perform work in accordance to all applicable laws, ordinances, rules, regulations, and OSHA standards.

Expose all utility locations within a given location to a minimum depth of 18-inches below the bottom of each utility. Excavate in a manner that protects the integrity of the utilities and prevents any damage to wrappings or protective coatings such as by any mechanical method or hand digging. Notify the utility owner promptly if damage or interruption of service occurs. Repair all damage caused to such utilities resulting from negligence or carelessness at own expense.

Take all lateral and depth measurements in US feet and tenths thereof. Identify horizontal locations of each exposed utility with a coordinate northing and easting referenced to the Wisconsin County Coordinate System (WCCS), Milwaukee County, NAD 83 (GRS-1980) (2007). Provide vertical elevations for each exposed utility and reference to NAVD 88 (2007).

The utility location shall remain exposed and available for visual inspection until the completion of all work in a given location. If the utility shall remain exposed overnight or for prolonged periods of time, protect the location with traffic-rated steel plating, safety barriers, and all necessary traffic control devices that may be required under applicable standards or as directed by the engineer.

C.3 Backfilling

Upon completion of the utility exposure, restore the location in kind to its original condition. Use granular backfill, conforming to standard spec 209, to backfill the exposed utility locations to the subgrade elevation except for areas located within local streets. All granular material placed to an elevation of 18-inches above each exposed utility shall consist substantially of sand with all particles retained on a one-inch (25.0 mm) sieve removed. The remaining granular material shall conform to the specifications for backfill for trench excavation. In grassy areas, place 6-inches of topsoil, sod or seed and mulch, and fertilizer. Alternate restoration methods may be used upon written approval from the engineer.

C.4 Documentation
Provide documentation to the engineer and include the coordinates, elevations, and sketches of the utility locations tied to known features in the plans. Each utility shall be referenced to a proposed alignment with a station and offset. Where near a ramp, reference the ramp alignment. The size and/or diameter, composition, and a description of each utility shall be documented and the location of the elevation with respect to each utility noted. Supply digital photographs of the uncovered utility to the engineer in .jpeg format for future reference.

D Measurement
The department will measure Exposing Existing Utility, Unpaved Area as a unit for each individual location, acceptably completed. A location may have multiple utilities located within the same exposure area. An exposure area will include all utilities within 6 lateral feet of each other, and payment will only be made for one unit regardless of the number of utilities exposed. If the distance from the existing ground elevation, located above the existing utility, to a point 18 inches below the exposed utility is between 0 and 6 feet, the department will measure each location as a single unit of work. If the distance from the existing ground elevation, located above the existing utility, to a point 18 inches below the exposed utility is greater than 6 feet and less than 12 feet, the department will pay for the item as two units of work. Exposures in depth greater than 12 feet are not covered under this item.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.5001	Exposing Existing Utility Unpaved Area	Each

Payment is full compensation for furnishing all excavation; for disposing of all materials; for locating all utilities within each respective location; for providing documentation and photographs of utility locations to the engineer; for furnishing all surveying associated with exposing existing utilities; for furnishing all maintenance of the location during construction; for furnishing all traffic control, safety barriers, and steel plating required; for temporary shoring.
SEF Rev. 13_0424

195. Reconstruct MMSD Manhole, Item SPV. 0060.5040.

A Description
This work includes reconstructing a sanitary manhole to an elevation as determined by the engineer, in accordance to the Standard Specifications for Sewer and Water Construction in Wisconsin, latest edition (SSSW), and as hereinafter provided.

B Materials

B.1 Manhole

Manhole barrel sections shall be constructed of precast reinforced concrete sections.

Precast manholes and tops shall conform to ASTM Specifications, C478, latest revision.

B.2 Manhole Seal

Sanitary manhole seal–internal/external, as shown in the construction details on the plans, shall meet the material requirements of section 8.42.3 and the performance requirements of section 8.42.4 of the SSSW.

B.3 Joints

Joints for precast manholes shall meet the requirements of ASTM C-443, latest revision, except that sealant shall be butyl rubber gasket or butyl rubber rope. Flexible butyl rubber gaskets or rope shall comply with the physical requirements for Type "B" gaskets in AASHTO Designation M-198, or Federal Specification SSS-00210-A, sealing compound, preformed plastic for expansion joints and pipe joints.

B.4 Steps

All manholes shall be provided with steps equally spaced vertically on center installed by the manufacturer as shown on the standard detail sheet. Steps shall be embedded into the riser or conical top section of the wall a minimum of 3 inches. Manhole steps shall be Type PS-2-BG as manufactured by M.A. Industries, Peachtree City, GA 30269; or equal. Provide certified test data that the steps are capable of withstanding an 800- pound vertical load without sustaining more than a 3/8-inch permanent set when tested in accordance to Section 10 of ASTM C 497.

B.5 Elastomeric Waterproofing Sealer

Elastomeric waterproofing membrane shall be a single component, bitumen-modified, moisture-curing polyurethane similar to TREMproof 60 as manufactured by Tremco, 10701 Shaker Blvd., Cleveland, Ohio 44104; Duramem V500 as manufactured by Pecora Corporation, 2601 Oakland Avenue, Garland, Texas 75040; Thiodeck C.F. as manufactured by Toch/Carboline Company, 350 Hanley Industrial Court, St. Louis, Missouri 63144; or equal.

B.6 Plastic Sheet

Plastic sheet shall be clear plastic, minimum 4 mils. thick, of length and width to cover elastomeric waterproofing sealer.

B.7 Granular Backfill

Granular backfill shall consist of hard durable particles or fragments of stone, gravel, or sand. Granular backfill shall conform to the following grading requirements:

GRADING REQUIREMENTS FOR GRANULAR BACKFILL

Sieve Sizes	Percent Passing by Weight
3 inches	100
2 inches	95 – 100
No. 4	35 - 60
No. 200	5 - 15

C Construction

C.1 General

Reconstruct manholes to conform to the detail on the standard detail sheet and in the locations shown in the plans.

Salvage and reinstall existing frames and covers.

C.2 Backfill

Backfill with granular backfill material. Place in suitable lifts not exceeding 8 inches loose depth and compact each lift to a minimum of 90 percent of maximum density as determined by AASHTO T 180. Compact with mechanical vibrating or impact tampers.

Remove all form materials and trash from the excavation before placing any backfill. Backfill around manholes only after the concrete has attained 2/3 of the specified compressive strength. Obtain the engineer's approval of concrete work and attained strength prior to backfilling. Backfill shall be brought up uniformly around manholes and structures to prevent unbalanced lateral loading.

Do not operate earth-moving equipment within 5 feet of walls of manholes for the purpose of depositing or compacting backfill materials. Compact backfill adjacent to concrete walls with hand-operated tampers or other equipment that will not damage the manhole.

C.3 Elastomeric Waterproofing Sealer

Elastomeric waterproofing sealer shall be applied to all gravity sewer manholes. Thoroughly sandblast the section of the manhole frame over which the sealer is to be applied, the manhole header, extension and cone and the top 12 inches of the manhole riser. All surfaces shall be free of dust, oil, rust, loose materials and other contaminants. Take necessary precautions to prevent rebound from the sandblasting operation to enter the sewer system. If the mortar between grade rings or brick courses is removed to a depth greater than 1/4 inch by the sandblasting, the joints shall be refilled with mortar as specified herein. All new masonry work shall be cured a minimum of 24 hours prior to applying the waterproofing sealer.

Apply the 4-inch wide bond breaker tape completely around the manhole circumference and centered over the mortar joint between the manhole frame and the manhole extension. Immediately before applying the sealer, wipe all surfaces with a cleaner and

immediately prime. The cleaner and primer shall be furnished by the sealer manufacturer. Apply the sealer with a trowel, roller or by spraying to achieve a thickness of not less than 100 wet mils. Do not apply the sealer when the ambient temperature is below 40 degrees F. The sealer shall extend from 9 inches below the bottom of the manhole cone and be carried over the top and onto the flange of the frame a minimum of 5 inches.

Allow the sealer to cure a minimum of 24 hours before backfilling when the ambient temperature is above 70 degrees F, and 48 hours when the ambient temperature is below 70 degrees F. Immediately before backfilling, loosely wrap two layers of 4 mil plastic sheet over the sealed area to prevent direct contact between the sealer and the backfill material.

D Measurement

The department will measure Reconstruct MMSD Manhole as a unit for each individual manhole, 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.0060.5040	Reconstruct MMSD Manhole	Each

Payment is full compensation for providing and installing all required materials, including masonry and fittings: for salvaging and reinstalling existing covers, including frames, grates or lids; for furnishing all necessary excavation, backfilling, disposing of surplus material, and for cleaning out and restoring the work site.

196. Aster, Professor Kippenburg CONT #1, Item SPV.0060.7001; Beebalm CONT #1, Item SPV006.7002; Daylilly, Stella D'Oro CONT #1, Item SPV.0060.7003; Coneflower Purple CONT #SP3, Item SPV.0060.7004; Goldenrod, Stiff CONT #1, Item SPV.0060.7005; Grass Fountain CONT #1, Item SPV.0060.7006; Grass, Prairie Dropseed CONT #1, Item SPV.0060.7007; Grass, Little Bluestem CONT #1, Item SPV.0060.7008; Grass, Karl Foerster Reed CONT #1, Item SPV.0060.7009; Susan, Black Eyed #SP3, Item SPV 0060.7010; Vervain Hoary CONT #1, Item SPV.0060.7011; Weed, Butterfly CONT #1, Item SPV.0060.7012.

A Description

This special provision describes furnishing and planting perennial plants of the species, varieties and sizes specified, in accordance to standard spec 632, as modified in the article Furnishing and Planting Plant Materials, and as hereinafter provided.

B Materials
Provide plants of the specific species, variety, size, color and other characteristics as shown on the plans and Planting Data chart unless prior written approval of the engineer is provided in advance for any substitution.

C Construction
Plant perennials in prepared beds that are a minimum of 6" deep and backfilled with Planting Mixture (standard spec 632.2.3.4). Incorporate timed-release fertilizer thoroughly into the top 3" inches of planting soil at the manufacturers recommended rate. Use a fertilizer conforming to the following minimum requirements:

Nitrogen……14%
Phosphoric Acid……14%
Potash……14%

Thoroughly water-in plants to eliminate all air pockets in the planting pit.

Plant all perennials between May 1st and September 1st unless directed otherwise by the engineer.

Contractor shall remove and dispose of all excess material from site.

D Measurement
The department will measure Perennials by each individual unit in place, and the quantity to be paid shall be the number of perennials planted and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.7001	Aster, Professor Kippenburg CONT #1	Each
SPV.0060.7002	Beebalm CONT #1	Each
SPV.0060.7003	Daylily, Stella D'Oro CONT #1	Each
SPV.0060.7004	Coneflower, Purple CONT #SP3	Each
SPV.0060.7005	Goldenrod, Stiff CONT #1	Each
SPV.0060.7006	Grass, Fountain CONT #1	Each
SPV.0060.7007	Grass, Prairie Dropseed CONT #1	Each
SPV.0060.7008	Grass, Little Bluestem CONT #1	Each
SPV.0060.7009	Grass, Karl Foerster Reed CONT #1	Each
SPV.0060.7010	Susan, Black-Eyed CONT #SP3	Each
SPV.0060.7011	Vervain, Hoary CONT #1	Each
SPV.0060.7012	Weed, Butterfly CONT #1	Each

Payment is in accordance to standard spec 632.5.

197. Crossroad Name Signs Special Sign Supports, Item SPV.0060.7013; Sign Structure Wayfinding, Item SPV.0060.7014 .

A Description

This work consists of fabricating, galvanizing, delivering and installing Sign Structures as shown on the plans and installation of aluminum signs on structure.

B Materials

B.1 General

All materials shall meet the requirements as shown on the plans and the applicable provisions of the standard specifications as follows:

- Structural Steel: standard spec 506.2.2
- Welding Materials: standard spec 506.2.3.11
- Painting: standard spec 517.2 and 517.3

Prior to fabrication, steel shall be blast cleaned per SSPC-SP 6 and galvanized according to ASTM A 123. All bolts, nuts and washers shall be supplied as factory galvanized according to ASTM A 153. Repair zinc coating damaged during fabrication as specified in 635.3.4. Grind the welded joints to a smooth finish where shown in the plans.

Steel preparation includes the chamfering of sharp edges. All sharp edges shall be flattened by a single pass of a grinder or suitable device along the sharp edge. Condition any thermal cut edges before blast cleaning by shallow grinding or other cleaning to remove any hardened surface layer. Remove all evident steel defects exposed in accordance to AASHTO M 160 prior to blast cleaning.

C Construction

Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the sign structure in conformance with the requirements of the contract. Do not begin fabrication prior to shop drawing review and acceptance.

Contractor shall provide a test segment of two different sized tubular components welded together and with the proper finish for the sign structures. The test segment shall consist of two pieces 2 feet long, welded and finished. The test segment shall be delivered to the job site within 60 days of the award of the contract. Contractor shall deliver the test segment to a location within the project area as designated by the engineer. Do not begin fabrication of sign structures prior to the test segment acceptance.

During construction and at the time of delivery the engineer shall inspect the sign structures for any shipping damage or construction defects. The engineer shall accept the product after the delivery is unloaded on the site. After the product is unloaded, the installation contractor will signify in writing that the sign structures were received in

acceptable condition per the engineer's inspection. Any damage to the sign structures after the acceptable delivery will be the responsibility of the installation contractor.

All welding shall conform to the applicable requirements of standard spec 506. No field welding, field cutting, or drilling will be permitted without the approval of the engineer.

Provide the engineer with the name, address, and phone number of a representative of sign structure fabricator for future coordination.

During handling, protect finish coating from damage. If damaged during handling the sign structures may be rejected by the engineer or engineer may direct fabricator that the finish shall be repaired in accordance to the manufacturer's recommendations.

Contractor shall remove and dispose of all excess material from site.

D Measurement

The department will measure Crossroad Name Signs Special Sign Supports and Sign Structure Wayfinding per 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.0060.7013	Crossroad Name Signs Special Sign Supports	Each
SPV.0060.7014	Sign Structure Wayfinding	Each

Payment is full compensation for fabricating, galvanizing and delivering sign structures, providing structure test segment and delivering to site; fabricating, furnishing, delivering and unloading sign structures, installing sign structures, aluminum signs and hardware; for preparing shop drawings, galvanizing metal sign structures and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

198. Concrete Foundation, Crossroad Name Signs Special Sign Support, Item SPV.0060.7015; Wayfinding, Item SPV.0060.7016.

A Description

This special provision describes constructing concrete foundations at the locations as shown on the plans or as directed by the engineer

B Materials

Furnish bar steel reinforcement conforming to standard spec 505.2.
Furnish grade A, A-FA, A-S, A-T, A-IS, or A-IP concrete conforming to standard spec 501.2.

C Construction
Construct concrete foundations, including necessary hardware and anchor bolts as shown in the plan details. In the event there are conflicts with existing utilities it may be necessary to shift foundation locations. If foundations are shifted to avoid utilities, contractor shall receive written approval from the engineer for the new location.

Construct concrete foundations as specified in standard spec 501, and provide the surface finish specified in standard spec 502.3.7.2 and plan details. Finish the concrete foundations to support sign structures or banner posts with structures and posts bearing evenly on the foundation. Inspect the forming and applicable reinforcement for concrete foundations before pouring the concrete. Cure the foundations for 5 days before installing any structures.

Contractor shall remove and dispose of all excess material from site.

D Measurement
The department will measure Concrete Foundations (Type) as each individual foundation 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.0060.7015	Concrete Foundation, Crossroad Name Signs Special Sign Support	Each
SPV.0060.7016	Concrete Foundation, Wayfinding	Each

Payment is full compensation for providing all materials including necessary hardware, anchor bolts, forms, bar steel reinforcement, and concrete; for excavating, backfilling, and disposing of surplus materials; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance to this contract.

199. Sign Cantilevered, Item SPV.0060.7017.

A Description
This special provision describes providing and erecting cantilevered wayfinding signs and supports.

B Materials
Furnish reinforced concrete for the column that is according to the pertinent requirements of standard spec 502.

Furnish an epoxy paint system that is according to the pertinent requirements of standard spec 517.

Furnish reinforced concrete for the footing that is according to the pertinent requirements of standard spec 636.

Furnish structural aluminum support panels material that is according to standard spec 637.

Furnish sign panels and sign message material that is according to the pertinent requirements of standard spec 637.

Furnish structural steel for the sign truss and sign support that is according to the pertinent requirements of standard spec 641.

Furnish materials for the architectural surface treatment on the exposed concrete surfaces of the column in accordance to the special provision for Architectural Surface Treatment, Item 517.1050.S.

Furnish materials for the two coat concrete stain on the exposed concrete surfaces of the column in accordance to the special provision for Concrete Staining, Item 517.1010.S.

Furnish materials for the multi-color concrete stain to the exposed concrete surfaces of the column in accordance to the special provision for Concrete Staining Multi-Color, Item 517.1015.S.

C Construction

C.1 General

Conform to the standard specifications and the plan details.

C.2 Aluminum Surface Preparation

Solvent clean all surfaces to be coated in accordance to SSPC-SP1. Remove water-soluble dirt and chemicals with water and detergent; solvent-soluble contaminants with solvent. Rinse, allow to dry, then power or hand abrade to remove the thin film of aluminum oxide.

C.3 Painting

Paint by applying three coats of an approved coating system as specified herein from the department's approved products list.

C.4 Coating Application

Apply paint in a neat, workmanlike manner. The resultant paint film shall be smooth and uniform without skips or areas of excessive paint. Apply coating in accordance to the manufacturer's recommendations.

Prior to applying the prime coat, coat with primer all edges, rivet and bolt heads, nuts and washers by using either a brush, roller, or spray application.

Dry Film Thickness per coat shall be a minimum of 3-mil. The dry film thickness shall be determined by use of a magnetic film thickness gage. The gage shall be calibrated for dry film thickness measurement in accordance to SSPC-PA 2.

During surface preparation and coating application, the ambient and aluminum temperature shall be between 39 and 100 degrees F. The aluminum temperature shall be at least 5 degrees F above the dew point temperature, and the relative humidity shall not exceed 85%.

D Measurement
The department will measure Sign Cantilevered 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.0060.7017	Sign Cantilevered	Each

Payment is full compensation for furnishing all required excavating; for providing all materials; for transporting, placing and curing the concrete; for architectural surface treatment and concrete staining; for placing anchor bolts and for providing and placing electrical conduit; for cleaning-up, repairing damage, and for disposing of excavation and surplus materials; for fabricating the sign structure, including all cutting, preparing, welding, zinc coating and painting; for transporting and erecting the sign structure; and for providing signs including messages and mounting hardware.

Sign lighting is paid for separately.

200. Ramp WG Pond Outlet Storm Sewer Structure, Item SPV.0060.8002.

A Description
Furnish and install pond outlet Storm Sewer Structure in accordance to the pertinent provisions of standard spec 611, as shown on the plans and as hereinafter provided. Furnish and install trash racks on the outlet Storm Sewer Structure. Furnish and install trash racks in accordance to the pertinent provisions of standard spec 506 and 513, as shown on the plans and as hereinafter provided. Provide orifice holes and anti-seep collar as shown on the plan.

B Materials
Furnish manhole materials in accordance to standard spec 611.

Furnish steel conforming to the requirements of standard spec 506.2.2.1. Furnish steel galvanized in accordance to ASTM A123 and ASTM 1153 as applicable.

Trash racks shall be fabricated from structural steel shapes, flat bar and plates and shall be galvanized after fabrication. Shop drawings for the trash racks shall be submitted to the engineer for approval prior to fabricating the trash racks.

Furnish bolts, nuts and washers for the installation of the trash racks onto the Outlet Storm Sewer Structures. Bolts, nuts and washers in accordance to standard spec 513.2.2.5.

C (Vacant)

D Measurement
The department will measure Ramp WG Pond Outlet Storm Sewer 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.0060.8002	Ramp WG Pond Outlet Storm Sewer Structure	Each

Payment is full compensation for providing and placing all materials, including all masonry, steel and pipe connections, and other fittings; furnishing and installing trash racks; for providing orifice holes and anti-seep collars; for furnishing all excavating, backfilling, disposing of surplus material, and for cleaning out and restoring the work site and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

201. Inlet Covers Type 57, Item SPV.0060.8004.

A Description
The work under these items shall be in accordance to the requirements of standard spec 611 and the details as shown on the plans.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Inlet Cover (Types) by each individual unit in place, furnished, installed and 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.0060.8004	Inlet Covers Type 57	Each

Payment shall conform to standard spec 611.5.

202. Inlet Covers Type R - Special, Item SPV.0060.8006.

A Description
The work under these items shall be in accordance to the requirements of standard spec 611 and the details as shown on the plans.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Inlet Covers (Types) by each individual unit in place, furnished, installed and 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.0060.8006	Inlet Covers Type R - Special	Each

Payment shall conform to standard spec 611.5 of the standard specification.

203. Reconnect Storm Sewer Laterals, Item SPV.0060.8007.

A Description
This special provision describes reconnecting existing storm sewer laterals to new structures or new pipe.

B (Vacant)

C Construction
Identify all private laterals in existing structures prior to that structure's removal. Remove existing lateral pipes to the next good joint and replace in-kind. Verify that positive drainage is achieved when connecting to the new inlet or curb outlet structure. The contractor will be allowed to salvage any structurally sound pipe that was removed with prior approval by the engineer. Connect the existing pipes to the new pipes with the appropriate coupling, concrete collar or by means approved by the engineer. Concrete masonry for concrete collar shall be in accordance to standard spec 501. Any additional pipe or materials required to reconnect the storm sewer laterals shall be considered incidental to this bid item.

D Measurement
The department will measure Reconnect Storm Sewer Laterals by each individual lateral connected and approved in the field.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.8007	Reconnect Storm Sewer Laterals	Each

Payment is full compensation for performing all work; removing, furnishing and installing all materials, couplings, concrete collars, and pipe; and for furnishing all labor, tools, equipment, and incidentals required to complete the work.

204. Manholes 9-FT Special, Item SPV.0060.8012; Manholes 10-FT Special, Item SPV.0060.8013; Storm Sewer Structure W1120, Item SPV.0060.8030; Storm Sewer Structure W1130, Item SPV.0060.8031.

A Description
This work shall consist of design and construction of either a cast-in-place or precast storm sewer structure made of concrete with necessary reinforcement, metal frames, grates and lids, including required excavating and backfilling.

B Materials
Conform to standard spec 611.2.

C Construction
Conform to standard spec 611.3.

D Measurement
The department will measure Manholes (Size) Special and Storm Sewer Structure (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.0060.8012	Manholes 9-FT Special	Each
SPV.0060.8013	Manholes 10-FT Special	Each
SPV.0060.8030	Storm Sewer Structure W1120	Each
SPV.0060.8031	Storm Sewer Structure W1130	Each

Payment is full compensation for providing all materials, including all masonry, for Grade “A” concrete adjustments and monolithic concrete shimming; conduit and sewer connections, steps, and other fittings; for providing and installing butyl rubber joints; for furnishing all excavating, backfilling, disposing of surplus material, and for cleaning out and restoring the work site; except that the department will pay for covers, including frames, grates and lids separately.

The department will apply contract unit prices without adjustments to the quantities of manholes constructed to depths not greater than one foot above or below the elevations shown on the plans. Manholes that the engineer orders constructed to a depth greater than one foot above or below elevations shown on the plans will be specified for extra work and paid for in accordance to standard spec 109.4.

205. Pipe Connection to Existing Structure, Item SPV.0060.8015.

A Description
This special provision describes connecting new storm sewer pipe to existing structure.

B Materials
Conform to standard spec 608.2 and 611.2

C Construction
Conform to standard spec 607.3 and 611.3

D Measurement
The department will measure Pipe Connection to Existing Structure by each individual lateral connected and approved in the field.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.8015	Pipe Connection to Existing Structure	Each

Payment is full compensation for performing all work; excavation, backfilling, furnishing, masonry and fittings; disposing of surplus material, coring holes in existing structure to connect new pipe; and installing all materials, couplings, concrete collars, and pipe; and for furnishing all labor, tools, equipment, and incidentals required to complete the work.

206. Sedimentation Basin, Item SPV.0060.8017.

A Description
Design, supply and maintain a sedimentation basin used to de-water the storm sewer or culvert pipes.

B (Vacant)

C Construction
Design a sedimentation basin that is able to filter the contaminated water prior to discharging it back into the adjacent drainage way conforming to Wisconsin DNR technical standard guidelines for sedimentation basin design. Submit sedimentation basin design to

the engineer for approval prior to its construction. Maintain the sedimentation basin at regular intervals or as directed by the engineer.

D Measurement
The department will measure Sedimentation Basin as each individual basin installed in accordance to the contract and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.8017	Sedimentation Basin	Each

Payment is full compensation for design and approval; furnishing and maintaining each basin; for any polymers required to achieve performance standards; for removal of the basin; and for furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

207. Removing Bulkhead, Item SPV.0060.8018.

A Description
This special provision describes removing previously constructed bulkhead as shown in the plans, and as hereinafter provided.

B (Vacant)

C Construction
Carefully remove the bulkhead without damaging the pipe. Replace portion of damaged pipe with similar size and material.

D Measurement
The department will measure Removing Bulkhead by each individual bulkhead removed in accordance to the contract and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.8018	Removing Bulkhead	Each

Payment is full compensation for furnishing all materials; removing bulkhead, replacing damaged pipe material including concrete collar around the pipe; and excavating and backfilling where necessary.

208. Welding Storm Sewer Covers, Item SPV.0060.8050.

A Description
This work includes welding storm sewer covers at locations as shown on the plan.

B (Vacant)

C Construction
Prior to welding clean out all soil, debris, other accumulated matter, and materials deposited or lodged on the storm sewer structure cover.

Conform to AWA 1.1 "Structural Welding Code – Steel".

All welding shall be done by skilled, experienced, qualified and state certified operators

Provide welding in such a manner that welding can be grounded off for future access.

D Measurement
The department will measure Welding Storm Sewer Covers as each individual item, 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.0060.8050	Welding Storm Sewer Covers	Each

Payment is full compensation for cleaning covers, welding including welding materials; for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

209. Removing Welds from Storm Sewer Covers, Item SPV.0060.8051.

A Description
This work includes removing welds from storm sewer covers at locations as shown on the plan.

B (Vacant)

C Construction
Carefully remove all welds from storm sewer covers. Do not damage storm sewer cover. Replace damaged cover and no additional payment will be made for replacing damaged cover.

D Measurement
The department will measure Removing Welds from Storm Sewer Covers as each individual item acceptably completed. The measurement is based on each cover and not as each weld removed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.8051	Removing Welds from Storm Sewer Covers	Each

Payment is full compensation for cleaning covers, removing welds, replacing damaged covers; for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

210. Drain Slotted Vane Type A, Item SPV.0060.8060.

A Description
This special provision describes furnishing and installing slotted vane drain as shown on the plans, in accordance to standard specs 501, 505, 607, and 611, and as hereinafter provided.

B Materials
The pipe that the vane drain casting rests in shall be 10-inch diameter SDR-35 poly vinyl chloride, (PVC) sewer pipe.

C Construction
Prior to encasing the pipe in concrete, cover the upper end of the slotted drain as shown on the plans, or as approved by the engineer.

Prior to construction operations adjacent to the slotted area of the slotted vane drain pipe, cover the slots on the top of the drain. Remove any material entering the pipe at the contractor's expense.

Exercise care to avoid damage to the slotted vane drainpipe. If any section of pipe is damaged or is unsatisfactory as determined by the engineer, replace the drainpipe at contractor’s expense.

D Measurement
The department will measure Drain Slotted Vane (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 items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.8060	Drain Slotted Vane Type A	Each

Payment is full compensation for furnishing all materials, including PVC pipe and end cap, slotted vane drain castings, concrete masonry and reinforcement; adjusting bricks; drilling type V inlet cover to accommodate connection bolts to vane drain; hauling and

placing the pipe; making connections to existing inlets; cleaning out and restoring site of work; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

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211. Remove and Cap Existing Drainage Storm Sewer Structure, Item SPV.0060.8061.

A Description

This item describes remove and cap existing drainage Storm Sewer Structure with concrete and necessary reinforcement, including required excavating and backfilling in accordance to construction details shown on plan, the standard specifications, and as hereinafter provided.

B Materials

Furnish materials conforming to standard spec 501 for concrete, standard spec 505 for reinforcement, and standard spec 506 for structural steel and miscellaneous metals.

Furnish grade A concrete with Type II cement conforming to standard spec 501.2. Furnish ASTM 617 Grade 60 reinforcing steel.

Furnish plastic waterstop conforming to standard spec 502.3.6.4.

Furnish support assemblies conforming to standard spec 611.2.2.

C Construction

Excavate and backfill as specified for excavation for Storm Sewer Structures in standard spec 206, except do not backfill concrete brick until at least 3 days after completing the unit. Use granular backfill material for backfilling.

Construct concrete as specified in standard spec 501, and as specified for culverts and retaining walls in standard spec 504.

Construct concrete brick as specified in standard spec 519.

Construct structural steel and miscellaneous metals as specified for steel bridges in standard spec 506.

Cure the concrete by one of the methods specified in standard spec 502.3.8 for curing concrete in subStorm Sewer Structure units.

Construct the masonry and install waterstop material to provide a watertight joint between new masonry cap and existing manhole.

Clean and remove all materials and debris deposited or lodged in the manhole due to the contractor's operations during construction.

D Measurement
The department will measure Remove and Cap Existing Drainage Storm Sewer Structure as each individual 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.0060.8061	Remove and Cap Existing Drainage Storm Sewer Structure	Each

Payment for the Remove and Cap Existing Drainage Storm Sewer Structure is full compensation for providing all materials, including all masonry; for furnishing all excavating; for sheeting and shoring; for backfilling; for providing granular backfill material; for control of water; for temporary support and protection of existing utilities to construction; for removing sheeting and shoring; disposing of surplus material, and for cleaning out and restoring the work site. Granular backfill material required for backfilling is incidental to the work.

212. Apron Endwalls for Culvert Pipe Reinforced Concrete 78-Inch, Item SPV.0060.8062.

A Description
Furnish and install apron endwalls for reinforced concrete pipe.

B Materials
Conform to standard spec 522.2.4.

C Construction
Construct in accordance to the plans and standard spec 522.3.

D Measurement
The department will measure Apron Endwall for Culvert Pipe Reinforced Concrete 78-Inch 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.0060.8062	Apron Endwalls for Culvert Pipe Reinforced Concrete 78-Inch	Each

Payment will be as per standard spec 522.5.

213. Drilled Foundation Shaft Obstructions, Item SPV.0075.4200.

A Description

A.1 General

The work included herein consists of removing, drilling, or coring through unknown, and unidentified, man-made subsurface obstructions when encountered during construction of drilled foundation shafts.

A.2 Definitions

Surface obstructions are defined as any objects, man-made or naturally deposited, encountered within 6 feet of the ground surface. Subsurface obstructions are defined as man-made obstructions that are encountered by the drilling equipment at a depth greater than 6 feet below the ground surface. Obstructions include only man-made materials, such as old concrete foundations or abandoned utilities. Known obstructions are man-made obstructions that are shown or identified in the plans. Unknown obstructions are man-made obstructions that are not shown or identified in the plans. Naturally occurring deposits such as rock, boulders, cobbles, and nested cobbles, are not considered obstructions and therefore are not applicable to the provision of this pay item.

B (Vacant)

C Construction

Remove surface and subsurface obstructions at drilled shaft locations. Special tools and/or procedures shall be used when the contractor cannot advance the hole more than 12 inches in 60 minutes using conventional rock augers fitted with teeth, drilling buckets, or under reaming tools operating at maximum power, torque, and down thrust. Special procedures and/or tools may be required but are not limited to chisels, breakers, core barrels, air hammer tools, and hand excavation. Other methods for obstruction removal can be employed to aid in the removal if acceptable to the engineer. Blasting is not permitted.

When an unknown subsurface obstruction is encountered, notify the engineer prior to beginning any work to remove the obstruction.

D Measurement

The department will measure Drilled Foundation Shaft Obstructions by the hour for each hour the contractor actively spends removing or coring through unknown man-made subsurface obstructions. A quantity of one hour will be paid upon the determination that a subsurface obstruction is encountered based on lack of hole advancement with conventional tools as set forth in this specification. Upon removal of the unknown man-made subsurface obstruction, portions of the final hour measured will be rounded up to the next whole hour. Down time spent planning for subsurface obstruction removal or delays caused by the mobilization of special equipment and tools not readily available at the site will not be measured for payment.

Measurement Example		Paid Obstruction Hours
1	Drilling encounters possible obstruction. Contractor notifies engineer. Start clock.	0.00
2	Conventional drilling equipment does not advance 1 foot after attempting to do so for at least 60 minutes.	1.00
3	Contractor resumes work clearing obstruction the following day. Assume the obstruction is cleared in aggregate total of 1 hour and 15 minutes of time. Obstruction is identified to be a previously unknown and unidentified man-made obstruction.	2.00

Only unknown (not identified in the plans), man-made subsurface obstructions, will be measured for payment. Work to clear and remove surface obstructions, known obstructions identified on the plans, and any natural deposits (rock, boulders, cobbles, and nested cobbles) will not be measured separately for payment and shall be included in the applicable item for Drilled Foundation Shaft 34.75-Inch included in the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0075.4200	Drilled Foundation Shaft Obstructions	HRS

Payment is full compensation for removal of unknown, man-made subsurface obstructions; and for furnishing all materials, labor, equipment, additional concrete, and incidentals necessary to complete the work.

214. Obstructions, Item SPV.0075.8097; Tunnel Excavation, Item SPV.0090.8096.

A Description

This section includes the requirements for tunnel excavation of Storm Sewer pipe between W1482 to W1501 using a one-pass system, utilizing an Earth Pressure Balance Machine (EPB), an slurry shield tunnel boring machine (TBM), or slurry shield microtunnel machine (MTBM) followed by a jacked reinforced concrete pipe.

A.1 Contractor's Qualifications

The contractor hired to perform the tunneling operations shall have a successful record with similar construction for a minimum of 5 years and a minimum of five similar projects (i.e., tunnel bores in soil with an outside diameter of 10 feet or larger and a total tunnel length of more than 250 feet per project or longer) and a demonstrated ability and capacity to perform the work under this contract to the satisfaction of WisDOT.

The contractor shall provide personnel meeting the qualification requirements as stated below. WisDOT may suspend work at no additional compensation or schedule extension, if the contractor substitutes unqualified personnel for accepted personnel during construction. If work is suspended due to the substitution of unqualified personnel, the adjustment in contract time resulting from the suspension of work will not be allowed.

Superintendent: Each shift shall be supervised by at least one person with previous experience of the Work. The superintendent must have at least 5 years and 1,000 feet of experience in similar-sized projects (minimum three projects).

Operator: System operators shall be experienced personnel with prior knowledge and ability in the proper operation of the systems being employed. Operators must have at least 5 years experience and have completed at least 1,000 feet of tunnel with similar equipment on at least three projects.

Surveyor: The contractor's surveyor responsible for line-and-grade control shall be a Licensed Surveyor registered in the State of Wisconsin who has prior experience in similar projects.

Contractor shall provide evidence of OSHA certification for site safety representative and personnel responsible for air quality monitoring.

B Materials

B.1 General

The contractor is responsible to determine materials required to meet these specifications. The contractor shall select one tunnel machine from the specified machines herein.

In the event that the provisions of other specification clauses cause ambiguity or conflict with these special provisions, these special provisions shall take precedence unless otherwise accepted by WisDOT. Open-face mining methods are not acceptable and shall not be considered.

The selected tunnel machine shall include the following features, as a minimum:

a. Tunneling equipment selected for the project shall be suitable for and capable of efficiently advancing through the subsurface conditions described on the boring logs in the Geotechnical Data Report.
b. The machine shall have sufficient torque and speed for efficient operation through the anticipated ground conditions and shall be capable of being rotated clockwise and counter-clockwise to adjust for rolling effects. The machine's torque shall be high enough to provide ability to mine through zones of cobbles and boulders.

c. The machine shall have a rock crusher, or similar means, which is capable of fracturing rocks up to at least 30 percent of the excavated diameter. The cutting wheel shall include a combination of disk cutters and other types of cutters that are designed for boulder fracturing and mining capability in the anticipated soil formations. The machine shall have interchangeable cutters. The contractor shall determine the cutter types and configuration.
d. Compatibility with pipe jacking and the structural capacity of the jacked pipe support system when thrusting or reacting against it.
e. The machine shall be steerable in both the vertical and horizontal directions to allow the operator to maintain line and grade within the specified tolerances.
f. Digital guidance system with continuous display of actual tunnel alignment vs. the design alignment.
g. The machine shall be designed and constructed to withstand all loads and pressures that are likely to be encountered during tunneling operations without distress or excessive deformation. Shield, cutting wheel and other metal work in contact with moving soil or muck shall be suitably protected to minimize abrasion damage.
h. The machine shall have a uniform exterior surface from the leading edge to the trailing edge, and free of projections, except beads, that will produce over excavation or voids.
i. Total overcut around the jacked pipe, defined as the difference between the excavated diameter at the heading and the jacked pipe outside diameter shall be less than 6 inches in diameter.
j. The tail of the machine shall have a sealing system and joint cushion that prevents ground and groundwater infiltration and pipe damage when thrusting or reacting against it.
k. The machine shall include monitoring and recording equipment sufficient for documentation of thrust forces, start and stop times, rate of advance, position (heading station and pitch), line and grade deviation, cutting head torque and speed, advancement thrust, face pressure, face standup time/stability, computed muck volume, ventilation and atmosphere monitoring data and any other pertinent information for each pipe advance or initial support set.
l. A ventilation and atmosphere control system capable of reducing and/or eliminating dust, vapors, fumes, and other atmospheric impurities.
m. Equip the machine with a continuous monitoring system for noxious and explosive gases. Include audible and visual alarms at the end of the shield that will be triggered if threshold levels, as specified by OSHA, are reached at any point along the shield. The tunnel machine shall have an emergency shut-off switch or control in case noxious or explosive gasses are detected.
n. All of the various components and systems shall be new or refurbished to be like new.

B.2 Earth Pressure Balance (EPB) Machine

The EPB machine shall include the following features, as a minimum:

a. An earth pressure balance machine, shall be used for all tunneling work required for this Project. The machine shall be manufactured by a company that specializes in the design and fabrication of this type of equipment. The machine shall be capable of providing pressurized face support during both excavation and shutdown periods.
b. The machine shall be capable of exerting a controllable pressure against the face, during both excavation and shutdown periods, to support the excavation face, prevent groundwater inflows, and prevent loss of ground. Determine and submit for approval a safe range of chamber pressures at the face that are high enough to provide adequate face support and groundwater pressure resistance while low enough to prevent ground heave. The cutting wheel chamber shall be equipped with at least one operating, calibrated pressure cell with an accuracy that allows face pressure to be maintained within ±0.1 bar of the desired pressure during mining.
c. The machine shall be equipped with fire suppression capabilities in accordance to the Tunnel Safety Orders. Fire resistant hydraulic oils shall be used.

B.3 Slurry Shield Tunnel Boring Machine (TBM)

The slurry shield TBM shall include the following features, as a minimum:

a. A slurry shield TBM shall be used for all tunneling work required for this Project. The machine shall be manufactured by a company that specializes in the design and fabrication of this type of equipment. The machine shall be capable of providing pressurized face support during both excavation and shutdown periods.
b. The machine shall be capable of exerting a controllable pressure against the face, during both excavation and shutdown periods, to support the excavation face, prevent groundwater inflows, and prevent loss of ground. Determine and submit for approval a safe range of slurry pressures at the face that are high enough to provide adequate face support and groundwater pressure resistance while low enough to prevent ground heave. The cutting wheel chamber shall be equipped with at least one operating, calibrated pressure cell with an accuracy that allows face pressure to be maintained within ±0.1 bar of the desired pressure during mining.
c. The machine shall be equipped with fire suppression capabilities in accordance to the Tunnel Safety Orders. Fire resistant hydraulic oils shall be used.
d. A slurry mixture or consistency shall be used that minimizes slurry migration into the ground to allow a slurry cake to develop for ground support. Slurry line density measurements and any other suitable devices shall be used to check against excess lost ground (over mining) by computing the rate of tunnel muck removed as a percentage of the theoretical excavated soil weight for each pipe jacked.

e. Pumps and intake and discharge piping that are compatible with the tunnel drive lengths, depths, soil types and machine advance rate anticipated. The slurry return lines shall consist of abrasion resistant hoses with high pressure rating to resist the abrasive cuttings of cobbles and boulders. The intake ports size in the crushing chamber shall be adequate to allow for passing of all material sizes produced at the face. Select a proper type and size of pump impellers to take into account the anticipated large size cobble and boulder cuttings.
f. A surface separation plant equipped with screens, centrifuges, cyclones and settling tanks for efficient removal of muck (both coarse and fine-grained fractions) from the slurry at a rate compatible with the anticipated machine advance rate.

B.4 Slurry Shield Microtunnel Boring Machine (MTBM)

The slurry shield MTBM shall include the following features, as a minimum:

a. A slurry shield MTBM shall be used for all tunneling work required for this Project. The machine shall be manufactured by a company that specializes in the design and fabrication of this type of equipment. The machine shall be capable of providing pressurized face support during both excavation and shutdown periods.
b. The machine shall be capable of exerting a controllable pressure against the face, during both excavation and shutdown periods, to support the excavation face, prevent groundwater inflows, and prevent loss of ground. Determine and submit for approval a safe range of slurry pressures at the face that are high enough to provide adequate face support and groundwater pressure resistance while low enough to prevent ground heave. The cutting wheel chamber shall be equipped with at least one operating, calibrated pressure cell with an accuracy that allows face pressure to be maintained within ±0.1 bar of the desired pressure during mining.
c. A slurry mixture or consistency shall be used that minimizes slurry migration into the ground to allow a slurry cake to develop for ground support. Slurry line density measurements and any other suitable devices shall be used to check against excess lost ground (over mining) by computing the rate of tunnel muck removed as a percentage of the theoretical excavated soil weight for each pipe jacked.
d. Pumps and intake and discharge piping that are compatible with the tunnel drive lengths, depths, soil types and machine advance rate anticipated. The slurry return lines shall consist of abrasion resistant hoses with high pressure rating to resist the abrasive cuttings of cobbles and boulders. The intake ports size in the crushing chamber shall be adequate to allow for passing of all material sizes produced at the face. Select a proper type and size of pump impellers to take into account the anticipated large size cobble and boulder cuttings.
e. A surface separation plant equipped with screens, centrifuges, cyclones and settling tanks for efficient removal of muck (both coarse and fine-grained fractions) from the slurry at a rate compatible with the anticipated machine advance rate.

B.5 Lubrication System

Provide a pipe lubrication system to inject bentonite slurry and/or polymer at the tunnel machine and pipe locations and in quantities as required to minimize pipe friction and jacking forces. Monitor and control pressures to prevent injection pressures at the pipe annulus from causing ground heave or "frac-out" (hydraulic fracturing) of the ground.

Only bentonite or polymers shall be used as pipe lubricant. Oil based lubricant is prohibited.

Bentonite: Bentonite shall be high swelling montmorillonite clay or other product as approved by WisDOT.

Polymers: Polymers used as pipe lubricant or additive to bentonite shall be non-toxic.

B.6 Jacked Pipe

Pipe class and inside diameter of the jacked pipes shall be as per Plans, and shall conform to Section 522.2.2 and ASCE 27-00 - Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction. The selection of the pipe's outside diameter shall coordinate with the selected tunnel machine to maintain the total overcut around the pipe under the maximum allowed magnitude as specified herein. In case of conflict between section 608.02 and ASCE 27-00, the stringent requirement should apply.

Pipe to be jacked into place shall have minimum concrete compressive strength of 6,000 psi and have flush joints. No pipe to be jacked into place shall be delivered to the jobsite until the concrete strength has reached 6,000 psi as determined by core samples taken and tested in accordance to AASHTO T 22 or manufacturer's certificate.

Each piece of pipe shall have one lubrication/grout port with threaded fittings at the crown and one lubrication/grout port with threaded fittings at each springline for pressure grouting. Ports and fittings shall be attached to the pipe in a manner that will not materially affect the strength of the pipe. Each grout port shall have a one-way check valve and shall be 2 inch minimum diameter with plugs cast into the pipe at the time of manufacturer. Plugs for sealing the fitting shall be capable of withstanding all external and internal pressures and loads without leaking. Pipe plugs shall provide resistance to corrosion equal to the pipe, coating, and lining.

C Construction

C.1 Submittals

C.1.1 General

Prepare and submit Documentation of Contractor's Qualifications, Shop Drawings, and Tunnel Work Plan at the preconstruction meeting or at least 21 calendar days prior to beginning tunnel construction, whichever date is earlier. WisDOT will accept the submittal as submitted or return the submittal with requested revisions. Do not start any work until WisDOT provides acceptance of the Documentation of Contractor's Qualifications, Shop Drawings and Tunnel Work Plan. Acceptance of the submittals does not relieve the contractor of responsibility for successful completion of the tunnels.

C.1.2 Subsurface Conditions

The contractor shall review the subsurface conditions described on the boring logs in the Geotechnical Data Report.

C.1.3 Submittals for Approval

Documentation of Contractor's Qualifications: The contractor shall submit the project experience documentation and resumes of site engineers, superintendents, shifters, operators, and all other key personnel, meeting the qualifications delineated in the Article of Contractor's Qualifications. The project experience documentation for each project must include a brief project description, detail the size and length of the tunnels, tunneling methods used during installation, local soil conditions, actual construction time and contact information consisting of an individual's name and current phone number. Contacts must be capable of verifying project participation. The resumes must contain a summary of each individual's experience and it must be complete enough for WisDOT to determine whether each individual has satisfied the qualifications.

Shop Drawings: The contractor shall prepare and submit detailed shop drawings and pertinent descriptions, data and calculations for all items to be incorporated into the finished work. The Drawings and calculations shall show compliance to specified requirements and applicable codes and shall bear the seal, signature and date of a professional engineer registered in the State of Wisconsin. As a minimum, include the following:

a. A tunnel cross-section showing the theoretical excavation perimeter, based on the proposed tunneling equipment, and the proposed pipe inside and outside perimeters.

b. Pipe drawings which include reinforcement details, joint details, joint cushion materials, fabrication tolerances, and grout/lubrication port detail.

c. Design calculations demonstrating that the pipe is capable of sustaining the maximum stresses to be imposed during jacking in accordance to ASCE 27, Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction. The axial strength of the selected pipe shall be designed based on a factor of safety of 2.5 or more against failure under the maximum anticipated jacking force. The calculations shall take into account maximum anticipated ground loads (earth, groundwater and surcharge pressure), live loads, jacking forces, eccentric forces due to steering, external loads such as traffic, and any other loads that may be reasonably anticipated. All loads shall be shown and described. Use the maximum allowable bearing stress criteria specified in this section.

d. Calculations showing the hydraulic pressure that is required to develop the maximum allowable jacking capacity for main jacks and intermediate jacking stations. A description of controls to ensure that the maximum allowable hydraulic pressure will not be exceeded during jacking operations. Calculations demonstrating that the soils behind the backstop (or thrust wall) will sustain the maximum forces developed by the main jacks.

e. Calculations showing anticipated face pressure and side resistance for the tunnel machine and pipe string. Calculations demonstrating the quantities of intermediate jacking stations per tunnel drive.
f. Details of intermediate jacking station and connection between the intermediate jacking station and the pipe.
g. Details of main jacking station.

Tunnel Work Plan: Prior to the start of work, the contractor shall submit a detailed work plan to WisDOT. The work plan shall include descriptions indicating the proposed locations of shafts, facilities, and equipment to be utilized and describing the methods of construction. Items shall include, but are not limited to:

a. Tunneling Equipment:
   i. A detailed description of the methods and equipment to be used in completing the tunnel drive. Include a description of how the proposed equipment and operations will prevent loss of ground and surface heave during operations. This description should include procedures to handle face stability and groundwater inflow and should also include a plan for inspection of the ground conditions and removal of obstructions. Clearly state the maximum size of boulder or rock fragment that can be excavated and removed by the proposed tunnel machine and for the procedure and equipment to be used to fracture-split and excavate of any boulders or rock blocks encountered. The plan should provide details of proposed methods and procedures for excavating the tunnels, hauling and disposing of muck, ventilation, and illumination.
   ii. Submit manufacturer's literature describing the tunneling system including the tunneling and all ancillary equipment. Provide model number, shield and machine controls, shield dimensions and cut diameter, specifications, and operating procedures. Provide descriptions of projects on which this system has been successfully used including names, addresses, and telephone numbers of owner's representatives for these projects as well as length, diameter, and pipe material used and the encountered ground condition. If a used or refurbished tunnel machine is proposed, list previous usage, modifications made and dates of modifications, and detailed description of the extent and dates of refurbishment.
   iii. Shop drawings showing propulsion system, safety systems, steering provisions, provisions for ground improvement, arrangement of the cutting tools, muck removal system and trailing components including muck conveyors. Include a description of how the breasting system functions and the methods to be used to maintain face pressure. Also include description of procedures for ensuring the support of the tunnel face if tunneling operations are interrupted.
   iv. Hoisting plant (crane) for placement of tunnel, jacking equipment and pipe, and for muck removal.

v. Submit samples of automated tunneling records to be provided during tunneling. Samples shall include electronic data and any necessary programs to interpret data, and the manual logs or records to be used.
vi. Maintenance procedures and a list of spare parts to be maintained onsite.
vii. Description of procedures for tunnel machine demobilization and removal from the tunnel.
viii. A description of the alignment control systems including manufacturer's literature and drawings showing setup, support provisions, and other details for the laser guidance system. Submit a description of surveying methods to be used to set laser guidance system positions and a description of procedures to check and reset or realign guidance system during construction. Confirm that these systems can achieve the required pipeline line and grade within the specified tolerances.
ix. Details of spoil handling, transport, and disposal equipment and procedures including details of spoil additives, and the location of permanent spoil disposal sites. Confirm that spoils shall be contained at all times and shall not be stockpiled or dumped on site. Provide manufacturers description for any spoil additives and Material Safety Data Sheets (MSDS's). Provide written documentation from the disposal site(s) indicating that they will accept the spoil and are in compliance with applicable regulations.

b. Tunneling sequence plan.
c. Bulkhead placement and removal.
d. Details lubrication system and description of pipe lubricants to be used during pipe jacking.
e. Shaft Layout Drawings: The contractor shall submit shaft layout drawings detailing dimensions and locations of all equipment, including overall work area boundaries. Layout drawings will be required for tunnel launch and retrieval locations and shall be to scale, or show correct dimensions. The contractor's layout drawings shall show that all equipment and operations shall be completely contained within the allowable work areas shown on the drawings.
f. Safety Plan: The contractor shall prepare a Safety Plan for the tunneling operations. Plan shall be project-specific in nature and shall include air monitoring equipment and procedures, and provisions for lighting, ventilation, and electrical system safeguards. Plan shall include incident response and tunnel/shaft rescue plan; hazard recognition; site safety analysis; tunnel and shaft access; flooding controls; and fire and explosion prevention. Plan shall also address ground support, communication, handling of materials and equipment, pressurized fluids and noise.
g. Contingency Plans: The following list includes problem scenarios that may be encountered during the tunneling operations. The contractor shall submit contingency plans for dealing with each problem scenario while satisfying the Specifications. These plans shall include the observations and measurements required to clearly identify the cause of the problems.

i. Tunnel machine unable to advance: Possible obstructions (including boulders, rock blocks, old foundations, metallic debris, or reinforced concrete).
ii. Cutter head or face support problems.
iii. Loss of cutter tools during tunnel drive.
iv. Strong hydrocarbon smell is detected in the spoils or in the shaft.
v. Laser distorted by heat, humidity, or physical disturbance.
vi. Ground heave, settlement and subsidence.
vii. Steering difficulties result in line and grade tolerances being exceeded.
viii. Control is lost. Cannot monitor position, thrust, or other performance parameters.
ix. Large volumes of water are encountered threatening face stability.

C.1.4 Information Submittals

Prior to Each Tunnel Drive: Submit the results and field notes of line and grade survey to WisDOT at least 24 hours prior to the start of each drive to ensure that the thrust block, jacking frame, guide rails, entry and exit eyes are installed properly.

Tunnel Daily Records: Submit the following daily records to WisDOT by noon on the day following the shift for which the data or records were taken.

a. Tunneling Records: The contractor shall provide complete tunneling records to WisDOT. These records shall include, at a minimum: date, time, name of operator, tunnel drive identification, installed ground support element number and corresponding tunnel length, rate of advance, jacking forces, excavated muck rates and volumes, total muck volume to date, changed face conditions encountered, lubrications, steering jack positions, line and grade offsets, any movement of the guidance system, shield inclination and roll, problems encountered with the tunnel machine or other components or equipment, and durations and reasons for delays. Computer-recorded data if used should be referenced to time and distance and should be recorded at time intervals of 1 minute. Manually recorded observations should be made at intervals of not less than once per ground support element, as conditions change, and as directed by WisDOT.
b. Survey Measurements: Survey measurements of tunnel alignment and all surface and subsurface settlement monitoring points.

C.1.5 Acceptance

The department will evaluate the Submittals for Approval with the requirements of these special provisions. Within 14 calendar days after receipt of the Submittals of Approval, WisDOT will notify the contractor of the acceptance of the submittal, or if additional information and/or changes are required. Any unacceptable part of the Submittals of Approval will require resubmission. The contractor must resubmit the Submittals of Approval for evaluation and review with the necessary changes or additional information provided. WisDOT will provide a written notice of acceptance or rejection of contractor's resubmitted Submittal for Approval within 14 calendar days after its receipt.

After WisDOT's acceptance of Submittal of Approval, no changes to the Submittal of Approval can be made without written consent of WisDOT.

All Information Submittals should be submitted to WisDOT. WisDOT can reject the submittals which do not adequate detail, as required herein. The contractor shall resubmit the rejected submittals within 7 days upon the receipt of WisDOT's rejection notice.

C.2 Tunnel Excavation

Construct pipeline by one-pass tunneling methods that provide jacked reinforced concrete pipe, or other type of lining as permitted by WisDOT, subject to the restrictions on methods stated elsewhere in this Special Provision. The acceptable tunneling method shall be tunnel excavation by an EPB machine, a slurry shield TBM, or a slurry shield MTBM. Blasting is not permitted anywhere on the Project.

The contractor shall complete tunnel excavation by the tunnel machine in accordance to approved Submittals and all applicable permit conditions, and provide all temporary electrical, water, telephone, and other facilities required to complete the tunnel. Detailed construction sequencing shall be the responsibility of contractor, consistent with the requirements of this Special Provision.

The contractor's selection of means and methods for excavation is integral to the planning and execution of the work of the project as specified. The selection of means and methods is the responsibility of the contractor and the selected means and methods shall be capable of coping with subsurface conditions encountered. Excavation shall include removal of excavated material to the ground surface. Loading, conveying, dumping, and disposal of excavated materials from the shafts and tunnel off the construction site shall be as specified herein.

Tunnel excavation by the tunnel machine shall not begin until the following tasks have been completed:

a. All required submittals have been provided, reviewed, and approved.
b. Shaft excavation, stabilization and shoring have been satisfactorily completed in accordance to Special Provision, Shaft Excavation Support System.
c. Groundwater control has been implemented as per Special Provision, Control of Water.
d. Survey control has been established for the tunnel.
e. All required geotechnical instrumentation had been properly installed and baseline readings taken, as per Special Provision Geotechnical Instrumentation.
f. A startup inspection of all mechanical and hydraulic systems associated with the tunneling operations has been completed. The system shall be tested on the surface to ensure that the machine and supporting equipment is functioning properly. WisDOT will be notified at least 72 hours prior to the start-up inspection and will be present during the start-up inspection. Key machine performance data will be measured and recorded by the contractor during this inspection, including face support components, functionality of main and steering jacks, laser and target, and other components. The records of the start-

up inspection will be submitted to WisDOT within 24 hours of the completed inspection.

g. Site safety representative has prepared a code of safe practices and an emergency plan in accordance to OSHA and other applicable requirements. Provide WisDOT with a copy of each prior to starting tunneling. Hold safety meetings and provide safety instruction for new employees as required by OSHA. Conduct a preconstruction safety conference in accordance to OSHA requirements. Arrange this conference and inform WisDOT of the time and place of the conference at least 7 days in advance.

Perform tunnel excavation in a manner that will minimize the movement of the ground in front of and surrounding the excavation, and minimize subsidence of the surface, structures, and utilities above and in the vicinity of the excavation. Support the ground in a manner to prevent loss of ground and keep the perimeters and faces of the tunnel, passages, and bottoms of work shafts stable. Support the face of the excavation by during all shut down periods.

Excavation shall be to the lines, grades, and dimensions shown on the Plans and Shop Drawings. Excavation shall not extend beyond the theoretical excavation line shown on the Shop Drawings. Methods shall be used and precautions shall be taken to minimize removal of loosening, and raveling of material beyond the minimum excavation necessary to satisfy all criteria. The contractor shall provide means to accurately measure the quantity of ground removed from the tunnel. After each tunnel drive, fill the annular space outside the pipe with grout as per Special Provision, Contact Grouting.

Do not advance the tunnel machine at any time when the tunnel guidance system is out of order. Validate line and grade continually with survey control by the qualified surveyor. Line and grade shall be validated at the frequency no less than once per installation of each pipe segment. Do not exceed tunnel horizontal and vertical tolerances of plus-or-minus 3 inches. When a variation from specified line or grade occurs, immediately take action to return the excavation within the specified design line and grade.

Completely contain, transport, and dispose of all excavated materials and additives away from the construction site. Space for stockpiling is limited and may not be available at the work site. All spoils must be contained in trucks, tanks, or other containers at all times. Dumping of spoil on the ground, discharge into sewers or ditches, or discharge into the shafts is not permitted. Only use the disposal sites identified in approved submittals for muck and spoil disposal.

Spare parts, should be available for delivery to the site within 5 days in the event that replacement is necessary.

When the boulders cannot be split or broken boulders into smaller size rock fragments by the cutterhead that may pass through muck handling system, the contractor shall be prepared to provide other methods of removing the boulders.

At the end of each tunnel drive, the contractor shall examine the wear-and-tear condition of each cutting tools equipped on the cutterhead. The contractor shall promptly change the damage and severely worn cutter tool at the end of each tunnel drive to prevent changing cutter tools during the tunnel drive.

C.3 Pipe Jacking

The contractor shall follow the direction of Pipe Jacking from W1482 to W1501. The contractor shall minimize loss of lubricant, or soil into the shaft at the pipe penetration.

Set the pipe to be jacked on properly braced and supported pipe guide rails. The axial forces from the thrust jacks shall be distributed to the pipe uniformly through cushion material to prevent damage to the ends of the pipe. Control the advance rate and the volume of material excavated to avoid over-excavation and heave.

Total jacking capacity, provided by the main jack and intermediate jacking station(s), if used, shall have a minimum factor of safety of 1.5 against the jacking force. Control jacking pressures so as not to exceed to the maximum allowable jacking capacity and the maximum jacking pressure of pipe.

Each pipe section shall be jacked as the excavation progresses in such a way that leaves no length of tunnel exposed at any time. Use anti-reverse thrust restraints to prevent pipe movement into launching shaft when jacking retracted for placement of a new pipe.

Pipes shall be jacked into place without damaging the pipe. In the event a section of pipe is damaged during the jacking operation, the pipe shall be jacked through to the receiving shaft and removed. Other methods of repairing the damaged pipe may be used, subject to approval by WisDOT.

The thrust block at the launching shaft shall be properly designed and constructed to provide a minimum factor of safety of 1.5 against the maximum possible thrust by the main jacks. The thrust block shall be aligned with the proposed pipe alignment and shall be designed to withstand the maximum allowable jacking pressure to be used, without excessive deflection or displacement.

C.4 Lubrication

Apply lubrication to the external surface of the pipe to reduce skin friction and the annular space created by the overcut shall be filled with a lubricant suitable for the particular soil conditions to be tunneled.

Provide a lubrication system to inject an approved lubricant at the rear of the tunnel machine and as required along the pipe length to lower the friction developed on the sides of the pipe during jacking. The lubrication system shall be such that it can automatically be controlled from the operator’s cabin and controlled volumes of lubricant can be injected by the operator at selected locations along the tunnel. Such volumes of lubricant pumped, including the location of injection, shall also be automatically recorded.

Monitor at all times both the volumes, pressures, and location of grout/lubrication injection points to ensure that the annulus around the pipe is completely filled with approved lubricant.

C.5 Obstructions
Obstructions are defined as per the specified conditions described on the borings logs in the Geotechnical Data Report.

Should the tunneling operations encounter a condition that impedes the forward progress of the tunnel machine, the contractor shall notify WisDOT immediately in writing. The contractor shall remove, treat, clear or otherwise make it possible for the tunnel machine and jacked pipes to advance past any and all obstructions that impede forward progress of the machine. The contractor shall immediately proceed with removal of the obstruction by the approved Contingency Plan.

If the contractor has exhausted all means of clearing the obstruction, as delineated in the Contingency Plan, the contractor shall submit a correction plan to correct the condition. Upon the written notification of WisDOT, the contractor shall immediately proceed with the obstruction by the approved correction plan.

C.6 Air Quality
Perform all shaft and tunnel excavation operations by methods and with equipment which will reduce or eliminate any dust, fumes, vapors, gases, fibers, fogs, mists or other atmospheric impurities. Conform to regulations promulgated by OSHA and other regulatory authorities regarding air quality and ventilation in excavations. Provide appropriate instruments for testing the quality of the tunnel atmosphere and take samples under working conditions, all in accordance to OSHA, District of Columbia, or other jurisdictional requirements.

Continuous gas monitoring shall be conducted at all times personnel are underground.
Air testing shall be required for the specific conditions to ensure the gas concentration requirements as per OSHA 29 CFR 1926.55 are met.

C.7 Tunnel Ventilations
As a minimum, when the excavations are occupied by workmen, the main ventilation system should deliver fresh air to the face at a volumetric flow rate equal to 60 feet per minute times the full area of the excavated face. A higher volumetric flow rate should be provided if necessary to conform to OSHA requirements. Operate the tunnel main ventilation system 24 hours per day, 7 days per week, continuously, until hole-through. During extended periods of inactivity when excavations are unoccupied, such as over weekends or holidays, the volumetric flow rate may be reduced to the OSHA minimums.

C.8 Tunnel and Shaft Illumination
Light in all areas where work is in progress shall be adequate to permit proper observation of operations by the contractor and WisDOT at all times. Lighting intensity shall be as required by applicable regulations for tunnel and shaft construction operations.

Lighting intensity shall be increased as required by the WisDOT for concrete placement and inspection and for final cleanup.

Open flame lights shall not be used. Flashlights shall be explosion-proof. Both power and lighting circuits shall be separated and thoroughly insulated. The voltage shall not exceed 115 volts. All lights shall be placed in porcelain light fixtures in vapor tight enclosures and metal guards. Lighting installation shall conform to National Electric Code NFPA 70.

Maintain underground illumination in place throughout the life of the Contract including the substantial completion inspection or until permission to remove illumination is received in writing from WisDOT.

C.9 Emergency Measures

Whenever there is a condition which is likely to endanger the stability of the excavation or adjacent structures, the contractor shall operate with a full crew for 24 hours a day including weekends and holidays without intermission until those conditions no longer jeopardize the stability of the work and adjacent facilities.

Emergency electric power supply shall be provided by the contractor and shall be independent of the primary electric supply. The emergency power system shall be capable of powering the excavation lighting, ventilation and water control systems and, if used, the low pressure compressed air system.

C.10 Cleanup

After completion of tunneling and pipeline installation, all construction debris, spoils, oil, grease, and other materials will be removed from the tunneled pipe, launch and retrieval shafts, and all contractor work areas. Cleaning shall be incidental to the construction. No separate payment shall be made for cleanup.

D Measurement

The department will measure Tunnel Excavation by the linear foot, acceptably completed. The number of linear feet of Tunnel Excavation will be based on the plan quantity (length) without measurement. Longer pipe and additional excavation beyond the limits of the plan dimensions will not be measured for payment unless authorized and agreed to in advance of placement by WisDOT.

The department will measure Obstructions per hourly basis, acceptably completed.

E Payment

The department will pay for plan quantities or revised plan quantities if agreed to in advance of placement by WisDOT, at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0075.8097	Obstructions	HOUR
SPV.0090.8096	Tunnel Excavation	LF

Payment for Tunnel Excavation is full compensation for completing tunnel work, including, but not limited to, tunneling, boulder removal (smaller than the defined obstruction size), pipe installation, lubrication, contact grouting, documentation, all materials, labors, equipments, tools, handling, transporting, disposing spoils, equipment mobilization/demobilization, and all other necessary incidental items as specified in this Special Provision.

Payment for Obstructions is full compensation for the specified conditions described on the borings logs in the Geotechnical Data Report.

215. Seeding Mixture Native Seed Butterfly Mix, Item SPV.0085.0010.

A Description

This special provision describes preparing seed beds and furnishing and sowing the required seed on slopes, appurtenances, and other areas, and on borrow pits and material disposal sites as shown on the plans.

B Materials

This work shall be in accordance to the pertinent provisions of standard spec 630.2 and as hereinafter provided.

Amend table of Native Seed Mixtures in standard spec 630.2.1.5.1.1.1 with the following:

Seeding Mixture Native Seed Butterfly Mix

Common Name	Botanical Name	Mixture %
Forbs		
Butterfly Weed	*Asclepias tuberosa*	7
Common Milkweed	*Asclepias syriaca*	10
New England Aster	*Aster novae-angliae*	2
Rough Blazingstar	*Liatris aspera*	2
Showy Goldenrod	*Solidago speciosa*	2
Wild White Indigo *	*Baptisia leucantha*	2
Pale Purple Coneflower	*Echinacea pallida*	2
Common Boneset	*Eupatorium perfolium*	2
Showy Tick Trefoil *	*Desmodium Canadense*	3
Purple Prairie Clover *	*Dalea purpurea*	3
	total	35%
Grasses		
Sideoats Gramma	*Bouteloua curtipendula*	16
Canada Wildrye	*Elymus Canadensis*	16
Little Bluestem	*Schizachyrium scoparium*	16
Indiangrass	*Sorgatrum nutans*	17
	total	65%

*Legumes

Amend standard spec 630.2.1.5.1.3 with the following:

If seeding bare soil with Seeding Mixture Native Seed Butterfly Mix plant a seeding nurse crop as specified in standard spec 630.2.1.5.1.4.

C Construction

This work shall be in accordance to the pertinent provisions of standard spec 630.3, as shown on the plans, and as hereinafter provided.

Amend standard spec 630.3.3.5.1 with the following:

Seed Mixture Native Seed Butterfly Mix at 0.4 pounds

Amend standard spec 630.3.3.6 (1) with the following:

During the first two growing seasons after plating Seeding Mixture Native Seed Butterfly Mix, mow as the engineer directs.

(2) During the first two growing season after planting Seeding Mixture Native Seed Butterfly Mix, eradiate the following species:

Phagmites or Common Reed	Phragmites australis

(3) Inspect the site to determine if any existing unwanted species are present and mark the areas of plant eradication. Areas marked by the contractor will be inspected by the department. Make adjustments as directed by the engineer. Eradicate the invasive species within all areas defined by the engineer.

Seeded areas shall be kept free of unwanted species until the nurse crop has germinated and reached a minimum height of 4 inches.

D Measurement

The department will measure Seeding Mixture Native Seed Butterfly Mix by the pound, acceptably completed. The department will measure quantities based on net weights of seed shipments, or on quantities weighed on department-approved scales the contractor furnishes. The department will make deductions for all quantities wasted or not actually incorporated in the work according to the contract. The department will determine the equivalent pounds of seed furnished and applied by dividing the actual pounds of seed applied by the sum of the unadjusted and adjusted percentages of the various species in the seed mixture sown. The department will use the unadjusted and adjusted percentages determined in standard spec 630.3.3.5.1.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0085.0010	Seeding Mixture Native Seed Butterfly Mix	LB

Payment is full compensation for providing, handling, and storing all seed; for providing the required culture and inoculating seed as specified; and for preparing the seed bed, sowing, covering and firming the seed.

216. Bar Steel Reinforcement HS Stainless Bridges, Item SPV.0085.4300.

A Description

This work consists of furnishing and placing stainless steel reinforcing bars as shown in the plans and as hereinafter provided.

B Materials

B.1 General

Conform to standard spec 505.2 except as modified in this special provision.

B.2 Grade and Type

The material shall conform to ASTM A 955 and to one of the following Unified Numbering System (UNS) designations: S31653, S31803, S32205, or S32304.

Supply Grade 60 bars, all of the same UNS designation.

B.3 Evaluation of Corrosion Resistance

Prior to fabrication, supply test results from an independent testing agency certifying that stainless steel reinforcement from the selected UNS designation meets the requirements of Annex A1 of ASTM A955. Corrosion performance for the selected UNS designation shall be redemonstrated if the processing method is significantly altered. Removal of mill scale or pickling processes used for stainless steel reinforcement supplied under this contract shall be the same as those used to prepare the samples tested per Annex A1 of ASTM A955.

B.4 Chemical Composition

Material shall conform to that specified in ASTM A276, Table 1, Chemical Requirements, for the given UNS designation.

B.5 Heat Treatment

Bars may be furnished in one of the heat treatment conditions listed in ASTM A955, and as needed to meet the requirements of this specification.

B.6 Finish

Supply bars that are free of dirt, mill scale, oil and debris by pickling to a bright or uniform light finish. Bars supplied with a tarnished or mottled finish are sufficient cause for rejection. Fabricate and bend bars using equipment that has been thoroughly cleaned or otherwise modified to prohibit contamination of the stainless steel from fragments of carbon steel or other contaminants.

Bars displaying rust/oxidation, questionable blemishes, or lack of a bright or uniform pickled surface are subject to rejection.

B.7 Bending and Cutting

Bend bars in accordance to standard spec 505.3.2 and ASTM A955. Use fabrication equipment and tools that will not contaminate the stainless steel with black iron particles. To prevent such contamination, equipment and tools used for fabrication, including bending and cutting, shall be solely used for working with stainless steel. Do not use carbon steel tools, chains, slings, etc. when fabricating or handling stainless steel reinforcing bars.

B.8 Control of Material

All reinforcement bars or bar bundles delivered to the project site shall be clearly identified with tags bearing the identification symbols used in the Plans. The tags shall also include the UNS designation, heat treat condition, heat number, grade (corresponding to minimum yield strength level), and sufficient identification to track each bar bundle to the appropriate Mill Test Report.

Provide samples for department testing and acceptance in accordance to the CMM requirements for Concrete Masonry Reinforcement – Bar Steel (Uncoated).

Provide Mill Test Reports (MTR) for the project that:

1. Are from the supplying mill verifying that the stainless reinforcement provided has been sampled and tested and the test results meet ASTM A 955, ASTM A 276, Table 1 and the Contract requirements;

2. Include a copy of the chemical analysis of the steel provided, with the UNS designation, the heat lot identification, and the source of the metal if obtained as ingots from another mill;

3. Include a copy of tensile strength, yield strength and elongation tests per ASTM A955 on each of the sizes of stainless steel reinforcement provided;

4. Permit positive determination that the reinforcement provided is that which the test results cover;

5. Include a statement certifying that the materials meet standard spec 106 regarding material being melted and manufactured in the United States; and

6. Certify that the bars have been pickled to a bright or uniform light finish.

C Construction

C.1 General

Conform to the construction methods in standard spec 505.3 except as modified in this special provision:

Ship, handle, store, and place the stainless steel reinforcing bars according to the applicable provisions with the following additions and exceptions:

1. Prior to shipping, ensure that all chains and steel bands will not come into direct contact with the stainless steel reinforcing bars. Place wood or other soft materials (i.e., thick cardboard) under the tie-downs. Alternatively, use nylon or polypropylene straps to secure the stainless steel reinforcing bars.

2. When bundles of reinforcing steel and stainless steel reinforcing bars must be shipped one on top of the other, load the stainless steel reinforcing bars on top. Use wooden spacers to separate the two materials. Space supports sufficiently close to prevent sags in the bundles.

3. Outside storage of stainless steel reinforcing bars is acceptable. Cover the stainless steel reinforcing bars with tarpaulins.

4. Store stainless steel reinforcing bars off the ground or shop floor on wooden supports and separately from carbon steel reinforcement. Space supports sufficiently close to prevent sags in the bundles.

5. Do not use carbon steel tools, chains, slings, etc. when fabricating or handling stainless steel reinforcing bars. Only use nylon or polypropylene slings. Protect from contamination during construction operations including any cutting, grinding, or welding above or in the vicinity of the stainless steel bars. Flame cutting or welding of stainless steel reinforcing bars is prohibited.

6. Place all stainless steel reinforcing bars on bar chairs that are solid plastic or stainless steel. Fabricate stainless steel metal chairs and continuous metal stainless steel supports from stainless steel conforming to the same requirements and UNS designations as stainless steel reinforcing bar as listed in Section B, “Materials”. Use stainless steel chairs with plastic-coated feet above steel beams.

7. Use stainless steel tie wires to tie stainless steel reinforcing bars. Tie wires shall conform to the same requirements and UNS designations as stainless steel reinforcing bars as listed in Section B, “Materials”, dead soft annealed, annealed at size. The tie wire does not need to be of the same UNS designation as the bar reinforcement.

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Do not tie stainless steel reinforcing bars to, or allow contact with uncoated reinforcing bars, galvanized forming hardware or attachments, or galvanized conduits. Direct contact with these materials is not acceptable. When stainless steel reinforcing bars or dowels must be near uncoated steel reinforcing bars, galvanized forming hardware, or other galvanized metals, maintain a minimum 1-inch clearance between the two metals. Where insufficient space exists to maintain this minimum, sleeve the bars with a continuous 1/8-inch minimum thickness polyethylene or nylon tube extending at least 1 inch in each direction past the point of closest contact between the two dissimilar bars and bind them

with nylon or polypropylene cable ties. Sleeves are not required between stainless steel reinforcing bars and welded girder shear studs. Stainless steel reinforcing bars are allowed to be in direct contact with undamaged epoxy-coated reinforcing bars.

Uncoated fasteners (such as used for static safety lines on beams), anchors, lifting loops, etc., that extend from the top flange of prestressed concrete beams into the bridge deck shall be completely removed or cut off flush with the top flange of the beam prior to casting the deck.

C.2 Splices

Splices shall be as shown in the plans. Substitution of stainless steel mechanical splices in lieu of lap slices shown on the plans may be permitted in certain situations subject to written approval by the engineer. Provide mechanical splices for stainless steel reinforcing bars made of stainless steel conforming to one of the UNS designations listed in section B, "Materials" and meeting the minimum capacity, certification, proof testing and written approval requirements of standard spec 550.3.3.4.

If it is necessary or the contractor elects to increase or alter the number or type of bar splices from those indicated in the plans, provide copies of plan sheets to the engineer showing the revised reinforcement layout, type, length and location of revised bar splices and revised bar lengths. The engineer must approve the location of new lap splices or substitution of mechanical bar couplers in lieu of bar lap splices prior to fabrication. New lap splices must be at least as long as those shown in the plans.

D Measurement

The department will measure Bar Steel Reinforcement HS Stainless Bridges by the pound acceptably completed. The department will compute the stainless steel bar weight using the standard weight per foot of equivalent size carbon steel reinforcing bars (ASTM A615) regardless of which stainless steel alloy is provided.

If the contractor is permitted to alter the reinforcement layout per C.2, no adjustment to the reinforcement bar quantity will be made for such alterations. Mechanical bar couplers that are provided but not shown in the plans are included in the item Bar Steel Reinforcement HS Stainless Bridges and will not be measured separately.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0085.4300	Bar Steel Reinforcement HS Stainless Bridges	LB

Payment is full compensation for providing, transporting and placing the stainless steel reinforcing bars with all component materials as described above.

If the contractor is permitted to alter the reinforcement layout per C.2, no additional compensation will be made for such alterations. Mechanical bar couplers that are provided, but not shown in the plans are included in the item Bar Steel Reinforcement HS Stainless Bridges and will not be paid for separately.

217. Pavement Marking Grooved Preformed Thermoplastic Zebra Marking 24-Inch, Item SPV.0090.0009; Stop Line 18-Inch, Item SPV.0090.0010; Crosswalk 6-Inch, Item SPV.0090.0011.

A Description

This special provision describes grooving the pavement surface, and furnishing and installing preformed thermoplastic pavement marking as shown on the plans, in accordance to standard spec 647 of the standards specifications, and as hereinafter provided.

B Materials

Furnish preformed thermoplastic pavement marking and sealant material, if required, from the department's approved products list.

C Construction

C.1 General

For quality assurance, provide the engineer and the region's Marking Section evidence of manufacturer training in the proper placement and installation of preformed thermoplastic pavement marking.

Plane the grooved lines in accordance to the plan details. Use grooving equipment with a free-floating, independent cutting or grinding head. Plane a minimum number of passes to create a smooth groove.

C.2 Groove Depth

Cut the groove to a depth of 120 mils ±10 mils deeper than the thermoplastic thickness, from the pavement surface or, if tined, from the high point of the tined surface. Measure depth using a straightedge placed perpendicular to the groove. The department may periodically check groove depths.

C.3 Groove Width – Linear Markings

Cut the groove 1-inch wider than the width of the thermoplastic.

C.4 Groove Position

Position the groove edge in accordance to the plan details.

C.4.1 Linear Marking

Groove at a minimum of 4-inches, but not greater than, 12-inches from both ends of the line segment. Achieve straight alignment with the grooving equipment.

C.4.2 Special Marking
Groove a box around the special marking up to 4 inches from the perimeter of the special marking.

C.5 Groove Cleaning
C.5.1 Concrete
Cooling the cutting head with water may be necessary for some applications and equipment. If cooling water is necessary, flush the groove immediately with water after cutting to remove any build-up of cement dust and water slurry. If this is not done, the slurry may harden in the groove.

If water is used in the grooving process, allow the groove to dry a minimum of 24 hours after groove cleaning, after removal of excess water, and prior to pavement marking application. Clean and dry the groove for proper application of the sealant, and placement of the pavement marking. Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove; use of the air blower does not decrease the amount of time required for the groove to dry.

C.5.2 New Asphalt
Groove pavement 10 or more days after paving. Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.5.3 Existing Asphalt
Check for structural integrity in supporting grooving operations. If the structural integrity of the asphalt pavement is inadequate to support grooving operations, immediately notify the engineer.

C.5.4 Asphalt
Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.6 Preformed Thermoplastic Application
Preheat the surface if necessary based on manufacturer's recommendation.

Application of the preformed thermoplastic in the groove without sealant will be as follows:

- May 1 to September 30, both dates inclusive – the Southeast Region and the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.
- June 1 to August 31 – the Southwest Region, and the Northeast, North Central, and Northwest Regions except for the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.

Application of the preformed thermoplastic in the groove with sealant materials will be as follows:

- October 1 to April 30, both dates inclusive – the Southeast Region and the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.
- September 1 to May 31, both dates inclusive – the Southwest Region and the Northeast, North Central, and Northwest Regions, except for the ozone non-attainment or maintenance Northeast Region counties of Sheboygan, Manitowoc, Kewaunee, and Door.

The sealant must be wet.

D Measurement

The department will not measure Pavement Marking Grooved Preformed Thermoplastic (Type). The department will use pay plan quantity according to the Pay Plan Quantity article.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0009	Pavement Marking Grooved Preformed Thermoplastic Zebra Marking 24-Inch	LF
SPV.0090.0010	Pavement Marking Grooved Preformed Thermoplastic Stop Line 18-Inch	LF
SPV.0090.0011	Pavement Marking Grooved Preformed Thermoplastic Crosswalk 6-Inch	LF

Payment is full compensation for cleaning and preparing the pavement surface, furnishing and installing the material; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

218. Concrete Barrier Temporary Precast Left In Place, Item SPV.0090.0012.

A Description

This special provision describes leaving in place temporary precast reinforced concrete barrier conforming to the shape, dimensions, and details the plans show and in accordance to the pertinent provisions of standard spec 603, these special provisions, and as hereinafter provided.

Concrete Barrier Temporary Precast Contractor Left In Place becomes property of the department after final acceptance by the engineer.

B (Vacant)

C (Vacant)

D Measurement
The department will measure Concrete Barrier Temporary Precast Left in Place by the linear foot acceptably completed, measured along the base of the barrier after final installation in its left-in-place location.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0012	Concrete Barrier Temporary Precast Left in Place	LF

Payment is full compensation for leaving Concrete Barrier Temporary Precast and transitions between temporary and permanent barriers on the project site; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

Initial delivery, subsequent deliveries, installations and anchoring will be paid for separately under the bid items provided for in the contract.

219. Concrete Barrier Type S42 Special, Item SPV.0090.0013.

A Description
Construct Concrete Barrier Type S42 Special in accordance to standard spec 603, details shown in the plans and as hereinafter provided.

B Materials
Furnish materials conforming to standard spec 603.2.

C Construction
Use construction methods conforming to standard spec 603.3.

D Measurement
The department will not measure Concrete Barrier Type S42 Special. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0013	Concrete Barrier Type S42 Special	LF

Payment will be made in accordance to standard spec 603.5. In addition, payment includes all joints as shown in the plans.

220. Concrete Curb and Gutter 6-Inch Sloped 60-Inch Type A, Item SPV.0090.0014; Concrete Curb and Gutter 55-Inch, Item SPV.0090.0016.

A Description

Perform this work in accordance to the pertinent requirements of standard spec 601 and conform to the construction detail shown in the plans.

B Materials

Use materials as described in the construction detail shown in the plans and as described in standard spec 601.2.

C Construction

Perform work in accordance to standard spec 601.3.

D Measurement

The department will not measure Concrete Curb and Gutter 6-Inch Sloped 60-Inch Type A, and Concrete Curb and Gutter 55-Inch. The department will use pay plan quantity according to the Pay Plan Quantity article.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0014	Concrete Curb and Gutter 6-Inch Sloped 60-Inch Type A	LF
SPV.0090.0016	Concrete Curb and Gutter 55-Inch	LF

Payment is full compensation for preparing the foundation; all special construction required at driveway entrances or curb ramps; for providing all materials, including concrete, and expansion joints; for placing, finishing, protecting, and curing concrete, and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

221. Fence Screening, Item SPV.0090.0015.

A Description

This special provision describes furnishing and erecting Fence Screening as shown on the plans in accordance to the construction details.

B Materials

Furnish Fence Screening materials that are in accordance to the pertinent requirements of standard spec 616.

C Construction

Perform work in accordance to standard spec 616.

D Measurement
The department will measure Fence Screening 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.0090.0015	Fence Screening	LF

Payment is full compensation for furnishing all materials, including concrete; for setting posts including placing concrete; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work in accordance to the contract.

222. Glare Screens Temporary, Item SPV.0090.0017.

A Description
The work under this item shall include furnishing, installing, maintaining, and removing a modular paddle glare guard system on concrete barrier temporary precast at the indicated locations in accordance to the plans and standard specifications, as directed by the engineer and as hereinafter provided.

B Materials
Glare guard units shall be modular units consisting of vertical blades, bases, and a horizontal base rail. The paddle devices shall be a minimum of 24-inches in height and be constructed of durable, impact resistant, non-warping flexible materials.

Units shall be modular in design to provide for portability, quick repair and easy installation. The cumulative nominal length of the modular units shall equal the length of the temporary barrier on which they are installed so that the joint between the barrier sections shall not be spanned by any one unit. Units shall not alter the design of the concrete barrier.

The relative connection strengths between various components of the assembly shall be designed to minimize the potential impact and debris hazard to approaching traffic and to simplify repairs. The modular units shall be fabricated in a manner to allow replacement of individual blades while the modular unit remains in place.

The blade, base and rail shall be made of high impact materials with sufficient strength to withstand three impacts from a horizontal steel bar traveling at 40 mph and impacting at mid-height of the blade. After three impacts, there shall be no evidence of cracking, splitting, delaminating or separation from the system.

The paddle glare guard provided shall be a material manufactured by Safe-Hit Corporation, 2405 IH 35 West, New Braunfels, Texas, 78130; Carsonite International, 2900 Lockhead Way, Carson City, Nevada, 89701; Flexstake Incorporated, 2150 Andrea Lane, Fort Myers, Florida, 33912; or equal.

C Construction
Attachment of the base rail to the top of the concrete barrier temporary precast shall be by means of a mechanical or adhesive system with a minimum pullout and shear of 3000 psi. All mounting hardware shall be as specified by the manufacturer.

D Measurement
The department will measure Glare Screens Temporary by the linear foot of paddle glare, guard 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.0090.0017	Glare Screens Temporary	LF

Payment is full compensation for furnishing, installing, maintaining and removing the Glare Screens Temporary; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

223. Pavement Marking Contrast Epoxy 7-Inch, Item SPV.0090.0018.

A Description
These items describe furnishing and installing contrast epoxy pavement marking in accordance to standard spec 646.

B Materials
Furnish epoxy pavement marking materials in accordance to standard spec 646.2.

C Construction
Apply the 1 ½ wide black epoxy with a 4-inch separation between the two black lines for the first pass, followed by a 4-inch wide white epoxy line second pass, for a total width of 7-inches.

D Measurement
Conform to standard spec 646.4 for solid and intermittent lines.

The department will not measure Pavement Marking Contrast Epoxy 7-Inch. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0018	Pavement Marking Contrast Epoxy 7-Inch	LF

Payment for this item is full compensation for preparing the surface, for providing all marking, for protecting until cured; and for replacing marking improperly constructed or

failures during the proving period; for cleaning and preparing the pavement surface; furnishing and installing the material; furnishing, placing, and removing temporary pavement marking, if necessary; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

224. Pavement Marking Contrast Epoxy 11-Inch, Item SPV.0090.0019.

A Description
These items describe furnishing and installing contrast epoxy pavement marking in accordance to standard spec 646.

B Materials
Furnish epoxy pavement marking materials in accordance to standard spec 646.2.

C Construction
Apply the 1 ½ wide black epoxy with a 8-inch separation between the two black lines for the first pass, followed by a 4-inch wide white epoxy line second pass, for a total width of 11-inches.

D Measurement
Conform to standard spec 646.4 for solid and intermittent lines.

The department will not measure Pavement Marking Contrast Epoxy 11-Inch. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.0019	Pavement Marking Contrast Epoxy 11-Inch	LF

Payment for this item is full compensation for preparing the surface, for providing all marking, for protecting until cured; and for replacing marking improperly constructed or failures during the proving period; for cleaning and preparing the pavement surface; furnishing and installing the material; furnishing, placing, and removing temporary pavement marking, if necessary; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

225. Removing Pavement Markings Water Blasting, Item SPV.0090.0021.

A Description
Remove pavement markings using ultra-high pressure water. Remove pavement markings from locations shown on the plans or as the engineer directs.

B (Vacant)

C Construction
Provide a truck or vehicle mounted ultra high pressure pump and water tank capable of delivering a minimum of 30,000 psi and up to 40,000 psi to waterjet nozzles. Furnish a water blaster with a vacuum recovery system to provide a clean, almost dry surface, without the use of a secondary cleanup process.

Remove pavement markings through means of water blasting. Do not damage the pavement during removal process.

Furnish equipment with a storage system that allows for the storage of the wastewater while retaining the debris.

D Measurement
The department will measure Removing Pavement Markings Water Blasting by the linear foot of 4-inch wide line, 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.0090.0021	Removing Pavement Markings Water Blasting	LF

Payment for Removing Pavement Markings Water Blasting is full compensation for removal, repairing associated damage, and disposal of residue.

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226. Cable Aerial Aluminum 6 AWG Quadruplex, Item SPV.0090.1007; Cable Aerial Aluminum 6 AWG Triplex, Item SPV.0090.1008; Cable Aerial Aluminum 4 AWG Triplex, Item SPV.0090.1009.

A Description
Furnish, install, and connect temporary overhead cable complete with all splicing, identifications, terminations and guy wires at wood poles. Remove the overhead cable after the temporary lighting is approved for removal.

B Materials
Overhead cable shall be aluminum conductors according to ASTM B 230 and shall be Class B stranded according to ASTM B 231, and shall conform to the values listed in the table below:

Phase Conductor				Messenger Wire	
Size AWG	**Stranding**	**Avg. Insulation Thickness**		**Min. Size AWG**	**Stranding**
		mm	mils		
6	7	1.1	45	6	6/1
4	7	1.1	45	4	6/1

The aerial cable shall be an assembly of insulated aluminum conductors and a steel messenger wire according to ANSI/ICEA S-76-474. The cable assembly may have the messenger wire intertwined with the insulated cables or lashed to the insulated cables by a factory wrap. The cable shall be assembled according to ANSI/ICEA S-76-474.

All cable shall be rated 600-V. The cable shall be rated 105º C dry and 90º C wet and shall be suitable for installation in wet and dry locations, and shall be resistant to oils and chemicals, and UV rated. The UL listing mark, cable voltage, insulation type and ratings, as well as the cable size, shall all be clearly printed on the cable in a color contrasting with the insulation color. When specified, each cable installed shall be identified with its complete circuit number at each termination, splice, junction box or other location where the wire is accessible.

All electric cables installed shall be color coded. Neutral wires shall be color-coded white. Single phase three wire runs of cable shall be color-coded one black, one red, and one white. Insulated ground wires, where applicable, shall be green. Color striping of cables will not be acceptable in lieu of the specified color coding means.

Make the luminaire connections to the aerial cable with listed parallel tap insulation piercing connectors. The connector shall be rated for 600-V, and be listed under UL Standard 486B.

C Construction

Overhead cable as shown on temporary lighting plans will not be needed for final lighting. Remove temporary overhead cable. Removal of temporary overhead cable will be incidental to this pay item and it will become property of the contractor. The bid price shall reflect the salvage value of the temporary overhead cable.

Upon written request of the contractor, the engineer may permit to reuse removed temporary overhead cable of ampacity equivalent to the specified cable and of a type and condition approved by the engineer, if possible.

Install guy wires as necessary per WisDOT standard details for Spanwire Temporary Traffic Signal.

Conform to standard spec 655.3.5(9) for ground resistance testing.

D Measurement
The department will measure Cable Aerial Aluminum 6 AWG Quadruplex; Cable Aerial Aluminum 6 AWG Triplex; Cable Aerial Aluminum 4 AWG Triplex in length by the linear foot, acceptably completed in place, and will be taken as the length of the messenger wire. Measurement will be made in a straight line between changes in direction and to the centers of light standards and control cabinets. Sag of the aerial cable or vertical cable will not be measured for payment. The rewiring to facilitate relocation of the cable due to staging or other construction requirements will not be measured for payment.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.1007	Cable Aerial Aluminum 6 AWG Quadruplex	LF
SPV.0090.1008	Cable Aerial Aluminum 6 AWG Triplex	LF
SPV.0090.1009	Cable Aerial Aluminum 4 AWG Triplex	LF

Payment is full compensation for providing electrical wire; for making all connections; for providing all connectors, including wire nuts, fuses, fuse holders, splices, tape, and insulators; for providing messenger wire, and guy wires; and for removing temporary overhead cable.

227. Type UF Cable 2 Conductor No 14, Item SPV.0090.3001.

A Description
This work shall consist of furnishing and installing cable for confirmation lights and making all connections as shown on the plans and as hereinafter provided.

B Materials
Revise standard spec 655 with the following:

Supplement standard spec 655.3.4 with the following:

When lighting is installed in conjunction with traffic signals, conductors from the traffic signal control cabinet to the confirmation light(s) shall be Cable Type UF, 2 conductor without ground, solid copper conductor, size No. 14.

C Construction
Furnish and install Cable Type UF 2-14 AWG for traffic signals.

D Measurement
The department will measure Type UF Cable 2 Conductor No 14 by the linear foot of cable, acceptably completed in place.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.3001	Type UF Cable 2 Conductor No 14	LF

Payment shall be full compensation for furnishing and installing cable; for making all connections; for furnishing and installing all connectors, including wire nuts, splice kits, tape, insulating varnish or sealant and ground lug fasteners, for testing; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

228. FenceDecorative Wall, Item SPV.0090.4410.

A Description
Fabricate, galvanize, paint, deliver and install decorative fencing on bridge superstructures and retaining walls.

B Materials
B.1 General
All materials shall meet the requirements as shown on the plans and the applicable provisions of the standard specifications as follows:

- Structural Steel: standard spec 506.2.2
- Steel Mesh: standard spec 505.2.5
- Painting: standard spec 517.2 and 517.3

After fabrication and prior to bolting and assembling the fence components, steel shall be blast cleaned per SSPC-SP 6 and galvanized according to ASTM A 123. All bolts, nuts and washers shall be supplied as factory galvanized according to ASTM A 153. Repair zinc coating damaged during fence assemblage as specified in standard spec 635.3.4. Grind the welded joints to a smooth finish where shown in the plans.

Steel preparation includes the chamfering of sharp edges. All sharp edges shall be flattened by a single pass of a grinder or suitable device along the sharp edge. Condition any thermal cut edges before blast cleaning by shallow grinding or other cleaning to remove any hardened surface layer. Remove all evident steel defects exposed in accordance to AASHTO M 160 prior to blast cleaning.

The decorative silhouette inset plates shown on the plans shall be fabricated as indicated in the plans. The decorative silhouette shall be electro galvanized in accordance to ASTM A 591-01 (0.08 oz/square foot/surface) and then painted with an approved tie and topcoat as given in this special provision. The top coat shall be painted the same color as the rest of the decorative fencing. Electronic files of the decorative silhouette patterns are available from Wisconsin Department of Transportation, Jeff Bohen, P.E., 141 NW Barstow Street, Waukesha, Wisconsin 53187, (262) 548-6459

The fence fabric shall consist of 8 GA. 2 inch by 2 inch welded wire mesh galvanized to ASTM A 123 and then covered with a polymer-coating conforming to the following requirements:

Thickness of Polymer-Coating:	ASTM F668
Adhesion:	ASTM F668
Accelerated Aging Test:	ASTM F668, D1499
Mandrel Bend Test:	ASTM F668

The polymer coating shall be a dense impervious covering applied without voids, tears or cuts that reveal the galvanized mesh substrate. Excessive roughness, bubbles, blisters and flaking in the polymer coating will be a basis for rejection. The color of the polymer-coating shall be as specified in B3 and conform to the requirements of ASTM F934. The vertical wires of the mesh shall be placed on the inside (Pedestrian/Traffic side) face of the fence.

B.2 Painting

All galvanizing surfaces to be painted shall be cleaned per SSPC-SP1 to remove, chlorides, sulfates zinc salts, oil, dirt, organic matter and other contaminants. The cleaned surface should then be Brush Blast Cleaned per SSPC-SP7 to create a slight angular surface profile (1.0 – 1.5 mils suggested) for adhesion. Blasting should not fracture the galvanized finish or remove any dry film thickness.

After cleaning provide a tie coat from an approved coating system that is specifically intended to be used on a galvanized surface. The tie coat shall etch the galvanized rail and prepare the surface for the top coat. Apply a top coat matching the specified color. The tie and top coats should be of contrasting colors. Use a pre-approved top coat that is resistant to the effects of the sun, and is suitable for use in a marine environment. The various decorative fence components shall be painted with the tie and top coats before final assembly of the fence panels. Exercise care so as not to damage the painted surface during panel assembly or fence installation.

Use one of the qualified paint sources and products given below. An equivalent system may be used with the written approval of the engineer.

Producer	Coat	Products	Dry Film Minimum Thickness (mils)	Minimum Time Between Coats (hours)
Sherwin Williams 1051 Permeter Drive, Suite 710 Schaumburg, IL 60173 847.330.1562	Tie	Recoatable Epoxy Primer B67-5 Series/B67V5	2.0 to 4.0	6
	Top	Acrolon 218 HS Polyurethane, B65-650	2.0 to 4.0	NA
Carboline 350 Hanley Industrial St. Louis, MO 63144 314.644.1000	Tie	Rustbond Penetrating Sealer FC	1	36
	Top	Carboline 133 LH	4	NA
Wasser Corporation 4118 B Place NW Suite B Aubum, WA 98001	Tie	MC-Ferrox B 100	3.0 to 5.0	8
	Top	MC-Luster 100	2.0 to 4.0	NA

B.3 Color
The finished color for coating system for decorative fencing shall match Federal Color 27038 – Black

C Construction
Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the fence in conformance with the requirements of the contract. State the polymer-coating type, Class and color used on the mesh. Do not begin fabrication prior to shop drawing review and acceptance.

Provide a full sized painted 6-foot by 10-foot test panel for the fence. The test panel shall be ten feet long. The test panel shall be delivered to the job site within 60 days of the award of the contract. Unload and set up test panel in an area designated by the engineer. Do not begin fabrication of fences prior to the test panel acceptance.

During construction and at the time of delivery the engineer shall inspect the frame components. The engineer shall accept the product after the delivery is unloaded on the site. After the product is unloaded, the installation contractor will signify in writing that the fence was received in acceptable condition per the engineer's inspection. Any damage to the fence panels after the acceptable delivery will be the responsibility of the installation contractor.

All welding shall conform to the applicable requirements of section 506 of the standard specifications. No field welding, field cutting, or drilling will be permitted without the approval of the engineer.

Take special care during construction to minimize the number and size of touch-up spots. Follow the manufacturer's recommendations for damaged area repairs. The engineer must approve the field paint appearance prior to final acceptance.

Provide the engineer with the name, address, and phone number of a representative of the fence fabricator for future coordination.

During handling, protect finish coating from damage. If damaged during handling the fencing may be rejected by the engineer or engineer may direct fabricator that the finish shall be repaired in accordance to the manufacturer's recommendations. Provide the engineer a copy of the manufacturer's recommended repair procedure and materials before repairing damaged coatings.

D Measurement

The department will measure Fence Decorative Bridge and Fence Decorative Wall 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.0090.4410	Fence Decorative Wall	LF

Payment is full compensation for fabricating, polymer-coating welded wire mesh, galvanizing, painting, and delivering test panel to site; fabricating, furnishing, delivering and unloading fence panels, lighting access panels, posts; installing fence posts and panels and hardware; for preparing shop drawings, painting, galvanizing metal fence components and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

229. Piling Sleeves, Item SPV.0090.4420.

A Description

The work under this item consists of furnishing and installing a corrugated steel piling sleeve or pile wrap in the reinforced earth zone of mechanically stabilized earth (MSE) retaining walls and other locations shown in the plans. Perform work in accordance to pertinent portions of standard specs 520 and 521, the plans, and as herein after provided

B Materials

B.1 Pipe Sleeves

The piling sleeve must meet the requirements of standard spec 521.2.2 for corrugated steel pipe.

B.2 Pile Wrap
As an alternative to pipe sleeves and if accepted by the engineer, provide a pile wrap that completely encases the perimeter of the pile and separates the pile from the surrounding soil. The provided pile wrap product shall be specifically intended to reduce or eliminate down drag loads on driven piles. Submit proposed pile wrap product data sheets and installation requirements to the engineer for acceptance.

C Construction
Set the piling sleeve within 1 inch of the required position indicated on the plans prior to placing the reinforced earth. Brace sleeve to maintain position within 2 inches of required position as backfilling proceeds. Place soil reinforcing mats around sleeve.

Is using pile wrap in lieu of pipe sleeves, install the pile wrap on the top portion of the piles that will be in the MSE soil reinforced zone or other limits shown on the plans prior placing the reinforced earth backfill around the piles. Install the pile wrap and place backfill around the wrapped pile in accordance to the pile wrap manufacturer's installation requirements and recommendations.

Any damage that would hinder the installation of a HP pile must be corrected prior to placing any additional reinforced earth.

After completion of pile installation inside a piling sleeve, backfill the void space around the pile within the sleeve with sand or other approved materials.

D Measurement
The department will not measure Piling Sleeves. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.4420	Piling Sleeves	LF

Payment is full compensation for furnishing and installing the piling sleeve or pile wrap; for furnishing and placing backfill inside the sleeve after pile installation; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

230. Piling Steel State-Furnished HP 14-Inch x 89 LB, Item SPV.0090.4440.

A Description
This special provision describes obtaining from the department stockpile site near the Zoo Interchange and delivering to the project site HP 14-Inch x 89 LB piles; driving, cutting off, and finishing HP 14-Inch x 89 LB piles; making submittals for driving system; and splicing if necessary in accordance to 550.

B Materials

B.1 Steel Piling

The stockpile site for the piling is located at the Wisconsin DNR Forestry Education and Exploration Center, at the Wil-O-Way Woods, located between Underwood Parkway and Swan Boulevard.

The following inventory of state furnished HP 14-Inch x 89 LB piling is available for this contract:

Number of Piles	Length (LF)
4	25
49	30
77	35
2	40
4	45
99	50
76	55
55	60
5	65

The department will provide material certifications required for state furnished HP 14-Inch x 89 LB piling.

C Construction

C.1 General

Install state furnished HP 14-Inch x 89 LB piling in accordance to standard spec 550 and as specified hereinafter.

Retrieve all piling needed for construction and return all excess piling back to the stockpile site. Comply with restrictions on traffic lane closures for work and delivery operations described elsewhere in these special provisions.

If installing piles using the PDA driving acceptance method install piling in accordance to standard spec 550 as modified by special provision Driven Piles Using Pile Dynamic Analyzer. Perform PDA testing and pile restrikes according to special provisions Pile Dynamic Analyzer (PDA) Testing and Pile Dynamic Analyzer (PDA) Restrikes.

To the extent possible, obtain the state-owned piling of sufficient length or splice as required to achieve the penetration resistance required to develop the required driving resistance shown on the plans for each pile. Allocate and install individual pieces from the stockpile in a manner that minimizes the number of pile splices required and minimizes the number of unused cutoff pieces less than 10 feet long. Return all pile cut-offs 10 feet or greater in length to the stockpile for use in other locations on the project. Cutoff pieces less than 10 feet long become the property of the contractor and are to be removed from the project site.

D Measurement
The department will measure Piling Steel State-Furnished HP 14-Inch x 89 LB by the linear foot, acceptably completed. The measured quantity equals the lengths of piling delivered, driven, and left in place below cutoff elevation.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.4440	Piling Steel State-Furnished HP14-Inch x 89 LB	LF

Payment for the Piling Steel State Furnished HP 14-Inch x 89 LB bid item is full compensation for coordination in retrieving the piling from the stockpile site; for hammer submittal; pile splices as necessary to achieve plan length; for preparing, driving, and cutting off piles; for re-driving heaved up piles when necessary; for disposal or return to stockpile of cutoffs not used; and for removal of material within the footing perimeter heaved up by pile driving operations.

Pile splices as necessary to achieve plan length are included in the item Piling Steel State-furnished HP 14-Inch x 89 LB and will not be paid for separately. The department will make additional payment under the Pile Splices administrative item for department-furnished piles that require an additional splice or splices as a result of exceeding plan length. For additional pile splices for state furnished piling required as a result of the driven pile exceeding plan length, the department will pay $450 for each such HP pile splice. The department will only pay for splicing if the piles conform to the following:

- The required driving resistance cannot be achieved in the length the plans show.
- Splices conform to the contract.
- The spliced pile is acceptably driven to the plan required driving resistance.

231. Drilled Foundation Shaft 47.25-Inch, Item SPV.0090.4450.

A Description
This special provision describes installing drilled foundation shafts for bridge foundations as shown on the plans.

A.1 Qualifications of the Contractor
The contractor performing the work described in these special provisions must have drilled foundation shaft project(s) successfully completed within the last 5 years. The contractor must submit a list outlining their experience on at least five projects where they have successfully completed drilled foundation shaft construction, including one project completed within the last 5 years. The project experience must include at least one project completed in soil and groundwater conditions similar to those anticipated for this project. The project experience must include advancing the drilled shafts to a depth of at least 30 feet below the original ground surface. At least one project must show

evidence of permanence with a 5-year minimum age. The project experience documentation for each project must include a brief project description, detail the size and length of the shafts, construction methods used during installation, methods used for wall stabilization, local soil conditions, actual construction time and contact information consisting of an individual's name and current phone number. Contacts must be capable of verifying project participation.

The contractor must submit staff experience records of the engineer, drill operators, and on-site supervisors and crew chiefs who will be assigned to the project. The staff records must contain a summary of each individual's experience and it must be complete enough for the engineer to determine whether each individual has satisfied the following qualifications.

The contractor must assign an engineer to supervise the work who has at least eight years of drilled shaft experience and who has completed at least one drilled shaft project. The assigned engineer's project experience must include at least one project completed in soil and groundwater conditions similar to those anticipated for this project. The contractor may not use consultants or manufacturer's representatives in order to meet the requirements of this section. Drill operators, and onsite supervisors and crew chiefs must have a minimum of one-year experience installing drilled shafts with the contractor's organization.

The contractor's qualifications and staff experience records shall be submitted at the preconstruction meeting or 14 calendar days prior to the start of drilled shaft construction, whichever date is earlier. The engineer will accept or reject the contractor's qualifications and staff experience records within 14 calendar days after receipt of the submission. Do not start work on any drilled foundation shafts until acceptance of the contractor's qualifications, staff experience, and drilled shaft installation plan is given by the engineer. The engineer may suspend work if the contractor substitutes unqualified personnel for accepted personnel during construction. If work is suspended due to the substitution of unqualified personnel, the adjustment in contract time resulting from the suspension of work will not be allowed.

B Materials

B.1 General

Concrete, drilling fluid, reinforcement and formwork shall be in accordance to the requirements of QMP Drilled Shafts, standard specifications, as shown on the plans, and as hereinafter provided.

In the event that the provisions of other specification clauses cause ambiguity or conflict with these special provisions, these special provisions shall take precedence unless otherwise accepted by the engineer.

B.2 Equipment

Equipment used for excavation, drilling, and cleaning operations shall utilize a temporary casing, which is installed using a rotary drive or by hydraulic oscillator, powered by the

drill rig. The equipment shall have adequate capacity; including power, torque, and down thrust to install full depth temporary casing and excavate a hole to a depth equal to the maximum depth of the drilled shafts shown in the plans plus 15 feet, or plus 20 percent of their maximum depth, whichever is greater. Anticipate and make available at the job site all equipment necessary and essential to penetrate soft and hard soils, as well as cobbles and boulders and unidentified man-made obstructions, during the construction of the drilled shafts.

The equipment must be capable of advancing the temporary casing a minimum of 5 feet ahead of the excavation inside the casing until the shaft tip elevation is reached. No excavation ahead of the casing shall be permitted without the engineer's approval.

The overhead rotary drive equipment shall be capable of installing and extracting the full depth temporary casing by means of rotational or oscillatory motion. Installation or removal of temporary casing by impact driving or vibration is not permitted. Advancing and installing the temporary casing by means of excavation ahead of the casing is not permitted.

Where hard soils, or other material including natural or man-made obstructions are encountered and cannot be drilled using conventional earth or rock augers, drilling buckets, and/or over reaming tools, provide drilling equipment including but not limited to rock core barrels, rock tools, down the hole hammer, chisels, air tools, or any other equipment necessary to advance the drilled shaft excavation to the depth and size as shown on the plans.

When applicable, or required by the engineer, provide equipment that produces a stable slurry suspension, mechanical agitation, and a pipeline or other safe methods of transporting the slurry to the drilled shaft.

B.3 Temporary Casing

Temporary casing shall be steel; rigid, smooth, clean, watertight, and of ample strength to withstand both handling and installation stresses and the pressure of both concrete and the surrounding earth materials. Temporary casing must be of sufficient length to provide temporary casing the full length of excavation for all drilled shafts. Segmented casing, if used, must be segmented using flush bolted, casing joints. Telescopic casing is not permitted. The diameter of casing shall not be less than the specified size of the drilled shaft. All casing diameters shown on the plans refer to outside diameter, O.D. dimensions.

B.4 Temporary Working Surface

Fill material, if required, to create a working surface for construction can be any suitable material approved by the engineer containing no logs, stumps, brush, perishables, or other materials such as stone or broken concrete that may affect the drilling of the shafts. Material that will remain permanently shall consist only of appropriate embankment fill when placed in association with a roadway, conforming to the requirements of standard spec 207.2.

B.5 Reinforcing Steel and Spacers

Deformed reinforcing bars shall comply with the size, dimension, spacing, and details shown on the plans. In addition, they shall conform to AASHTO M31, Grade 60, and all the pertinent requirements of standard spec 505. Non-corrosive wheel type spacers and boots shall be used to properly position the reinforcing steel. All reinforcing steel shall be 100% wire tied between the vertical reinforcement and ties.

B.6 Crosshole Sonic Logging (CSL) Tubes

Access tubes for CSL testing shall be 2 inches I.D. schedule 40 steel pipe conforming to ASTM A 53, Grade A or B, Type E, F, or S. Pipes shall have a round, regular internal diameter, free of defects or obstructions; including any defect at the pipe joints, to permit the free unobstructed passage of source and receiver probes. Each tube or steel pipe shall be fitted with a watertight shoe onto the bottom and a removable cap at the top. Both, the shoe and cap shall be watertight and free from corrosion. The internal and external faces of the CSL tubes shall be clean to ensure passage of the probes and produce a good bond with the concrete.

C Construction

C.1 Drilled Foundation Shaft Installation Plan

C.1.1 General

Prepare and submit a Drilled Foundation Shaft Installation Plan at the preconstruction meeting or at least 14 calendar days prior to beginning drilled shaft construction, whichever date is earlier. Submit the Drilled Foundation Shaft Installation Plan to the engineer for review. The engineer will accept the plan as submitted or return the plan with requested revisions. The engineer's initial acceptance of the submitted plan is considered preliminary with final acceptance pending the successful completion and acceptance of the Trial Drilled Foundation Shaft included in the contract. Do not start any work on production drilled foundation shaft installations until after the successful installation of the Trial Drilled Foundation Shaft and the engineer provides final acceptance the Drilled Foundation Shaft Installation Plan. Acceptance of the installation plan does not relieve the contractor of responsibility for successful completion of the drilled foundation shafts.

C.1.2 Subsurface Conditions

The contractor is strongly advised to obtain and review the Geotechnical Exploration and Foundation Evaluation Report for the bridge structure for which the drilled foundation shafts are being constructed. See article "Geotechnical Investigation Information" in these special provisions for information on obtaining geotechnical reports.

C.1.3 Submittals

The submitted Drilled Shaft Installation Plan shall include the following:

a. **Job Site Visit**. Acknowledge that the job site was visited to verify the site conditions with regard to entrance, access, overhead lines, subsurface features, clearing and grubbing, permitting, and collecting all information necessary to plan and execute the installation of the drilled shafts.

b. **Plan to Protect Existing Structures**. Outline the steps to be taken during drilled shaft installation to protect adjacent or nearby structures and utilties.
c. **Details of Environmental Control Procedures**. Provide plan to prevent loss of slurry or concrete into waterways, project areas, or protected areas. Detail method to ensure the compliance with state and federal environmental regulations during drilled shaft construction.
d. **List of Proposed Equipment**. Include details of proposed templates; number and sizes of cranes; number and sizes of drills, include rotary torque, crowd force drills, and maximum drilling depth; diameter, length, and reach of augers, bailing buckets, guide walls, templates, and roller bits; cleaning equipment including cleaning buckets, submersible pumps, or air-lifted pumps; size of de-sanding equipment and slurry pumps; soil/rock-coring sampling equipment; inspecting drilled shaft apparatus; length and diameter of tremie or size of concrete pumps; size, length, and thickness of casings; over reaming equipment; and all relevant equipment necessary to complete the drilled shaft installation. Acceptance of the installation plan by the department does not relieve the contractor responsibility to provide other equipment, if necessary, to achieve satisfactory shaft installations meeting the requirements of this special provision.
e. **Details of Sequence of Drilled Shaft Installation and Time for Construction Operations**. Include a layout of the drilled shaft installation sequence. Provide a sequential list of installation steps and a time table of operations for installing full depth temporary casing, sealing casing, excavation and/or drilling time, drilled shaft cleaning, rock coring, drilled shaft inspection, concrete placement. Consider the effect of construction operations of one drilled shaft onto the adjacent drilled shaft(s) and utilities and avoid construction conflicts that will affect the quality or integrity of the completed work. Indicate when and what construction sequence modifications shall be performed under atypical situations, i.e, weekend or holiday shutdowns, unanticipated shutdowns due to equipment issues, etc.
f. **Proposed Drilled Shaft Installation Procedure(s)**. Provide details of the proposed shaft installation procedures, including coring or drilling boulders, rock, obstructions or steep sloping surfaces, when required, and meeting the minimum installation requirements set forth in subsection C.3. Method for identification of the competent or bearing material before finalizing the excavation. Method for monitoring verticality of the drilled shaft walls during excavation, and details of proposed corrective measures to be implemented for shafts out of tolerance. Details of the methods and means of preventing displacement of the casing and/or drilled shaft during installation.
g. **Details of Slurry Operations.** This is required if slurry is used to stabilize the bottom of the excavation within the temporary casing. Include slurry type, methods to mix, circulation, de-sanding, and test the slurry to comply with these special provisions.
h. **Inspection and Cleaning**. Methods to clean and inspect the drilled shaft excavation prior to reinforcement placement.

i. **Crosshole Sonic Logging (CSL).** Method to install and secure the CSL pipes to the reinforcing cage or steel core, along with the proposed selection of pipe and size.
j. **Details of Reinforcement Steel Placement During Construction**. Include methods to ensure cage centering and cover; proper cage orientation, cage integrity while lifted during placement, number of cranes, number of lift points, and number of spreader bars; number and location of bottom and side spacers; cage support; and tie downs during concrete placement.
k. **Concrete Placement Plan**. The purpose of the Concrete Placement Plan is to ensure that a sufficient quantity of concrete is at the job site or in transit to the job site so that the entire pour can be done without delay. Include location of the concrete plant, number of trucks, estimated delivery times, estimated time between trucks, and number of trucks at the site before placement begins. Indicate the use of tremie or concrete pump lines and details of the seal to be used at the bottom end of the tremie or concrete pump line. Breakdowns of concrete plants, trucks, or traffic problems shall be considered under this Concrete Placement Plan. The contractor shall be aware of, and account for, batch, travel, and concrete placement times. Include an estimate of the concrete placement time per drilled shaft. When applicable, detail excavation to grade and finishing of the drilled shafts.
l. **Casing Removal**. Include the details and means by which the contractor intends to remove full depth temporary casings and provide information about staged temporary casing removal when applicable.
m. **Methods of Handling and Disposal of Spoil Excavation, Waste Slurry, Waste Concrete, and Drilled Shaft Cutoffs**. Present sufficient details to the engineer to evaluate the adequacy and compliance of the contractor's methods of disposal with the standard specifications, including all related environmental permits and local regulations.
n. **Other Information** requested on the plans or by the engineer.

C.1.4 Acceptance

The department will evaluate the Drilled Foundation Shaft Installation Plan for conformance with the requirements of these special provisions. Within 14 calendar days after receipt of the Drilled Foundation Shaft Installation Plan, the engineer will notify the contractor of the preliminary acceptance of the plan, or if additional information and/or changes are required. Any unacceptable part of the Installation Plan will require resubmission. The contractor must resubmit the Drilled Foundation Shaft Installation Plan for evaluation and review with the necessary changes or additional information provided. The engineer will provide a written notice of preliminary acceptance or rejection of contractor's resubmitted Drilled Foundation Shaft Installation Plan within 14 calendar days after its receipt. The engineer will provide final acceptance of the Drilled Foundation Shaft Installation Plan after the successful completion of the Trial Drilled Foundation Shaft and satisfactory drilled foundation shaft installation performance is demonstrated in the field.

After assessment or reassessment of the Drilled Foundation Shaft Installation Plan has been made and the engineer has granted preliminary acceptance, no changes to the plan can be made without written consent of the engineer.

C.2 Trial Drilled Foundation Shaft

After the Drilled Foundation Shaft Installation Plan has been preliminarily accepted, construct a trial drilled foundation shaft using the same crews and equipment that will be performing the drilled foundation production work. Construct in accordance to the Trial Drilled Foundation Shaft special provision and adhere to and demonstrate the adequacy of the accepted Drilled Foundation Shaft Installation Plan.

Construction of the Trial Drilled Foundation Shaft will be used to determine if the contractor's methods, equipment, personnel, and proposed procedures are effective to produce stable drilled shaft excavations and drilled foundation shafts that meet the requirements of these special provisions. CSL tests may be performed by the engineer, as part of the evaluation of the trial shaft. With approval of the engineer, revise construction methods and equipment as necessary during this stage or at any time during the installation of production shafts to satisfactorily complete the drilled foundation shafts in accordance to these special provisions.

In the event the contractor fails to demonstrate the adequacy of the drilled foundation shaft installation procedure(s) or equipment during construction of the Trial Drilled Foundation Shaft, the engineer will require appropriate modifications as may be necessary to produce acceptable results. Comply to satisfactorily demonstrate the adequacy of the proposed method(s) or equipment, or construct additional trail drilled foundation shafts as indicated by the engineer at no additional cost to the department.

C.3 Drilled Shaft Installation

C.3.1 General

Carry out the work in accordance to the accepted Drilled Foundation Shaft Installation Plan and as demonstrated during installation of the Trial Drilled Foundation Shaft. The resulting installation plan shall include length of full depth temporary casing, details of the constituent materials of any drilling fluid or means used for stabilization of the bottom of the excavation, the method of inspection, details of the concrete design mix, concreting method, the anticipated time to complete one shaft, and the pattern of construction.

Ensure that damage does not occur to the completed shafts as a result of work on adjacent shafts. Submit to the engineer a drilled shaft installation sequence. The proposed sequence and timing of shaft installation shall be such that the installation work will not cause any damage to adjacent shafts. The shaft installation shall not commence until acceptance of the engineer has been obtained.

C.3.2 Temporary Working Surface

Use a temporary working surface to provide a level surface at the top of shafts for drilling where needed.

C.3.3 Forcible Correction
Where shafts have not been positioned within the specified limits no method of forcible correction will be permitted.

C.3.4 Records
Keep a work record of all shafts installed. Give a copy of each day's record to the engineer within 24 hours of that day's work being completed. The engineer will review and agree to the daily record form format before drilled shaft work commences. Incorporate any comments by the engineer into the record form. Note all unexpected drilling or installation conditions in the records.

C.3.5 Methods of Drilled Shaft Installation
C.3.5.1 General
The temporary casing installation method and concrete placement in the wet using a tremie pipe shall be used to produce sound and durable drilled shafts free of defects. When a particular installation method is required in the special provisions, only that method of construction shall be used. If no particular method is specified for use, select and use one of the methods of construction as determined by the site conditions and needed to properly accomplish the work. Do not use the permanent casing method unless authorized by the engineer. Submit to the engineer for acceptance his selected method of construction in the Drilled Shaft Installation Plan described in these special provisions.

Full length temporary casing with the use of water or slurry inside the temporary casing, is required for the installation of all drilled shafts on the project. The use of permanent casing method will not be permitted unless authorized by the engineer. The use of slurry without casing is not permitted. Full depth temporary casing shall be installed using overhead rotary drive equipment or by using hydraulic oscillating equipment specifically intended for temporary casing installation and extraction. Installation of full depth temporary casing by means of driving or vibrating is not permitted. Advancing and installing casing by means of excavation ahead of the casing is not permitted. During temporary casing installation and shaft excavation, the tip of the temporary casing shall be advanced a minimum of 5 feet ahead of the tip of the excavation, until the bottom of the excavation is reached.

After the temporary casing is in place, excavate inside the casing, while keeping the temporary casing full of water or slurry as necessary to stabilize the bottom of the excavation within the casing. Excavate to the planned shaft tip elevation using the wet excavation techniques described below. Clean the bottom of the excavation. Before extracting the temporary casing, ensure that the level of fresh concrete inside the casing is at such level that the pressure of its hydrostatic head displaces up and out the fluid trapped in the annular space between the casing and the drilled shaft wall.

C.3.5.2 Dry Installation Method
The dry method of shaft installation is not permitted.

C.3.5.3 Temporary Casing Installation Method

The temporary casing method of shaft installation consists of supporting the shaft excavation by means of full depth temporary casing that is advanced ahead of the excavation until the drilled shaft tip elevation is reached. Excavate, remove, and clean all accumulated loose material from within the cased excavation before placing the reinforcement cage and the shaft concrete in the wet excavation. Do not place concrete into the wet excavation using free fall. Concrete must be placed under water in wet excavation using proper tremie procedures to direct the concrete under the water inside the shaft excavation and displace the water.

C.3.5.4 Wet Installation Method

The wet installation method consists of drilled shaft installation by means of full depth temporary casing in conjunction with the use of slurry, drilling fluid, or water to maintain stability against heave and blow-in in the bottom of the excavation. Use the wet installation method for all drilled foundation shafts in the contract. When using the wet method below the groundwater table, all drilled shaft operations shall be accomplished while maintaining a positive head of fluid of sufficient depth above the water table to avoid heaving or blow-in of the bottom of the excavation.

C.3.5.5 Permanent Casing Method

Do not use the permanent casing method.

C.3.6 Excavations

C.3.6.1 General

Excavations required for the drilled foundation shafts shall be performed through whatever materials are encountered to the dimensions and elevations shown in the plans, or as directed by the engineer. The excavation and installation method shall be suitable for the intended results and materials encountered. Blasting is not permitted.

Maintain a construction log during the drilled foundation shaft excavation. The construction log will include information such as ground elevation, ground water elevation, sequence number, method of installation, machines and tools employed, drilling fluids employed, drilling times, excavated materials and their particular elevations, soil samples and their particular elevations, and all other information relevant to the excavation process that will assist the engineer in evaluating the foundation. Information shall also include proposed methods for disposal of excavated material and slurry in accordance to state and local environmental regulations, codes and ordinances, the standard specifications, or as directed by the engineer.

C.3.6.2 Protection of Existing Structures

Take all reasonable precautions to prevent damage to existing structures and utilities. These measures shall include, but are not limited to, subsidence control during installation of temporary casings or excavation inside temporary casings.

Where drilled foundation shafts are to be installed in conjunction with embankment placement, the drilled foundation shafts shall be constructed after placement of the fill, unless otherwise shown in the plans, or accepted by the engineer. If fill is required to be placed after completion of the drilled shafts, the footing cap shall be done, as closely as possible, after the fill is in placed and compacted to final grade leaving only the space necessary for the construction of the cap.

C.3.6.3 Drilled Shaft Excavation

Provide the necessary equipment to remove and dispose of all materials encountered in the drilled shaft excavation to the dimension and elevation shown on the plans, or as directed by the engineer. Contractor's excavation equipment may include but is not limited to earth augers and rotary drills designed to work within full depth temporary casing. Unless otherwise shown on the plans, the drilled shaft excavations shall be vertical bored holes extending from the ground surface down to design tip elevation.

C.3.6.4 Obstructions

Obstructions are defined as man-made objects that when encountered, stop or significantly impede downward progress of the temporary casing installation or excavation to less than 12-inches for 60 minutes or longer under normal applied thrust and torque. Obstructions include man-made objects and may include, but are not limited to old concrete foundations, piling, abandoned utilities or buried pavements. Obstructions are further classified as "known obstructions" which are identified on the plans, and "unknown obstructions" that may be encountered but are not identified on the plans.

Employ special tools and/or procedures as necessary when obstructions are encountered and the contractor cannot advance the excavation more than 12-inches in 60 minutes using conventional rock augers fitted with teeth, drilling buckets, or under reaming tools operating at normal power, torque, and down thrust. Special procedures and tools that may be required include, but are not limited to; chisels, breakers, core barrels, air hammer tools, and hand excavation. Other methods for obstruction removal such as hole diameter increase can be employed to aid in the removal if acceptable to the engineer. Blasting is not permitted.

Natural deposits, including boulders, cobbles, nested cobbles and other deposits may be encountered that impede the installation and advancement of the temporary casing and excavation to less than 12-inches for 60 minutes or longer as noted above for obstructions. Natural deposits, regardless of makeup, depth, configuration, and consistency are not classified as obstructions as defined in the special provision Drilled Foundation Shaft Obstructions included in this contract.

C.3.6.5 Lost Tools

Drilling tools that are lost in the excavation shall not be considered obstructions and shall be promptly removed. All costs due to removal of lost tools shall be borne by the contractor including costs associated with hole degradation during removal operations or time while the hole remains open.

C.3.6.6 Inspections and Cleanliness of Excavation

Provide the details of drilled shaft inspection and cleanliness within the Drilled Foundation Shaft Installation Plan, required by subsection C.1.3 of this specification. Provide equipment and tools for checking the dimensions and alignment of each drilled shaft excavation, and coordinate schedules for inspection of the excavation with the engineer. Determine dimensions, alignment, and final depth of the drilled shafts after final cleaning. When applicable, provide safe access and egress to the engineer for inspection of the walls and bottom of the drilled shaft excavation prior to placement of the rebar cage or steel core section and concrete. After the drilled shaft excavation has been prepared for inspection, notify the engineer. The cleanliness and the bearing surface of the drilled shafts will be evaluated and accepted by the engineer. Unless the engineer specifies otherwise, the contractor's cleaning operation shall be considered sufficient when no more that 50 percent of the bottom area of each shaft has less than 1/2-inch of sediment or debris at the time of hole acceptance just prior to steel positioning and concrete placement. The maximum depth of sediment or any debris at any location on the bottom of the shaft shall not exceed 1 1/2-inch at the time of concrete placement.

C.3.6.7 Safety

Do not permit any worker to enter the drilled foundation shaft excavation for any reason unless a suitable casing has been installed, the water level has been lowered and stabilized below the level to be occupied, and suitable safety equipment and procedures have been provided to the personnel entering the excavation which includes OSHA certification for confined-entry-space.

C.3.6.8 Record Information

Provide to the department the drilled shaft excavation records and report any unusual observation to the engineer within 8 hours of discovery. Submit a draft of this form for each completed drilled shaft within 24 hours of shaft completion, and submit the final form within two (2) weeks. Submit relevant information on a daily basis, or more frequently when variations occur, or as otherwise required by the engineer.

Report the drilled shaft construction progress in accordance to “Records and Forms” Drilled Shafts: Publication No. FHWA – GEC 010, Section 19.5 and Appendix F, pages F-1 through F-16.

C.3.7 Placement of Reinforcing Steel Cage

Prior to placement of the reinforcing steel and concrete, if slurry fluid was employed during the installation of the drilled shaft, test the slurry for compliance with this specification as described in the QMP, Drilled Shafts special provision. Slurry Tests shall be performed along the shaft and at the bottom of the shaft. Adjust the slurry properties as necessary to meet the specifications.

Prior to placement of the reinforcing steel and concrete, ensure that C.3.6.6 cleanliness requirements are met.

Concrete or non-corrosive spacers shall be used at sufficient intervals not exceeding 10 feet along the reinforcement cage or the steel core. A minimum of 4 spacers shall be spaced evenly around the circumference of any shaft with a maximum space around the shaft circumference of 30 inches between any spacer (i.e. at any given level a 4-foot diameter shaft shall have 4 spacers). The first spacers shall be placed 1.5 feet from the bottom of the shaft with successive spacers at maximum intervals of 10 feet along the shaft. Spacers shall be of an appropriate diameter wheel to provide minimum clearance shown on the plans between the shaft excavation walls and the steel reinforcement.

C.3.8 Concrete Placement

C.3.8.1 General

Test the concrete delivered to the job site for compliance with the QMP Drill Shafts special provisions, the standard specifications and these special provisions.

C.3.8.2 Concrete Placement Time

Place concrete within three (3) hours after excavation inspection and approval unless otherwise directed by the engineer. If the concrete is not placed within this time frame, the excavation must be re- inspected and accepted by the engineer prior to concrete placement.

C.3.8.3 Concrete Placement by Free Fall

Concrete placement within drilled shafts by free fall is not permitted.

C.3.8.4 Concrete Placement by Tremie Pipes

Use tremie pipes to place the concrete inside the excavation. Keep the discharge end of the tremie a minimum of 7-feet below the level of the fresh concrete already placed inside the excavation to maintain a seal. The concrete shall flow into position by pressure through a steel tremie with a minimum diameter of 10-inches. Seal the bottom of the tremie using one way flap valve, before it is lowered into the wet excavation. If water/slurry enters the tremie pipe after concrete pouring has started, the tremie must be withdrawn, cleaned, resealed, and pouring restarted. If for some reason, the tremie is raised out of the fluid concrete or the concrete inside the drilled shaft drops down contaminating the tremie, completely remove and clean the tremie, then replace the seal at the bottom of the tremie, and lower the tremie back as far below as possible into the already placed concrete.

C.3.8.5 Concrete Placement by Concrete Pumps

Concrete pumps and concrete lines can be used to place concrete in drilled shafts rapidly or to deliver the concrete from a distant location. However, due to the need to disassemble the pump line to allow the removal of casing sections and potential air pockets, disruption in concrete flow, the concrete pump placement directly within the shaft is not permitted on this project. The pump must discharge the concrete into a minimum 10-inch diameter steel tremie with a bottom one way flap valve.

All pump lines and connections shall be watertight and must guide the concrete to the discharge point at the center of the rebar cage or steel core and drilled shaft excavation. The pump line may be flexible; however, inside the shaft minimum 10-inch diameter tremie steel pipe will be used so that it delivers the concrete in uninterrupted manner. Keep the bottom of the tremie or discharge orifice 7-feet below the surface of fluid concrete already placed to avoid sudden jumping of the pump line out of the excavation. Concreting shall continue until over pouring is evident at the top of the drilled shaft and until dark gray concrete (acceptable concrete) can be distinguished from the drilling fluid.

C.3.8.6 Casting Level

Over pour concrete above the top of shaft cut-off level to ensure that all concrete at and below cut-off level is homogeneous and free of laitance and deleterious materials.

C.3.9 Construction Tolerances for Individual Shafts

Drilled foundation shaft excavations or completed drilled foundation shafts constructed out of the tolerance will not be accepted. The contractor is responsible for correcting to the satisfaction of the engineer all unacceptable work. Materials, construction, work, engineering analysis, and redesign necessary to complete corrections to out-of-tolerance excavations or completed drilled shafts shall be furnished to the department without either cost or time extension for the project. Comply with the following construction tolerances:

a. The final, as constructed position of the drilled shaft shall be within a maximum of 2 inches in any direction from the theoretical position shown on the plans, unless otherwise permitted by the engineer prior to construction.
b. The vertical alignment of the drilled shaft excavation shall not vary by more than 1/16 inch per foot from plumb vertical.
c. The diameter of the installed drilled shaft shall not be less than the diameter of the drilled shaft shown on the plans. Any conflicts due to a casing that is greater in diameter than the plan shaft diameter shall be remedied by the contractor. No additional compensation or schedule time shall be granted to the contractor for resolving any conflicts due to oversized casings. Employ equipment and methods of excavation to complete the drilled shaft excavation to a planar bottom, and the cutting edges of the equipment used during the excavation shall be normal to equipment's vertical axis within a tolerance of 3/8-inch per foot of diameter. The bottom of the drilled shaft excavation shall be normal to the axis of the drilled shaft within ¾-inch per foot of drilled shaft diameter.
d. Tolerances outlined in sections a. to c. herein shall be checked and finally met by the contractor prior to placement of the reinforced rebar cage or steel core inside the shaft hole.
e. After the concrete is poured, the top elevation of the installed drilled shaft shall be within 1-inch of the top elevation of the corresponding drilled shaft on the plans, and the top of the reinforcing steel cage shall be within the positional tolerance shown on the plans. The center of the reinforcing cage shall be the center of the drilled shaft.

C.3.10 Non Destructive Testing Program

C.3.10.1 Shaft Integrity Test (PIT)

The Pile Integrity Tester performs low strain integrity testing, alternatively called Sonic Testing, Pulse Echo, or Transient Response. The PIT can detect the presence and location of potentially dangerous defects such as cracks, necking, soil inclusions or voids and can determine shaft length. The equipment and technique are well established, and specified by ASTM D5882.

Prior to beginning the PIT test, assure that the concrete top is accessible and cleaned. The test(s) will be performed by the engineer. The engineer will evaluate and analyze the PIT test results within 5 business days and provide the contractor with a response regarding the acceptability of the drilled shaft tested. The test shall be conducted on shafts that are at least 5 days old so that the concrete has attained minimum compressive strength necessary to perform the test.

C.3.10.2 Crosshole Sonic Logging Test

C.3.10.2.1 General

Crosshole Sonic Logging, (CSL), is a nondestructive testing (NDT) method that measures the time for an ultrasonic pulse to travel from a signal source inside an access tube to a receiver inside another access tube and evaluates the integrity of drilled shafts.

Install access tubes intended for Crosshole Sonic Logging CSL testing. The test(s) will be performed by the engineer. All CSL testing will be completed within 10 calendar days of concrete placement.

Prior to beginning the CSL test, ensure that the test probes can pass through and down the tubes to the bottom of every installed tube. If a tube is obstructed, the contractor, at no additional cost to the department, must core a hole within the drilled shaft and near the obstructed tube to the depth as directed by the engineer. The core shall be large enough to accommodate the probe through its full length.

The engineer will evaluate and analyze the CSL test results within 5 business days of their receipt and provide a response regarding the acceptability of the drilled shaft tested. The test shall be performed in accordance to ASTM D6760.

C.3.10.2.2 Installation Requirements

Drilled shafts must be fitted with CSL test tubes to evaluate their integrity as shown on the plans.

Install the access tubes or pipes as nearly parallel and far as possible from the longitudinal bars. The number of tubes to be installed per each drilled shaft diameter is as indicated in the table below:

Drilled Shaft Diameter	Number of CSL Tubes	Tube Spacing
47.25-inches	4 minimum	As shown in plans

Securely attach the tubes to the interior of the reinforcement cage with a minimum concrete cover of three inches. The tubes may be attached to exterior of the cage when accepted by the engineer provided the minimum cover requirement of 3-inches over the tubes shall be maintained. In all cases, the tubes shall be as near to vertical and parallel as possible.

Extend the tubes from the bottom of the drilled shaft to at least 3-feet above the top of the drilled shaft, or 2-feet above the ground surface for shafts with cut-off below the ground surface. The tubes must be watertight and capped to prevent concrete or debris from entering during manipulation of the cage and concreting. Care must be taken during lifting and lowering the steel reinforcement so as not to damage the tubes. Fill the CSL tubes with potable water prior to concrete placement. For production shafts and upon completion of the CSL tests, remove all the water from the access tubes or drilled holes and fill them with an approved grout.

C.3.11 Acceptance for Constructed Drilled Shafts

C.3.11.1 General

Any drilled foundation shafts that are not constructed and installed in accordance to these special provisions will be rejected by the engineer. Rejected shafts shall be replaced or rectified by the contractor using methods and procedures subject to the acceptance of the engineer. If required to rectify rejected shafts, shaft replacement, shaft repair, or the cost of constructing additional shafts, will be at no additional cost to the department and no additional time will be added to the contract

In the event that a shaft or shafts are rejected, work on remaining drilled shafts in the contract cannot continue until the contractor re-visits and re-submits a revised drilled shaft installation plan and the revised plan is accepted by the engineer. The revised plan must address any construction issues that resulted in or contributed to the reason(s) for which the deficient shaft(s) were rejected. No additional time will be added to the contract for the time required to revise and accept the revised drilled shaft installation plan.

C.3.11.2 Based on Specifications

The department will only accept drilled foundation shafts that conform to these special provisions. Drilled foundation shafts and related work constructed in any manner that disregards any specified requirement will not be accepted. This includes:

a. Drilled foundation shaft excavations constructed out-of-tolerance, as specified in this specification. When repair to an out-of-tolerance shaft is possible as determined by the engineer, fix the drilled shaft to meet the tolerances before the contractor is permitted to proceed further with any drilled shaft construction. All repairs must be acceptable to the engineer before the contractor may resume the drilled shaft work.

b. Excavation of a drilled foundation shaft with slurry not conforming to the QMP, Drilled Shafts special provision.
c. Drilled foundation shafts exhibiting cuttings from slurry at the drilled shaft bottom; showing soft, incomplete, or unclean bottoms; or presenting side sloughing and sedimentation at the bottom.
d. Drilled foundation shafts with honeycomb intrusions or concrete in which the fines have been washed out or water channels in concrete.
e. Horizontal discontinuity or necking in the drilled foundation shaft concrete.
f. Quarter-moon-shaped soil intrusions on the sides of a drilled foundation shaft.
g. Folded-in debris inside a drilled foundation shaft.
h. Drilled foundation shafts for which the mix design has been altered without the acceptance of the engineer, including the unauthorized addition of water to a mix design to bring it to a certain slump.
i. Drilled foundation shafts constructed in a manner where concrete placement has failed to meet the required time requirements, placement tolerances, or the methods of installation did not have the engineer's acceptance.
j. Drilled foundation shafts constructed with concrete not meeting the minimum 28-day compressive strength (3500 psi) requirement.

C.3.11.3 Based on the PIT or (CSL) Test

CSL and PIT will be evaluated by the engineer. If the engineer determines that CSL or the PIT testing indicates significant anomalies or defects, the engineer will direct the contractor to core the shaft(s) at the location(s) of the defect or anomaly. The coring shall be a minimum of NX sized double tube core barrel. The engineer will determine the number of cores, length(s), location(s), and testing methodology. If the coring or core sample testing results confirm the presence of significant anomalies or defects, the drilled shaft will be determined to be unacceptable and rejected by the engineer. Upon rejection of the shaft(s), submit a remedial action plan to the engineer for correcting the rejected work. The remedial action plan shall include detailed shaft repair or replacement procedures if necessary and will be subject to acceptance by the engineer. Any modifications to the drilled shaft, load transfer mechanisms, and elements affected by the proposed remedial actions will require calculations and working drawings, and shall be made and stamped by a professional engineer, registered in the state of Wisconsin.

In the event that the engineer directs the contractor to core through the concrete and the coring and associated core sample tests confirm the presence of anomalies or defects, the cost of coring, hole closure, core sample tests, and all labor and materials to perform the accepted remedial actions shall be provided at no additional cost to the department and with no extension of the contract time originally granted.

In the event that the engineer directs the contractor to core through the concrete and the core or core sample tests do not confirm the presence of anomalies or defects, the cost of the coring, hole closure and associated testing shall be borne by the department.

Frequent defects as determined by the engineer will result in a re-evaluation of the contractor's installation procedure and, depending on the frequency and type of defect, the engineer may require the contractor to change or modify his procedure

D Measurement
The number of linear feet of Drilled Foundation Shaft 47.25-Inch of individual shafts acceptably completed will be based on the plan quantity (length) without measurement. Longer shafts, larger shaft diameters, additional excavation, and additional concrete placed beyond the limits of the plan dimensions will not be measured for payment unless authorized and agreed to in advance of placement by the engineer.

E Payment
The department will pay for plan quantities or revised plan quantities if agreed to in advance of placement by the engineer, at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.4450	Drilled Foundation Shaft 47.25-Inch	LF

Payment is full compensation for furnishing, installing, and removing full depth temporary casing, templates, placing and removing temporary working surfaces, drilling fluids, documentation, clearing or removal of surface obstructions, clearing or removal of known man-made or natural obstructions; drilling the shafts, handling and disposal of the excavated, augered and cored soils, and any drilling fluids; positioning steel, wheel type spacers and boots; furnishing and placing the concrete for the drilled foundation shafts to the dimensions and elevations as shown on the plans, and, installing and closing the crosshole logging tubes; and for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the work.

Reinforcement bars are measured and paid under the bid item Bar Steel Reinforcement HS Bridges.

Removal of unknown man-made subsurface obstructions for Drilled Foundation Shaft 47.25-Inch will be measured and paid for separately under the bid item, Drilled Foundation Shaft Obstructions included in the contract.

232. Railing Decorative Pedestrian Bridge, Item SPV.0090.4460.

A Description
Fabricate, galvanize, paint, deliver and install decorative railing on pedestrian bridge B-40-784 superstructures and abutment wing walls.

B Materials
B.1 General
All materials shall meet the requirements as shown on the plans and the applicable provisions of the standard specifications as follows:

- Structural Steel: standard spec 506.2.2
- Perforated Aluminum Infill Panels: ASTM B209 Alloy 6061
- Painting: standard spec 517.2 and 517.3

After fabrication and prior to bolting and assembling the railing components, steel shall be blast cleaned per SSPC-SP 6 and galvanized according to ASTM A 123. All bolts, nuts and washers shall be supplied as factory galvanized according to ASTM A 153. Repair zinc coating damaged during railing assemblage as specified in standard spec 635.3.4. Grind the welded joints to a smooth finish where shown in the plans.

Steel preparation includes the chamfering of sharp edges. All sharp edges shall be flattened by a single pass of a grinder or suitable device along the sharp edge. Condition any thermal cut edges before blast cleaning by shallow grinding or other cleaning to remove any hardened surface layer. Remove all evident steel defects exposed in accordance to AASHTO M 160 prior to blast cleaning.

Provide perforated metal infill panels of the material, and thickness shown on the plans. Provide perforation pattern as shown on the plans. Electro galvanize the perforated metal panels in accordance to ASTM A 591-01 (0.08 oz/square foot/surface) and then paint with an approved tie and topcoat as given in this special provision. The top coat shall be painted the same color as the rest of the decorative railing.

B.2 Painting

All galvanizing surfaces shall be cleaned per SSPC-SP1 to remove, chlorides, sulfates zinc salts, oil, dirt, organic matter and other contaminants. The cleaned surface should then be Brush Blast Cleaned per SSPC-SP7 to create a slight angular surface profile (1.0 – 1.5 mils suggested) for adhesion. Blasting should not fracture the galvanized finish or remove any dry film thickness.

After cleaning provide a tie coat from an approved coating system that is specifically intended to be used on a galvanized surface. The tie coat shall etch the galvanized rail and prepare the surface for the top coat. Apply a top coat matching the specified color. The tie and top coats should be of contrasting colors. Use a pre-approved top coat that is resistant to the effects of the sun, and is suitable for use in a marine environment. The various decorative railing components shall be painted with the tie and top coats before final assembly of the railing panels. Exercise care so as not to damage the painted surface during panel assembly or railing installation.

Use one of the qualified paint sources and products given below. An equivalent system may be used with the written approval of the engineer.

Producer	Coat	Products	Dry Film Minimum Thickness (mils)	Minimum Time Between Coats (hours)
Sherwin Williams 1051 Permeter Drive, Suite 710 Schaumburg, IL 60173 847.330.1562	Tie	Recoatable Epoxy Primer B67-5 Series/B67V5	2.0 to 4.0	6
	Top	Acrolon 218 HS Polyurethane , B65-650	2.0 to 4.0	NA
Carboline 350 Hanley Industrial St. Louis, MO 63144 314.644.1000	Tie	Rustbond Penetrating Sealer FC	1	36
	Top	Carboline 133 LH	4	NA
Wasser Corporation 4118 B Place NW Suite B Aubum, WA 98001	Tie	MC-Ferrox B 100	3.0 to 5.0	8
	Top	MC-Luster 100	2.0 to 4.0	NA

B.2 Color
The finished color for coating system for decorative fencing shall match Federal Color 37925 – White

C Construction
Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the railing in conformance with the requirements of the contract. Do not begin fabrication prior to shop drawing review and acceptance.

Provide a full sized painted 6-foot by 10-foot test panel for the railing. The test panel shall be ten feet long. The test panel shall be delivered to the job site within 60 days of the award of the contract. Unload and set up test panel in an area designated by the engineer. Do not begin fabrication of railing prior to the test panel acceptance.

During construction and at the time of delivery the engineer shall inspect the frame components. The engineer shall accept the product after the delivery is unloaded on the site. After the product is unloaded, the installation contractor will signify in writing that the railing was received in acceptable condition per the engineer's inspection. Any damage to the railing panels after the acceptable delivery will be the responsibility of the installation contractor.

All welding shall conform to the applicable requirements of standard spec 506. No field welding, field cutting, or drilling will be permitted without the approval of the engineer.

Take special care during construction to minimize the number and size of touch-up spots. Follow the manufacturer's recommendations for damaged area repairs. The engineer must approve the field paint appearance prior to final acceptance.

Provide the engineer with the name, address, and phone number of a representative of the railing fabricator for future coordination.

During handling, protect finish coating from damage. If damaged during handling the fencing may be rejected by the engineer or engineer may direct fabricator that the finish shall be repaired in accordance to the manufacturer's recommendations.

D Measurement
The department will measure Railing Decorative Pedestrian Bridge 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.0090.4460	Railing Decorative Pedestrian Bridge	LF

Payment is full compensation for fabricating painting, galvanizing and delivering test panel to site; fabricating, furnishing, delivering railing panels, lighting access; installing railing panels and hardware; for preparing shop drawings, painting, galvanizing metal railing components and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

233. Pipe Underdrain 6-Inch Special, Item SPV.0090.8001 ; Pipe Underdrain 8-Inch Special, Item SPV.0090.8025.

A Description
This work shall consist of providing necessary subsurface drainage by constructing trenches, placing the required geotextile fabric, installing the designated pipes or drainage devices within, cored connections, back-plastering and or mortaring connections to storm sewer structures, and backfilling the trenches with the specified backfill material in accordance to standard specs 310, 612 and 645, as shown on the plans, and as hereinafter provided.

B Materials
B.1 Base Aggregate
All aggregate shall be base aggregate open graded and shall conform to standard spec 310.2.

B.2 Pipe Underdrain
Conform to standard spec 612.2.

B.3 Geotextile Fabric
Geotextile fabric shall consist of Type DF Schedule A and shall conform to standard spec 645.2.4.

C Construction
Conform to standard spec 612.3. .

D Measurement
The department will measure Pipe Underdrain 6-Inch Special, and Pipe Underdrain 8-Inch Special by the linear foot acceptably completed. The department will measure along the centerline of the pipe, center to center of junctions 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.0090.8001	Pipe Underdrain 6-Inch Special	LF
SPV.0090.8025	Pipe Underdrain 8-Inch Special	LF

Payment is full compensation for providing, handling, and placing all materials, including pipe, base aggregate open graded, geotextile fabric Type DF Schedule A, cored connections, back-plastering and or mortaring connection to storm sewer structure, fittings, and caps or plugs; for furnishing all excavating, plowing, and re-compacting, salvaging; disposing of surplus material; restoring the work site; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work No additional payment will be made for base aggregate open graded.

234. Storm Sewer Pipe Reinforced Concrete Horizontal Elliptical Pipe Class HE-IV 38x60-Inch, Item SPV.0090.8003.

A Description
Furnish and install reinforced concrete horizontal elliptical pipe storm sewer.

B Materials
Furnish Class HE-IV pipe storm sewer in accordance to standard spec 610.2.

C Construction
Construct in accordance to the plans and standard spec 610.3.

D Measurement
The department will measure Storm Sewer Pipe Reinforced Concrete Horizontal Elliptical Pipe Class HE-IV 38x60-Inch by the linear foot, acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.8003	Storm Sewer Pipe Reinforced Concrete Horizontal Elliptical Pipe Class HE-IV 38x60-Inch	LF

Payment will be as per standard spec 610.5.

235. Storm Sewer Pipe Reinforced Concrete Class V 78-Inch, Item SPV.0090.8004; Storm Sewer Pipe Reinforced Concrete Class V 66-Inch, Item SPV.0090.8005.

A Description
Furnish and install reinforced concrete pipe storm sewers.

B Materials
Conform to materials as per standard spec 608.2(1).

Provide storm sewer reinforced concrete (Class) (size) conforming to Concrete D-Load Pipe ASTM C 655 specifications.

The design strength of the pipe shall be the D-load to produce the 0.01-inch crack for carrying HL 93 truck load and maximum fill height over the pipe as shown on the plan.

C Construction
Construct in accordance to the plans and standard spec 608.3.

D Measurement
The department will measure Storm Sewer Pipe Reinforced Concrete (Class) (Size) bid item(s) by the linear foot, acceptably completed. The measured quantity equals the number of linear feet of pipe measured along the centerline of the pipe. The department will measure from center to center of drainage Storm Sewer Structure. The department will make no deduction from these measured lengths for intermediate Storm Sewer Structures or 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.0090.8004	Storm Sewer Pipe Reinforced Concrete Class V 78-Inch	LF
SPV.0090.8005	Storm Sewer Pipe Reinforced Concrete Class V 66-Inch	LF

Payment will conform to standard spec 608.5.

236. Drain Slotted Vane Longitudinal, Item SPV.0090.8030.

A Description

This special provision describes furnishing and installing slotted vane drain as shown on the plans, in accordance to standard spec 501, 505, 607, and 611, and as hereinafter provided.

B Materials

The pipe that the vane drain casting rests in shall be 15-inch diameter SDR-35 poly vinyl chloride, (PVC) sewer pipe.

C Construction

Prior to encasing the pipe in concrete, cover the upper end of the slotted drain as shown on the plans, or as approved by the engineer.

Prior to construction operations adjacent to the slotted area of the slotted vane drain pipe, cover the slots on the top of the drain. Remove any material entering the pipe at the contractor's expense.

Exercise care to avoid damage to the slotted vane drainpipe. If any section of pipe is damaged or is unsatisfactory as determined by the engineer, replace the drainpipe at contractor’s expense.

D Measurement

The department will measure Drain Slotted Vane Longitudinal by the linear foot of drain slotted vane longitudinal, 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.0090.8030	Drain Slotted Vane Longitudinal	LF

Payment is full compensation for furnishing all materials, including PVC pipe and end cap, slotted vane drain castings, concrete masonry and reinforcement; hauling and placing the pipe; making connection to new culvert pipe; cleaning out and restoring site of work; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

237. Survey Project 1060-33-72, Item SPV.0105.0001.

A Description

This special provision describes modifying standard specs 105.6 and 650 to define the requirements for construction staking for this contract.

Replace standard spec 105.6.2 with the following:

The department will not perform any construction staking for this contract. Perform all survey required to lay out and construct the work under this contract, subject to engineer's approval.

The survey includes establishing horizontal and vertical position for all aspects of construction including but not limited to storm sewer, subgrade, base, curb, gutter, curb and gutter, pipe culverts, structure layout, pavement, barriers (temporary and permanent), electrical installations, supplemental control, slope stakes, ponds, ITS, FTMS, parking lots, utilities, landscaping elements, irrigation system layout, installation of community sensitive design elements, traffic control items, fencing, etc.

The department may choose to perform quality assurance surveys during the project. These quality assurance surveys do not relieve the responsibility for performing all survey work required to lay out and construct the work under this contract.

Delete standard spec 650.1.

B (Vacant)

C Construction

Conform to standard spec 650.3 and as modified in this special provision.

Replace standard spec 650.3.3.1 with the following:

Under the Survey Project bid item, global positioning system (GPS) machine guidance for conventional subgrade staking on all or part of the work may be substituted. The engineer may require reverting to conventional subgrade staking methods for all or part of the work at any point during construction if, in the engineer's opinion, the GPS machine guidance is producing unacceptable results.

Replace standard spec 650.3.3.3.4.1 with the following:

The department will provide the contractor staking packet as described in the Construction and Materials Manual (CMM) 7.10. At any time after the contract is awarded, the available survey and design information may be requested. The department will provide that information within 5 business days of receiving the contractor's request. The department incurs no additional liability beyond that specified in standard spec 105.6 or standard spec 650 by having provided this additional information.

Add the following to standard spec 650.3.3.3.6.2:

Record all subgrade elevation checks and submit a hard copy to the engineer at the completion of the project.

D Measurement
Replace standard spec 650.4 with the following:

The department will measure Survey Project 1060-33-70 as a separate single lump sum unit of work for survey, acceptably completed.

E Payment
Replace standard spec 650.5 with the following:

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.0001	Survey Project 1060-33-72	LS

Payment is full compensation for performing all survey work required to lay out and construct all work under this contract; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work. No additional payments will be made for restaking due to construction disturbance and knock-outs.

SEF Rev. 12_0827

238. Pavement Cleanup Project 1060-33-72, Item SPV.0105.0002.

A Description
This special provision describes cleanup of dust and debris from pavements within and adjacent to the job site.

B Materials
B.1 Pavement Cleanup
Furnish a vacuum-type street sweeper equipped with a power broom, water spray system, and a vacuum collection system.

Vacuum equipment shall have a self-contained particulate collector capable of preventing discharge from the collection bin into the atmosphere.

Use a vacuum-type sweeper as the primary sweeper, except as specified herein or approved by the engineer.

C Construction
C.1 Pavement Cleanup
Keep all pavements, curb lanes and gutters both closed and open to public traffic within the job-site boundaries free of dust and debris generated from any activity under the contract. Keep all pavements, curb lanes and gutters adjacent to the project free of dust and debris that are affected by land disturbing, dust generating activities, as defined in the contractor's dust control implementation plan.

Provide surveillance to identify if material is being tracked from the jobsite. Clean up spillage and material tracked from the project within an hour of occurrence or as directed by the engineer. Perform cleanup operations in a safe manner.

Provide routine sweeping of all pavements, curb lanes and gutters on local street active haul routes a minimum of once a day as defined in the Dust Control Implementation Plan (DCIP) or as directed by the engineer.

- Watertown Plank Road
- STH 100 (Mayfair Road)
- Swan Boulevard

In addition to routine sweeping, conduct sweepings as the engineer directs or approves, to deal with dust problems that might arise during off-work hours or emergencies. Provide the engineer with a contact person available at all times to respond to requests for emergency sweeping. Respond to emergency sweeping requests within four hours.

If the vacuum-type sweeper breaks down, a mechanical broom sweeper may be substituted for no more than 24 hours total elapsed time. Repair the vacuum-type sweeper within that 24 hours or substitute a vacuum-type sweeper.

Skid steers with mechanical power brooms may only be utilized on sidewalks and driveways whose pavements will not support the weight of a street sweeper, unless otherwise approved by the engineer.

D Measurement

The department will measure Pavement Cleanup Project 1060-33-72 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.0105.0002	Pavement Cleanup Project 1060-33-72	LS

Payment schedule for this item will be in accordance to the percentage of contract value earned.

Payment is full compensation for surveillance, mobilization, sweeping, disposing of materials and any other labor, tools or equipment necessary to complete the work.

SEF Rev. 12_1008

239. Concrete Jump Slab, Item SPV.0105.0004.

A Description

This special provision describes the construction of a reinforced concrete slab over the existing We-Energies steam tunnel in accordance to the plans, the pertinent sections of the standard specifications, and as hereinafter provided.

B Materials

B.1 Concrete

Use materials that conform to concrete masonry as specified in standard spec 501.

B.2 Reinforcing

Use materials that conform to standard spec 505.

B.3 Polystyrene and Fiberboard

Use materials that conform to rigid cellular polystyrene as specified in the requirements of ASTM C578, Classification Type IV (4) and has a minimum density of 1.6 pcf, and minimum compressive strength of 25 psi; or use materials that conform to asphalt-impregnated fiberboard as specified in the requirements of AASHTO M213, or asphalt-impregnated fiberboard sheathing as specified in the requirements of ASTM C208.

C Construction

Conform to standard spec 415 as applicable and as modified in this special provision.

Provide no less than 10 business days advance notice to Mr. John Bever of We-Energies Tel (414) 221-3529 prior to beginning the removal of the existing pavement over the steam tunnel.

The contractor is not permitted to transport construction materials or equipment over the exposed top slab of the existing steam tunnel. Localized grading required to prepare the base below the grade beam must be compacted with a walk behind plate compactor. Compact the Base Aggregate Dense 1 ¼-Inch over and adjacent to the existing tunnel with a walk behind plate compactor.

D Measurement

The department will measure Concrete Jump Slab as a single complete 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.0105.0004	Concrete Jump Slab	LS

Payment is full compensation for furnishing all equipment, tools, labor and materials necessary to prepare the foundation, construct the jump slab and underlying grade beams; including concrete, epoxy coated bar steel reinforcement, dowel and tie bars, polystyrene and fiberboard, preformed joint filler; backfilling and compacting the Base Aggregate Dense 1 ¼-Inch under the jump span; curing and protecting the concrete; and for coordination with the We-Energies.

240. Removing Overhead Sign Support, Item SPV.0105.0005.

A Description

Work under this item shall consist of removing the overhead sign structure and footing. The sign on the structure is paid for under a separate pay item, i.e Removing signs type II. See signing plans for location.

B (Vacant)

C Construction

Remove overhead sign supports and concrete footings, backfill the resulting holes, and dispose of all materials outside of the right-of-way in accordance to standard spec 204.3 and 638.3. Concrete footing shall be removed to 2' below the existing ground. The reinforcement shall be cut off flush with the top of the concrete. The footing shall be then covered with topsoil and seeded. This is all incidental to Remove Overhead Sign Structure.

D Measurement

The department will measure Removing Overhead Sign Support, as a single lump sum unit of work in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.0005	Removing Overhead Sign Support	LS

Payment in full compensation for disassembling, removing, including concrete footings, backfilling, and disposal of all materials.

241. Concrete Pavement Joint Layout, Item SPV.0105.0006.

A Description

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

B (Vacant)

C Construction
Plan and locate all points necessary to establish the horizontal position of the transverse and longitudinal joints in the concrete to prevent uncontrolled cracking. Submit a joint layout design to the engineer before paving each intersection. Mark the location of all concrete joints in the field. Follow the plan details for joints in concrete making adjustments as required to fit field conditions.

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

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.0006	Concrete Pavement Joint Layout	LS

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

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

242. Maintenance of Lighting System, Item SPV.0105.1005.

A Description
Maintain existing and proposed lighting system beginning on the date that the contractor's activities (electrical or otherwise) at the job site begin. Be responsible for the proper operation and maintenance of all existing and proposed lighting systems which are part of, or which may be affected by, the work until final acceptance or as otherwise determined by the engineer.

Before performing any excavation, removal, or installation work (electrical or otherwise) at the site, initiate a request for a maintenance transfer and preconstruction inspection, as specified elsewhere herein, to be held in the presence of the engineer and a representative of the party or parties responsible for maintenance of any lighting systems which may be affected by the work. Make the request for the maintenance preconstruction inspection no less than seven calendar days prior to the desired inspection date.

Existing lighting systems, when depicted on the plans, are intended only to indicate the general equipment installation of the systems involved and shall not be construed as an exact representation of the field conditions. Visit the site to confirm and ascertain the exact condition of the electrical equipment and systems to be maintained.

B (Vacant)

C Construction

C.1 Existing Lighting Systems

Existing lighting systems are defined as any lighting system or part of a lighting system in service prior to this contract. The contract drawings indicate the general extent of any existing lighting. Ascertain the extent of effort required for compliance with these specifications; failure to do so will not be justification for extra payment or reduced responsibilities. The contractor is also expected to clear and replace any knockdowns or damage caused to the existing lighting system, regardless of who causes the damage. Maintain existing lighting system as follows:

Partial Maintenance: Only maintain the affected circuits if the number of circuits affected by the contract is equal to or less than 40% of the total number of circuits in a given controller and the controller is not part of the contract work unless otherwise indicated. Isolate the affected circuits by means of in-line waterproof fuse holders as specified elsewhere and as approved by the engineer.

Full Maintenance: Maintain the entire controller and all associated circuits if the number of circuits affected by the contract is greater than 40% of the total number of circuits in a given controller, or if the controller is modified in any way under the contract work.

C.2 Proposed Lighting Systems

Proposed lighting systems shall be defined as any temporary or final lighting systems or part of a lighting system which is to be constructed under this contract.

Maintain all items installed under this contract. Maintenance shall include, but not be limited to, any equipment failures or malfunctions as well as equipment damage either by the motoring public, contractor operations, or other means. Include the potential cost of replacing or repairing any malfunctioning or damaged equipment in the bid price of this item; it will not be paid for separately.

C.3 Maintenance Operations

Maintain lighting units (including sign lighting), cable runs, and lighting controls. In the case of a pole knockdown or sign light damage caused by normal vehicular traffic, promptly clear the lighting unit and circuit discontinuity and restore the system to service. Reinstall the lighting unit (if salvageable), or install a new one.

Provide weekly night-time patrol of the lighting system, with patrol reports filed immediately with the engineer and copied to the region lighting coordinator with deficiencies corrected within 24 hours of the patrol. Present patrol reports on standard forms as designated by the engineer. Uncorrected deficiencies may be designated by the engineer as necessitating emergency repairs as described elsewhere herein.

Perform corrective action on specific lighting system equipment according to the following chart. The chart lists the maximum response, service restoration, and permanent repair time.

Incident or Problem	Service Response Time	Service Restoration Time	Permanent Repair Time
Control cabinet out	1 hour	4 hours	7 Calendar days
Hanging mast arm	1 hour to clear	na	7 Calendar days
Motorist caused damage or leaning light pole 10 degrees or more	1 hour to clear	4 hours	7 Calendar days
Circuit out – Needs to reset breaker	1 hour	4 hours	na
Circuit out – Cable trouble	1 hour	24 hours	21 Calendar days
Outage of 3 or more successive lights	1 hour	4 hours	na
Outage of 75% of lights on one tower	1 hour	4 hours	na
Outage of light nearest RR crossing approach, Islands and gores	1 hour	4 hours	na
Outage (single or multiple) found on night outage survey	na	na	7 Calendar days

C.4 Lighting

1. **Serve Response Time:** The amount of time from the initial notification to the contractor until a patrolman physically arrives at the location.
2. **Service Restoration Time**: The amount of time from the initial notification to the contractor until the time the system is fully operational again. (In cases of motorist-caused damage, the undamaged portions of the system are operational.)
3. **Permanent Repair Time**: The amount of time from initial notification to the contractor until the time permanent repairs are made if the contractor was required to make temporary repairs to meet the service restoration requirement.

Failure to provide this service will result in liquidated damages of $500 per day per occurrence. In addition, the department reserves the right to assign any work not completed within this timeframe to the State Electrical Engineering and Electronics Unit. Reimburse all costs associated to repair this uncompleted work. Failure to pay these costs to the State Electrical Engineering and Electronics Unit within one month after the incident will result in additional liquidated damages of $500 per month per occurrence. Unpaid bills will be deducted from the cost of the contract. Repeated failures and/or a gross failure of maintenance shall result in the State's Electrical Engineering and Electronics Unit being directed to correct all deficiencies and the resulting costs deducted from any monies owed the contractor.

Repair damage caused by the contractor's operations at no additional cost to the contract.

C.5 Operation of Lighting

The lighting shall be operational every night, dusk to dawn. Duplicate lighting systems (such as temporary lighting and proposed new lighting) shall not be operated simultaneously. Do not keep lighting systems in operation during long daytime periods. Demonstrate to the satisfaction of the engineer that the lighting system is fully operational prior to submitting a pay request. Failure to do so will be grounds for denying the pay request.

D Measurement

The department will measure Maintenance of Lighting System 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.0105.1005	Maintenance of Lighting System	LS

Payment is full compensation for Maintenance of Lighting Systems; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

SEF 13_0306

243. Lighting System Integrator, Item SPV.0105.1007.

A Description

These special provisions describe coordinating lighting with various parties; record keeping, and documentation. Where the department is responsible for freeway lighting operation, maintenance, or utility locates on existing systems or systems overlapping project boundaries, the contractor's freeway lighting integrator will serve as the contractor's liaison to the department's electrical operations unit.

B Personnel Qualifications

Assign personnel experienced in underground utility construction and department lighting specifications and practices.

C Construction

At any one time during the project, the contractor shall assign one individual person as the freeway lighting integrator.

The freeway lighting integrator shall:

1. Familiarize himself with the location and nature of existing lighting circuits. This familiarity shall include the extent of any lighting system that overlaps project limits.
2. Maintain a file of applicable permits or licenses issued to the contractor, and convey copies to the engineer.
3. Keep with him at all times a contact list of affected lighting personnel.

4. Maintain a record of tagouts and the clearance of tagouts.
5. Interface with department electrical personnel to determine how contract limits might affect maintenance or operation of existing systems.
6. Maintain ongoing contact with the department's Diggers' Hotline Coordinator to ensure that each of the two persons knows that all requested utility locates are marked in the field by the appropriate party. The intent here is to assure coordination. This special provision does not transfer additional utility locating responsibilities to the contractor, beyond those responsibilities already assigned to him by other provisions of the contract.
7. Inform the department of any lighting outages, including outside the project limits where a lighting system crosses the project boundary.
8. Maintain in any format real-time records of existing, removed and new lighting facilities. Include utility service extensions. Additional required records will include temporary connections and their ultimate removal.
9. Maintain records of tests, including: "meg" tests, amperage draw per circuit leg, voltage reading at the disconnect, and voltage reading at the furthest pole per circuit leg. Convey these records at time of acceptance or partial acceptance.
10. At the time of acceptance or partial acceptance, convey as-built drawings in both the following formats: plan redlines and .dgn electronic. Include utility service extensions.
11. Secure copies of operator's manuals, tear sheets, etc. as may be provided by manufacturers of some lighting materials, and convey a minimum of three sets to the department.
12. Work with the engineer to notify department electrical personnel of acceptance or partial acceptance.
13. Perform related duties as may be needed to ensure continuity of freeway lighting during construction, and orderly transfer upon completion.
14. Contractor must use GPS to provide coordinates of each light pole and control cabinet. The data must be entered into a Microsoft Excel 2007 spreadsheet along with other required fields as specified by WisDOT.

D Measurement

The department will measure Lighting System Integrator as one complete unit item of work per each pay item for all required coordination, record-keeping, and documentation, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.1007	Lighting System Integrator	LS

Payment will be full compensation for personnel costs; and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

244. Underdeck Lighting Bridge Structure B-40-779 and B-40-780, Item SPV.0105.1011.

A Description

The work under each item to consist of supplying, fabricating and installing the underdeck lighting, probeam mounting bracket and wiring system, including, couplers, SO cord, fittings, junction boxes, and incidentals as shown in the plans for the referenced structure. Separate measurement and payment will be made for Luminaire Flood Probeam LED, Item SPV.0060.1072.

B Materials

Mounting bracket plate to be 1/4-inch thick 304 stainless steel and conforming to detail drawings. The contractor to furnish and install a minimum of 24-inch (648 mm) liquidtight flexible conduit from luminaire to junction boxes. Junction boxes to be stainless steel; and conduit bodies, expansion fittings, elbows, sweeps and bends to be of fiberglass reinforced epoxy (FRE), produced by same manufacturer as the conduit and listed for outdoor and above ground use. Cover screws to be stainless steel hex head variety. All FRE products to conform to NEMA TC-14 / UL1684 and to be UL listed. Wires to be #12 AWG, stranded copper, XLP insulated, single conductor, USE rated, 600 volt AC wire.

C Construction

Conduit provided as structural bid item as shown in the plans and wiring detail. Wiring and fusing to be in accordance to standard spec 659.3.2. Junction box to be installed in such a manner as to ensure that the cover plate is not obstructed. All work to conform to standard specs 652, 653, and 659 as well as standard detail drawings 10HL 15-3a and 3b Electrical Details Underdeck Lighting and plan detail drawings for underdeck lighting.

Provide identification plaques on the junction box providing power to the structure. The plaque is to identify the circuit or circuits powering the fixtures on the structure. Separate measurement and payment will be made for plaque sequence identification under standard bid item 659.0802.

D Measurement

The department will measure Underdeck Lighting Bridge Structure B-40-779 and B-40-780 as a single lump sum unit of work for underdeck lighting, 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.0105.1011	Underdeck Lighting Bridge Structure B-40-779 and B-40-780	LS

Payment is full compensation for grounding, junction boxes, luminaire and luminaire mounting, conduit, conduit bodies, fusing, hardware and all work; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work

245. Grab Rail LED Lighting, Item SPV.0105.1020.

A Description

This work shall consist of furnishing, installing and placing in permanent operating condition an LED Pod Light to be installed into the underside of the pedestrian handrail to provide general illumination along the sidewalks in accordance to the contract documents and as directed by the engineer. Pedestrian bridge and canopy walkways lighting is under a separate bid item.

B Materials

1. LED pod light shall be stand-alone units,, with vandal resistant access chambers that will allow unit to be removed from the handrail for maintenance purposes.

The unit shall consist of a low voltage (24VDC) LED-based light fixture that is integrated into the underside of the handrail. The lens shall be clear and vandal resistant. The LED shall be of high brightness with a color temperature of 4000K, an approximate life of 50,000 hours, and a power consumption of 2 watts perpod. The operating temperature shall be -40 degree F to 120 degree F. Lens type shall be asymmetric.

2. An LED driver or power supply transform shall regulate the voltage to the LEDs. The LED power supply shall be protected against open circuit, short circuit, overload and overheating conditions. It shall be UL recognized and FCC compliant. The LED driver shall be housed in two 24W"x36H"x10D" NEMA 4X enclosure The LED Driver shall be rated for 100W and shall operate at 120/240VAC.

C Construction

The LED pod light shall be installed in the underside of the handrail every other pedestrian rail post (3 to 3.28 feet spacing). Each LED Driver shall control no more than thirty eight (38) of LED pod lights. The power cable to be used to connect the feeder from the LED Driver to the LED light pod shall be #12 AWG minimum or as per recommendation by the manufacturer. Splicing of the electrical feeder from the LED Driver to the LED pod light shall be performed inside the LED driver enclosure. Single-pole (1P) fuse assembly for ungrounded circuit conductor for each driver shall be provided. A power distribution or terminal block for input suitable for six or more pairs of #6 to #18 AWG wire is required for proper installation. Grounding system shall be installed in each enclosure in accordance to typical grounding electrode installation in the project. Class II wiring shall be routed through structural provided conduit penetrated on the concrete from the bottom of the rail post. The LED pod light system shall be installed along both pedestrian sidewalks of the ramps for the length shown on plans and shall conform to the Contract Documents and the manufacturer's specifications. Approved manufacturers are:

1. Wagner Companies, or
2. Badger Railing, or
3. C. W. Cole & Company, Inc, or

Provide identification plaques on the junction box providing power to the structure. The plaque is to identify the circuit or circuits powering the fixtures on the structure. The cost of the plaques to be included in this Grab-Rail LED lump sum.

D Measurement
The department will measure Grab Rail LED Lighting as a single lump sum unit of work for lighting, 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.0105.1020	Grab Rail LED Lighting	LS

The lump sum price bid shall include the cost of furnishing all labor, materials, and equipment necessary to complete all the work outlined in this specification to the satisfaction of the engineer in charge. Included in the bid are the furnishing and installation of the LED POD light, LED Driver with enclosure, mounting hardware and any other material and associated labor not identified in this specification or on plans but required for the installation and operation of the system. All wires and conduit associated with the installation of the grabrail lights shall be approved by the engineer prior their installation and they will be paid separately under their respective pay items.

Payment is full compensation for grounding, junction boxes, luminaire and luminaire mounting, conduit, conduit bodies, fusing, hardware and all work; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

246. Pedestrian Canopy Bridge (B-40-784) Lighting, Item SPV.0105.1021.

A Description
The work under this item consists of furnishing and installing the Canopy LED luminaire, and Wall Wash/Glazer LED linear lighting on canopy walkway, pedestrian bridge and stair case towers. Complete installation but not limited to mounting bracket, wiring system, including surface mounted raceways, couplers, SO cord, fittings, junction boxes, and other items incidentals as shown in the plans. Exit signs and battery lights illuminating means of egress during power failure as emergency lighting shall be provided on designated stairs leading out to a public way. Electrical panel, wall bracket, or concrete base for ground mounted cabinet enclosure shall be included in this item. Application for providing new electric service shall be coordinated and complied with utility requirements. Payment for Electric Service meter Breaker Pedestal under standard bid item. Grab-Rail lighting is under a separate bid item.

B Materials

B.1. General

1. Luminaires shall conform to applicable portions of Section 659.2.2. The luminaire housing shall be all aluminum with factory finished durable corrosion and UV resistant gray powder-coated or anodized aluminum finish. Housing access shall be tool-free. The luminaire shall be UL listed, IP 66 rated.

2. LED lamps shall be in the 4000K color temperature range with a minimum of 70 CRI.

3. The luminaire shall be equipped with a voltage-sensing LED driver, to accommodate 120-240V with 90% power factor and THD 20% max at full load. Surge protection shall be provided and tested in accordance to the specifications. The luminaire shall also be equipped with a quick-disconnect plug for connecting the pole riser wires to the terminal block. A strain relief shall retain the pole riser wires within the luminaire.

4. Provide luminaire matching what is proposed for use on the project.
Example luminaire shall be available for evaluation for up to two weeks time. Furnish the following list of specific documentation detailing the characteristics of the LED luminaire:

- Fixture IES files (.ies format) for illumination modeling.
- Cut sheets, warranty information and parts list for all equipment.
- Luminaire heat dissipation techniques.
- Energy usage information.
- Color spectrum with HID lamp comparison.
- Optical design features.

Do not order materials until the engineer approves the list.

B.2 Luminaire – Canopy LED

Furnish canopy LED luminaires with housing that is made an aluminum die cast with hinged frame and powder coated with high-performance polyester resin for a rugged and maintenance-free finish. Luminaires shall be constructed of rugged cast and extruded aluminum with integral, weather-tight LED driver components with high performance aluminum heat-sinks. Housing or cover shall have tamper-proof fasteners and vandal resistant access to the electrical compartment. Each luminaire shall use a terminal block for power input suitable for #2 to #14 AWG wire. This luminaire is not quantified; it is part of a single lump sum in this item.

Luminaire shall accommodate varied lighting output from high brightness, 4000K (+/- 400K per full unit), minimum 70 CRI, long life LED sources. Drivers shall operate across 120-240V, 50/60 Hertz as standard. LED drivers shall have a power factor greater than 90% and THD less than 20% of full load. All luminaires shall come equipped with an integral surge suppression protection standard and a quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance.

Luminaire Performance shall conform to the following:

- Luminaire tested and certified by an independent test laboratory to meet the photometric performance criteria established by IESNA LM-79.
- Luminaires shall deliver minimum 4,700 lumens and be rated to consume no more than 60 watts (+/- 15%) while operating for a minimum of 50,000 hours (+/- 10%) >70% lumen maintenance. Luminaire is suitable for operation in -30°C to 40°C ambient environments.
- Luminaires shall be rated and/or certified: U.L. listed for wet locations; RoHS compliant for lead and mercury standards; IP-65 minimum weather fastness rating
- Lumninaire shall offer standard in 4000K (+/- 275K) CCT and nominal 70 CRI.

The Canopy LED light shall be installed on the ceiling of canopy walkways and below landing surfaces in stair cases as shown on plans and shall conform to the Contract Documents and the manufacturer's specifications. Approved manufacturers are:

1. Cree-Beta The Edge:CAN-EDG-5M-06-UL-BK-525-43K*
2. LSI: XPG3-5-50-450-NW-UE-BLK-CWBB*
3. McGraw EdisoN: CNC-B02-E1-LED-SQ-BK*

Finish: The luminaire fixture finish shall feature an epoxy primer with an ultra-durable black powder topcoat, providing resistance to corrosion, ultraviolet degradation and abrasion. Alternative equivalent finishes shall be approved by the engineer.

*: Luminaires in the stair towers shall be white

B.3 Luminaire – Wall Washer/ Wall Glazer LED

Furnish high performance LED luminaire designed for wall washing and wall grazing. Luminaires shall be constructed of rugged cast and extruded aluminum eliminates the possibility of moisture entering the fixture ,with integral, weather-tight LED driver components with high performance aluminum heat-sinks. Each luminaire shall use a terminal block for power input suitable for #2 to #18 AWG wire. This luminaire is not quantified; it is part of a single lump sum in this item.

Luminaire shall accommodate varied lighting output from high brightness, 4000K (+/- 400K per full unit), minimum 70 CRI, long life LED sources. Drivers shall operate across 120-240V, 50/60 Hertz as standard. LED drivers shall have a power factor greater than 90% and THD less than 20% of full load. All luminaires shall come equipped with an integral surge suppression protection standard and a quick disconnect harness suitable for mate and break under load provided on power feed to driver for ease of maintenance. Driver is removable through access door and at the fixture. Units shall be UL listed for Damp or Wet locations. Wall washers are to illuminate the frosted glass exterior walls.

- Luminaire tested and certified by an independent test laboratory to meet the photometric performance criteria established by IESNA LM-79.
- Luminaires shall deliver minimum3700 lumens and be rated to consume no more than 100 watts (+/- 15%) per 8-foot section while operating for a minimum of 50,000 hours (+/- 10%).
- Luminaires shall perform a minimum range of 10 - 16 foot-candle at the ground level with average-minimum ratio equal or better than 1.3.

Proposed model acceptable for the project: * Lengths to fit location

- Lumenpulse # LumenFacade LOG HO-120-*-40K-WH
- GVA Lighting-STR9-*-CM-6-2.5W-4000K-ND
- Cree-FLD-OL-SN-*-14-D-UL-WH-700-40K

B.4 Cabinet Enclosure

Coordinate all necessary arrangements with the utility for new electrical secondary service at 120/240 VAC isolated neutral on behalf of the City of Wauwatosa, which will be the billing customer. The department will pay all required utility service extension fees. Work to include underground conduits and wiring for connections to power LED driver(s) at the other locations as shown in the plans. This enclosure is not quantified; it is part of a single lump sum in this item. Concrete cabinet base installation will be paid for as a separate item and is not included herein.

Panelboards shall be in accordance to UL, NEMA, NEC, and as shown on the drawings. Provide standard manufactured products. All components of panelboards shall be the product and assembly of the same manufacturer. All panels shall be dead front safety type. Arrange sections for easy removal without disturbing other sections. All panelboards shall be completely factory assembled with molded case circuit breakers. Panelboard shall have a 60A/2P main breaker, 100A copper bus size, 120/240V voltage, 1 phase, top or bottom feed, and surface mounting. The panelboard shall have the following features:

1. Non-reduced size copper bus bars, and connection straps bolted together and rigidly supported on molded insulators. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of branch circuit devices. Buss bars shall be copper.
2. Full size neutral bar, mounted on insulated supports.
3. Ground bar with sufficient terminals for all grounding wires.
4. Buses braced for the available short circuit current, but not less than 22,000 amperes symmetrical.
5. All breakers and phase bus connections shall be arranged so that it will be possible to substitute a 2-pole breaker for two single pole breakers, and a 3-pole breaker for three single pole breakers, when trip is 30 amps or less and frame size is 100 amperes or less, without having to drill and tap the main bus bars at bus straps.
6. Design interior so that protective devices can be replaced without removing adjacent units, main bus connectors, and without drilling or tapping. Panel phase bus connections to protective devices shall not be riveted to the panel bus and shall be field removable by means of a screw driver.

7. Where designated on panel schedule as "space", include all necessary bussing, device support and connections. Provide blank cover for each space.
8. Provide galvanized steel cabinets to house panelboards. Cabinets for distribution panels may be factory primed and suitably treated with a corrosion-resisting paint finish meeting UL standard for outdoor applications.
9. Cabinet enclosure shall not have ventilating openings.
10. Back and sides shall be of one piece formed steel. Cabinets for distribution panels may be of formed sheet steel with end and side panels welded, riveted, or bolted as required.
11. Provide minimum of four interior mounted studs and necessary hardware for "in" and "out" adjustment of panel interior.
12. Gutter size in panel boxes, on all sides, shall be in accordance to the NEC. Cabinets containing through feeders shall have the gutters space increased by the amount required for auxiliary gutters in the NEC.
13. Surface trim shall have the same width and height as the box.
14. Provide doors with flush type latch and manufacturer's standard lock. Doors over 48 inches in height shall have a vault handle and a three point catch, arranged to fasten door at top, bottom, and center.
15. In making switching devices accessible, doors shall not uncover any live parts.
16. Provide concealed, butt hinges welded to the doors and trims.
17. For magnetic contactors incorporated in panelboards, provide separate doors for the contactors.
18. Provide a directory card, metal holder, and transparent cover. Permanently mount holders on inside of doors.
19. Painting: Thoroughly clean and paint trims and doors at the factory with primer and manufacturer's standard finish.

Circuit breakers shall be UL listed and labeled, in accordance to the NEC, as shown on the drawings, and as specified. Circuit breakers in panelboards shall be bolt on type on phase bus bar or branch circuit bar. Molded case circuit breakers shall have automatic, trip free, non-adjustable, inverse time, and instantaneous magnetic trips for 100 ampere frame or less. Factory setting shall be HI, unless otherwise noted. Breaker features shall be as follows:

1. Molded case circuit breakers for lighting and appliance branch circuit panelboards shall have minimum interrupting rating as indicated but not less than:
   a. 120/208 and 120/240 Volt Panelboard: 22,000 amperes symmetrical.
2. A rugged, integral housing of molded insulating material.
3. Silver alloy contacts.
4. Arc quenchers and phase barriers for each pole.
5. Quick-make, quick-break, operating mechanisms.
6. A trip element for each pole, thermal magnetic type with long time delay and instantaneous characteristics, a common trip bar for all poles and a single operator.
7. Electrically and mechanically trip free.
8. An operating handle which indicates ON, TRIPPED, and OFF positions.
9. Line connections shall be bolted.

10. Interrupting rating shall not be less than the maximum short circuit current available at the line terminals as indicated on the drawings.
11. An overload on one pole of a multipole breaker shall automatically cause all the poles of the breaker to open.
12. 12 of 20A single pole circuit breakers.

Lighting Contactors shall be UL listed and labeled, 8 contacts at 20A, electrically held, multipole, NEMA ICS 2 contactor. Unit shall have a NEMA 3R enclosure. Contacts shall be silver-cadmium oxide coated. Contacts shall be capable of being field converted. Provide an ON/OFF/AUTOMATIC selector switch. Contactor shall be controlled by a photocell in the automatic mode. Photo cell shall be a flush mounting type wherein only the photo-sensitive portion extends through the power center panel. Lighting contactors shall be Square D, Class 8903, Type L or equal.

Electrical Service The contractor shall be responsible for coordinating the timely installation of the service lateral by the utility. Provide copper, ground rods with a minimum of two at 5/8" Dia. by 10' long separated by not less than 6'-0" and ground conductor meeting Table 259-94 of the N.E.C. Connections between the ground conductor and ground rod shall be via an exothermic type connection process. All wire in a conduit shall be pulled through at the same time. Electrical permits and all applications will be required. The metering pedestal and service are paid under a separate bid item.

Provide identification plaques on the panelboard and/or enclosure providing power to the structure. The plaque is to identify the circuit or circuits powering the panelboard and/or enclosure on the structure

Wiring and Raceway All wiring and raceway, including junction boxes for interior and exterior lighting is to be provided under this section. Raceway shall be rigid metallic conduit sized per number of circuits/conductors. Minimum size wiring shall be #12 AWG type THWN.

B.5 Exit Signs and Battery Emergency Light

Coordinate all necessary requirements with city inspector of the City of Wauwatosa. Work to include traditional emergency lighting and exit signs on guiding the pedestrian inside the stair cases and leading to a public way. The emergency lighting unit (EMU) shall be complete with mounting bracket, current limiting charger with thermal protection and thermally compensated charging along with low voltage cutout to protect the batteries. EMU shall LED indicators for diagnostics, heater with thermostat and battery blanket. EMU to be operational between -40 degrees F and +131 degrees F. Batteries shall be high temperature. EMU shall have self diagnostics test to run automatically 5 minutes every 30 days and 30 minutes every 6 months. Unit shall capable of determining if a lamp is burnt out. EMU shall have an audible failure alarm. Provide a 2-color engraved notice on EMU to call the city of Wauwatosa if the audible alarm is sounding. Co0ordinate phone number with the city of Wauwatosa.

Lamps on unit and remote heads shall be halogen, minimum 10 watts. Remote heads shall be twins and UL listed for WET locations. Emergency battery with LED head lights and weather-proof remote LED double head shall be fully adjustable to meet all aiming requirements, die cast aluminum, sealed and gasketed outdoor type. This unit is not quantified; it is part of a single lump sum in this item.

2. Emergency battery lighting shall be wired to lighting circuit serving area ahead of lighting contactor or local switch to maintain continuity of power. Emergency lights shall be capable of regular testing without turning off the lighting circuit.

3. The Exit signs shall be installed above the door headers leading to public way as shown on plans. Exit shall be non-electrical, heavy-duty aluminum housing, impact-resistant, corrosion-proof and flame-retardant with high-brightness strontium oxide aluminate photo luminescent "Glow-in-the-Dark" that are designed to absorb and store energy from existing light sources. Exits shall be maintenance-free and have a life expectancy of at least 25 years. Exits shall conform to the UL 924 listing, Life Safety NFPA 101, and in compliance with local ordinance and the manufacturer's specifications. This unit is not quantified; it is part of a single lump sum in this item.
Approved manufacturers are:

1. Cooper Lighting – Sure Lites PHL Series
2. The Exit Light Company, PARJ Series
3. Jessup, Glo Brite P50, 7310 Series

C Construction

Conduit provided as structural bid item as shown in the plans and wiring detail. Wiring and fusing to be in accordance to standard spec 659.3.2. Junction box to be installed in such a manner as to ensure that the cover plate is not obstructed. All work to conform to standard specs 652, 653, and 659 as well as standard detail drawings and plan detail drawings for Pedestrian Bridge (B-40-784).

D Measurement

The department will measure Pedestrian Canopy Bridge (B-40-784) Lighting as a single lump sum unit of work, acceptably completed. Separate payments will be made for Electric Service meter Breaker Pedestal under standard bid item 656.0200 and for plaque sequence identification under standard bid item 659.0802.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.1021	Pedestrian Canopy Bridge (B-40-784) Lighting	LS

Payment is full compensation for grounding, junction boxes, luminaire and luminaire mounting, conduit, conduit bodies, fusing, hardware and all work; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

247. Emergency Vehicle Warning System, Item SPV.0105.2016.

A Description

This special provision describes furnishing, installing, and making operational an emergency vehicle warning system as shown on the plans. The system will consist of two vehicle identification card readers, a controller, relays, cabinet to house the controller and relays, and the cabling between the readers and the controller. Furnish and install the vehicle identification readers, cabinet, controller, cabling, relays, vehicle tags, mounting hardware. The system will activate a flashing beacon (paid for separately) connected through multi-conductor power cable (paid for separately) for a user-definable period of time after reading a vehicle tag through the detection zone.

B Materials

All materials furnished with this item must meet have all pertinent regulatory approvals, including UL, FCC, and NEMA. All materials must function between -35º and +150 º F with between 0 and 95%relative humidity.

Cabinet

Cabinet must be appropriate size to fit all the materials required to be in it to complete the system and make it functional. Additionally, the cabinet must contain four 120VAC power outlets. The cabinet must be no larger than 15-inches wide by 18-inches tall. It must be made from 5052 aluminum with the door opening gasketed. Door must include a Corbin No. 2 lock. The cabinet must include screened vents.

Vehicle Identification Reader

Furnish two vehicle tag identification readers meeting the following requirements:

- Must use a wireless communication frequency to the vehicle tags between UHF 902 and 928 MHz.
- Supports protocols EPC Gen 2 and ISO 18000-6C.
- Must have a single read point operating mode and a dual read point mode.
- Must have RS-232 and Ethernet LAN communication abilities and configurable 26 to 34-bit data format.
- Must be fully compatible and interoperable with all material furnished in this item.

Power Supplies

Supplied power will be 120VAC. Furnish all power supplies needed for the equipment included in this item so they operate properly with the supplied 120VAC.

Controller
Furnish a system controller meeting the following requirements:

- Supports at least two card readers of the type furnished with the system.
- Must be able to store a minimum of 4,800 date and time stamped events.
- Must have programmable timezones.
- Must draw no more than 150 mA.
- Must fit in the cabinet furnished with this item.
- Must be fully compatible and interoperable with all material furnished in this item.

Timer Relay
Furnish a timer relay meeting the following requirements:

- Must be user-selectable to function for between one (1) and 999 seconds after being triggered by the controller.
- Must be fully compatible and interoperable with all material furnished in this item.

Flasher Relay
Furnish a flasher relay meeting the following requirements:

- Must meet California Model 204 requirements for a flasher relay.
- Must be fully compatible and interoperable with all material furnished in this item.

Vehicle Tag
Furnish 150 mountable windshield vehicle tags with a compatible communication frequency to the vehicle identification reader and a data transfer rate of up to 640 kbps. The tags will be no larger than 2.65 X 1.0 inch. The operating temperature will be -40° to 185° F. Cards must be fully compatible and interoperable with all material furnished in this item.

The tags will have unique IDs, an on-chip memory of 752 bits and data retention capability of 10 years and 10,000 cycles.

Cabling

- Cabling between the card readers and the controller must be outdoor rated and the insulation rated for at least 120VAC.

Furnish stainless steel mounting brackets to attach the readers to poles (poles paid for separately).

Furnish network cable, with RJ-45 connectors, of sufficient length to reach from the reader to the associated Ethernet switch as shown on the plans.

C Construction

Install the vehicle identification reader per the manufacturer's recommendations for mounting heights to minimize false activations. One reader will activate for vehicles driving one direction through the facility and another reader will activate for vehicles driving another direction through the facility.

Connect the readers to the controller through the cable described elsewhere in this item. Connect the controller to the timed relay and the flasher relay to the timed relay and to the flasher through the power cable (paid for separately).

Demonstrate to the engineer that the system functions as intended and does not read false indications from cards adjacent to the readers but not on the intended driveway.
Use existing or shared access holes in poles or sign structures to install the associate network cable in the pole or sign structure. Where necessary, drill a new hole for the cable and seal the hole using an appropriately sized grommet.

Provide vehicle tags to the Milwaukee County Sheriff. Contact Captain Daniel Hughes at (414) 454-4084 to coordinate delivery.

D Measurement

The department will measure Emergency Vehicle Warning System as a single lump sum unit of work, completely installed and operational, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.2016	Emergency Vehicle Warning System	LS

Payment is full compensation for furnishing, testing and installing the system, including card readers, controller, cabinet, relays, cabling, and 150 vehicle cards; for setup and coordination; and for furnishing all labor, tools, mounting hardware, equipment, transportation, and incidentals necessary to complete the work.

248. Remove Traffic Signals USH 45 NB/SB Ramps and W. Watertown Plank Road, Item SPV.0105.3010; W. Watertown Plank Road and N. 92nd Street, Item SPV.0105.3011; W. Watertown Plank Road and N. 87th Street, Item SPV.0105.3012.

A Description

This special provision describes removing existing traffic signals at the state owned intersection of USH 45 northbound/southbound Ramps and W. Watertown Plank Road and the City of Wauwatosa owned intersections of W. Watertown Plank Road and N. 92nd Street and W. Watertown Plank Road and N. 87th Street in accordance to the pertinent provisions of standard spec 204 and as hereinafter provided. Specific removal items are noted in the plans.

B (Vacant)

C Construction

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

State Owned Traffic Signals

Notify the department's Electrical Field Unit at (414) 266-1170 at least five working days prior to the removal of the traffic signals. Complete the removal work as soon as possible following shut down of this equipment.

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

Remove all standards and poles per plan from their concrete footings and disassemble out of traffic. Remove the transformer bases from each pole. Remove the signal heads, emergency vehicle preemption (EVP) heads mast arms, luminaires, wiring/cabling, and traffic signal mounting devices from each signal standard, arm or pole. Ensure that all access hand hole doors and all associated hardware remain intact. Dispose of the underground signal cable, internal wires and street lighting cable off the state right-of-way. Deliver the remaining materials to the West Allis Electrical Service Facility at 935 South 60th Street, West Allis, Milwaukee County. Contact the department's Electrical Field Unit at (414) 266-1170 at least five working days prior to delivery to make arrangements.

DOT forces shall remove the signal cabinet from the footing. The signal cabinet and associated signal cabinet equipment will be removed from the site by DOT forces and will remain the property of the department.

City of Wauwatosa Owned Traffic Signals

Notify the City of Wauwatosa Public Works Department at (414) 471-8422 at least five working days prior to the removal of the traffic signals. Complete the removal work as soon as possible following shut down of this equipment.

The City of Wauwatosa assume that all equipment is in good condition and in working order prior to the contractor's removal operation. Prior to removal, inspect and provide a list of any damaged or non-working traffic signal equipment to the engineer. Any equipment not identified as damaged or not working, prior to removal, will be replaced by the contractor at no cost to the City of Wauwatosa.

Remove all standards and poles per plan from their concrete footings and disassemble out of traffic. Remove the transformer bases from each pole. Remove the signal heads, mast arms, luminaires, wiring / cabling and traffic signal mounting devices from each signal standard, arm or pole. Ensure that access handhole doors and all associated hardware remain intact. Remove the traffic signal cabinet from the concrete footing. Dispose of the underground signal cable, internal wires, and street lighting cable. Deliver the remaining materials to the City of Wauwatosa Electrical Yard at 11100 W. Walnut Road, Wauwatosa, WI. Contact the City of Wauwatosa Public Works Department at (414) 471-8422 at least five working days prior to delivery to make arrangements.

D Measurement

The department will measure Remove Traffic Signals (Location) as a single lump sum unit of work for each 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.0105.3010	Remove Traffic Signals USH 45 NB/SB Ramps and W. Watertown Plank Road	LS
SPV.0105.3011	Remove Traffic Signals W. Watertown Plank Road and N. 92nd Street	LS
SPV.0105.3012	Remove Traffic Signals W. Watertown Plank Road and N. 87th Street	LS

Payment is full compensation for removing and disassembling traffic signals; for scrapping of some materials; for disposing of scrap material; for delivering the requested materials to the West Allis Electrical Service Facility or the City of Wauwatosa Electrical Yard; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

249. Remove Loop Detector Wire and Lead-in Cable USH 45 NB/SB Ramps and W. Watertown Plank Road, Item SPV.0105.3013; W. Watertown Plank Road and N. 92nd Street, Item SPV.0105.3014.

A Description

This special provision describes removing loop detector wire and lead-in cable at the state owned intersection of USH 45 NB/SB Ramps and W. Watertown Plank Road and the City of Wauwatosa owned intersection of W. Watertown Plank Road and N. 92nd Steet. Removal shall be in accordance to standard spec 204, as shown in the plans, and as hereinafter provided.

B (Vacant)

C Construction

State Owned Traffic Signals

Notify the department's Electrical Field Unit at (414) 266-1170 at least five working days prior to the removal of the loop detector wire and lead-in cable. WisDOT forces shall disconnect the lead-in cable from the cabinet equipment.

Remove and dispose of detector lead-in cable and loop wire for abandoned loops. Detector lead-in cable and loop wire shall become property of the contractor and shall be disposed off of the right-of-way.

City of Wauwatosa Owned Traffic Signals

Notify the City of Wauwatosa Public Works Department at (414) 471-8422 at least five working days prior to the removal of the loop detector wire and lead-in cable.

Remove and dispose of detector lead-in cable and loop wire for abandoned loops. Detector lead-in cable and loop wire shall become property of the contractor and shall be disposed off of the right-of-way.

D Measurement

The department will measure Remove Loop Detector Wire and Lead-in Cable (Location) as a single lump sum unit of work for each 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.0105.3013	Remove Loop Detector Wire and Lead-in Cable USH 45 NB/SB Ramps and W. Watertown Plank Road	LS
SPV.0105.3014	Remove Loop Detector Wire and Lead-in Cable W. Watertown Plank Road and N. 92nd Street	LS

Payment is full compensation for removing loop detector wire and lead-in cable; for scrapping of some materials; for disposing of scrap material; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

250. Install Vendor Supplied Municipal Traffic Signal Cabinet W. Watertown Plank Road and Swan Boulevard / Innovation Drive, Item SPV.0105.3015; W. Watertown Plank Road and N. 92nd Street, Item SPV.0105.3016; W. Watertown Plank Road and N. 87th Street, Item SPV.0105.3017; W. Watertown Plank Road and Discovery Parkway, Item SPV.0105.3028.

A Description

This special provision describes the installing of the vendor furnished Traffic Signal Cabinet for traffic signals.

B Materials

Arrange for the delivery of the vendor furnished Traffic Signal Cabinet to the project site and protect it from all damage and loss. The City of Wauwatosa will provide notification at the preconstruction meeting of the Traffic Signal Cabinet vendor and provide the vendor's contact information.

Provide the project plans and specifications to the Traffic Signal Cabinet vendor a minimum of 70 calendar days prior to scheduled field installation. Coordinate directly with the Traffic Signal Cabinet vendor to schedule the cabinet delivery date and time to the project site location. Notify the City of Wauwatosa Public Works Department at (414) 471-8422 at least five working days prior to cabinet delivery.

Coordinate directly with the Traffic Signal Cabinet vendor to schedule the cabinet acceptance testing. Notify the City of Wauwatosa Public Works Department at (414) 471-8422 and participate in the acceptance testing. The City of Wauwatosa has the final determination of the cabinet acceptance testing date and time. The acceptance testing procedures will be provided by the City of Wauwatosa.

Append standard spec 651.3.3 (6) with the following:

Operate the completed traffic signal installation for 30 days consecutively, using the specified signal sequence(s) and all special functions, such as preemption as the plans show or as specified by the engineer.

The department shall not be responsible for project delays and costs due to the delays of delivery by the vendor or by the failure of the Traffic Signal Cabinet to pass acceptance testing.

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

C Construction

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

Request a signal inspection of the completed signal installation to the engineer at least five working days prior to the time of the requested inspection. The City of Wauwatosa Department of Public Works personnel will perform the inspection.

D Measurement

The department will measure Install Vendor Supplied Municipal Traffic Signal Cabinet [Location] as a single lump sum unit of work in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.3015	Install Vendor Supplied Municipal Traffic Signal Cabinet W. Watertown Plank Road and Swan Boulevard / Innovation Drive	LS
SPV.0105.3016	Install Vendor Supplied Municipal Traffic Signal Cabinet W. Watertown Plank Road and N. 92nd Street	LS
SPV.0105.3017	Install Vendor Supplied Municipal Traffic Signal Cabinet W. Watertown Plank Road and N. 87th Street	LS
SPV.0105.3028	Install Vendor Supplied Municipal Traffic Signal Cabinet W. Watertown Plank Road and Discovery Parkway	LS

Payment is full compensation for installing and testing the Traffic Signal Cabinet; for furnishing and installing all other items necessary (such as, wire nuts, splice kits and/or connectors, tape, insulating varnish, ground lug fasteners, etc.) to make the proposed system complete from the source of supply to the most remote unit; for clean-up and waste disposal; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

251. Video Vehicle Detection System W. Watertown Plank Road and Swan Boulevard / Innovation Drive, Item SPV.0105.3018; W. Watertown Plank Road and N. 92nd Street, Item SPV.0105.3019; W. Watertown Plank Road and N. 87th Street, Item SPV.0105.3020; W. Watertown Plank Road and Discovery Parkway, Item SPV.0105.3029.

A Description

This specification sets forth the minimum requirements for a system that detects vehicles on a roadway using only video images of vehicle traffic. Work shall consist of furnishing and installing a video image detector system on all travel approaches.

The video detection camera system shall consist of the latest model video image detector cameras, mounting brackets and hardware, video monitor, video image processor card, power cable, and auxiliary equipment to make the video detector system fully operational. The camera shall be an Iteris brand model and shall be equipped with a battery backup system.

B Materials

B.1 System Hardware

The video detection system shall consist of one to six video cameras, a video detection processor (VDP) capable of processing from one to six video sources, a video monitor, 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 144 detection zones shall be

available. A separate computer shall not be required to program the detection zones. The VDP shall process video from up to 6 video sources simultaneously. The sources can be video cameras or S-VHS video tape players. The video shall be input to the VDP in RS170 format and shall be digitized and analyzed in real time. A separate microprocessor for each video input shall be used.

The VDP shall detect the presence of vehicles in up to 24 detection zones, per camera. A detection zone shall be approximately the width and length of one car. 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 the detection zones quickly and easily. A separate computer shall not be required for programming detection zones.

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 RS-232 port for communications with an external computer. The VDP RS-232 port shall be multi-drop capable.

The VDP shall accept new detection patterns from an external computer through the RS-232 port when the external computer uses the correct communications protocol for downloading detection patterns.

The VDP shall send its detection patterns to an external computer through the RS-232 port when requested when the external computer uses the correct communications protocol for uploading detection patterns.

B.3 Vehicle Detection

Up to 144 detection zones shall be supported and each detection zone can be sized to suit the site and the desired vehicle detection region. Detection zones shall be capable of being OR'ed or AND'ed together to indicate vehicle presence on a single detector output channel.

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 three detection zone patterns shall be saved for each camera within the VDP memory and this memory shall prevent 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 available within 1 second of activation.

When a vehicle is detected crossing a detection zone, the corners of the detection zone will flash 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 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. See the traffic signal installation plans for recommended camera placement.

The VDP shall provide 32 channels of detection through either a NEMA TS1 port or a NEMA TS2 port. 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 zones shall be directional to reduce false detections from objects traveling in directions other than the desired direction of travel in the detection area. Detection zone setup shall not require site-specific information such as latitude and longitude to be entered into the system. Detection zone setup shall not require temporal information such as date and time.

The VDP shall process the video input from each camera using a separate microprocessor at 30 frames per second.

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.

B.4 VDP Hardware

The VDP shall be housed in a durable metal enclosure suitable for shelf-mounting or rack mounting in a roadside traffic equipment cabinet. The VDP enclosure shall not exceed 7" high, 17.75" wide, and 10.5" deep. The VDP shall be modular in construction with plug-in field replaceable units (FRU's) to minimize troubleshooting and repair time. The VDP shall operate satisfactorily in a temperature range from -30°F to +165°F and a humidity range from 0%RH to 95%RH, non-condensing as set forth in NEMA specifications.

The VDP shall be powered by 120 VAC 60 Hz single-phase power source. Surge ratings shall be as set forth in NEMA specifications. Power consumption shall not exceed 135 watts.

The VDP shall include an RS-232 port for serial communications with a remote computer. The VDP RS-232 port shall be multi-drop capable. This port shall be a 9-pin female "D" subminiature connector on the front of the VDP.

The VDP shall include ports for transmitting TS1 and TS2 detections to a traffic controller. The TS1 port shall be a 37-pin female "D" connector on the front of the VDP. The TS2 port shall be a 15-pin female "D" connector on the front of the VDP. The front of the VDP shall include up to six BNC video input connections suitable for RS-170 video inputs. Each 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.

The front of the VDP shall include one BNC video output. Any one of the six video inputs shall be switch selectable for output on this BNC connection via the pointing device at the VDP, or through software and a personal computer connected through the RS-232 multi-drop port via a full duplex modem link.

The video inputs to the VDP shall include transient voltage suppression and isolation. Amplification that shall assure the 1-volt peak-to-peak video signal integrity is maintained despite video cabling losses and externally induced transients. The amplifier shall have a minimum common mode rejection at 60 Hz of 90 dB. The VDP enclosure shall include provisions to be bonded to a good earth ground.

The front face of the VDP shall contain indications, such as LED displays, to enable the user to view real time detections for up to 8 detector output channels at a time.

B.5 Camera

The video cameras used for traffic detection shall be furnished by the 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 of 0.1 lux to 10,000 lux.

The camera shall use a CCD sensing element and shall output monochrome video with resolution of not less than 380 lines vertical and 380 lines horizontal. The camera shall include an electronic shutter control lens.

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. A single camera configuration shall be used for all approaches in order to minimize the setup time and spares required by the user.

The camera electronics shall include AGC to produce a satisfactory image at night. The camera shall be housed in a weather-tight sealed enclosure. 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 5" in diameter, less than 14" long, and shall weigh less than 5 pounds when the camera and lens are mounted inside of the enclosure.

The camera enclosure shall include a thermostatically controlled heater to assure proper operation of the lens shutter at low temperatures and prevent moisture condensation on the optical faceplate of the enclosure.

When mounted outdoors in the enclosure, the camera shall operate satisfactorily in a temperature range from -30°F to +140°F and a humidity range from 0% RH to 100% RH. The camera shall be powered by a 120 VAC 60 Hz power source. Power consumption shall be 15 watts or less, under all conditions.

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. For optimum detection, the camera should be centered above the traveled roadway. 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 be connected within the same connector. The video signal output by the camera shall be black and white in RS-170 or CCIR format. The video signal shall be fully isolated from the camera enclosure and power cabling.

B.6 Manufacturer Warranty

The manufacturer / supplier shall provide a limited two-year warranty on the video detection system. Refer to the supplier's standard warranty included in the Terms and Conditions of Sale documentation.

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.

B.7 Video Detection Coaxial Cable

The coaxial cable to be used between the camera and the VDP in the traffic cabinet shall be Belden 8281 or a 75 ohm, precision video cable with 20-gauge solid bare copper

conductor (9.9 ohms/M), solid polyethylene insulating dielectric, 98% (min) tinned copper double-braided shield and black polyethylene outer covering. The signal attenuation shall not exceed 0.78 dB per 100 feet at 10 MHz. Nominal outside diameter is 0.304 inches.

This cable shall be suitable for installation in conduit or overhead with the appropriate span wires. 75-ohm BNC plug connectors shall 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.

B.8 Video Detection 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 power cable shall be terminated at the camera per manufacturer's instructions and shall only require standard wire strippers and a screw driver for installation (no special connectors or crimping tools shall be used for installation). The cabling shall comply with the National Electric Code, as well as local electrical codes. Cameras may acquire power from the luminaire, if necessary.

B.9 Video Detection 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) and 10" (H). Weight shall not exceed 10 pounds.

C Construction

Install the Video Vehicle Detection System (Location) in accordance to the pertinent sections of the standard specifications and manufacturer's recommendations.

The coaxial cable and power cable shall be installed as a continuous unbroken run from the cameras to the VDP.

D Measurement
The department will measure Video Vehicle Detection System (Location) as a single lump sum unit of work in place and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.3018	Video Vehicle Detection System W. Watertown Plank Road and Swan Boulevard / Innovation Drive	LS
SPV.0105.3019	Video Vehicle Detection System W. Watertown Plank Road and N. 92nd Street	LS
SPV.0105.3020	Video Vehicle Detection System W. Watertown Plank Road and N. 87th Street	LS
SPV.0105.3029	Video Vehicle Detection System W. Watertown Plank Road and Discovery Parkway	LS

Payment shall be full compensation for furnishing and installing the Video Detection Camera system on signal poles or mast arms as shown on the plans; for aiming the camera; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

252. Install Fiber Optic Communications in Cabinet W. Watertown Plank Road and Swan Boulevard / Innovation Drive, Item SPV.0105.3021; W. Watertown Plank Road and N. 92nd Street, Item SPV.0105.3022; W. Watertown Plank Road and N. 87th Street, Item SPV.0105.3023; W. Watertown Plank Road and Discovery Parkway, Item SPV.0105.3030.

A Description
This special provision describes installing fiber optic communications equipment in traffic signal cabinets.

B Materials
The department will furnish pre-terminated fiber optic patch panels and managed Ethernet switches. The materials will be provided with the traffic signal cabinet. The patch panels will have pre-terminated fiber optic cable pigtails. Provide two each 1-meter lengths of ST-ST single mode fiber jumper (2 fibers per jumper) from the patch panel to the Ethernet switch. Provide a 1-meter length of CAT-5e cable from the Ethernet switch to the controller. Provide a 1-meter length of CAT-5e cable from the Ethernet switch to the Interface Panel. CAT-5e patch cords shall have factory pre-terminated RJ45 / 8P8C connectors on both ends per TIA/EIA T568B. Provide all patch panel, Ethernet switch, and Interface Panel attachment hardware.

Provide a 14 AWG XLP insulated, stranded, copper, 600 volt AC locate wire through the conduit run from the communication vault to the traffic signal cabinet. Connect the locate wire by using a silicone filled wire nut at each pull box, vault or other access point. Alternatively, use a single wire through the access points, leaving a 6 foot coil in each pull box, vault or other access point for splicing. All material under this item shall meet the requirements of standard spec 655.

C Construction

Install the patch panel and Ethernet switch on the side of the traffic signal cabinet opposite the electrical service at a location as approved by the engineer. With approval by the engineer, the Ethernet switch may be placed on a shelf near the patch panel. Install the pre-terminated fiber optic cable in conduit from the patch panel to the communication vault as specified in standard spec 678.3.1. Fiber optic cable ends shall be covered securely to protect open ends during installation in raceways. Leave the remainder of the fiber optic cable coiled in the communication vault.

Install the fiber jumpers and CAT-5e cable and provide a communications link from the communication vault to the controller. Install the CAT5-e cable from the Interface Panel to the Ethernet switch.

Connect the locate wire by using a wire nut at each access point. Alternatively, use a single wire through the access points.

D Measurement

The department will measure Install Fiber Optic Communications in Cabinet (Location) as a single lump sum unit of work in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.3021	Install Fiber Optic Communications in Cabinet W. Watertown Plank Road and Swan Boulevard / Innovation Drive	LS
SPV.0105.3022	Install Fiber Optic Communications in Cabinet W. Watertown Plank Road and N. 92nd Street	LS
SPV.0105.3023	Install Fiber Optic Communications in Cabinet W. Watertown Plank Road and N. 87th Street	LS
SPV.0105.3030	Install Fiber Optic Communications in Cabinet W. Watertown Plank Road and Discovery Parkway	LS

Payment is full compensation for installing pre-terminated patch panels, Ethernet switches, and fiber optic cable in conduit; furnishing and installing attachment hardware, fiber jumpers, CAT-5e cable, and locate wire; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

253. Temporary EVP System W. Watertown Plank Road and N. 92nd Street, Item SPV.0105.3024; W. Watertown Plank Road and N. 87th Street, Item SPV.0105.3025; Swan Boulevard and Discovery Parkway, Item SPV.0105.3026.

A Description

This special provision describes furnishing, installing, and maintaining temporary EVP systems at the temporary signalized intersection as shown in the plans.

B Materials

Furnish an emergency vehicle preemption system compatible with the City of Wauwatosa system and users. Contact the City of Wauwatosa Public Works [Joe Kroll; (414) 471-8422; 11100 W. Walnut Road, Wauwatosa, WI; jkroll@wauwatosa.net] for information regarding the equipment needs and operational requirements of the emergency vehicle preemption system.

C Construction

The Temporary EVP System, as shown in the temporary traffic signal plans or as directed by the engineer, shall be complete in place, tested, and in full operation during each stage and sub-stage of construction.

Install the temporary vehicle detection system as shown in the plans and according to the manufacturer's recommendations. Determine a suitable location for the temporary EVP detectors for each stage and sub-stage of construction. Detectors may be mounted on the temporary traffic signal span wire or wood poles. Relocate the temporary EVP detectors to a suitable location if construction activities and/or construction staging changes impede the detector operation. Arrange for testing of equipment prior to acceptance of the installation for each construction stage.

All cables associated with the temporary vehicle detection system shall be routed to the cabinet. Each lead shall be appropriately marked as to which EVP channel it is associated.

Periodic adjustment and/or moving of the temporary EVP detectors may be required due to changes in traffic control, staging, or other construction operations.

Ensure that the temporary EVP system stays in clean working order. Periodic cleaning of the equipment may be required due to dirt and dust build-up.

Remove the temporary EVP system upon project completion.

Provide the engineer records of all EVP settings used during construction.

D Measurement
The department will measure Temporary EVP System (Location), furnished, installed, and completely operational, as a single complete lump sum unit of work per intersection, complete in place and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.3024	Temporary EVP System W. Watertown Plank Road and N. 92nd Street	LS
SPV.0105.3025	Temporary EVP System W. Watertown Plank Road and N. 87th Street	LS
SPV.0105.3026	Temporary EVP System Swan Boulevard and Discovery Parkway	LS

Payment is full compensation for furnishing and installing all required equipment, materials, and supplies; for maintaining and changing the EVP detectors to match the plans, traffic control, and construction staging; for relocating the temporary EVP detectors due to construction activities, if required; for testing the EVP system for each stage and sub-stage of construction; for periodically cleaning all temporary EVP detectors; for removing the temporary EVP system; for cleaning up and properly disposing of waste; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

254. Existing Temporary EVP System W. Watertown Plank Road and Swan Boulevard / Innovation Drive, Item SPV.0105.3027.

A Description
This special provision describes assuming ownership, adding additional EVP equipment, and maintaining temporary EVP systems at the temporary signalized intersection as shown in the plans.

B Materials
Assume ownership of the existing emergency vehicle preemption system compatible with the City of Wauwatosa system and users.

Furnish additional EVP equipment compatible with the existing temporary EVP system currently in place at the intersection.

C Construction
The Temporary EVP System, as shown in the temporary traffic signal plans or as directed by the engineer, shall be complete in place, tested, and in full operation during each stage and sub-stage of construction.

Install the additional temporary emergency vehicle detector as shown in the plans and according to the manufacturer's recommendations. Determine a suitable location for the temporary EVP detectors for each stage and sub-stage of construction. Detectors may be mounted on the temporary traffic signal span wire or wood poles. Relocate the temporary EVP detectors to a suitable location if construction activities and/or construction staging changes impede the detector operation. Arrange for testing of equipment prior to acceptance of the installation for each construction stage.

All cables associated with the temporary vehicle detection system shall be routed to the cabinet. Each lead shall be appropriately marked as to which EVP channel it is associated.

Periodic adjustment and/or moving of the temporary EVP detectors may be required due to changes in traffic control, staging, or other construction operations.

Ensure that the temporary EVP system stays in clean working order. Periodic cleaning of the equipment may be required due to dirt and dust build-up.

Remove the temporary EVP system upon project completion.

Provide the engineer records of all EVP settings used during construction.

D Measurement

The department will measure Existing Temporary EVP System (Location) as a single complete lump sum unit of work per intersection, complete in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.3027	Existing Temporary EVP System W. Watertown Plank Road and Swan Boulevard / Innovation Drive	LS

Payment is full compensation for assuming ownership and maintaining all equipment, materials, and supplies; for furnishing and installing all additional required equipment, materials, and supplies; for maintaining and changing the EVP detectors to match the plans, traffic control, and construction staging; for relocating the temporary EVP detectors due to construction activities, if required; for testing the EVP system for each stage and sub-stage of construction; for periodically cleaning all temporary EVP detectors; for removing the temporary EVP system; for cleaning up and properly disposing of waste; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

255. Prefabricated Steel Truss Pedestrian Bridge B-40-784, Item SPV.0105.4500.

A Description

Furnish a fully engineered, fabricated steel truss pedestrian bridge structure, including bearings, and transport and erect it as shown in the plans, in accordance to Part 5 Structures of the standard specifications, and as hereinafter provided. These specifications shall be regarded as minimum standards for design and construction.

B Materials

B.1 Approved Manufacturers

The bridge shall be designed and manufactured by an approved designer and supplier selected from the department's approved products list.

To be eligible for this project, pre-fabricated bridges from other manufacturers must be pre-approved prior to the bid opening date. Applications for pre-approval may be submitted at any time. Prepare the application in accordance to the department requirements. If needed, obtain information and assistance with the pre-approval process from the Structures Design Section in the Bureau of Structures, Room 601 of the Hill Farms State Transportation Building in Madison, or by calling (608) 266-8494.

B.2 Design Requirements

Structural design of the pedestrian bridge shall be by a professional engineer registered in the State of Wisconsin.

Design the bridge in accordance to the most recent edition of the AASHTO LRFD Bridge Design Specifications, all current interims, and the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges, except as modified herein.

Design the bridge for a H10 vehicle live load or pedestrian live load of 90 psf, which ever controls.

Design welded tubular connections in accordance to the Structural Welding Code-Steel ANSI/AWS D1.1. The fracture critical requirements of ANSI/AWS D1.5 do not apply, and Charpy V-notch impact testing will not be required. Loading shall be as stated in Section 3 of the AASHTO LRFD Guide Specifications for Design of Pedestrian Bridges and as specified hereinafter. The bridge shall be a variable depth Vierendeel through truss with curved top chord profile as shown on the plans. A single diagonal member, orientated as shown in the plans, is permitted in the end truss panels only. The vertical members shall be orientated radial to the top chord as shown in the plans. The top transverse beam members shall be mounted at a constant height above the deck elevation and be designed to support the roof dead and live lands specified hereinafter. Unless otherwise shown in the plans, all chords, verticals, diagonals, and bracing, shall be square or rectangular hollow structural steel (HSS) sections. Floor beams may be HSS or wide flange sections. All HSS sections shall have a minimum thickness of ¼-inch. All other steel shapes shall have a minimum thickness of 5/16-inch. Field splices shall be bolted

with ASTM A325 high strength bolts in accordance to the "Specifications for Structural Joints Using ASTM A325 or A490 Bolts". For top and bottom chord field splices, splice plates are required on both the inside and outside surface of all four sides of the spliced tubing so that each bolt will be acting in double shear. Nuts may be welded to the splice plates to hold them in place during installation. When the collection of water inside a structural tube is a possibility, either during construction or during service, provide the tube with a drain hole at its lowest point.

If the profile grade line is on a crest vertical curve, camber the bridge to match the profile grade line shown on the plans plus the calculated dead load deflection. For a single span bridge, if the profile grade line has a constant slope (no vertical curve), camber the bridge to offset the calculated dead load deflection plus an amount equal to 1% of the bridge length. For a bridge with two or more spans, if the profile grade line has a constant slope (no vertical curve), camber the bridge to offset the calculated dead load deflection only. Concrete bridge decks shall be continuous over the floor beams and supported by 20-gauge, 1½-inch deep corrugated galvanized steel stay-in-place deck forms or removable deck forms if specified on the contract plans. The minimum slab thickness shall be 6-inches measured from the bottom of the deck form. Design the longitudinal reinforcing steel in the slab based on a wheel load located 1 foot from the face of the curb or toe plate, or a pedestrian live load of 90 psf, whichever controls.

Concrete strength (f'_c) shall be 4,000 psi and F_y of bar steel shall be 60,000 psi. A concrete mix with a unit weight of 120 pcf or 150 pcf may be used at the option of the manufacturer/contractor. Use a design dead load of 120 pcf or 150 pcf to match the concrete mix selected. Use load factors of 1.25 for dead load and 1.75 for live load for the design of the concrete slab. Minimum concrete cover shall be 2 inches for top reinforcement and 1 inch for bottom reinforcement. Design the bridge for expansion and contraction with a temperature range of -30º F to 120º F. Utilize Teflon slip pads or other approved material on the sliding surface of the expansion bearing assembly.

The bridge will be fitted with decorative pedestrian hand rails along both sides of the bridge. Include a railing dead load of 100 lbs per foot in the design of the bridge.

The bridge shall include a canopy roof structure with integral gutter as shown in the plans. The canopy roof will be mounted to and span between the top transverse beams. Design the top transverse beams and trusses to support the canopy roof dead load and uniform distributed snow load of 72 PSF. Coordinate the appearance of the canopy roof on the truss with the canopy roof on the elevated approach walkways so that the entire canopy roof has the same appearance. The metal panels for the canopy roof on the truss shall match the panels used for the elevated approach walkways and be a minimum thickness of 24 gage. The integral gutter shall be the same profile as shown on the plans, match the material used for the gutter on the elevated approach walkways and be a minimum thickness of 18 gage.

The sides of the truss will covered with tight metal mesh decorative screening as shown on the plans. Provide HSS sections shown on the plans for support of the metal screening. Design the truss to resist a lateral wind load of 50 psf projected over the entire area of the decorative metal screening shown in the plans.

B.3 Plan Requirements and Submittals

Electronically submit the superstructure plans/shop drawings and design computations to the engineer for acceptance by the Structures Design Section. Make the submittal no later than 12 weeks after date of notice of contract approval. Allow the following time period in the construction schedule: 20 calendar days after the first receipt of plans by the Structures Design Section for a complete initial review of the design and plans submittal, and an additional 20 calendar days for any necessary revisions and/or corrections.

In the submittal, include the following:

1. Basic design criteria shown on the design plans.
2. Complete detailed drawings of all structural steel connections, sizes of members, span lengths between bearing points, skews, walkway widths, height of handrails and safety rails, bearing assembly details, anchor bolt locations, concrete deck reinforcement, design data, materials data, and dead and live load bearing reactions.
3. Engineer's certification. The plans shall be sealed, signed, and dated by a professional engineer registered in the State of Wisconsin.
4. One set of design calculations with independent checks.

The department will return plans (electronically) from this submittal, and any subsequent submittals, to the contractor, either indicating acceptance or marked with required revisions and/or corrections. Provide the engineer copies of final plans to be used in fabrication and construction.

B.4 Weld Testing

An independent agency shall perform nondestructive weld testing; the manufacturer shall pay for this testing. All welds are to be visually inspected except as noted below.

Ten percent of all fillet welds shall be magnetic particle tested.

All full penetration welds of chords shall be ultrasonically or radiographically tested.

Bottom chord welded tube splices for tube thicknesses less than 3/8-inches thick shall be radiographically tested or covered with fillet welded splice plates with non intersecting welds which develop 75% of the spliced member strength.

Submit electronically a written testing report upon completion.

C Construction

C.1 Delivery and Erection

Deliver the bridge by truck to the location that is nearest to the site and accessible by road. The contractor is responsible for unloading the bridge from the trucks at the time of arrival.

The manufacturer shall notify the contractor in advance of the expected arrival time. Information regarding delays after the trucks depart the plant such as inclement weather, delays in permits, rerouting by public agencies, or other circumstances shall be passed on to the contractor as soon as possible.

The manufacturer shall provide an erection procedure to the contractor and shall advise the contractor of the actual lifting weights, attachment points, and all other pertinent information needed to install the bridge. Unloading, splicing, bolting, and providing proper lifting equipment as well as all tools, equipment, labor, and miscellaneous items required to complete the work is the responsibility of the contractor. The procedure for bolting field splices shall be given to the contractor by the manufacturer.

C.2 Finishes

Paint the bridge with a three coat epoxy system as specified in this contract under the separate bid item Painting Epoxy System Pedestrian Bridge B-40-784.

D Measurement

The department will measure Prefabricated Steel Truss Pedestrian Bridge B-40-784, as a single lump sum unit of work for the bridge, 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.0105.4500	Prefabricated Steel Truss Pedestrian Bridge B-40-784	LS

Payment is full compensation for designing, manufacturing, transporting and erecting the pedestrian bridge; furnishing bearing plates, pads, bolts, anchors bolts, and grout.

256. Painting Polysiloxane System B-40-776, Item SPV.0105.4510; Painting Polysiloxane System B-40-783, Item SPV.0105.4520.

A Description

This work consists of steel surface preparation, shop application of the two-coat polysiloxane system, incidental field painting, and repairs to all damaged areas of structural steel in accordance to the pertinent parts of standard spec 517 and as hereafter provided.

Included in this work is the shop painting of the interior surface areas of the steel box girders and the framing therein. The contractor may, at his option, coat the interior of the box girders using the first two coats of the three-coat epoxy paint system per standard spec 517.2.4. If this option is chosen, the following criteria apply:

- Cover the box girder in storage or erected if exposed to sunlight for more than 30 days.
- There will be no adjustment in bid price.

B Materials

Furnish a coating system from the department's approved product list consisting of an organic zinc rich epoxy prime coat and a finish coat of polysiloxane having a resin co-reacted or blended with acrylic, epoxy, or urethane resin or combination thereof supplied by the manufacturer of the zinc rich primer. The coatings shall not contain any isocynates or polyisocynates components. The organic zinc rich epoxy primer shall be in accordance to standard spec 517.2. The organic zinc rich epoxy primer application shall be in accordance to standard specs 517.2 and 517.3.

The finished color of the Polysiloxane coating for the exterior of structural steel box girders, including all exterior diaphragms and bracing on steel box girder bridges shall match the color indicated on the plans.

The finished color of the coating for all structural steel on the interior of structural steel box girders, including all diaphragms and bracing on the interior of steel box girders, shall match the Federal Standard No. 595B as follows:

White – #27925

C Construction

Remove all visually evident steel defects in accordance to AASHTO M 160 prior to blast cleaning. When material defects exposed by blast cleaning are removed, restore the blast profile by either blast cleaning or by using mechanical tools in accordance to SSPC-SP11. Mill or grind flame cut edges so the lines are parallel to the length of the plate edge. Grind exterior corners to a 3/32" radius.

Supply the engineer with product data sheets before any coating is applied. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, and the minimum drying time for shop or field applied coats. The manufacturer shall provide the recommended procedures for coating galvanized bolts, nuts and washers. Provide the range of application for temperature conditions and the procedures for re-coat.

Except for the required incidental field finish work including bolted field splices and repair of damaged areas, shop apply the coatings at the following dry film thicknesses:

Organic zinc rich epoxy primer .....4 mils min
Polysiloxane finish coat .....4 to 8 mils
Total paint system .....8 mils minimum, 13 mils max.

Measure all thicknesses in accordance to SPCC PA 2.

Apply the organic zinc rich epoxy primer in accordance to standard spec 517.3 of the standard specification except that the dry film thickness on the faying surfaces of bolted field splices shall not be less than 2 mils or greater than 2.5 mils. Mask the faying surfaces during application of the finish coat.

Do not apply polysiloxane if the temperature of air or the steel is below 35 F. A mist coating of polysiloxane in accordance to the manufacturer's procedures is recommended to minimize bubbling.

On the interior of box girders, the paint on the top of the bottom flange shall be uniformly dusted with silica sand or other grit material acceptable to the engineer, to create a non-slip walking surface within the interior of the box girders. The silica sand or other approved grit material shall be uniformly applied on the wet film surface of the first interior coat. Blow off any loose, non-adhered sand or grit prior to application of the second interior coat.

The last sentence of paragraph (4) of standard spec 517.3.1.5.2 is revised as follows: The maximum time between coats shall be in accordance to the manufacturer's recommendations except that no more than 60 days may elapse between coats of Polysiloxane System with the exception of additional time for field application of the polysiloxane finish coating in areas where incidental painting is required or damage has occurred.

After delivery of the girders to the project site, prior to erecting the girders, visually inspect the girders and clean if necessary of all dust, dirt, road salts and other contaminants that have collected and adhered on the surfaces of the girders during shipping to the project site. Clean by use of a low-pressure water blast or other means acceptable to the engineer to remove all visually identifiable contaminants, without damage to the shop-applied girder paint.

Take special care during construction to minimize the number and size of touch-up spots. Follow the manufacturer's recommendations for damaged area repairs. The engineer must approve the field paint appearance prior to final acceptance.

Protect the property in the vicinity of the structure from paint over-spray damages for the completion of incidental field painting such as field splices and repair of all damaged areas in accordance to standard spec 517.3.1.8. Prior to applying the polysiloxane field coating, clean all primed surfaces and/or areas to be re-coated with light water blast and prepare surfaces as per manufacturer's recommendations. Prior to painting, all surface cleaning and application procedures shall be approved by the engineer.

D Measurement
The department will measure Painting Polysiloxane System (Structure) as a single lump sum unit of work for each structure, 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.0105.4510	Painting Polysiloxane System B-40-776	LS
SPV.0105.4520	Painting Polysiloxane System B-40-783	LS

Payment is full compensation for steel preparation, for furnishing and applying the paint materials, for protecting the site, for incidental field painting and repairs of damaged areas; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

257. Painting Epoxy Polysiloxane System Pedestrian Bridge B-40-784, Item SPV.0105.4530.

A Description
This special provision describes the shop application of a three coat paint system on new structural carbon steel in accordance to standard spec 517 and as hereinafter provided.

B Materials
B.1 Coating System
Furnish a complete coating system from the department's approved product list. Use the same coating system for all repairs due to handling, shipping and erecting, and for all other uncoated areas. The color of epoxy shall be white and the urethane coating material shall match the color number shown on the plans in accordance to Federal Standard Number 595B, as printed in 1989. Supply the engineer with the product data sheets before any coating is applied. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, the minimum drying time for shop or field applied coats, and the recommended procedures for coating galvanized bolts, nuts, and washers.

C Construction
The manufacturer of the structure shall be responsible for coating applications at slip critical field splices where one or all of the coatings may have to be omitted from faying surfaces.

D Measurement
The department will measure Painting Epoxy Polysiloxane System Pedestrian Bridge B-40-784 as a single lump sum unit of work for each structure, 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.0105.4530	Painting Epoxy Polysiloxane System Pedestrian Bridge B-40-784	LS

Payment is full compensation for cleaning, surface preparation, furnishing and applying the paint materials to the new structural carbon steel, for field repairs, and for furnishing all labor, tools, equipment and incidentals necessary to complete the work in accordance to the contract.

258. Trial Drilled Foundation Shaft, Item SPV.0105.4540.

A Description

The work included here in consists of installing a non-production, trial drilled foundation shaft to verify the proposed means and methods of drilled foundation shaft installation for construction of drilled foundation shafts shown in the plans.

Engineer acceptance of a successfully constructed trial drilled foundation shaft is required prior to beginning the installation of any other drilled foundation shafts for the contract.

B Materials

All materials for the trial shaft are to be as specified the bid item Drilled Foundation Shaft 47.25-Inch.

C Construction

The trial drilled foundation shaft must be installed by the same contractor and work crews who will perform the production drilled foundation shaft installation work on the contract. Use the same equipment and installation procedures intended to be used for the production work on the contract and in accordance to the accepted Drilled Foundation Shaft Installation Plan.

The trail drilled foundation shaft is intended to be installed in the same soil profile as the production drilled foundation shafts included in the contract. If approved by the engineer, the trial drilled foundation may be installed and be used as the first production shaft on the project. Otherwise, construct the trial drilled foundation shaft at a nearby location mutually agreed to by the engineer and contractor.

The trial drilled foundation shaft shall consist of one 47.25-inch diameter drilled shaft as shown on the plans for B-40-784. The trial drilled foundation shaft shall be installed to the same depth, and reinforced the same as the production drilled foundation shafts for pier 1 of B-40-784. Include 4 crosshole sonic logging (CSL) tubes within the trial drilled foundation shaft.

Construction of the trial drilled shaft shall be as specified under the item Drilled Foundation Shaft 47.25-Inch and the accepted Drilled Foundation Shaft Installation Plan. Dispose of all soil excavation and excess materials removed for construction of the trial drilled foundation shaft in accordance to the requirements of the contract.

Acceptance of the trial drilled foundation shaft will be as specified for Drilled Foundation Shaft 47.25-Inch including non-destructive testing as specified for Drilled Foundation Shaft 47.25-Inch. Upon acceptance by the engineer, cutoff the trial drilled foundation shaft and remove as necessary so as to be at least two feet below finished grade, and abandoned in place.

D Measurement

The department will measure Trial Drilled Foundation Shaft as a single lump sum unit of work, acceptably completed.

Unsuccessful or rejected trial drilled foundation shaft installations, or trial drilled foundation shafts not meeting specifications, will not be measured for payment or be cause for additional compensation.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.4540	Trial Drilled Foundation Shaft	LS

Payment is full compensation for drilling and excavating the trial drilled foundation shaft; handling and properly disposing of excavated, augured and cored soils; placing the concrete for drilled foundation shaft to the required diameter and depth; furnishing and installing the reinforcing steel; furnishing and placing CSL tubes; meeting QMP drilled shafts special provision; removal, backfilling; site restoring; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

259. Existing Parking Structure Modification, Item SPV.0105.4550.

A Description

Work under this item consists of providing alterations to the existing Children's Hospital parking structure to facilitate and allow pedestrian access to and from the elevated connecting walkway of B-40-784. This includes removing one section of the existing architectural precast façade and replacing with a new altered precast façade component with cutout for the walkway; removal of the existing snow chute on the connecting parking level and patching the exiting snow chute openings in the concrete floor above and below the walkway. Perform work in accordance to pertinent parts of the standard specifications, the plans, and these special provisions.

A.1 Children's Hospital Contact
Coordinate and schedule all work and submit shop drawings for approval to the Children's Hospital Director of Facilities:

Bob Szczepaniak / Facilities Project Manager
Children's Hospital
Phone: (414) 266-2141
Email: rszczepaniak@chw.org

A.2 Existing Structure Plans
Obtain existing Children's Hospital parking structure plans from Wayne Johnson / Children's Hospital Director of Facilities.

B Materials
Concrete Mixes: Conform to ACI 301.
Reinforcement: ASTM A615A / A615B, Grade 60.
Aggregates: ASTM C33.

C Construction
Notify the Children's Hospital Director of Facilities a minimum of 30 calendar days prior to beginning any work on the Children's Hospital parking structure. Erect a secure barrier to cordon off the work area from public access using temporary fencing or temporary wooden walls. Provide a single access point for construction personal that can locked to prevent public access during non-work hours. Anchor the temporary barriers in a secure manor without drilling, coring or otherwise impacting the existing floor or ceiling. Provide temporary signage to indicate the construction zone and re-direct public access away from and around the work site.

C.1 Precast Façade Panel Design
Obtain the existing parking structure plans from the Children's Hospital Director of Facilities. The existing precast façade panel that is required to be altered is shown in the plans for B-40-784. Design and fabricate a new replacement precast panel as indicated in the B-40-784 plans. Provide embedded anchor bolts or other means of attaching the reconfigured railing to the top of the replacement façade panel. The existing plans contain design loading and specifications for the design of the existing precast façade components. Match the design loads, surface finish and texture of the existing precast panel to be removed.

Submit structural design calculations and shop drawings for the replacement panel to the Children's Hospital Director of Facilities for review and approval. The calculations and shop drawings shall be stamped by a professional engineer registered in the state of Wisconsin. At a minimum, the submitted shop drawings must show shop details for the proposed replacement panel as well as removal procedures and plans for the removal of the existing panel to be replaced. Allow 10 working days for review and approval of the submittal.

C.2.Precast Panel Removal and Erection

Remove and salvage the existing railing on the existing façade panel to be removed. Reconfigure the existing salvaged railing by cutting and providing two new railing end supports as shown in the B-40-784 plan. Fabrication of the new railing end supports and cutting and reconfiguration of the existing salvaged railing shall be done off-site in a shop environment.

Erect the replacement façade panel as soon as possible after removal of the existing panel. After erection of the new panel, erect a secure temporary barrier across the opening in the new panel until the B-40-784 walkway is completed and opened.

As shown in the B-40-784 plans, remove the existing steel snow chute on the 4th floor level of the parking garage that is in front of the B-40-784 walkway access into the parking garage. Fill the openings in the floor and ceiling where the snow chute was removed according to the details shown in the B-40-784 plans.

D Measurement

The department will measure Existing Parking Structure Modification 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.0105.4550	Existing Parking Structure Modification	LS

Payment will be full compensation for designing and fabricating the replacement façade panel, removal of the existing façade panel, erection of the proposed façade panel, snow chute removal, floor and ceiling patching at the snow chute locations, railing removal, reconfiguration and reinstallation and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

260. Rectangular Rapid Flashing Beacon (RRFB) System Station 774WE+30 Right , Item SPV.0105.6020; Station 774WE+30 Left, Item SPV.0105.6021; Station 770WE+20 Left, Item SPV.0105.6022; Station 758WJ+10 Right, Item SPV.0105.6023; Station 758WJ+10 Left, Item SPV.0105.6024; Station 754WJ+00 Left, Item SPV.0105.6025; Station 751WG+00 Right, Item SPV.0105.6026; Station 751WG+00 Left, Item SPV.0105.6027; Station 762WG+00 Right, Item SPV.0105.6028; Station 767WD+50 Right, Item SPV.0105.6029; Station 767WD+50 Left, Item SPV.0105.6030; Station 776WD+20 Right, Item SPV.0105.6031.

A Description

This work shall consist of furnishing and installing to the department a solar powered rectangular rapid flashing beacon (RRFB) system consisting of multiple assemblies as

described herein and as shown in the plans. Each assembly shall be solar powered and pedestrian activated. The assemblies shall be wirelessly controlled and multiple units shall be synchronized.

B Materials

Furnish a RRFB system with multiple assemblies. Each assembly may consist of, but not limited to, light indications, and electrical components (wiring, solid-state circuit boards, etc). An assembly may include the following items:

(1) **Light Indications**

1. Each indication shall be a minimum size of approximately 7" wide x 3" high with 8 high power LEDs
2. Two indications shall be installed on an assembly facing in the direction of approaching vehicular traffic. The two indications shall be aligned horizontally, with the longer dimension of the indication horizontal, and a minimum space between the two indications of approximately 7" measured from inside edge of one indication to inside edge of second indication.
3. A 6 LED indication shall be installed on an assembly facing in the direction of approaching pedestrian traffic to serve as a confirmation for the pedestrian that the system has been activated.
4. The outside edges of the two indications, including any housing, shall not protrude beyond the outside edges of the integral signage of the assembly.
5. The light intensity of the indications shall be certified to meet the minimum specifications of the Society of Automotive Engineers (SAE) standard J595 Class 1(Directional Flashing Optical Warning Devices for Authorized Emergency, Maintenance, and Service Vehicles) dated January 2005 and be available upon request
6. Each indication shall be located between the bottom of the crossing warning sign and the top of the supplemental downward diagonal arrow plaque.
7. All exposed hardware shall be anti-vandal.
8. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

(2) **Sign**

1. All signs shall be supplied and installed under a separate bid item. However, the assemblies must be constructed to allow the appropriate space for the installation of the signs in the field.

(3) **Control Circuit**

1. The control circuit shall have the capability of independently flashing up to two independent outputs. The LED light outputs and flash pattern shall be completely programmable using windows based software

2. The controller shall be web enabled to allow for remote programming and system diagnostics. Including flash time, flash pattern and report system information, such as battery voltage, and temperature.
2. The flashing output shall have 70 to 80 periods of flashing per minute with a 100 – millisecond duration on time. The output shall reach the output current as programmed for the duration of the pulse.
3. Each of the two yellow indications shall have 70 to 80 periods of flashing per minute and shall have alternating, but approximately equal, periods of flashing light emissions and dark operation. During each of its 70 to 80 flashing periods per minute, the yellow indications on the left side of the RRFB shall emit two (2) slow pulses of light after which the yellow indications on the right side of the RRFB shall emit four (4) rapid pulses of light followed by a long pulse.
4. Flash rates with the frequencies of 5 to 30 flashes/second shall not be used to avoid inducing seizures.
5. The control circuit shall be installed in an IP67 NEMA rated enclosure.
6. All circuit connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series or approved equal
7. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

(4) **Battery**

1. The Battery shall be a 12VDC Absorbed Glass Mat (AGM) sealed lead-acid, maintenance-free battery.
2. The Battery shall be rated at 45AH minimum and shall conform to Battery Council International (BCI) specifications.
   All batteries shall be sealed in a plastic film to provide moisture and corrosion resistance.
3. The Battery shall have a minimum operating temperature range of -76º to 140ºF (-60º to 60ºC).
4. All battery connectors shall conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Connectors shall be Deutsch DTM series or approved equal
5. The Battery shall be solar-charged with a capacity up to 30 days of autonomy without sunlight, varying with ambient temperature and number of activations. Solar calculations shall be provided

(5) **Wireless Radio**

1. Radio control shall operate on 900 MHzfrequency hopping spread spectrum network.
2. Radio shall integrate with communication of RRFB system control circuit to activate light indications from pushbutton input.
3. The Radio shall synchronize all of the remote light indications so they will turn on within 120 msec of each other and remain synchronized through-out the duration of the flashing cycle.
4. Radio systems shall operate from 3.6 vdc to 15vdc
5. The Radio unit shall have an LCD display to program flash time and communicate system information, such as battery voltage, battery temperature and solar charge level an onboard diagnostics.6. All individual components of the system shall be replaceable to allow for easy field repair and maintenance.

(6) **Pushbutton**

1. The pushbutton shall be capable of continuous operation over a temperature range of -30 degrees F to 165 degrees F (-34 degrees C to 74 degrees C).
2. Pushbutton shall be ADA compliant.

(7) **Solar Panel**

1. The Solar Panel shall provide 55 watts at peak total output.
2. The Solar Panel shall be affixed to an aluminum plate and bracket, adjustable at an angle of 45°- 60° to facilitate adjustment for maximum solar collection and optimal battery strength.
3. The Solar Panel Assembly (panel, plate and bracket) shall be mounted on a 360º rotatable pole cap mount, to facilitate adjustment for maximum solar collection and optimal battery strength.
4. The Solar Panel shall have a minimum operating temperature range of -40º to 185ºF (-40º to 85ºC).

(8) **Pedestal Shaft**

1. Shall meet the requirements as set forth in standard spec 657.2.4 for highway and structure construction.
2. Shall be a standard 4.5" OD aluminum pedestal pole. Supplied with one end threaded for easy installation into a pedestal base.
3. Shall be a 13’ Schedule 80 pipe raw aluminum

(9) **Pedestal Base**

1. Shall meet the requirements as set forth in standard spec 657.2.5 for highway and structure construction.
2. The pedestal base shall be a cast aluminum pedestals mount on a concrete base attached by four internal anchor bolts imbedded in the base.

3. The Base shall have a large 8.5" square hand hole cover allowing access to the interior of the base.

(10) **Concrete Base**

1. Shall meet the requirements as set forth in standard spec 654.2.1 for highway and structure construction, as applicable.
2. The concrete base shall be a Type 1 base (WisDOT bid item 654.0101) or approved equivalent.

(11) **Anchor Bolts**

1. The anchor bolts shall be galvanized steel 1" x 42".
2. Set of 4 includes lock washer and nut.

C Construction

The RRFB system will consist of multiple assemblies to be constructed by the contractor as shown on the plans.

D Measurement

The department will measure Rectangular Rapid Flashing Beacon (RRFB) System (Station) as a lump sum unit of work, as shown on the plans, acceptably furnished and delivered.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.6020	Rectangular Rapid Flashing Beacon (RRFB) System Station 774WE+30 Right	LS
SPV.0105.6021	Rectangular Rapid Flashing Beacon (RRFB) System Station 774WE+30 Left	LS
SPV.0105.6022	Rectangular Rapid Flashing Beacon (RRFB) System Station 770WE+20 Left	LS
SPV.0105.6023	Rectangular Rapid Flashing Beacon (RRFB) System Station 758WJ+10 Right	LS
SPV.0105.6024	Rectangular Rapid Flashing Beacon (RRFB) System Station 758WJ+10 Left	LS
SPV.0105.6025	Rectangular Rapid Flashing Beacon (RRFB) System Station 754WJ+00 Left	LS
SPV.0105.6026	Rectangular Rapid Flashing Beacon (RRFB) System Station 751WG +00 Right	LS
SPV.0105.6027	Rectangular Rapid Flashing Beacon (RRFB) System Station 751WG +00 Left	LS
SPV.0105.6028	Rectangular Rapid Flashing Beacon (RRFB) System Station 762WG+00 Right	LS
SPV.0105.6029	Rectangular Rapid Flashing Beacon (RRFB) System Station 767WD+50 Right	LS

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.6030	Rectangular Rapid Flashing Beacon (RRFB) System Station 767WD+50 Left	LS
SPV.0105.6031	Rectangular Rapid Flashing Beacon (RRFB) System Station 776WD+20 Right	LS

Payment is full compensation for providing and installing a fully operational RRFB system consisting of multiple assemblies; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

261. Chevron Solar Powered Sign System Assembly Ramp WJ, Item SPV.0105. 6040, Chevron Solar Powered Sign System Assembly Ramp WD, Item SPV.0105. 6041

A Description

This work consists of furnishing and installing a 3 Chevron synchronized sign system that is solar powered with a radar activation device and supplying light assemblies that are wirelessly controlled. This work also includes supplying multiple synchronized units as detailed in the plans.

A.1 General Requirements

A.1.1 Supply and install Chevron sign systems that consist of a Day-Viz LED Blinkersign or approved equal and conform to the 2009 Federal Highway MUTCD section 2A.07 on retro reflectivity and illumination.

A.1.2 Supply and install Chevron sign systems as a complete assembly, consisting of but not limited to, the pole, breakaway Device, sign mounting, radar device, solar panel, radio and electrical components (wiring, battery, solid-state circuit boards, etc).

A.2 Functional Requirements

A.2.1 Furnish each Chevron sign system with solar power.
A.2.2 Furnish each Chevron sign system with a radar device that will activiate the sign system.
A.2.3 Furnish a Chevron sign system that will be seen as normally dark, that initiates operation only upon radar activation over a set speed threshold, and that ceases operation after a predetermined time limit (based on MUTCD procedures).
A.2.4 Furnish each remote Chevron sign system with a wireless activation mechanism, using a 900Mhz radio housed in an enclosure mounted to the sign as shown on the plans.
A.2.5 Supply Chevron sign system LED's that flash in a sequence from near to far.
A.2.6 Supply wireless synchronization for all Chevron signs (All lights will turn on within 120msec and remain synchronized through-out the duration of the flashing cycle).
A.2.7 Furnish Chevron sign systems that flash from 1 to 8 sec. with an adjustable offset to the next sign.
A.2.8 Supply each Chevron sign system with one radar activated device on the first sign as to trigger incoming vehicles over a specified speed.

B Materials

Furnish a Chevron sign system as a complete assembly, consisting of but not limited to, breakaway device , signage, sign mounting, radar activation device, solar panel, battery, solar controller, wireless radio and electrical components (wiring, solid-state circuit boards, etc) and as detailed below:

B.1 LED Blinkersign

Supply blinkersign with:

a. A TAPCO Day-Viz™ LED enhanced, fully self-contained Blinkersign™ conforming to the 2009 Federal Highway Highway MUTCD section 2A.07 on retro reflectivity and illumination or approved equal.
b. A high power Luxeon® light emitting diodes (LED) that provides maximum daytime brightness with automatic dimming for reduced night brightness. Mount the LEDs in the border of the arrow to conform to federal standards on all signs.
c. 3M DG3 prismatic sheeting or similar with Anti-Graffiti overlay.
d. signs conforming to MUTCD standards.
e. 0.080 or 0.100 gauge aluminum on all sign blanks.
f. 3M DG3 or similar prismatic sheeting, unless required with a lower grade of reflectivity.
g. Anti-vandal fasteners to mount components to sign and sign to fixture on all sign assemblies.
h. TAPCO # 2180 Day-Viz on all sign assemblies or approved equal.

B.2 LEDs

a. Supply up to 10 high power single watt Luxeon® LEDs that provide a maximum light intensity of up to 600,000 mcd (millicandelas) with a viewing angle of 20° for each sign assembly.
b. Match the color of the sign amber (587.5-590) to all LEDs, as per section 2A.07 of the MUTCD.
c. Seal each LED in 7/8" diameter, heat dissipating plastic enclosure to provide resistance to weather and vibration. Supply a center LED that is less than ¼ inch.
d. Mount All LED enclosures in a 1 inch hole and ultrasonically weld to the sign assembly.
e. Wire all LEDs in a parallel string. Provide for I the event of a single LED failure so not all LEDs fail.
f. Activate all LEDs simultaneously as per MUTCD standards.
g. Use wire conforming to military specifications, MIL-W-16878D, Type D, and enclose in a vinyl nylon jacket.
h. Cover and secure wiring to the sign assembly using a 1"x3/8" aluminum weather resistant extrusion.
i. Use LED connectors conforming to Ingress Protection, IP-67 rating, Use dust proof connectors, and protect from temporary immersion in water up to 1 meter deep for 30 minutes. Supply Deutsch DTM series connectors.
j. Supply a TAPCO # 3012 LED or approved equal.

B.3 Control Circuit
Supply and install the following:

a. A control circuit that has the capability of independently flashing a single output or alternate a double sign. Supply a flashing output level that is user programmable with the use of a Windows GUI (Graphical User Interface) Software programming device.
b. A flashing output that has 50 to 60 flashes per minute with 100 msec – 500 msec duration on time or 1-8 sec flash with an adjustable offset from the previous sign. Supply outputs that reach the output current as programmed for the duration of the programmed pulse.
c. An output current that is individually programmable for day and night time operation. Use daytime and nighttime flashing current ranges from 0 mA to 2000 mA with 1 mA increments. The day and nighttime mode will automatically be determined by solar panel charge input or photo eye input if desired. Supply a daytime and nighttime mode that is programmable up to 6 different light levels.
d. A control circuit with operating temperatures of -40 to +80 c.
e. Supply Deutsch DTM series circuit connectors or approved equal conforming to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 1 meter deep for 30 minutes.
f. A TAPCO # 2538-30 control circuit or approved equal.

B.4 Battery
Supply and install the following:

a. A Battery unit with 4.8 volt 14000mAH Nickel Metal Hydride (NiMH).
b. Sealed in a plastic film.
c. Corrosion and moisture resistant batteries with operating temperatures of -20 to +60 ºC.
d. Battery connectors with an Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 3 feet deep for 30 minutes. Supply Deutsch DTM series connectors or approved equal.
e. Internally fused batteries.
f. Batteries equipped with an internal battery temperature control thermal sensor.
g. TAPCO #2795-6 batteries or approved equal.

B.5 Wireless Radio
Supply and install the following:

a. A radio control that operates on 900 mhz frequency hopping spread spectrum network.
b. A radio capable of integrating with the communication of the Chevron sign system control circuit to activate sign from Radar unit.

c. Synchronization of all remote Chevron signs with the radio indications so they will turn on within 120 msec of each other and remain synchronized through-out the duration of the flashing cycle with the preset offset determined for sequencing.
d. A radio system capable of operating from 3.6 to 15vdc.

B.6 Speed Radar Detector

Furnish and install a one-piece programmable stationary directional true Doppler Radar detector meeting the following requirements:

a. Programmable to monitor only the speed of vehicles coming towards the system.
b. An operation Frequency of 24.125 GHz ±5Mhz with a Power Output 5mW on the K-Band operating band.
c. Operating between 9 to 18VDC with Reverse battery protection with a detection of 300 feet (90 meters) on level road mounted 5 feet off the ground.
d. A Nominal Operating Current/Power 9mAmps @12VDC / 0.1Watts
e. An Operating Temperature range -40 to +185F (-40 to +85 C) and housed in a weatherproof housing.
f. Programmable by an IR Remote Programmer.(Remote optional)
g. Data Interfaces: Serial Communication RS232 and RS485
h. A detector accuracy of +/-0.1 Mph (0.16 Kmph) and a speed range between 10 to 105 Mph (8 to 168 Kph)
i. A US Approval FCC Part 15 for license free operation. The FCC ID is "TIASS300."

B.7 Solar Panel

a. Provide and install a solar panel up to 13.5”x15” size and provide up to 13.5 watts peak total output.
b. Mount the solar panel to an aluminum plate and bracket at an angle of 45°- 60°.
c. Use only anti-vandal fasteners.
d. Furnish solar panel connectors that conform to Ingress Protection, IP-67 rating, dust proof, and protected from temporary immersion in water up to 1 meter deep for 30 minutes. Furnish Deutsch DTM series connectors.
e. Furnish only TAPCO # 2772-2 solar panels or approved equal.

C Construction

Install the Chevron sign system components as a complete assembly as detailed in the plans and as follows:

a. Mount the blinkersign LEDs in the border of the arrow to conform to federal standards on all signs.
b. Seal each LED in 7/8” diameter, heat dissipating plastic enclosure to provide resistance to weather and vibration. Center LED to be less than ¼”.
c. Mount All LED enclosures in a 1” hole and ultrasonically weld to the sign assembly.
d. Wire all LEDs in a parallel string

e. Activate all LEDs simultaneously as per MUTCD standards.
f. Use wire conforming to military specifications, MIL-W-16878D, Type D, and enclose in a vinyl nylon jacket.
g. Cover and secure wiring to the sign assembly using a 1”x3/8” aluminum extrusion.
h. Synchronize all of the remote Chevron signs with the radio indications so they will turn on within 120 msec of each other and remain synchronized through-out the duration of the flashing cycle with the preset offset determined for sequencing.
i. Mount assemblies to wood post as shown on the plan.

D Measurement
The department will measure Chevron Solar Powered Sign System Assembly (Location) as a single lump sum unit of work, acceptably furnished and delivered, as shown on the plans.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.6040	Chevron Solar Powered Sign System Assembly Ramp WJ	LS
SPV.0105.6041	Chevron Solar Powered Sign System Assembly ramp WD	LS

Payment of the item Chevron solar powered sign system assembly is full compensation for furnishing and installing the Chevron solar powered sign system assembly, for testing, for the mounting hardware, and for preserving and resetting assembly location stakes, as indicated on the plans and for furnishing all incidentals necessary to complete the work. The department will pay separately for required sign supports.

SEF 13_0327

262. Dewatering for Detention Basin Construction, Item SPV.0105.8002.

A General
This special provision describes dewatering of detention basin including control of water during excavation and clay lining construction.

A.1 Submittals
Discharge Permits
Submit discharge and well permit applications to Wisconsin Department of Natural Resources (WDNR) if dewatering wells are to be used. Also submit design and calculations for the sedimentation tank or clarifier system to be utilized to reduce sediment levels to minimum levels as required by WDNR prior to discharging.

Water Control Plan
Submit to the department for approval the water control plan at least 30 days prior to installation of water control systems. Resubmit as appropriate if the system or any part thereof is modified during installation or operation.

Should requirements of any permit be different than requirements herein, the more stringent requirements shall control.

Water control plan shall as a minimum, include:
1. Descriptions of proposed groundwater and surface water control facilities including, but not limited to, equipment; methods; installation; standby equipment and power supply, pollution control facilities including silt removal facilities, discharge locations to be utilized; removal of water control systems; provisions for immediate temporary water supply as required by this section.
2. The contractor shall submit shop drawings showing locations, dimensions, and relationships of elements of each water control system. The submittal shall include design calculations demonstrating adequacy of proposed water control or isolation systems and their components. The contractor shall provide manufacturer's literature describing installation, operation, and maintenance procedures for all components of the water control system.
3. Design calculations demonstrating adequacy of proposed water control systems and components. The contractor may be required to demonstrate the systems proposed in the water control plan and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations at all locations and times required.

If system is modified during installation or operation, revise or amend and resubmit Water Control Plan.

Quality Control Submittals
During construction, submit pumping rate measurements, water level readings taken at construction phase piezometers and groundwater quality data as needed.

A.2 Control of Water
General
This section addresses the provisions for controlling, handling, disposing and treating groundwater and surface water, including contaminated groundwater that may be encountered in detention basin excavations, as required for performance of the work; maintaining the control of water facilities, including maintenance items such as the disposal of sludge from settling detention basins and treatment plants; and work necessary to repair or replace property damaged due to groundwater disturbance.

General dewatering and lowering of the groundwater table for the purpose of stabilization of the detention basin excavation surface will be permitted for detention basin construction.

Dewater existing detention pond water to construct the expansion of the existing pond as shown on the plan.

The contractor is responsible for designing, furnishing, installing and maintaining dewatering system that accomplishes continuous control of water at all times during the course of construction, and shall provide adequate backup systems to accomplish control of water. The method of control, handling, and disposal of groundwater and surface water shall be by whatever means are necessary and in conformance with this section to obtain satisfactory working conditions and to maintain the progress of the work.

All required drainage, pumping, treatment, and disposal shall be done without damage to adjacent property or structures and without interference with the operations of other contractors, or the rights of public and private owners, or pedestrian and vehicular traffic.

The contractor shall modify the water control system at his own expense if, after installation and while in operation, it causes or threatens to cause damage to adjacent property or to existing buildings, structures, or utilities.

A.3 Regulatory Requirements

Storm water discharge to storm sewers, watercourses, lakes, and wetlands shall conform to the requirements of local, state, and Federal regulations.

Water from excavations shall be kept separate from storm water discharge associated with surface construction. Ground water from excavations shall be discharged into the nearest sanitary sewer, in compliance with all applicable codes and regulations. Discharge of ground water into storm sewers, open waterways, or on open ground is prohibited.

In the event that contaminated waters are encountered, the contractor is required to notify the department prior to discharging contaminated water into the sanitary sewer system. The contractor may be required to provide laboratory test results documenting contaminant concentrations.

B Materials

The contractor is responsible to determine materials required to meet these dewatering specifications. The piezometer and observation well materials are listed below.

B.1 Filter Pack

Filter pack shall be clean natural silica sand; graded such that all of the material passes the No. 4 sieve and is retained on the No. 30 sieve.

B.2 Filter Pack Seal

Filter pack seal shall be clean natural silica sand; graded such that all of the material passes the No. 10 sieve and is retained on the No. 40 sieve.

B.3 Bentonite Seal

Bentonite pellets used to form bentonite seals shall be 3/8-inch diameter compressed pellets made from high swelling montmorillonite.

B.4 Piezometers (PZ)

Riser pipe for piezometers shall consist of schedule 40 or thicker PVC pipe with flush threaded couplings. All PVC pipe shall have a nominal diameter of 2 inches. A PVC cap for the riser shall be provided. Sensing tips shall consist of 2-inch ID factory-slotted PVC threaded pipe, with 0.02-inch size openings, 60 inches in length.

C Construction

C.1 General

Continuously control, handle, treat and dispose water at all times during the course of construction, and provide adequate backup systems to accomplish control of water in conformance with this section to obtain satisfactory working conditions and to maintain the progress of the work. Water to be controlled includes groundwater, contaminated groundwater; surface water (precipitation and run-off); and wastewater from combined or separated sewers or related facilities.

Obtain all permits required from Wisconsin Department of Natural Resources, local municipality and any other agencies for installation and operation of water control systems and discharging of collected water into water courses, water bodies, sewers or the ground.

Perform the work without damage to adjacent property or structures and without interference with the operations of other contractors, or the rights of public and private owners, or pedestrian and vehicular traffic. Modify the water control system at your own expense if, after installation and while in operation, it causes or threatens to cause damage to adjacent property or to existing buildings, structures, or utilities.

C.2 Surface Water Control

Intercept and divert surface drainage away from the work sites by the use of dikes, curbwalls, ditches, sumps, or other means. Design surface drainage systems so that they do not cause erosion on or off the site. Control surface runoff to prevent entry of surface water into excavations and to prevent erosion on or off the site. Remove drainage systems when no longer needed.

C.3 Water Control in Excavations

Use water control methods that are appropriate, as determined by the contractor, to permit conditions, ground conditions, construction operations, and requirements of these plans and specifications. The methods shall involve removal of water accumulating within excavations from precipitation and groundwater infiltration, and may involve removal of water outside excavations by means such as the use of dewatering or pressure relief wells.

Water control measures shall minimize adverse effects of elevated or reduced water pressure on the work, the surrounding ground and adjacent facilities and structures. Design and operate the water control measures to prevent removal of in-site materials (development of lost ground), or loosening or softening of subgrade soils within excavations.

The water control methods shall be of such capacity that they will lower and maintain the free water and piezometric levels, to an elevation at least 2 feet below all earth slopes, detention basin bottoms and excavation surfaces including the base of excavation required for placement of the clay liner thickness. The methods shall have sufficient capacity to accomplish this desired result allowing for normal variations in precipitation and soil and aquifer properties.

Control groundwater and surface water such that the detention basin construction can be performed without adverse effects of water on the facility being constructed, including hydrostatic uplift pressures. If soil stratification is such that the water level cannot be maintained at the specified levels, contractor shall, at no additional cost to the department, control seepage of groundwater by whatever means are necessary to assure there is no loss of ground by erosion or piping of fines with seepage and no instability of slopes due to seepage. Control water during periods when excavation and installing slope underdrains, clay patches and as such other times as is necessary for efficient and safe execution of the work.

Should water enter the excavation in amounts that could adversely affect the performance of the work or that has the potential to cause loss or damage to adjacent property or structures, take immediate steps to control the water inflow.

Provide standby pumps and standby power supply where disruption of water control systems could allow water inflows to threaten the work or the safety of personnel.

C.4 Monitoring of Groundwater Levels

Monitor groundwater levels as necessary to evaluate the sufficiency of the control of water system. Monitor groundwater levels in piezometers. A system of construction piezometers is required to monitor free water surface elevations and piezometric elevations to evaluate the effectiveness of the water control system in fulfilling the requirements specified herein. Piezometers shall be of adequate numbers and in suitable arrangements and depths for determining the free water surface elevations and piezometric elevation over the area. A minimum of one piezometer per four dewatering wells or two per pond excavation location shall be installed with the dewatering system at locations and depths proposed by the contractor and approved by the department's representative. At least one piezometer shall be placed at the edge of the planned pond between the pond and the closest building/structure.

Piezometer materials and installation shall conform to the requirements herein. Determination of baseline water levels and monitoring of water levels by the engineer and contractor shall be in accordance to this article.

C.5 Installing Piezometers

Drill, sample and log borings in soil drilled for the purpose of installing piezometers as specified herein. Use 2 ½ foot soil sampling intervals with an SPT sampler. Drill borings using 4-inch minimum inside diameter casing and water. Drill the borings so as not to damage adjacent utilities. If use of drilling fluid is necessary to stabilize the borehole, use a biodegradable organic polymeric drilling fluid. Perform a standard penetration test at 2.5-foot depth intervals.

Install the sensing tip, riser pipe, filter pack, filter pack seal, and annular space seal as determined by contractor's engineer. The engineer will determine the depth of the sensing zone for each piezometer installed based upon observations of retained soil samples. Make pipe joints secure and watertight. Withdraw the drill casing in small increments as the backfill materials are placed, so that collapse of the borehole does not occur. Do not rotate casing during withdrawal.

Place filter pack material slowly so that bridging does not occur in the boring and to prevent the instrument from being lifted as the casing is withdrawn. Use a measuring rod or similar device to measure the height of the filter pack to ensure that the filter pack is installed over the proper depth interval. Carefully raise and lower the measuring rod while the filter pack is installed, to prevent bridging and to tamp the filter pack in place.

Place a filter pack seal above the filter pack. Place the filter pack seal in a similar manner as for filter pack material. Place a bentonite seal above the filter pack seal.

Place the annular space seal by tremie grouting. Place the grout in such a manner as to not disturb the integrity of the filter pack and seal.

Grout for the annular space seal for piezometers shall consist of a bentonite to cement ratio of 0.15/1 by weight, with sufficient water to allow pumping. Mix bentonite and water first.

Provide the top of each riser pipe with a cap in which an air vent hole 1/8 inch in diameter has been drilled. The cap shall be easy to remove.

Develop each installation a minimum of 24 hours after completion. Airlift water from the riser pipe by injecting compressed air through a small tube inserted 3 to 5 feet above the top of the sensing tip. Take care not to inject air directly into the sensing tip. Continue development until the water becomes clear and, in the opinion of the engineer, the material soil filter has been developed. Perform a rising head sensitivity test.

The contractor shall make a minimum of one reading at each piezometer, per 24-hour period, 5 days per week during the period of dewatering activities (including dewatering by pumping seepage from sumps) These piezometer readings shall be recorded on an approved form and reported to the engineer within 24 hours after they are obtained.

C.6 Dewatering Wells

Obtain a site-specific dewatering discharge or construction site storm water discharge permit if the WDNR has specific concerns that are not addressed by other permits that might otherwise apply.

Obtain a WDNR permit for operation of any well or well system that has a combined pumping capacity of 70 gallons per minute or more (a high capacity extraction system). For purposes of permitting, a well is defined as any opening made in the ground where the depth of the opening is greater than its largest surface dimension and extends more than 10 feet below ground surface. The permit will require that wells be constructed, operated, and abandoned in accordance to Chapter NR 812, Wis. Adm. Code.

Comply with WDNR regulations regarding disposal of contaminated groundwater in the event that contaminated waters are encountered. Obtain additional permits, if required.

Keep dewatering from wells to the minimum necessary for execution of the work. Obtain any additional geotechnical information necessary for design of a dewatering well system, including performing pump tests, grain size analyses, groundwater chemical analyses, and subsurface investigations. Design and operate wells so as to prevent removal of fine soils with seepage through backpack material and screens. Provide means by which water discharge from each well can be measured and flow rates adjusted. Construct and operate wells in accordance to WDNR requirements, including obtaining permits, as required.

The wells shall be designed, installed and operated in a manner that will preclude removal of materials from the foundation by the pumping operation (hereafter referred to as "piping of fines"). After installation, each well shall be individually pump-tested at maximum design flow to verify acceptability with respect to piping of fines (sediment mostly consisting of silt and sand) as measured using a centrifugal tester. Any well or wellpoint segment found to be causing piping of fines at a rate exceeding 2 parts per million (ppm) by volume during the individual pump-test at the maximum design flow shall be replaced in a manner acceptable to the engineer, and at no additional cost to the department. Each well shall be checked for sediment piping using a centrifugal tester immediately after installation and at least once per month during operation. Measure the sediment content of the total dewatering effluent using a centrifugal tester at least every 30 days. If the sediment content of the total effluent is greater than 1 ppm, contractor shall identify and abandon wells that are producing excessive sand and replace them if necessary. All sediment content tests shall be performed in the presence of the engineer. Sediment content test results shall be furnished to the department within 24 hours.

Monitor the rate of discharge from each well on a daily basis with an accuracy of at least 2 percent of the flow and make records available to the engineer on a weekly basis or as requested. Abandon dewatering wells as specified in standard spec 204.3.3.3 and in accordance to NR 812 Wis. Adm. Code, whichever is more stringent.

C.7 Ground Loss From Removal or Disturbance of Groundwater

Immediately support any structure including, but not limited to, buildings, bridges, freeway surfaces, streets, and utilities, or portions of such structure, including footings, foundations, basements, walls or concrete and asphalt driveways that become unstable or vulnerable to settlement due to removal or disturbance of groundwater. Cease excavation and other construction operations that result or have the potential to result in further settlement until corrective measures are implemented. Support shall include but not be limited to shoring; sheeting; bracing; underpinning; compaction grouting; driving piles; excavating, backfilling, and placing new structural concrete beneath or adjacent to the unstable structure; or other means necessary to rectify the particular problem involved.

Bear the costs of all loss or damage arising from removal or disturbance of groundwater including, but not limited to claims for subsidence and loss of structure support that may occur in the prosecution of the work. If the contractor fails to correct the damage resulting from his operations, the engineer may deem the work to be unacceptable work as defined in standard spec 105.3.2.2.

C.8 Treatment and Disposal of Water

Discharge all water removed from the construction site through pipes or hoses. Do not convey water in open ditches or trenches. Discharge water in a manner that will not cause soil erosion at the discharge point. Discharge shall not cause sediment accumulation or flooding in any stream, storm sewer, or on adjacent properties.

Treat all water to remove suspended solids, oils, cement, bentonite, and other contaminants by use of settling detention basins, on-site treatment plant, or other means selected by the contractor. Design the treatment systems for the maximum discharge rates consistent with the means and methods selected by the contractor. Treatment systems shall be capable of expansion if greater capacity becomes necessary during the course of the work. Provide to the engineer copies of all records required by the WDNR.

Protection of storm sewers and drains shall be in conformance with the local municipality Erosion Control Ordinance and the Wisconsin Construction Site Best Management Practices Handbook, latest revision. Any requirements and costs for such use shall be the responsibility of the contractor. Do not cause flooding by overloading or blocking the flow in the drainage facilities, and leave the facilities unrestricted and as clean as originally found. Document the condition of the drainage facilities prior to and subsequent to their use. The engineer may independently verify the condition of such facilities. Repair or restore any damage to facilities as a result of the contractor's operations as directed by the authority having jurisdiction, at the contractor's expense.

Should requirements of any permit be different than requirements herein, the more stringent requirements shall control.

Remove suspended solids from water discharged from excavations, sufficient to preclude sediment deposition in the receiving sewer.

Ventilate enclosures around wells and water discharge points to prevent the accumulation of combustible gas that may escape from solution in groundwater.

On completing the work, clean out and dispose of all sediments and residues in settling detention basins, treatment facilities, and the like. Dispose of sediments and residues in accordance to applicable regulations.

C.9 Abandonment of Piezometers
At the conclusion of detention basin construction, abandon the piezometers installed during construction in accordance to NR 812 Wis. Adm. Code.

D Measurement
The department will measure Dewatering for Detention Basin Construction 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.0105.8002	Dewatering for Detention Basin Construction	LS

Payment is full compensation for providing submittals, obtaining permits, furnishing materials, installation, all dewatering, testing, protection, maintenance, replacement or repair of damaged instruments, installations or adjacent structures, obtaining data readings, abandonment, and for furnishing all labor, tools, equipment and incidentals necessary to complete the work as specified herein.

263. Control of Water, Item SPV.0105.8098.

A Description
This section addresses the provision for controlling, handling, disposing and treating groundwater and surface water that may be encountered in shaft excavations as required for performance of the work to complete the Storm Sewer Pipe between manholes W1482 to W1501.

B Materials
The contractor is responsible to determine materials required to meet this Special Provision.

C Construction
C.1 Submittals
C.1.1 General
The discharge permits and water control plan shall be submitted to WisDOT at least 30 days prior to start of excavation, unless otherwise noted:

C.1.2 Subsurface Conditions

The contractor shall review the subsurface conditions described on the borings logs in the Geotechnical Data Report.

C.1.3 Submittals

Discharge Permit: Submit discharge and well permit applications to Wisconsin Department of Natural Resources (WDNR) if dewatering wells are to be used. Also submit design and calculations for the sedimentation tank or clarifier system to be utilized to reduce sediment levels to minimum levels required by WDNR prior to discharging.

Water Control Plan: Water control plan shall be coordinated with requirements of Special Provisions: Shaft Excavation and Support, Tunnel Excavation, and Geotechnical Instrumentation. The following items shall be included in the water control plan, as a minimum.

a. Descriptions of proposed groundwater and surface water control facilities including, but not limited to, equipment; methods; installation; standby equipment and power supply, pollution control facilities including silt removal facilities, discharge locations to be utilized; removal of water control systems; provisions for immediate temporary water supply as required by this section.
b. The contractor shall submit shop drawings showing locations, dimensions, and relationships of elements of each water control system.
c. Design calculations demonstrating dewatering zone of influence, and adequacy of proposed water control systems and components. The contractor may be required to demonstrate the systems proposed in the water control plan and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations at all locations and times required. The contractor shall provide manufacturer's literature describing installation, operation, and maintenance procedures for all components of the water control system.
d. Monitoring plans including measurement of: pumping rates at shafts and wells, reading of piezometers, and water quality sampling of discharge.
e. Method(s) to measure discharge quantities.
f. If system is modified during installation or operation, revise or amend and resubmit Water Control Plan.

Quality Control: During construction, submit rate of discharge, pumping rate measurements, water level readings taken at piezometers, groundwater quality data, and sediment content test results. Contractor readings shall be performed in addition to any readings taken by WisDOT. Submit the data and test results within 24 hours of readings.

C.1.4 Acceptance

All Information Submittals should be submitted to WisDOT. WisDOT can reject the submittals which do not adequate detail, as required herein. The contractor shall resubmit the rejected submittals within 7 days upon the receipt of WisDOT’s rejection notice.

C.2 General Requirements
The contractor shall continuously control, handle, treat and dispose water at all times during the course of construction, and provide adequate backup systems to accomplish control of water in conformance with this Special Provision to obtain satisfactory working conditions and to maintain the progress of the work. Water to be controlled includes groundwater, contaminated groundwater; surface water (precipitation and run-off); and wastewater from the existing combined storm sewers or related facilities.

All required drainage, pumping, treatment, and disposal shall be done without damage to adjacent property or structures and without interference with the operations of other contractors, or the rights of public and private owners, or pedestrian and vehicular traffic.

The contractor shall modify the water control system at his/her own expense if, after installation and while in operation, it causes or threatens to cause damage to adjacent property or to existing buildings, structures, or utilities.

C.3 Regulatory Requirements
Storm water discharge to storm sewers, watercourses, lakes, and wetlands shall conform to the requirements of local, state, and Federal regulations. Water from excavations shall be kept separate from storm water discharge associated with surface construction.

In the event that contaminated waters are encountered, the contractor is required to notify the department prior to discharging contaminated water. Comply with WDNR regulations regarding disposal of contaminated groundwater. Obtain additional permits, if required. Notify the Milwaukee Metropolitan Sewerage District for any discharge of contaminated water into the sewer system, and provide laboratory test results documenting contaminant concentrations.

C.4. Surface Water Control
Intercept and divert surface drainage away from the work sites by the use of dikes, curbwalls, ditches, sumps, or other means. Design surface drainage systems so that they do not cause erosion on or off the site. Control surface runoff to prevent entry of surface water into excavations and to prevent erosion on or off the site. Remove drainage systems when no longer needed.

C.5 Water Control in Excavations
Use water control methods that are appropriate, as determined by the contractor, to permit conditions, ground conditions, construction operations, and requirements of these Plans and Special Provisions. The methods shall involve removal of water accumulating within excavations from precipitation and groundwater infiltration, and may involve removal of water outside excavations by means such as the use of dewatering or pressure relief wells.

Water control measures shall minimize adverse effects of elevated or reduced water pressure on the work, the surrounding ground and adjacent facilities and structures. Design and operate the water control measures to prevent removal of in-situ materials

(development of lost ground), or loosening or softening of subgrade soils within excavations.

The water control methods shall be of such capacity that they will lower and maintain the free water and piezometric levels, to an elevation at least 2 feet below all tunnel excavation invert, shaft bottoms and excavation surfaces. The methods shall have sufficient capacity to accomplish this desired result allowing for normal variations in precipitation and soil and aquifer properties.

Control groundwater and surface water such that the construction of tunnels, shafts, open-cut excavations, trenches and other structures can be performed without adverse effects of water on the facilities being constructed, including prevention of hydrostatic uplift pressures on the new facilities until construction has been adequately completed. If soil stratification is such that the water level cannot be maintained at the specified levels, contractor shall, at no additional cost to the department, control seepage of groundwater by whatever means are necessary to assure that there is no loss of ground by erosion or piping of fines with seepage through shoring or lagging into shafts or tunnels and no instability of slopes due to seepage. Control water during periods when excavating, installing ground support systems, installing subgrade protection measures, placing concrete (except tremie concrete), placing pipe, and at such other times as is necessary for efficient and safe execution of the work.

Should water enter the excavation in amounts that could adversely affect the performance of the work or that has the potential to cause loss or damage to adjacent property or structures, take immediate steps to control the water inflow.

Provide standby pumps and standby power supply where disruption of water control systems could allow water inflows to threaten the work or the safety of personnel.

C.6 Monitoring of Groundwater Levels

Monitor groundwater levels as necessary to evaluate the sufficiency of the control of water system. A system of construction piezometers is required to monitor free water surface elevations and piezometric elevations to evaluate the effectiveness of the water control system in fulfilling the requirements specified herein. Piezometers shall be of adequate numbers and in suitable arrangements and depths for determining the free water surface elevations and piezometric elevation over the area. A minimum of one piezometer per four dewatering wells or one per excavation location shall be installed with the dewatering system at locations and depths proposed by the contractor.

Drilling method utilized for piezometer installation shall be direct rotary with drilling fluid that does not impact the development of the piezometer and shall conform to ASTM D5783. During the drilling, soil sampling at intervals of 2.5 feet or less using standard penetration tests shall be formed in accordance to ASTM D1586. The contractor shall install and develop piezometers in accordance to ASTM D5092. Develop each installation a minimum of 24 hours after completion. The contractor’s engineer will

determine the depth of the sensing zone for each piezometer installed based upon observations of retained soil samples.

The contractor shall make a minimum of one reading at each piezometer, per 24-hour period, 5 days per week during the period of dewatering activities (including dewatering by pumping seepage from sumps within open-cuts, shafts, and tunnels) and one reading at each piezometer per week until the end of construction during periods of no dewatering.

C.7 Dewatering Wells

Obtain a site-specific dewatering discharge or construction site storm water discharge permit if the WDNR has specific concerns that are not addressed by other permits that might otherwise apply.

Obtain a WDNR permit for operation of any well or well system that has a combined pumping capacity of 70 gallons per minute or more (a high capacity extraction system). For purposes of permitting, a well is defined as any opening made in the ground where the depth of the opening is greater than its largest surface dimension and extends more than 10 feet below ground surface. The permit will require that wells be constructed, operated, and abandoned in accordance to Chapter NR 812, Wis. Adm. Code.

Keep dewatering influence zone to the minimum necessary for execution of the work. Obtain any additional geotechnical information necessary for design of a dewatering well system, including performing pump tests, grain size analyses, groundwater chemical analyses, and subsurface investigations. Design and operate wells so as to prevent removal of fine soils with seepage through backpack material and screens. Provide means by which water discharge from each well can be measured and flow rates adjusted. Construct and operate wells in accordance to WDNR requirements. Monitor the rate of discharge from each well on a daily basis with an accuracy of at least 2 percent of the flow.

The wells shall be designed, installed and operated in a manner that will preclude removal of materials from the foundation by the pumping operation (hereafter referred to as "piping of fines"). After installation, each well shall be individually pump-tested at maximum design flow to verify acceptability with respect to piping of fines (sediment mostly consisting of silt and sand) as measured using a centrifugal tester. Any well or wellpoint segment found to be causing piping of fines at a rate exceeding 2 parts per million (ppm) by volume during the individual pump-test at the maximum design flow shall be replaced in a manner acceptable to WisDOT, and at no additional cost to the department. Each well shall be checked for sediment piping using a centrifugal tester immediately after installation and at least once per month during operation. Measure the sediment content of the total dewatering effluent using a centrifugal tester at least every 30 days. If the sediment content of the total effluent is greater than 1 ppm, contractor shall identify and abandon wells that are producing excessive sand and replace them if necessary. All sediment content tests shall be performed in the presence of WisDOT.

C.8 Ground Loss from Removal or Disturbance of Groundwater

Immediately support any structure including, but not limited to, buildings, bridges, freeway surfaces, streets, and utilities, or portions of such structure, including footings, foundations, basements, walls or concrete driveways that become unstable or vulnerable to settlement due to removal or disturbance of groundwater. Cease excavation and other construction operations that result or have the potential to result in further settlement until corrective measures are implemented. Support shall include but not be limited to shoring; sheeting; bracing; underpinning; compaction grouting; driving piles; excavating, backfilling, and placing new structural concrete beneath or adjacent to the unstable structure; or other means necessary to rectify the particular problem involved.

The contractor shall bear the costs of all loss or damage arising from removal or disturbance of groundwater including, but not limited to claims for subsidence and loss of structure support that may occur in the prosecution of the work. If the contractor fails to correct the damage resulting from his operations, WisDOT may deem the work to be unacceptable work as defined in standard spec 105.3.2.2.

C.9 Treatment and Disposal of Water

Discharge all water removed from the construction site through pipes or hoses. Do not convey water in open ditches or trenches. Discharge water in a manner that will not cause soil erosion at the discharge point. Discharge shall not cause sediment accumulation or flooding in any stream, storm sewer, or on adjacent properties.

Treat all water to remove suspended solids, oils, cement, bentonite, and other contaminants by use of settling basins, on-site treatment plant, or other means selected by the contractor. Design the treatment systems for the maximum discharge rates. Treatment systems shall be capable of expansion if greater capacity becomes necessary during the course of the work. As requested by WisDOT, the contractor shall provide copies of all records required by the WDNR.

Obtain permission to use storm sewers or drains for water disposal purposes from the authority having jurisdiction. Protection of storm sewers and drains shall be in conformance with the Wisconsin Construction Site Best Management Practices Handbook, latest revision and the requirements by authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the contractor. Do not cause flooding by overloading or blocking the flow in the drainage facilities, and leave the facilities unrestricted and as clean as originally found. Document the condition of the drainage facilities prior to and subsequent to their use. WisDOT may independently verify the condition of such facilities. Repair or restore any damage to facilities as a result of the contractor's operations as directed by the authority having jurisdiction, at the contractor's expense.

Should requirements of any permit be different than requirements herein, the more stringent requirements shall control.

Ventilate enclosures around wells and water discharge points to prevent the accumulation of combustible gas that may escape from solution in groundwater.

On completing the work, clean out and dispose of all sediments and residues in settling basins, treatment facilities, and the like. Dispose of sediments and residues in accordance to applicable regulations.

C.10 Abandonment of Piezometers and Dewatering Wells
Abandon the design phase piezometers (as shown in the Geotechnical Baseline Report) and all piezometers and dewatering wells installed during construction in accordance to Section 204.3.3.3 and in accordance to NR 812 Wis. Adm. Code, whichever is more stringent.

D Measurement
The department will measure Control of Water as a single lump sum unit of work, acceptably completed.

E Payment
The department will pay for Control of Water at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.8098	Control of Water	LS

Payment for Control of Water shall be full compensation for, but not limited to a complete dewatering system design, installation, monitoring, discharge, and all necessary incidental work as specified in this Special Provision.

264. Geotechnical Instrumentation, Item SPV.0105.8099.

A Description
This Special Provision includes requirements to develop the geotechnical instrumentation plan, furnish, install, maintain and remove when applicable, the geotechnical instrumentation for the tunnel and working shafts of Storm Sewer between manholes W1482 to W1501. The purpose of the instrumentation program is to monitor ground movements within and around the tunnel and shafts. The instrumentation program specified herein is not intended to be used to ensure the safety of the work.

A.1 Personnel Qualifications
Technicians: A qualified technician shall be licensed surveyor registered in the State of Wisconsin and have a minimum of 2 years experience in the installation of geotechnical instrumentation similar to those specified herein.

Instrumentation Engineer: The contractor shall hire a professional civil or geotechnical engineer or engineering geologist, with a minimum of 5 years experience in the installation of instrumentation specified herein.

B Materials

Protective Cover: Each protective cover shall be 2 inches larger in inside diameter than the instrument within, or a minimum of 4 inches in inside diameter. Protective covers shall be guard casings or valve boxes depending upon installation location, as specified in this Special Provision. Guard casing shall consist of Schedule 40 steel pipe, or equal. Guard casing shall be of such length that it will have a minimum depth below ground surface of 2 feet, and a height above ground surface of 2 feet to 4 feet, or as instructed by WisDOT. Guard casing shall have a bolting or screw-type cover that is free of sharp edges and burrs, and is easy to remove for monitoring. Valve boxes shall be cast iron or steel designed to resist traffic loading typical for roadway installation. Valve box shall be of such length that it will have a minimum depth below ground surface of 1.5 feet when installed flush with the ground surface. The valve box shall have a bolting cover.

Inclinometers (INC): Inclinometer casing shall be grooved plastic 2.75-inch OD casing that is compatible with the inclinometer being provided. The casing shall be complete with necessary rigid self-aligning couplings and end plugs. The inclinometer monitoring system shall include probe, 100 feet of cable, cable relief, pulley assembly, cable hold, and readout. The inclinometer readout shall measure inclinations at any depth selected by the operator and shall digitally store, process and report the data (by display and downloadable digital files) as lateral movements from a stored baseline reading. The cable connecting the sensor and indicator shall have a stranded steel core to take the stress of pulling so as not to break any connectors or wires. The cable shall be jacketed with a waterproof material and marked externally at 1-foot intervals for accurate depth determination. The cable guide pulley shall mount to the top of the inclinometer casing.

Utility Settlement Markers (UM): Subsurface settlement markers for monitoring utility movement shall consist of a 0.75-inch solid rod or No. 6 steel reinforcing rod set within a 2-inch Schedule 80 PVC pipe casing as depicted on a detail in the plans. The upper end of the rod shall have a rounded head or cap set perpendicular to the rod axis. Equivalent types of subsurface settlement markers may be used subject to the WisDOT's approval.

Ground Settlement Markers (GM): Surface settlement markers in paved areas shall be hardened steel markers treated or coated to resist corrosion, with an exposed convex head having a minimum diameter of 1/2 inch and similar to surveyor's PK nails. Surface settlement markers in unpaved areas shall be a 2-inch by 2-inch by 18-inch long hardwood hub driven to grade.

C Construction

C.1 Submittals

C.1.1 General

Prepare and submit the Qualifications, Instrumentation Plan and Shop Drawings, and at least 21 calendar days prior to start of instrumentation installation. WisDOT will accept the submittal as submitted or return the submittal with requested revisions. Do not start any work until WisDOT provides acceptance of Qualifications and Instrumentation Plan and Shop Drawings. Acceptance of the submittals does not relieve the contractor of responsibility for successful completion of the tunnels.

C.1.3 Submittals for Approval

Qualifications: Submit qualifications of the technicians and the instrumentation engineer.

Instrumentation Plan and Shop Drawings: The Instrumentation Plan and Shop Drawings shall be prepared by the instrumentation engineer and shall ear the seal, signature and date of the instrumentation engineer. As a minimum, include the following:

a. Shop Drawings detailing locations (coordinates), depths, types, details, and other pertinent information showing the installation details for each type of instrumentation required.
b. Shop Drawing that indicates the locations of control points and benchmarks associated with surveys for monitoring geotechnical instrumentation.
c. Description of methods for installing and protecting all instruments.
d. Materials and mix portions for cement-bentonite or cement-lime grout for installing subsurface settlement markers and inclinometers.
e. Schedule of instrument installation and baseline related to significant activities or milestones in the overall project.
f. Manufacturer's literature describing installation, operation, and maintenance procedures for all instruments, materials, readout units, and accessories.
g. Submit permits and consents from authority having jurisdiction, if applicable, for drilling holes from ground surface and conducting monitoring activities.
h. Plans for geotechnical instrumentation to be installed at contractor’s option.
i. Contingency plan when monitoring Threshold Limits are exceeded.

As-built Plans: Following installation of the instruments and prior to the start of underground construction, submit as-built drawings showing the exact installed location (coordinates and elevation), inclinometer’s groove orientation relative to the shaft, the instrument identification number, the instrument type, the installation date and time, the heading station or portal or shaft excavation depth on the installation date, when applicable, and the anchor or tip elevation and instrument length, when applicable, and installed locations of control points and benchmarks associated with surveys for monitoring geotechnical instrumentation. Include details of installed instruments, accessories, and protective measures including all dimensions and materials used.

C.1.3 Information Submittals

Certificates: Submit for each instrument to be installed, as applicable, a certificate issued by the instrument's manufacturer stating that the manufacturer has inspected and tested each instrument before it leaves the factory to confirm that the instrument is working correctly and has no defects or missing parts.

Reports and Records:

a. Drilling and installation logs for instrumentation installations prepared by the instrumentation engineer.
b. Submit copies of completed DNR abandonment forms for subsurface settlement markers and inclinometers as soon as possible after instruments are installed or abandoned.
c. Submit pre-construction assessment report prior to start of any construction or dewatering activities. The pre-construction assessment report shall document the condition of the existing roadway, utilities, and any structures within the zone of influence defined herein.
d. Submit post-construction assessment report at the end of construction.
e. Submit initial/baseline readings specified herein to WisDOT, at least 15 days prior to the start of any construction activity within 50 of the tunnel alignment centerline or edge of the shafts or dewatering within 100 feet of the instrument.
f. Weekly monitoring report by the instrumentation engineer shall be submitted on a weekly basis as specified herein. Supply copies of field notes if requested. As a minimum, construction status (dewatering activity, excavation depth, tunnel progress etc.), monitoring data (with comparison to the baseline readings), interpreted results, exceedances and comments, and impact assessment to adjacent roadway/structure based on monitored movement shall be included in the weekly monitoring report.
g. The contractor shall submit monthly reports, prepared by the contractor's excavation support system design engineer, which include his/her field observation on performance of shaft excavation support systems and review of relevant instrumentation monitoring data.

C.1.4 Acceptance

The department will evaluate the Submittals for Approval with the requirements of these special provisions. Within 14 calendar days after receipt of the Submittals of Approval, WisDOT will notify the contractor of the acceptance of the submittal, or if additional information and/or changes are required. Any unacceptable part of the Submittals of Approval will require resubmission. The contractor must resubmit the Submittals of Approval for evaluation and review with the necessary changes or additional information provided. WisDOT will provide a written notice of acceptance or rejection of contractor's resubmitted Submittal for Approval within 14 calendar days after its receipt.

After WisDOT's acceptance of Submittal of Approval, no changes to the Submittal of Approval can be made without written consent of WisDOT.

All Information Submittals should be submitted to WisDOT. WisDOT can reject the submittals which do not adequate detail, as required herein. The contractor shall resubmit the rejected submittals within 7 days upon the receipt of WisDOT's rejection notice.

C.2 General Requirement

The contractor shall develop the instrumentation plan based on the following requirements:

a. Monitoring shall be performed within tunnel and shaft zone of influence. Tunnel zone of influence shall be defined as a theoretical slope of 1.5H:1V from the spring lines of tunnel excavation. Shaft zone of influence shall be defined as a theoretical slope of 1H:1V from the bottom of shaft excavation.
b. One INC shall be installed between the shaft at W1482 and the existing highway. One INC shall be installed between the shaft at W1501and the existing highway.
c. UMs shall be installed for all active utilities larger than 18-inch diameter and deeper than 5 feet below ground surface to the crown which are located within the defined zone of influence.
d. GMs shall be installed at the following locations:
    x. within 5 feet from edge of the shaft on four side of the shaft
    xi. immediately adjacent to any existing structure which located within the tunnel and shaft zone of influence as defined herein, and dewatering zone of influence as specified in the Special Provision, Control of Water.

The contractor shall install instruments as per the approved submittals. The instrumentation engineer shall supervise and direct technicians and be responsible for instrument installation required. The instrumentation engineer shall be physically present at the installation sites to supervise the installations.

The contractor shall abandon all instruments upon completion of the work.

C.3 Installation

Geotechnical instrumentation shall be installed and baseline readings shall be completed:

a. before commencing any dewatering activity, for the instruments are located within the dewatering zone of influence.
b. before excavation work for shafts and tunnels, for the instruments within 50 feet from the tunnel alignment centerline or edge of shaft.

The contractor shall locate conduits and underground utilities in all areas where borings are to be drilled and instruments installed. Instrument locations shall be modified, as approved by the instrumentation engineer, to avoid interference with the existing conduits and utilities. Repair damage to existing utilities resulting from instrument installations at no additional cost to the department.

All instruments shall be clearly marked, permanently labeled, and protected to avoid being obstructed or otherwise damaged by construction operations or the general public. Protective housing and box or vault covers shall be marked.

After installation of each instrument, survey the as-built location to define the vertical and lateral positions of the exposed parts.

Provide a protective cover for all instruments installed in boreholes from the ground surface. Maintain exposed parts of installed instruments as necessary to ensure their availability for use for the duration of the work. Replace, at no cost to the department, instrumentation in place that becomes damaged, inaccessible, or unreadable as a result of the contractor's means and methods of construction or changes in the contractor's means and methods of construction that could have been anticipated by the contractor prior to installation. The locations of replacement instruments shall be jointly determined by WisDOT and the contractor. Complete the repair or replacement as soon as practical.

C.4 Tremie Grouting

Perform tremie grouting by pumping grout through a tremie pipe positioned 3 to 5 feet above the bottom of the space to be grouted. Keep the bottom end of the tremie pipe submerged in grout as the grout level is brought up to the ground surface. The density of the grout flowing from the space at the ground surface shall be the same as the density of the grout being placed. Allow the grout to set for a minimum 12-hour period before additional materials are placed on top of the grout. Top off any settling of grout.

C.5 Installing Inclinometer

Drilling method utilized for INC installation shall be hollow-stem augers per ASTM D6151. Drill borings for inclinometers using 6-inch minimum inside diameter casing and water or, where ground conditions permit, using drilling mud in a 6-inch minimum diameter borehole. During the drilling, soil sampling at intervals of 2.5 feet or less using standard penetration tests shall be formed in accordance to ASTM D1586.

Install the inclinometer casing completed with end plug as shown on the plans. Install the inclinometer casing at least 10 feet below bottom of shaft excavation. Carefully orient the casing grooves as instructed by the instrumentation engineer. Grout the inclinometer casing in place. Place grout by tremie method. If steel drill casing has been used to support the borehole, remove the drill casing in increments, and top off the grout level with each increment.

Perform tremie grouting by pumping grout through a tremie pipe positioned 3 to 5 feet above the bottom of the space to be grouted. Keep the bottom end of the tremie pipe submerged in grout as the grout level is brought up to the ground surface. The density of the grout flowing from the space at the ground surface shall be the same as the density of the grout being placed. Allow the grout to set for a minimum 12-hour period before additional materials are placed on top of the grout. Top off any settling of grout.

The grout shall consist of a cement to water ratio ranging from 2.5 to 1 for hard soil and 6.6 to 1 for soft soil by weight. The specific ratio to be used will be determined by the instrumentation engineer. The bentonite to cement ratio will be approximate 0.3 to 1, by weight, adjusted to produce grout with the consistency of heavy cream. Mix cement and water first. Add bentonite as necessary to achieve the specified consistency.

Provide the top of each inclinometer casing with a cap. The cap shall be easy to remove.

Perform a groove tracking test after the installation has been completed to ensure that the inclinometer casing has been properly installed. Lower the inclinometer sensor to the bottom of the casing in all four possible orientations, verifying that on raising to the top of the casing the inclinometer orientation is unchanged.

C.6 Utility Settlement Markers

UMs shall be installed to 3 feet above the crown of the utility. Potholing methods shall be used to carefully advance a minimum 4-inch diameter hole to the upper surface of the utility to be monitored for installation of a utility settlement marker. Temporary casing shall be set if necessary. Great care shall be taken to prevent damage to the utility.

Potholing is defined as use of vacuum excavating or low pressure water jetting and vacuum excavating to advance holes with low risk of utility damage to confirm utility locations or to advance holes for grout pipes or geotechnical instrumentation to depths below utilities of concern.

A 6-inch minimum thickness bentonite seal shall be placed at the bottom of the borehole to prevent annular backfill and surrounding soil from entering the PVC casing The bentonite shall be hydrated with water prior to placement.

A PVC casing shall be inserted to the bottom of the borehole, and the annular space outside the PVC casing shall be backfilled with coarse sand or grout. Sand shall be placed in maximum 1-foot lifts and tamped with a rod. Grout shall be placed by tremie method. Grout for subsurface settlement markers shall consist of cement and water, with the minimum amount of water necessary to allow pumping. Any temporary casing set in conjunction with potholing shall be withdrawn in a manner to prevent collapse of the borehole. After the annular space is filled, the PVC casing shall be flushed with clean water to remove any soil and grout. A steel rod or pipe with centralizers that is cut to the required length shall be set in firm contact with the top of the utility. A protective cover shall be installed. The installation shall conform to the details shown in the plans.

C.7 Ground Settlement Markers

The method of installation shall be the contractor's option; however, the marker shall be rigidly affixed so as not to move relative to the surface to which it is attached.

C.8 Monitoring Instruments

Horizontal and vertical survey accuracy shall be 0.01 feet or less.

The contractor shall take a minimum of two sets of initial readings. After initial readings are approved by the instrumentation engineer, the average from the initial readings shall be used to establish the baseline reading.

For shafts, monitor all instruments within shaft zone of influence as follows:

a. Monitor all instruments daily within 50 feet of the outer edge of shaft or within dewatering zone of influence, whichever zone is larger, beginning when shaft construction, or dewatering activity begins, whichever comes first.
b. Monitor daily or once per shift, whichever is more frequent during active excavation of shaft, tunnel launching, and tunnel break through.
c. Monitor twice per week during all other construction activities until backfill and removal of shaft excavation support systems.

For tunnels, monitor all instruments within tunnel zone of influence as follows:

a. Monitor twice daily or twice per shift, whichever is more frequent during active tunnel excavation beginning when tunnel excavation approaches within 50 feet of the station of the instrument location. Continue monitoring at the same frequency until excavation advances 100 feet beyond the station of the instrument location or the tunnel drive is completed, i.e. tunnel shield or tunnel boring machine completely enters the receiving shaft. The monitoring shall be performed at a maximum interval of 4 hours.
b. Upon completion of the tunnel drive, monitoring daily until contact grouting to fill exterior voids is complete.
c. Continue to monitor weekly until backfill and removal of shaft excavation support systems are completed.

The monitoring threshold limits for all instruments are established as follows:

Facilities Monitoring	**Threshold Limit Level 1**	**Threshold Limit Level 2**
Pavement Settlement	1 inch	1.5 inch
Open Area Settlement	1 inch	2 inch
Underground Utilities	0.75 inch	1 inch
Inclinometer	0.50 inch	1 inch
Excavation Support System Deflection	0.75 inch	1.5 inch
Vibration at Existing Structure Location	0.5 inch/sec	2.0 inch/sec

Use whatever means and methods are necessary to limit ground movements, settlements, and damage of utilities, structures and other facilities. These means and methods include, but are not limited to excavation support systems, tunneling methods, underpinning of vulnerable facilities, grouting and other forms of ground improvement.

C.9 Actions to Mitigate Excess Ground Movements

If movement of an instrument reaches the Threshold Limit Level 1, the contractor shall proceed with the approval contingency plan. The likely cause of the movement shall be promptly discussed with WisDOT and the contractor's excavation support system design engineer when applicable. The contractor shall increase the monitoring frequency where

the Threshold Limit Level 1 was exceeded, as directed by WisDOT or the contractor's excavation support system design engineer.

If movement of an instrument reaches the Threshold Limit Level 2, the contractor shall immediately report to WisDOT and cease excavation or other construction operations that result in further movement until additional operational changes are made to reduce ground loss around excavation. The approved contingency plan shall be implemented immediately. The likely cause of the displacement shall be discussed with WisDOT and the contractor's excavation support system design engineer when applicable. The contractor shall increase the monitoring frequency where the Threshold Limit Level 1 was exceeded, as directed by WisDOT or the contractor's excavation support system design engineer. The contractor shall not resume the construction until the ground movement is stabilized, as determined by the instrumentation engineer. If the contractor has exhausted all measures in the approved contingency plan and is not able to stabilize the ground movement, the contractor shall submit a correction plan to WisDOT. Upon WisDOT's acceptance of the correction plan, the contractor shall implement the correction plan immediately.

The cost of actions required for complying with Threshold Limits and to repair any damage to adjacent facilities shall be borne by the contractor with no additional cost to the department.

D Measurement

The department will measure Geotechnical Instrumentation as a single lump sum unit of work, acceptably completed.

E Payment

The department will pay for the specified quantities or revised quantities if agreed to in advance of placement by WisDOT, at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.8099	Geotechnical Instrumentation	LS

Payment for Geotechnical Instrumentation shall be full compensation for furnishing and installing each instrument which includes all materials, labor, tools and equipment necessary for providing submittals, furnishing materials, installation, testing, protection, maintenance, replacement or repair of damaged instruments, initial readings, abandonment, and all other specified items of work for which no separate bid item is provided.

265. Traffic Control Fixed Message Signs Left In Place, Item SPV.0165.0001.

A Description

This special provision describes furnishing and installing fixed message signs including posts as shown on the plans.

Fixed Message Signs Left In place become property of the department after final acceptance by the engineer.

B Materials
This work shall be in accordance to the pertinent provisions of standard spec 643.2 and as hereinafter provided.

C Construction
This work shall be in accordance to the pertinent provisions of standard spec 643.3, as shown on the plans, and as hereinafter provided.

D Measurement
The department will measure Traffic Control Fixed Message Signs Left In Place by the square foot, acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.0001	Traffic Control Fixed Message Signs Left In Place	SF

Payment is full compensation for furnishing and installing the Traffic Control Fixed Message Signs Left In Place and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

266. Concrete Sidewalk 5-Inch Special, Item SPV.0165.0010.

A Description
This special provision describes placing colored concrete. Placement, forming, and aggregate of the concrete shall be in accordance to the pertinent requirements of standard specs 415, 416 and 501, in accordance to the details as shown on the plans, and as hereinafter provided.

B Materials
At least 15 working days prior to the start of colored concrete installation supply one 2-foot x 2-foot panel sample of the colored concrete. The final color and finish is to be approved by the City of Wauwatosa, Mr. William Wehrley (414) 479-8929 prior to placement of any colored concrete in the field.

The accepted sample shall be the standard of finish for all colored concrete work within the project.

The concrete shall be grade A2 or grade A-FA as specified in standard spec 501 of the standard
specifications. All colored concrete shall originate from the same batch plant.

C Construction
Concrete shall be placed by installers experienced with colored, broom finished concrete.

Concrete sidewalk shall match the visual appearance of the approved sample. Concrete sidewalk not conforming to the color and finish of the approved sample shall be replaced at the contractor's expense.

C.1 Color Admixture
Use integral color admixture material specifically designed for coloring concrete.
Blend admix at plant per manufacturers specifications to achieve the indicated color. Color admixtures manufacturer and colors include:

Solomon Color – **Brick 417**
Schofield System – **Quarry Red C-32**
Davis Colors – **Brick Red 160**

Or approved equal

C.2 Finish
Finish shall be a medium brushed (broom) finish with a 6-inch smooth troweled finish as shown in the plans.

D Measurement
The department will not measure Concrete Sidewalk 5-Inch Special. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.0010	Concrete Sidewalk 5-Inch Special	SF

Payment is full compensation for installation of colored concrete; excavating and preparing the foundation; providing all materials, including concrete, and expansion joints; placing, finishing, protecting and curing concrete; for preparing sample panels; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

267. CIP Retaining Wall, Item SPV.0165.0020.

A Description
The work under this item consists of furnishing and installing a minor cast-in-place concrete retaining wall along the north side of Watertown Plank Road at the location shown in the plans. Perform work in accordance to the standard specifications, the plans, and as hereinafter provided

B Materials
(1) Furnish concrete masonry conforming to standard spec 504.2.

(2) Furnish high strength bar steel reinforcement and coated high strength bar steel reinforcement conforming to standard spec 505.2.

(3) Furnish rubberized membrane waterproofing conforming to standard spec 516.2.3.

(4) Furnish 6-inch diameter pipe underdrain and geotextile fabric pipe wrap conforming to standard spec 612.2.

(5) For constructing concrete masonry architectural surface treatment use form liners conforming to section B of article Architectural Surface Treatment, B-40-784.

(6) Furnish mortar for sack rubbing concrete surfaces and concrete stain for use on exterior concrete surfaces conforming to section B of article Concrete Staining Multi-Color B-40-784.

C Construction

(1) Perform structure excavation and backfill the completed structure in accordance to standard spec 206.

(2) Construct the minor cast-in-place retaining wall conforming to standard spec 504.3

(3) Place rubberized waterproofing membrane at the locations shown on the plans in accordance to standard spec 516.3.3.

(4) Wrap and lay 6-inch pipe underdrain at the location shown in the plans in accordance to standard spec 612.3.

(5) Construct architectural surface treatment to match the architectural surface treatment on adjacent Structure B-40-784 and conforming to standard spec C of article Architectural Surface Treatment B-40-784.

(6) Apply concrete stain to the 6-inch coping and a multi-color concrete stain to the architectural surface treatment as noted on the plans and in accordance to section C of articles Concrete Staining B-40-784 and Concrete Staining Multi-Color B-40-784.

D Measurement

The square footage of exposed wall area for CIP Retaining Wall acceptably completed will be based on the plan quantity without measurement. Modifications to the wall length or height, additional excavation and / or additional concrete placed beyond the limits of the plan dimensions will not be measured for payment unless authorized and agreed to in advance of placement by the engineer.

E Payment

The department will pay for the plan quantity or revised plan quantity if agreed to in advance of placement by the engineer, at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.0020	CIP Retaining Wall	SF

Payment is full compensation for structure excavation and backfilling; furnishing and placing concrete masonry, high strength bar steel reinforcement, coated high strength bar steel reinforcement, rubberized membrane waterproofing, and wrapped pipe underdrain; constructing architectural surface treatment and applying multi-color concrete staining; and for furnishing all labor, tools, equipment and incidentals necessary to complete the work.

268. Longitudinal Grooving Bridge Deck, Item SPV.0165.4700.

A Description

Provide longitudinal deck grooves parallel to the centerline of the roadway prior to opening the bridge to traffic as directed by the engineer.

B Materials

The grooving machine to contain blades mounted on a multi-blade arbor on a self-propelled machine built for grooving hardened concrete surfaces.

The grooving machine to have a depth control device that detects variations in the deck surface and adjusts the cutting head height to maintain a specified depth of groove.

The grooving machine to have a guide device to control multi-pass alignment.

C Construction

Perform longitudinal grooving operation in a manner to preclude any damage to the concrete deck surface.

Longitudinal grooving operation to result in a uniformly grooved deck surface.

Cut grooves continuously across the deck width to within 18 inches of the barrier rail, curb line, or median divider. If metal floor drains extend more than 18 inches from the barrier rail, curb line, or median divider, all grooves on the bridge deck surface are to end within 6 inches of the floor drain perimeter.

At skewed metal edged expansion joints in the bridge deck surface, all grooves on the bridge deck surface are to end within 6 inches of the joint leaving no ungrooved surface adjacent to each side of the joint greater than 6 inches in width on the deck side of the expansion joints.

Produce grooves that are continuous across construction joints or other joints in the concrete deck surface less than ½-inch wide.

Grooves shall be 1/8-inch wide and 3/16-inch deep. The longitudinal groove shall be spaced at ¾ inches center-to-center. Tolerance for groove width shall be +1/16 inch to

-0 inch. Tolerance for groove depth shall be ± 1/16 inch. Tolerance for groove spacing shall be ± 1/16 inch.

Collect, remove and dispose of solid material residue and liquid waste resulting from grooving operations by vacuuming in a manner satisfactory to the engineer.

D Measurement

The department will measure Longitudinal Grooving Bridge Deck by the square foot acceptably completed. The quantity will be determined by multiplying the grooved width by the total length grooved.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.4700	Longitudinal Grooving Bridge Deck	SF

Payment is full compensation for providing the required machinery and operators; for grooving, for collecting, removing and properly disposing of all waste materials, and for furnishing all labor, equipment, tools and incidentals necessary to complete the work

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269. Wall Concrete Panel Mechanically Stabilized Earth LRFD/QMP Pilot, Item SPV.0165.4710.

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 mechanically stabilized earth (MSE) wall and all wall components shall be 75 years.

This special provision describes the quality management program (QMP) for MSE walls. A quality management program is defined as all activities, including process control, inspection, sampling and testing, and necessary adjustments in the process that are related to the construction of the MSE wall, which meets all the requirements of this provision.

This special provision describes contractor quality control (QC) sampling and testing for backfill density testing, documenting those results, and documenting related production and placement process changes. This special provision also describes department quality verification (QV), independent assurance (IA), and dispute resolution.

Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes 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

B Materials

B.1 Proprietary Mechanically Stabilized Earth Concrete Panel Wall Systems

The supplied wall system must be from the department's approved list of concrete panel mechanically stabilized earth wall systems.

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 department's Bureau of Structures, Structures Design Section. 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. The name of the pre-approved proprietary wall system selected shall be furnished to the engineer within 25 days after the award of contract. The location of the plant manufacturing the concrete panels shall be furnished to the engineer at least 14 days prior to the start of panel production.

To receive pre-approval, the retaining wall system must comply with all pertinent requirements of this provision. 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 LRFD Bridge Manual. Information and assistance with the pre-approval process can be obtained by contacting the Structures Design 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 the proposed wall design is in compliance with the design specifications. Four copies of the following shall be submitted to the engineer for review and acceptance no later than 60 days from the date of notification to proceed with the project.

The plans and shop drawings 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 8 ½ 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, shop drawings, and calculations shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

The design shall be in compliance with the *AASHTO LRFD Bridge Design Specifications 5th Edition 2010*, (AASHTO LRFD) with latest interim specifications for Mechanically Stabilized Earth Walls, WisDOT's current *Standard Specifications for Highway and Structure Construction* (Standard Specifications), Chapter 14 of the WisDOT LRFD Bridge Manual and standard engineering design procedures as determined by the department. Loads, load combinations, load and resistance factors shall be as specified in

AASHTO LRFD Section 11. The associated resistance factors shall be defined in accordance to Table11.5.6-1 LRFD.

Design and construct the walls in accordance to the lines, grades, heights and dimensions shown on the plans, as herein specified, and as directed by the engineer. Where walls or wall sections intersect with an included angle of 130 degrees or less, a vertical corner element separate from the standard panel face shall abut and interact with the opposing standard panels. The corner element shall have ground reinforcement connected specifically to that panel and shall be designed to preclude lateral spread of the intersecting panels. If the wall is installed in front of a bridge abutment or wing, it shall also be designed to resist the applied abutment/bridge lateral forces specified on the contract plans.

Walls parallel to supporting highway traffic shall be designed for the effects of highway surcharge loading equivalent of 2 feet soil surcharge weight or 240 psf. The design shall also consider the traffic barrier impact where applicable. Walls that do not carry highway traffic shall be designed for a live load surcharge of 100 psf in accordance to Chapter 14 of the WisDOT LRFD Bridge Manual or as stated on the plans.

A maximum value of the angle of internal friction of the wall backfill material used for design shall be assumed to be 30 degrees without a certified report of tests. If a certified report of tests yields an angle of internal friction greater than 30 degrees, the larger test value may be used for design, up to a maximum value of 36 degrees.

An external stability check at critical wall stations showing Capacity Demand Ratios (CDR) for sliding, eccentricity, and bearing checks is performed by the department and are provided on the wall plans.

The design of the Wall Concrete Panel Mechanically Stabilized Earth by the contractor shall consider the internal and compound stability of the wall mass in accordance to AASHTO LRFD 11.10.6. The internal stability shall include soil reinforcement pullout, soil reinforcement rupture, and panel-reinforcement connection failure at each soil reinforcement level. The design shall be performed using the Simplified Method or Coherent Gravity Method. Calculations for factored stresses and resistances shall be based upon assumed conditions at the end of the design life. Compound stability shall be computed for the applicable strength limits.

Facing panels shall meet the design requirements of AASHTO LRFD 11.10.2.3. The Facing panels shall also be designed to resist compaction stresses that occur during the wall erection. The minimum thickness of the Facing panel shall be 5.5 inches. The surface area of a standard single panel cannot exceed 60 square feet. The maximum height of a standard panel shall be 5 feet. The top and bottom panels may exceed 5 foot in height based on site topography subject to the approval by the Structures Design Section. The design of the steel reinforcement within the panels shall be based on one-way bending action. Design the wall panels and joints between panels to accommodate a

maximum differential settlement of 1 foot over a 100-foot length, unless the plans indicate other.

The minimum length of soil reinforcement measured from the back face of the wall shall be equal to 0.7 the wall height or as shown on the plan. In no case shall this length be less than 8 feet. The soil reinforcement length shall be the same from the bottom to the top of the wall. The soil reinforcement shall extend a minimum of 3.0 feet beyond the theoretical failure plane in all cases. The maximum vertical spacing of soil reinforcement layers shall be 31 inches. The uppermost layer of the reinforcement shall be located a minimum of six inches below the bottom of an overlying slab, footing or top of the wall. The upper layers of the soil reinforcement shall also be checked to verify that they have sufficient tensile resistance against traffic barrier impact where applicable.

All soil reinforcement steel required for the reinforced soil zone shall be connected to the face panels. The reinforcement and the reinforcement/facing connection strength shall be designed to resist maximum factored reinforcement loads in accordance to AASHTO LRFD Section 11.10.6. Facing connection strength shall be defined as the resistance factor times the failure load, or the load at 0.5 inch deformation times 0.9, whichever is less. The nominal long term design strength in steel reinforcement and connections shall be based upon assumed conditions at the end of the design life.

Soil reinforcement shall be prefabricated into single or multiple elements before galvanizing. Soil reinforcement shall be fabricated or designed to avoid piling, drainage structures or other obstacles in the fill without field modifications. Cutting or altering of the basic structural section of either the strip or grid at the site is prohibited unless approved by the Structures Design Section. A minimum clearance of 3” shall be maintained between any obstruction and reinforcement unless otherwise approved by the Structures Design Section. Splicing steel reinforcement is not allowed, unless approved by the Structures Design.

MSE facing panels shall be installed on concrete leveling pads. The minimum cross section of the leveling pad shall be 6-inches deep by 1-foot wide. Potential depth of frost penetration at the wall location shall not be considered in designing the wall for depth of leveling pad.

Submit the following to the engineer for review: complete design calculations, explanatory notes, supporting materials, specifications, and detailed plans and shop drawings for the proposed wall system. Sample analyses and hand output shall be submitted to verify the output by the software. The design calculations and notes shall clearly indicate the Capacity to Demand Ratios (CDR) for all internal stabilities as defined in AASHTO LRFD.

The wall submittal package shall be submitted electronically to the engineer and Structures Design Section. Submit all required information no later than 30 days prior to beginning construction of the wall. The detailed plans and shop drawings shall include all details, dimensions, quantities and cross-sections necessary to construct the walls.

B.3 Wall System Components
Materials furnished for wall system components under this contract shall conform to the requirements of this specification. All certifications related to material and components of the wall systems specified in this subsection shall be submitted to the engineer.

B.3.1 General
The walls shall have modular precast concrete face panels produced by a wet cast process, and have cast-in-place concrete pads or footings. The concrete panels shall have a minimum strength of 4000 psi at 28 days. The panel edges shall be configured so as to conceal the joints. The detail shall be a shiplap, tongue and groove or other detail adequate to prevent vandalism or ultraviolet light damage to the backside of the wall joint covering. Joints between panels shall be no more than 0.75 inch. Use full wall height slip joints at points of differential settlement when detailed on the plan. Horizontal joints must be provided with a compressible bearing material to prevent concrete to concrete contact.

A minimum of two bearing pads shall be used per panel. The allowable bearing stress shall not exceed 900 psi. The bearing pads shall be preformed EPDM rubber conforming to ASTM D-2000, Grade 2, Type A, Class A with a minimum Durometer Hardness of 80, or high- density polyethylene pads with a minimum density of 0.034 lb/in^3 in accordance to ASTM 1505.

An 18-inch wide geotextile shall be used on the backface of the wall panels to cover all panel joints. The geotextile shall meet the physical requirements stated in standard spec 645.2.4 for Geotextile Fabric, Type DF, Schedule B, except that the grab tensile strength shall be a minimum of 180 pounds in both the machine and cross-machine directions. The geotextile shall be attached with a standard construction adhesive suitable for use on concrete surfaces and cold temperatures. The adhesive shall be applied to the panels, not to the geotextile.

All steel portions of the wall system exposed to earth shall be galvanized. All soil reinforcement and attachment devices shall be carefully inspected to ensure they are true size and free from defects that may impair the strength and durability.

Use a wall leveling pad that consists of poured concrete masonry, Grade A, A-FA, A-S, A-T, A-IS or A-IP concrete conforming to standard specification standard spec 501 as modified in standard spec 716. Provide QMP for leveling pad concrete as specified in standard spec 716.

The minimum embedment to the top of the leveling pad shall be 1 foot 6 inches or as given on the plan or given in AASHTO LRFD 11.10.2.2 whichever is greater. Step the leveling pad to follow the general slope of the ground line. The leveling pad's steps shall keep the bottom of the wall within one half the panel heights of the minimum embedment i.e. the minimum embedment plus up to one half the height of one panel. Additional embedment may be detailed by the contractor, but will not be measured for payment.

B.3.2 Backfill

Furnish and place backfill for mechanically stabilized earth concrete panel walls as shown on the plans and as hereinafter provided.

Provide and use backfill that consists of natural sand or a mixture of sand with gravel, crushed gravel or crushed stone. It shall not contain recycled or milled asphalt, recycled concrete, foundry sand, bottom ash, blast furnace slag or other potentially corrosive material.

Provide material conforming to the following gradation requirements as per AASHTO T27.

Sieve Size	Percentage by Weight Passing
1 inch	100
No. 40	0 - 60
No. 200	0 - 15

The material shall have a liquid limit not greater than 25, as per AASHTO T89, and a plasticity index not greater than 6, as per AASHTO T90. In addition, backfill material shall meet the following requirements.

Test	Method	Value
pH	AASHTO T-289	5 – 10.0
Sulfate content	AASHTO T-290	200 ppm max.
Chloride content	AASHTO T-291	100 ppm max.
Electrical Resistivity	AASHTO T-288	3000 ohm/cm min.
Organic Content	AASHTO T-267	1.0% max.
Angle of Internal Friction	AASHTO T-236	30 degrees min. (At 95.0% of maximum density and optimum moisture, per AASHTO T99)

Prior to placement of the backfill, obtain and furnish to the engineer a certified report of test results that the backfill material complies with the requirements of this specification. This certified report of test shall be less than 6 months old. Tests will be performed by a certified independent laboratory. Additional certified report of tests (except Angle of Internal Friction test) are required for every 2000 cubic yards of backfill used per wall. In addition, when backfill characteristics and/or sources change, a certified report of all tests will be provided for the new backfill material.

C Construction

C.1 Excavation and Backfill

Excavation will encompass preparing the leveling pad foundation and the area below the reinforcing strips in accordance to standard spec 206. The volume of excavation covered is limited to the width of the reinforced mass and to the depth of the leveling pad unless shown or noted otherwise on the plan. 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 back of the wall.

C.2 Compaction

Compact all backfill behind the wall as specified in 207.3.6. Compact the backfill to 95.0% of maximum density as determined by AASHTO T-99, Method C. Insure that adequate moisture is present in the backfill during placement and compaction to prevent segregation and to help achieve compaction.

Compaction of backfill within 3 feet of the back face of the wall should be accomplished using lightweight compaction devices. Use of heavy compaction equipment or vehicles should be avoided within 3 feet of the panels.

Place and compact the MSE backfill to the level of the next higher layer of MSE reinforcement before placing the MSE reinforcement or connecting it to the wall facing. The MSE reinforcement shall lay horizontally on the top of the most recently placed and compacted layer of MSE backfill. Bending of MSE reinforcement that result in a kink in the reinforcement shall not be allowed. If skewing of the reinforcement is required due to obstructions in the reinforced fill, the maximum skew angle shall not exceed 15 degrees from the normal position unless a greater angle is shown on the plans. The adequacy of the skewed reinforcement in such a case shall be addressed by supporting calculations.

C.3 Panel Tolerances

As backfill material is placed behind a panel, maintain the panel in its proper inclined position according to the supplier specifications and as approved by the engineer. The supplier shall specify the back batter so that the final position of the wall is vertical. Vertical tolerances and horizontal alignment tolerances shall not exceed ¾-inch when measured along a 10-foot straight edge. The maximum allowable offset in any panel joint shall be ¾-inch. The overall vertical tolerance of the wall (plumbness from top to bottom) shall not exceed ½-inch per 10 feet of wall height. Erect the precast face panels to ensure that they are located within 1 inch from the contract plan offset at any location to ensure proper wall location at the top of the wall. Provide a ¾-inch joint separation between all adjacent face panels to prevent direct concrete-to-concrete contact. Maintain this gap by the use of bearing pads and/or alignment pins. Failure to meet this tolerance shall cause the engineer to require the contractor to disassemble and re-erect the affected portions of the wall. In addition, imperfect molding, honeycombing, cracking or severe chipping of panels shall be cause of panel rejection.

C4 Quality Management Program

C.4.1 Quality Control Plan

Submit a comprehensive written quality control plan to the engineer at or before the pre-construction meeting. Do not perform MSE wall construction work before the engineer reviews and accepts the plan. Construct the project as the plan provides.

Do not change the quality control plan without the engineer's review and acceptance. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in the contractor's laboratory as changes are adopted. Insure 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 process that will be used, and action time frames.
3. A list of source locations, section and quarter descriptions, for all aggregate materials requiring QC testing.
4. Descriptions of stockpiling and hauling methods.
5. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.
6. Location of the QC laboratory, retained sample storage, and other documentation.
7. A summary of the locations and calculated quantities to be tested under this provision.

C.4.2 Quality Control Personnel

Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians. Have a grading technician certified under HTCP at level I present at the each grading site during all wall backfill placement, compaction, and nuclear testing activities. Have a nuclear density technician certified under HTCP at level I perform field density and field moisture content testing.

If an Assistant Certified Technician (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.

C.4.3 Equipment

Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and maintain a calibration record at the laboratory.

Furnish nuclear gauges from the department's approved product list at http://www.atwoodsystems.com/materials. Ensure that the gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.

Conform to ASTM D 6938 and CMM 8.15 for density testing and gauge monitoring methods. Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Perform each test for 4 minutes of nuclear gauge count time.

Split each Proctor sample and identify so as to provide comparison with the department's test results. Unless the engineer directs otherwise, retain the QC split samples for 14 calendar days and promptly deliver the department's split samples to the department

C.4.4 Quality Control (QC) Testing

Perform compaction testing on the backfill. Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians. Have a grading technician certified under HTCP at level I present at the site during all wall backfill operations, compaction, and nuclear testing activities. Have a nuclear density technician certified under HTCP at level I, or ACT certified technician, perform field density and field moisture content testing. Conform to CMM 8.15 for testing and gauge monitoring methods. The QC technician must retain a split sample for the region and deliver it to the region laboratory within 72 hours. Conduct testing at a minimum frequency of 1 test per 50 cubic yards of backfill, or major portion thereof. A minimum of one test for every lift is required. Deliver documentation of all compaction testing results to the engineer at the time of testing.

Perform 1 gradation and 5-point Proctor test every 750 cubic yards of fill and provide the region a split sample within 72 hours at the region laboratory. Test sites shall be selected using ASTM Method D3665. Provide Proctor test results to the engineer within 48 hours of sampling. Provide gradation test results to the engineer within 24 hours of sampling.

C.4.5 Department Testing

C.4.5.1 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.

C.4.5.2 Quality Verification (QV) Testing

(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 C.4 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 at the minimum frequency of 30% of the required contractor tests.

(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 split each QV sample, testing half for QV, and retaining the remaining half for 10 business days.

(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 this special provision, the department will take no further action. If QV test results are nonconforming, the area shall be reworked until the requirements of this special provision are met.

C.4.5.3 Independent Assurance (IA)

(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 C.4.5.4.

C.4.5.4 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 or work, 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.5 Geotechnical Information

Geotechnical data to be used in the design of the wall is given on the wall plan. After completing wall excavation of the entire reinforced soil zone, notify the department and allow the Regional Soils Engineer two working days to review the foundation.

D Measurement

The department will measure Wall Concrete Panel Mechanically Stabilized Earth LRFD in area by the square foot, acceptably completed, measured as the vertical area within the pay limits the contract plans show. No other measurement of quantities shall be made in the field. Unless the engineer directs in writing, a change to the limits indicated on the contract plan, 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
SPV.0165.4710	Wall Concrete Panel Mechanically Stabilized Earth LRFD/QMP Pilot	SF

Payment is full compensation for supplying a design and shop drawings; preparing the site, including all necessary excavation and disposal of materials; supplying all necessary wall components to produce a functional system including cap and copings; constructing the retaining system and drainage system; providing backfill, backfilling, compacting, developing/completing/documenting the quality management program, performing compaction testing; and for furnishing all tools, labor, equipment, and incidentals necessary to complete the contract work. Parapets, railings, abutment bodies and other items above the wall cap or coping will be paid for separately. Vehicle barrier and its support will be paid 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.

270. Temporary Wall Wire Faced Mechanically Stabilized Earth LRFD/QMP Pilot, Item SPV.0165.4730.

A Description

This special provision describes designing, furnishing materials and erecting a temporary earth retention system in accordance to the lines, dimension, elevations and details as shown on the plans and provided in the contract.

This special provision describes the quality management program (QMP) for MSE walls. A quality management program is defined as all activities, including process control, inspection, sampling and testing, and necessary adjustments in the process that are related to the construction of the MSE wall, which meets all the requirements of this provision.

This special provision describes contractor quality control (QC) sampling and testing for backfill density testing, documenting those results, and documenting related production and placement process changes. This special provision also describes department quality verification (QV), independent assurance (IA), and dispute resolution.

Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes 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

B Materials

B.1 Proprietary Wire Faced Mechanically Stabilized Earth Wall Systems

The supplied wall system must be from the department's approved list of Wire Faced Mechanically Stabilized Earth Wall systems (Wire Faced MSE Walls).

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 department's Bureau of Structures, Structures Design Section. The department maintains a list of pre-approved Wire Faced Mechanically Stabilized Earth (Wire Faced MSE) Wall systems. 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. The name of the pre-approved proprietary wall system selected shall be furnished to the engineer within 25 days after the award of contract.

To receive pre-approval, the retaining wall system must comply with all pertinent requirements of this provision. 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 LRFD Bridge Manual. Information and assistance with the pre-approval process can be obtained by contacting the Structures Design 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 the proposed wall design is in compliance with the design specifications. Four copies of the following shall be submitted to the engineer for review and acceptance no later than 60 days from the date of notification to proceed with the project.

The plans and shop drawings 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 8 ½ 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, shop drawings, and calculations shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

The design of the Wire Faced MSE Walls shall be in compliance with the *AASHTO LRFD Bridge Design Specifications 5th Edition 2010*, (AASHTO LRFD) with latest interim specifications for Mechanically Stabilized Earth Walls, WisDOT's current *Standard Specifications for Highway and Structure Construction* (Standard Specifications), Chapter 14 of the WisDOT LRFD Bridge Manual and standard engineering design procedures as determined by the department. Loads, load combinations, load and resistance factors shall be as specified in AASHTO LRFD Section 11. The associated resistance factors shall be defined in accordance to Table 11.5.6-1 LRFD.

Design and construct the walls in accordance to the lines, grades, heights and dimensions shown on the plans, as herein specified, and as directed by the engineer. If the wall is installed in front of a bridge abutment or wing, it shall also be designed to resist the applied abutment/bridge lateral forces specified on the contract plans.

Walls parallel to supporting highway traffic shall be designed for the effects of highway surcharge loading equivalent of 2 feet soil surcharge weight or 240 psf. The design shall also consider the traffic barrier impact where applicable. Walls that do not carry highway traffic shall be designed for a live load surcharge of 100 psf in accordance to Chapter 14 of the WisDOT LRFD Bridge Manual or as stated on the plans.

A maximum value of the angle of internal friction of the wall backfill material used for design shall be assumed to be 30 degrees without a certified report of tests. If a certified report of tests yields an angle of internal friction greater than 30 degrees, the larger test value may be used for design, up to a maximum value of 36 degrees.

An external stability check at critical wall stations showing Capacity Demand Ratios (CDR) for sliding, eccentricity, and bearing checks is performed by the department and are provided on the wall plans.

The design of the Wire Faced MSE Walls by the contractor shall consider the internal and compound stability of the wall mass in accordance to AASHTO LRFD 11.10.6. The internal stability shall include soil reinforcement pullout, soil reinforcement rupture, and panel-reinforcement connection failure at each soil reinforcement level. The design shall be performed using the Simplified Method or Coherent Gravity Method. Calculations for factored stresses and resistances shall be based upon assumed conditions at the end of the design life. Compound stability shall be computed for the applicable strength limits.

The minimum embedment of the Wire Faced MSE wall shall be 1 foot 6 inches, or as given on the contract plan. Frost depth shall not be considered. The wall facings shall be designed in accordance to AASHTO 11.10.2.3. A fine metallic screen and a geotextile filter fabric shall be used at the front face of the wall to retain the fines of the soil mass.

The nominal long term design strength to be used in steel reinforcement and connector design shall consider the corrosion losses and based upon conditions at the end of the design life. The minimum length of soil reinforcement measured from the back face of the wall shall be equal to 0.7 of the wall height or as shown on the plan. In no case shall this length be less than 8 feet. The soil reinforcement length shall be the same from the bottom to the top of the wall. All soil reinforcement layers shall be connected to facings. The soil reinforcement shall extend a minimum of 3.0 feet beyond the theoretical failure plane in all cases. The maximum vertical spacing of soil reinforcement layers shall be 31 inches. The uppermost layer of the reinforcement shall be located a minimum of six inches below the bottom of an overlying slab, footing or top of the wall. The upper layers of the soil reinforcement shall also be checked to verify that they have sufficient tensile resistance against traffic barrier impact where applicable.

All soil reinforcement steel required for the reinforced soil zone shall be connected to the facings. The reinforcement and the reinforcement/facing connection strength shall be designed to resist maximum factored reinforcement loads in accordance to AASHTO LRFD Section 11.10.6. Facing connection strength shall be defined as the resistance factor times the failure load, or the load at 0.5 inch deformation times 0.9, whichever is less. The nominal long term design strength in steel reinforcement and connections shall be based upon assumed conditions at the end of the design life.

Soil reinforcement shall be fabricated or designed to avoid piling, drainage structures or other obstacles in the fill without field modifications. Cutting or altering of the basic structural section of either the strip or grid at the site is prohibited unless approved by the Structures Design Section. A minimum clearance of 3” shall be maintained between any obstruction and reinforcement unless otherwise approved by the Structures Design Section. Splicing steel reinforcement is not allowed, unless approved by the Structures Design Section.

Submit the following to the engineer for review: complete design calculations, explanatory notes, supporting materials, specifications, and detailed plans and shop drawings for the proposed wall system. Sample analyses and hand output shall be submitted to verify the output by the software. The design calculations and notes shall clearly indicate the Capacity to Demand Ratios (CDR) for all internal stabilities as defined in AASHTO LRFD.

The wall submittal package shall be submitted electronically to the engineer and Structures Design Section. Submit all required information no later than 30 days prior to beginning construction of the wall. The detailed plans and shop drawings shall include all details, dimensions, quantities and cross-sections necessary to construct the walls.

B.3 Wall System Components

Materials furnished for wall system components under this contract shall conform to the requirements of this specification. All certifications related to material and components of the wall systems specified in this subsection shall be submitted to the engineer.

B.3.1 Steel Components

All steel components of permanent Wire-Faced MSE walls shall be galvanized in accordance to ASTM A-123. Provide steel reinforcement that meet the following requirements:

B3.1.1 Welded Wire Fabric Soil Reinforcement

Provide shop fabricated welded wire reinforcement from cold drawn steel wire that has a yield stress of 65,000 psi and conforming to the minimum requirements of ASTM A-82 and be welded into the finished configuration in accordance to ASTM A-185. A minimum galvanization coating of 2 oz/ft^2 or 3.4 mils thickness is required. Replace welded wire fabric that has been damaged during handling, placing or backfilling at the direction of the engineer, at no expense to the department.

B3.1.2 Steel Reinforcing Strips and Tie Strips

As an alternate to Welded Wire Reinforcing mesh, provide Steel Reinforcing strips or ladder Reinforcing strips or equal, hot-rolled from bars, to the required shape and dimensions meeting the requirements of ASTM A-572 Grade 65 minimum and galvanized to a minimum thickness of 3.4 mils. Tie strips shall be shop fabricated of hot-rolled steel meeting the requirements of ASTM A-1011 Grade 50.

B3.1.3 Welded Wire Fabric Facing Panels

Provide welded wire fabric that is used to fabricate the facings of the wire-Faced wall that has a yield stress of 65,000 psi. All steel shall be shop fabricated of cold drawn steel wire conforming to the minimum requirements of ASTM A-82 and be welded into the finished configuration in accordance to ASTM A-185. Replace welded wire fabric that has been damaged during handling, placing or backfilling at the direction of the engineer, at no expense to the department.

B3.1.4 Fasteners
Galvanized high strength bolts meeting the requirements of AASHTO M164 or equivalent.

B3.1.5 Connector Pins and Mat Bars
Connector pins and mat bars fabricated from cold drawn steel wire meeting the requirements of ASTM A-82 and galvanized to according to ASTM 123 to a minimum thickness of 3.4 mils.

B3.1.6 Metallic Screen
Provide a stainless steel or galvanized steel metallic screen per AASHTO M-111. The metallic screen should have an approximate opening of ¼" and be made of 0.025" (minimum) gauge wire.

B.3.2 Geotextile Filter Fabric
Geotextile filter fabric shall be used behind the metallic screen. Use geotextile as recommended by the wall manufacturer. If none is recommended, use Type DF (schedule B) as shown in standard spec 645 or as specified on the contract plans.

B.3.3 Backfill
Furnish and place backfill for Wire- Faced MSE wall as shown on the plans and as hereinafter provided.

Provide and use backfill that consists of natural sand or a mixture of sand with gravel, crushed gravel or crushed stone. It shall not contain recycled or milled asphalt, recycled concrete, foundry sand, bottom ash, blast furnace slag or other potentially corrosive material.

Provide material conforming to the following gradation requirements as per AASHTO T27.

Sieve Size	Percentage by Weight Passing
1 inch	100
No. 40	0 - 60
No. 200	0 - 15

The material shall have a liquid limit not greater than 25, as per AASHTO T89, and a plasticity index not greater than 6, as per AASHTO T90.

In addition, backfill material shall meet the following requirements.

Test	Method	Value
pH	AASHTO T-289	5 – 10.0
Sulfate content	AASHTO T-290	200 ppm max.
Chloride content	AASHTO T-291	100 ppm max.
Electrical Resistivity Organic Content	AASHTO T-288 AASHTO T-267	3000 ohm/cm min. 1.0% max.
Angle of Internal Friction	AASHTO T-236	30 degrees min. (At 95.0% of maximum density and optimum moisture, per AASHTO T99)

Prior to placement of the backfill, obtain and furnish to the engineer a certified report of test results that the backfill material complies with the requirements of this specification. This certified report of test shall be less than 6 months old. Tests will be performed by a certified independent laboratory. Additional certified report of tests (except Angle of Internal Friction test) are required for every 2000 cubic yards of backfill used per wall. In addition, when backfill characteristics and/or sources change, a certified report of all tests will be provided for the new backfill material.

C Construction

C.1 Excavation and Backfill

Excavation will encompass preparing the foundation and the area below the reinforcing strips in accordance to standard spec 206. The volume of excavation covered is limited to the width of the reinforced mass and to the depth of the bottom of the wall unless shown or noted otherwise on the plan. 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 back of the wall.

Stagger vertical joints in the welded wire facing.

C.2 Compaction

Compact all backfill behind the wall as specified in standard spec 207.3.6. Compact the backfill to 95.0% of maximum density as determined by AASHTO T-99, Method C. Ensure that adequate moisture is present in the backfill during placement and compaction to prevent segregation and to help achieve compaction.

Compaction of backfill within 3 feet of the back face of the wall should be accomplished using lightweight compaction devices. Use of heavy compaction equipment or vehicles should be avoided within 3 feet of the wall face. Compact the backfill to 95.0% of maximum density as determined by AASHTO T-99, Method C.

Erect welded wire facing and other associated elements according to the wall manufacturer's construction guide. Place and compact the MSE backfill to the level of the next higher layer of MSE reinforcement before placing the MSE reinforcement or connecting it to the wall facing. Place remaining courses in vertical or battered positions as shown on the contract plans.

The MSE reinforcement shall lay horizontally on top of the most recently placed and compacted layer of MSE backfill. Bending of MSE reinforcement that result in a kink in the reinforcement shall not be allowed. If skewing of the reinforcement is required due to obstructions in the reinforced fill, the maximum skew angle shall not exceed 15 degrees from the normal position unless a greater angle is shown on the plans. The adequacy of the skewed reinforcement in such a case shall be addressed by supporting calculations.

C.3 Tolerances

The overall vertical tolerance of the wall and the horizontal alignment tolerance shall not exceed 3 inches per 10 feet for temporary installations.

For battered wire facing, the final deviation from the design batter shall be within ±1 inch for each 10 feet of battered wall height.

C.4 Quality Management Program

C.4.1 Quality Control Plan

Submit a comprehensive written quality control plan to the engineer at or before the pre-construction meeting. Do not perform MSE wall construction work before the engineer reviews and accepts the plan. Construct the project as the plan provides.

Do not change the quality control plan without the engineer's review and acceptance. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in the contractor's laboratory as changes are adopted. Ensure that the plan provides the following elements:

- An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.
- The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication process that will be used, and action time frames.
- A list of source locations, section and quarter descriptions, for all aggregate materials requiring QC testing.
- Descriptions of stockpiling and hauling methods.
- An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.
- Location of the QC laboratory, retained sample storage, and other documentation.
- A summary of the locations and calculated quantities to be tested under this provision.

C.4.2 Quality Control Personnel

Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians. Have a grading technician certified under HTCP at level I present at the each grading site during all wall backfill placement, compaction, and nuclear testing activities. Have a nuclear density technician certified under HTCP at level I perform field density and field moisture content testing.

If an Assistant Certified Technician (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.

C.4.3 Equipment

Furnish the necessary equipment and supplies for performing quality control testing. Ensure that all testing equipment conforms to the equipment specifications applicable to the required testing methods. The engineer may inspect the measuring and testing devices to confirm both calibration and condition. Calibrate all testing equipment according to the CMM and maintain a calibration record at the laboratory.

Furnish nuclear gauges from the department's approved product list at http://www.atwoodsystems.com/materials. Ensure that the gauge manufacturer or an approved calibration service calibrates the gauge the same calendar year it is used on the project. Retain a copy of the calibration certificate with the gauge.

Conform to ASTM D 6938 and CMM 8.15 for density testing and gauge monitoring methods. Perform nuclear gauge measurements using gamma radiation in the backscatter or direct transmission position. Perform each test for 4 minutes of nuclear gauge count time.

Split each Proctor sample and identify so as to provide comparison with the department's test results. Unless the engineer directs otherwise, retain the QC split samples for 14 calendar days and promptly deliver the department's split samples to the department

C.4.4 Quality Control (QC) Testing

Perform compaction testing on the backfill. Perform the quality control sampling, testing, and documentation required under this provision using HTCP certified technicians. Have a grading technician certified under HTCP at level I present at the site during all wall backfill operations, compaction, and nuclear testing activities. Have a nuclear density technician certified under HTCP at level I, or ACT certified technician, perform field density and field moisture content testing. Conform to CMM 8.15 for testing and gauge monitoring methods. The QC technician must retain a split sample for the region and deliver it to the region laboratory within 72 hours. Conduct testing at a minimum frequency of 1 test per 50 cubic yards of backfill, or major portion thereof. A minimum of one test for every lift is required. Deliver documentation of all compaction testing results to the engineer at the time of testing.

Perform 1 gradation and 5-point Proctor test every 750 cubic yards of fill and provide the region a split sample within 72 hours at the region laboratory. Test sites shall be selected using ASTM Method D3665. Provide Proctor test results to the engineer within 48 hours of sampling. Provide gradation test results to the engineer within 24 hours of sampling.

C.4.5 Department Testing

C.4.5.1 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.

C.4.5.2 Quality Verification (QV) Testing

(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 C.4 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 at the minimum frequency of 30% of the required contractor tests.

(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 split each QV sample, testing half for QV, and retaining the remaining half for 10 business days.

(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 this special provision, the department will take no further action. If QV test results are nonconforming, the area shall be reworked until the requirements of this special provision are met.

C.4.5.3 Independent Assurance (IA)

(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 C.4.5.4.

C.4.5.4 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 or work, 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.5 Geotechnical Information

Geotechnical data to be used in the design of the wall is given on the wall plan. After completing wall excavation of the entire reinforced soil zone, notify the department and allow the Regional Soils Engineer two working days to review the foundation.

D Measurement

The department will measure Temporary Wall Wire Faced Mechanically Stabilized Earth LRFD/QMP Pilot in area by the square foot acceptably completed, measured as the vertical area within the pay limits the contract plans show. No other measurement of quantities shall be made in the field. Unless the engineer directs in writing, a change to the limits indicated on the contract plan, 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
SPV.0165.4730	Temporary Wall Wire Faced Mechanically Stabilized Earth LRFD/QMP Pilot	SF

Payment is full compensation for supplying a design and shop drawings; preparing the site, including all necessary excavation and disposal of materials; supplying all necessary wall components to produce a functional system; constructing the retaining system and drainage system; providing backfill, backfilling, compacting, developing/completing/documenting the quality management program, performing compaction testing; and for furnishing all tools, labor, equipment, and incidentals necessary to complete the contract work. Parapets, railings, abutment bodies and other items above the wall will be paid for separately. Vehicle barrier and its support will be paid 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.

271. Channel Glass Exterior Cladding, Item SPV.0165.4740.

A Description

Fabricate and install translucent exterior linear channel glass units on pedestrian bridge B-40-784 stair towers.

B Materials

B.1 General

All materials shall meet the requirements as shown on the plans and the applicable provisions of the standard specifications as follows:

Air Infiltration. Total amount of air infiltration shall not exceed 0.06 cubic foot/minute/square foot of wall area tested per ASTM E 283 at 6.24 PSF.

Water Penetration Under Static Pressure No uncontrolled water penetration allowed in accordance to ASTM E 331; air pressure 20 percent design of wind load; 15 PSF maximum, applied against face.

Condensation Resistance Factor In accordance to AAMA 1503-98: Vertical System: 0.57

Structural Requirement:
Per ASTM E 330-84, vertical linear applications.
Design wind Load: 25 PSF

Aluminum framing components shall not deflect more than L/175 at the design wind load of 25 PSF.

Glass requirements: Per ASTM C 1036, Type 2, Class 1, Quality q3 finish F1, cast or rolled glass, channel shape, surface texture as selected by architect.

Tempered Glass:
Where required by wind loads or safety considerations glass to be SGCC certified to ANSI Z 97.1-84 and CPSC Title 16 Part 1201 (16 CFR 1201, category II) for unlimited size. Safety film shall not be used to satisfy safety glazing requirements, except in longitudinally cut pieces which cannot be tempered. Tempered glass to be 100% heat soak tested in accordance to German Bauregelliste 2002/1, part 11.4 (approximately 10 ½ hour treatment).

Channel Glass: Glass manufacturer to supply independent test reports verifying the channel glass will withstand the defined load requirements in accordance to the probability of breakage as determined by the architect.

B.2 Glass Manufacturers
Subject to compliance with the product requirements listed above, provide the Basis of Design glass products or equivalent from one of the manufacturers listed below. Glass products of other manufacturers matching the aesthetics, performance, and certifications of the product requirements listed above may be used with the written approval of the engineer.

Benheim (Basis of Design Product)
Profilit
Lumaglass,
or equal.

Glass products of other manufacturers matching the aesthetics, performance, and certifications of the product requirements listed above may be used with the written approval of the engineer.

B.3 Product Components and Accessories
B.3.1 Translucent Linear Glass Units
Dimensions: 10-5/16” wide by 2-3/8” deep glass channels.

Configuration: P26/60/7 with double glazed configuration.

Surface Texture: Rough cast textured surface provide a translucent effect.
Provide tempered glass units to be SGCC certified to ANSI Z 97.1, 16 CFR 1201 category II.

Tempered glass shall be 100% heat soak tested in accordance to German Bauregelliste 2002/1, part 11.4 (approximately 10 ½ hour treatment). Tempered glass shall be diamond saw cut to provide precise dimensions and clean edges in accordance to EN 572.7.

B.3.2 Aluminum Framing

Provide members of size, shape and profile indicated, designed to provide for glazing from exterior or interior, fabricated and assembled in accordance to manufacturer's fabrication and installation manual.

Aluminum: Extruded units per the profiles shown or as required to suit conditions indicated.

Minimum wall thickness of 0.125 inch (3.18mm) for framing members and rails, 0.090inch (2.3 mm) for sheets.

Finish for the aluminum framing system shall be clear anodized: AA-M12C22A41, architectural Class 1, etched, medium matte, clear anodic coating, 0.7 mil minimum thickness.

Vinyl Frame Liner, Glass Support and Spacer: Extruded vinyl spacer engineered for snap-in application in standard thermally broken aluminum frame to support and space glass units.

Fabricate frame assemblies with mitered or coped joints. Maintain accurate relation of planes and angles.

Provide end dams at all vertical interruptions of horizontal extrusions.

Fabricate framing for expansion and contraction to accommodate a thermal variation of 180 degrees Fahrenheit.

Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or in-fill used in accordance to requirements of manufacturer's fabrication and installation manual and GANA Glazing Manual minimum wall thickness

Thermal Break: Poured and debridged polyurethane resin or equivalent product with aluminum frame.

Anchorage Devices: Standard fabricated steel or aluminum assemblies of shapes, plates, bars or tubes. Hot-dip galvanized steel assemblies after fabrication, ASTM A123, 2.0 ounce (0.05kg) minimum coating.

Fasteners: Non-magnetic stainless steel or other engineer approved non-corrosive materials compatible with items being fastened. Provide concealed fasteners wherever possible.

Exposed locations: Stainless steel fasteners with approved finish.
Concealed locations: Stainless steel or approved fasteners in accordance to approved engineering calculations.

Mechanical or Adhesive Anchors: Per 502.2.12.2

B.4 Protective Coatings and Sealants
Protective Coatings: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 30 mil (0.76 mm) thickness for each coat; or alkyd type zinc chromate primer, FS TT-P-645.

Perimeter Joint Sealant and backer rod for silicone-glazing:

Color: Translucent.
Primer: As required by sealant manufacturer for applications shown.
Sealant Backing: Breaker rod and tape to be closed cell unless otherwise required by sealant manufacturer. Provide translucent backer rod.

C Construction
Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the fence in conformance with the requirements of the contract. Do not begin fabrication prior to shop drawing review and acceptance.

Provide a full sized (4 channel) wide test panel unit in location as directed by engineer. Show connection, seal, hardware, accessories and construction techniques. The test panel shall be delivered to the job site within 60 days of the award of the contract. Unload and set up test panel in an area designated by the engineer. Do not begin fabrication of railing prior to the test panel acceptance.

During construction and at the time of delivery the engineer shall inspect the glass and framing components. The engineer shall accept the product after the delivery is unloaded on the site. After the product is unloaded, the installation contractor will signify in writing that the system was received in acceptable condition per the engineer's inspection. Any damage to the glass or framing system after the acceptable delivery will be the responsibility of the installation contractor.

All welding shall conform to the applicable requirements of standard spec 506 of the standard specifications. No field welding, field cutting, or drilling will be permitted without the approval of the engineer.

Provide the engineer with the name, address, and phone number of a representative of the fence fabricator for future coordination.

Install units in accordance to applicable building codes and approved Shop Drawings, plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction and adjacent structures.

Erect framing, vinyl spacer, and glass in accordance to manufacturer's printed installation instructions. Clean glass immediately before installing. Protect or seal all installed glass units daily on both sides of glass, between frame and glass, and between linear glass units to prevent infiltration of airborne debris.

Perimeter Joint Sealant: Ensure compatibility of joint components and adhesion of perimeter joint sealant to surfaces that receive sealant.

Erection Tolerances – Framing Members:
Limit variations of jambs from plumb and horizontal frame members from level:

1/8 inch in 12 feet (3 mm in 3000 mm) vertically.
1/8 inch in 20 feet (3 mm in 6000 mm) horizontally.

Limit variations from theoretical locations to 1/4 inch for any member at any location.

Limit end-to-end and edge-to-edge alignment offsets to 1/32 inch maximum out of plane offset for horizontal and vertical glazing legs of framing members designed to be in the same plane.

D Measurement
The department will not measure Channel Glass Exterior Cladding. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.4740	Channel Glass Exterior Cladding	SF

Payment is full compensation for fabricating, delivering test panel to site; fabricating, furnishing, and delivering glazing system; installing linear glass panels and framing system and accessories; for preparing shop drawings and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

272. Metal Roof Decking, Item SPV.0165.4750.

A Description
Fabricate and install metal roof decking panels with integral gutter system on pedestrian bridge B-40-784 and elevated approach walkways as shown on the plans and as hereinafter provided..

B Materials

B.1 General

All materials shall meet the requirements as shown on the plans and the applicable provisions of the standard specifications as follows:

Performance Requirements: Provide sheet metal roofing which has been manufactured, fabricated and installed to withstand structural and thermal movement, wind loading and weather exposure to maintain manufacturer's performance criteria without defects, damage, failure or infiltration of water.

Air Infiltration: Maximum 0.011 cfm/lf of seam at static pressure of +/-6.24 psf when tested per ASTM E1680.

Water Penetration: No uncontrolled water penetration through the panel joints at a static pressure of 12.0 psf when tested in accordance to ASTM E1646.

Color change and fade resistance: No cracking, peeling, blistering or loss of adhesion when tested in accordance to ASTM G23; color change, after removal of surface deposits such as dirt or chalk, maximum 5 NBS units.

Humidity resistance: No blistering, peeling or loss of adhesion after 1000 hours testing, in accordance to ASTM D2247.

B.2 Metal Roof Panel Systems and Manufacturers

Subject to compliance with the product requirements listed above, provide the basis of design or equivalent product from manufacturers listed below. Roof panel products of other manufacturers matching the aesthetics, performance, and certifications of the product requirements listed above may be used with the written approval of the engineer.

Basis of Design Product:
Mega-Rib by McElroy Metal, Incorporated

Alternate Products and Manufacturers:
IC72 - Panel Roof by Metal Sales Manufacturing Corporation.
7.2 Panel by MBCI Metal Roof and Wall Systems
or equal.

B.3 Product Components and Accessories

B.3.1 Roof Panels

Material: ASTM A792 Steel Sheet, Grade 50, Class 1, 24 gage, with unpainted acrylic Galvalume AZ55 coating.
Profile: Longitudinal ribs 1 1/2" deep, spaced 7.2" on center.
Size: 36" cover width, lengths indicated on drawings.

B.3.2 Sheet Metal Gutter Channel

Manufactured in uniform standard lengths corresponding to support members.

Furnish corner bend sections and other special sections to form integral channel gutter as shown in the plans. Furnish outlet tubes and other accessories required to connect to downspouts.

Material: ASTM A792 Steel Sheet, Grade 50, Class 1, 18 gage, with unpainted acrylic Galvalume AZ55 coating.

Profile: Custom; break-formed as indicated on drawings.

B.3.3 Metal Trim

Manufacturer's standard sheet metal matching panel material and finish, break-formed to profiles indicated on drawings, and including, but not limited to:

Metal edge terminations
Corner bend sections
Stops
Valley and ridge flashing
Termination and transition strips
Expansion joint flashing as shown on the drawings

B.3.4 Clips, Fasteners and Sealant

Supply attachment hardware and other items required for water tight installation of panels in accordance to manufacturer's installation instructions. Supply galvanized clips and fasteners.

C Construction

Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, attachment details, gutter details, and all necessary details, dimensions, and information to allow fabrication and placement of the roof and gutter system on B-40-784. Do not begin installation of the roof panel system prior to shop drawing review and acceptance.

Provide a full sized 4-foot long test panel unit to include connections and connection hardware, sealant tape, accessories and construction techniques. The test panel shall be delivered to the job site within 60 days of the award of the contract.

Protect the roof panel finish surfaces from damage during construction and from subsequent construction activities. Repair or replace panels or components having minor damage to the finish in accordance to panel manufacturer's recommendations and as approved by the engineer. The engineer shall be sole judge of acceptability of repair to damaged finishes.

Provide the engineer with the name, address, and phone number of a representative of the roof panel manufacturer for future coordination.

Install metal roofing panels to profiles, patterns and drainage indicated and required for leakproof installation. Provide for structural and thermal movement of work. Provide sealant at all panel joints and other locations as required to provide water tight installation. The finished appearance of all seams shall be uniform and neat in appearance.

Installation Tolerance: Permitted variation from true plane: Maximum 1/8" in 20 feet.

Install screw fasteners in accordance to manufacturer's installation instructions. Take care to install fasteners to correct depth to provide water tight seal at fastener location without over tightening and causing a dimpled appearance on the panels.

Form expansion joints between adjacent panels with attached trim flashing as shown in the drawings.

Gutter and Downspout Installation:
Mount center gutter channel as shown on drawings. Provide a minimum slope of 1/8" per foot to gutter drain downspouts. Provide lapped expansion joints in gutter at locations shown in the plans.

D Measurement
The department will not measure Metal Roof Decking. The department will use pay plan quantities according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.4750	Metal Roof Decking	SF

Payment is full compensation for fabricating, delivering test panel to site; fabricating, furnishing, and delivering roofing system components including roof panels, gutter channel, flashing, joints seals and sealant, and attachment hardware; installing roof panel and gutter system; for preparing shop drawings and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

273. Stair Tower Roofing, Item SPV.0165.4760.

A Description
Work under this item consists of providing and installing a membrane roofing system and roof drain on the stair tower enclosures included on pedestrian bridge B-40-784. Perform work in accordance to pertinent parts of the standard specifications, the plans, and these special provisions.

B Materials

B.1 Metal Roof Decking

Fabricate metal roofing panels without top-flange stiffening grooves, to comply with "Steel Deck Institute (SDI) Specifications and Commentary for Steel Roof Deck", SDI Publication No. 30, and with the following:

Galvanized Steel Sheet: Conforming to ASTM A 653, Structural Steel (SS), grade G60 (Z180) zinc coating.
Deck Profile: 3N
Profile Depth: 3 inches
Design Uncoated Steel Thickness: 22 gage

B.2 Roof Insulation

Prefaced polyisocyanurate board insulation conforming to ASTM C 1289, Type II, Class 21, Grade 2, with felt or glass-fiber mat faces on both major surfaces.

Provide Insulation boards with factory tapers fabricated to slope ¼" per foot unless otherwise indicated on the plans. Provide preformed saddles, tapered edge strips, and other insulation shapes indicated or required for achieving roof slope to drain. Fabricate to drainage slopes indicated.

Provide factory coated steel fasteners and metal or plastic plates designed for fastening the roof insulation to the substrate and acceptable to the system manufacturer.

B.2.3 EPDM Membrane Roofing

Provide an EPDM (Ethylene Propylene Diene Monomer) roof membrane conforming to ASTM D 4637, Type 1, non-reinforced, uniform, flexible EPDM sheet.

Thickness: 60 mils, nominal
Exposed Face Color: Black
Bonding Adhesive: Manufacturer's standard

B.2.4 Termination Bar

Provide an aluminum termination bar, 14 gage, 1 inch x 8 feet long with 3/8" flange at top to receive caulking bead. Termination bas shall have predrilled ¼" holes spaced at 8" on center for attachment.

B.2.5 Compatibility

Provide roofing insulation and EPDM membrane materials from one manufacturer to ensure product compatibility.

B.2.6 Roof Drains

Provide a epoxy coated cast iron roof drain casting with dual outlets for main drain and separate overflow in the same casting or drain assembly. The primary and overflow outlets shall provide a minimum 6" diameter outlet and facilitate connection to a 6-inch

diameter downspout piping as shown on the drawings. Drains shall be equipped with locking ductile iron, brass or polypropylene strainer domes.

Roof drains shall be:

Model 22200 series as manufactured by Josam Company,
Model Z164 series as manufactured by Zurn Industries, LLC.,
Model RD-700 series as manufactured by Watts Drainage Products,
or equal.

C Construction

C.1 Metal Decking Installation

Attach metal deck to steel framing per the details shown in the plans. Locate roof drain casting as shown on plans and install in accordance to manufacturer's installation instructions.

C.2 Insulation Installation

Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday. Comply with membrane roofing system and insulation manufacturer's written instructions for installing roof insulation. Install tapered insulation under area of roofing to slope roof to drain and conform to slopes indicated on plans. Install insulation over area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

Mechanically fastened each layer of insulation and secure to metal roof decking using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.

C.3 Adhered Membrane Roofing Installation

Adhere membrane roofing over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll membrane roofing and allow to relax before installing. Accurately align membrane roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

Apply bonding adhesive to substrate and underside of membrane roofing at rate required by manufacturer and allow to partially dry before installing membrane roofing. Do not apply to splice area of membrane roofing. In addition to adhesive bonding, mechanically fasten membrane roofing securely at terminations, penetrations, and perimeters.

At adhesively bonded membrane seams clean both faces of splice areas, apply splicing cement, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.

At tape seams clean and prime both faces of splice areas, apply splice tape, and firmly roll side and end laps of overlapping membrane roofing according to manufacturer's written instructions to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of membrane roofing terminations.

Repair tears, voids, and lapped seams in roofing that does not comply with requirements as approved by the engineer.

D Measurement
The department will not measure Stair Tower Roofing. The department will use pay plan according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.4760	Stair Tower Roofing	SF

Payment will be full compensation for furnishing and installing the steel metal decking, roof drain, roof insulation, adhered EPDM membrane, termination bar, attachment hardware, fasteners and adhesive, and for furnishing all labor, tools, equipment and incidentals necessary to complete the contract work.

274. Decorative Screening, Item SPV.0165.4770.

A Description
Fabricate and install wire fabric mesh as decorative screening on pedestrian bridge B-40-784 main truss span.

B Materials
B.1 General
Stainless Steel
Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 316.

Bars and Shapes: ASTM A 276, Type 316.

Wire Fabric Mesh
Wire Rope: 1-by-19 wire rope made from wire complying with ASTM A 492, Type 316.

Wire-Rope Fittings: Connectors of types indicated, fabricated from stainless steel, and with capability to sustain, without failure, a load equal to minimum breaking strength of wire rope with which they are used.

Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.

B.2 Manufacturers
Subject to compliance with the product requirements listed above, provide the Basis of Design product or available manufacturers listed below. Wire Fabric Mesh products of other manufacturers matching the aesthetics, performance, and certifications of the product requirements listed above may be used with the written approval of the engineer.

Subject to compliance with requirements, provide products by one of the following:

GKD Metal Fabrics, Ellipse 14 pattern or equal by
Banker Wire.
Cambridge Architectural.
Metal-Tex.

C Construction
C.1 Fabrication
Fabricate decorative screening panels of the width and height shown on the plans.

Provide a flat SST metal bar at the top and bottom edge and long shank bolts to attach the screening panels to the support members shown on the bride plans. Provide a means for tensioning the wire fabric to the minimum level specified or recommended by the manufacturer.

C2 Installation
Provide shop drawings in accordance to the requirements of standard spec 506.3.2. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the fence in conformance with the requirements of the contract. Do not begin fabrication prior to shop drawing review and acceptance.

No field welding, field cutting will be permitted. Field drill holes in the 3x3x1/4" support tubes on the prefabricated truss to attached the decorative screening. Provide attachment hardware and fasteners to secure decorative screening panels to the pedestrian bridge truss span as shown in the plans.

Install units in accordance to the plan details and approved shop drawings and the manufacturer's requirements and recommendations. Install screening panels, plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction and adjacent structures. Set panels accurately in locations and at spacing shown on the plans

D Measurement
The department will not measure Decorative Screening. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.4770	Decorative Screening	SF

Payment is full compensation for fabricating, delivering test panel to site; fabricating, furnishing, and delivering glazing system; installing Wire Fabric Mesh and framing system and accessories; for preparing shop drawings and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

275. Mulch, Shredded Bark, Item SPV. 0165.7001.

A Description
This work consists of installing a weed barrier and shredded bark mulch in planting beds around evergreen trees as indicated in the plans.

B Materials
Weed barrier shall be nonwoven polypropylene geotextile fabric, Type DF as described in standard spec 645.2.4.

Shredded bark mulch shall be hardwood bark with no pieces being larger than 2” X 5” X 1”.

C Construction
Place weed barrier in tree planting areas only as indicated in the plans. Any overlap of weed barrier shall be a minimum of 3 inches. Do not place weed barrier in perennial areas.

Place shredded bark mulch in planting areas and tamp gently to a finished depth of 2 inches. Take care in placing mulch to avoid damaging plant material.

D Measurement
The department will measure Mulch Shredded Bark by the square foot, acceptably completed and 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
SPV. 0165.7001	Mulch, Shredded Bark	SF

Payment is full compensation for furnishing all materials, labor, tools, equipment and incidentals; for removing excess materials as required for the installation of Mulch Shredded Bark.

276. Shaft Excavation Support System, Item SPV.0165.8095.

A Description

This section includes the requirements to design, furnish and install, and remove when applicable, the excavation support system for working shafts between proposed manholes W1482 to W1501. The contractor shall design and construct each shaft excavation support system for the subsurface conditions described on the boring logs in the Geotechnical Data Report and in accordance to requirements in this Special Provision.

A.1 Qualifications of the Contractor

The contractor's excavation support system design engineer shall be a professional civil engineer registered in the State of Wisconsin and shall have at least ten years of experience in design and construction of excavation support system similar to the contractor's proposed system. This engineer is referred to herein as the contractor's engineer.

A.2 Design Criteria

All ground support system elements including sheeting, shoring, and bracing of shaft excavations shall conform to the requirements of Subpart P, Excavations (1926.650 of 29 CFR) of the Occupational Safety and Health Administration (OSHA).

The design shall provide bottom stability and system stiffness sufficient to meet the contract requirements for control of water and for protection of adjacent work and property. The design shall be compatible with the contractor's selected methods of excavation and control of water. The design shall provide for placement of excavation support systems and removal of the excavation support systems where required and feasible. The design shall provide for construction of the permanent work, and all other construction operations and requirements.

Design shaft excavation support systems and working slabs to withstand earth pressures, groundwater pressures, bottom heave, equipment loads, thrust block loads from pipe jacking, loads from making a portal for tunneling, applicable traffic and construction loads, and other surcharge loads to allow the safe construction of the tunnel without movement or settlement of the ground, and to prevent damage to or movement of adjacent structures, streets, and utilities. Design excavation support systems to be compatible with the geologic conditions as described on the boring logs in the Geotechnical Data Report and in accordance to AISC and ACI code provisions, as applicable.

- Design each member or support element to support the maximum loads that can occur during construction with appropriate safety factors. The maximum combination of loads or stresses shall be no larger than 67% of the yield strength of the structural members.

- Design the support system to minimize horizontal and vertical movements, as per limits delineated in the Special Provision, Geotechnical Instrumentation, and to protect adjacent utilities from damage. The type and stiffness of each ground support system and the methods of ground support installation shall be designed and constructed in order to meet the ground movement limits and adjacent property protection requirements as specified in the Special Provision, Geotechnical Instrumentation.
- Design support system to maintain the stability of the excavation against sliding or bottom heave. Provide a minimum factor of safety against sliding of 1.5. Provide a minimum factor of safety against bottom heave due to adjacent surcharge pressures and hydrostatic uplift pressures or upward seepage pressures of 1.5.
- Employ combinations of walers, struts, tie-back anchors and beams for bracing and lateral support as required to support excavation faces and control groundwater and prevent loss of ground with soldier piles and lagging, liner plate, sheetpile systems or other methods of ground support. Provide struts with intermediate vertical and horizontal supports to prevent buckling. Trench shields and/or speed shores are not allowed for shaft construction.
- Design a gravel pad or concrete working slab equipped with a sump to pump out construction water and storm water for shaft excavation bottoms to provide stable support for construction operations.
- Design for shaft sizes indicated on the drawings.

The support system shall be designed to ensure that no earth or other loading will be placed on the new structures prior to substantial completion of them and until design strength has been reached. The contractor shall be solely and completely responsible for any damage or loss due to premature loading of the new structures.

The design shall specify the following items as a minimum: the quality of materials to be used for excavation support systems; constraints on maximum excavation limits relative to support installation steps; tolerances for size and position of ground support elements; required preloading of excavation support elements; restrictions on surcharge loads and other loads that may act on the excavation support system such as jacking forces and grouting, ground freezing and groundwater pressures; ground support system and adjacent ground movement limits; provisions for subgrade stability and protection; and constraints on removal of support system elements as the permanent work is constructed and backfilling is completed.

B Materials

Materials used in construction of the shaft excavation support systems shall meet these requirements:

a. All timber and structural steel used for the supporting systems, whether new or used, shall be sound and free from defects that may impair their strength.
b. Structural Steel: Conform to ASTM A572 Grade 50 unless approved otherwise.

c. Timber: All timber shall be structural grade with a minimum allowable flexural strength of 1,100 psi.
d. Steel Segments (Liner Plates): Segments shall be accurately bent to the approved shape for the proper radius of tunnel section. Rib segments shall fit closely and have bolted butt-plate joint connections. Each plate of every 4th ring fitted with a minimum 1-1/2-inch diameter grout pipe. All steel appurtenances required for the installation of the segments such as bolts, gaskets, shims, spacers, and other necessary accessories shall be provided with the segments. Segments (liner plates), channels, plates, rods, and accessories shall be structural steel conforming to ASTM A36 or ASTM A572. Bolts shall conform to ASTM A325 or A449. Nuts shall conform to ASTM A307, Grade A.
e. Contact Grout: Conform to Special Provision, Contact Grouting.
f. Anchor Tendons: Conform to ASTM A615 for Grade 60 or 75 or ASTM A722 for Grade 150
g. Anchor Grout: The grout shall be a pumpable neat mixture of cement and water and shall be stable (bleed less than 2 percent), fluid, and provide a minimum 28-day compressive strength as per contractor's design. Grout material shall conform to the requirements of Section 501.2. Use Type I Portland cement.

C Construction

C.1 Submittals

C.1.1 General

Prepare and submit Qualifications, Shop Drawings and Work Plan at the preconstruction meeting or at least 14 calendar days prior to beginning shaft construction, whichever date is earlier. WisDOT will accept the submittal as submitted or return the submittal with requested revisions. Do not start any work until WisDOT provides acceptance of the Documentation of Qualifications, Shop Drawings and Work Plan. Acceptance of the submittals does not relieve the contractor of responsibility for successful completion of the shafts.

C.1.2 Subsurface Conditions

The contractor review the subsurface conditions described on the borings logs in the Geotechnical Data Report.

C.1.3 Submittals for Approval

Excavation Support System Design Engineer Qualifications: Submit written documentation (including evidence of professional registration in the State of Wisconsin) as supporting evidence of the qualifications of the contractor's engineer.

Shop Drawings and Work Plan: Submit plans and shop drawings for shaft excavations, excavation support systems, and other related information. Drawings and calculations shall be prepared and sealed by the contractor's engineer. As a minimum, the submittal shall contain the following information:

a. Construction method to be used for the installation of each system, including sequence of installation and equipment description.
b. Detailed construction sequence for shafts at manholes W1482 and W1501, at a minimum, addressing penetration of the existing storm sewer pipes, maintenance of existing pipe flow throughout construction course, construction of proposed pipes and manholes, and construction of tunnel.
c. Shop drawings and design calculations showing assumed loading conditions, estimated ground movements, system component design, arrangement of supports and construction sequence for proposed support system(s). Show the elevation of struts, braces, or other supports as related to the depth of excavation at intermediate stages of construction. Provide details of bottom slab, drains, and sump construction. Indicate sizes, shapes, and material specifications for all support elements including lagging, if used. Calculations shall include estimates of likely deflections or deformations of the support system and maximum tolerable values. Calculations shall also show the shaft wall is able to sustain the maximum jacking forces transferred from the thrust block during pipe jacking.
d. The design and submittal of driven steel sheetpiles for shaft excavation support, shall, as a minimum, address the following items in addition to the other required items: interference with utilities, advancement past boulder obstructions; hard driving and sheetpile advancement without damage within anticipated dense or hard ground; sheetpile drivability evaluation; vibrations, noise and densification impacts; vibration induced ground settlement; provisions for maintaining horizontal and vertical alignment control; structural design of the bracing system or tie-backs.
e. The design and submittal of soldier piles and laggings for shaft excavation support shall, as a minimum, address the following items in addition to the other required items: interference with utilities; drilled hole advancement, including drilling equipment type, expected hole diameters and methods of maintaining hole stability; structural design of soldier piles, including size, weight, steel grade, depth, and backfill of hole; method of shaft excavating; method of removing boulder obstructions; method of lagging installation and overcut backfilling or contact grouting; design and installation of any internal bracing or tie-backs.
f. The design and submittal of steel ribs and laggings/ liner plates for shaft support shall as a minimum, address the following items in addition to the other required items: interference with utilities; structural design of steel ribs and laggings/ liner plates, including size, weight, steel grade, depth; liner plate details, including geometry, joints, connectors (bolts and dowels), compression packings, gaskets, inserts, and accessories; method of assembly; method of shaft excavating; method of removing boulder obstructions; method of lagging/liner plate installation and overcut backfilling or contact grouting; design.
g. A site plan for each shaft indicating utilities, use of access roads, site grading and site development details for the excavation and all work areas, and the proposed limits of disturbance surrounding each excavation.

h. Portal plans indicating support installed to maintain ground support system integrity and stability of the excavation when commencing tunneling and when holing through. Provide details of the portal bracing, seal and ground improvement (if used) needed for face stability and tunnel launching.

C.1.4 Information Submittals

Contractor's Engineer Certification: Submit to WisDOT, no later than the 5th day of each month, a signed and sealed certification (letter, memorandum, or report) by the contractor's engineer that, based on his/her observations, the work completed during the previous month pertaining to design was installed and is performing substantially in accordance to the design concepts prepared by him/her. The contractor's engineer shall also report any significant deviations from the submitted design concepts, any performance concerns observed and actions recommended remediating these items. The contractor's engineer certifications shall be made monthly during a period commencing with the start of excavation and ground support system installation, continuing during portal excavation and pipe jacking operations and ending when the ground support system has been abandoned and backfilled or removed and backfilled.

As-built Plans: Submit as-builts of abandoned excavation support systems.

C.1.5 Acceptance

The department will evaluate the Submittals for Approval with the requirements of these special provisions. Within 14 calendar days after receipt of the Submittals of Approval, WisDOT will notify the contractor of the acceptance of the submittal, or if additional information and/or changes are required. Any unacceptable part of the Submittals of Approval will require resubmission. The contractor must resubmit the Submittals of Approval for evaluation and review with the necessary changes or additional information provided. WisDOT will provide a written notice of acceptance or rejection of contractor's resubmitted Submittal for Approval within 14 calendar days after its receipt.

After WisDOT's acceptance of Submittal of Approval, no changes to the Submittal of Approval can be made without written consent of WisDOT.

All Information Submittals should be submitted to WisDOT. WisDOT can reject the submittals which do not adequate detail, as required herein. The contractor shall resubmit the rejected submittals within 7 days upon the receipt of WisDOT's rejection notice.

C.2 General Shaft Construction Requirements

The contractor shall review the Plans and other Special Provisions of this project to coordinate with utility relocation work adjacent to the shaft prior to shaft construction.

Excavation support systems for shafts can consist of drilled-in soldier piles and laggings, steel ribs and laggings/liner plates, driven interlocked steel sheetpiles at shaft locations.

The contractor shall design and install shaft ground support systems in accordance to the contract documents and approved submittals. The contractor shall furnish materials for installing, monitoring, maintaining, and removing ground support systems. The contractor's engineer shall maintain involvement and responsibility from design through installation, performance and abandonment or removal of ground support systems.

The contractor shall implement groundwater control measures, as required in the Special Provision, Control of Water. Installation of excavation support systems shall not be done without groundwater control measures.

Whenever necessary to prevent caving during excavation to protect adjacent structures, property, workmen, and the public, adequately sheet and brace excavations. All sheeting, shoring, and bracing of excavations shall conform to the safety requirements of the Federal, State, or local public agency having jurisdiction over such matters. The most stringent of these requirements shall apply.

The contractor shall install support systems to permit the safe execution of the work, and to ensure that no ground loading or other loading will be placed on the new work prior to completion and until design strength of the structure being constructed has been reached. During periods of shutdown, fully support the walls of excavations to prevent lost ground. The contractor shall install excavation support systems to minimize loss of soil into the excavations; minimize ground movements outside of the excavations; maintain stability of the excavations; preserve the in situ strength of surrounding soils; to limit construction included vibration. Control vibrations from boulder splitting or installation and removal of driven sheetpiles for initial support systems to prevent damage to the work and adjacent property. Ground movement and vibration shall be monitored as per Special Provision, Geotechnical Instrumentation.

Skin tight contact between the ground and the soldier pile and lagging system or the steel ribs and lagging/liner plate system is required and is to be maintained by the contractor's selected means, such as blocking, cribbing, wedging, grouting, or such other means compatible with the design of contractor's engineer. For overcut voids over 1/2 inch wide, the contractor shall promptly complete contact grouting as specified in the Special Provision, Contact Grouting. Contact grouting shall be performed to control ground movement into the excavation, and to provide firm and uniform contact between the support system and the ground. Grout holes shall be located as necessary to accomplish the work.

C.3 Driven Steel Sheetpiles

Before positioning sheetpiles for driving, the contractor shall clean the sheetpiles and inspect for defects and proper interlock dimensions. Position sheetpiles using temporary guide support to form rigid structures during the sheetpile setting and driving operation. Allow sufficient clearance in the interlocks to slide, under sheetpile's own weight, in the interlock of the sheetpile previously placed until the top of existing ground is reached by the tip of the sliding sheetpile. Do not use vibratory or impact hammer to force the interlocking of sheetpiles.

Before driving is started, the contractor shall check sheetpiles for position and alignment. Sheetpile top should be located within 2 inches of the planned location. Drive sheetpiles in rotating stages such that the tip of any sheetpile is not more than 5 feet below the tip of any adjacent sheetpile no more than 8 feet below the tip of any other sheetpile in the same shaft, except as required by the final tip elevations shown. Drive sheetpiles to the approved tip elevations. Drive down piles that are raised during the process of driving adjacent piles. If refusal is reached before driving to the specified tip elevation, an impact hammer or controlled jetting may be used. Perform jetting on both sides of sheetpile simultaneously with driving.

The driving tolerance shall not be more than 1 percent from the vertical in all directions. Centroid of sheetpile at cutoff elevation shall not vary from design position shown by more than 3 inches after driving. The contractor shall remove and replace sheetpile driven out of interlock at no additional cost to WisDOT.

Extend to required grade by welding on additional full length sheetpiles driven below grade, and sheetpiles with damaged heads which have been cut off to permit further driving. Sheetpiles adjoining spliced sheetpiles shall be full length.

C.3 Drilled-in Soldier Pile and Lagging Wall

The contractor shall design soldier pile and lagging wall to allow the penetration of the existing storm sewer pipe. The contractor shall install soldier piles through pre-drilled holes and fill in with concrete. Driven soldier piles are prohibited.

The soldier piles shall be installed within 2 inches from the planned location. The contractor shall replace soldier piles not located within tolerance or damaged due to any cause at no additional cost to WisDOT.

Based on the design of contractor's engineer, soldier piles shall be secured against horizontal or vertical movements or distortion. Laggings shall be assembled true to the lines and grades presented on the approved Shop Drawings.

Install laggings in conformance with the manufacture's recommendations and in a manner that will not deform or overstress the soldier piles. The contractor shall prevent laggings from deflecting more than contractor's design deflection.

Prior to allowing excavation to stand overnight, advance the laggings to 1 feet above the excavation line and contact grout.

C.4 Steel Ribs and Laggings/Liner Plates

The contractor shall design and install steel ribs and laggings/liner plates to allow the penetration of the existing storm sewer pipe. The contractor shall install steel ribs and laggings/liner plates as per approved shop drawings and in conformance with the manufacture's recommendations.

The contractor shall be prepared to handle wet sand seams and lenses during installation of steel ribs and laggings. The contractor shall avoid ground loss from unstable wet sand seams and lenses, if encountered.

Unsupported excavation to stand overnight is prohibited. The steel ribs and lagging/liner plate system shall be advanced to the bottom of the excavation prior to the end of each work day.

C.4 Bracing System

The contractor shall install bracing system consist of walers, struts or tie-back anchors in the sequence as specified by the contractor's engineer.

Install steel supports true to the line and grades as per approved shop drawings. The contractor shall install steel plates to ensure firm contact between walers (if used) and the sheetpiles or soldier piles.

If tie-back anchors are used, the requirements herein shall be followed.

Tolerance: The tie-back anchors shall be positioned plus or minus 6 inches from the theoretical elevation shown in the Shop Drawings. At the point of entry, the anchor shall be installed within plus or minus 3 degrees of the inclination from horizontal shown in the Shop Drawings, and the anchor shall be within plus or minus 3 degrees of a line drawn perpendicular to the face of the wall unless otherwise shown in the shop drawings. Minimum grout cover for tendons shall be ½ inch. Tie-back anchors which do not satisfy the specified tolerances, due to the contractor's installation methods, will be replaced at no additional cost.

Anchor hole drilling: Anchor holes shall be drilled at the specified locations, angles, lengths and minimum diameters shown on the drawings. Overdrilling of holes shall be utilized only if described in approved work plan. The contractor shall check orientation of anchor hole prior to and during drilling. Only use drilling mud or foam to not impact ground anchor load transfer, and specified by the contractor's engineer.

Anchor tendon Installation: Immediately prior to tendon installation, flush hole with water to provide saturated soil and concrete surfaces, remove standing water in bottom of hole, and sound hole for compliance with required depth. Tendons shall be free of dirt, loose rust, grease, or other deleterious substances and placed in accordance to approved Shop Drawings. The contractor shall provide with rigid and adequate support during placement of grout. The tendon bars shall be continuous, without splices or welds

Grouting of anchor: The contractor shall place a separate bondbreaker if a corrugated sheath is used or if recommended by the manufacture. Pump into bottom of hole through clean and leak-free grout pipes. If grout inside the sheath is not pre-manufactured, the contractor shall grout area outside and inside the sheath simultaneously and maintain grout at the same level both inside and outside of the sheath. Measure amount being pumped to avoid overfilling hole. Continuously sound the grout surface by positive

measuring rod through the holes in tendon baseplate to verify that grout is at correct elevation and is not higher than shown or approved. Keep grout pipe below grout surface to avoid entrapping air. After grout operation is complete, allow tendon to remain undisturbed until grout has cured for the time required to reach minimum specified strength, as determined by ASTM C942. If top elevation of grout exceeds specified elevation by 1 foot or more, perform following remedial action:

a. Remove tendon, flush hole, and redrill if necessary or remove grout to the required elevation.
b. Replace tendon with new tendon if damaged.

Tendon Stressing: Do not tension tendon before grout have cured for minimum specified time and grout strength, required by contractor's design and as shown on approved Shop Drawings or in calculations, has been verified by testing laboratory when cured at appropriate temperatures. Tension tendon by means of equipment required and furnished by tendon manufacturer.

C.5 Removal of Excavation Support Systems

The contractor shall remove all elements of excavation support systems within 6 feet below the existing or the proposed ground surface, whichever is lower. Repair any settlement or damage to the work or to adjacent property as a result of removing excavation support systems. Excavation support systems that cannot be safely removed and without causing settlement or damage to the work or adjacent property shall be left in place, at no additional cost to the department.

If backfill material is loosened to an extent that it settles more than one inch as a result of attempts to remove sheeting or other ground support members, the contractor shall be responsible for remedial measures to re-compact or consolidate the loosened backfill. The contractor's engineer shall be responsible for determining if ground support system can be safely removed. Excavation support system elements that are left in place shall be at the contractor's expense. Restoration of any damage and the cost of remediating disturbed backfill or adjacent property damage caused by removal of ground support systems shall be at the contractor's expense.

C.6 Shaft Backfilling

Backfill shafts in accordance to standard spec 206.3.13. Backfill around the pipe inside the shaft shall be in accordance to standard spec 209.2, 520.3.2 and 520.3.4.

D Measurement

The department will measure Shaft Excavation Support System by the square foot of the excavation surface. The number of square feet of Shaft Excavation Support System will be based on the plan quantity without measurement. Plan quantity is defined by the shown shaft perimeters times the depth at the center of the shaft. Additional excavation beyond the limits of the plan dimensions will not be measured for payment unless authorized and agreed to in advance of placement by WisDOT.

E Payment

The department will pay for plan quantities or revised plan quantities if agreed to in advance of placement by WisDOT, at the contract unit price under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.8095	Shaft Excavation Support System	SF

Payment for Shaft Excavation Support System is full compensation for furnishing, installing, and removing excavation support systems for both working shafts, including but not limited to: excavation; all elements of excavation support system; removing boulders encountered; providing and placing backfill; shaft base material compaction and work slab; disposing of surplus material; equipment mobilization/demobilization; and furnishing all materials, labor, equipment, tolls, and all necessary incidentals to complete the work as specified in this Special Provision.

277. Concrete Pavement 8-Inch Special, Item SPV.0180.0010.

A Description

This special provision describes placing colored concrete. Placement, forming, and aggregate of the concrete shall be in accordance to the pertinent requirements of standard specs 415, 416, 501, 701, 710 and 715, in accordance to the details as shown on the plans, and as hereinafter provided.

B Materials

At least 15 working days prior to the start of colored concrete installation supply one 2-foot x 2-foot panel sample of the colored concrete with the proposed broom finish and troweled edge. The final color and finish is to be approved by the City of Wauwatosa, Mr. William Wehrley (414) 479-8929 prior to placement of any colored concrete in the field.

The accepted sample shall be the standard of finish for all colored concrete work within the project.

The concrete shall be grade A2 or grade A-FA as specified in standard spec 501. All colored concrete shall originate from the same batch plant.

C Construction

Concrete shall be placed by installers experienced with colored, broom finished concrete.

Concrete pavement shall match the visual appearance of the approved sample. Concrete pavement not conforming to the color and finish of the approved sample shall be replaced at the contractor's expense.

Tie the pavement to adjacent Concrete Pavement 8-Inch using No. 4 tie bars spaced 2'-0" center to center.

C.1 Color Admixture
Use integral color admixture material specifically designed for coloring concrete.

Blend admix at plant per manufacturers specifications to achieve the indicated color. Color admixtures manufacturer and colors include:

Solomon Color – **Brick 417**
Schofield System – **Quarry Red C-32**
Davis Colors – **Brick Red 160**

Or approved equal

C.2 Finish
Finish shall be a medium brushed (broom) finish with a 6-inch smooth troweled finish as shown in the plans.

D Measurement
The department will not measure Concrete Pavement 8-Inch Special. The department will use pay plan quantity according to the Pay Plan Quantity article.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.0010	Concrete Pavement 8-Inch Special	SY

Payment is full compensation for installation of colored concrete; excavating and preparing the foundation; providing all materials, including concrete, and expansion joints; placing, finishing, protecting and curing concrete; for preparing sample panels; and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.

278. Concrete Pavement 12-Inch Special, Item SPV.0180.0020.

A Description
This special provision describes specialized material and construction requirements for HPC concrete pavement to be utilized on the USH 45 mainline pavement and shoulders.

Conform to standard specs 415 and 501 as modified in this special provision, and in accordance to special provision QMP Concrete Pavement Special Requirements and to the construction details shown on the plans.

Concrete pavement mixes from standard spec 501 of standard specifications may not be used. Provide an independent contractor developed mix design.

B Materials
Conform to standard specs 415.2 and 501.2 and as modified in this special provision.

B.1 Concrete
Add the following to standard spec 415.2.1.

The maximum slag content shall not exceed 30% of the cementitious material. The maximum combination of fly ash and slag shall not exceed 30% of the total cementitious material.

B.2 Reinforcement
Replace standard spec 415.2.2 with the following:

Furnish steel reinforcement conforming to standard spec 505.

Furnish tie bars as the plans show and conforming to 505.2.6.

Furnish dowel bars conforming to standard spec 505.2.6 except, for transverse joints in mainline concrete pavement, use non-corrosive high performance dowel bars. Use only one type of high performance bar for work under the contact. The contractor may use any one of the following:

- Bars with 316L stainless steel cladding meeting ASTM A276 chemical requirements. Ensure that the bars have a smooth finished surface cladding 0.060 inches thick or thicker over ASTM A615 grade 60 or higher carbon steel. The bars shall have a minimum outside diameter of 1.5-inches and a length of 18-inches.

- Bars with 316L stainless steel tubes meeting ASTM A276 chemical requirements. Ensure that the tubes have a smooth finished surface, a wall thickness of 0.060 inches or more, and are press-filled with ASTM A615 grade 60 or higher carbon steel. Use an adhesive or epoxy between the tube and the carbon steel to fill any voids. The bars shall have a minimum outside diameter of 1.5-inches and a length of 18-inches.

- Solid 316L stainless steel bars conforming to ASTM A955 grade 60 or higher. The bars shall have a minimum outside diameter of 1.5-inches and a length of 18-inches.

- Bars with a rolled UNS Z41121 zinc alloy cladding conforming to ASTM B6. Ensure that the bars have a smooth finished surface cladding 0.040 inches thick or thicker over ASTM A615 grade 60 or higher carbon steel. The bars shall have a minimum outside diameter of 1.5-inches and a length of 18- inches.

B.3 Concrete Curing Agents
Replace standard spec 415.2.4(1) with the following:

Furnish poly-alpha-methylstyrene membrane curing compound conforming to AASHTO M 148, type 2 as modified below.

Total Solids (% by weight of compound)	42 Minimum
% Reflectance in 72 hours (ASTM E1347)	65 Minimum
Loss of Water, kg/m2 in 24 hours (ASTM C156)	0.15 Maximum
Loss of Water, kg/m2 in 72 hours (ASTM C156)	0.40 Maximum
VOC content (g/L)	350 Maximum
Infrared Spectrum, Vehicle	100% alpha methylstyrene

Replace standard spec 501.2.5.4.1 with the following:

Use clean, hard, durable crushed limestone with 100% fractured surfaces and free of an excess of thin or elongated pieces, frozen lumps, vegetation, deleterious substances or adherent coatings considered injurious.

Use virgin aggregates only.

B.4 Deleterious Substances
Replace standard spec 501.2.5.4.2(1) with the following:

The amount of deleterious substances shall not exceed the following percentages:

Deleterious Substance	Percent By Weight
Shale	1.0
Coal	1.0
Clay lumps	0.3
Soft fragments	3.0
Any combination of above	3.0
Thin or elongated pieces based on a 3:1 ratio	15.0
Materials passing the No. 200 (75 µm) sieve	1.5
Chert[1]	3.0

[1] Material classified lithologically as chert and having a bulk specific gravity (saturated surface-dry basis) of less than 2.45. Determine the percentage of chert by dividing the weight of chert in the sample retained on a 3/8-inch (9.5 mm) sieve by the weight of the total sample.

Delete paragraphs one and two of standard spec 501.2.5.4.3 and replace with the following:

The percent wear shall not exceed 30%.

The department will ensure that soundness testing conforms to AASHTO T 104, using 5 cycles in sodium sulfate solution on aggregate retained on the No. 4 (4.75 mm) sieve. The weighted loss shall not exceed 6 percent.

The department will ensure that freeze-thaw soundness testing confirms to AASHTO T 103. The weighted freeze-thaw average loss shall not exceed 18 percent.

B.5 QMP Testing Requirement Modification

B.5.1 Concrete Pavement Mixes

Testing referred to in this section pertains to concrete mix design approval and trial batch proving.

In addition to the first paragraph of B.5.2.3.2 of the QMP Concrete Pavement Special Requirements provision of this contract, use at least five pairs of beams and five pairs of cylinders to demonstrate the flexural strength and splitting tensile strength of a mix design. Demonstrate that the 28-day flexural strength of the proposed mix will equal or exceed 650 psi. Ensure that the average flexural strength of any one pair of beams is not less than 490 psi.

B.5.2 Contractor Testing

B.5.2.1 General

Perform all quality control tests applicable to this special provision and as described in the quality control plan. Use the test methods identified below to perform the required tests:

Flexural strength……AASHTO T 97
Splitting tensile strength……..AASHTO T 198

The department may periodically observe contractor sampling and testing, and direct additional contractor sampling and testing for department evaluation. Ensure that all test results are available for the engineer's review at any time during normal working hours.

B.5.3 Flexural Strength and Splitting Tensile Strength

B.5.3.1 Sampling

Cast specimens for testing flexural strength and splitting tensile strength in each lot tested under the QMP Concrete Pavement Special Requirements provision of this contract. Cast compressive strength, flexural strength, and splitting tensile strength test specimens from the same concrete mix sample.

Sample according to AASHTO T 141. Cast and cure the specimens according to AASHTO T 23.

Cast 1 set of 3 standard 6 x 6-inch beams to test the lot flexural strength.

Cast 1 set of 3 standard 6 x 12-inch cylinders to test the lot splitting tensile strength.

B.5.3.2 Testing
Have a technician certified for flexural strength and splitting tensile strength through the department's HTCP, in a department-qualified laboratory, perform flexural and splitting tensile strength testing and document the results.

Determine the 28-day strength in psi of each specimen according to the specified AASHTO standards for each required test. Test each specimen to failure. Use a machine that automatically records the date, time, rate of loading, and maximum load of each specimen. Include a printout of this information with the strength documentation for each specimen tested.

C Construction
Conform to standard specs 415.3 and 501.3 and as modified in this special provision.

C.1 Transverse Tining
Replace standard spec 415.3.11.6.3.2 with the following:

Tine freshly placed pavement as soon as it is practical after floating.

Tine with a self-propelled tining machine. Where using a tining machine is not practical, tine by hand. Produce uniformly deep grooves approximately 1/8 to 3/16 inch (3 mm to 5 mm) deep. Provide a finished surface free of tining defects. Complete before tining tears or unduly roughens the concrete.

Tine surface longitudinally as specified in standard spec 415.3.11.6.3.3. Within 2-Inches of longitudinal sawed joints, turf drag but do not tine surface.

C.2 Joint Finishing and Edging
Add the following to standard spec 415.3.11.7:

Treat sawed surfaces of transverse and longitudinal joints with a silane joint sealant found on the department's approved products list for Concrete Protective Surface Treatments. Prepare surface by pressure washing all saw slurry from sawed joints and allow to dry thoroughly prior to application of silane sealer. Apply the product directly to the interior of the sawed joint. Do not use the broadcast spray method of application.

C.3 Curing Concrete
C.3.1 General
Replace standard spec 415.3.12.1 with the following:

Maintain adequate moisture throughout the concrete mass to support hydration until the concrete develops sufficient strength to open it to service. Cure all concrete by impervious coating as specified in standard spec 415.3.12.2 within 75 minutes from the time concrete is discharged from the truck.

If the contractor does not cure concrete as specified in the subsection, the engineer may suspend concrete placement operations.

C.4 Extended Delivery Time
Delete paragraph one from standard spec 501.3.2.4.3.3.

C.5 Ready-Mixed Concrete
Replace standard spec 501.3.5.1 with the following:

Use central-mixed concrete for all work under this special provision. Central-mixed concrete is completely mixed in a stationary mixer and transported to the point of delivery with or without mechanical agitation in the transporting vehicle.

C.6 Delivery
Replace paragraph three of standard spec 501.3.5.2 with the following:

Deliver and completely discharge concrete within one hour beginning when adding water to the cement, or when adding cement to the aggregates. A decrease in air temperature below 60° F or the use of department-approved retarders shall not increase the discharge time.

C.7 Hot Weather Concreting
C.7.1 General
Replace standard spec 501.3.8.2.1 with the following:

The contractor is responsible for the quality of the concrete placed in hot weather. Submit a written temperature control plan at or before the pre-pour meeting. In that plan, outline the actions the contractor will take to control concrete temperature if the concrete temperature at the point of placement exceeds 80° F (27° C). Do not place concrete without the engineer's written acceptance of that temperature control plan. Perform the work as outlined in the temperature control plan.

If the air temperature exceeds 80° F (27° C) ensure that the asphalt base is in a moist condition during concrete placement. Water the asphalt base, as required, not less than 6 hours before placing the concrete. If the asphalt base subsequently dries, moisten it by sprinkling water just before placing the concrete. Sprinkle the water to avoid forming pools.

If the concrete temperature at the point of placement exceeds 90° F (32° C), do not place concrete for items covered in this special provision.

Notify the engineer whenever conditions exist that might cause the temperature at the point of placement to exceed 80° F (27° C). If project information is not available, the contractor should obtain information from similar mixes placed for other nearby work.

Any additive or action taken by the contractor to control the temperature of concrete to within the limits of this special provision, including, but not limited to, the addition of ice to the concrete mix, is considered incidental to the work and will not be measured or paid for separately.

D Measurement
The department will not measure Concrete Pavement 12-Inch Special. The department will use pay plan quantity according to the Pay Plan Quantity article.

E Payment
E.1 General
Conform to standard spec 415.5 and as modified in this special provision.

Replace paragraph one of standard spec 415.5.1 with the following:

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.0020	Concrete Pavement 12-Inch	SY

E.2 Pay Adjustment for Strength
The department will adjust pay for each lot using percent within limits (PWL) of the 28-day sublot average strengths for that lot. The department will measure PWL relative to the lower specification limit of 4500 psi.

279. Geogrid Reinforcement, Item SPV.0180.0030.

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 [1]
Tensile Strength at 5% Strain, Both Principal Directions (lb/ft)	ASTM D 4595 [2]	450 min.
Flexural Rigidity Both Principal Directions (mg-cm)	ASTM D 1388 [3]	150,000 min.
Aperture Area (in^2)	Inside Measurement [4]	5.0 max
Aperture Dimension (in)	Inside Measurement [4]	0.5 min.

- [1] 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.

- [2] 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)].

- [3] Values shall be determined by Option "A" (Cantilever Test) of testing method ASTM D1388 using test specimens that are 36 inches ±0.04 inch long. Test specimen widths for differing geogrids shall be variable and equal to one element plus ½ 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.

- [4] 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 ten 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. Take responsibility for all costs to repair or replace damaged or defective geogrid.

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 and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.0030	Geogrid Reinforcement	SY

Payment is full compensation for furnishing, transporting, and installing the geogrid; furnishing and installing all devices and materials necessary to join or secure the geogrid in place; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

SEF Rev. 12_1004

280. Topsoil Special, Item SPV.0180.0040.

A Description

This special provision section describes furnishing, placing, spreading, and finishing humus-bearing soil, adapted to sustain plant life, commonly known as topsoil, from locations the contractor furnishes beyond the limits of the right-of-way.

This special provision also describes removing topsoil from the sites of proposed roadway excavations and embankments in amounts and depths available and necessary to cover the work slopes. This work also includes reclamation, placing, spreading, and finishing of this topsoil.

B Materials

Furnish material that is relatively free from large roots, sticks, weeds, brush, stones, litter, and waste products.

Furnish material, either obtained offsite, or material obtained within project limits, consisting of loam, sandy loam, silt loam, silty clay loam, or clay loam humus-bearing soils adapted to sustain plant life. Do not use surface soils from ditch bottoms, drained ponds, and eroded areas, or soils which are supporting growth of NR 40 listed plants and noxious weeds or other undesirable vegetation. Ensure that the material conforms to the following:

Topsoil Requirements	Minimum Range	Maximum Range
Material Passing 2.00 mm (#10) Sieve*	90%	100%
PH Range	6.0	7.0
Organic Matter**	5%	20%
Clay	5%	30%
Silt	10%	70%
Sand and Gravel	10%	70%

*See Section 625.3.3 for sieve requirements when using either sod or seed mixture 40.
**Organic matter determined by loss on ignition test of samples oven dried to constant weight at 212 F (100 C).

C Construction

C.1 Preparing the Roadway for Topsoil

Undercut or underfill all areas designated to receive topsoil to a degree that if covered to the required depth with topsoil the finished work conforms to the required lines, grades, slopes and cross sections the plans and drawings show.

C.2 Processing Topsoil

Mow topsoil procurement areas to a height of approximately 6 inches. Remove litter such as brush, rock, and other materials that will interfere with subsequent vegetation establishment.

Strip off the humus-bearing soil. Take care to minimize removing the underlying sterile soil. Then stockpile the topsoil on the right-of-way or place it directly on the designated areas.

Obtain topsoil from embankment areas outside the roadway foundation only if that additional material is required to cover the slopes, and conforms to the requirements of section B above. Utilize excess topsoil on the project or dispose of as specified in standard spec 205.3.12.

C.3 Placing Topsoil

After preparing and finishing the areas designated for topsoil to the required lines, grades, slopes and cross section, place and spread the topsoil to a uniform depth as the plans show or the contract requires. If no depth is shown, place and spread the topsoil to a minimum depth of 4 inches in rural areas and a minimum depth of 6 inches in urban areas, or as the engineer designates.

Break down all clods and lumps using appropriate equipment to provide a uniformly textured soil.

Where using either sod or seed mixture 40 ensure that, for the upper 2 inches, 100 percent of the material passes a one-inch sieve and at least 90 percent passes the No. 10 sieve.

Remove rocks, twigs, foreign material, and clods that cannot be broken down. Dress the entire surface to present a uniform appearance. The engineer will not require rolling.

If light sandy soils are covered with heavier clay bearing loam topsoil, then mix or blend the 2 types of soils to a more or less homogeneous mixture by using the appropriate equipment.

D Measurement

The department will not measure Topsoil Special. The department will use pay plan quantity according to Pay Plan Quantity article.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.0040	Topsoil Special	SY

Payment for Topsoil is full compensation for removing, stockpiling, reclaiming, providing, processing, excavating, loading, hauling, and placing this material; and for undercutting excavations, or underfilling embankments necessary to receive this material. The department will make no allowance, adjustment, or measurement for payment under the Excavation bid items for undercutting cut sections, underfilling embankments, or deductions for materials obtained from areas of cut sections.

If an area is damaged by erosion after partial acceptance, the department will pay for restoring topsoil in these areas at a unit price determined by multiplying the contract unit price bid for Topsoil multiplied by 3, The department will pay for restoration under the Restoration Post Acceptance Topsoil administrative item.

The department will not pay for removing topsoil from outside the roadway foundation in embankment areas unless that material is necessary to cover the slopes.

SEF Rev.13_0626

281. Geotextile Fabric Type FF, Item SPV.0180.0050.

A Description

This special provision describes furnishing, installing and removing geotextile fabric and fabric hold down systems for filtering storm water, as shown in the plans and as hereinafter provided.

B Materials

Furnish type FF geotextile fabrics conforming to standard spec 645.2.1 except use a woven polypropylene fabric. Furnish type FF geotextile fabrics selected from the department's erosion control product acceptability list (PAL). Obtain copies of the erosion control PAL and prequalification procedure from the Bureau of Technical Services.

C Construction

Meet the pertinent requirements as set forth in standard spec 645.3 and as follows:

Install 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 of surface area of the fabric placed and accepted in accordance to the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.0050	Geotextile Fabric Type FF	SY

Payment is full compensation for furnishing, transporting, installing and removing the fabric and fabric hold down systems; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

282. Insulation Board Polystyrene, 4-Inch, Item SPV.0180.5001.

A Description

This special provision describes furnishing and installing polystyrene insulation board, cover material, granular backfill and compaction in accordance to the plans, standard specification for Sewer and Water Construction in Wisconsin, latest edition and amendments, ("SWS") and as hereinafter provided.

B Materials

B.1 General

Provide polystyrene insulation board that conforms to the requirements for Extruded Insulation Board, AASHTO Designation M230, except as hereinafter revised.

Delete flammability requirement.

All materials will require inspection by Milwaukee Metropolitan Sewer District (MMSD). Notify Larry Anderson, office: (414) 225-2241 or cell: (414) 617-1429 for materials inspection and construction inspection, three working days prior to starting construction.

Pipe cover material shall conform to the requirements contained in the "SWS". Granular backfill material shall conform to section 8.43.4 under roadways and drives in the "SWS".

B.2 Certification

Before installation, obtain from the manufacturer a certification indicating compliance and furnish it to the engineer.

C Construction

C.1 General

Repair existing polyethylene encasement observed to be compromised or damaged during construction around an exposed force main pipe per requirements of the "SWS". Avoid damage to the polyethylene encasement.

C.2 Insulation Board

Place insulation board on top and sides of the force main cover material, 6 inches above the top of pipe and 6-inches adjacent to the sides of the pipe. Place boards on the top with the long side parallel to the centerline of the pipe, and a minimum width of outside diameter of the force main plus 24 inches. Place the boards in a staggered arrangement to eliminate continuous traverse joints.

Store insulation board in an area where it will not be damaged. Ensure insulation board is free from dents, cracks, holes, and other defects that compromise its integrity. Ensure insulation board is not damaged during installation.

C.3 Compaction

Compact granular backfill mechanically to a minimum of 95% maximum density as determined by ASTM D1557, Method D (Modified Proctor Test) from the top of the pipe cover material to the surface of the trench. Special compaction equipment and measures are required where standard compaction equipment cannot be utilized. Flooding of backfill will not be allowed. Compact native backfill mechanically to a minimum of 90% maximum density as determined by ASTM D1557 (Modified Proctor Test) from top of pipe cover material to trench surface. Compaction of the excavated and granular backfill material shall be compacted to achieve uniform consolidation in conformance with section 2.6.14(b) of the "SWS".

D Measurement

The department will measure Insulation Board Polystyrene (4-Inch) 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.0180.5001	Insulation Board Polystyrene 4-Inch	SY

Payment is full compensation for furnishing and installing all materials, including insulation board, cover material, and granular backfill material; for furnishing all excavation, dewatering, sheathing and shoring; for repairing compromised or damaged polyethylene encasement, for backfilling, mechanical compaction, for removing sheathing and shoring; for disposal of all surplus or waste material; and for site cleanup.

283. Cold Patch, Item SPV.0195.0001.

A Description

This special provision describes furnishing, stockpiling, placing, and maintaining cold patch material. The cold patch material shall be used for short term maintenance purposes to fill potholes/voids in the existing pavement surface that the engineer deems necessary.

B Materials

B.1 General

Furnish cold patch that is a combination of course aggregate, natural sand and bituminous material MC-250. The mixture shall be designed to have a workability range of 15ºF-100º F without the addition of heat. The mixture shall have good adhesion to wet surfaces and be resistant to damage by water, salt and deicing products. The mixture shall be uniform and not require any mixing or special handling prior to use.

B.2 Gradations

Conform to the following gradation requirements:

SIEVE SIZE	PERCENT PASSING (by weight)
3/8 Inch (9.5mm)	96 - 100
No. 4 (4.75 mm)	76 - 82
No. 8 (2.38mm)	50 - 60
No. 50 (.297mm)	15 - 20
No. 200 (.074mm)	2 - 5
Bitumen	4.8 - 5.2

C Construction

C.1 General

Choose a smooth, firm, and well-drained area for an on-site stockpile that is cleared of vegetation and foreign material that may contaminate the cold patch. The stockpile shall be easily accessible and able to be maintained and replenished at any time during the duration of the project.

Application of the cold patch must be able to be accomplished by hand labor. Prior to filling any potholes/voids all ponded water and loose debris shall be removed. Place material into the pothole/void and compact flush with a tamper, roller, or vehicle tire. Traffic must be able to travel over the patch immediately after installation.

D Measurement

The department will measure Cold Patch by the ton stockpiled on site, 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.0195.0001	Cold Patch	Ton

Payment for cold patch is full compensation for the patch; furnishing and providing a stockpile of material; preparing the pothole/void for material placement, stockpiling, placing, compacting, and maintaining, and all incidentals necessary to complete the contract work.

The contractor shall be compensated for any unused stockpile quantities remaining on site at the completion of the project, thus the stockpile is not to exceed 10 tons on site at any given time unless approved by the engineer.

Any unused portions of the stockpile shall be removed and disposed of at the completion of the project unless otherwise directed by the engineer. This work shall be completed at no additional expense to the department.

SEF Rev. 12_0604

ADDITIONAL SPECIAL PROVISION 1 (ASP 1)
FOR TRANSPORTATION ALLIANCE FOR NEW SOLUTIONS (TrANS)
PROGRAM EMPLOYMENT PLACEMENTS AND APPRENTICESHIPS

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 __2__ *(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 __2__ *(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 under-representation 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

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

GFW SAMPLE MEMORANDUM

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

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
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		DBE Contractor Contact Person	
Phone:		Phone	
Fax:		Fax	
Email:		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 First-Tier Subcontractors

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

The prime contractor may also withhold retainage from payments due subcontractors. Reduce the total amount retained from all first-tier subcontractors to no more than the department retains within 10 calendar days of the department releasing retainage.

Payment to Lower-Tier Subcontractors

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

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:

$$FA = \left(\frac{CFI}{BFI} - 1 \right) x\ Q\ x\ BFI$$

(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:

104.4 Requests for Information

Replace paragraph one with the following effective with the July 2013 letting:

(1) Either the department or the contractor may request information that the other party must provide in order for the requesting party to fulfill its contract obligations. The requesting party shall submit requests for information (RFI) on department form DT2502 either in hard copy or via email. RFI must conform to the following:

- Be of reasonable scope.
- Explain why a response is necessary to fulfill contract obligations.
- Provide a requested response time, which must be reasonable in relation to its scope.

106.1 General

Replace the entire text with the following effective with the July 2013 letting:

106.1.1 Materials

(1) Provide materials conforming to the contract. Use new products and materials for items permanently incorporated into the work unless the contract specifies or allows otherwise. Use materials the contract specifies unless the engineer authorizes substitutes under 108.8. Monitor construction operations to identify potential nonconforming materials and prevent their incorporation into the work.

(2) All materials are subject to the engineer's approval before incorporation into the work. The engineer may inspect or test all materials at any time during their preparation, storage, and use. Notify the engineer of the proposed source of materials before delivering those materials to the project site. If the engineer requests, provide samples of material and access to facilities that the engineer needs to assess the acceptability of all materials. The department will, on request, share with the contractor available information on a source or material. The department will maintain a web-based list of approved aggregate sources. Aggregate producers must provide test results as required in the department policy for aggregate source approval to have their source approved and to keep that approval over time.

(3) For fabricated components, the materials and the fabricator are subject to the department's approval before delivery of those components to the project site. The engineer may require the contractor to obtain components from another department-approved source if the department determines a fabricator's product does not conform to the contract.

(4) Do not incorporate materials into the work until the engineer approves those materials. However, the contractor may request permission to incorporate materials not already approved. The engineer will grant this permission only if the contractor can provide convincing evidence that the engineer will subsequently find those materials conforming. Incorporation of materials before approval is at the contractor's risk and permission to do so does not imply that the department will subsequently approve those materials.

(5) Except as required under the contract, ensure that products incorporated into the work, either temporarily or permanently, do not display advertising or messages not directly related to the manufacturer, properties, or function of those products; or advertising or messages in violation of state statutes

106.1.2 Designated Materials Person

(1) Designate one person, either a member of the contractor's own organization or acting as an agent for the contractor responsible for the following:

- Communicating contract sampling and testing requirements to subcontractors at all tiers.
- Reporting out-of-specification test results to the department as soon as the information is available.

- Providing certified reports of test or analysis and manufacturers' certificates of compliance from subcontractors at all tiers and maintaining certification records as specified in 106.3.3.2.

(2) Ensure that the contractor-designated materials person submits materials information required under the contract to a person the engineer designates. Ensure that the contractor-designated materials person communicates with their department counterpart weekly.

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[1]
Sampling fresh concrete	AASHTO R60
Making and curing concrete compressive strength test specimens	AASHTO T23
Compressive strength of molded concrete cylinders	AASHTO T22

[1] 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 cement and sufficient air-entraining admixture to produce concrete with the air content specified in 501.3.2.4.

501.3.1.3.2 Special Restrictions

Replace paragraph one with the following effective with the July 2013 letting:

(1) If using coarse aggregate composed primarily of igneous or metamorphic materials, provide concrete for concrete pavement, approach slabs, barrier, surface drains, driveways, alleys, sidewalks, curb, gutter, and curb & gutter as follows:

Grade A, A-FA, A-S, and A-T :	If using type II portland cement, or if using Type IL blended cement where the base portland cement meets Type II chemical requirements.
Grade A-IS and A-IP :	If using type I/II blended portland cement.
Grade A-S2 :	If placing by a slip-formed process and using type II portland cement.
Grade C, C-FA, C-S, C-IS, and C-IP :	If using types I or III portland cement.

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 cement. The contractor may replace up to 30 percent of type I, IL, II, or III 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.

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.

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 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[1]	2 3/4"	3 1/4"	4 1/4"	4 3/4"
		SUM IN MIDDLE 1/2 OF LENGTH[2]	11"	13"	17"	19
	WIDE FACE	EDGE KNOT N MIDDLE 1/3 OF LENGTH	1 3/8"	1 5/8"		
		EDGE KNOT AT END[1]	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"

[1] But do not exceed the maximum allowable knot on the centerline of the wide face of the same piece.

[2] 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 AWPA 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 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 permanent no-passing zones as specified in section 648.

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 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.

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.

Errata

Make the following corrections to the 2013 edition of the standard specifications:

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.

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.

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.

614.2.1 General

Correct errata by changing the discontinued AASHTO M298 to ASTM B695.

(4) Furnish steel nuts conforming to ASTM A563, washers conforming to ASTM F436, grade 1, and bolts conforming to ASTM A307. Ensure that the nuts, washers, and bolts are either hot-dip coated according to AASHTO M232 class C or mechanically coated according to ASTM B695 class 50.

643.3.1 General

Correct errata by eliminating the word "continuously".

(6) Review all traffic signs and control devices furnished and erected for location, position, visibility, adequacy, and manner of use under specific job conditions immediately after each setup and at least once every 24 hours and more frequently as necessary, to ensure all the signs and control devices are in compliance with this section. Review the signs and devices from the same direction that approaching traffic views them.

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[1]
Sieve analysis of fine and coarse aggregate	AASHTO T27[1]
Aggregate moisture	AASHTO T255[1]
Sampling freshly mixed concrete	AASHTO R60
Air content of fresh concrete	AASHTO T152[2]
Concrete slump	AASHTO T119[2]
Concrete temperature	ASTM C1064
Concrete compressive strength	AASHTO T22
Making and curing concrete cylinders	AASHTO T23
Standard moist curing for concrete cylinders	AASHTO M201

[1] As modified in CMM 8-60.

[2] As modified in CMM 8-70.

ADDITIONAL SPECIAL PROVISION 7

A. Reporting 1st Tier and DBE Payments During Construction

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

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

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 contacting 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:

County	%	County	%	County	%
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 2013

ADDITIONAL FEDERAL-AID PROVISIONS

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.

APRIL 2013

BUY AMERICA PROVISION

All steel and iron materials permanently incorporated in this project shall be domestic products and all manufacturing and coating processes for these materials from smelting forward in the manufacturing process must have occurred within the United States. Coating includes epoxy coating, galvanizing, painting and any other coating that protects or enhances the value of a material subject to the requirements of Buy America. The exemption of this requirement is the minimal use of foreign materials if the total cost of such material permanently incorporated in the product does not exceed one-tenth of one percent (1/10 of 1%) of the total contract cost or $2,500.00, whichever is greater. For purposes of this paragraph, the cost is that shown to be the value of the subject products as they are delivered to the project. The contractor shall take actions and provide documentation conforming to CMM 2-28.4 to ensure compliance with this “Buy America” provision.

http://roadwaystandards.dot.wi.gov/standards/cmm/cm-02-28.pdf#cm2-28.4

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

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 contacts.

While the wage rates shown are the minimum rates required by the contract to be paid during its life, this in 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
MILWAUKEE 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 reqarding 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.

TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
	$	$	$
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	29.56	23.86	53.42
Roofer or Waterproofer	29.40	15.05	44.45
Teledata Technician or Installer	24.65	15.67	40.32
Tuckpointer, Caulker or Cleaner	34.35	11.13	45.48
Underwater Diver (Except on Great Lakes)	37.45	19.45	56.90
Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY	29.64	17.06	46.70
Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY	30.60	14.64	45.24
Premium Pay: DOT PREMIUM: Pay two times the hourly basic rate on Sunday, New Year’s Day, Memorial Day,			

TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
	$	$	$
Independence Day, Labor Day, Thanksgiving Day & Christmas Day.			
Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY	25.94	13.57	39.51
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, Dumptor, 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: http://roadwaystandards.dot.wi.gov/hcci/labor- wages- eeo/ index. shtm.			
Pavement Marking Vehicle	23.84	14.90	38.74
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.			

TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY	HOURLY FRINGE BENEFITS	TOTAL
	$	$	$
Fiber Optic Laborer (Outside, Other Than Concrete Encased)	17.24	15.03	32.27
Railroad Track Laborer	14.50	3.53	18.03
HEAVY EQUIPMENT OPERATORS			
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: http://roadwaystandards.dot.wi.gov/hcci/labor- wages- eeo/ index. shtm.	35.22	19.90	55.12
Backhoe (Track Type) Having a Mfgr.'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: http://roadwaystandards.dot.wi.gov/hcci/labor- wages- eeo/ index. shtm.	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 Mfgr.'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);	34.22	19.90	54.12

TRADE OR OCCUPATION	HOURLY BASIC RATE OF PAY $	HOURLY FRINGE BENEFITS $	TOTAL $
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. 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: http://roadwaystandards.dot.wi.gov/hcci/labor- wages- eeo/ index. shtm.			
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 Sawer (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. 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: http://roadwaystandards.dot.wi.gov/hcci/labor- wages- eeo/ index. shtm.	33.96	19.90	53.86
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; Oiler; 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. 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: http://roadwaystandards.dot.wi.gov/hcci/labor- wages- eeo/ index. shtm.	33.67	19.90	53.57
Fiber Optic Cable Equipment.	20.00	7.88	27.88
Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer.	37.45	19.45	56.90
Work Performed on the Great Lakes Including 70 Ton & Over Tug Operator; Assistant Hydraulic Dredge Engineer; Crane or Backhoe Operator; Hydraulic Dredge Leverman or Diver's Tender; Mechanic or Welder.	37.45	19.45	56.90
Work Performed on the Great Lakes Including Deck Equipment Operator or Machineryman (Maintains Cranes Over 50 Tons or Backhoes 115,000 Lbs. or More); Tug, Launch or Loader, Dozer or Like Equipment When Operated on a Barge, Breakwater Wall, Slip, Dock or Scow, Deck Machinery.	27.75	19.15	46.90
Work Performed on the Great Lakes Including Deck Equipment Operator, Machineryman or Fireman (Operates 4 Units or More or Maintains Cranes 50 Tons or Under or Backhoes 115,000 Lbs. or Under); Deck Hand, Deck Engineer or Assistant Tug Operator; Off Road Trucks-Great Lakes ONLY.	27.75	19.15	46.90

SUPERSEDES DECISION WI20120010
U. S. DEPARTMENT OF LABOR
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin
GENERAL DECISION NUMBER: WI130010
DATE: July 19, 2013
DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

LABORERS CLASSIFICATION:	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
Group 2: Air Tool Operator; Joint Sawer and Filler (Pavement); Vibrator or Tamper Operator (Mechanical Hand Operated); Chain Saw Operator; Demolition Burning Torch Laborer	24.49	16.74
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

Truck Drivers:	Basic Hourly Rates	Fringe Benefits
1 & 2 Axles	23.16	17.13
Three or More Axles; Euclids, Dumptor & Articulated, Truck Mechanic	23.31	17.13

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; Modification #2 dated June 7, 2013; Modification #3 dated July 19, 2013.

SUPERSEDES DECISION WI20120010
U. S. DEPARTMENT OF LABOR
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin
GENERAL DECISION NUMBER: WI130010
DATE: July 19, 2013
DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

POWER EQUIPMENT OPERATORS CLASSIFICATION:	Basic Hourly Rates	Fringe Benefits
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	$36.72	$20.10
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.	$36.22	$20.10
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 (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.	$35.72	$20.10
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.	$35.46	$20.10
Group 5: Air compressor; power pack; vibratory hammer and extractor; heavy equipment, leadman; tank car heaters; stump chipper; curb machine operator; concrete pro-portioning 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.	$35.17	$20.10
Group 6: Off – road material hauler with or without ejector	$29.27	$20.10

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 WI20120010
U. S. DEPARTMENT OF LABOR
(DAVIS-BACON ACT, MINIMUM WAGE RATES)

STATE: Wisconsin
GENERAL DECISION NUMBER: WI130010
DATE: July 19, 2013
DESCRIPTION OF WORK: Highways and Airport Runway and Taxiway Construction

LABORERS CLASSIFICATION:	Rates	Benefits
Electricians		
Area 1	$27.80	16.52
Area 2:		
Electricians	29.13	17.92
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 8		
Electricians	30.00	17.76
Area 9:		
Electricians	32.94	18.71
Area 10	28.97	19.55
Area 11	31.91	23.60
Area 12	32.87	19.23
Area 13	32.82	22.51
Teledata System Installer		
Area 14		
Installer/Technician	21.89	11.83
Sound & Communications		
Area 15		
Installer	16.47	14.84
Technician	24.75	16.04

Area 1 - 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, TREMPEALEAU, VERNON and WASHBURN COUNTIES

Area 3 - FLORENCE (townships of Aurora, Commonwealth, Fern, Florence and Homestead), MARINETTE (Niagara township)

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.

Area 5 - ADAMS, CLARK (Colby, Freemont, Lynn, Mayville, Sherman, Sherwood, Unity), FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, MARINETTE (Area North of the town of Wausaukee), 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 6 - KENOSHA COUNTY

Area 8 - DODGE, (Emmet Township only), GREEN, JEFFERSON, LAFAYETTE, RACINE (Burlington township), ROCK and WALWORTH COUNTIES

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 - CALUMET (Township of New Holstein), DODGE (East of Hwy. 26 including Chester Township), FOND DU LAC, MANITOWOC (Schleswig), and SHEBOYGAN COUNTIES

Area 11 - DOUGLAS COUNTY

Area 12 - RACINE (except Burlington township) COUNTY

Area 13 - MILWAUKEE, OZAUKEE, WASHINGTON and WAUKESHA COUNTIES

Area 14 - Statewide.

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.

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 omision 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.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SECTION 0001 ROADWAY ITEMS					
0005	201.0105 CLEARING	136.000 STA		.		.
0010	201.0120 CLEARING	1,464.000 ID		.		.
0015	201.0205 GRUBBING	136.000 STA		.		.
0020	201.0220 GRUBBING	1,464.000 ID		.		.
0025	203.0200 REMOVING OLD STRUCTURE (STATION) 4001. STA 362+59.61	LUMP	LUMP			.
0030	203.0200 REMOVING OLD STRUCTURE (STATION) 4002. STA 763+83.27	LUMP	LUMP			.
0035	203.0210.S ABATEMENT OF ASBESTOS CONTAINING MATERIAL (STRUCTURE) 0001. B-40-0132	LUMP	LUMP			.
0040	203.0210.S ABATEMENT OF ASBESTOS CONTAINING MATERIAL (STRUCTURE) 0002. B-40-0133	LUMP	LUMP			.
0045	204.0100 REMOVING PAVEMENT **P**	155,095.000 SY		.		.

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0050	204.0110 REMOVING ASPHALTIC SURFACE **P**	16,231.000 SY		.		.
0055	204.0115 REMOVING ASPHALTIC SURFACE BUTT JOINTS **P**.	678.000 SY		.		.
0060	204.0125 REMOVING ASPHALTIC SURFACE MILLING **P**.	32.000 TON		.		.
0065	204.0150 REMOVING CURB & GUTTER **P**.	3,977.000 LF		.		.
0070	204.0155 REMOVING CONCRETE SIDEWALK **P**	7,357.000 SY		.		.
0075	204.0157 REMOVING CONCRETE BARRIER **P**	11,324.000 LF		.		.
0080	204.0165 REMOVING GUARDRAIL **P**	1,056.000 LF		.		.
0085	204.0170 REMOVING FENCE **P**	9,651.000 LF		.		.
0090	204.0195 REMOVING CONCRETE BASES	128.000 EACH		.		.
0095	204.0210 REMOVING MANHOLES	50.000 EACH		.		.
0100	204.0220 REMOVING INLETS	179.000 EACH		.		.

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0105	204.0245 REMOVING STORM SEWER (SIZE) 0001. 12-INCH **P**	7,336.000 LF		.		.
0110	204.0245 REMOVING STORM SEWER (SIZE) 0002. 15-INCH **P**	1,225.000 LF		.		.
0115	204.0245 REMOVING STORM SEWER (SIZE) 0003. 18-INCH **P**	939.000 LF		.		.
0120	204.0245 REMOVING STORM SEWER (SIZE) 0004. 21-INCH **P**	476.000 LF		.		.
0125	204.0245 REMOVING STORM SEWER (SIZE) 0005. 24-INCH **P**	859.000 LF		.		.
0130	204.0245 REMOVING STORM SEWER (SIZE) 0006. 30-INCH **P**	771.000 LF		.		.
0135	204.0245 REMOVING STORM SEWER (SIZE) 0008. 42-INCH **P**	718.000 LF		.		.
0140	204.0245 REMOVING STORM SEWER (SIZE) 0009. 48-INCH **P**	112.000 LF		.		.
0145	204.0245 REMOVING STORM SEWER (SIZE) 0011. 60-INCH **P**	248.000 LF		.		.
0150	204.0245 REMOVING STORM SEWER (SIZE) 0012. 66-INCH **P**	240.000 LF		.		.
0155	204.0280 SEALING PIPES	35.000 EACH		.		.

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0160	204.0291.S ABANDONING SEWER	1,874.000 CY		.		.
0165	204.9060.S REMOVING (ITEM DESCRIPTION) 0001. FLEXIBLE TUBULAR MARKER POSTS AND BASES	16.000 EACH		.		.
0170	204.9060.S REMOVING (ITEM DESCRIPTION) 0002. BARRICADES PERMANENT TYPE III	11.000 EACH		.		.
0175	205.0100 EXCAVATION COMMON **P**	453,381.000 CY		.		.
0180	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4001. B-40-779	LUMP	LUMP			.
0185	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4002. B-40-780	LUMP	LUMP			.
0190	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4004. B-40-781	LUMP	LUMP			.
0195	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4005. B-40-782	LUMP	LUMP			.
0200	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4006. B-40-783	LUMP	LUMP			.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0205	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4007. B-40-784	LUMP	LUMP			.
0210	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4008. B-40-778	LUMP	LUMP			.
0215	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4009. B-40-776	LUMP	LUMP			.
0220	206.1000 EXCAVATION FOR STRUCTURES BRIDGES (STRUCTURE) 4010. B-40-777	LUMP	LUMP			.
0225	206.6000.S TEMPORARY SHORING	18,788.000 SF		.		.
0230	209.0200.S BACKFILL CONTROLLED LOW STRENGTH	68,943.000 CY		.		.
0235	210.0100 BACKFILL STRUCTURE **P**	7,455.000 CY		.		.
0240	305.0110 BASE AGGREGATE DENSE 3/4-INCH **P**	629.000 TON		.		.
0245	305.0120 BASE AGGREGATE DENSE 1 1/4-INCH **P**	96,059.000 TON		.		.
0250	312.0110 SELECT CRUSHED MATERIAL **P**	182,162.000 TON		.		.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0255	315.0100 ASPHALTIC BASE **P**	9,304.000 TON		.		.
0260	415.0080 CONCRETE PAVEMENT 8-INCH **P**	72,131.000 SY		.		.
0265	415.0085 CONCRETE PAVEMENT 8 1/2-INCH **P**	49,569.000 SY		.		.
0270	415.0210 CONCRETE PAVEMENT GAPS	8.000 EACH		.		.
0275	415.1080 CONCRETE PAVEMENT HES 8-INCH	2,340.000 SY		.		.
0280	416.0170 CONCRETE DRIVEWAY 7-INCH **P**	29.000 SY		.		.
0285	416.0610 DRILLED TIE BARS	377.000 EACH		.		.
0290	416.0620 DRILLED DOWEL BARS	382.000 EACH		.		.
0295	440.4410.S INCENTIVE IRI RIDE	33,909.000 DOL	1.00000		33909.00	
0300	460.1110 HMA PAVEMENT TYPE E-10	5,023.000 TON		.		.
0305	460.1130 HMA PAVEMENT TYPE E-30	4,775.000 TON		.		.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0310	460.2000 INCENTIVE DENSITY HMA PAVEMENT	6,350.000 DOL	1.00000		6350.00	
0315	465.0105 ASPHALTIC SURFACE	1,490.000 TON		.		.
0320	465.0125 ASPHALTIC SURFACE TEMPORARY	1,880.000 TON		.		.
0325	465.0310 ASPHALTIC CURB	1,720.000 LF		.		.
0330	465.0315 ASPHALTIC FLUMES	10.000 SY		.		.
0335	502.0100 CONCRETE MASONRY BRIDGES **P**	3,860.000 CY		.		.
0340	502.3100 EXPANSION DEVICE (STRUCTURE) 4001. B-40-783	LUMP	LUMP			.
0345	502.3100 EXPANSION DEVICE (STRUCTURE) 4002. B-40-784	LUMP	LUMP			.
0350	502.3100 EXPANSION DEVICE (STRUCTURE) 4003. B-40-776	LUMP	LUMP			.
0355	502.3200 PROTECTIVE SURFACE TREATMENT **P**	15,557.000 SY		.		.
0360	503.0146 PRESTRESSED GIRDER TYPE I 45W-INCH **P**	7,477.000 LF		.		.

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0365	504.0500 CONCRETE MASONRY RETAINING WALLS **P**	1,572.000 CY		.		.
0370	505.0405 BAR STEEL REINFORCEMENT HS BRIDGES	183,540.000 LB		.		.
0375	505.0605 BAR STEEL REINFORCEMENT HS COATED BRIDGES	815,935.000 LB		.		.
0380	505.0615 BAR STEEL REINFORCEMENT HS COATED RETAINING WALLS	225,455.000 LB		.		.
0385	506.0605 STRUCTURAL STEEL HS **P**	1,227,540 LB		.		.
0390	506.2605 BEARING PADS ELASTOMERIC NON-LAMINATED **P**	140.000 EACH		.		.
0395	506.3015 WELDED STUD SHEAR CONNECTORS 7/8X6-INCH	4,515.000 EACH		.		.
0400	506.3020 WELDED STUD SHEAR CONNECTORS 7/8X7-INCH	6,380.000 EACH		.		.
0405	506.4000 STEEL DIAPHRAGMS (STRUCTURE) 0001. B-40-777 **P**	12.000 EACH		.		.
0410	506.4000 STEEL DIAPHRAGMS (STRUCTURE) 0002. B-40-778 **P**	16.000 EACH		.		.
0415	506.4000 STEEL DIAPHRAGMS (STRUCTURE) 0003. B-40-779 **P**	24.000 EACH		.		.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0420	506.4000 STEEL DIAPHRAGMS (STRUCTURE) 0004. B-40-780 **P**	24.000 EACH		.		.
0425	506.4000 STEEL DIAPHRAGMS (STRUCTURE) 0005. B-40-781 **P**	20.000 EACH		.		.
0430	506.4000 STEEL DIAPHRAGMS (STRUCTURE) 0006. B-40-782 **P**	20.000 EACH		.		.
0435	513.2000 RAILING PIPE (STRUCTURE) 4001. R-40-491	LUMP	LUMP			.
0440	513.2000 RAILING PIPE (STRUCTURE) 4002. R-40-492	LUMP	LUMP			.
0445	513.2000 RAILING PIPE (STRUCTURE) 4003. B-40-784	LUMP	LUMP			.
0450	513.2000 RAILING PIPE (STRUCTURE) 4004. B-40-780	LUMP	LUMP			.
0455	514.2625 DOWNSPOUT 6-INCH **P**	368.000 LF		.		.
0460	516.0500 RUBBERIZED MEMBRANE WATERPROOFING **P**	768.000 SY		.		.
0465	517.1010.S CONCRETE STAINING (STRUCTURE) 0001. B-40-776 **P**	8,940.000 SF		.		.
0470	517.1010.S CONCRETE STAINING (STRUCTURE) 0002. B-40-777 **P**	7,535.000 SF		.		.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0475	517.1010.S CONCRETE STAINING (STRUCTURE) 0003. B-40-778 **P**	8,318.000 SF		.		.
0480	517.1010.S CONCRETE STAINING (STRUCTURE) 0004. B-40-779 **P**	4,962.000 SF		.		.
0485	517.1010.S CONCRETE STAINING (STRUCTURE) 0005. B-40-780 **P**	6,465.000 SF		.		.
0490	517.1010.S CONCRETE STAINING (STRUCTURE) 0006. B-40-781 **P**	7,715.000 SF		.		.
0495	517.1010.S CONCRETE STAINING (STRUCTURE) 0007. B-40-782 **P**	8,195.000 SF		.		.
0500	517.1010.S CONCRETE STAINING (STRUCTURE) 0008. B-40-783 **P**	7,856.000 SF		.		.
0505	517.1010.S CONCRETE STAINING (STRUCTURE) 0009. B-40-784 **P**	15,880.000 SF		.		.
0510	517.1010.S CONCRETE STAINING (STRUCTURE) 0010. R-40-486 **P**	25,505.000 SF		.		.
0515	517.1010.S CONCRETE STAINING (STRUCTURE) 0011. R-40-487 **P**	7,290.000 SF		.		.
0520	517.1010.S CONCRETE STAINING (STRUCTURE) 0012. R-40-488 **P**	1,405.000 SF		.		.
0525	517.1010.S CONCRETE STAINING (STRUCTURE) 0013. R-40-489 **P**	9,230.000 SF		.		.

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0530	517.1010.S CONCRETE STAINING (STRUCTURE) 0014. R-40-490 **P**	4,445.000 SF		.		.
0535	517.1010.S CONCRETE STAINING (STRUCTURE) 0015. R-40-491 **P**	9,965.000 SF		.		.
0540	517.1010.S CONCRETE STAINING (STRUCTURE) 0016.S-40-58 **P**	1,118.000 SF		.		.
0545	517.1010.S CONCRETE STAINING (STRUCTURE) 0017. B-40-775 **P**	9,700.000 SF		.		.
0550	517.1010.S CONCRETE STAINING (STRUCTURE) 0018. R-40-484 **P**	4,260.000 SF		.		.
0555	517.1010.S CONCRETE STAINING (STRUCTURE) 0019. R-40-485 **P**	23,100.000 SF		.		.
0560	517.1010.S CONCRETE STAINING (STRUCTURE) 0020. R-40-492 **P**	10,575.000 SF		.		.
0565	517.1010.S CONCRETE STAINING (STRUCTURE) 0021. S-40-57 **P**	988.000 SF		.		.
0570	517.1010.S CONCRETE STAINING (STRUCTURE) 0022. S-40-59 **P**	953.000 SF		.		.
0575	517.1010.S CONCRETE STAINING (STRUCTURE) 0023. S-40-60 **P**	1,062.000 SF		.		.
0580	517.1010.S CONCRETE STAINING (STRUCTURE) 0024. S-40-61 **P**	992.000 SF		.		.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0585	517.1010.S CONCRETE STAINING (STRUCTURE) 0025. S-40-62 **P**	1,062.000 SF		.		.
0590	517.1010.S CONCRETE STAINING (STRUCTURE) 0026. S-40-63 **P**	1,044.000 SF		.		.
0595	517.1010.S CONCRETE STAINING (STRUCTURE) 0027. S-40-153 **P**	940.000 SF		.		.
0600	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0001. B-40-777 **P**	305.000 SF		.		.
0605	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0002. B-40-778 **P**	415.000 SF		.		.
0610	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0003. B-40-779 **P**	690.000 SF		.		.
0615	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0004. B-40-780 **P**	750.000 SF		.		.
0620	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0005. B-40-781 **P**	360.000 SF		.		.
0625	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0006. B-40-782 **P**	360.000 SF		.		.

CONTRACT: 20130910002 PROJECT(S): 1060-33-72 FEDERAL ID(S): WISC 2013420

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0630	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0007. B-40-784 **P**	5,920.000 SF		.		.
0635	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0008. R-40-491 **P**	5,675.000 SF		.		.
0640	517.1015.S CONCRETE STAINING MULTI-COLOR (STRUCTURE) 0009. R-40-492 **P**	5,520.000 SF		.		.
0645	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0001. B-40-777 **P**	305.000 SF		.		.
0650	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0002. B-40-778 **P**	415.000 SF		.		.
0655	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0003. B-70-779 **P**	690.000 SF		.		.
0660	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0004. B-40-780 **P**	750.000 SF		.		.
0665	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0005. B-40-781 **P**	360.000 SF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0670	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0006. B-40-782 **P**	360.000 SF		.		.
0675	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0007. B-40-784 **P**	5,920.000 SF		.		.
0680	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0008. R-40-486 **P**	20,170.000 SF		.		.
0685	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0009. R-40-487 **P**	5,435.000 SF		.		.
0690	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0011. R-40-489 **P**	6,360.000 SF		.		.
0695	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0012. R-40-490 **P**	3,710.000 SF		.		.
0700	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0013. R-40-491 **P**	5,675.000 SF		.		.
0705	517.1050.S ARCHITECTURAL SURFACE TREATMENT (STRUCTURE) 0014. R-40-492 **P**	5,520.000 SF		.		.
0710	520.8000 CONCRETE COLLARS FOR PIPE	44.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0715	522.1012 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 12-INCH	1.000 EACH		.		.
0720	522.1024 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 24-INCH	17.000 EACH		.		.
0725	522.1030 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 30-INCH	5.000 EACH		.		.
0730	522.1036 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 36-INCH	2.000 EACH		.		.
0735	522.1048 APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 48-INCH	1.000 EACH		.		.
0740	532.0200.S WALL MODULAR BLOCK GRAVITY 0001. 6THS+44 - 7THS+75 LT **P**	388.000 SF		.		.
0745	532.0200.S WALL MODULAR BLOCK GRAVITY 0002. 8THS+25 - 10THS+50 LT **P**	865.000 SF		.		.
0750	550.0010 PRE-BORING UNCONSOLIDATED MATERIALS	614.000 LF		.		.
0755	550.0500 PILE POINTS	16.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS		UNIT PRICE DOLLARS	CTS	BID AMOUNT DOLLARS	CTS
0760	550.1100 PILING STEEL HP 10-INCH X 42 LB	8,800.000	LF	.		.	
0765	550.1120 PILING STEEL HP 12-INCH X 53 LB	11,210.000	LF	.		.	
0770	601.0319 CONCRETE CURB & GUTTER 19-INCH **P**	69.000	LF	.		.	
0775	601.0322 CONCRETE CURB & GUTTER 22-INCH **P**	1,109.000	LF	.		.	
0780	601.0331 CONCRETE CURB & GUTTER 31-INCH **P**	32,904.000	LF	.		.	
0785	601.0555 CONCRETE CURB AND GUTTER 6-INCH SLOPED 36-INCH TYPE A **P**	3,556.000	LF	.		.	
0790	601.0600 CONCRETE CURB PEDESTRIAN **P**	15.000	LF	.		.	
0795	602.0410 CONCRETE SIDEWALK 5-INCH **P**	97,903.000	SF	.		.	
0800	602.0415 CONCRETE SIDEWALK 6-INCH **P**	59.000	SF	.		.	
0805	602.0515 CURB RAMP DETECTABLE WARNING FIELD NATURAL PATINA **P**	640.000	SF	.		.	
0810	603.1132 CONCRETE BARRIER TYPE S32 **P**	2,029.000	LF	.		.	

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0815	603.1142 CONCRETE BARRIER TYPE S42 **P**	25,994.000 LF		.		.
0820	603.3513 CONCRETE BARRIER TRANSITION TYPE S32 TO S36	18.000 EACH		.		.
0825	603.3535 CONCRETE BARRIER TRANSITION TYPE S36 TO S42	18.000 EACH		.		.
0830	603.8000 CONCRETE BARRIER TEMPORARY PRECAST DELIVERED	36,131.000 LF		.		.
0835	603.8125 CONCRETE BARRIER TEMPORARY PRECAST INSTALLED	41,125.000 LF		.		.
0840	604.0400 SLOPE PAVING CONCRETE **P**	347.000 SY		.		.
0845	604.0600 SLOPE PAVING SELECT CRUSHED MATERIAL **P**	355.000 SY		.		.
0850	606.0100 RIPRAP LIGHT	134.000 CY		.		.
0855	606.0200 RIPRAP MEDIUM	16.000 CY		.		.
0860	606.0300 RIPRAP HEAVY	24.000 CY		.		.
0865	608.0312 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 12-INCH	354.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0870	608.0315 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 15-INCH	2,644.000 LF		.		.
0875	608.0318 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 18-INCH	497.000 LF		.		.
0880	608.0324 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 24-INCH	11,833.000 LF		.		.
0885	608.0330 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 30-INCH	1,864.000 LF		.		.
0890	608.0336 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 36-INCH	760.000 LF		.		.
0895	608.0342 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 42-INCH	2,751.000 LF		.		.
0900	608.0348 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 48-INCH	561.000 LF		.		.
0905	608.0354 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 54-INCH	1,279.000 LF		.		.
0910	608.0412 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 12-INCH	51.000 LF		.		.
0915	608.0415 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 15-INCH	548.000 LF		.		.
0920	608.0418 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 18-INCH	45.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0925	608.0424 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 24-INCH	491.000 LF		.		.
0930	608.0430 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 30-INCH	1,265.000 LF		.		.
0935	608.0436 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 36-INCH	898.000 LF		.		.
0940	608.0460 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 60-INCH	172.000 LF		.		.
0945	608.0478 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 78-INCH	677.000 LF		.		.
0950	608.0566 STORM SEWER PIPE REINFORCED CONCRETE CLASS V 66-INCH	759.000 LF		.		.
0955	610.0419 STORM SEWER PIPE REINFORCED CONCRETE HORIZONTAL ELLIPTICAL CLASS HE-IV 19X30-INCH	80.000 LF		.		.
0960	611.0420 RECONSTRUCTING MANHOLES	9.000 EACH		.		.
0965	611.0430 RECONSTRUCTING INLETS	3.000 EACH		.		.
0970	611.0535 MANHOLE COVERS TYPE J-SPECIAL	45.000 EACH		.		.
0975	611.0606 INLET COVERS TYPE B	13.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
0980	611.0612 INLET COVERS TYPE C	4.000 EACH		.		.
0985	611.0624 INLET COVERS TYPE H	169.000 EACH		.		.
0990	611.0627 INLET COVERS TYPE HM	23.000 EACH		.		.
0995	611.0642 INLET COVERS TYPE MS	44.000 EACH		.		.
1000	611.0654 INLET COVERS TYPE V	133.000 EACH		.		.
1005	611.0663 INLET COVERS TYPE X	19.000 EACH		.		.
1010	611.2004 MANHOLES 4-FT DIAMETER	6.000 EACH		.		.
1015	611.2005 MANHOLES 5-FT DIAMETER	86.000 EACH		.		.
1020	611.2006 MANHOLES 6-FT DIAMETER	50.000 EACH		.		.
1025	611.2007 MANHOLES 7-FT DIAMETER	23.000 EACH		.		.
1030	611.2008 MANHOLES 8-FT DIAMETER	17.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1035	611.3004 INLETS 4-FT DIAMETER	212.000 EACH		.		.
1040	611.3901 INLETS MEDIAN 1 GRATE	2.000 EACH		.		.
1045	611.3902 INLETS MEDIAN 2 GRATE	21.000 EACH		.		.
1050	611.8110 ADJUSTING MANHOLE COVERS	24.000 EACH		.		.
1055	611.8115 ADJUSTING INLET COVERS	8.000 EACH		.		.
1060	611.8120.S COVER PLATES TEMPORARY	46.000 EACH		.		.
1065	611.9800.S PIPE GRATES	9.000 EACH		.		.
1070	612.0206 PIPE UNDERDRAIN UNPERFORATED 6-INCH	447.000 LF		.		.
1075	612.0212 PIPE UNDERDRAIN UNPERFORATED 12-INCH	523.000 LF		.		.
1080	612.0406 PIPE UNDERDRAIN WRAPPED 6-INCH	6,836.000 LF		.		.
1085	612.0806 APRON ENDWALLS FOR UNDERDRAIN REINFORCED CONCRETE 6-INCH	2.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1090	614.0150 ANCHOR ASSEMBLIES FOR STEEL PLATE BEAM GUARD	1.000 EACH		.		.
1095	614.0805 CRASH CUSHIONS PERMANENT LOW MAINTENANCE	15.000 EACH		.		.
1100	614.0905 CRASH CUSHIONS TEMPORARY	23.000 EACH		.		.
1105	614.2500 MGS THRIE BEAM TRANSITION	40.000 LF		.		.
1110	614.2610 MGS GUARDRAIL TERMINAL EAT	1.000 EACH		.		.
1115	615.0100 GUARD FENCE TIMBER RAIL	133.000 LF		.		.
1120	616.0206 FENCE CHAIN LINK 6-FT	6,821.000 LF		.		.
1125	616.0329 GATES CHAIN LINK (WIDTH) 0001. 12-FT	2.000 EACH		.		.
1130	618.0100 MAINTENANCE AND REPAIR OF HAUL ROADS (PROJECT) 0001. 1060-33-72	1.000 EACH		.		.
1135	619.1000 MOBILIZATION	1.000 EACH		.		.
1140	620.0300 CONCRETE MEDIAN SLOPED NOSE **P**	1,931.000 SF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1145	623.0200 DUST CONTROL SURFACE TREATMENT	251,583.000 SY		.		.
1150	624.0100 WATER	2,317.000 MGAL		.		.
1155	627.0200 MULCHING	34,817.000 SY		.		.
1160	628.1104 EROSION BALES	220.000 EACH		.		.
1165	628.1504 SILT FENCE	5,714.000 LF		.		.
1170	628.1520 SILT FENCE MAINTENANCE	5,714.000 LF		.		.
1175	628.1905 MOBILIZATIONS EROSION CONTROL	31.000 EACH		.		.
1180	628.1910 MOBILIZATIONS EMERGENCY EROSION CONTROL	22.000 EACH		.		.
1185	628.2004 EROSION MAT CLASS I TYPE B	148,545.000 SY		.		.
1190	628.2021 EROSION MAT CLASS II TYPE A	192.000 SY		.		.
1195	628.2023 EROSION MAT CLASS II TYPE B	29,505.000 SY		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1200	628.6510 SOIL STABILIZER TYPE B	2.000 ACRE		.		.
1205	628.7005 INLET PROTECTION TYPE A	378.000 EACH		.		.
1210	628.7010 INLET PROTECTION TYPE B	211.000 EACH		.		.
1215	628.7015 INLET PROTECTION TYPE C	281.000 EACH		.		.
1220	628.7020 INLET PROTECTION TYPE D	56.000 EACH		.		.
1225	628.7504 TEMPORARY DITCH CHECKS	928.000 LF		.		.
1230	628.7555 CULVERT PIPE CHECKS	6.000 EACH		.		.
1235	628.7560 TRACKING PADS	10.000 EACH		.		.
1240	629.0205 FERTILIZER TYPE A	7.000 CWT		.		.
1245	629.0210 FERTILIZER TYPE B	142.500 CWT		.		.
1250	630.0200 SEEDING TEMPORARY	144.000 LB		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1255	630.0400 SEEDING NURSE CROP	1,447.000 LB		.		.
1260	631.0300 SOD WATER	761.000 MGAL		.		.
1265	631.1000 SOD LAWN	34,002.000 SY		.		.
1270	632.0101 TREES (SPECIES, ROOT, SIZE) 0001. ELM, NEW HORIZON B&B 2 1/2 - INCH CAL	15.000 EACH		.		.
1275	632.0101 TREES (SPECIES, ROOT, SIZE) 0002. GINKGO, MALE ONLY B&B 2 1/2 - INCH CAL	17.000 EACH		.		.
1280	632.0101 TREES (SPECIES, ROOT, SIZE) 0003. HACKBERRY, COMMON B&B 2 1/2 - INCH CAL	17.000 EACH		.		.
1285	632.0101 TREES (SPECIES, ROOT, SIZE) 0004. KATSURATREE B&B 2 1/2 - INCH CAL	16.000 EACH		.		.
1290	632.0101 TREES (SPECIES, ROOT, SIZE) 0005. OAK, SWAMP WHITE B&B 2 1/2 - INCH CAL	25.000 EACH		.		.
1295	632.0101 TREES (SPECIES, ROOT, SIZE) 0006. MAPLE, MIYABE B&B 2 1/2 - INCH CAL	13.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1300	632.0101 TREES (SPECIES, ROOT, SIZE) 0007. TREE, TULIP B&B 2 1/2 - INCH CAL	17.000 EACH		.		.
1305	632.0101 TREES (SPECIES, ROOT, SIZE) 0008. CRABAPPLE, 'CAMELOT' B&B 2 - INCH CAL	6.000 EACH		.		.
1310	632.0101 TREES (SPECIES, ROOT, SIZE) 0009. DOGWOOD, CORNELIANCHERRY B&B 1 1/2 - INCH CAL	8.000 EACH		.		.
1315	632.0101 TREES (SPECIES, ROOT, SIZE) 0010. HAWTHORN, THORNLESS COCKSPUR B&B 2 - INCH CAL	5.000 EACH		.		.
1320	632.0101 TREES (SPECIES, ROOT, SIZE) 0011. LILAC, IVORY SILK TREE B&B 2 - INCH CAL	3.000 EACH		.		.
1325	632.0101 TREES (SPECIES, ROOT, SIZE) 0012. MAACKIA, STARBURST AMUR B&B 2 - INCH CAL	10.000 EACH		.		.
1330	632.0101 TREES (SPECIES, ROOT, SIZE) 0013. PEAR, AUTUMN BLAZE B&B 2 - INCH CAL	17.000 EACH		.		.
1335	632.0101 TREES (SPECIES, ROOT, SIZE) 0014. BOXWOOD, GREEN MOUND CONT 24 - INCH	59.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1340	632.0101 TREES (SPECIES, ROOT, SIZE) 0015. SPIREA, GOLDFLAME CONT 24 - INCH	17.000 EACH		.		.
1345	632.0101 TREES (SPECIES, ROOT, SIZE) 0016. SUMAC, GRO LOW CONT 24 - INCH	10.000 EACH		.		.
1350	632.9101 LANDSCAPE PLANTING SURVEILLANCE AND CARE CYCLES	24.000 EACH		.		.
1355	633.5200 MARKERS CULVERT END	27.000 EACH		.		.
1360	634.0618 POSTS WOOD 4X6-INCH X 18-FT	99.000 EACH		.		.
1365	634.0816 POSTS TUBULAR STEEL 2X2-INCH X 16-FT	77.000 EACH		.		.
1370	634.0885 POSTS TUBULAR STEEL 2X2-INCH X 8.5-FT	31.000 EACH		.		.
1375	635.0200 SIGN SUPPORTS STRUCTURAL STEEL HS	7,800.000 LB		.		.
1380	636.0100 SIGN SUPPORTS CONCRETE MASONRY **P**	495.500 CY		.		.
1385	636.0500 SIGN SUPPORTS STEEL REINFORCEMENT	756.000 LB		.		.
1390	636.1000 SIGN SUPPORTS STEEL REINFORCEMENT HS	43,440.000 LB		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1395	636.1500 SIGN SUPPORTS STEEL COATED REINFORCEMENT HS	68,310.000 LB		.		.
1400	637.0101 SIGNS TYPE I	5,291.000 SF		.		.
1405	637.0202 SIGNS REFLECTIVE TYPE II	3,222.663 SF		.		.
1410	637.0402 SIGNS REFLECTIVE FOLDING TYPE II	133.240 SF		.		.
1415	638.2101 MOVING SIGNS TYPE I	3.000 EACH		.		.
1420	638.2102 MOVING SIGNS TYPE II	39.000 EACH		.		.
1425	638.2601 REMOVING SIGNS TYPE I	15.000 EACH		.		.
1430	638.2602 REMOVING SIGNS TYPE II	308.000 EACH		.		.
1435	638.3000 REMOVING SMALL SIGN SUPPORTS	142.000 EACH		.		.
1440	638.3100 REMOVING STRUCTURAL STEEL SIGN SUPPORTS	23.000 EACH		.		.
1445	641.6600 SIGN BRIDGE (STRUCTURE) 4010. S-40-57	LUMP	LUMP			.

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1450	641.6600 SIGN BRIDGE (STRUCTURE) 4011. S-40-58	LUMP	LUMP			.
1455	641.6600 SIGN BRIDGE (STRUCTURE) 4012. S-40-59	LUMP	LUMP			.
1460	641.6600 SIGN BRIDGE (STRUCTURE) 4013. S-40-60	LUMP	LUMP			.
1465	641.6600 SIGN BRIDGE (STRUCTURE) 4014. S-40-61	LUMP	LUMP			.
1470	641.6600 SIGN BRIDGE (STRUCTURE) 4015. S-40-62	LUMP	LUMP			.
1475	641.6600 SIGN BRIDGE (STRUCTURE) 4016. S-40-63	LUMP	LUMP			.
1480	641.6600 SIGN BRIDGE (STRUCTURE) 4017. S-40-153	LUMP	LUMP			.
1485	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0001. S-40-964	LUMP	LUMP			.
1490	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0002. S-40-984	LUMP	LUMP			.
1495	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0003. S-40-962	LUMP	LUMP			.
1500	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0004. S-40-959	LUMP	LUMP			.

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CONTRACTOR :_____

LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1505	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0005. S-40-985	LUMP	LUMP			.
1510	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0006. S-40-961	LUMP	LUMP			.
1515	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0007. S-40-980	LUMP	LUMP			.
1520	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0008. S-40- 966	LUMP	LUMP			.
1525	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0009. S-40-139	LUMP	LUMP			.
1530	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0010. S-40-142	LUMP	LUMP			.
1535	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0011. S-40-144	LUMP	LUMP			.
1540	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0012. S-40-143	LUMP	LUMP			.
1545	641.8100 OVERHEAD SIGN SUPPORT (STRUCTURE) 0013. S-40-454	LUMP	LUMP			.
1550	643.0200 TRAFFIC CONTROL SURVEILLANCE AND MAINTENANCE (PROJECT) 0001. 1060-33-72	398.000 DAY		.		.
1555	643.0300 TRAFFIC CONTROL DRUMS	191,672.000 DAY		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1560	643.0410 TRAFFIC CONTROL BARRICADES TYPE II	7,320.000 DAY		.		.
1565	643.0420 TRAFFIC CONTROL BARRICADES TYPE III	43,992.000 DAY		.		.
1570	643.0500 TRAFFIC CONTROL FLEXIBLE TUBULAR MARKER POSTS	394.000 EACH		.		.
1575	643.0600 TRAFFIC CONTROL FLEXIBLE TUBULAR MARKER BASES	394.000 EACH		.		.
1580	643.0705 TRAFFIC CONTROL WARNING LIGHTS TYPE A	87,984.000 DAY		.		.
1585	643.0715 TRAFFIC CONTROL WARNING LIGHTS TYPE C	39,992.000 DAY		.		.
1590	643.0800 TRAFFIC CONTROL ARROW BOARDS	805.000 DAY		.		.
1595	643.0900 TRAFFIC CONTROL SIGNS	103,627.000 DAY		.		.
1600	643.0910 TRAFFIC CONTROL COVERING SIGNS TYPE I	24.000 EACH		.		.
1605	643.0920 TRAFFIC CONTROL COVERING SIGNS TYPE II	31.000 EACH		.		.
1610	643.1000 TRAFFIC CONTROL SIGNS FIXED MESSAGE	4,236.750 SF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1615	643.1050 TRAFFIC CONTROL SIGNS PCMS	3,643.000 DAY		.		.
1620	643.2000 TRAFFIC CONTROL DETOUR (PROJECT) 0001. 1060-33-72	1.000 EACH		.		.
1625	643.3000 TRAFFIC CONTROL DETOUR SIGNS	74,191.000 DAY		.		.
1630	645.0120 GEOTEXTILE FABRIC TYPE HR **P**	722.000 SY		.		.
1635	645.0130 GEOTEXTILE FABRIC TYPE R **P**	3,220.000 SY		.		.
1640	646.0103 PAVEMENT MARKING PAINT 4-INCH **P**	24,428.000 LF		.		.
1645	646.0106 PAVEMENT MARKING EPOXY 4-INCH **P**	146,976.000 LF		.		.
1650	646.0126 PAVEMENT MARKING EPOXY 8-INCH **P**	2,007.000 LF		.		.
1655	646.0600 REMOVING PAVEMENT MARKINGS	76,896.000 LF		.		.
1660	646.0841.S PAVEMENT MARKING GROOVED WET REFLECTIVE CONTRAST TAPE 4-INCH **P**	7,851.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1665	646.0843.S PAVEMENT MARKING GROOVED WET REFLECTIVE CONTRAST TAPE 8-INCH **P**	9,413.000 LF		.		.
1670	647.0156 PAVEMENT MARKING ARROWS EPOXY TYPE 1 **P**	5.000 EACH		.		.
1675	647.0166 PAVEMENT MARKING ARROWS EPOXY TYPE 2 **P**	36.000 EACH		.		.
1680	647.0176 PAVEMENT MARKING ARROWS EPOXY TYPE 3 **P**	13.000 EACH		.		.
1685	647.0196 PAVEMENT MARKING ARROWS EPOXY TYPE 5 **P**	8.000 EACH		.		.
1690	647.0206 PAVEMENT MARKING ARROWS BIKE LANE EPOXY	3.000 EACH		.		.
1695	647.0256 PAVEMENT MARKING SYMBOLS EPOXY **P**	3.000 EACH		.		.
1700	647.0306 PAVEMENT MARKING SYMBOLS BIKE LANE EPOXY **P**	3.000 EACH		.		.
1705	647.0356 PAVEMENT MARKING WORDS EPOXY **P**	9.000 EACH		.		.
1710	647.0456 PAVEMENT MARKING CURB EPOXY **P**	353.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1715	647.0566 PAVEMENT MARKING STOP LINE EPOXY 18-INCH **P**	355.000 LF		.		.
1720	647.0606 PAVEMENT MARKING ISLAND NOSE EPOXY **P**	16.000 EACH		.		.
1725	647.0656 PAVEMENT MARKING PARKING STALL EPOXY **P**	2,304.000 LF		.		.
1730	647.0726 PAVEMENT MARKING DIAGONAL EPOXY 12-INCH **P**	619.000 LF		.		.
1735	647.0746 PAVEMENT MARKING DIAGONAL EPOXY 24-INCH **P**	950.000 LF		.		.
1740	647.0955 REMOVING PAVEMENT MARKINGS ARROWS **P**	29.000 EACH		.		.
1745	647.0960 REMOVING PAVEMENT MARKINGS SYMBOLS **P**	4.000 EACH		.		.
1750	647.0965 REMOVING PAVEMENT MARKINGS WORDS **P**	12.000 EACH		.		.
1755	649.0400 TEMPORARY PAVEMENT MARKING REMOVABLE TAPE 4-INCH	87,267.000 LF		.		.
1760	649.0801 TEMPORARY PAVEMENT MARKING REMOVABLE TAPE 8-INCH	3,375.000 LF		.		.
1765	649.1200 TEMPORARY PAVEMENT MARKING STOP LINE REMOVABLE TAPE 18-INCH	610.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1770	649.1800 TEMPORARY PAVEMENT MARKING ARROWS REMOVABLE TAPE	74.000 EACH		.		.
1775	649.2100 TEMPORARY RAISED PAVEMENT MARKERS	1,406.000 EACH		.		.
1780	652.0125 CONDUIT RIGID METALLIC 2-INCH	204.000 LF		.		.
1785	652.0210 CONDUIT RIGID NONMETALLIC SCHEDULE 40 1-INCH	195.000 LF		.		.
1790	652.0215 CONDUIT RIGID NONMETALLIC SCHEDULE 40 1 1/4-INCH	1,068.000 LF		.		.
1795	652.0220 CONDUIT RIGID NONMETALLIC SCHEDULE 40 1 1/2-INCH	65.000 LF		.		.
1800	652.0225 CONDUIT RIGID NONMETALLIC SCHEDULE 40 2-INCH	37,523.000 LF		.		.
1805	652.0235 CONDUIT RIGID NONMETALLIC SCHEDULE 40 3-INCH	36,364.000 LF		.		.
1810	652.0405 CONDUIT REINFORCED THERMOSETTING RESIN 2-INCH	864.000 LF		.		.
1815	652.0605 CONDUIT SPECIAL 2-INCH	261.000 LF		.		.
1820	652.0700.S INSTALL CONDUIT INTO EXISTING ITEM	10.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1825	652.0800 CONDUIT LOOP DETECTOR	1,570.000 LF		.		.
1830	653.0135 PULL BOXES STEEL 24X36-INCH	82.000 EACH		.		.
1835	653.0140 PULL BOXES STEEL 24X42-INCH	97.000 EACH		.		.
1840	653.0208 JUNCTION BOXES 8X8X8-INCH	1.000 EACH		.		.
1845	653.0220 JUNCTION BOXES 18X6X6-INCH	12.000 EACH		.		.
1850	653.0222 JUNCTION BOXES 18X12X6-INCH	33.000 EACH		.		.
1855	653.0905 REMOVING PULL BOXES	97.000 EACH		.		.
1860	654.0101 CONCRETE BASES TYPE 1	25.000 EACH		.		.
1865	654.0102 CONCRETE BASES TYPE 2	13.000 EACH		.		.
1870	654.0105 CONCRETE BASES TYPE 5	200.000 EACH		.		.
1875	654.0108 CONCRETE BASES TYPE 8	18.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1880	654.0217 CONCRETE CONTROL CABINET BASES TYPE 9 SPECIAL	8.000 EACH		.		.
1885	655.0146 CABLE IN DUCT 4-6 AWG	10,875.000 LF		.		.
1890	655.0230 CABLE TRAFFIC SIGNAL 5-14 AWG	7,289.000 LF		.		.
1895	655.0240 CABLE TRAFFIC SIGNAL 7-14 AWG	4,612.000 LF		.		.
1900	655.0250 CABLE TRAFFIC SIGNAL 9-14 AWG	1,535.000 LF		.		.
1905	655.0260 CABLE TRAFFIC SIGNAL 12-14 AWG	9,459.000 LF		.		.
1910	655.0305 CABLE TYPE UF 2-12 AWG GROUNDED	2,050.000 LF		.		.
1915	655.0320 CABLE TYPE UF 2-10 AWG GROUNDED	3,547.000 LF		.		.
1920	655.0505 ELECTRICAL WIRE TRAFFIC SIGNALS 14 AWG	23,935.000 LF		.		.
1925	655.0515 ELECTRICAL WIRE TRAFFIC SIGNALS 10 AWG	6,761.000 LF		.		.
1930	655.0610 ELECTRICAL WIRE LIGHTING 12 AWG	41,916.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1935	655.0620 ELECTRICAL WIRE LIGHTING 8 AWG	1,889.000 LF		.		.
1940	655.0625 ELECTRICAL WIRE LIGHTING 6 AWG	138,391.000 LF		.		.
1945	655.0630 ELECTRICAL WIRE LIGHTING 4 AWG	4,200.000 LF		.		.
1950	655.0635 ELECTRICAL WIRE LIGHTING 2 AWG	4,100.000 LF		.		.
1955	655.0700 LOOP DETECTOR LEAD IN CABLE	13,850.000 LF		.		.
1960	655.0800 LOOP DETECTOR WIRE	5,670.000 LF		.		.
1965	655.0900 TRAFFIC SIGNAL EVP DETECTOR CABLE	4,791.000 LF		.		.
1970	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0001. CB-RM-40-0140	LUMP	LUMP			.
1975	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0002. CB-RM-40-0139	LUMP	LUMP			.
1980	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0003. CB-RM-40-0105	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
1985	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0004. CB-RM-40-0025	LUMP	LUMP			.
1990	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0005. CB-CCTV-40-0193	LUMP	LUMP			.
1995	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0006. CB-DMS-40-0131	LUMP	LUMP			.
2000	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0007. CB-VIR-40-0001	LUMP	LUMP			.
2005	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 0008. LIGHTING	LUMP	LUMP			.
2010	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 3001. W. WATERTOWN PLANK ROAD & SWAN BOULEVARD / INNOVATION DRIVE	LUMP	LUMP			.
2015	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 3002. W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2020	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 3003. W. WATERTOWN PLANK ROAD & N. 87TH STREE.	LUMP	LUMP			.
2025	656.0200 ELECTRICAL SERVICE METER BREAKER PEDESTAL (LOCATION) 3004. W. WATERTOWN PLANK ROAD & DISCOVERY PARKWAY	LUMP	LUMP			.
2030	656.0400 ELECTRICAL SERVICE MAIN LUGS ONLY METER PEDESTAL (LOCATION) 0001. 365NS+71.1 LT	LUMP	LUMP			.
2035	656.0400 ELECTRICAL SERVICE MAIN LUGS ONLY METER PEDESTAL (LOCATION) 0002. 13THN+75.8 RT	LUMP	LUMP			.
2040	656.0400 ELECTRICAL SERVICE MAIN LUGS ONLY METER PEDESTAL (LOCATION) 0003. 70WWB+18.3 LT	LUMP	LUMP			.
2045	656.0400 ELECTRICAL SERVICE MAIN LUGS ONLY METER PEDESTAL (LOCATION) 0004. 757WJ+77.6 LT	LUMP	LUMP			.
2050	656.0400 ELECTRICAL SERVICE MAIN LUGS ONLY METER PEDESTAL (LOCATION) 0005. 44WWB+72.9 LT	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2055	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0001. CB-RM-40-0140	LUMP	LUMP			.
2060	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0002. CB-RM-40-0139	LUMP	LUMP			.
2065	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0003. CB-RM-40-0105	LUMP	LUMP			.
2070	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0004. CB-RM-40-0025	LUMP	LUMP			.
2075	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0005. CB-CCTV-40-0193	LUMP	LUMP			.
2080	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0006. CB-DMS-40-0131	LUMP	LUMP			.
2085	656.0500 ELECTRICAL SERVICE BREAKER DISCONNECT BOX (LOCATION) 0007. CB-VIR-40-0001	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2090	657.0100 PEDESTAL BASES	16.000 EACH		.		.
2095	657.0210 TRANSFORMER BASES BREAKAWAY 15-17 INCH BOLT CIRCLE	18.000 EACH		.		.
2100	657.0255 TRANSFORMER BASES BREAKAWAY 11 1/2-INCH BOLT CIRCLE	200.000 EACH		.		.
2105	657.0310 POLES TYPE 3	1.000 EACH		.		.
2110	657.0315 POLES TYPE 4	12.000 EACH		.		.
2115	657.0321 POLES TYPE 5-STEEL	7.000 EACH		.		.
2120	657.0322 POLES TYPE 5-ALUMINUM	201.000 EACH		.		.
2125	657.0375 POLES TYPE A 0001. ALUMINUM	18.000 EACH		.		.
2130	657.0410 TRAFFIC SIGNAL STANDARDS ALUMINUM 9-FT	2.000 EACH		.		.
2135	657.0420 TRAFFIC SIGNAL STANDARDS ALUMINUM 13-FT	1.000 EACH		.		.
2140	657.0430 TRAFFIC SIGNAL STANDARDS ALUMINUM 10-FT	13.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2145	657.0605 LUMINAIRE ARMS SINGLE MEMBER 4 1/2-INCH CLAMP 4-FT	22.000 EACH		.		.
2150	657.0609 LUMINAIRE ARMS SINGLE MEMBER 4-INCH CLAMP 6-FT	13.000 EACH		.		.
2155	657.0610 LUMINAIRE ARMS SINGLE MEMBER 4 1/2-INCH CLAMP 6-FT	108.000 EACH		.		.
2160	657.0615 LUMINAIRE ARMS SINGLE MEMBER 4 1/2-INCH CLAMP 8-FT	82.000 EACH		.		.
2165	657.0620 LUMINAIRE ARMS SINGLE MEMBER 6-INCH CLAMP 4-FT	36.000 EACH		.		.
2170	657.0630 LUMINAIRE ARMS SINGLE MEMBER 6-INCH CLAMP 8-FT	11.000 EACH		.		.
2175	657.6005.S ANCHOR ASSEMBLIES LIGHT POLES ON STRUCTURES	1.000 EACH		.		.
2180	658.0110 TRAFFIC SIGNAL FACE 3-12 INCH VERTICAL	84.000 EACH		.		.
2185	658.0115 TRAFFIC SIGNAL FACE 4-12 INCH VERTICAL	4.000 EACH		.		.
2190	658.0120 TRAFFIC SIGNAL FACE 5-12 INCH VERTICAL	4.000 EACH		.		.
2195	658.0215 BACKPLATES SIGNAL FACE 3 SECTION 12-INCH	84.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2200	658.0220 BACKPLATES SIGNAL FACE 4 SECTION 12-INCH	4.000 EACH		.		.
2205	658.0225 BACKPLATES SIGNAL FACE 5 SECTION 12-INCH	4.000 EACH		.		.
2210	658.0416 PEDESTRIAN SIGNAL FACE 16-INCH	38.000 EACH		.		.
2215	658.0500 PEDESTRIAN PUSH BUTTONS	41.000 EACH		.		.
2220	658.0600 LED MODULES 12-INCH RED BALL	56.000 EACH		.		.
2225	658.0605 LED MODULES 12-INCH YELLOW BALL	56.000 EACH		.		.
2230	658.0610 LED MODULES 12-INCH GREEN BALL	56.000 EACH		.		.
2235	658.0615 LED MODULES 12-INCH RED ARROW	36.000 EACH		.		.
2240	658.0620 LED MODULES 12-INCH YELLOW ARROW	50.000 EACH		.		.
2245	658.0625 LED MODULES 12-INCH GREEN ARROW	34.000 EACH		.		.
2250	658.0635 LED MODULES PEDESTRIAN COUNTDOWN TIMER 16-INCH	38.000 EACH		.		.

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2255	658.5069 SIGNAL MOUNTING HARDWARE (LOCATION) 3001. W. WATERTOWN PLANK ROAD & SWAN BOULEVARD/INNOVATION DRIVE	LUMP	LUMP			.
2260	658.5069 SIGNAL MOUNTING HARDWARE (LOCATION) 3002. W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.
2265	658.5069 SIGNAL MOUNTING HARDWARE (LOCATION) 3003. W. WATERTOWN PLANK ROAD & N. 87TH STREET	LUMP	LUMP			.
2270	658.5069 SIGNAL MOUNTING HARDWARE (LOCATION) 3004. W. WATERTOWN PLANK ROAD & DISCOVERY PARKWAY	LUMP	LUMP			.
2275	659.0802 PLAQUES SEQUENCE IDENTIFICATION	294.000 EACH	.			.
2280	661.0200 TEMPORARY TRAFFIC SIGNALS FOR INTERSECTIONS (LOCATION) 3001. W. WATERTOWN PLANK ROAD & SWAN BOULEVARD/INNOVATION DRIVE	LUMP	LUMP			.
2285	661.0200 TEMPORARY TRAFFIC SIGNALS FOR INTERSECTIONS (LOCATION) 3002. W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2290	661.0200 TEMPORARY TRAFFIC SIGNALS FOR INTERSECTIONS (LOCATION) 3003. W. WATERTOWN PLANK ROAD & N. 87TH STREET	LUMP	LUMP			.
2295	661.0200 TEMPORARY TRAFFIC SIGNALS FOR INTERSECTIONS (LOCATION) 3004. SWAN BOULEVARD & DISCOVERY PARKWAY	LUMP	LUMP			.
2300	661.0300 GENERATORS	6.000 DAY	.			.
2305	670.0100 FIELD SYSTEM INTEGRATOR 0001. FTMS	LUMP	LUMP			.
2310	670.0100 FIELD SYSTEM INTEGRATOR 3001. SIGNAL	LUMP	LUMP			.
2315	670.0200 ITS DOCUMENTATION 0001 FTMS	LUMP	LUMP			.
2320	670.0200 ITS DOCUMENTATION 3001. SIGNAL	LUMP	LUMP			.
2325	671.0122 CONDUIT HDPE 2-DUCT 2-INCH	660.000 LF	.			.
2330	671.0132 CONDUIT HDPE 3-DUCT 2-INCH	7,334.000 LF	.			.
2335	671.0232 CONDUIT HDPE DIRECTIONAL BORE 3-DUCT 2-IN	1,340.000 LF	.			.

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2340	672.0100 BASE ITS CONTROLLER CABINET	4.000 EACH		.		.
2345	672.0230 BASE CAMERA POLE 30-FT	1.000 EACH		.		.
2350	672.0250 BASE CAMERA POLE 50-FT	1.000 EACH		.		.
2355	673.0105 COMMUNICATION VAULT TYPE 1	13.000 EACH		.		.
2360	673.0200.S INSTALL ITS FIELD CABINET	4.000 EACH		.		.
2365	673.0225.S INSTALL POLE MOUNTED CABINET	3.000 EACH		.		.
2370	674.0106 CABLE ITS COMMUNICATION 6 PAIR	185.000 LF		.		.
2375	674.0200 CABLE MICROWAVE DETECTOR	18,230.000 LF		.		.
2380	674.0300 REMOVE CABLE	14,780.000 LF		.		.
2385	675.0100 INSTALL CONTROLLER RAMP METER PROCESSOR ASSEMBLY	4.000 EACH		.		.
2390	675.0300 INSTALL MOUNTED CONTROLLER MICROWAVE DETECTOR ASSEMBLY	11.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2395	675.0400.S INSTALL ETHERNET SWITCH	5.000 EACH		.		.
2400	676.0100 SIGNAL ASSEMBLY RAMP CONTROL SIDEMOUNT	6.000 EACH		.		.
2405	676.0105 SIGNAL ASSEMBLY RAMP CONTROL OVERHEAD	4.000 EACH		.		.
2410	676.0300 SIGNAL ASSEMBLY ADVANCE FLASHER TYPE 1	3.000 EACH		.		.
2415	676.9001.S REMOVING ADVANCE FLASHER ASSEMBLIES TYPE 1	5.000 EACH		.		.
2420	676.9002.S REMOVING ADVANCE FLASHER ASSEMBLIES TYPE 2	1.000 EACH		.		.
2425	677.0100 INSTALL CAMERA POLE	2.000 EACH		.		.
2430	677.0200 INSTALL CAMERA ASSEMBLY	2.000 EACH		.		.
2435	677.0300.S INSTALL VIDEO ENCODER	2.000 EACH		.		.
2440	677.9051.S REMOVING 50-FOOT CAMERA POLE	1.000 EACH		.		.
2445	677.9200.S REMOVING CCTV CAMERA	1.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2450	678.0006 INSTALL FIBER OPTIC CABLE OUTDOOR PLANT 6-CT	12,340.000 LF		.		.
2455	678.0012 INSTALL FIBER OPTIC CABLE OUTDOOR PLANT 12-CT	1,755.000 LF		.		.
2460	678.0072 INSTALL FIBER OPTIC CABLE OUTDOOR PLANT 72-CT	15,615.000 LF		.		.
2465	678.0300 FIBER OPTIC SPLICE	270.000 EACH		.		.
2470	678.0400 FIBER OPTIC TERMINATION	54.000 EACH		.		.
2475	678.0500 COMMUNICATION SYSTEM TESTING 0001. FTMS	LUMP	LUMP			.
2480	678.0500 COMMUNICATION SYSTEM TESTING 3001. SIGNAL	LUMP	LUMP			.
2485	690.0150 SAWING ASPHALT	1,321.000 LF		.		.
2490	690.0250 SAWING CONCRETE	8,782.000 LF		.		.
2495	715.0415 INCENTIVE STRENGTH CONCRETE PAVEMENT	56,051.000 DOL	1.00000		56051.00	
2500	715.0502 INCENTIVE STRENGTH CONCRETE STRUCTURES	68,285.000 DOL	1.00000		68285.00	

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2505	ASP.1T0A ON-THE-JOB TRAINING APPRENTICE AT $5.00/HR	300.000 HRS	5.00000		1500.00	
2510	ASP.1T0G ON-THE-JOB TRAINING GRADUATE AT $5.00/HR	400.000 HRS	5.00000		2000.00	
2515	SPV.0005 SPECIAL 0010. ROOT STOCK PROTECTION	0.200 ACRE	.		.	
2520	SPV.0035 SPECIAL 0030. EXCAVATION, HAULING, AND REUSE OF SOLID WASTE SOIL **P**	3,123.000 CY	.		.	
2525	SPV.0035 SPECIAL 4000. HPC MASONRY STRUCTURES	4,991.000 CY	.		.	
2530	SPV.0035 SPECIAL 8001. DETENTION BASIN CLAY LINING **P**	7,018.000 CY	.		.	
2535	SPV.0045 SPECIAL 0010. TEMPORARY CROSSWALK / SIDEWALK	4,622.000 DAY	.		.	
2540	SPV.0045 SPECIAL 0020. TRUCK MOUNTED ATTENUATOR	150.000 DAY	.		.	
2545	SPV.0060 SPECIAL 0005. REMOVING HIGH MAST TOWER CONCRETE BASES	2.000 EACH	.		.	
2550	SPV.0060 SPECIAL 0011. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC ARROWS, TYPE 2 **P**	43.000 EACH	.		.	

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2555	SPV.0060 SPECIAL 0012. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC ARROWS, TYPE 3 **P**	6.000 EACH		.		.
2560	SPV.0060 SPECIAL 0014. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC WORDS **P**	34.000 EACH		.		.
2565	SPV.0060 SPECIAL 0015. TRAFFIC CONTROL CLOSE-OPEN FREEWAY ENTRANCE RAMP	40.000 EACH		.		.
2570	SPV.0060 SPECIAL 0016. TRAFFIC CONTROL CLOSE-OPEN FREEWAY TO FREEWAY SYSTEM RAMP	45.000 EACH		.		.
2575	SPV.0060 SPECIAL 0017. TRAFFIC CONTROL INTERIM FREEWAY LANE CLOSURE	125.000 EACH		.		.
2580	SPV.0060 SPECIAL 0018. TRAFFIC CONTROL UNCOVERING SIGNS	3.000 EACH		.		.
2585	SPV.0060 SPECIAL 0030. REMOVING OLD SIGN STRUCTURE S-40-196	1.000 EACH		.		.
2590	SPV.0060 SPECIAL 0031. REMOVING OLD SIGN STRUCTURE S-40-197	1.000 EACH		.		.
2595	SPV.0060 SPECIAL 0032. REMOVING OLD SIGN STRUCTURE S-40-231	1.000 EACH		.		.
2600	SPV.0060 SPECIAL 0033. REMOVING OLD SIGN STRUCTURE S-40-232	1.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2605	SPV.0060 SPECIAL 0034. REMOVING OLD SIGN STRUCTURE S-40-233	1.000 EACH		.		.
2610	SPV.0060 SPECIAL 0035. TRAFFIC CONTROL BARRICADES TYPE III LEFT IN PLACE	14.000 EACH		.		.
2615	SPV.0060 SPECIAL 0036. TRAFFIC CONTROL WARNING LIGHTS TYPE A LEFT IN PLACE	29.000 EACH		.		.
2620	SPV.0060 SPECIAL 0037. TRAFFIC CONTROL SIGNS LEFT IN PLACE	5.000 EACH		.		.
2625	SPV.0060 SPECIAL 0038. TRAFFIC CONTROL DRUMS LEFT IN PLACE	30.000 EACH		.		.
2630	SPV.0060 SPECIAL 0040. CONCRETE BARRIER TRANSITION TYPE G1	1.000 EACH		.		.
2635	SPV.0060 SPECIAL 0041. CONCRETE BARRIER TRANSITION TYPE G2	1.000 EACH		.		.
2640	SPV.0060 SPECIAL 0042. CONCRETE BARRIER TRANSITION TYPE G3	1.000 EACH		.		.
2645	SPV.0060 SPECIAL 0043. CONCRETE BARRIER TRANSITION TYPE G4	1.000 EACH		.		.
2650	SPV.0060 SPECIAL 0044. CONCRETE BARRIER TRANSITION TYPE G5	1.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2655	SPV.0060 SPECIAL 0045. CONCRETE BARRIER TRANSITION TYPE G6	1.000 EACH		.		.
2660	SPV.0060 SPECIAL 0046. CONCRETE BARRIER TRANSITION TYPE G7	2.000 EACH		.		.
2665	SPV.0060 SPECIAL 0049. TRAFFIC CONTROL CRASH CUSHION TEMPORARY LEFT IN PLACE	2.000 EACH		.		.
2670	SPV.0060 SPECIAL 0050. TRAFFIC CONTROL COVERING SIGNS TYPE 1 LEFT IN PLACE	6.000 EACH		.		.
2675	SPV.0060 SPECIAL 0051. FIXED MESSAGE SIGN PORTABLE SUPPORT	14.000 EACH		.		.
2680	SPV.0060 SPECIAL 0052. 24-HOUR BASELINE VIBRATION MONITORING	86.000 EACH		.		.
2685	SPV.0060 SPECIAL 0053. DAILY VIBRATION MONITORING	43.000 EACH		.		.
2690	SPV.0060 SPECIAL 0054. BASELINE CPM PROGRESS SCHEDULE	1.000 EACH		.		.
2695	SPV.0060 SPECIAL 0055. CPM PROGRESS SCHEDULE UPDATES AND ACCEPTED REVISIONS	12.000 EACH		.		.
2700	SPV.0060 SPECIAL 0056. TEMPORARY BUS STOP PAD	41.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2705	SPV.0060 SPECIAL 0057. TRAFFIC CONTROL LOCAL ROAD LANE CLOSURE	40.000 EACH		.		.
2710	SPV.0060 SPECIAL 0058. FIXED MESSAGE SIGN PORTABLE SUPPORT REMOVE / REINSTALL	2.000 EACH		.		.
2715	SPV.0060 SPECIAL 0060. MOBILIZATIONS EMERGENCY PAVEMENT REPAIR	5.000 EACH		.		.
2720	SPV.0060 SPECIAL 0061. BARRICADE RACK (2 BARRICADE UNIT)	2.000 EACH		.		.
2725	SPV.0060 SPECIAL 0062. BARRICADE RACK (3 BARRICADE UNIT)	2.000 EACH		.		.
2730	SPV.0060 SPECIAL 0063. PERMANENT BARRICADE TYPE 3	4.000 EACH		.		.
2735	SPV.0060 SPECIAL 0110. SHALLOW MARSH ROOT STOCK	260.000 EACH		.		.
2740	SPV.0060 SPECIAL 1010. LAMP DISPOSAL HIGH INTENSITY DISCHARGE	198.000 EACH		.		.
2745	SPV.0060 SPECIAL 1020. SALVAGING LIGHT POLES LUMINAIRES AND ARMS	12.000 EACH		.		.
2750	SPV.0060 SPECIAL 1023. SALVAGING LUMINAIRES WAUWATOSA	70.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2755	SPV.0060 SPECIAL 1024. SALVAGING LIGHT POLES, AND LUMINAIRES MILWAUKEE COUNTY	22.000 EACH		.		.
2760	SPV.0060 SPECIAL 1032. REMOVING CONCRETE LIGHT POLES AND ARMS	70.000 EACH		.		.
2765	SPV.0060 SPECIAL 1033. REMOVING ALUMINUM LIGHT POLES, ARMS AND LUMINAIRES	44.000 EACH		.		.
2770	SPV.0060 SPECIAL 1035. WOOD POLE LIGHTING 60-FT	57.000 EACH		.		.
2775	SPV.0060 SPECIAL 1036. WOOD POLE 60-FT	28.000 EACH		.		.
2780	SPV.0060 SPECIAL 1040. REMOVING 60-FT WOOD POLES AND FLOODLIGHTS	50.000 EACH		.		.
2785	SPV.0060 SPECIAL 1041. REMOVING 60-FT WOOD POLE	24.000 EACH		.		.
2790	SPV.0060 SPECIAL 1044. REMOVING HIGH MAST LIGHTING TOWER 150-FOOT	2.000 EACH		.		.
2795	SPV.0060 SPECIAL 1047. ABANDONING HIGH MAST FOUNDATION	2.000 EACH		.		.
2800	SPV.0060 SPECIAL 1050. PULL BOXES STEEL 24X36-INCH	2.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2805	SPV.0060 SPECIAL 1051. PULL BOXES STEEL 24X42-INCH GROUNDED	8.000 EACH		.		.
2810	SPV.0060 SPECIAL 1060. LUMINAIRE LED	115.000 EACH		.		.
2815	SPV.0060 SPECIAL 1062. LUMINAIRE UTILITY LED CATEGORY B	108.000 EACH		.		.
2820	SPV.0060 SPECIAL 1063. LUMINAIRE UTILITY LED CATEGORY C	30.000 EACH		.		.
2825	SPV.0060 SPECIAL 1064. LUMINAIRE UTILITY LED CATEGORY D	36.000 EACH		.		.
2830	SPV.0060 SPECIAL 1070. LUMINAIRES FLOODLIGHT 100W HPS	1.000 EACH		.		.
2835	SPV.0060 SPECIAL 1071. LUMINAIRES FLOODLIGHT 400W HPS	58.000 EACH		.		.
2840	SPV.0060 SPECIAL 1072. LUMINAIRE FLOOD PROBEAM LED	7.000 EACH		.		.
2845	SPV.0060 SPECIAL 1075. LUMINAIRE SIGN LED	25.000 EACH		.		.
2850	SPV.0060 SPECIAL 1090. SALVAGE DISTRIBUTION CENTERS	2.000 EACH		.		.
2855	SPV.0060 SPECIAL 1096. LIGHTING CONTROL CABINET 240/480 VAC	2.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2860	SPV.0060 SPECIAL 1101. CONCRETE CONTROL CABINET BASES SPECIAL	2.000 EACH		.		.
2865	SPV.0060 SPECIAL 1120. DISTRIBUTION CENTERS LIGHTING WAUWATOSA	1.000 EACH		.		.
2870	SPV.0060 SPECIAL 1122. POLE, FIFTEEN FEET - ALUMINUM	8.000 EACH		.		.
2875	SPV.0060 SPECIAL 1153. REMOVE ELECTRIC SERVICE METER BREAKER PEDESTAL LIGHTING	3.000 EACH		.		.
2880	SPV.0060 SPECIAL 1165. SALVAGE LIGHTING UNIT SPECIAL	10.000 EACH		.		.
2885	SPV.0060 SPECIAL 2001. GROUND ROD	14.000 EACH		.		.
2890	SPV.0060 SPECIAL 2002. REMOVING RAMP CONTROL SIGNAL ASSEMBLY SIDEMOUNT	5.000 EACH		.		.
2895	SPV.0060 SPECIAL 2003. REMOVING RAMP CONTROL SIGNAL ASSEMBLY OVERHEAD	3.000 EACH		.		.
2900	SPV.0060 SPECIAL 2004. REMOVING CONTROLLER CABINET	2.000 EACH		.		.
2905	SPV.0060 SPECIAL 2005. REMOVING CONTROLLER CABINET BASE	2.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2910	SPV.0060 SPECIAL 2006. REMOVE CONTROLLER RAMP METER PROCESSOR ASSEMBLY	2.000 EACH		.		.
2915	SPV.0060 SPECIAL 2007. REMOVING ELECTRICAL SERVICE METER BREAKER PEDESTAL	1.000 EACH		.		.
2920	SPV.0060 SPECIAL 2008. RAMP CLOSURE GATES HARDWIRED 30-FT	2.000 EACH		.		.
2925	SPV.0060 SPECIAL 2009. INSTALL PORTABLE VIDEO SURVEILLANCE SYSTEM	1.000 EACH		.		.
2930	SPV.0060 SPECIAL 2010. RELOCATING PORTABLE VIDEO SURVEILLANCE SYSTEM	2.000 EACH		.		.
2935	SPV.0060 SPECIAL 2011. INSTALL TEMPORARY VEHICLE DETECTOR ASSEMBLY	1.000 EACH		.		.
2940	SPV.0060 SPECIAL 2012. REFOCUSING TEMPORARY VEHICLE DETECTOR ASSEMBLY	2.000 EACH		.		.
2945	SPV.0060 SPECIAL 2013. SPEED WARNING SIGN SYSTEM	2.000 EACH		.		.
2950	SPV.0060 SPECIAL 2014. INSTALL DYNAMIC MESSAGE SIGN	1.000 EACH		.		.
2955	SPV.0060 SPECIAL 2015. INSTALL BLUETOOTH READER	2.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
2960	SPV.0060 SPECIAL 3010. POLES TYPE 9	5.000 EACH		.		.
2965	SPV.0060 SPECIAL 3011. POLES TYPE 10	2.000 EACH		.		.
2970	SPV.0060 SPECIAL 3012. POLES TYPE 12	2.000 EACH		.		.
2975	SPV.0060 SPECIAL 3013. POLES TYPE 13	10.000 EACH		.		.
2980	SPV.0060 SPECIAL 3014. MONOTUBE ARMS 15-FT	7.000 EACH		.		.
2985	SPV.0060 SPECIAL 3015. MONOTUBE ARMS 25-FT	1.000 EACH		.		.
2990	SPV.0060 SPECIAL 3016. MONOTUBE ARMS 30-FT	3.000 EACH		.		.
2995	SPV.0060 SPECIAL 3017. MONOTUBE ARMS 45-FT	3.000 EACH		.		.
3000	SPV.0060 SPECIAL 3018. MONOTUBE ARMS 50-FT	8.000 EACH		.		.
3005	SPV.0060 SPECIAL 3019. MONOTUBE ARMS 55-FT	1.000 EACH		.		.
3010	SPV.0060 SPECIAL 3020. LUMINAIRE ARMS STEEL 8-FT	18.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3015	SPV.0060 SPECIAL 3021. CONC BASES TYPE 10 CONTRCTOR SUPPL ANCHOR BOLTS & ANCHOR ROD TEMPLATE	7.000 EACH		.		.
3020	SPV.0060 SPECIAL 3022. CONC BASES TYPE 13 CONTRCTOR SUPPL ANCHOR BOLTS & ANCHOR ROD TEMPLATE	12.000 EACH		.		.
3025	SPV.0060 SPECIAL 3023. EVP DETECTOR TYPE 1	14.000 EACH		.		.
3030	SPV.0060 SPECIAL 3024. EVP DISCRIMINATOR TYPE IV	4.000 EACH		.		.
3035	SPV.0060 SPECIAL 3025. EVP CONFIRMATION LIGHT ASSEMBLY TYPE 1	14.000 EACH		.		.
3040	SPV.0060 SPECIAL 3026. MONOTUBE ARMS 35-FT	2.000 EACH		.		.
3045	SPV.0060 SPECIAL 4100. ANCHOR ASSEMBLIES LIGHT POLE STRUCTURES SPECIAL	18.000 EACH		.		.
3050	SPV.0060 SPECIAL 4110. ANCHOR ASSEMBLIES CANOPY POSTS	90.000 EACH		.		.
3055	SPV.0060 SPECIAL 4111. ANCHOR ASSEMBLIES STAIR TOWER	8.000 EACH		.		.
3060	SPV.0060 SPECIAL 4115. ANCHOR ASSEMBLIES BRIDGE STRUCTURES	1.000 EACH		.		.

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3065	SPV.0060 SPECIAL 4120. PILE DYNAMIC ANALYZER (PDA) TESTING	16.000 EACH		.		.
3070	SPV.0060 SPECIAL 4130. PILE DYNAMIC ANALYZER (PDA) RESTRIKES	16.000 EACH		.		.
3075	SPV.0060 SPECIAL 4140. BEARING HIGH-LOAD MULTI-ROTATIONAL FIXED	4.000 EACH		.		.
3080	SPV.0060 SPECIAL 4150. BEARING HIGH-LOAD MULTI-ROTATIONAL GUIDED	12.000 EACH		.		.
3085	SPV.0060 SPECIAL 4160. STAIR TREADS	82.000 EACH		.		.
3090	SPV.0060 SPECIAL 4180. FIXED LADDER R-40-491	10.000 EACH		.		.
3095	SPV.0060 SPECIAL 4181. FIXED LADDER R-40-492	8.000 EACH		.		.
3100	SPV.0060 SPECIAL 4190. FLOOR DRAIN SPECIAL	1.000 EACH		.		.
3105	SPV.0060 SPECIAL 5000. EXPOSING EXISTING UTILITY PAVED AREA	75.000 EACH		.		.
3110	SPV.0060 SPECIAL 5001. EXPOSING EXISTING UTILITY UNPAVED ARAE	25.000 EACH		.		.
3115	SPV.0060 SPECIAL 5040. RECONSTRUCTING MMSD MANHOLE	4.000 EACH		.		.

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3120	SPV.0060 SPECIAL 7001. ASTER, PROFESSOR KIPPENBURG CONT #1	194.000 EACH		.		.
3125	SPV.0060 SPECIAL 7002. BEEBALM CONT #1	25.000 EACH		.		.
3130	SPV.0060 SPECIAL 7003. DAYLILY, STELLA D' ORO CONT #1	61.000 EACH		.		.
3135	SPV.0060 SPECIAL 7004. CONEFLOWER, PURPLE CONT #SP3	24.000 EACH		.		.
3140	SPV.0060 SPECIAL 7005. GOLDENROD, STIFF CONT #1	27.000 EACH		.		.
3145	SPV.0060 SPECIAL 7006. GRASS, FOUNTAIN CONT #1	65.000 EACH		.		.
3150	SPV.0060 SPECIAL 7007. GRASS, PRAIRIE DROPSEED CONT #1	120.000 EACH		.		.
3155	SPV.0060 SPECIAL 7008. GRASS, LITTLE BLUESTEM CONT #1	105.000 EACH		.		.
3160	SPV.0060 SPECIAL 7009. GRASS, KARL FOERSTER REED CONT #1	144.000 EACH		.		.
3165	SPV.0060 SPECIAL 7010. SUSAN, BLACK EYED CONT #SP3	12.000 EACH		.		.
3170	SPV.0060 SPECIAL 7011. VERVAIN, HOARY CONT #1	2.000 EACH		.		.

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	SPV.0060 SPECIAL 7012.					
3175	WEED, BUTTERFLY CONT #1	20.000 EACH		.		.
	SPV.0060 SPECIAL 7013.					
3180	CROSSROAD NAME SIGNS SPECIAL SIGN SUPPORTS	7.000 EACH		.		.
	SPV.0060 SPECIAL 7014.					
3185	SIGN STRUCTURE WAYFINDING	7.000 EACH		.		.
	SPV.0060 SPECIAL 7015.					
3190	CONCRETE FOUNDATION, CROSSROAD NAME SIGNS SPECIAL SIGN SUPPORT	7.000 EACH		.		.
	SPV.0060 SPECIAL 7016.					
3195	CONCRETE FOUNDATION, WAYFINDING	7.000 EACH		.		.
	SPV.0060 SPECIAL 7017.					
3200	SIGN CANITLEVERED	5.000 EACH		.		.
	SPV.0060 SPECIAL 8002.					
3205	RAMP WG POND OUTLET STORM SEWER STRUCTURE	1.000 EACH		.		.
	SPV.0060 SPECIAL 8004.					
3210	INLET COVERS TYPE 57	4.000 EACH		.		.
	SPV.0060 SPECIAL 8006.					
3215	INLET COVERS TYPE R - SPECIAL	8.000 EACH		.		.
	SPV.0060 SPECIAL 8007.					
3220	RECONNECT STORM SEWER LATERALS	50.000 EACH		.		.
	SPV.0060 SPECIAL 8012.					
3225	MANHOLES 9-FT SPECIAL	6.000 EACH		.		.

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3230	SPV.0060 SPECIAL 8013. MANHOLES 10-FT SPECIAL	12.000 EACH		.		.
3235	SPV.0060 SPECIAL 8015. PIPE CONNECTION TO EXISTING STRUCTURE	20.000 EACH		.		.
3240	SPV.0060 SPECIAL 8017. SEDIMENTATION BASIN	8.000 EACH		.		.
3245	SPV.0060 SPECIAL 8018. REMOVING BULKHEAD	4.000 EACH		.		.
3250	SPV.0060 SPECIAL 8030. STORM SEWER STRUCTURE W1120	1.000 EACH		.		.
3255	SPV.0060 SPECIAL 8031. STORM SEWER STRUCTURE W1130	1.000 EACH		.		.
3260	SPV.0060 SPECIAL 8050. WELDING STORM SEWER COVERS	5.000 EACH		.		.
3265	SPV.0060 SPECIAL 8051. REMOVING WELDS FROM STORM SEWERS COVER	10.000 EACH		.		.
3270	SPV.0060 SPECIAL 8060. DRAIN SLOTTED VANE TYPE A	11.000 EACH		.		.
3275	SPV.0060 SPECIAL 8061. REMOVE AND CAP EXISTING DRAINAGE STORM SEWER STRUCTURE	4.000 EACH		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3280	SPV.0060 SPECIAL 8062. APRON ENDWALLS FOR CULVERT PIPE REINFORCED CONCRETE 78-INCH	1.000 EACH		.		.
3285	SPV.0075 SPECIAL 4200. DRILLLED FOUNDATION SHAFT OBSTRUCTIONS	10.000 HRS		.		.
3290	SPV.0075 SPECIAL 8097. OBSTRUCTIONS	1.000 HRS		.		.
3295	SPV.0085 SPECIAL 0010. SEEDING MIXTURE NATIVE SEED BUTTERFLY MIX	723.000 LB		.		.
3300	SPV.0085 SPECIAL 4300. BAR STEEL REINFORCEMENT HS STAINLESS BRIDGES	626,875.000 LB		.		.
3305	SPV.0090 SPECIAL 0009. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC ZEBRA MARKING 24-INCH **P*	168.000 LF		.		.
3310	SPV.0090 SPECIAL 0010. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC STOP LINE, 18-INCH **P**	780.000 LF		.		.
3315	SPV.0090 SPECIAL 0011. PAVEMENT MARKING GROOVED PREFORMED THERMOPLASTIC CROSSWALK, 6-INCH **P**	3,765.000 LF		.		.
3320	SPV.0090 SPECIAL 0012. CONCRETE BARRIER TEMPORARY PRECAST LEFT IN PLACE	9,080.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3325	SPV.0090 SPECIAL 0013. CONCRETE BARRIER TYPE S42 SPECIAL **P**	198.000 LF		.		.
3330	SPV.0090 SPECIAL 0014. CONCRETE CURB AND GUTTER 6-INCH SLOPED 60-INCH TYPE A **P**	1,418.000 LF		.		.
3335	SPV.0090 SPECIAL 0015. FENCE SCREEN	578.000 LF		.		.
3340	SPV.0090 SPECIAL 0016. CONCRETE CURB & GUTTER 55-INCH **P**	114.000 LF		.		.
3345	SPV.0090 SPECIAL 0017. GLARE SCREENS TEMPORARY	5,604.000 LF		.		.
3350	SPV.0090 SPECIAL 0018. PAVEMENT MARKING CONTRAST EPOXY 7-INCH **P**	6,207.000 LF		.		.
3355	SPV.0090 SPECIAL 0019. PAVEMENT MARKING CONTRAST EPOXY 11-INCH **P**	7,246.000 LF		.		.
3360	SPV.0090 SPECIAL 0021. REMOVING PAVEMENT MARKING WATER BLASTING	553.000 LF		.		.
3365	SPV.0090 SPECIAL 1007. CABLE AERIAL ALUMINUM 6 AWG QUADRUPLEX	2,284.000 LF		.		.
3370	SPV.0090 SPECIAL 1008. CABLE AERIAL ALUMINUM 6 AWG TRIPLEX	6,620.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3375	SPV.0090 SPECIAL 1009. CABLE AERIAL ALUMINUM 4 AWG TRIPLEX	7,802.000 LF		.		.
3380	SPV.0090 SPECIAL 3001. TYPE UF CABLE 2 CONDUCTOR NO. 14	4,791.000 LF		.		.
3385	SPV.0090 SPECIAL 4410. FENCE DECORATIVE WALL	280.000 LF		.		.
3390	SPV.0090 SPECIAL 4420. PILING SLEEVES **P**	619.000 LF		.		.
3395	SPV.0090 SPECIAL 4440. PILING STEEL STATE-FURNISHED HP 14-INCH X 89 LB	15,770.000 LF		.		.
3400	SPV.0090 SPECIAL 4450. DRILLED FOUNDATION SHAFT 47.25-INCH **P**	80.000 LF		.		.
3405	SPV.0090 SPECIAL 4460. RAILING DECORATIVE PEDESTRIAN BRIDGE	2,156.000 LF		.		.
3410	SPV.0090 SPECIAL 8001. PIPE UNDERDRAIN 6-INCH SPECIAL	43,364.000 LF		.		.
3415	SPV.0090 SPECIAL 8003. STORM SEWER PIPE REINFORCED CONC HORIZONTAL ELLIPTICAL CLS HE-IV 38X60-IN	183.000 LF		.		.
3420	SPV.0090 SPECIAL 8004. STORM SEWER PIPE REINFORCED CONCRETE CLASS V 78-INCH	891.000 LF		.		.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
	SPV.0090 SPECIAL 8005.					
3425	STORM SEWER PIPE REINFORCED CONCRETE CLASS V 66-INCH	310.000 LF		.		.
	SPV.0090 SPECIAL 8025.					
3430	PIPE UNDERDRAIN 8-INCH SPECIAL	1,000.000 LF		.		.
	SPV.0090 SPECIAL 8030.					
3435	DRAIN SLOTTED VANE LONGITUDINAL	1,600.000 LF		.		.
	SPV.0090 SPECIAL 8096.					
3440	TUNNEL EXCAVATION **P**	84.000 LF		.		.
	SPV.0105 SPECIAL 0001.					
3445	SURVEY PROJECT 1060-33-72	LUMP	LUMP			.
	SPV.0105 SPECIAL 0002.					
3450	PAVEMENT CLEANUP PROJECT 1060-33-72	LUMP	LUMP			.
	SPV.0105 SPECIAL 0004.					
3455	CONCRETE JUMP SLAB	LUMP	LUMP			.
	SPV.0105 SPECIAL 0005.					
3460	REMOVING OVERHEAD SIGN SUPPORT	LUMP	LUMP			.
	SPV.0105 SPECIAL 0006.					
3465	CONCRETE PAVEMENT JOINT LAYOUT	LUMP	LUMP			.
	SPV.0105 SPECIAL 1005.					
3470	MAINTENANCE OF LIGHTING SYSTEM	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3475	SPV.0105 SPECIAL 1007. LIGHTING SYSTEM INTEGRATOR	LUMP	LUMP			.
3480	SPV.0105 SPECIAL 1011. UNDERDECK LIGHTING BRIDGE STRUCTURE B-40-779 AND B-40-780	LUMP	LUMP			.
3485	SPV.0105 SPECIAL 1020. GRAB RAIL LED LIGHTING	LUMP	LUMP			.
3490	SPV.0105 SPECIAL 1021. PEDESTRIAN CANOPY BRIDGE (B-40-784) LIGHTING	LUMP	LUMP			.
3495	SPV.0105 SPECIAL 2016. EMERGENCY VEHICLE WARNING SYSTEM	LUMP	LUMP			.
3500	SPV.0105 SPECIAL 3010. REMOVE TRAFFIC SIGNALS (USH 45 & WATERTOWN PLANK ROAD	LUMP	LUMP			.
3505	SPV.0105 SPECIAL 3011. REMOVE TRAFFIC SIGNALS (W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.
3510	SPV.0105 SPECIAL 3012. REMOVE TRAFFIC SIGNALS (W. WATERTOWN PLANK ROAD & N. 87TH STREET	LUMP	LUMP			.
3515	SPV.0105 SPECIAL 3013. REMOVE LOOP DET WIRE & LDLIC USH45 NB/SB RAMPS & W. WATERTOWN PLANK ROAD	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3520	SPV.0105 SPECIAL 3014. REMOVE LOOP DET WIRE & LDLIC W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.
3525	SPV.0105 SPECIAL 3015. INSTALL VENDR SUPP MUNIC TRAFF SIG CAB W. WTP RD & SWAN RD/INNOVA TION DR	LUMP	LUMP			.
3530	SPV.0105 SPECIAL 3016. INSTALL VENDR SUPP MUNIC TRAFF SIG CABINET W. WATERTOWN PLANK RD & N. 92N ST	LUMP	LUMP			.
3535	SPV.0105 SPECIAL 3017. INSTALL VENDR SUPP MUNIC TRAFF SIG CAB W. WATERTOWN PLANK RD & N 87TH ST	LUMP	LUMP			.
3540	SPV.0105 SPECIAL 3018. VIDEO VEHICLE DETECTION SYSTEM W. WTP RD & SWAN BLVD / INNOVATION DR	LUMP	LUMP			.
3545	SPV.0105 SPECIAL 3019. VIDEO VEHICLE DETECTION SYSTEM W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.
3550	SPV.0105 SPECIAL 3020. VIDEO VEHICLE DETECTION SYSTEM W. WATERTOWN PLANK ROAD & N. 87TH STREET	LUMP	LUMP			.
3555	SPV.0105 SPECIAL 3021. INSTL FIBER OPTIC COMM IN CABINET W. WTP RD & SWAN BLVD / INNOVATIVE DR	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3560	SPV.0105 SPECIAL 3022. INSTL FIBER OPTIC COMM IN CABINET W. WATERTOWN PLANK RD & N. 92ND STREET	LUMP	LUMP			.
3565	SPV.0105 SPECIAL 3023. INSTL FIBER OPTIC COMM IN CABINET W. WATERTOWN PLANK RD & N. 87TH STREET	LUMP	LUMP			.
3570	SPV.0105 SPECIAL 3024. TEMPORARY EVP SYSTEM W. WATERTOWN PLANK ROAD & N. 92ND STREET	LUMP	LUMP			.
3575	SPV.0105 SPECIAL 3025. TEMPORARY EVP SYSTEM W. WATERTOWN PLANK ROAD & N. 87TH STREET	LUMP	LUMP			.
3580	SPV.0105 SPECIAL 3026. TEMPORARY EVP SYSTEM SWAN BOULEVARD & DISCOVERY PARKWAY	LUMP	LUMP			.
3585	SPV.0105 SPECIAL 3027. EXIST TEMP EVP SYS W. WATERTOWN PLANK RD & SWAN BLVD / INNOVATION DR	LUMP	LUMP			.
3590	SPV.0105 SPECIAL 3028. INST VENDOR SUPPLIED MUNICIPAL TRAF SIG CAB (W. WTP RD & DISCOVERY PKWY	LUMP	LUMP			.
3595	SPV.0105 SPECIAL 3029. VIDEO VEHICLE DETECTION SYSTEM W. WATERTOWN PLANK RD & DISCOVERY PKWY	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3600	SPV.0105 SPECIAL 3030. INSTALL FIBER OPTIC COMM. IN CAB W. WATERTOWN PLANK RD & DISCOVERY PKWY	LUMP	LUMP			.
3605	SPV.0105 SPECIAL 4500. PREFABRICATED STEEL TRUSS PEDESTRIAN BRIDGE B-40-784	LUMP	LUMP			.
3610	SPV.0105 SPECIAL 4510. PAINTING POLYSILOXANE SYSTEM B-40-776	LUMP	LUMP			.
3615	SPV.0105 SPECIAL 4520. PAINTING POLYSILOXANE SYSTEM B-40-783	LUMP	LUMP			.
3620	SPV.0105 SPECIAL 4530. PAINTING EPOXY POLYSILOXANE SYSTEM PEDESTRIAN BRIDGE B-40-784	LUMP	LUMP			.
3625	SPV.0105 SPECIAL 4540. TRIAL DRILLED FOUNDATION SHAFT	LUMP	LUMP			.
3630	SPV.0105 SPECIAL 4550. EXISTING PARKING STRUCTURE MODIFICATION	LUMP	LUMP			.
3635	SPV.0105 SPECIAL 6020. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 774WE+30 RIGHT	LUMP	LUMP			.
3640	SPV.0105 SPECIAL 6021. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 774WE+30 LEFT	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3645	SPV.0105 SPECIAL 6022. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 770WE+20 LEFT	LUMP	LUMP			.
3650	SPV.0105 SPECIAL 6023. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 758WJ+10 RIGHT	LUMP	LUMP			.
3655	SPV.0105 SPECIAL 6024. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 758WJ+10 LEFT	LUMP	LUMP			.
3660	SPV.0105 SPECIAL 6025. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 754WJ+00 LEFT	LUMP	LUMP			.
3665	SPV.0105 SPECIAL 6026. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 751WG+00 RIGHT	LUMP	LUMP			.
3670	SPV.0105 SPECIAL 6027. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 751WG+00 LEFT	LUMP	LUMP			.
3675	SPV.0105 SPECIAL 6028. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 762WG+00 RIGHT	LUMP	LUMP			.

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LINE NO	ITEM DESCRIPTION	APPROX. QUANTITY AND UNITS	UNIT PRICE DOLLARS	UNIT PRICE CTS	BID AMOUNT DOLLARS	BID AMOUNT CTS
3680	SPV.0105 SPECIAL 6029. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 767WD+50 RIGHT	LUMP	LUMP			.
3685	SPV.0105 SPECIAL 6030. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 767WD+50 LEFT	LUMP	LUMP			.
3690	SPV.0105 SPECIAL 6031. RECTANGULAR RAPID FLASHING BEACON (RRFB) SYSTEM STATION 776WD+20 RIGHT	LUMP	LUMP			.
3695	SPV.0105 SPECIAL 6040. CHEVRON SOLAR POWERED SIGN ASSEMBLY RAMP WJ	LUMP	LUMP			.
3700	SPV.0105 SPECIAL 6041. CHEVRON SOLAR POWERED SIGN ASSEMBLY RAMP WD	LUMP	LUMP			.
3705	SPV.0105 SPECIAL 8002. DEWATERING FOR DETENTION BASIN CONSTRUCTION	LUMP	LUMP			.
3710	SPV.0105 SPECIAL 8098. CONTROL OF WATER	LUMP	LUMP			.
3715	SPV.0105 SPECIAL 8099. GEOTECHNICAL INSTRUMENTATION	LUMP	LUMP			.
3720	SPV.0165 SPECIAL 0001. TRAFFIC CONTROL FIXED MESSAGE SIGNS LEFT IN PLACE	25.250 SF	.			.

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3725	SPV.0165 SPECIAL 0010. CONCRETE SIDEWALK 5-INCH SPECIAL **P**	23,237.000 SF		.		.
3730	SPV.0165 SPECIAL 0020. CIP RETAINING WALL **P**	352.000 SF		.		.
3735	SPV.0165 SPECIAL 4700. LONGITUDINAL GROOVING BRIDGE DECK	65,020.000 SF		.		.
3740	SPV.0165 SPECIAL 4710. WALL CONCRETE PANEL MECHANICALLY STABILIZED EARTH LRFD / QMP PILOT **P**	73,605.000 SF		.		.
3745	SPV.0165 SPECIAL 4730. TEMP WALL WIRE FACED MECHANICALLY STABILIZED EARTH LRFD / QMP PILOT **P**	1,575.000 SF		.		.
3750	SPV.0165 SPECIAL 4740. CHANNEL GLASS EXTERIOR CLADDING **P**	4,580.000 SF		.		.
3755	SPV.0165 SPECIAL 4750. METAL ROOF DECKING **P**	9,224.000 SF		.		.
3760	SPV.0165 SPECIAL 4760. STAIR TOWER ROOFING **P**	606.000 SF		.		.
3765	SPV.0165 SPECIAL 4770. DECORATIVE SCREENING **P**	3,256.000 SF		.		.
3770	SPV.0165 SPECIAL 7001. MULCH, SHREDDED BARK	16,000.000 SF		.		.

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3775	SPV.0165 SPECIAL 8095. SHAFT EXCAVATION SUPPORT SYSTEM **P**	4,515.000 SF		.		.
3780	SPV.0180 SPECIAL 0010. CONCRETE PAVEMENT 8-INCH SPECIAL **P**	2,356.000 SY		.		.
3785	SPV.0180 SPECIAL 0020. CONCRETE PAVEMENT 12-INCH SPECIAL **P**	58,252.000 SY		.		.
3790	SPV.0180 SPECIAL 0030. GEOGRID REINFORCEMENT	45,986.000 SY		.		.
3795	SPV.0180 SPECIAL 0040. TOPSOIL SPECIAL **P**	236,385.000 SY		.		.
3800	SPV.0180 SPECIAL 0050. GEOTEXTILE FABRIC TYPE FF	200.000 SY		.		.
3805	SPV.0180 SPECIAL 5001. INSULATION BOARD POLYSTYRENE 4-INCH	2,000.000 SY		.		.
3810	SPV.0195 SPECIAL 0001. COLD PATCH	20.000 TON		.		.
	SECTION 0001 TOTAL					.
	TOTAL BID					.

PLEASE ATTACH SCHEDULE OF ITEMS HERE