**HIGHWAY WORK PROPOSAL**

Proposal Number: Ø 9

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

| COUNTY | STATE PROJECT ID | FEDERAL PROJECT ID | PROJECT DESCRIPTION | HIGHWAY |
|---|---|---|---|---|
| Door | 4430-16-60 | | Sturgeon Bay Bridge, Bridge Maintenance | STH 42 |

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, $ 75,000.00<br>Payable to: Wisconsin Department of Transportation | Attach Proposal Guaranty on back of this PAGE. |
| Bid Submittal Due<br>Date: August 11, 2015<br>Time (Local Time): 9:00 AM | Firm Name, Address, City, State, Zip Code<br>**SAMPLE**<br>**NOT FOR BIDDING PURPOSES** |
| Contract Completion Time<br>July 29, 2016 | |
| Assigned Disadvantaged Business Enterprise Goal<br>0 % | This contract is exempt from federal oversight. |

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

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

Subscribed and sworn to before me this date _____

(Signature, Notary Public, State of Wisconsin)

(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<br>Bridge maintenance. | |
| Notice of Award Dated | Date Guaranty Returned |

# PLEASE ATTACH
# PROPOSAL GUARANTY HERE

**Effective with November 2007 Letting**

## PROPOSAL REQUIREMENTS AND CONDITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

**Effective with August 2015 Letting**

# BID PREPARATION

## Preparing the Proposal Schedule of Items

### A General

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

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

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

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

The contractor is responsible for reviewing this web site for general notices as well as information regarding proposals in each letting. The department will also post special notices of all addenda to each proposal through this web site no later than 4:00 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://wisconsindot.gov/Pages/doing-bus/contractors/hcci/bid-let.aspx

or by calling the department at (608) 266-1631. Addenda can ONLY be obtained from the departments web site listed above or by picking up the addenda at the Bureau of Highway Construction, Room 601, 4802 Sheboygan Avenue, Madison, WI, during regular business hours.

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

## B Submitting Electronic Bids

### B.1 On the Internet

(1) Do the following before submitting the bid:

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

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

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

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

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

(1) Download the latest schedule of items from the Wisconsin pages of the Bid Express™ web site reflecting the latest addenda posted on the department's web site at:

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

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

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

**Bidder**

**Name**

**BN00**

**Proposals: 1, 12, 14, & 22**

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

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

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

1. The check code printed on the bottom of the printout of the Expedite™ generated schedule of items is not the same on each page.
2. The check code printed on the printout of the Expedite™ generated schedule of items is not the same as the check code for that proposal provided on the diskette or CD ROM.
3. The diskette or CD ROM is not submitted at the time and place the department designates.

**C Waiver of Electronic Submittal**

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

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

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

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

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

# PROPOSAL BID BOND

Wisconsin Department of Transportation

DT1303 1/2006

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

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

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

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

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

**PRINCIPAL**

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

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

(Company Name)

(Signature and Title)

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

(Signature of Attorney-in-Fact)

**NOTARY FOR PRINCIPAL**

(Date)

State of Wisconsin )
) ss.
_____ County )

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

(Signature, Notary Public, State of Wisconsin)

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

(Date Commission Expires)

**Notary Seal**

**NOTARY FOR SURETY**

(Date)

State of Wisconsin )
) ss.
_____ County )

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

(Signature, Notary Public, State of Wisconsin)

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

(Date Commission Expires)

**Notary Seal**

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

# CERTIFICATE OF ANNUAL BID BOND

Wisconsin Department of Transportation

DT1305 8/2003

| |
|---|
| Time Period Valid (From/To) |
| Name of Surety |
| Name of Contractor |
| Certificate Holder<br>Wisconsin Department of Transportation |

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

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

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

(Signature of Authorized Contractor Representative) (Date)

**March 2010**

## LIST OF SUBCONTRACTORS

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

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

| Name of Subcontractor | Class of Work | Estimated Value |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**DECEMBER 2000**

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

Instructions for Certification

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## Special Provisions

## Table of Contents

**SPECIAL PROVISIONS**

## 1. General.

Perform the work under this construction contract for Project 4430-16-60, Sturgeon Bay Bridge, Bridge Maintenance, STH 42, Door County, Wisconsin as the plans show and execute the work as specified in the State of Wisconsin, Department of Transportation, Standard Specifications for Highway and Structure Construction, 2015 Edition, as published by the department, and these special provisions.

If all or a portion of the plans and special provisions are developed in the SI metric system and the schedule of prices is developed in the US standard measure system, the department will pay for the work as bid in the US standard system.
100-005 (20141107)

## 2. Scope of Work.

The work under this contract shall consist of:

**B-15-4**
Replacing select supporting steel beams and the steel grid deck with partial-depth concrete filled shoulder on the bascule span; replacing the epoxy overlay on the bascule span sidewalk; re-balancing of bascule leaves; replacing approach span sidewalk expansion joints; replacing bearings at Piers 3, 6 and 10; repairing PCC girder ends at Piers 3, 6, and 10 and the abutments; performing concrete surface repairs to substructures and parapets; replacing traffic gates; replacing operating machinery brakes and modifying machinery supports; cleaning and painting the floor of the machinery rooms; providing additional new camera systems; replacing navigation lights; and performing miscellaneous other structural, electrical and mechanical repairs and replacements;

**B-15-5 and B-15-6**
Concrete surface repairs; concrete slope paving repair; and removing and replacing concrete overlays; and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.
104-005 (20090901)

## 3. Prosecution and Progress.

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

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

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

STH 42/57 between Green Bay Road and Egg Harbor Road and on Structure B-15-4 shall be closed to vehicular and pedestrian traffic from the start of work on B-5-4 to noon, June 29, 2016. Detour traffic as described in the "Traffic" article of these special provisions. Do not close STH 42/57 to through traffic prior to March 1, 2016. Lane closures along STH 42/57 will be permitted beginning October 17, 2015 as specified in the "Traffic" article.

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

**Schedule of Operations**
The schedule of operations shall conform to the requirements described below, unless modifications are approved in writing by the engineer.

**B-15-5 and B-15-6**
Anticipated Stages:

Stage 1: Repair median portion of Structures B-15-5 (STH 42/57 Southbound) and B-15-6 (STH 42/57 northbound) and slope paving.

Stage 2: Repair outside portion of Structures B-15-5 (STH 42/57 Skkouthbound) and B-15-6 (STH 42/57 northbound) and slope paving.

**B-15-4**
Replace select supporting steel beams, the steel grid deck with partial-depth concrete filled shoulder, and the operating machinery on one bascule leaf at a time. Maintain navigation with at least one leaf always operational.

Complete construction operations on STH 42/57 to the stage necessary to reopen it to through traffic prior to 12:01 AM, June 29, 2016. Do not reopen until completing the work noted above under section B-15-4.

*Supplement standard spec 108.11 as follows:*

If the contractor fails to complete the work necessary to reopen STH 42/57 to through traffic prior to 12:01 AM, June 29, 2016, the department will assess the contractor $15,000 in interim liquidated damages for each calendar day that the roadway remains closed after 12:01 AM, June 29, 2016. An entire calendar day will be charged for any period of time within a calendar day that the road remains closed beyond 12:01 AM.

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

**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 Over Waterway with Minimal Debris.

## 4. Traffic.

Do not proceed with any operation until all traffic control devices for such work are in the proper location.

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

If any bridge work will require the use of work barge and or falsework that will be in potential hazard to public navigation, appropriate safety signing, marking and lighting must be used in accordance to U.S. Coast Guard standards and per the requirements of article "Construction Over or Adjacent to Navigable Waterway."

**Structures B-15-5 and B-15-6**
Maintain through traffic at all times on STH 42/57 as shown in the plans. Single lane closures will be permitted beginning October 17, 2015. Lane closures will only be permitted when work is commencing, and closures will not be permitted during winter shutdown, as directed by the engineer. Avoid unnecessary lane closures for extended periods of time.

Close the STH 42/57 connector ramp and trail to northbound Green Bay Road/S. Madison Avenue for a maximum duration of one night, between the hours of 6:00 PM and 6:00 AM, to complete slope paving repairs on Structures B-15-5 and B-15-6. Provide the department and the City of Sturgeon Bay with two weeks advance written notice prior to closing the ramp.

Maintain one 12-foot minimum travel lane on STH 42/57 in each direction by using details provided in the plan or as directed by the engineer.

Maintain emergency access to the project area at all times.

**Structure B-15-4**
Maintain closure of STH 42/57 traffic on Structure B-15-4 while performing rehabilitation work on it. Do not detour STH 42/57 traffic prior to completing slope paving repairs for Structures B-15-5 and B-15-6 described herein.

**Detour**
Place portable changeable message signs seven days in advance of any detours.

STH 42/57 (Green Bay Road) over Sturgeon Bay will be closed during bridge rehabilitation work. Northbound and Southbound traffic will be detoured simultaneously through downtown Sturgeon Bay as described below and as shown in the plans.

**Trucks**
Northbound traffic will be detoured via Green Bay Road, Madison Avenue, Michigan Street, 14th Avenue, and Egg Harbor Road.

Southbound traffic will be detoured via Egg Harbor Road, 14th Avenue, Michigan Street, Madison Avenue, and Green Bay Road.

**Non-truck**
Northbound traffic will be detoured via Green Bay Road, Madison Avenue, Michigan Street, 3rd Avenue, Jefferson Street, and Egg Harbor Road.

Southbound traffic will be detoured via Egg Harbor Road, Jefferson Street, 3rd Avenue, Michigan Street, Madison Avenue, and Green Bay Road.

**Portable Changeable Message Signs – Message Prior Approval**
After coordinating with department construction field staff, notify the Northeast Region Traffic Section at (920) 492-5641 (secondary contact number is (920) 492-7719) three business days prior to deploying or changing a message on a PCMS to obtain approval of the proposed message. The Northeast Region Traffic Unit will review the proposed message and either approve the message or make necessary changes.

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

| | |
|---|---|
| Lane and shoulder closures* | 14 calendar days |
| Full roadway closures | 14 calendar days |
| System and service ramp closures* | 14 calendar days |
| Full system and service ramp closures | 14 calendar days |
| Project start | 14 calendar days |
| Construction stage changes | 14 calendar days |
| Detours | 14 calendar days |
| Lane and shoulder closures** | 3 business days |
| System and service ramp closures** | 3 business days |
| Modifying all closure types | 3 business days |

* With height, weight, or width restrictions (available width, all lanes in one direction ≤16')
** Without height, weight, or width restrictions (available width, all lanes in one direction >16')

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

**Ahnapee State Trail**
During the detour of Structure B-15-4, place signs of the trail closure just north of County U for northbound traffic and just south of Utah Street for southbound traffic. Signs shall use orange sheeting and read: "Ahnapee State Trail". Payment for trail detour signs is incidental to the Traffic Control Detour item.

## 5. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 42/57 traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday periods:

- From noon Friday, September 4, 2015 to 6:00 AM Tuesday, September 8, 2015 for Labor Day;
- From noon Wednesday, November 25, 2015, to 6:00 AM Monday, November 30, 2015 for Thanksgiving;
- From noon Wednesday, December 23, 2015, to 6:00 AM Monday, December 28, 2015 for Christmas;
- From noon Thursday, December 31, 2015, to 6:00 AM Saturday, January 2, 2016 for New Year's;
- From noon Friday, May 27, 2016 to 6:00 AM Tuesday, May 31, 2016 for Memorial Day;
- From noon Friday, July 1, 2016 to 6:00 AM Tuesday, July 5, 2016 for Independence Day.

107-005 (20050502)

## 6. Utilities.

This contract comes under the provision of Administrative Rule Trans 220.
107-065 (20080501)

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

- AT&T Wisconsin: Eric Adair, 205 S. Jefferson St., Green Bay, WI 54301, telephone (920) 433-4147, email az9216@att.com.

- Charter Communications: Nick Frase, 3315 Lincoln Ave., Two Rivers, WI 54241, telephone (920) 793-2216, email nicholas.frase@chartercom.com.

- Wisconsin Public Service Corporation: Jerry Peot, 700 N. Adams St. PO Box 19001, Green Bay, WI 54307-9001, telephone (920) 794-3215, email gpeot@wpsr.com.

## 7. Work by Others.

The Wisconsin Department of Transportation Northeast Region Electrical Unit will perform work the following work for the existing lighting system: Replace the light fixtures. Provide the Northeast Region Electrical Unit with two days to complete this work prior to reopening the roadway to traffic. Contact Jeff Rickert at (920) 360-6238 to coordinate the work.

## 8. Other Contracts.

The department will be reconstructing STH 42/57 from south of Michigan Street to north of Egg Harbor Road under Project 4140-20-73. This project is scheduled to be constructed concurrently with Project 4430-16-60 and be completed by July 1, 2016. The project consists primarily of replacing the existing concrete pavement and intersection reconstruction at Michigan Street, Alabama Street, and Egg Harbor Road. This project uses the same detour as Project 4430-16-60; however, it will remain in place until the completion of project 4140-20-73, regardless of the prosecution and progress of Project 4430-16-60.

The department will be staging work for Project 4140-20-73 under Project 4140-20-74. The project is scheduled to take place in fall 2015 and will not impact traffic as no work is anticipated on roadways.

Coordination between Project 4140-20-73 and Project 4430-16-60 contractors may be required to adjust traffic control. Coordinate with the contractor and engineer regarding Project 4140-20-73 during construction.

The engineer and prime contractor representative shall be invited to the weekly meeting for the 4430-16-60 project. Contact Jeremy Ashauer, (920) 492-4165, at the Wisconsin Department of Transportation prior to bidding and during construction for updates.

## 9. Construction Over or Adjacent to Navigable Waters.

*Supplement standard spec 107.19 with the following:*

The Sturgeon Bay Ship Canal is classified as a navigable waterway.
107-060 (20040415)

Submit a contingency plan to the engineer prior to the start of construction. Include the names and telephone numbers of personnel and a list of equipment that will be available to correct any navigation problems that may arise during non-working hours.

Provide industry accepted measures and precautions to prevent accidental dropping of debris, sparks, flames, lighted or other damaging objects onto boats and water users passing beneath the bridge.

Ensure the rights and safety of the navigating public. Place appropriate warning signs and buoys upstream and downstream of the project site. In accordance to the U.S. Coast Guard Standards, place marker lights on all watercraft and equipment that will remain moored, anchored, or otherwise floating on the waterway between dusk and dawn. Sign, mark, or light all other potential navigation hazards associated with the project including, but not limited to, construction machinery, rigging, and temporary structures. Provide water space with horizontal and vertical clearances to allow for safe public navigation through the construction site at all times. Payment for this accommodation is considered incidental to the contract work.

The department has coordinated with the United States Coast Guard (USCG), and deviations from the normal operating procedures have been agreed to for the bascule span's roadway grid replacement and brake replacement work for this project. Failure of the contractor to meet the bridge opening requirements outlined below may lead to fines being levied. The contractor will be held responsible for any and all fines placed against the department by the USCG, as a result of any work not meeting the bridge opening requirements.

Except as follows, both bascule leaves must be able to be fully opened to accommodate vessels including commercial freighters and USCG cutters.

The USCG will permit both bascule leaves to be locked in the down position between May 1 and June 30, 2016. This duration is based on an accelerated schedule of six days per week for nine continuous weeks working from dawn to dusk. The dates are approximate, partially dependent on weather conditions during the prior winter season, and subject to change by the USCG.

**Placement of Navigational Aids during Construction**
Install temporary waterway buoys (e.g., *Danger, Informational,* or *Navigational* type buoys) as directed by the engineer. The cost of these buoys is incidental to structural items to construct B-15-4 and the contract.

As needed, coordinate with WDNR NE Region Safety Specialist Warden, Jeremy Cords, at (920) 366-1917, or email at Jeremy.Cords@Wisconsin.gov.

## 10. Water Work Access.

No separate payment will be made for transportation to and from floating equipment and temporary or permanent construction in the channel, these costs shall be included in the unit prices bid for related work items.

## 11. Environmental Protection, Aquatic Exotic Species Control.

Exotic invasive organisms such as VHS, zebra mussels, purple loosestrife, and Eurasian water milfoil are becoming more prolific in Wisconsin and pose adverse effects to waters of the state. Wisconsin State Statutes 30.07, "Transportation of Aquatic Plants and Animals; Placement of Objects in Navigable Waters", details the state law that requires the removal of aquatic plants and zebra mussels each time equipment is put into state waters.

At construction sites that involve navigable water or wetlands, use the follow cleaning procedures to minimize the chance of exotic invasive species infestation. Use these procedures for all equipment that comes in contact with waters of the state and/or infested water or potentially infested water in other states.

Ensure that all equipment that has been in contact with waters of the state, or with infested or potentially infested waters, has been decontaminated for aquatic plant materials and zebra mussels prior to being used in other waters of the state. Before using equipment on this project, thoroughly disinfect all equipment that has come into contact with potentially infested waters. Use the following inspection and removal procedures (guidelines from the Wisconsin Department of Natural Resources http://dnr.wi.gov/topic/fishing/documents/vhs/disinfection_protocols.pdf for disinfection:

1. Prior to leaving the contaminated site, wash machinery and ensure that the machinery is free of all soil and other substances that could possibly contain exotic invasive species;
2. Drain all water from boats, trailers, bilges, live wells, coolers, bait buckets, engine compartments, and any other area where water may be trapped;
3. Inspect boat hulls, propellers, trailers and other surfaces. Scrape off any attached mussels, remove any aquatic plant materials (fragments, stems, leaves, seeds, or roots), and dispose of removed mussels and plant materials in a garbage can prior to leaving the area or invested waters; and

4. Disinfect your boat, equipment and gear by either:
    a. Washing with ~212º F water (steam clean), or
    b. Drying thoroughly for five days after cleaning with soap and water and/or high pressure water, or
    c. Disinfecting with either 200 ppm (0.5 oz per gallon or 1 Tablespoon per gallon) Chlorine for 10-minute contact time or 1:100 solution (38 grams per gallon) of Virkon Aquatic for 20- to 30-minute contact time. Note: Virkon is not registered to kill zebra mussel veligers nor invertebrates like spiny water flea. Therefore this disinfect should be used in conjunction with a hot water (>104º F) application.

Complete the inspection and removal procedure before equipment is brought to the project site and before the equipment leaves the project site.
107-055 (20130615)

## 12. Notice to Contractor, Notification of Demolition and/or Renovation No Asbestos Found.

John Roelke, License Number AII-119523, and Nathan Braun, License Number AII-206950, inspected Structure B-15-4 for asbestos on March 5, 2015. No regulated Asbestos Containing Material (RACM) was found on this structure. A copy of the inspection report is available from: Jeremy Ashauer, (920) 492-4165.

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 to Jennifer Gibson, (920) 492-4160 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-15-4, STH 42/57 over Sturgeon Bay
- Site Address: 44°49’06.00”N Latitude, 87°21’24.00” W Longitude Section 08 Town 27N Range 26E City of Surgeon Bay
- Ownership Information: WisDOT Transportation Northeast Region, 944 Vanderperren Way, Green Bay, WI 54304.
- Contact: Jeremy Ashauer
- Phone: (920) 492-4165
- Age: 37 years old. This structure was constructed in 1978.
- Area: 79,520 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.

107-125 (20120615)

## 13. Notice to Contractor – Emergency Contact.

The prime contractor shall provide a 24-hour emergency contact person responsible for the project. The individual shall be available either on site or by telephone and be equipped with the ability to make decisions regarding the project.

## 14. Notice to Contractor – B-15-4 Lead Paint.

Steel components of bridge Structure B-15-4 may be covered with paint containing lead. Any work that may disturb the paint must follow all applicable state and federal regulations regulating lead and lead waste. Assume all removed paint contains lead and dispose appropriately.

## 15. Removing Old Structure Over Waterway With Minimal Debris Station 777+50.00, Item 203.0600.S.01.

Conform to standard spec 203 as modified in this special provision.

*Add the following to standard spec 203:*

**203.3.6 Removals Over Waterways and Wetlands**

**203.3.6.2 Removing Old Structure Over Waterway with Minimal Debris**

(1) Remove the existing Structure B-15-4 over the Sturgeon Bay in large sections and conforming to the contractor's approved structure removal and clean-up plan. During superstructure removal, prevent all large pieces and minimize the number of small pieces from entering the waterway or wetland. Remove all reinforcing steel, all concrete, and all other debris that falls into the waterway or wetland. The contractor may leave limited amounts of small concrete pieces scattered over the waterway floor or wetland only if the engineer allows.

(2) Submit a structure removal and clean-up plan as part of the erosion control implementation plan required under standard spec 107.20. Do not start work under the structure removal and clean-up plan without the department's written approval of the plan. Include the following information in the structure removal and clean-up plan:

- Methods and schedule to remove the structure.
- Methods to control potentially harmful environmental impacts.
- Methods for superstructure removal that prevent all large pieces and minimize the number of small pieces from entering the waterway or wetlands.
- Methods to control dust and contain slurry.
- Methods for removing piers and abutments. If blasting in water, include restrictions that regulatory agencies and the contract require.
- Methods for cleaning the waterway or wetlands.

(3) If stockpiling spoil material, place it on an upland site an adequate distance from the waterway, wetland, or any open water created by excavation. Install silt fence between the spoil pile and the waterway, wetland, or excavation site.

*Add the following Removing Old Structure bid item to standard spec 203.5.1:*

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 203.0600.S.01 | Removing Old Structure Over Waterway With Minimal Debris Station 777+50.00 | LS |

203-020 (20080902)

## 16. Expansion Device, B-15-4.

**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)

## 17. Pigmented Protective Surface Treatment, Item 502.3210.S.

**A Description**
This special provision describes providing a pigmented cure and seal compound to the inside and top faces of concrete parapets.

**B Materials**
Furnish a gray Cure and Seal Compound for Non-Trafficked Surfaces on Structural Masonry selected from the department's approved products list unless the contract specifies a different color.

**C Construction**
Apply pigmented cure and seal compound to the inside and top faces of concrete parapets after the required surface finish has been applied per standard spec 502.3.7. Apply before opening to traffic and before suspending work for the winter.

Ensure that the concrete is clean and dry, and that application equipment is clean and functioning properly. Air blast immediately before applying the pigmented cure and seal compound to remove all dust or loose particles. Follow the manufacturer's recommended coverage rate. If application at that rate in a single coat causes running, use tow lighter coats allowed to dry between coats.

**D Measurement**
The department will measure Pigmented Protective Surface Treatment 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 |
|---|---|---|
| 502.3210.S | Pigmented Protective Surface Treatment | SY |

Payment is full compensation for providing the compound; including surface preparation and cleaning.
502-050 (20141107)

## 18. Protective Surface Treatment Reseal, Item 502.3215.S.

**A Description**
This special provision describes resealing existing structures with protective surface treatment.

**B Materials**
Furnish a clear commercial protective surface treatment selected from the department's approved products list.

**C Construction**
Apply protective surface treatment to the entire top surface of the bridge deck; curb, including vertical face; median and sidewalk surfaces; and the inside faces and tops of concrete parapets.

Ensure that the concrete is surface-dry for a minimum of one day before application. Delay application if rain is expected, or protect from rain for up to 12 hours after application.

Ensure that the concrete is clean. Air blast immediately before applying the protective surface treatment to remove all dust or loose particles. Also ensure that application equipment is clean and functioning properly.

Use the manufacturer's recommended methods. Apply at the rate the manufacturer recommends unless that rate causes ponding.

Do not open the bridge to service until trafficked areas are dry enough to sustain traffic without causing damage to the treatment or creating a safety hazard.

**D Measurement**
The department will measure Protective Surface Treatment Reseal 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 |
|---|---|---|
| 502.3215.S | Protective Surface Treatment Reseal | SY |

Payment is full compensation for resealing, including surface preparation and cleaning.
502-055 (20080902)

## 19. Removing Bearings, B-15-4, Item 506.7050.S.01.

**A Description**
This special provision describes raising the girders and removing the existing bearings, as shown on the plans and as hereinafter provided.

**B (Vacant)**

**C Construction**
Raise the structure's girders and remove the existing bearings as shown in the plans

Obtain prior approval from the engineer for the method of jacking the girders and of supporting them as required.

**D Measurement**
The department will measure Removing Bearings B-15-4 by the unit for each bearing removed.

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 506.7050.S.01 | Removing Bearings, B-15-4 | Each |

Payment is full compensation for raising the bridge girders; and for removing the old bearings.

Cost of furnishing and installing the bearings will be paid for under separate bid items.
506-035 (20130615)

## 20. Polymer Overlay, Item 509.5100.S.

**A Description**
This special provision describes furnishing and applying two layers of a two-component polymer overlay system to the bridge decks shown on the plans. The minimum total thickness of the overlay system shall be ¼".

## B Materials

### B.1 General

Furnish materials specifically designed for use over concrete bridge decks. Furnish polymer liquid binders from the department's approved product list.

### B.2 Polymer Resin

The polymer resin base and hardener shall be composed of two-component, 100% solids, 100% reactive, thermosetting compound with the following properties:

| Property | Requirements | Test Method |
|---|---|---|
| Gel Time [A] | 15 - 45 minutes @ 73° to 75° F | ASTM C881 |
| Viscosity [A] | 7 - 70 poises | ASTM D2393, Brookfield RVT, Spindle No. 3, 20 rpm |
| Shore D Hardness [B] | 60-75 | ASTM D2240 |
| Absorption [B] | 1% maximum at 24 hr | ASTM D570 |
| Tensile Elongation [B] | 30% - 70% @ 7 days | ASTM D638 |
| Tensile Strength [B] | >2000 psi @ 7 days | ASTM D638 |
| Chloride Permeability [B] | <100 coulombs @ 28 days | AASHTO T277 |

[A] Uncured, mixed polymer binder
[B] Cured, mixed polymer binder

### B.3 Aggregates

Furnish natural or synthetic aggregates that have a proven record of performance in applications of this type. Furnish aggregates that are non-polishing, clean, free of surface moisture, fractured or angular in shape; free from silt, clay, asphalt, or other organic materials; and meet the following properties and gradation requirements:

Aggregate Properties:

| Property | Requirement | Test Method |
|---|---|---|
| Moisture Content* | ½ of the measured aggregate absorption, % | ASTM C566 |
| Hardness | ≥6.5 | Mohs Scale |
| Fractured Faces | 100% with at least 1 fractured face & 80% with at least 2 fractured faces of material retained on No.16 | ASTM 5821 |
| Absorption | ≤1% | ASTM C128 |

* Sampled and tested at the time of placement.

Gradation:

| Sieve Size | % Passing by Weight |
|---|---|
| No. 4 | 100 |
| No. 8 | 30 – 75 |
| No. 16 | 0 – 5 |
| No. 30 | 0 – 1 |

**B.4 Required Properties of Overlay System**

The required properties of the overlay system are listed in the table below:

| Property | Requirement [A] | Test Method |
|---|---|---|
| Minimum Compressive Strength at 8 Hrs. (psi) | 1,000 psi @ 8 hrs<br>5,000 psi @ 24 hrs | ASTM C 579 Method B, Modified [B] |
| Thermal Compatibility | No Delaminations | ASTM C 884 |
| Minimum Pull-off Strength | 250 psi @ 24 hrs | ACI 503R, Appendix A |

[A] Based on samples cured or aged and tested at 75°F

[B] Plastic inserts that will provide 2-inch by 2-inch cubes shall be placed in the oversized brass molds.

**B.5 Approval of Bridge Deck Polymer Overlay System**

A minimum of 20 working days prior to application, submit product data sheets and specifications from the manufacturer, and a certified test report to the engineer for approval. The engineer may request samples of the polymer and/or aggregate, prior to application, for the purpose of acceptance testing by the department.

For materials not pre-qualified, in addition to the above submittals, submit product history/reference projects and a certified test report from an independent testing laboratory showing compliance with the requirements of the specification.

The product history/reference projects consist of a minimum of 5 bridge/roadway locations where the proposed overlay system has been applied in Wisconsin or in locations with a similar climate - include contact names for the facility owner, current phone number or e-mail address, and a brief description of the project.

Product data sheets and specifications from the manufacture consists of literature from the manufacturer showing general instructions, application recommendations/methods, product properties, general instructions, or any other applicable information.

## C Construction

### C.1 General

Conduct a pre-installation conference with the manufacturer's representative prior to construction to establish procedures for maintaining optimum working conditions and coordination of work. Furnish the engineer a copy of the recommended procedures and apply the overlay system according to the manufacturer's instructions. The manufacturer's representative familiar with the overlay system installation procedures shall be present at all times during surface preparation and overlay placement to provide quality assurance that the work is being performed properly.

Store resin materials in their original containers in a dry area. Store and handle materials according to the manufacturer's recommendations. Store all aggregates in a dry environment and protect aggregates from contaminants on the job site.

### C.2 Deck Preparation

#### C.2.1. Deck Repair

Remove all asphaltic patches and unsound or disintegrated areas of the concrete decks as the plans show, or as the engineer directs. Work performed to repair the concrete deck will be paid for under other items. Ensure that products used for deck patching are compatible with the polymer overlay system.

NOTE: Some polymer systems require concrete patch material to be in place a minimum of 28-days before overlaying - contact polymer manufacturer before completing deck patching/repair.

#### C.2.2 Surface Preparation

Determine an acceptable shotblasting machine operation (size of shot, flow of shot, forward speed, and/or number of passes) that provides a surface a profile meeting CSP 5 according to the International Concrete Repair Institute Technical Guideline No. 03732. If the engineer requires additional verification of the surface preparation, test the tensile bond strength according to ACI 503R, Appendix A of the ACI *Manual of Concrete Practice*. The surface preparation will be considered acceptable if the tensile bond strength is greater than or equal to 250 psi or the failure area at a depth of ¼ inches or more is greater than 50% of the test area. Continue adjustment of the shotblasting machine and necessary testing until the surface is acceptable to the engineer or a passing test result is obtained.

Prepare the entire deck using the final accepted adjustments to the shotblasting machine as determined above. Thoroughly blast clean with hand-held equipment any areas inaccessible by the shotblasting equipment. Do not perform surface preparation more than 24 hours prior to the application of the overlay system.

Prepare the vertical concrete surfaces adjacent to the deck a minimum of 2" above the overlay according to SSPC-SP 13 by sand blasting, using wire wheels, or other approved method.

Just prior to overlay placement, clean all dust, debris, and concrete fines from the prepared surfaces including the vertical surfaces with compressed air. When using compressed air, the air stream must be free of oil. Any grease, oil, or other foreign matter that rests on or has absorbed into the concrete shall be removed completely. If any prepared surfaces (including the first layer of the polymer overlay) are exposed to rain or dew, lightly sandblast (breeze blast) the exposed surfaces.

Protect drains, expansion joints, access hatches, or other appurtenances on the deck from damage by the shot and sand blasting operations and from materials adhering and entering. Tape or form all construction joints to provide a clean straight edge.

Create a transitional area approaching transverse expansion joints and ends of the deck using the shotblasting machine or other approved method. Remove 5/16" to 3/8" of concrete adjacent to the joint or end of deck and taper a distance of 3 feet.

The engineer may consider alternate surface preparation methods per the overlay system manufacture's recommendations. The engineer will approve the final surface profile and deck cleanliness prior to the contractor placing the polymer overlay.

**C.3 Application of the Overlay**

Perform the handling and mixing of the polymer resin and hardening agent in a safe manner to achieve the desired results according to the manufacturer's instructions. Do not apply the overlay system if any of the following exists:

a. Ambient air temperature is below 50$^{o}$F;
b. Deck temperature is below 50$^{o}$F;
c. Moisture content in the deck exceeds 4.5% when measured by an electronic moisture meter or shows visible moisture after 2 hours when measured in accordance with ASTM D4263;
d. Rain is forecasted during the minimum curing periods listed under C.5;
e. Materials component temperatures below 50$^{o}$F or above 99$^{o}$F;
f. Concrete age is less than 28 days unless approved by the engineer.
g. The deck temperature exceeds 100$^{o}$F.
h. If the gel time is 10 minutes or less at the predicted high air temperature for the day.

After the deck has been shotblasted or during the overlay curing period, only necessary surface preparation and overlay application equipment will be allowed on the deck. Begin overlay placement as soon as possible after surface preparation operations.

The polymer overlay shall consist of a two-course application of polymer and aggregate. Each of the two courses shall consist of a layer of polymer covered with a layer of aggregate in sufficient quantity to completely cover the polymer. Apply the polymer and aggregate according to the manufacturer's requirements. Apply the overlay using equipment designed for this purpose. The application machine shall feature positive displacement volumetric metering and be capable of storing and mixing the polymer resins at the proper mix ratio. Disperse the aggregate using a standard chip spreader or equivalent

machine that can provide a uniform, consistent coverage of aggregate. First course applications that do not receive enough aggregate before the polymer gels shall be removed and replaced. A second course applied with insufficient aggregate may be left in place, but will require additional applications before opening to traffic.

After completion of each course, cure the overlay according to the manufacturer's instructions. Follow the minimum cure times listed under C.5 or as prescribed by the manufacturer. Remove the excess aggregate from the surface treatment by sweeping, blowing, or vacuuming without tearing or damaging the surface; the material may be re-used if approved by the engineer and manufacturer. Apply all courses of the overlay system before opening the area to traffic. Do not allow traffic on the treated area until directed by the engineer.

After the first layer of coating has cured to the point where the aggregate cannot be pulled out, apply the second layer. Prior to applying the second layer, broom and blow off the first layer with compressed air to remove all loose excess aggregate.

Prior to opening to traffic, clean expansion joints and joint seals of all debris and polymer. If required by the engineer, a minimum of 3 days following opening to traffic, remove loosened aggregates from the deck, expansion joints, and approach pavement.

**C.4 Application Rates**

Apply the polymer overlay in two separate courses in accordance with the manufacturer's instructions, but not less than the following rate of application.

| Course | Minimum Polymer Rate [A] (GAL/100 SF) | Aggregate [B] (LBS/SY) |
|---|---|---|
| 1 | 2.5 | 10+ |
| 2 | 5.0 | 14+ |

[A] The minimum total applications rate is 7.5 GAL/100 SF.

[B] Application of aggregate shall be of sufficient quantity to completely cover the polymer.

**C.5 Minimum Curing Periods**

As a minimum, cure the coating as follows:

| | Average temperature of deck, polymer and aggregate components in °F | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Course** | **50-54** | **55-59** | **60-64** | **65-69** | **70-74** | **75-79** | **80-84** | **85-99** |
| 1 | 6 hrs. | 5 hrs. | 4 hrs. | 3 hrs. | 2.5 hrs | 2 hrs | 1.5 hrs. | 1 hr. |
| 2 | 8 hrs. | 6.5 hrs. | 6.5 hrs. | 5 hrs. | 4 hrs. | 3 hrs. | 3 hrs. | 3 hrs. |

**C.6 Repair of Polymer Overlay**

Repair all areas of unbonded, uncured, or damaged polymer overlay for no additional compensation. Submit repair procedures from the manufacturer to the engineer for approval. Absent a manufacturer's repair procedures and with the approval of the engineer, complete repairs according to the following: Saw cut the limits of the area to the top of the

concrete; remove the overlay by scarifying, grinding, or other approved methods; shot blast or sand blast and air blast the concrete prior to placement of polymer overlay; and place the polymer overlay according to section C.3.

**D Measurement**
The department will measure Polymer Overlay in area 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 |
|---|---|---|
| 509.5100.S | Polymer Overlay | SY |

Payment is full compensation for preparing the surface; for tensile bond testing; for providing the overlay; for cleanup; and for sweeping/vacuuming and disposing of excess materials. Concrete Deck Repair will be paid for separately.
509-030 (20130615)

## 21. Removing Concrete Masonry Deck Overlay B-15-5, Item 509.9005.S.01; B-15-6, Item 509.9005.S.02.

**A Description**
Remove the concrete masonry deck overlay by milling the entire bridge deck, according to standard spec 204, the plans, and as hereinafter provided.

**B (Vacant)**

**C Construction**
**C.1 Milling**
Use a self-propelled milling machine that is specially designed and constructed for milling bridge decks. It shall mill without tearing or gouging the concrete masonry underlying the deck overlay. The machine shall consist of a cutting drum with carbide or diamond tip teeth. Space the teeth on the drum to mill a surface finish that is acceptable to the engineer.

Shroud the machine to prevent discharge of any loosened material into adjacent work areas or live traffic lanes. Equip the machine with electronic devices that provide accurate depth, grade and slope control, and an acceptable dust control system.

Perform milling in a manner that precludes damage to the bridge floor and results in a uniform textured finish that:

- Is free of sharp protrusions;
- Has uniform transverse grooves that measure up to ¼-inch vertically and transversely; and
- If applicable, is acceptable to the manufacturer of the sheet waterproof membrane.

Windrowing and storing of the removed milled concrete masonry on the bridge is only permitted in connection with the continuous removal and pick-up operation. During nonworking hours, clear the bridge of all materials and equipment.

**C.2 Cleaning**
Blast-clean the entire surface of the deck, the vertical faces of curbs, sidewalks and parapets to the depth of the adjoining concrete overlay. Blast-clean all exposed existing reinforcing steel.

Clean the surface on which the new concrete will be placed to remove all loose particles and dust by either brooming and water pressure using a high-pressure nozzle, or by water and air pressure. Use water for cleaning that conforms to specifications for water under standard spec 501.2.4.

The removed concrete masonry shall become the property of the contractor; properly dispose of it according to standard spec 204.

**D Measurement**
The department will measure Removing Concrete Masonry Deck Overlay in area 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 |
|---|---|---|
| 509.9005.S.01 | Removing Concrete Masonry Deck Overlay B-15-5 | SY |
| 509.9005.S.02 | Removing Concrete Masonry Deck Overlay B-15-6 | SY |

Payment is full compensation for removing the concrete masonry; cleaning the concrete surfaces; and for properly disposing of all materials.
509-005 (20100709)

## 22. Epoxy Injection Crack Repair, Item 509.9025.S; Cored Holes 2-Inch Diameter, Item 509.9026.S.

**A Description**
Repair structural cracks in the pier using the epoxy injection method, and core 2-inch diameter core samples from a crack in the concrete structure that has been repaired using the epoxy injection method, according to standard spec 509, as shown on the plans, as directed by the engineer, and as hereinafter provided.

**B Materials**
Furnish epoxy injection material that is insensitive to the presence of water and is composed of a two-component epoxy resin designed specifically for structurally re-bonding cracks in Portland cement concrete. The epoxy injection material shall conform to the following physical properties at 77 degrees F:

| | Unmixed | | Mixed |
|---|---|---|---|
| | Component A (Resin) | Component B (Catalyst) | |
| Weight per gallon, lbs | 9.15 ±0.1 | 8.2 ±0.1 | 9.15 ±0.1 |
| Viscosity, cps | 500-700 | 120-160 | 275-350 |
| Specific Gravity, g/cc | 1.128 ±0.012 | 0.984 ±0.012 | 1.099 ±0.012 |
| Color Straw | Straw | Straw | Straw |
| Shelf Life (closed containers) | 2 years | 2 years | --- |
| Solids by Weight | --- | --- | 100% |
| Pot Life (200 gram mass) | --- | --- | 12-15 mins. |
| Mixing Ratio (by weight) | 80% | 20% | --- |
| Mixing Ratio (by volume) | 78% | 22% | --- |
| Bond Strength | --- | --- | 2000 psi min |
| Shrinkage Resistance | --- | --- | ASTM C883 |
| Thermal Compatibility | --- | --- | ASTM C884 |

Furnish surface seal material for confining the injected epoxy resin in the cracks that meets the following requirements:

- Adequate strength to hold the injection fittings firmly in place to resist injection pressures and prevent leakage during injection
- Non-sag consistency
- Insensitive to the presence of water
- Controlled cure time
- Two-component epoxy resin
- 100% solids by weight
- Applicable to wet surfaces
- Viscosity should be paste

## C Construction

### C.1 Injection Equipment

Use equipment to meter and mix the two-epoxy resin components and to inject the mixture into the cracks. The equipment shall be portable and have positive displacement type pumps equipped with an interlock to provide positive ration control of exact proportions of the two components at the nozzle. Use electric or air powered pumps that provide in-line metering and mixing.

Use injection equipment that has automatic pressure control capable of discharging the mixture at any present pressure up to 160 psi (±5 psi), and is equipped with a manual pressure control override.

The equipment shall have the capability of maintaining the volume ratio for the mixture prescribed by the manufacturer of the epoxy resin material within a tolerance of ±5% by volume at any discharge pressure up to 160 psi.

The injection equipment shall be equipped with sensors on both the Component A and B reservoirs that will automatically stop the machine when only one component is being pumped to the mixing head.

**C.2 Surface Area Preparation**

Clean the surface areas adjacent to cracks of all dirt, dust, grease, oil, efflorescence, or other foreign matter, which may be detrimental to adhesion of the surface seal material. Acids and corrosives will not be permitted for cleaning.

Install injection ports along the cracks on both faces of the pier at intervals of 4 to 10 inches, or as appropriate to accomplish full penetration of the injection resin. Center the injection ports over the cracks and secure in place using surface seal material. Where possible, install the injection ports over the widest areas of the cracks.

Apply the surface seal material to the face of the crack between the entry ports. For known through cracks, apply the surface seal material to both faces of the member. Before proceeding with the injection operation, allow sufficient time to elapse for the surface seal material to gain adequate strength.

**C.3 Epoxy Injection**

Install the epoxy injection resin according to the manufacturer's instructions.

During installation, in general, limit pressures to 35 psi at the point of entry into the crack.

On vertical cracks, start the injection at the lowest point and continue upward along the crack. While injecting, resin should flow to and out of the next higher port. When this flow is established, cap the lower port and continue the injection until all ports have been injected and flow has been established between them.

On horizontal cracks, follow the same procedures used for vertical cracks; start the injection at one end and continue the injection in succession along the crack until all ports have been injected and flow has been established between them.

**C.4 Finishing and Clean-Up**

When cracks are completely filled, cure the epoxy resin for a sufficient length of time so that when the surface seal is removed, there is no draining or runback of the epoxy material from the cracks. Grind, or use other appropriate method, to remove surface seal material, excess epoxy material, and injection ports. No epoxy material shall extend beyond the plane of the surfaces of the in-situ concrete.

**C.5 Core Sampling**

To determine if the crack injection is complete, obtain two 2-inch diameter core samples from the repaired pier. Take the cores to the depth of the element or at least 12 inches. Take the cores at locations selected by the engineer. The engineer will have the option of increasing or decreasing the number of cores taken.

The injection shall be considered complete if more than 90% of the crack void, to 12 inches deep, is filled with the epoxy resin in each of the samples taken. If the injection is incomplete, re-injection and additional cores may be required.

Repair the core holes left in the member using one of the two following methods:

1. Fill core holes with an epoxy mortar consisting of one part epoxy injection resin to four parts clean, dry, bagged fine aggregate mixed by volume. Match the finish repair to the surrounding surface.
2. Fill core holes with an epoxy mortar consisting of one part epoxy gel to one part clean, dry, bagged fine aggregate mixed by volume. Match the finish repair to the surrounding surface.

**D Measurement**

The department will measure Epoxy Injection Crack Repair in length by the linear foot crack, acceptably repaired.

The department will measure Cored Holes 2-Inch Diameter as each individual cored hole as approved by the engineer and acceptably completed. Additional cores taken as required by the engineer after re-injection (due to incomplete injection) will not be measured for payment. Additional cores taken by the contractor that are not ordered by the engineer 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 |
|---|---|---|
| 509.9025.S | Epoxy Injection Crack Repair | LF |
| 509.9026.S | Cored Holes 2-Inch Diameter | Each |

Payment is full compensation for furnishing and placing the epoxy sealant, including any cleaning before and after injection; coring samples of the work; inspecting the core samples; and for repairing the core holes left in the member.

509-025 (20100709)

## 23. Structure Repainting General.

**A General**

**A.1 Inspection**

On all structures in this contract, notify the engineer of any missing or broken bolts or nuts, any missing or broken rivets, or of any cracks or flaws in the steel members while cleaning or painting.

**A.2 Date Painted**

At the completion of all painting work, stencil in black paint or contrasting color paint the date of painting the bridge. The numbers shall be three inches (75 mm) in height and shall show the month and year in which the painting was completed: e.g., 11-95 (November 1995). On each bridge painted, stencil the date at two locations. On truss bridges, stencil the

date on the cover plates of end posts near and above the top of the railings at the oncoming traffic end. On steel girder bridges, stencil the date on the **inside** of the outside stringers at the abutments. The date on grade separation bridges shall be readable when going under the structure or at some equally visible surface near the ends of the bridge, as designated by the engineer.

**A.3 Graffiti Removal**
Remove any graffiti on concrete abutments, piers, pier caps, parapet railings, slope paving or any other location at the direction of the engineer. Use a brush sandblast to remove graffiti.

The above work will not be measured and paid for separately, but will be considered incidental to other items in the contract.

**B (Vacant)**

**C Construction**
**C.1 Repainting Methods**
Do not perform blasting, cleaning and painting on days of high winds. Prevailing winds in excess of 15 mph (25 km/hr) shall be considered high winds.

Place the final field coat of paint on the exterior of the exterior beams as a continuous painting operation. Stop at splices, vertical stiffeners or other appropriate locations so that lap marks are not evident or noticeable.

Completely clean and remove spent abrasive and other waste materials resulting from the contractor's operation from bridge deck surfaces, gutter lines, drains, curbs, bridge seats, pier caps, slope paving, roadway below, and all structural members and assemblies.

**C.2 Inspection**
*Supplement standard spec 105.9 as follows:*

Furnish, erect and move scaffolding and other appropriate equipment to permit the inspector the opportunity to closely observe all affected surfaces. The scaffolding, with appropriate safety devices, shall meet the approval of the engineer.
517-005 (20140630)

## 24. Painting Epoxy System B-15-4.

**A Description**
This special provision describes work that shall be 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 list. 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 applied coats, and the recommended procedures for coating galvanized bolts, nuts, and washers.

**C Construction**
Modify the fourth paragraph of standard spec 517.3.1.7.2 to read:

On all other areas including the outside surfaces of splice plates, the minimum dry film thickness above the surface profile for the primer coat shall be 3.0 mils (0.076 mm).
517-041 (20040820)

## 25. Structure Repainting Organic Zinc Rich System, B-15-4, Item 517.1000.S.01.

**A Description**
This special provision describes cleaning and painting the metal surfaces as described below in accordance to the manufacturer's recommendations and as hereinafter revised or supplemented.

**A.1 Areas to be Cleaned and Painted**
1. Structure B-15-4 at 1,300 SF, Machinery room floor top surfaces.

Areas are approximate and given for informational purposes only.

**B Materials**
**B.1 Coating System**
Furnish a complete coating system from the department's approved product list. The color for the vinyl finish coating material shall match the color number shown below in accordance to Federal Standard Number 595B, as printed in 1989. Before any coating is applied, supply the engineer with the product data sheets. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, and the minimum drying time between coats.

Finish Color: #25240 Blue

The color of the organic primer must be such that a definite contrast between it and the color of the blasted steel is readily apparent. There shall be a color contrast between all subsequent coats for the paint system. Submit color samples to the engineer for approval.

These coatings are intended to be applied by spraying.

## C Construction

### C.1 Surface Preparation

Prior to blast cleaning, solvent clean areas of oil and grease on surfaces to be coated in accordance to SSPC-SP1. A No. 10 Near White Blast Cleaning according to Steel Structures Painting Council Specification Ten (Latest Edition) will be required on all metal surfaces to be painted. All metal surfaces receiving a No. 10 blast will be primed the same day or reblasted before application.

Provide abrasives used for blast cleaning that are free from contaminants and consist of clean dry sand, mineral grit or manufactured grit. The abrasive shall have a gradation such that it will produce a uniform profile between .025 mm to .064 mm on the steel surface, as measured with extra coarse Testex Replica Tape. Air pressure for abrasive blasting, measured at the nozzle, shall be 620 kPa minimum.

Remove by grinding all fins, tears, slivers, and burred or sharp edges that are present on any steel member, or that appear during the blasting operation, and re-blast the area to give a .025 mm to .064 mm surface profile.

Remove all abrasive and paint residue from steel surfaces with a good commercial grade vacuum cleaner equipped with a brush-type cleaning tool, or by double blowing. If the double blowing method is used and determined by the engineer not to be effective, then vacuum or hand wipe with a clean soft cloth after the double blowing operations are completed the exposed surfaces of all structural steel, including flanges, web, stiffeners, splice plates, diaphragms, hangers, etc. The air line used for surface preparation and blowing the steel clean shall have an in-line water trap and the air shall be free of oil and water as it leaves the air line.

Take care to protect freshly coated surfaces from subsequent blast cleaning operations. Thoroughly wire brush with a non-rusting tool blast-damaged primed surfaces or if visible rust occurs, re-blast to a near white condition. Clean and re-prime the brushed or blast-cleaned surfaces within the time recommended by the manufacturer.

### C.2 Coating Application

Apply paint in accordance to the manufacturer’s recommendations in a neat workmanlike manner. Apply paint by airless spray.

The engineer may allow the use of conventional spray equipment after satisfactory demonstration by the contractor of the proper technique and handling of that equipment.

Mix the paint or coatings in accordance to the manufacturer’s directions to a smooth lump-free consistency. After mixing and during application, continuously stir the paint or coating under constant slow speed agitation by use of a jiffy mixer.

Prior to applying the prime coat, stripe with primer by either brush or spray application all edges, rivet and bolt heads, nuts and washers.

Remove all dry spray by vacuuming, wiping or sanding if necessary.

If the application of the coating at the required thickness in one coat produces runs, bubbles, or sags, apply a "mist-coating" in multiple passes of the spray gun – the passes separated by several minutes. Where excessive coating thickness produces "mud-cracking", remove such coating back to soundly bonded coating and recoat the area to the required thickness.

The resultant paint film shall be smooth and uniform without skips or areas of excessive paint.

The coating is supplied for normal use without thinning. If in cool weather it is necessary to thin the coating for proper application, perform the thinning in accordance to the manufacturer's recommendations.

During surface preparation and coating application, the ambient and steel temperature shall be between 39 and 100 degrees F. The steel temperature shall be at least 5 degrees F above the dew point temperature. (This requires the steel to be dry and free of any condensation regardless of the actual temperature of the steel). The relative humidity shall not exceed 85%.

Paint thickness shall be as follows:

| Dry Film Thickness | |
|---|---|
| Primer 1 | .025 mm min. above surface profile |
| Primer 2 | .076 mm min. |
| Tie or Intermediate Coat | .008 mm min. |
| Top Coat | .076 mm |

Apply the prime coat in two applications. The first application shall cover the surface profile of the blasted steel. The second application shall be the main application after the surface profile is accounted for. The total dry film thickness of the combination of the two prime coats shall be .10 mm minimum. Tint the two prime coats as recommended by the manufacturer to contrast from each other and from the blasted steel surface. Time to recoat shall be according to the manufacturer's recommendations.

Apply the tie or intermediate coat at the rate specified by the manufacturer. Allow this coat to cure a minimum of two hours before the top coat is applied. The total dry film thickness of the combination tie or intermediate, and top coat shall be .089 mm. Apply the vinyl top coat within 72 hours after application of the prime coat.

The dry film thickness will 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. Dry film thickness in each area measured will be based on an average of three gage readings, after calibration of the gage to account for surface profile of the bare steel as a result of surface preparation.

**D Measurement**
The department will measure Structure Repainting Organic Zinc Rich System (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 |
|---|---|---|
| 517.1000.S.01 | Structure Repainting Organic Zinc Rich System, B-15-4 | LS |

Payment is full compensation for preparing and cleaning the designated surfaces; and for furnishing and applying the paint.
517-025 (20040820)

## 26. Structure Overcoating Cleaning and Priming B-15-4, Item 517.3000.S.01.

**A Description**
This special provision describes cleaning and painting with two or three coats of paint the metal surfaces as hereinafter provided.

**A.1 Areas to be Cleaned and Painted**
Structure B-15-4
1. Three Coat Area:
   840 SF Stringer Top Flanges with SP11 Cleaning
   1,720 SF machinery supports and machinery with SP 2 cleaning.
   2,560 SF total three-coat area.

**B (Vacant)**

**C Construction**
**C.1 Surface Preparation**
Prior to overcoating or hand tool cleaning, solvent clean all surfaces to be coated in accordance to SSPC-SP1. A SSPC-SP 2 hand Tool Cleaning according to Steel Structures Painting Council Specification 2 will be required on all metal surfaces to be painted with a three-coat system. Prime the same day, or re-clean before application, all metal surfaces receiving a No. 2 cleaning.

Remove all abrasive or paint residue from steel surfaces with a High Efficiency Particulate Abatement (HEPA-VAC) vacuum cleaner equipped with a brush-type cleaning tool, or by double blowing. If the double blowing method is used, vacuum the exposed top surfaces of all structural steel, including flanges, longitudinal stiffeners, splices, plates, and hangers, after the double blowing operations are completed. The air line used for blowing the steel clean shall have an inline water trap and the air shall be free of oil and water as it leaves the air line.

Take care to protect freshly coated surfaces from subsequent cleaning operations. Thoroughly wire brush damaged primed surfaces with a non-rusting tool. Clean and re-prime the brushed surfaces within the time recommended by the manufacturer.

**C.2 Painting**
Paint by applying two or three coats of an approved coating system as specified herein to the surfaces as described in A.1 from the department's approved products list.

**C.3 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 steel temperature shall be between 39 and 100 degrees F. The steel 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 Structure Overcoating Cleaning and Priming (Structure), completed in accordance to the contract and accepted, as a single complete unit of work.

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 517.3000.S.01 | Structure Overcoating Cleaning and Priming B-15-4 | LS |

Payment is full compensation for preparing and cleaning the designated surfaces; and for furnishing and applying the paint.
517-036 (20080501)

## 27. Containment and Collection of Waste Materials B-15-4, Item 517.4000.S.01.

**A Description**
This special provision describes furnishing and erecting tarpaulins to contain, collect and store the spent material from surface preparation of steel surfaces, collecting such spent material, and labeling and storing the spent material in waste containers in accordance to the contract and as hereinafter provided.

**B Materials**
Provide 5-gallon lidded plastic containers for containing the spent material.

**C Construction**
Erect tarpaulins or other materials to collect all of the spent material from power tool cleaning. Consider and treat all spent material as hazardous waste because it contains lead.

Collect and store all waste material collected by this operation at the bridge site for disposal. Collect and store all waste materials at the end of each workday or more often if needed. Store materials in 5-gallon lidded plastic containers.

Label each container with the date the first waste was placed in the container and the words "Hazardous Waste – EPA Waste Code D008." Lock and secure all containers at the end of each workday. Keep the containers covered at all times except to add or remove waste material. Store the containers in an accessible and secured area, not located in a storm water runoff course, flood plain or exposed to standing water.

Collect the spent debris by vacuuming, shoveling, sweeping, or by channeling it directly to disposal containers. The enclosure shall be thoroughly cleaned at the end of each work day.

**D Measurement**
The department will measure Containment and Collection of Waste Materials (Structure), completed in accordance to the contract and accepted, as a single complete unit of work for each structure designated 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 |
|---|---|---|
| 517.4000.S.01 | Containment and Collection of Waste Materials B-15-4 | LS |

Payment is full compensation for designing, erecting, operating, maintaining and disassembling the containment devices; collecting, labeling and storing spent materials in appropriate containers.
517-037 (20080902)

## 28. Labeling and Disposal of Waste Material.

The EPA ID number for Structure B-15-4 is WIR000142901.

Presently, the state has an exclusive mandatory use contract with a private waste management contractor to transport and dispose of hazardous waste.

The state's waste management contractor shall furnish and deliver appropriate hazardous waste containers and site-specific labels to each bridge site. The provided containers shall be placed at pre-selected drop-off and pick-up points at each bridge site, and these

locations shall be determined at the preconstruction conference. The custody of the containers and labels shall be the responsibility of the painting contractor while they are at the job site.

Report all reportable spills and discharges in accordance to the contingency plan.

Labels are site-specific. Check the labels to ensure that the project ID, structure number, and EPA ID match the structure generating the waste. Apply a label to each drum when it is opened for the first time. Fill in the date on the label the first day material is accumulated in the drum. The following page is an example of a properly filled-in label.

During paint removal operations, continuously monitor and notify the project inspector of the status of waste generation and quantity stored so that timely disposal can be arranged.
517-055 (20100709)

HAZARDOUS WASTE

WW-5257580999-001-01-0

# STORAGE LABEL

DOT SHIPPING DESCRIPTION

RQ, HAZARDOUS WASTE, SOLID, n.o.s.,
(LEAD), 9, NA3077, III, (D008)

Enter the date that waste materials were first placed into the container

EPA CODE: E/D008 STATE: S
WIP#: 391498
WIP DESC: BRIDGE SAND WITH LEAD

DATE ACCUMULATED: 07/01/2005

HAZARDOUS WASTE – FEDERAL LAW PROHIBITS IMPROPER DISPOSAL IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.

WISC DOT BRIDGE # B-29-53/54
I-94 OVER CTH H
PROJECT # 5882-03-70
CAMP DOUGLAS, WI 54618 (608) 963-0871

GENERATOR EPA ID
WIR000121103

Project ID Number on label must match the Project Number assigned by the WIDOT

Bridge Number and Address on label must match specific bridge from which waste was generated.

EPA ID Number on label is specific to the bridge from which the waste is generated.

## 29. Negative Pressure Containment and Collection of Waste Materials, B-15-4, Item 517.4500.S.01.

### A Description

This special provision describes providing a dust collector to maintain a negative air pressure in the enclosure; furnishing and erecting enclosures as required to contain, collect and store waste material resulting from the preparation of steel surfaces for painting, and repainting, including collection of such waste material, and the labeling and storage of waste material in approved hazardous waste containers, all as hereinafter provided.

### B (Vacant)

### C Construction

Erect an enclosure to completely enclose (surround) the blasting operations. The ground, slope paving, or roadway cannot be used as the bottom of the enclosure unless covered by approved containment materials. So that there are no visible emissions to the air or ground or water, design, erect, operate, maintain and disassemble the enclosures in such a manner to effectively contain and collect dust and waste materials resulting from surface preparation and paint over spray. Suspend all enclosures over water from the structure or as approved by the engineer.

Construct the enclosure of flexible materials such as tarpaulins or of rigid materials such as plywood, or of a combination of flexible and rigid materials and meet SSPC Guide 6 requirements with Level 1 emissions. Systems manufactured and provided by Eagle Industries, Detroit Tarps, or equal, are preferred. The tarpaulins shall be a non-permeable material, either as part of the tarp system or have a separate non-permeable lining. Maintain all materials free of tears, cuts or holes. The vertical sides of the enclosure shall extend from the bottom of the deck down to the level of the covered work platform or covered barge where used for structures over water, and shall be fastened securely to those levels to prevent the wind from lifting them. Bulkheads are required between beams to enclose the blasting area as approved by the engineer. Where bulkheads are required, construct them of plywood and properly seal them. To prevent spent materials and paint over spray from escaping the enclosed area, overlap and fasten together all seams. Place groundcovers under all equipment prior to operations or as approved by the engineer.

To allow proper cleaning, inspection of structures or equipment, and painting, provide safe adequate artificial lighting in areas where natural light is inadequate.

Provide a dust collector so that there are no visible emissions outside of the enclosure and so that a negative air pressure inside the enclosure is maintained. The dust collector shall be sized to maintain the minimum air flow based on the cross-sectional area of the enclosure.

A combination of positive air input and negative air pressure may be needed to maintain the minimum airflow within the enclosure.

Filter all air exhausted from the enclosure to create a negative pressure within the enclosure so as to remove all hazardous and other particulate matter.

After all debris has been removed and all painting has been approved in the containment area is complete, remove containment in accordance with SSPC Guide 6.

As a safety factor for structures over water, provide for scum control. Provide a plan for corrective measures to mitigate scum forming and list the procedures, labor and equipment needed to assure compliance. Effectively contain the scum that forms on the water and does not sink in place from moving upstream or downstream by the use of floating boom devices.

If in the use of floating boom devices the scum tends to collect at the devices, contain, collect, store the scum, and do not allow it to travel upstream or downstream beyond the devices. Remove the scum at least once a day or more often if needed.

Collect and store at the bridge site for disposal all waste material or scum collected by this operation, or any that may have fallen onto the ground tarps. Collect and store all waste material and scum at the end of each workday or more often if needed. Storage shall be in provided hazardous waste containers. Label each container as it is filled, using the labels provided by the Hazardous Waste Disposal contractor. Check the label and ensure that the project ID, bridge number and EPA ID match the structure. Fill in the generation date when the first material is placed in the container. Secure all containers at the end of each workday. Keep the containers covered at all times except to add or remove waste material. Store the containers in an accessible and secured area, not located in a storm water runoff course, flood plain, or exposed to standing water.

In a separate operation, recover the recyclable abrasive for future application, and collect the paint and/or corrosion particles for disposal.

**D Measurement**

The department will measure Negative Pressure Containment and Collection of Waste Materials (Structure) as a single complete lump sum unit of work for each structure designated in the contract, completed in accordance with 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 |
|---|---|---|
| 517.4500.S.01 | Negative Pressure Containment and Collection of Waste Materials B-15-4 | LS |

Payment is full compensation for designing, erecting, operating, maintaining, and disassembling the containment devices; providing negative pressure exhaust ventilation; collecting, labeling, and for storing spent materials in provided hazardous waste containers.
517-065 (20140630)

## 30. Portable Decontamination Facility, Item 517.6001.S.

### A Description

This special provision describes furnishing and maintaining weekly, or more often if needed, a single unit portable decontamination facility as hereinafter provided.

### B Materials

Supply and operate all equipment in accordance with OSHA.

Supply adequate heating equipment with the necessary fuel to maintain a minimum temperature of 68° F in the facility.

The portable decontamination facility shall consist of a separate "Dirty Room", "Shower Room" and "Clean Room". The facility shall be constructed so as to permit use by either sex. The facility shall have adequate ventilation.

The "Dirty Room" shall have appropriately marked containers for disposable garments, clothing that requires laundering, worker shoes, and any other related equipment. Each container shall be lined with poly bags for transporting clothing, or for disposal. Benches shall be provided for personnel.

The "Shower Room" shall include self-contained individual showering stalls that are stable and well secured to the facility. Provide showers with a continuous supply of potable hot and cold water. The wastewater must be retained for filtration, treatment, and/or for proper disposal.

The "Clean Room" shall be equipped with secure storage facilities for street clothes and separate storage facilities for protective clothing. The lockers shall be sized to store clothing, valuables and other personal belongings for each worker. Benches shall be provided for personnel.

Supply a separate hand wash facility, either attached to the decontamination facility or outside the containment.

### C Construction

Properly contain, store, and dispose of the wastewater.

### D Measurement

The department will measure Portable Decontamination Facility 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 |
|---|---|---|
| 517.6001.S | Portable Decontamination Facility | Each |

Payment is full compensation for furnishing and maintaining a portable decontamination facility.
517-060 (20140630)

## 31. Traffic Control.

Perform this work in accordance to the requirements of standard spec 643, and as shown on the plans or as approved by the engineer, except as hereinafter modified.

Submit to engineer for approval a detailed traffic control plan for any changes to the proposed traffic control detail as shown on the plans. Submit this plan ten days prior to the preconstruction conference.

Provide 24 hours-a-day availability of equipment and forces to expeditiously restore lights, signs, or other traffic control devices that are damaged or disturbed. The cost to maintain and restore the above items shall be considered incidental to the item as bid and no additional payment will be made therefore.

Supply the name and telephone number of a local contact person for traffic control repair before starting work.

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

The turning of traffic control devices when not in use to obscure the message will not be allowed under this contract.

Obtain prior approval from the engineer for the location of egress and ingress for construction vehicles to prosecute the work.

Cover existing signs which conflict with traffic control as directed by the engineer.

Conduct operations in such a manner that causes the least interference and inconvenience to the free flow of vehicles on the roadways. This includes the following:

a. Do not park or store any vehicle, piece of equipment, or construction materials on the right-of-way without approval of the engineer.

b. All construction vehicles and equipment entering or leaving live traffic lanes shall yield to through traffic.

c. Equip all vehicles and equipment entering or leaving the live traffic lanes with a hazard identification beam (flashing yellow signal) capable of being visible on a sunny day when viewed without the sun directly on or behind the device from a

distance of 1000 feet. Activate the beam when merging into or exiting a live traffic lane.

Do not disturb, remove or obliterate any traffic control signs, advisory signs, shoulder delineators or beam guard in place along the traveled roadways without the approval of the engineer. Immediately repair or replace any damage done to the above during the construction operations at contractor expense.

The traffic requirements are subject to change at the direction of the engineer in the event of an emergency.
(NER09-1119)

## 32. PPC Beam End Block Repair, Item SPV.0060.01.

### A Description

This special provision describes removing deteriorated concrete from ends of precast pretensioned concrete beams at locations designated in the plans and forming, placing and curing blocks of latex modified portland cement concrete around those areas secured to existing concrete by drilled and epoxied reinforcing steel and masonry anchors.

### B Materials

Provide concrete conforming to the requirements for prestressed I-type girders as specified in standard spec 503 except as modified for the following:

- Include a latex admixture in a proportion of 143 pounds per cubic yard of concrete.
- Use coarse aggregate with a minimum of 95 percent passing the 3/8 inch sieve.
- Use coarse aggregate that is 100 percent crushed material.

Use a latex admixture for the concrete conforming to the following requirements:

- A formulated latex admixture for modifying concrete mixtures that is a non-toxic, film forming, polymeric emulsion to which all stabilizers are added at the point of manufacture. Latex admixtures must be homogeneous and uniform in composition. Provide white latex styrene butadiene modifier having between 46.0 percent and 49.0 percent solids, a pH as shipped between 8.5 and 11.0, that does not contain any chlorides and has a shelf life of at least two years.
- Submit a manufacturer's certification that the latex emulsion meets the requirements of FHWA Research Report RD-78-35, Chapter VI. Provide a certificate that includes the date of manufacture of the latex admixture, batch or lot number, quantity represented, manufacturer's name, and the location of the manufacturing plant. Sample and test the latex emulsion in accordance to RD-78-35, Chapter VII, Certification Program.
- Package and store the latex admixture in containers and storage facilities which will protect the material from freezing and from temperatures above 85° F. Do not store the material in direct sunlight and shade when stored outside of buildings during moderate temperatures.

**C Construction**

Perform the work in accordance to the requirements of standard spec 509.3.7 and as specified herein. Remove all deteriorated concrete to sound material. Take necessary precautions while removing concrete to preserve all existing reinforcing steel and prestressing strands. At locations where reinforcing steel is exposed due to deteriorated and/or spalled concrete, remove concrete to a minimum depth of 1/2" inch behind the steel. Do not remove concrete behind prestressing strands except if it is heavily deteriorated.

Drill holes through beam web at locations shown on the plans for placement of lapping reinforcing steel from each side of beam.

Drill partial depth holes into each side of beam web for installation of Type L masonry anchors. Exercise caution not to damage underlying pretensioning strands when drilling partial depth holes.

Abrasive blast clean and roughen the following:

- Areas where concrete has been removed against which new concrete will be placed.
- Areas of existing smooth beam concrete within the limits of proposed concrete blocks.
- Exposed reinforcing steel and prestressing strands.

Use chipping hammers for removing concrete that are light-duty pneumatic or electric with a 15 pound class or less. Use blast cleaning equipment for concrete surface preparation of the abrasive type with equipment having oil traps.

Power wash all blast cleaned surfaces of concrete and steel using water pressure between 1,200 psi to 2,000 psi to remove all chlorides, dust and loose materials, and any bond-inhibiting materials.

After power washing, coat blast cleaned surfaces of exposed steel reinforcement and prestressing strands, with zinc rich paint.

Just prior to concrete placement, saturate the prepared surfaces with water to a saturated surface-dry condition.

Place latex modified concrete from top of forms and cause it to flow through underside of the beam to the opposite side then complete placement from top of form on opposite side of beam.

Use equipment for producing concrete by volumetric batching and continuous mixing that conforms to ASTM C 685. Demonstrate by certification or by field tests that the equipment is properly calibrated for yield and proportions.

Use vibrating equipment capable of consolidating the concrete.

Do not place concrete when the air temperature is below 45° F and falling or below 40° F. Do not place concrete when the surface temperature of the repair area is less than 40° F. Do not place concrete when the air temperature is greater than 90° F. Ensure concrete being placed has a minimum temperature of 50°F and a maximum temperature of 90° F.

Apply cotton mats for curing to the exposed top surface of concrete within 10 minutes after finishing placement of concrete and begin wet curing immediately. Maintain curing for a minimum period of 4 days and keep forms fully in place during that time. If temperatures below 45° F are forecast during the curing period, provide protection methods.

Ensure beam bearings are not damaged by concrete removal and blast cleaning nor contaminated by placement of new concrete.

Do not concurrently perform block repairs, including any removal of concrete or drilling of holes, for ends of adjacent beams; perform subsequent block repairs only after completing the adjacent one including the specified minimum time for concrete curing.

**D Measurement**
The department will measure PPC Beam End Block Repair 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.0060.01 | PPC Beam End Block Repair | Each |

Payment is full compensation for furnishing all labor, tools, materials, and incidentals necessary to complete the contract work. Payment for this work includes drilling holes entirely through beam webs for placement from each side of lapping reinforcing steel and furnishing and placing epoxy into the remaining annual space of those holes after insertion of steel. Drilling of partial depth holes into beam webs for installation of Masonry Anchors Type L No. 5 Bars is not paid for as part of this work.

## 33. Clean and Coat Concrete Beam Ends, Item SPV.0060.02.

**A Description**
This special provision describes cleaning the ends of concrete beams under expansion joints at locations shown on the plans and as designated by the engineer and applying an epoxy coating. This work shall be performed following the concrete beam end block repairs.

**B Materials**
Furnish non-pigmented epoxy conforming to AASHTO M-235, Type III, Grade 2, Class B or C.

**C Construction**
Thoroughly clean the beam ends of all debris and coatings to the satisfaction of the engineer prior to application of the coating. Abrasively blast the surface to be coated. Determine an acceptable abrasive blasting operation that provides a surface a profile meeting CSP 5 according to the International Concrete Repair Institute Technical Guideline No. 03732.

Clean and apply the epoxy coating to the repaired beam ends at least three days after moist curing has ceased for the new concrete. Cleaning and coating areas include new concrete, adjacent existing concrete, and the butt ends of the beams. Immediately following abrasive blasting of the exposed tips of the prestressing strands at the butt ends, coat the strands with

Removed material is not allowed to enter the waters of the Sturgeon Bay ship canal.

**D Measurement**
The department will measure Clean and Coat Concrete Beam Ends by each 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.0060.02 | Clean and Coat Concrete Beam Ends | Each |

Payment is full compensation for cleaning and coating concrete beam ends.

## 34. Seal Parapet Deflection Joints, Item SPV.0060.03.

**A Description**
This special provision describes re-sealing of parapet deflection joints.

**B Materials**
Provide non-staining gray non-bituminous joint sealer complying with ASTM C920 for non-sagging grade NS, Class 25, traffic area use T, and either single-component type S, or multi-component type M.

**C Construction**
Remove existing sealant and any other loose material and clean the joint thoroughly prior to application of new sealant. Do not allow any removed material to fall into the waterway.

Apply sealant per manufacturer's recommendations and remove any excess material.

**D Measurement**
The department will measure Seal Parapet Deflection Joints by each 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.0060.03 | Seal Parapet Deflection Joints | Each |

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

## 35. Remove and Reset Beam Connection, Item SPV.0060.04.

**A Description**
This special provision describes removal and resetting the W Beam and Thrie Beam connection to concrete parapets in areas of concrete surface repair, removal and installation of hardware as shown on the plans and as hereinafter provided.

**B Materials**
Provide materials in accordance to standard spec 614 and as shown on the plans.

**C Construction**
Remove and reset W Beam Connections, and Thrie Beam Connections, conflicting anchor assemblies for beam type guard rail and install as required. Install new hardware as required.

**D Measurement**
The department will measure Remove and Reset Beam Connection by each 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.0060.04 | Remove and Reset Beam Connection | Each |

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

## 36. Furnish Bridge Balance Plates, Item SPV.0085.01.

**A Description**
This special provision describes furnishing and delivering new steel counterweight balance adjustment plates of the size and configuration shown on the plans and placing them into counterweight pockets.

**B Materials**
Fabricate new steel plates conforming to ASTM A709 to the size and quantity shown in the plans. If additional plates beyond the quantity shown are required, they shall be provided at the same cost per pound as the plan quantity of plates provided. Plates need not be painted.

**C Construction**
Construct plates according to the dimensions shown on the plans. Cut plates so they are of uniform size and grind cut edges smooth such that there are no raised burrs or sharp edges.

**D Measurement**
The department will measure Furnish Bridge Balance Plates by the pound acceptably completed. The quantity of new plates shown on the plans is approximate. The actual number of plates to be produced, measured and paid for shall be coordinated with the engineer as part of the contractor prepared bridge balancing calculations. If additional balance plates are required because of the contractor's choice to use an alternate heavier grid system than the one shown in the plans, they 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.0085.01 | Furnish Bridge Balance Plates | LB |

Payment shall be full payment in accordance to standard spec 502.5.2, and includes furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

## 37. Trap Door Replace Hinges, Item SPV.0105.01.

**A Description**
This special provision describes furnishing and installing replacement stainless steel hinges for the trap door in the floor of the machinery room of each bascule leaf as shown in the plans.

**B Materials**
Provide replacement stainless steel hinges for the existing trap doors. Provide new hinges of the size that matches those of the existing ones.

**C Construction**
Apply lubrication to the hinges. After hinge installation, demonstrate proper door opening and closing to the engineer

**D Measurement**
The department will measure Trap Door Replace Hinges as a single lump sum unit of work, acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| SPV.0105.01 | Trap Door Replace Hinges | LS |

Payment is full compensation for providing and installing replacement door hinges including all labor, tools, testing equipment, materials, and incidentals necessary to complete the contract work.

## 38. Balance Bascule Bridge Leaves, Item SPV.0105.02.

**A Description**

This special provision describes making modifications to the existing counterweight system of each bascule leaf to restore each leaf to a condition of acceptable balance. The work includes balancing through physical adjustment of balance weights and balance testing to ensure compliance with the design criteria listed herein. The work also includes the calculation and documentation of the span balance procedure. The bridge is presently considered to be in a desirable state of balance and modifications will be required to correct for the imbalance that will be created by the rehabilitation work being performed. Provide all labor, materials and equipment to balance the movable leaves of the bridge.

**B Materials**

There are no materials associated with this pay item. Furnishing of steel balance plates for counterweight adjustment is included in the pay item “Furnish Bridge Balance Plates”.

**C Construction**

**C.1 General**

Perform all work in accordance to the 1988 AASHTO Movable Highway Bridge Specifications and as directed herein.

**C.2 Calculations**

The arrangement and quantity of concrete balance blocks and steel balance plates shown in the design plans is approximate based on a cursory field review and preliminary calculations. It is the contractor’s responsibility to determine and produce an accurate final balance condition. The contractor shall determine the actual weights and locations of all materials removed and added to the bascule leaves and counterweights for use in the calculations by way of physical tests (scale weights) of samples of these items.

Perform a complete balancing weight calculation based on components being added or removed to the movable span as a part of this contract. The goal of these calculations is to determine an accurate adjustment and addition of counterweight plates to the existing counterweight pockets. These calculations shall be submitted to the engineer for review. Balance about both the horizontal and vertical axis shall be considered utilizing both upper and lower counterweight pockets as necessary. Adjustments to the counterweights shall be made as required to restore the leaf to a slightly “leaf heavy” condition upon completion of the work effecting the span weight. Concrete counterweight blocks and steel

counterweight plates shall be removed from, or added to the pockets to make the necessary adjustments. In the absence of temporary shoring, the maximum permissible imbalance at any time during construction is WX= 0 to +650 kip-ft in the seated position and WX = -250 to 650 kip-ft at any angle of operation. (positive values reflect a tip heavy state, and negative values reflect a counterweight heavy state). The leaves shall not be counterweight heavy in the seated position at any time during construction without the use of restraints to prevent opening of the leaves.

**C.3 Balance Blocks and Balance Plates**

Install new delivered steel balance plates into counterweight pockets based on contractor-prepared span balance computations. Install, remove and/or adjust the locations of concrete blocks and steel plates in pockets as many times as necessary to achieve required final balance condition as described below.

**C.4 Drift Testing and Balancing**

Prior to the start of any fieldwork, the contactor shall perform a series of drift tests in the presence of the engineer to document the existing balance condition. An accurate inventory shall also be taken and recorded of the number and position of existing balance blocks and void space available in the counterweight pockets.

The existing balance condition shall be tested in the following manner during times of calm weather with low wind velocities. If requested by the engineer, the contractor shall vary the specific methods of the test to produce the required information.

- From a stopped position release the brakes and note the direction of movement, time it takes to travel approximately 5 degrees, and rotation in degrees it takes to stop the leaf after the brakes are reapplied. Perform this test at the nearly closed position and at 15 degree intervals up to and including the nearly open position. At no time shall the bascule leaf imbalance be large enough to run through the brakes and impact the live load shoes or bumper blocks during testing. Immediate span balance adjustment shall be made if the motor brake alone is not capable of stopping the span during drift testing
- Record the time it takes for each leaf to stop when power is disconnected from the drive motors with the leaf moving at its normal speed and with the brakes manually released. During this operation the ability to promptly reset the manual brake release must be maintained in case of a “runaway” condition. The time required for the leaf to stop shall be recorded for both opening and closing cycles, and power shall be disconnected when the leaf is at approximately 40 degrees from the fully closed position.

Upon completion of all work on the bascule span, the new balance condition of each leaf shall be measured and recorded per the same ‘drift test’ methods used to record the original balance condition.

The required final balance condition for each bascule leaf will be one in which it is slightly tip-heavy and moves toward the closed position at a slow controllable rate under gravity after it is stopped from all angles of opening, the brakes are released, and power is removed from the drive motors. The maximum acceptable degree of imbalance will be one

in which the leaf does not rotate from any position of opening by more than 5 degrees within 10 seconds of releasing the brakes. If a leaf does not meet this criterion, the contractor shall add, remove and/or adjust the locations of concrete blocks and/or steel plates from the counterweight pockets as necessary to achieve this specified balance acceptance condition.

**D Measurement**
The department will measure Balance Bascule Bridge Leaves 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.0105.02 | Balance Bascule Bridge Leaves | LS |

Payment is full compensation for furnishing all analyses, testing, professional engineering services and all other balance work described herein or shown on the plans; installing, removing and/or adjusting the locations of concrete balance blocks and steel balance plates; and for furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

## 39. Electrical Work, Item SPV.0105.03.

**A Description**
This special provision describes furnishing labor, tools, equipment and materials necessary for the manufacture, installation, finishing, testing and making fully operational miscellaneous electrical rehabilitation items for the bascule bridge.

Comply with all local codes, all laws applying to electrical installations in effect, and with the regulations of the latest National Electrical Code, where such regulations do not conflict with the laws in effect and with the requirements of the utility company.

It is the intention of the contract plans to call for completely finished work, fully tested and ready for reliable and consistent operation. Furnish, deliver, and install any apparatus, appliance, materials, or work not shown on the plans but described in the special provisions or vice versa, or any incidental accessories necessary to make the work complete in all respects and ready for operation, to be furnished, delivered, and installed without additional expense to the department.

**A.1 Scope**
The rehabilitation work under includes the following:

- Replacement of traffic gates
- Replacement of navigation pier lights
- Replacement of navigation center channel lights
- Replacement of leaf fully seated plunger limits

- Center channel navigation light control circuit modifications
- New fixed infrared monitoring camera at each rear lock
- New pan-tilt-zoom CCTV camera for monitoring the waterway
- Replacement of motor starters for traffic gates and brakes
- Conduit and conductor modifications for the installation of new brakes

**A.2 Submittals**

Submit the following for each component of the Traffic Gate Assemblies:

- Manufacturer's shop drawings
- Product data sheets
- Manufacturer's installation instructions
- Operation and maintenance data

**A.3 Coordination of Electrical Work**

The contract documents are diagrammatic in showing certain physical relationships which must be arranged within the electrical work, and which must interface with other work including utilities and mechanical work. Coordinate electrical work with the work of other trades to eliminate conflicts. Advise other trades of openings required in their work for the subsequent move-in of large units of electrical equipment.

Schedule and arrange electrical work in a neat, well organized manner.

Locate operating and control equipment to provide easy access, and arrange entire electrical work with adequate access for operation and maintenance, as per the latest NEC requirements.

**B Materials**

Provide all new materials that conform to the standards of the Underwriters Laboratories, Inc., in every case where such a standard has been established for the particular type of materials in question. Submit to the engineer for approval, prior to purchase of any materials or equipment required to be furnished and installed, a complete list of all such materials and equipment including manufacturer's catalog (part and/or model) numbers, catalog data sheets, illustrations, and shop drawings.

**B.1 General**

In addition to the standard specifications, provide and install all equipment in accordance to the applicable requirements of the following:

- AASHTO Standard Specifications for Movable Highway Bridges
- NFPA 70, National Electrical Code
- NFPA 79, Electrical Standard for Industrial Machinery

Ensure that equipment and its installation present a neat and attractive appearance. Use new heavy duty industrial design, equivalent to the best grade of the particular type of equipment made by the leading manufacturers of such equipment.

Furnish new equipment that is compatible with all other associated equipment in the system. Ensure that all items furnished perform the function indicated on the approved drawings and as required by the design.

Equipment sizes and space shown on design drawings are approximate. Ensure that all required electrical equipment components can be adequately located in the operator's house and elsewhere on the project as required.

**B.2 Traffic Gate Assemblies**

Furnish vertical to horizontal type, electrically operated with manual cranking ability gate assemblies at locations shown in the plans. Equip on-coming gate assembly enclosures with warning gongs, in accordance to manufacturer's instructions. Equip gate arms with steel hot-dip galvanized, sectional bolt-on counterweights with at least 10 percent adjustment and LED warning lights.

House the operating mechanism and main control components in a weatherproof housing constructed of .188-inch (4.8-mm) carbon steel, hot dip galvanized after fabrication. Exterior surfaces shall be painted aluminum. All fasteners shall be corrosion resistant.

Design the housing for easy removal of the arm shaft assembly as a unit, including bearings and main arm crank. Fully gasket and seal the arm assembly mounting and shaft openings.

Use full cross bronze straps for mounting front and rear access doors with slip-off type hinges and stainless steel pins. Furnish two door handles per door, with a vise action to compress a neoprene bulb-type gasket to seal the door openings.

Size anchorages for new gate installations on gate pilasters per manufacturer's recommendations with drilled anchor bolts, set with epoxy, and adequately sized to support all attachments.

During the opening and closing cycles, begin the gate arm movement with zero velocity and accelerate smoothly, reaching maximum velocity at mid stroke (45 degrees) then decelerate smoothly to zero velocity at full stroke (90 degrees) without whip or bounce. Standard operating time is 13 seconds for full opening or closing cycle. Size gate assemblies and anchorages to handle the weight of the arm used and to operate against a wind speed of 50 MPH.

Design the main arm shaft with a minimum of 2-inch diameter AISI 4150 with a minimum tensile strength of 140,000 psi. Mount the shaft in heavy duty re-lubricating ball bearings. The warning arm shall pivot in the vertical plane via a mechanical 4-bar linkage utilizing cranks keyed to the main arm shaft and transmission shaft and an adjustable connecting rod between a pair of self-aligning spherical rod ends. The connecting rod shall be of 1-inch (25mm) diameter AISI 4150. The linkage shall be driven by a fully enclosed, double reduction, worm gear speed reducer. Gear ratio used shall produce an operation time of 11 seconds.

Equip gate with a manual motor disconnect switch and with an automatic disconnect switch to break control circuit when any door is opened. Ensure the light circuit is equipped with a heavy-duty, solid state, fully factory-wired, with two alternately flashing circuits and one steady burn circuit with a flash rate of 0.50 second ON, 0.50 second OFF. Provide all mounting hardware, solid state flashing circuitry, a clearly labeled terminal block, a heat sink, and a transformer when required.

Furnish and install limit switch unit assemblies consisting of eight individual switches with one set of normally open and one set of normally closed contacts each. Furnish and install contacts with a UL rating of not less than 15 A at 480 VAC. Use corrosion resistant non-ferrous materials for limit switch body, shafts and cams.

**B.2.1 Gongs**

Provide a warning gong mounted on top of the on-coming warning gate housing. Each warning gong must be weatherproof, motor-operated, vandal-proof, 12-inch gong mounted in a heavy-duty, cast-aluminum housing with hinged back door. The gong must be of cast-bronze. Each gong shall be approved equal to the G-12 Warning Gong as made by Roadway Manufacturing, the B&B Electromatic Z-555BR Warning Gong, the Western-Cullen No. 555, or the Security Products Division of Federal Signal Corporation Type 555. Paint and mount gongs with hardware in such a way as to prevent theft.

**B.2.2 Gate Arms**

Use 4-inch (102-mm) square, 6005-T5 aluminum extruded tubing for gate arm with 3-inch high strength UV-resistant fiberglass extension. Maximum length of fiberglass extension is 12 feet. Stainless steel truss cables and a damping type bumper rod shall be furnished with longer arms at the discretion of the manufacturer. Cover the front and rear arm surfaces with alternating red and white high intensity reflective sheeting.

Verify gate arm lengths and coordinate with final roadway width. Ensure that the gate arm is covered on both sides with alternating 16-inch reflective red and white engineering grade sheeting. Provide a break-away shear pin base for each gate arm so that when excessive force is applied to arm, the pin shears, the arm shall then swing 45 degrees horizontally and drop free of the gate operator thus minimizing damage to operator.

Design shear pin base and lightweight arm assembly for easy, rapid reinstallation or replacement by one person.

Furnish and install weatherproof LED warning lights on all gates, to operate on 120 VAC.

**B.2.3 Gate Motors**

Furnish and install totally enclosed, Class F insulation motors specifically designed for gate actuator capable of operating at full load when the voltage to the motor is ±10 percent of rated voltage. Use only motors having the voltage capacity as shown in the plans. Ensure the motor has the capacity to perform all necessary functions to the satisfaction of the engineer based on torque required for gate arm and accessories. Ensure the braking

mechanism is equipped with a solenoid release, automatic motor brake that automatically releases when hand crank is inserted. Provide a hand crank to manually raise or lower gate arm in event of power failure. Door safety switches shall automatically disconnect the control circuit power and positively prevent electrical operations of the gate arm when the door is open.

**B.3 Disconnect Switches**

Furnish and install heavy-duty disconnect switches having electrical characteristics, ratings, and modifications shown on the drawings and meet the following requirements:

- NEMA Type 4X (stainless steel) enclosures in the machinery room and exterior locations.
- NEMA 12 units in the operator, control, generator and hydraulic rooms.
- Metal front cover mounted factory nameplates that contain a permanent record of switch type, catalog number, and HP rating.
- Pad-lockable handles with easily recognizable positions are required.
- Switches that include visible blades, reinforced fuse clips, and non-teasible positive quick make-quick break mechanisms.
- Switch assemblies and operating handles that are an integral part of the enclosure base.
- Switches that are HP rated and meet Federal and NEMA Specifications.
- Switches that have defeatable door interlocks that prevent the door from opening when the operating handle is in the ON position.
- Heavy duty switches with line terminal shields.
- Non-fusible switch assemblies of NEMA KS 1 construction Type HD with quick-make, quick-break load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position and Handle lockable in OFF position. One N.C. (normally closed) and one N.O. (normally open) set of auxiliary contacts is required.

**B.4 Navigation Lights**

Provide a complete navigation hazard lighting system operating at 120 VAC and complying with USCG CFR 118.80(b). Furnish all Fender and Clearance lights with shock proof LED lamps, surge suppressors and UV polycarbonate lamp lens.

Provide lamps with a dense array of individual LEDs, each encased in a solid clear epoxy lens. In the event of an LED failure, remaining LEDs shall continue to operate. Provide LEDs with an overall luminosity of 840 Candelas for red and green arrays. Individual LEDS shall have a MTBF rating of 100,000 hours. Each assembled LED lamp shall be dipped in clear silicone to provide a moisture barrier.

**B.4.1 Fender/Pier Lights**

Furnish and install unpainted housings of bronze construction with a one inch threaded conduit opening at the bottom, equipped with a red 180°, standard marine Fresnel type, rigid, heat resistant glass lens, 7- to 8-inch diameter. Furnish manufacturer's recommended mounting bracket. Furnish all stainless steel closure bolts, lens tie rods, and attachment hardware. Use only marine type junction boxes. All joints, including lid shall be sealed

with weatherproof gaskets. All fastenings shall be tamper resistant. Access cover shall require a special wrench.

### B.4.2 Center Channel Lights

Furnish and install unpainted housings of bronze with cushioned lenses, weatherproof gasketed joints and large service access door equipped with 180°, standard marine molded single-piece Fresnel type, rigid, heat resistant glass, 7- to 8-inch diameter. with the Lower Section; Red, Upper Section; Green. Furnish all stainless steel closure bolts, lens tie rods, and attachment hardware. Ensure swivel assembly is cast bronze housing and bracket with stainless steel pivot, watertight "O" ring seal, bronze bearings, cable entrance fitting, and #35 stainless steel service chain rated for 225 pounds. Use a hanger stem 1½- or 2-inch galvanized pipe as recommended by manufacturer with anti-swing brake and automatic lock. No solid wire conductors shall be permitted.

### B.5 Limit Switches

Furnish and install new heavy duty plunger type limit switches designed for the movable bridge industry. Provide the switch with a stainless steel housing. Provide switch with a stainless steel plunger and a ball end extension that allows for a minimum of 0.75" field adjustment.

The trip plate shall be spring loaded with an over center mechanism to provide simultaneous, positive, accurate and repeatable snap action of all switches. Provide 4 circuits with snap action microswitches rated at 40 amp make, 15 amp break at 120 volts.

### B.6 CCTV Cameras

All camera views and programming shall be coordinated with and approved by the department.

### B.6.1 Pan/Tilt/Zoom Cameras

Furnish and install Pelco Spectra IV high resolution digital Pan/Tilt/Zoom dome-type cameras of similar style to existing cameras. Connect new cameras to the existing camera control system. Furnish and install all conduit and conductors for camera power, control and video. Cables shall conform to manufacturer requirements.

Camera assemblies must conform to the following minimum specifications: Provide enclosures rated outdoor, harsh environment, dust-tight, waterproof. Enclosure must be lightweight, aluminum construction and meet NEMA 4 and IP66 standards. Include a sun shroud enclosure, heater/controller/defroster to eliminate fogging, obstructions, and visual artifacts. Size enclosure to make compatible with camera, lens, mounts, and accessories required. Make all external connections through watertight fittings. Provide easily serviceable enclosure and provide stainless steel fasteners.

Provide individual 24 VAC, 60 Hz camera power supplies for each camera assembly. Fuse power supply and size to provide 125 percent of full load amperes for camera and accessory loads. Account for voltage drops to provide 24 VAC @ +/- 15 percent (with heaters on) at each camera power input connector. Power supplies must be in a NEMA 4

minimum rated enclosure, 120 VAC input, 24 VAC, with 5 A minimum output per camera assembly.

### B.6.2 Fixed Infrared Cameras

Furnish and install high resolution fixed cameras with infrared lighting for night vision. Locate cameras in areas around rear locks to provide a clear view of the position of each rear lock assembly. Provide camera housings in NEMA 4 and IP66 type vandal resistant enclosures. Cameras shall be capable of day and night monitoring.

Cameras shall be supplied with coaxial connection and connected through spare coax cables located in submarine cable box.

Furnish and install a digital video encoder for minimum 4 analog inputs and 1 ethernet output. Cameras and video encoder shall be compatible with Pelco Endura systems. Connect output to the PLC system network. Coordinate installation with the department. Programming will be performed by the department.

## B.7 Motor Starters

Provide all starters with a minimum NEMA size 1 starter. Each starter shall have its own control power transformer. Each starter shall have a minimum of 1 N.O. and 1 N.C. contacts. Provide overload relays with Class 20 trip.

Provide 3-pole 480 VAC, full voltage, NEMA type starters of the magnetic combination type. Motor starters shall be a combination circuit breaker, NEMA controller with overload relay protection.

Furnish, where indicated or required, motor controls having the electrical characteristics, ratings, and modifications shown in the plans. All magnetic starter coils shall be 120VAC.

- NEMA ICS 1 - Industrial Control and Systems- General Standards.
- NEMA ICS 2 - Industrial Control and Systems- Controllers, Contractors and Overload Relays Rated not More than 200 VAC or 750 VDC.
- NEMA ICS 4 - Industrial Control and Systems- Terminal Blocks.
- NEMA ICS 5 - Industrial Control and Systems- Control Circuit and Pilot Devices.
- NEMA ICS 6 - Industrial Control and Systems- Enclosures.
- NEMA ST 1- Standard for Specialty Transformers (Except General Purpose Type).

### B.7.1 Non-Reversing Starters

Provide starters that are built and tested in accordance to the latest NEMA standards. Non-reversing starters shall be equipped with three NEMA Class 20 overload relays. Provide for field installation of up to 3 N.O. and 4 N.C. NEMA ICS 2, Class A300, auxiliary contacts in addition to the hold-in interlock.

### B.7.2 Reversing Starters

Provide starters that are built and tested in accordance to the latest NEMA standards. Reversing starters shall be equipped with three NEMA Class 20 overload relays. Provide

for field installation of up to 4 N.O. and 4 N.C. NEMA ICS 2, Class A300, auxiliary contacts in addition to the normal interlocks.

### B.7.3 Overload Relays

Provide overload relays that are block-type with a push-to-test feature. An isolated, field mountable alarm contact shall be available.

## B.8 Conduit

Furnish and install conduit and raceways in the quantities and sizes required to complete the work as shown on the plans and as required by NEC. Conduit and circuits indicated on plans, diagrams, and schedules may be recombined in the field where appropriate, with the approval of the engineer. Section Includes: metal conduit, non-metallic conduit, liquidtight flexible metal conduit, and fittings and conduit bodies. Use rigid galvanized steel conduit for conduit in the operator, control, generator and hydraulic rooms. Use of thin wall EMT is allowed for lighting and receptacle circuits that are installed behind finished drywall. Use PVC coated rigid galvanized steel conduit for all exterior conduit that is located outside the three rooms listed above. Use PVC schedule 40 where embedded in concrete or installed in a trench. Where conduit is under a roadway, use Schedule 80.

### B.8.1 Definitions

- Conduit: Pipe that has been treated, threaded, and U.L. listed as suitable for use as an electrical raceway.
- Conduit Body: Fitting with removable cover to allow for pulling conductors and which may also provide a means for making a tight turn or "tee" connection in conduit.
- Fitting: Accessory component for joining conduit (coupling), connecting conduit to a box or enclosure (connector or hub), or providing other functions (such as expansion fitting).

### B.8.2 Conduit Requirements

- Minimum Size: ¾ inch minimum trade size for rigid and PVC, unless otherwise specified. ½ inch for EMT.
- PVC Coated Metal Conduit Description: NEMA RN 1; rigid steel conduit (ANSI C80.1) with external PVC coating, 40 mil thick. Fittings and Conduit Bodies: NEMA FB 1; steel fittings with external PVC coating to match conduit.
- Liquidtight Flexible Metal Conduit Description: UL 360; Interlocked steel construction with PVC jacket. Fittings: NEMA FB 1.
- Non-metallic conduit description: NEMA TC 2, schedule 80 (UL 651). PVC fittings NEMA TC 3 to match conduit. Embedded in concrete use only.

### B.8.3 Conduit drawings

Before the start of construction, submit for review a full size drawing showing all conduit runs between all pieces of equipment. Provide “as-built” drawings for riser diagrams and schedules.

## B.9 Conductors

### B.9.1 General

No aluminum or solid copper conductors are allowed. For single conductor insulated wire use no wire smaller than No. 12 AWG for power and lighting circuits and no smaller than No. 14 AWG for control wiring, except that control wiring within a cabinet may be No. 16 AWG. Minimum field wire size is No. 12 AWG for control and No. 10 AWG for motor loads. Use minimum No. 10 AWG for 20 A, 120 VAC, branch circuit home runs longer than 75 feet, and for 20 A, 208/240/277 VAC, branch circuit home runs longer than 200 feet.

Furnish insulated conductors of seven or nineteen strand copper, minimum 98 percent conductivity and connector accessories for copper in sufficient quantities for a complete installation. Use twisted shielded pairs in cases of low level audio or digital signal when required. Provide XHNW, THHW/THWN-MTW insulation rated 600 VAC unless otherwise noted. Provide type SE, USE-2, RHW-2 or RHW insulation for incoming power.

Conform to the following:

- ANSI/NFPA 70 - National Electrical Code.
- ASTM B3/ANSI C7.1 - Standard Specifications for Soft or Annealed Copper Wire.
- UL 83 - Thermoplastic-Insulated Wires and Cable.
- UL 44 - Thermoset-Insulated Wires and Cable.
- UL 854 - Service Entrance Cables.
- UL 1063 - Machine-Tool Wire and Cables.
- UL 1685 - Vertical-Tray Fire-Propagation and Smoke-Release Test for Electrical Cables.
- ANSI/NFPA 70. Furnish products listed and classified by Underwriters Laboratories, Inc. as suitable for purpose specified and shown.

### B.9.2 Project Conditions

Verify that field measurements are as shown on plans. Wire and cable routing shown on plans is approximate unless dimensioned. Route wire and cable as required to meet project conditions. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required. Determine required separation between cable and other work. Determine cable routing to avoid interference with other work.

## C Construction

### C.1 General

Comply with all local codes, all laws applying to electrical installations in effect and with the regulations of the latest edition of the National Electrical Code, where such regulations do not conflict with the laws in effect and with the requirements of the utility company.

### C.1.2 Protection of Electrical Equipment

Protect electrical equipment from water damage, especially from rain, snow, condensation, and water dripping or splashing on equipment and wiring, at all times during shipment, storage and construction (prior to final acceptance). Provide temporary electrical

connections to equipment heaters, or provide temporary heaters, as required to prevent damage from moisture.

Thoroughly dry out and put through a special dielectric tests as directed by the engineer at no cost to the department, or replace if not tested to the satisfaction of the engineer, any apparatus that has been subjected to possible injury by water or dampness (including the interiors of motor control equipment, submarine cable ends, or any other electrical devices).

**C.1.3 Coordination of Electrical Work**

The plans are diagrammatic in showing certain physical relationships which must be arranged within the electrical work, and which must interface with other items including structural and mechanical work. Coordinate as necessary between trades to allow for proper installation of all electrical work and to eliminate conflicts. Locate operating and control equipment to provide easy access, and arrange entire electrical work with adequate access for operation and maintenance, as per the latest NEC requirements.

**C.1.4 Field Measurements and Surveys**

Prior to development of submittals, conduct field surveys to verify construction dimensions. Identify field dimensions on submittals that have been field verified. Conduct field measurements and surveys as required to supplement plan information and provide a complete and satisfactory fitting and fully operational installation.

**C.1.5 Submittals**

Submit electrical equipment, hardware, drawings, testing plans, and documentation for all electrical items. Submit working plans and shop drawings as described in the contract documents and in this special provision. Clearly mark manufacturer's standard drawings that indicate dimensions and/or options for more than one piece of equipment to clearly indicate what data applies.

Include shop drawings drawn to scale and certified by the manufacturer for all submittals for major electrical equipment. Where wiring diagrams, schematic diagrams, engraving schedules, conduit drawings, interconnection diagrams, one-line, three-line diagrams, etc. are called for or provided, they are to be site specific.

Submittal approval will be on an “all or none” basis. Provide complete resubmittals even if some items on the original submittals may not have been marked deficient. Provide sufficient time in project schedule to allow for the possibility of repetitious submittals without creating delays to the project. The department will not bear any responsibilities for delays caused by repetitious submittals.

**C.1.6 Manuals**

At the completion of the project, provide complete as-built drawings. As-built drawings will be essentially the same as the working plans and shop drawings submitted for approval but showing all of the changes made during construction.

**C.2 Traffic Gates**

Install new gates at existing locations. Remove the existing grout leveling base. Re-use existing gate anchor bolts, but use new galvanized washers and nuts. If proposed gate mounting holes do not align with existing anchor bolts, install new anchors drilled through the deck and use 6”x6”x1/2” galvanized plate washers on bottom side of deck.

Verify that system voltage matches gate requirements. Install traffic gates in accordance to manufacturer's instructions. Make all electrical connections to provide proper operation of the traffic gates, lights, gongs, etc. Make connections to control system, manually test hand cranks, and power test traffic gates to ensure proper operation of gate operator, gate arm lights and gate interlocks.

Install pressure type terminal blocks inside the housing on the roadway side and terminate all control wires on terminal blocks and clearly label all circuits. Use No. 16 AWG stranded or larger wire. Ensure that the color code or number conductors match wiring diagram. Ensure that gear limit switches to the drive mechanism are in step with the actual gate position at all times, whether operation is by power or manual mode. Do not use cams or 4998-02- screws to set the limit switches.

Visually observe the operation of gates. Adjust the balance weights of the gate arm to provide a smooth operation with little to no bounce. Adjust limits, cables and arm rods so gate arm is level when in the down position.

**C.3 Navigational Lights**

Inspect and measure existing center channel clearance lights. Coordinate the length of arm with manufacture to ensure fixture bottom is at same elevation as the bottom of the bascule girder at that location.

Remove the mercury switches that control red or green selections from the control circuit. Use the existing cam limit switch and wiring to control the green red selection. At full open, the green light shall turn on, at all other points the red light shall be on. Adjust the full open limit as necessary. Mercury switches are located in each machinery room’s droop cable terminal box. Wiring changes can be made in this terminal box.

**C.4 Bridge Seated Limit Switches**

Remove existing Bridge seated limit switches and their mounting brackets. Grind off any welds for existing mounting bracket. Flame cutting not allowed. Attach galvanized angles to stiffener and bottom flange of bascule girder. For bottom flange, drill and tap minimum 3/8” diameter galvanized or stainless steel bolts. For stiffener, drill through stiffener and attach with minimum 3/8” diameter bolts. Attach a 3/8” galvanized steel plate to the angles for mounting the new bridge seated limits.

**C.5 Brakes**

Disconnect power and limit switch wiring for existing brakes. Replace flexible conduit connections and wiring as required to connect to new brake assemblies.

**C.6 Motor Control Center**

Remove equipment and components in unused starter buckets. Install new motor starters for brakes and traffic gates in these starter buckets. Replace bucket breaker as necessary to protect motors per National Electric Code requirements. Relocate or extend existing control and power wiring for new starter locations. Splicing of cables is not allowed; install terminal blocks to extend conductors.

**C.7 CCTV**

Furnish and install new cameras in locations shown in plans and accordance to manufacturer instructions. Test all connections for tightness and intermittent connections. Install interior wiring neatly and carefully with proper connectors of video and power connections per manufacturer's instructions. Use conductors approved by the camera manufacturer.

Camera programming and set up will be performed by the engineer or his representative. Notify the engineer prior to powering up CCTV systems.

Remove the existing thermal imaging cameras and turn over to the department.

**C.8 Conduit and Wiring**

Unless otherwise specified in the plans, install conduit in accordance to NECA Standard Practice. Install nonmetallic conduit in accordance to manufacturer's instructions. Arrange supports to prevent misalignment during wiring installation. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers. Do not use plastic straps or plastic hangers. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits. Fasten conduit supports to building structure and surfaces under provisions of supporting devices. Attachment to steel or concrete shall be by galvanized or stainless steel straps, hangers held at not less than two points by galvanized, stainless steel bolts, or lag screws. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary support.

Provide pull boxes or junction boxes wherever necessary to facilitate the installation of the conductors. Pull boxes are used for pulling conductors through. No splicing or terminations are permitted. Junction boxes are used for field connections of conductors. Conductors are to be connected using approved terminal blocks. Do not use condulets for pulling more than 10 conductors or for making such turns in conduit runs or for branching conductors, except for indoor wiring to lighting fixtures and receptacles. At any point where a conduit crosses an expansion joint, or where movement between adjacent sections of conduit can be expected, install a bronze or alloy expansion fitting.

Use of flexible conduit is allowed only for the connection of motors, limit switches, and other devices that must be periodically adjusted in position. Make connections between the rigid conduit system and all motors, and limit switches with flexible conduit with couplings and threaded terminal fittings. Do not exceed two feet in length for flexible

conduit extensions. Install flexible conduit with bonding jumpers and arrange to drain away from the device it serves.

Provide at both ends of each conduit run a brass tag having a number stamped thereon in accordance to the conduit diagrams. Secure and permanently fasten these tags to the conduit ends with bare copper wire. Run concealed in walls, ceiling, or floor conduits in the control room. Run exposed conduits in the bascule piers. Where conduits pass through the floors or walls of the control room, provide galvanized rigid conduit sleeves for free passage of the conduits. After the conduits are installed, caulk openings with an elastic compound and provide escutcheon plates on the interior walls, ceilings and floors for airtight fits.

Arrange conduit to maintain headroom and present neat appearance. Route exposed conduit parallel and perpendicular to walls. Route conduit in and under slab from point-to-point. Maintain adequate clearance between conduit and piping. Maintain 12-inch clearance between conduit and surfaces with temperatures exceeding 104 ºF.
Connect conduit sections to each other with threaded couplings. Install conduits to be continuous and watertight between boxes or equipment. Protect conduits at all times from the entrance of water and other foreign matter by capping or well plugging overnight when the work is temporarily suspended.

Conduits mounted exteriorly on parts of the steel work must be set not less than 1½ inch clear from the supporting structure to prevent accumulation of dirt. Space parallel horizontal conduit one inch apart and securely clamp to the steel work to prevent rattling and wear. The clamps, in general, shall consist of U-bolts attached to angle or channel iron supports bolted to the members. The spacing of the clamps shall not exceed 6 feet of spacing per NEC 346 and 347 whichever is less.

Cut conduit square using saw or pipe cutter; de-burr cut ends. Bring conduit to shoulder of fittings; fasten securely. Long running threads will not be permitted. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum. Embedded conduit stub-outs shall be provided with threaded 316 stainless steel.

Use conduit hubs to fasten conduit to sheet metal boxes. Install no more than equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use factory elbows for bends in metal conduit larger than 2 inches. All field bends shall be long sweep, free from kinks, and of such easy curvature as to facilitate the drawing in of conductors without injury to the conductors. Make conduit runs with as few couplings as standard lengths will permit.

Avoid moisture traps; provide junction box with drain fitting at low points in conduit system. Install all conduits so that they will drain properly and provide drainage tees at low points where required. Provide suitable pull string in each empty conduit except sleeves and nipples. Use suitable caps to protect installed conduit against entrance of dirt and

moisture. Carefully clean all conduits before and after installation. Upon completion of the conduit installation, clear each conduit with a tube cleaner equipped with a mandrel of a diameter not less than eighty percent of the nominal inside diameter of the conduit, and draw in the conductors. Identify conduit under provisions of the Electrical Identification section of this special provision.

**C.9 Conductors**

Do not splice conductors (except for "pigtail" leads and lighting circuits). Use solderless pressure connectors with insulating covers for wire splices and taps, No. 8 AWG and smaller, for lighting circuits. Make lug connections with high-pressure indent connector tools as recommended by the lug manufacturer. Use split bolt connectors for wire splices and taps, No. 6 AWG and larger, and all motor connections or other approved method.

Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor. Make splices and taps to carry full ampacity of conductors without perceptible temperature rise. All splices shall be waterproof. Terminate spare conductors with electrical tape.

Neatly train and lace wiring inside boxes, equipment, and panelboards. Place an equal number of conductors for each phase (three-phase system) of a circuit in same raceway or cable. Make conductor lengths for parallel circuits equal. Pull all conductors into a raceway at the same time. Use soap base wire pulling lubricant for pulling No. 4 AWG and larger wire. Tighten all connections to manufacturer's recommendations. Take precautions to avoid "sawing" through PVC conduit. Pull ropes shall be braided. Bare conductors shall not be pulled through PVC conduits. Conduit shall be swabbed with lubricant prior to pulling the conductors.

Identify wire and cable under provisions of Electrical Identification. Identify each conductor with its circuit number or other designation indicated on plans. Test each circuit for continuity and short-circuits for its complete length before being connected to its load. Verify identification numbers for the entire length of the circuit. Inspect wire and cable for physical damage and proper connection. Perform insulation testing on all power conductors.

**D Measurement**

The department will measure Electrical Work as a single lump sum unit of work, acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| SPV.0105.03 | Electrical Work | LS |

Payment is full compensation for furnishing, relocating and installing traffic gates, limits, cameras and all other electrical components described herein for the bascule span; and for furnishing all labor, tools, testing equipment, materials, and incidentals necessary to complete the contract work.

## 40. Mechanical Work, Item SPV.0105.04.

### A Description

This special provision describes furnishing all apparatus, material and labor required to properly detail, manufacture, ship, install, adjust, test, and put into approved working order all parts of the bascule span mechanical work specified. Furnish, at no extra cost, any device, material, labor or effort not herein specified, yet required to complete or perfect the equipment in a manner suitable to the department.

### B Materials

#### B.1 Shop Drawings

Dimensions given on the plans are nominal and intended for guidance. Make note of any variations from nominal dimensions on the shop drawings or provide written notice to the engineer. Where additional information is required or changes must be made; prepare working, erection, and shop drawings and submit to the department as specified.

#### B.1.1 General Requirements

Shop drawings must detail and accurately dimension all parts. Shop drawings must define limits of accuracy and tolerances required for machining, surface finishes and allowances for fits.

#### B.1.2 Manufacturer's Literature

Submit catalog cuts and detailed manufacturer's literature for all components not detailed in the shop drawings. Clearly mark such items with the item number corresponding to the mark shown on the assembly drawing and the full and complete part number, extended to completely define the part including all optional or custom features. If the same cut sheet is used to define more than one item, submit multiple copies.

#### B.1.3 Material Certifications

Submit material certifications for all materials specified to require material testing within the plans and specifications or within a referenced material specification (e.g. ASTM, ANSI, or others).

#### B.1.4 Procedures

In addition to required detailed shop drawings, submit to the engineer for review various procedures described herein. The procedures must be thorough and must be supplemented by sketches, calculations, details, catalog cuts, photographs, etc. as required to demonstrate that the specified requirements can be met.

## B.2 Material Compatibility

Provide products which are compatible with other products of the mechanical work and with other work requiring interface with the mechanical work, including mechanical/electrical connections and control devices.

## B.3 Substitutions

Specification of a manufacturer's part number, product, and/or name is for the purpose of defining quality, configuration, rating and arrangement of parts. Part numbers shown in the contract documents are not necessarily complete numbers nor are they intended to describe details of the component beyond those that are required. Be aware that manufacturers may change product names and part numbers without advance notification. Select and provide manufactured products that meet the requirements and intent as shown in the contract documents. Provide complete, current part numbers for all proposed equipment and verify that the part as designated is appropriate for the intended function.

## B.4 Shop Inspection and Testing

### B.4.1 Material Acceptance

Furnish to the department test results of all certifications required of the contract documents, including copies of chemical and physical tests and certifications of compliance. Initial acceptance of materials and finished parts and assemblies will not preclude subsequent rejection if found deficient. Replacement of such materials will be the responsibility of the contractor.

## B.5 General Material Requirements

Provide materials as specified on the plans and in the specifications. Wherever materials are not shown or specified, provide materials that conform to the current specifications noted. An alternative material may be requested in writing; the request must provide complete data justifying suitability of the alternate materials and must be approved by the department prior to initiating manufacture or construction.

Provide materials and equipment that are essentially the standard catalogued products of manufacturers regularly engaged in production of such materials or equipment and is the manufacturer’s latest standard design that complies with the specification requirements. Materials and equipment must essentially duplicate items that have been in satisfactory commercial or industrial use at least two years prior to bid opening. Where two units of the same class of equipment are required, these units must be products of the same manufacturer. However, the component parts of the system need not be the products of the same manufacturer.

## B.6 Fasteners

### B.6.1 High Strength Bolts

Unless otherwise specified, provide fasteners used for connecting machinery parts to each other and to supporting steelwork that conforming to the minimum specified physical requirements of ASTM A325 cut thread, washer faced, hexagonal head bolts. Do not use ASTM A490 bolts. Use nuts that conform to ASTM A563 or A194, Grade DH or 2H,

heavy hex series. High strength bolts, nuts and washers shall be mechanical galvanized, ASTM F2329.

### B.6.2 Hex Head Cap Screws

Provide hex head cap screws conforming to ANSI B18.2.1. Unless otherwise noted in the plans, provide such screws as grade 8.

### B.6.3 Bolt Dimensions

Dimension bolt heads, nuts and hexagonal cap screws in accordance to ANSI B18.2. Such fasteners are to be of the heavy series. Unless otherwise specified, provide Unified Coarse Class 2 threads for all bolts, nuts and cap screws.

### B.6.4 Locking of Fasteners

Provide approved type positive locks for cap screws and nuts on bolts unless noted otherwise in the plans. Use standard thickness nuts where double nuts are required in locations where occasional opening or adjustment is necessary. Use flat jam nuts only where space prohibits use of standard nuts. Lock washers must be made of tempered steel (mechanical galvanized, ASTM F2329), and conform to regular SAE dimensions and specifications. Properly tension high strength bolts and nuts, which will create a self-locking effect. If wire is used for locking it must be stainless steel

### B.6.5 Washers

Use hardened steel (mechanical galvanized, ASTM F2329), plain washers conforming to ASTM F436 at the rotated end of high strength ASTM A325 or A449 bolts.

### B.6.6 Miscellaneous Fasteners and Hardware

Unless otherwise specified or shown in the plans, provide miscellaneous fasteners and hardware, including cotter pins and lock wire of corrosion resistant stainless steel, with material composition of type 304 or 316.

## B.7 Keys and Keyways

### B.7.1 Dimensions

Provide keys and keyways conforming to the dimensions and tolerances for square and flat keys of ANSI B17.1, Keys and Keyseats, unless otherwise specified.

### B.7.2 Materials

Unless otherwise specified herein or in the plans, provide keys machined from steel forgings, ASTM A668, Class D.

## B.8 Brake Wheel Couplings

### B.8.1 General

Unless otherwise specified or shown in the plans, provide couplings that meet the requirements of Subarticle 6.7.9.3 of the AASHTO Movable Specifications. Provide couplings that are the standard product of an established manufacturer.

### B.8.2 Couplings

Use grid-type, self-aligning, full flexible (in bending and torsion) couplings to connect electric motors to machinery components. Couplings shall be rated to a minimum of 650 ft-lb. Provide couplings with steel hubs and alloy steel grids, and accommodates 13" brake wheel with shrouded bolt design.

### B.8.3 Couplings Lubrication

Coupling lubricant and its maintenance must be specified by the manufacturer. The lubricant chosen must be approved for use in grid couplings by the manufacturer.

## B.9 Brakes

### B.9.1 Intent of Operation

The motor brakes function to stop the bascule leaf under emergency stops and to hold the leaf stationary against wind and unbalance loads. During normal operation the span drive will stop the leaf and provide all necessary dynamic braking and control. Machinery brakes function primarily to hold the span against high wind loads, assisting the motor brakes. The machinery brakes also function to assist in stopping the bascule leaf under emergency stops should the motor brakes alone fail to do so.

### B.9.2 General

Motor and Machinery Brakes: 230/460 VAC, three-phase, 60 Hz, spring applied electro-hydraulic thruster released, AISE-NEMA rated mill duty shoe brakes of the torque rating and sizes indicated in the TSP and Plans.

Nitride all steel components for corrosion protection and resistance to wear, scuffing and fatigue prior to surface painting. Submit process documentation. Other surface processes, such as, hard chrome plating, nickel plating or hot-dipped galvanizing must be submitted and approved.

All main pivot points shall contain a bolted bushing assembly manufactured from corrosion resistant material. The outer bearing race shall be a Teflon/Dacron material for a self-lubricating surface and the inner race shall be made from nitrided steel. The use of needle type bearings or the use of pins as a pivot point is not acceptable.

### B.9.3 Actuator

Cast in aluminum alloy and fitted with double shaft seals, waterproof, dustproof IP65/NEMA 4, TENV, three-phase, squirrel cage motor. Actuator design to be independent of direction of motor rotation. Note: When the bridge is in the closed position the brake will be at a 65° angle with actuator above the brake wheel. When the bridge is in the full open position the brake will be horizontal.

Supply brake actuator with fluid suitable for ambient temperature range from -30°F to 170°F. Fit actuator with integral time delay valve to adjust the brake setting times by dampening the brake torque, fully adjustable during brake operation.

### B.9.4 Torque Spring
External torque spring infinitely can only be adjustable down to maximum 40 percent of full rated torque, fully enclosed with calibrated torque indicated. Brakes shall have minimum torque capacities of 225 ft-lbs for the motor brake and 490 ft-lbs for the machinery brake.

### B.9.5 Adjustments
Provide for self-adjustment for lining wear to sense the need for adjustment every time the brake sets and make correction next time the brake releases, and resistant to externally caused vibration. Provide for auto-equalization such that when the brake releases, running shoe clearance is automatically equalized and maintained. Locate to be immune to accumulated dust and be easily serviced.

### B.9.6 Manual Release
Provide latching hand release for manual release of the brakes without power. Design hand release as a fixed component, not requiring removable levers or wrenches and accessible from outside the brake enclosure and self-locking in the released position.

### B.9.7 Limit Switches
Provide electro-mechanical, lever-operated, brake mounted limit switches for indication of brake released, brake set and brake manually released. Utilize three independent limit switches with two N.O./N.C. contacts per switch rated for 120 VAC. Each lever type limit switch shall provide snap action double pole, double throw, contact blocks rated 10 amps at 120 VAC with high snap-through force to minimize contact rebound. Heavy duty, oil tight, NEMA type 4X construction with sealed bodies and pig-tail leads. Provide 316 S.S. lever arms with length required for application. Limit switches shall be fully adjustable to compensate for actuator stroke length after field installation and alignment of brake.

### B.9.8 Shoes
Provide self-centering brake shoes that are easily replaced from either side of the brake frame without disassembling the top brake connecting rod or pull rod, and without disturbing the torque adjustments.

### B.9.9 Brake Wheels
Supply brake wheels manufactured from ASTM A536 grade 65-45-12 ductile iron and coated with .005” minimum hard chrome plating, except on drum to coupling mating surfaces and internal surfaces adjacent to coupling grid. Provide 13” brake wheel integrated with brake wheel coupling. Refer to the Mechanical plans and the Technical Special Provisions for the Brake wheel coupling requirements.

### B.9.10 Nameplates
Provide each piece of mechanical equipment and apparatus with permanent, stainless steel nameplate on which is engraved the name of the Manufacturer, the catalog or model number, and the rating or capacity of the equipment or apparatus with lettering a minimum of 0.125 inch high and 0.015 inch deep. Nameplates on all proprietary elements must be readable, clean, and free of all paint before acceptance of the machinery.

**B.10 Shims**
Provide shims required for alignment as detailed in the plans. Provide the department with one full set of additional shims.

**B.11 Weldments**
Fabricate weldments for support of machinery from structural steel of the type and grade specified in the Plans. Where the type and grade of steel is not specified in the Plans, fabricate weldments from ASTM A709, Grade 50 structural steel. Use of steel plate larger than that denoted in the Plans may be required to obtain the final required dimensions. All machinery support weldments shall be stress relieved prior to any machining.

**B.12 Painting**
In-Shop Painting: Paint with a three-coat system consisting of one coat of inorganic zinc primer, polyamide epoxy intermediate coat and aliphatic polyurethane top coat. Matching existing color of bridge, provide paint sample for final approval.

Field Painting shall be performed under the bid item "Structure Overcoating Cleaning and Priming B-15-4".

**C Construction**
**C.1 General**
Construct in accordance to the requirements defined herein and in the plans and the provisions of the AASHTO Movable Specifications. Where a conflict exists between documents, the requirements of the plans and specifications will govern over those of the AASHTO Movable Specifications.

Brake replacement shall occur during grid deck replacement.

All machinery must be set, aligned and verified by experienced millwrights. Millwrights must have a minimum five years of experience in setting and aligning heavy machinery and must have completed installation of machinery for a minimum of three bascule bridges. Submit to the engineer for review the qualifications of the proposed millwrights.

**C.2 Setting of Machinery**
Unless otherwise specified or shown in the plans, position all machinery pedestals that are installed prior to aligning the supported machinery to be within the following tolerances:

| | |
|---|---|
| Horizontal position: | 1/32 in. |
| Vertical position: | 1/32 in. |
| Orientation (parallel to Plan centerline): | 0.5 degrees |

**C.3 Erection and Testing**
Erect and assemble machinery in accordance to part numbers and match marks. Adjust all parts for precise alignment by means of shims and pull parts tightly against supporting members by use of clamps, temporary bolts, or other approved means before drilling and reaming holes for connecting bolts. Install all machinery within the specified tolerances

and such that satisfactory operation is achieved. Utilize millwrights with demonstrated skill in this type work for all erection and adjustment of machinery.

Unless approved by the engineer prior to construction, drill bolt holes in structural steel supports only after alignment of machinery.

Do not install machinery unless mounting surfaces are clean of dirt, paint and other foreign materials.

Securely tighten connecting screws, bolts and nuts to torque values specified in the shop drawings or in accordance to AASHTO if not specified on the shop drawings.

Prior to erection of the machinery components on their structural supports, make a complete survey of the actual relative horizontal and vertical position of the structural supports. Install structural support bases and tighten fasteners as required prior to surveying. From this survey, prepare and submit a layout of machinery shim thicknesses for review by the engineer. Upon concurrence by the engineer that the layout is acceptable, mark the necessary center lines on the structural supports, install the required thickness of shims, verify, and only then proceed to set the machinery.

**C.4 Bolting**

Where turned bolts are to be used for connecting machinery to structural steel or steel supports, do not pre-drill the bolts holes in the steel, unless otherwise specified or shown in the plans. Sub-drill turned bolt holes from solid at assembly or erection after proper alignment of the machinery. Do not ream turned bolt holes to the full size until final assembly after alignment is complete.

Clean all contact surfaces of structural steel to which machinery is to be bolted, before bolting.

Spot face bolt holes through unfinished, rough cast surfaces for the head and nut.

Except as noted herein or in the plans, tension ASTM A325M and ASTM A449 bolts, used for connecting steel machinery parts together or to structural steel and whose nominal threaded diameter is less than or equal to 1-1/2 inches, in accordance to the bolted connection requirements of AASHTO and the standard specifications.

**C.5 Brakes**

For installation and alignment, follow manufacturer recommendations.

The new brakes operate on 460 volt, three phase power (460-3-60). Furnish and install liquid-tight flexible conduit and new power wires from each motor to the new brakes. Provide wiring runs in a manner which is secure, neat and does not interfere with the operation or maintenance of the leaf.

Establish final brake application times during functional testing. Initially set the brakes for the following application times (i.e. the time from removal of the release signal, or loss of power, required for the brake to produce its specified torque):

| | |
|---|---|
| Motor Brakes: | 1 to 2 seconds |
| Machinery Brakes: | 3 to 4 seconds |

**C.5.1 Burn-In (Bedding)**

In order to obtain full braking torque from the brakes the shoes must be bedded to the drums in order to get full pad contact. Perform the following brake pad seating procedure for each brake, one at a time as follows:

- Perform bedding procedure while operating span. Note; limit switches may need to be jumpered in order to perform bedding of brake pads. Brake Wheel will be attached to primary reducer input shaft during testing.
- Open brake motor disconnect switch for the brake being bedded.
- With the brake released by hand, operate the span for one full cycle in creep speed.
- After the motor has reached operating speed engage the brake pads onto the drum using the manual release lever. Apply pressure proportionately. Do not allow the brakes to overheat or glaze over. If the pressure on the brake pads is insufficient additional force may be applied to the actuator linkage by hand.
- Perform the seating procedure until 80% of the brake pad is in contact with the drum.

**C.6 Keys and Keyways**

All keys must be effectively held in place, preferably by setting them into closed-end keyways milled into the shaft. Round the ends of all such keys to a half circle of diameter equal to the width of the key. Keyways must have a radius in the inside corners. Keyways may not extend into any bearing. If two keys are used in a hub, locate them 120 degrees apart and in line with wheel arms where possible.

**C.7 Brake Wheel Couplings**

Finish boring and cutting of keyways in couplings to the limits specified on the shop drawings. Install coupling halves on reducer shafts and other shafts as per the coupling manufacturer's installation instructions. Coupling-shaft fits must conform to FN2 fit, unless otherwise noted in the contract documents. Manufacturer recommended coupling installation alignment tolerances apply. Where the manufacturer does not publish recommended tolerances, the maximum parallel offset of the coupling hubs may not exceed 0.0025 inches per inch of diameter of the outer gear tooth and angular offset may not exceed 1/16 degrees.

**C.8 Hubs and Bores**

Unless specified by the manufacturer, or noted otherwise, bore hubs concentric with the outside diameter within 0.002 inches.

**C.9 Weldments**

Perform all welding and weld inspection of machinery in accordance to AWS D1.5. Treat all welded machinery and weldments that support machinery as main members, all welds as subject to tension or stress reversal, and all welds as joining primary components. Do not perform field welding on these elements.

Perform coupon testing and provide a certified copy of test reports prior to any welding procedure involving attachment to existing steelwork. Provide report showing the chemical composition of the specific steel piece(s) to be welded. Design weld procedure specific to this chemical composition.

Unless otherwise shown in the Plans, connect elements of weldments by complete joint penetration welds. Do not use fillet welds where they would require machining to provide clearance for machinery, fasteners, or other attachments. Clip stiffeners to avoid overlapping stiffener welds with welds at the intersection of main plates.

Stress relieve weldments after welding and prior to final machining. Finish machined surfaces of weldments to flatness as required in this technical special provision and parallel to each other and to the bottom of the base plate. The height of the weldment shall be per Plan height ±⅛ inch. All exposed edges of weldments shall be ground to a chamfer or radius to eliminate sharp edges and burrs. Weldment base plates which will be placed against concrete or grout shall have ¾ inch minimum radii on the corners.

Finished mounting surfaces shall have those surfaces thoroughly coated with an approved corrosion inhibitor and shall be skidded or crated for protection during handling, shipment and storage. Prime weldment base surfaces which will have concrete or grout cast against them, but do not have a finish coat the weldments, shall be similarly protected.

**C.10 Painting**

In-Shop Painting: Clean and paint all machinery surfaces that are not corrosion resistant. Prepare non-contact finished surfaces per the manufacturer's recommendations then paint with a three-coat system as described herein. Apply the finish coat to new weldments (primer coat only on bottom mounting surfaces of weldments) in the shop.

Field Painting shall be performed under the pay item "Structure Overcoating Cleaning and Priming B-15-4". Clean and paint all newly exposed machinery surfaces that are not corrosion resistant. Blast cleaning is not allowed. Where applicable, paint from ⅛ to ¼ inches of the boundaries of the relatively moving parts of all machinery. Apply grease to these boundaries to protect from corrosion after painting or cleaning.

**C.11 Protection for Shipment**

Coat all finished metal surfaces as soon as practical, after machining, with rust-inhibitive coatings. Coat non-stainless shims with rust-inhibitive coating prior to shipment and wipe clean before installation. Completely protect machinery parts from weather, dirt and foreign materials during shipping and store indoors while awaiting installation. Shaft

journals having finished mounting surfaces must have those surfaces thoroughly coated with rust-inhibitive coatings while awaiting installation.

Bag and crate mounting hardware and other small parts for shipment. Provide and secure tags, recording the part number, to each part with wire or plastic ties prior to shipment.

### C.12 Startup Requirements

Implement startup procedures that protect the equipment from damage and ensure safe working conditions during bridge operations throughout construction. This section identifies specific requirements related to movable bridge startup operations.

#### C.12.1 Machinery Operation

Movable leaves must not be operated by the drive machinery until all of the following conditions have been met:

- Drive machinery connections have been completed including installation of couplings, motor brakes and machinery brakes and tensioning of fasteners.
- Brake support fasteners have been properly installed and tensioned as required.
- Wind loads are within the capacity of the mechanism used to rotate the bascule leaf.

Movable leaves must not be operated at greater than creep speed in any mode from the control desk until all the brakes have been tested for holding the span and E-Stop operation has been verified.

#### C.12.2 Brake Field Testing

After replacing the brakes, perform static testing of the span to determine the holding capabilities for each of the new brakes.

Perform the following test with bascule leaf operation in the closed position:

- Verify brake torque settings.
- Using creep/slow speed, manually release the brakes and raise the bascule leaf approximately 2 to 3 inches off of the bearing plates at the uplift girders. Stop the bridge by setting the brakes and removing the raise signal at the drive.
- Remove power from the motors and verify that the brakes hold the load.
- Manually release the machinery brake and verify that the motor brake holds the load.
- Set the machinery brake.
- Manually release the motor brake and verify that the machinery brake holds the load.
- Set the motor brake.
- Verify either brake can hold the load at 15° increments from seated to full open position.
- Verify brake setting times in accordance to the plans or as field modified per the direction of the engineer.

**C.13 Protection of Equipment**
During construction, all equipment must be protected from damage as a result of construction operations and contamination from dust and debris. Should any equipment become contaminated, immediately clean the equipment, re-lubricate, and protect from further contamination. The bridge must not be operated and no enclosed equipment opened during any period in which construction operations can contaminate the equipment.

**D Measurement**
The department will measure Mechanical Work as a single lump sum unit for the Mechanical Work, acceptably completed.

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| SPV.0105.04 | Mechanical Work | LS |

Payment is full compensation for furnishing all material and labor required to fabricate and install in working order the bascule span mechanical work as shown on the plans and as described herein; and for furnishing all tools, equipment and incidentals necessary to complete all work required under this pay item.

The cost of furnishing and fabricating machinery support weldments including furnishing and installing connection bolts between machinery and machinery supports is included in this item.

## 41. Steel Grid Remove and Replace, Item SPV.0165.01.

**A Description**
This special provision describes removing the existing steel grid roadway deck on each bascule leaf and furnishing and erecting the new steel grid deck system. Details in the plans and this special provision are based on a welded steel grid system. An equivalent riveted grid system may be provided, subject to the approval of the engineer. The contractor is responsible at no additional cost to the project for making all adjustments of details and providing all additional engineering and counterweight to balance the bascule leaves due to choosing to provide an alternate riveted grid system.

**B Materials**
Provide steel grid, trim bars, and connection plates conforming to ASTM A709 Grade A50 structural steel with a minimum copper content of 0.2 percent.

Provide grid flooring consisting of panels fabricated with standard “ribless” main bars 5-3/16 inches deep, spaced on 7½ inches on-center with cross bars ¼ inch by 2½ inches at 4-inch spacing. Intersect the cross bars by supplemental bars ¼ inch by 1 inch evenly spaced between main bars. Provide and connect diagonal bars alternately at a main bar and a supplemental bar. Interconnect the main beams, cross supplemental and diagonal bars by

welding in accordance to manufacturer's standards. Provide a grid system having a riding surface comprised of elements that are serrated.

Provide connection plates shop welded to the bottom of the main bearing bars for bolting the grid system to the supporting steel framing system. Provide galvanized form pans and #3 rebar in the roadway shoulder areas that are to be half filled with concrete. Field welding of the grid system to the supporting steel framing system will not be permitted

Hot-dip galvanize the shop assembled units of the steel grid floor including grid, connection plates, and all appurtenant items in accordance to ASTM A123 or A153 as applicable. Repair any and all galvanized areas damaged by welding, abrasion, or other causes in accordance to ASTM A780, using either the zinc-based solders or the zinc-rich paints type of materials. Follow the requirements of annexes A1, repair using zinc-based alloys, and/or A2, repair using zinc-rich paints.

Following galvanizing, weigh at least one grid panel of each panel size such that the information can be used for accuracy of final bridge balance calculations. Use an appropriately sized scale accurate to the nearest 10 pounds. Record the scale weights and associated panel piece mark and provide information to the engineer.

## C Construction

### C.1 Fabrication

Fabricate the grid deck within the limits of the tolerances shown on the plans. Explicitly show on the shop drawings, all of the tolerances specified in the plans, including cumulative width.

Perform all work for this item in accordance to all applicable requirements of the standard specifications in general and standard spec 515 in particular, except as modified herein or shown on the plans.

Coordinate locations of all holes to be field-drilled in connection plates to assure they will correspond to locations where attachment can be made to the top flanges of supporting stringers. Prior to preparing shop drawings make field verification measurements of the steel stinger spacing to ensure that shop welded grid attachment plates will be accurately centered on the stinger top flanges within ¼". Assemble the units on top of the stringers and at right angles to them. Provide units with length sufficient to cover half of the width of the roadway without splicing. Place the grid units, as shown on the erection drawings, and bolted to the stringers as shown on the plans.

In the erection of the units, exercise care to place each unit in its proper position, measuring in all cases from the same reference point to prevent cumulative errors in spacing. Splice the units together along their edges by the bolting of bars to form a rigid assembly. Field splice the trim and splice bars by bolting.

Place the fabricated floor in accordance to the manufacturer's specifications as approved by the engineer. Splice all transverse bars.

Connect grid assembly to the roadway stringers with field drilled holes in the stringers. Drill the holes for the connection bolts in the connection plates of the grid panels in the field to assure proper alignment and fit.

Do not perform welding to galvanized surfaces.

Submit complete construction drawings, shop details, and erection plans for review in accordance to standard spec 105.2 and as specified herein. Show spacing and size of all longitudinal and transverse members of the grid units, sizes and lengths of welds, sizes and locations of bolts, splices and trim on the drawings.

**C.2 Installation Tolerances**

Erect and connect the grid panels within the limits of the installation tolerances shown on the design plans.

**C.3 Removal of Existing Grid**

Remove the existing steel grid components in accordance to all applicable requirements of the standard specifications in general, and standard spec 203 in particular, except as modified herein or as shown on the plans.

The existing grid floor is welded to the top flanges of the supporting steel stringers. The end panels are also welded to the existing center break weldments which will remain in place. Remove all welds and grind smooth all flanges of stringers that are to remain and the center break weldments. Take all necessary care and precautions to ensure that remaining bridge steel is not damaged during removal operations. Repair or replace any damaged steel to the satisfaction of the engineer.

For the purposes of accurately determining the required modifications for the final bridge balance, provide scale measured weights of representative pieces of removed open steel grid and concrete filled grid components. Use an appropriately sized scale accurate to the nearest 10 pounds. Weigh pieces that are at least 20 square feet in area. Record the scale weights and associated accurately determined areas of the pieces weighed. Provide information to the engineer.

**C.4 Temporary Shoring**

Provide adequate shoring and temporary supports for each bascule leaf before removal of any of its existing steel grid. Assure that the leaves cannot roll in either direction during the work while the bridge is in an unbalanced state. Supports shall remain in place, until the leaf is rebalanced, and machinery brakes are operational. Prepare and submit fabrication drawings and erection diagrams for the temporary supports. Secure the services of a Professional engineer licensed in the State of Wisconsin, to design these supports to carry the entire unbalanced load plus all additional applicable loads. Submit proposed shoring methods, sealed design calculations, and drawings for review. The engineer’s

review will not relieve the contractor of responsibility to ensure that the bascule leaf is adequately shored in a safe manner during all phases of the work. Drawings shall show all necessary details for the construction of the shoring system. Designs shall utilize a minimum factor of safety of 3.

The contractor shall be fully responsible for the safety, stability and adequacy of the shoring system and shall be solely responsible and liable for all damages resulting from his construction operations or from failure or inadequacy of the shoring system. Repair and restore to original condition all surfaces of the movable and fixed structures where shoring was in contact.

**D Measurement**

The department will not measure Steel Grid Remove and Replace. The department will use pay plan quantity according to standard spec 109.1.1.2.

**E Payment**

The department will pay for plan quantities according to standard spec 109.1.1.2 at the contract unit price under the following bid item:

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| SPV.0165.01 | Steel Grid Remove and Replace | SF |

Payment is full compensation for removing and disposing of the old grid and for furnishing and erecting of the new steel grid roadway floor, and furnishing all labor, tools, equipment and incidentals necessary to complete the contract work. The cost of field drilling holes in supporting steel framing and grid connection plates and all associated galvanized bolts, nuts and washers for the bolted attachment of the grid system will be considered included in this payment. Also included is all work related to temporary shoring of the bascule leaves.

## 42. PPC Beam Surface Repair, Item SPV.0165.02.

**A Description**

This special provision describes removing deteriorated concrete from surfaces of precast pretensioned concrete beams at locations designated in the plans and as designated by the engineer and replacing it with a polymer modified Portland cement mortar.

**B Materials**

Provide a polymer modified Portland cement mortar meeting the following requirements:

- Have a corrosion inhibitor additive.
- A workable mix capable of bonding and holding its own plastic weight, when mixed and placed according to manufacturer instructions, on vertical and overhead surfaces.
- A minimum compressive strength of 1,500 psi at 24 hours, 3,500 psi at 3 days, and 5,000 psi at 28 days; according to ASTM C 109.
- Have a minimum bond strength of 2,000 psi at 28 days.

- Have a water soluble chloride ion content of less than 0.40 lb/cu yd. The test shall be performed according to ASTM C 1218, and the mortar shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an independent lab a minimum of once every two years, and the test results shall be provided to the department.

**C Construction**

Perform the work in accordance to the requirements of standard spec 509.3.7 and as specified herein. Remove all deteriorated concrete to sound material. The repair depth shall be a minimum of 3/8 inches. Take necessary precautions while removing deteriorated concrete to preserve all existing reinforcing steel and prestressing strands. At locations where reinforcing steel is exposed due to deteriorated and/or spalled concrete, remove concrete to a minimum depth of 1/2" inch behind the steel. Do not remove concrete behind prestressing strands except if it is heavily deteriorated.

Abrasive blast clean concrete and exposed steel reinforcement and prestressing strands against which repair mortar will be placed.

Use chipping hammers for removing concrete that are a light-duty pneumatic or electric tool with a 15 pound class or less. Use blast cleaning equipment for concrete surface preparation of the abrasive type with equipment having oil traps.

Power wash using water pressure between 1,200 psi to 2,000 psi to remove all chlorides, dust and loose materials, and any bond-inhibiting materials from the prepared surface.

After power washing, coat the blast cleaned surfaces of steel reinforcement and prestressing strands with zinc rich paint.

Just prior to mortar placement, saturate the repair surface with water to a saturated surface-dry condition.

Mix and place the polymer modified Portland cement mortar according to the manufacturer's instructions. Place and finish mortar to the contours of the member, as originally constructed. Do not place the mortar when the air temperature is below 45° F and falling or below 40° F. Do not place mortar when the surface temperature of the repair area is less than 40° F. Do not place mortar when the air temperature is greater than 90° F. Ensure mortar has a minimum temperature of 50°F and a maximum temperature of 90° F.

Apply cotton mats for curing the exposed layer of mortar within 10 minutes after finishing and begin wet curing immediately. Maintain curing for a minimum of 3 days. If temperatures below 45° F are forecast during the curing period, provide protection methods during the curing period.

Provide ladders or other appropriate equipment for the engineer to inspect repaired areas. After curing but no sooner than 28 days after placement of the mortar, examine the repair in the presence of the engineer for conformance with original dimensions, cracks, and

delaminations. Perform sounding for delaminations with a hammer or by other methods determined by the engineer. Remove and replace repaired areas of mortar as determined by the engineer for delaminations or surface cracks greater than 0.01 inches in width.

**D Measurement**
The department will measure PPC Beam Surface Repair by the square foot, acceptably completed.

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| SPV.0165.02 | PPC Beam Surface Repair | SF |

Payment is full compensation for completing all work including saw cutting, removing concrete; abrasive blasting, preparing surfaces; furnishing, applying and curing the repair mortar; and cleanup.

## 43. Concrete Fill for Roadway Grid Deck, Item SPV.0165.03.

**A Description**
This special provision describes furnishing and placing lightweight concrete masonry for the filled portions of the steel grid bridge deck. Perform the work in accordance to standard specs 501 and 502 except as otherwise hereinafter provided.

**B Materials**
This work requires that portions of the open-grid deck be filled with lightweight concrete masonry having a maximum plastic unit weight of 120 pounds per cubic foot. The lightweight concrete shall have a compressive strength of 3250 psi minimum at seven days and 4,000 psi at 28 days. The contractor is responsible for the lightweight concrete mix design.

Coarse aggregates shall meet the requirements of Lightweight Coarse Aggregate as specified hereinafter.

Add microsilica admixture to the lightweight concrete to reduce the chloride permeability of the concrete. Microsilica admixture shall meet the requirements as specified in this article.

- Lightweight Coarse Aggregate. Lightweight coarse aggregate shall be expanded clay, shale, or slate produced by the rotary-kiln process and shall meet the requirements of AASHTO M195 and ASTM C330. In case of conflict, AASHTO M195 shall govern. The maximum dry, loose unit weight of the aggregate shall not exceed 55 pounds per cubic foot as tested in accordance to AASHTO T19. If the unit weight of any shipment of lightweight aggregate varies by more than 10 percent from that of the sample submitted for approval, then the shipment may be rejected.

When tested in accordance to AASHTO T104 using magnesium sulfate, the loss of lightweight aggregate in 5 cycles of the accelerated soundness test shall not exceed 8 percent.

The drying shrinkage of concrete specimens prepared and tested in accordance to section 8.4 of AASHTO M195, shall not exceed 0.07 percent.

Furnish samples of coarse aggregate to the engineer for source approval. Take additional samples from shipments at intervals specified by the engineer.

The lightweight aggregate producer shall furnish test reports from an independent testing laboratory certifying that concrete made from the aggregate and containing approximately 6 percent air content shall have a minimum durability factor of 85 percent when tested in accordance to ASTM C666.

The resistance to degradation of the coarse aggregate, when tested in accordance to ASTM C131, shall not exceed 50 percent.

- Microsilica Admixture. Supply the microsilica admixture either in a dry, densified form or as water-based slurry. Submit a notarized manufacturer's certification stating that the microsilica admixture meets the following requirements. Include the solids content in the certification if the microsilica is furnished in slurry.

| | |
|---|---|
| Silica Dioxide (siO2), min % | 85 |
| * Sulfur Trioxide (SO3), max % | 3 |
| * Loss on Ignition, max % | 7 |
| * Other Ingredients, max % | 7 |
| Possolanic Activity Index with Portland Cement at 7 days, min % of control | 85 |

* The sum of sulfur trioxide, loss on ignition and other ingredients shall not exceed 15%. The "Other ingredients" include retarder and high-range water reducers, whether included in the admixture or added separately

**C Construction**

To prove the design meets the given criteria, provide the engineer with the mix design, test results and 6 test cylinders cured a minimum of 7 days, at least 30 days prior to the anticipated grid deck pour.

Monitor air content using the volumetric method.

Delay the pour if the temperature within 48 hours following the proposed pour is predicted to fall below 40° F or exceed 100° F.

Give the concrete a continuous wet cure for a period of 7 days. Use the continuous wet cure method for curing. The use of impervious curing covers which do not require wetting will not be permitted. Supply sufficient water needed to keep the blankets saturated for the

required curing period. Provide concrete having a 28 day strength of 4,000 psi. A bascule leaf with a completed concrete fill pour may be operated once the concrete has attained a compressive strength of 3000 psi. A completed bridge deck may be subject to vehicular traffic upon attainment of 3000 psi compressive strength, but no sooner than after seven curing days have passed.

**D Measurement**

The department will measure Concrete Fill for Roadway Grid Deck by the square foot, acceptably completed.

**E Payment**

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| SPV.0165.03 | Concrete Fill for Roadway Grid Deck | SF |

Payment is full compensation according to standard spec 502.5.2, and includes furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

## 44. Polymer Overlay Patching, Item SPV.0180.01.

**A Description**

This work consists of removing and replacing deteriorated areas of the existing protective polymer coating on the concrete sidewalk of the approach spans of Structure B-15-4 at locations specified by the engineer.

**B Materials**

**B.1 General**

Furnish polymer liquid binders from the department's approved product list.

**B.2 Polymer Resin**

Provide the polymer resin base and hardener composed of two-component, 100% solids, 100% reactive, thermosetting compound with the following properties:

| Property | Requirements | Test Method |
|---|---|---|
| Gel Time [A] | 15 - 45 minutes @ 73° to 75° F | ASTM C881 |
| Viscosity [A] | 7 - 70 poises | ASTM D2393, Brookfield RVT, Spindle No. 3, 20 rpm |
| Shore D Hardness [B] | 60-75 | ASTM D2240 |
| Absorption [B] | 1% maximum at 24 hr | ASTM D570 |
| Tensile Elongation [B] | 30% - 70% @ 7 days | ASTM D638 |
| Tensile Strength [B] | >2000 psi @ 7 days | ASTM D638 |
| Chloride Permeability [B] | <100 coulombs @ 28 days | AASHTO T277 |

[A] Uncured, mixed polymer binder
[B] Cured, mixed polymer binder

**B.3 Aggregates**

Furnish natural or synthetic aggregates that have a proven record of performance in applications of this type. Furnish aggregates that are non-polishing, clean, free of surface moisture, fractured or angular in shape; free from silt, clay, asphalt, or other organic materials; and meet the following properties and gradation requirements:

Aggregate Properties:

| Property | Requirement | Test Method |
|---|---|---|
| Moisture Content* | ½ of the measured aggregate absorption, % | ASTM C566 |
| Hardness | ≥6.5 | Mohs Scale |
| Fractured Faces | 100% with at least 1 fractured face and 80% with at least 2 fractured faces of material retained on No.16 | ASTM 5821 |
| Absorption | ≤1% | ASTM C128 |

* Sampled and tested at the time of placement.

**B.4 Required Properties of Overlay System**

The required properties of the overlay system are listed in the table below:

| Property | Requirement [A] | Test Method |
|---|---|---|
| Minimum Compressive Strength at 8 Hrs. (psi) | 1,000 psi @ 8 hrs<br>5,000 psi @ 24 hrs | ASTM C 579 Method B, Modified [B] |
| Thermal Compatibility | No Delaminations | ASTM C 884 |
| Minimum Pull-off Strength | 250 psi @ 24 hrs | ACI 503R, Appendix A |

[A] Based on samples cured or aged and tested at 75°F
[B] Place plastic inserts that will provide 2-inch by 2-inch cubes in the oversized brass molds.

**B.5 Approval of Sidewalk Polymer Overlay System**

A minimum of 20 working days prior to application, submit product data sheets and specifications from the manufacturer, and a certified test report to the engineer for approval. The engineer may request samples of the polymer and/or aggregate, prior to application, for the purpose of acceptance testing by the department.

For materials not pre-qualified, in addition to the above submittals, submit product history/reference projects and a certified test report from an independent testing laboratory showing compliance with the requirements of the specification.

The product history/reference projects consist of a minimum of 5 bridge/roadway locations where the proposed overlay system has been applied in Wisconsin or in locations with a similar climate - include contact names for the facility owner, current phone number or e-mail address, and a brief description of the project.

Product data sheets and specifications from the manufacture consists of literature from the manufacturer showing general instructions, application recommendations/methods, product properties, general instructions, or any other applicable information.

## C Construction

### C.1 General

Furnish the engineer a copy of the recommended procedures and apply the overlay system according to the manufacturer's instructions.

Store resin materials in their original containers in a dry area. Store and handle materials according to the manufacturer's recommendations. Store all aggregates in a dry environment and protect aggregates from contaminants on the job site.

### C.2 Preparation of Areas

#### C.2.1. Existing Protective Polymer Coating Removal

Remove all unsound areas of the existing polymer coating at locations specified by the engineer. Make patches a minimum of 6 inches by 6 inches square but large enough to include all unsound areas. Saw cut the perimeter of the patches. Remove the full depth of the existing polymer coating to allow placement of a new two layer system.

#### C.2.2 Surface Preparation

Thoroughly abrasive blast the surface to be provided with the overlay patch. Determine an acceptable abrasive blasting operation that provides a surface a profile meeting CSP 5 according to the International Concrete Repair Institute Technical Guideline No. 03732. If the engineer requires additional verification of the surface preparation, test the tensile bond strength according to ACI 503R, Appendix A of the ACI Manual of Concrete Practice. The surface preparation will be considered acceptable if the tensile bond strength is greater than or equal to 250 psi or the failure area at a depth of ¼ inches or more is greater than 50% of the test area. Continue adjustment of the abrasive blasting and necessary testing until the surface is acceptable to the engineer or a passing test result is obtained.

Prepare the surface areas to be patched using the final accepted abrasive method determined above. Thoroughly clean with hand-held equipment any areas inaccessible by the abrasive blasting equipment. Do not perform surface preparation more than 24 hours prior to the application of the overlay system.

Just prior to overlay placement, clean all dust, debris, and concrete fines from the prepared surfaces including the vertical surfaces with compressed air. When using compressed air, the air stream must be free of oil. Remove completely any grease, oil, or other foreign matter that rests on or has absorbed into the concrete. If any prepared surfaces (including the first layer of the polymer overlay) are exposed to rain or dew, lightly abrasive blast the exposed surfaces.

Protect railing, expansion joints, and other appurtenances on the sidewalk from damage by the blasting operations and from any materials adhering to or entering into them.

The engineer may consider alternate surface preparation methods per the overlay system manufacture's recommendations. The engineer will approve the final surface profile and sidewalk cleanliness prior to the contractor placing the polymer overlay.

**C.3 Application of the Overlay**

Perform the handling and mixing of the polymer resin and hardening agent in a safe manner to achieve the desired results according to the manufacturer's instructions. Do not apply the overlay system if any of the following exists:

- Ambient air temperature is below 50°F;
- Deck temperature is below 50°F;
- Moisture content in the deck exceeds 4.5% when measured by an electronic moisture meter or shows visible moisture after 2 hours when measured in accordance to ASTM D4263;
- Rain is forecasted during the minimum curing periods listed under C.5;
- Materials component temperatures below 50°F or above 99°F;
- Concrete age is less than 28 days unless approved by the engineer.
- The sidewalk temperature exceeds 100°F.
- If the gel time is 10 minutes or less at the predicted high air temperature for the day.

After surface areas to be patched have been blasted or during the overlay curing period, only necessary surface preparation and overlay application equipment will be allowed on the sidewalk. Begin overlay placement as soon as possible after surface preparation operations.

Provide the polymer overlay that consists of a two-course application of polymer and aggregate. Each of the two courses shall consist of a layer of polymer covered with a layer of aggregate in sufficient quantity to completely cover the polymer. Apply the polymer and aggregate according to the manufacturer's requirements. Apply the overlay using equipment designed for this purpose. The application machine shall feature positive displacement volumetric metering and be capable of storing and mixing the polymer resins at the proper mix ratio. Disperse the aggregate using a standard chip spreader or equivalent machine that can provide a uniform, consistent coverage of aggregate. First course applications that do not receive enough aggregate before the polymer gels shall be removed and replaced. A second course applied with insufficient aggregate may be left in place, but will require additional applications before opening to traffic.

After completion of each course, cure the overlay according to the manufacturer's instructions. Follow the minimum cure times listed under C.5 or as prescribed by the manufacturer. Remove the excess aggregate from the surface treatment by sweeping, blowing, or vacuuming without tearing or damaging the surface; the material may be re-used if approved by the engineer and manufacturer. Apply all courses of the overlay

system before opening the area to traffic. Do not allow traffic on the treated area until directed by the engineer.

After the first layer of coating has cured to the point where the aggregate cannot be pulled out, apply the second layer. Prior to applying the second layer, broom and blow off the first layer with compressed air to remove all loose excess aggregate.

**C.4 Application Rates**

Apply the polymer overlay in two separate courses in accordance to the manufacturer's instructions, but not less than the following rate of application.

| Course | Minimum Polymer Rate [A] (GAL/100 SF) | Aggregate [B] (LBS/SY) |
|---|---|---|
| 1 | 2.5 | 10+ |
| 2 | 5.0 | 14+ |

[A] The minimum total applications rate is 7.5 GAL/100 SF.

[B] Application of aggregate shall be of sufficient quantity to completely cover the polymer.

**C.5 Minimum Curing Periods**

As a minimum, cure the coating as follows:

| | Average temperature of deck, polymer and aggregate components in °F | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Course** | **50-54** | **55-59** | **60-64** | **65-69** | **70-74** | **75-79** | **80-84** | **85-99** |
| 1 | 6 hrs. | 5 hrs. | 4 hrs. | 3 hrs. | 2.5 hrs | 2 hrs | 1.5 hrs. | 1 hr. |
| 2 | 8 hrs. | 6.5 hrs. | 6.5 hrs. | 5 hrs. | 4 hrs. | 3 hrs. | 3 hrs. | 3 hrs. |

**C.6 Repair of Polymer Overlay**

Repair all areas of unbonded, uncured, or damaged polymer overlay for no additional compensation. Submit repair procedures from the manufacturer to the engineer for approval. Absent a manufacturer's repair procedures and with the approval of the engineer, complete repairs according to the following: Saw cut the limits of the area to the top of the concrete; remove the overlay by scarifying, grinding, or other approved methods; abrasive blast and air blast the concrete prior to placement of polymer overlay; and place the polymer overlay according to section C.3.

**D Measurement**

The department will measure Polymer Overlay Patching in area 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.0180.01 | Polymer Overlay Patching | SY |

Payment is full compensation for completing all work including saw cutting and removing areas of deteriorated overlay; abrasive blasting and preparing the surface after removal; tensile bond testing; furnishing and applying the overlay; and cleanup, sweeping/vacuuming and disposing of excess materials.

## 45. Remove Polymer Overlay, Item SPV.0180.02.

**A Description**
This special provision describes removing the existing polymer overlay on the bascule span sidewalk of Structure B-15-4 to allow a new overlay to be placed.

**B (Vacant)**

**C Construction**
Furnish the engineer with proposed procedure methods for review prior to beginning the work

Completely remove the existing polymer overlay and any underlying unsound or disintegrated areas of concrete within the sidewalk steel grid. Exercise care in removing the existing overlay so that no damage occurs to the steel grid. Use chipping hammers for removing concrete that are a light-duty pneumatic or electric tool with a 15 pound class or less. Repair any damage caused to the existing steel grid during the process of overlay removal to the satisfaction of the engineer at no additional cost to the department. Abrasively blast clean the concrete surfaces and the exposed surfaces of steel sidewalk grid after removal of the existing overlay. Do not allow material being removed to fall into the waterway.

Prior to beginning removal of the existing overlay, remove the timber rub rails along the base of the fence on the bascule span sidewalk to ensure adequate access to properly perform all removal work, surface preparation after removal, and placement of the new overlay. Reinstall timber rub rails after new overlay has cured.

**D Measurement**
The department will measure Remove Polymer Overlay in area 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.0180.02 | Remove Polymer Overlay | SY |

Payment is full compensation for removing the existing overlay, abrasive blasting the underlying steel and concrete surfaces, and for temporary removal and replacement of timber rub rails.

# ADDITIONAL SPECIAL PROVISION 4

## Payment to First-Tier Subcontractors

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

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

## Payment to Lower-Tier Subcontractors

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

## Release of Routine Retainage

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

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

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

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

# ADDITIONAL SPECIAL PROVISION 6
# ASP 6 - Modifications to the standard specifications

*Make the following revisions to the standard specifications:*

---

**450.3.2.1 General**

*Replace the entire text with the following effective with the January 2015 letting:*

(1) Do not place asphaltic mixture when the air temperature approximately 3 feet above grade, in shade, and away from artificial heat sources is less than 36 F for upper layers or 32 F for lower layers unless the engineer allows in writing. The contractor should place HMA pavement for projects on or north of STH 29 between May 1 and October 15 inclusive and for projects south of STH 29 between April 15 and November 1 inclusive. Notify the engineer at least one business day before paving.

(2) Unless the contract specifies otherwise, conform to the following:

- Keep the road open to all traffic during construction.
- Prepare the existing foundation for treatment as specified in 211.
- Incorporate loose roadbed aggregate as a part of preparing the foundation, in shoulder construction, or dispose of as the engineer approves.

(3) Place asphaltic mixture only on a prepared, firm, and compacted base, foundation layer, or existing pavement substantially surface-dry and free of loose and foreign material. Do not place over frozen subgrade or base, or where the roadbed is unstable.

---

**450.5 Payment**

*Replace the entire text with the following effective with the May 2015 letting:*

(1) All costs of furnishing, maintaining, and operating the truck scale or other weighing equipment and furnishing the weigh tickets are incidental to the contract.

(2) Nonconforming material allowed to remain in place is subject to price adjustment under 105.3.2.

(3) Full-depth sawing to remove integrally placed safety edge where not required is incidental to the contract.

(4) The contractor is responsible for the quality of HMA pavement placed in cold weather. If because of an excusable compensable delay under 108.10.3, the engineer directs the contractor to pave when the temperature is less than 36 F for the upper layer or less than 32 F for lower layers, the department:

- Will relieve the contractor of responsibility for damage and defects the engineer attributes to cold weather paving.
- Will not assess disincentives for density or ride.

---

**455.3.2.1 General**

*Replace the paragraphs one and two with the following effective with the January 2015 letting:*

(1) Apply tack coat only when the air temperature is 32 F or more unless the engineer approves otherwise in writing. Before applying tack coat ensure that the surface is dry and reasonably free of loose dirt, dust, or other foreign matter. Do not apply if weather or surface conditions are unfavorable or before impending rains.

(2) Use tack material of the type and grade the contract specifies. The contractor may, with the engineer's approval, dilute tack material as allowed under 455.2.4. Provide calculations using the asphalt content as-received from the supplier and subsequent contractor dilutions to show that as-placed material has 50 percent or more residual asphalt content. Apply at 0.050 to 0.070 gallons per square yard, after dilution, unless the contract designates otherwise. The engineer may adjust the application rate based on surface conditions. Limit application each day to the area the contractor expects to pave during that day.

### 460.2.2.3 Aggregate Gradation Master Range

*Replace paragraph one with the following effective with the December 2014 letting:*

(1) Ensure that the aggregate blend, including recycled material and mineral filler, conforms to the gradation requirements in table 460-1. The values listed are design limits; production values may exceed those limits.

**TABLE 460-1 AGGREGATE GRADATION MASTER RANGE AND VMA REQUIREMENTS**

| SIEVE | PERCENTS PASSING DESIGNATED SIEVES | | | | | | |
|---|---|---|---|---|---|---|---|
| | NOMINAL SIZE | | | | | | |
| | 37.5 mm | 25.0 mm | 19.0 mm | 12.5 mm | 9.5 mm | SMA 12.5 mm | SMA 9.5 mm |
| 50.0-mm | 100 | | | | | | |
| 37.5-mm | 90 –100 | 100 | | | | | |
| 25.0-mm | 90 max | 90 -100 | 100 | | | | |
| 19.0-mm | ___ | 90 max | 90 -100 | 100 | | 100 | |
| 12.5-mm | ___ | ___ | 90 max | 90 -100 | 100 | 90 - 97 | 100 |
| 9.5-mm | ___ | ___ | ___ | 90 max | 90 -100 | 58 - 72 | 90 - 100 |
| 4.75-mm | ___ | ___ | ___ | ___ | 90 max | 25 - 35 | 35 - 45 |
| 2.36-mm | 15 – 41 | 19 - 45 | 23 - 49 | 28 - 58 | 20 - 65 | 15 - 25 | 18 - 28 |
| 75-µm | 0 – 6.0 | 1.0 - 7.0 | 2.0 - 8.0 | 2.0 - 10.0 | 2.0 - 10.0 | 8.0 - 12.0 | 10.0 - 14.0 |
| % MINIMUM VMA | 11.0 | 12.0 | 13.0 | 14.0[1] | 15.0[2] | 16.0 | 17.0 |

[1] 14.5 for E-0.3 and E-3 mixes.

[2] 15.5 for E-0.3 and E-3 mixes.

---

### 460.3.4 Cold Weather Paving

*Add a new subsection as follows effective with the May 2015 letting:*

### 460.3.4 Cold Weather Paving

### 460.3.4.1 Cold Weather Paving Plan

(1) Submit a written cold weather paving plan to the engineer at the preconstruction meeting. In that plan outline material, operational, and equipment changes for paving when the air temperature approximately 3 feet above grade, in shade, and away from artificial heat sources is less than 40 F. Include the following:

- Use a department-accepted HMA mix design that incorporates a warm mix additive from the department's approved products list. Do not use a foaming process that introduces water into the mix.
- Use additional rollers.

(2) Engineer written acceptance is required for the cold weather paving plan. Engineer acceptance of the plan does not relieve the contractor of responsibility for pavement performance except as specified in 450.5(4).

### 460.3.4.2 Cold Weather Paving Operations

(1) Do not place asphaltic mixture when the air temperature approximately 3 feet above grade, in shade, and away from artificial heat sources is less than 40 F unless a valid engineer-accepted cold weather paving plan is in effect.

(2) If the national weather service forecast for the construction area predicts ambient air temperature less than 40 F at the projected time of paving within the next 24 hours, confirm or submit revisions to a previously engineer-accepted cold weather paving plan for engineer validation. Upon validation of the plan, the engineer will allow paving for the next day. Once in effect, pave conforming to the engineer-accepted cold weather paving plan for the balance of that work day or shift regardless of the temperature at the time of paving.

**460.4 Measurement**

*Add paragraph two as follows effective with the January 2015 letting:*

(2) The department will measure HMA Cold Weather Paving by the ton of HMA mixture for pavement placed conforming to an engineer-accepted cold weather paving plan.

---

**460.5.1 General**

*Revise paragraph one as follows effective with the January 2015 letting:*

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

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 460.1100 | HMA Pavement Type E-0.3 | TON |
| 460.1101 | HMA Pavement Type E-1 | TON |
| 460.1103 | HMA Pavement Type E-3 | TON |
| 460.1110 | HMA Pavement Type E-10 | TON |
| 460.1130 | HMA Pavement Type E-30 | TON |
| 460.1132 | HMA Pavement Type E-30X | TON |
| 460.1700 | HMA Pavement Type SMA | TON |
| 460.2000 | Incentive Density HMA Pavement | DOL |
| 460.4000 | HMA Cold Weather Paving | TON |

---

**460.5.2.2 Disincentive for HMA Pavement Density**

*Revise paragraph two as follows effective with the January 2015 letting:*

(2) The department will not assess density disincentives for pavement placed in cold weather because of a department-caused delay as specified in 450.5(4).

---

**460.5.2.4 Cold Weather Paving**

*Add a new subsection as follows effective with the May 2015 letting:*

**460.5.2.4 Cold Weather Paving**

(1) Payment for HMA Cold Weather Paving is full compensation for additional materials and equipment specified for cold weather paving under 460.3.4 including costs for preparing, administering, and following the contractor's cold weather paving plan. The department will not pay for HMA Cold Weather Paving for HMA placed on days when the department is assessing liquidated damages.

(2) If HMA pavement is placed under 460.3.4 and the HMA Cold Weather Paving bid item is not in the contract, the department will pay for the additional costs specified in 460.5.2.4(1) as extra work. The department will pay separately for HMA pavement under the appropriate HMA Pavement bid items.

---

**465.2 Materials**

*Replace paragraph two with the following effective with the December 2014 letting:*

(2) Under the other 465 bid items, the contractor need not submit a mix design. Furnish aggregates mixed with a type AC asphaltic material, except under the Asphaltic Curb bid item furnish PG58-28 asphaltic material. Use coarse and fine mineral aggregates uniformly coated and mixed with the asphaltic material in an engineer-approved mixing plant. The contractor may include reclaimed asphaltic pavement materials in the mixture.

**506.3.2 Shop Drawings**

*Replace the entire text with the following effective with the May 2015 letting:*

(1) Ensure that shop drawings conform to the contract plans and provide additional details, dimensions, computations, and other information necessary for completely fabricating and erecting the work. Include project and structure numbers on each shop drawing sheet.

(2) Check shop drawings and submit electronically to the department for review before beginning fabrication. For primary fabrication items, also certify that shop drawings conform to quality control standards by submitting department form DT2333. Department review does not relieve the contractor from responsibility for errors or omissions on shop drawings.

(3) Shop drawings are part of the contract. The department must approve differences between shop drawings and contract plans. The contractor bears the costs of department-approved substitutions. Do not deviate from or revise drawings without notifying the department and resubmitting revised drawings.

(4) Ensure that the fabricator delivers 3 sets of shop drawings for railroad structures to the railroad company upon contract completion.

## Bid Items Added

*Add the following new bid item effective with the January 2015 letting:*

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 460.4000 | HMA Cold Weather Paving | TON |

## Errata

*Make the following corrections to the standard specifications:*

**501.3.2.4.4 Water Reducer**

*Correct errata by deleting the reference to footnote 6 for grade D concrete.*

(1) Add a water reducing admixture conforming to 501.2.3. Determine the specific type and rate of use based on the atmospheric conditions, the desired properties of the finished concrete and the manufacturer's recommended rate of use. The actual rate of use shall at least equal the manufacturer's recommended rate, and both the type and rate used require the engineer's approval before use.

**506.5 Payment**

*Correct errata by changing the reference to 506.3.22.*

(9) The department will limit costs for inspections conducted under 506.3.22 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.

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

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

**Effective August 2015 letting**

## BUY AMERICA PROVISION

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

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

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://wisconsindot.gov/rdwy/worksheets/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

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**
**DOOR 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, 2015

**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 | 30.85 | 17.61 | 48.46 |
| Carpenter | 32.72 | 16.00 | 48.72 |
| Future Increase(s): Add $1.42/hr on 6/1/2015; Add $1.42/hr on 6/1/2016. 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 | 33.86 | 17.96 | 51.82 |
| Future Increase(s): 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 | 32.82 | 20.16 | 52.98 |
| Fence Erector | 23.73 | 19.09 | 42.82 |
| Ironworker | 29.27 | 23.97 | 53.24 |
| Future Increase(s): Add $1.15/hr on 6/1/2015. 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. | | | |
| Line Constructor (Electrical) | 39.50 | 16.70 | 56.20 |
| Painter | 23.62 | 9.07 | 32.69 |
| Pavement Marking Operator | 24.10 | 25.75 | 49.85 |
| Piledriver | 33.24 | 16.00 | 49.24 |
| Future Increase(s): Add $1.44/hr on 6/1/2015; Add $1.44/hr on 6/1/2016. 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. | | | |
| Roofer or Waterproofer | 21.00 | 6.81 | 27.81 |
| Teledata Technician or Installer | 22.25 | 12.24 | 34.49 |

| TRADE OR OCCUPATION | HOURLY BASIC RATE OF PAY | HOURLY FRINGE BENEFITS | TOTAL |
|---|---|---|---|
| | $ | $ | $ |
| Tuckpointer, Caulker or Cleaner | 30.85 | 17.61 | 48.46 |
| Underwater Diver (Except on Great Lakes) | 35.40 | 15.90 | 51.30 |
| Heavy Equipment Operator - ELECTRICAL LINE CONSTRUCTION ONLY | 35.55 | 15.57 | 51.12 |
| Light Equipment Operator -ELECTRICAL LINE CONSTRUCTION ONLY | 31.60 | 14.98 | 46.58 |
| Heavy Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY | 27.65 | 13.44 | 41.09 |
| Light Truck Driver - ELECTRICAL LINE CONSTRUCTION ONLY | 25.68 | 12.83 | 38.51 |
| Groundman - ELECTRICAL LINE CONSTRUCTION ONLY | 21.75 | 11.63 | 33.38 |
| **TRUCK DRIVERS** | | | |
| Single Axle or Two Axle | 25.18 | 18.31 | 43.49 |
| Future Increase(s): Add $1.15/hr on 6/1/2015. 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. | | | |
| Three or More Axle | 25.28 | 18.31 | 43.59 |
| Future Increase(s): Add $1.15/hr on 6/1/2015. 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 | 30.27 | 21.15 | 51.42 |
| Future Increase(s): Add $1.25/hr on 6/1/2015; Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017. 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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http:/ / www.dot.wi.gov/ business/ civilrights/ laborwages/ pwc. htm. | | | |
| Pavement Marking Vehicle | 33.22 | 14.77 | 47.99 |
| Shadow or Pilot Vehicle | 24.37 | 17.77 | 42.14 |
| Truck Mechanic | 24.52 | 17.77 | 42.29 |
| **LABORERS** | | | |
| General Laborer | 30.13 | 15.14 | 45.27 |
| Future Increase(s): Add $1.05/hr eff. 06/01/2015; Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017 Premium Pay: Add $.10/hr for topman, air tool operator, vibrator or tamper operator (mechanical hand operated), chain saw operator and demolition burning torch laborer; Add $.15/hr for bituminous worker (raker and luteman), formsetter (curb, sidewalk and pavement) and strike off man; Add $.20/hr for blaster and powderman; Add $.25/hr for bottomman; Add $.35/hr for line and grade specialist; Add $.45/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 | 30.13 | 15.14 | 45.27 |
| Future Increase(s): Add $1.05/hr eff. 06/01/2015; Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017 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). | | | |

| TRADE OR OCCUPATION | HOURLY BASIC RATE OF PAY $ | HOURLY FRINGE BENEFITS $ | TOTAL $ |
|---|---|---|---|
| Flagperson or Traffic Control Person | 26.76 | 15.14 | 41.90 |
| Future Increase(s): Add $1.05/hr eff. 06/01/2015; Add $1.00/hr eff. 06/01/2016; Add $1.00/hr eff. 06/01/2017<br>Premium Pay: DOT PREMIUMS: 1) Pay two times the hourly basic rate on Sunday, New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day & Christmas Day. 2) Add $1.25/hr when the Wisconsin Department of Transportation or responsible governing agency requires that work be performed at night under artificial illumination with traffic control and the work is completed after sunset and before sunrise. | | | |
| Fiber Optic Laborer (Outside, Other Than Concrete Encased) | 18.33 | 8.92 | 27.25 |
| Railroad Track Laborer | 17.00 | 2.96 | 19.96 |
| **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). | 37.72 | 21.15 | 58.87 |
| Future Increase(s): Add $1.25/hr on 6/1/2015; Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017.<br>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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http:/ / www.dot.wi.gov/ business/ civilrights/ laborwages/ pwc. htm. | | | |
| 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. | 37.22 | 21.15 | 58.37 |
| Future Increase(s): Add $1.25/hr on 6/1/2015; Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017.<br>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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http:/ / www.dot.wi.gov/ business/ civilrights/ laborwages/ pwc. htm. | | | |
| 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); | 36.72 | 21.15 | 57.87 |

| TRADE OR OCCUPATION | HOURLY BASIC RATE OF PAY | HOURLY FRINGE BENEFITS | TOTAL |
|---|---|---|---|
| | $ | $ | $ |
| Material or Stack Hoist; Mechanic or Welder; Milling Machine; Post Hole Digger or Driver; Roller (Over 5 Ton); Scraper (Self Propelled or Tractor Drawn) 5 cu yds or More Capacity; Shoulder Widener; Sideboom; Skid Rig; Stabilizing or Concrete Mixer (Self-Propelled or 14S or Over); Straddle Carrier or Travel Lift; Tractor (Scraper, Dozer, Pusher, Loader); Tractor or Truck Mounted Hydraulic Backhoe; Trencher (Wheel Type or Chain Type); Tube Finisher; Tugger (NOT Performing Work on the Great Lakes); Winches & A- Frames.<br>Future Increase(s): Add $1.25/hr on 6/1/2015; Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017.<br>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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http:/ / www.dot.wi.gov/ business/ civilrights/ laborwages/ pwc. htm. | | | |
| 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.<br>Future Increase(s): Add $1.25/hr on 6/1/2015; Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017.<br>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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http:/ / www.dot.wi.gov/ business/ civilrights/ laborwages/ pwc. htm. | 36.72 | 21.15 | 57.87 |
| 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.<br>Future Increase(s): Add $1.25/hr on 6/1/2015; Add $1.30/hr on 6/1/2016; Add $1.25/hr on 6/1/2017.<br>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 $1.50/hr night work premium. See DOT'S website for details about the applicability of this night work premium at: http:/ / www.dot.wi.gov/ business/ civilrights/ laborwages/ pwc. htm. | 36.17 | 21.15 | 57.32 |
| Fiber Optic Cable Equipment. | 28.89 | 17.95 | 46.84 |
| Work Performed on the Great Lakes Including Diver; Wet Tender or Hydraulic Dredge Engineer. | 41.65 | 21.71 | 63.36 |
| 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. | 41.65 | 21.71 | 63.36 |
| 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. | 35.72 | 15.94 | 51.66 |

| TRADE OR OCCUPATION | HOURLY BASIC RATE OF PAY | HOURLY FRINGE BENEFITS | TOTAL |
|---|---|---|---|
| | $ | $ | $ |
| 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. | 35.46 | 20.40 | 55.86 |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| | SECTION 0001 Contract Items | | | | | |
| 0010 | 203.0600.S Removing Old Structure Over Waterway With Minimal Debris (station) 01. STA 777+50. 00 | LUMP | LUMP | | | . |
| 0020 | 312.0115 Select Crushed Material | 60.000 CY | | . | | . |
| 0030 | 502.3100 Expansion Device (structure) 01. B-15-4 | LUMP | LUMP | | | . |
| 0040 | 502.3200 Protective Surface Treatment | 1,039.000 SY | | . | | . |
| 0050 | 502.3210.S Pigmented Protective Surface Treatment | 1,990.000 SY | | . | | . |
| 0060 | 502.3215.S Protective Surface Treatment Reseal | 220.000 SY | | . | | . |
| 0070 | 502.5005 Masonry Anchors Type L No. 5 Bars | 300.000 EACH | | . | | . |
| 0080 | 505.0605 Bar Steel Reinforcement HS Coated Bridges | 5,380.000 LB | | . | | . |
| 0090 | 506.0605 Structural Steel HS | 21,400.000 LB | | . | | . |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| 0100 | 506.6000 Bearing Assemblies Expansion (structure) 01. B-15-4 | 24.000 EACH | | . | | . |
| 0110 | 506.7050.S Removing Bearings (structure) 01. B-15-4 | 24.000 EACH | | . | | . |
| 0120 | 509.0301 Preparation Decks Type 1 | 119.000 SY | | . | | . |
| 0130 | 509.0302 Preparation Decks Type 2 | 32.000 SY | | . | | . |
| 0140 | 509.1000 Joint Repair | 18.000 SY | | . | | . |
| 0150 | 509.1500 Concrete Surface Repair | 2,250.000 SF | | . | | . |
| 0160 | 509.2500 Concrete Masonry Overlay Decks | 80.000 CY | | . | | . |
| 0170 | 509.5100.S Polymer Overlay | 161.000 SY | | . | | . |
| 0180 | 509.9005.S Removing Concrete Masonry Deck Overlay (structure) 01. B-15-5 | 457.000 SY | | . | | . |
| 0190 | 509.9005.S Removing Concrete Masonry Deck Overlay (structure) 02. B-15-6 | 457.000 SY | | . | | . |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| 0200 | 509.9025.S Epoxy Injection Crack Repair | 66.000 LF | | . | | . |
| 0210 | 509.9026.S Cored Holes 2-Inch Diameter | 6.000 EACH | | . | | . |
| 0220 | 517.0600 Painting Epoxy System (structure) 01. B-15-4 | LUMP | LUMP | | | . |
| 0230 | 517.1000.S Structure Repainting Organic Zinc Rich System (structure) 01. B-15-4 | LUMP | LUMP | | | . |
| 0240 | 517.3000.S Structure Overcoating Cleaning and Priming (structure) 01. B-15-4 | LUMP | LUMP | | | . |
| 0250 | 517.4000.S Containment and Collection of Waste Materials (structure) 01. B-15-4 | LUMP | LUMP | | | . |
| 0260 | 517.4500.S Negative Pressure Containment and Collection of Waste Materials (structure) 01. B-15-4 | LUMP | LUMP | | | . |
| 0270 | 517.6001.S Portable Decontamination Facility | 1.000 EACH | | . | | . |
| 0280 | 603.8000 Concrete Barrier Temporary Precast Delivered | 1,600.000 LF | | . | | . |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| 0290 | 603.8125 Concrete Barrier Temporary Precast Installed | 1,600.000 LF | | . | | . |
| 0300 | 619.1000 Mobilization | 1.000 EACH | | . | | . |
| 0310 | 628.1905 Mobilizations Erosion Control | 1.000 EACH | | . | | . |
| 0320 | 628.1910 Mobilizations Emergency Erosion Control | 1.000 EACH | | . | | . |
| 0330 | 628.7015 Inlet Protection Type C | 10.000 EACH | | . | | . |
| 0340 | 643.0100 Traffic Control (project) 01. 4330-16-60 | 1.000 EACH | | . | | . |
| 0350 | 643.0300 Traffic Control Drums | 6,040.000 DAY | | . | | . |
| 0360 | 643.0410 Traffic Control Barricades Type II | 10.000 DAY | | . | | . |
| 0370 | 643.0420 Traffic Control Barricades Type III | 3,391.000 DAY | | . | | . |
| 0380 | 643.0705 Traffic Control Warning Lights Type A | 4,695.000 DAY | | . | | . |
| 0390 | 643.0715 Traffic Control Warning Lights Type C | 880.000 DAY | | . | | . |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| 0400 | 643.0800 Traffic Control Arrow Boards | 80.000 DAY | | . | | . |
| 0410 | 643.0900 Traffic Control Signs | 4,388.000 DAY | | . | | . |
| 0420 | 643.0910 Traffic Control Covering Signs Type I | 2.000 EACH | | . | | . |
| 0430 | 643.0920 Traffic Control Covering Signs Type II | 1.000 EACH | | . | | . |
| 0440 | 643.1000 Traffic Control Signs Fixed Message | 53.000 SF | | . | | . |
| 0450 | 643.1050 Traffic Control Signs PCMS | 100.000 DAY | | . | | . |
| 0460 | 643.2000 Traffic Control Detour (project) 01. 4430-16-60 | 1.000 EACH | | . | | . |
| 0470 | 643.3000 Traffic Control Detour Signs | 64,904.000 DAY | | . | | . |
| 0480 | 646.0106 Pavement Marking Epoxy 4-Inch | 1,800.000 LF | | . | | . |
| 0490 | 646.0600 Removing Pavement Markings | 800.000 LF | | . | | . |
| 0500 | 649.0400 Temporary Pavement Marking Removable Tape 4-Inch | 3,200.000 LF | | . | | . |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| 0510 | SPV.0060 Special 01. PPC BEAM END BLOCK REPAIR | 30.000 EACH | | . | | . |
| 0520 | SPV.0060 Special 02. CLEAN AND COAT CONCRETE BEAM ENDS | 36.000 EACH | | . | | . |
| 0530 | SPV.0060 Special 03. SEAL PARAPET DEFLECTION JOINTS | 123.000 EACH | | . | | . |
| 0540 | SPV.0060 Special 04. REMOVE AND RESET BEAM CONNECTION | 5.000 EACH | | . | | . |
| 0550 | SPV.0085 Special 01. FURNISH BRIDGE BALANCE PLATES | 84,500.000 LB | | . | | . |
| 0560 | SPV.0105 Special 01. TRAP DOOR REPLACE HINGES | LUMP | LUMP | | | . |
| 0570 | SPV.0105 Special 02. BALANCE BASCULE BRIDGE LEAVES | LUMP | LUMP | | | . |
| 0580 | SPV.0105 Special 03. ELECTRICAL WORK | LUMP | LUMP | | | . |
| 0590 | SPV.0105 Special 04. MECHANICAL WORK | LUMP | LUMP | | | . |
| 0600 | SPV.0165 Special 01. STEEL GRID REMOVE AND REPLACE **P** | 6,105.000 SF | | . | | . |
| 0610 | SPV.0165 Special 02. PPC BEAM SURFACE REPAIR | 40.000 SF | | . | | . |

CONTRACT: 20150811009 PROJECT(S): 4430-16-60 FEDERAL ID(S): N/A

CONTRACTOR :_____

| LINE NO | ITEM DESCRIPTION | APPROX. QUANTITY AND UNITS | UNIT PRICE DOLLARS | UNIT PRICE CTS | BID AMOUNT DOLLARS | BID AMOUNT CTS |
|---|---|---|---|---|---|---|
| 0620 | SPV.0165 Special 03. CONCRETE FILL FOR ROADWAY GRID DECK | 890.000 SF | | . | | . |
| 0630 | SPV.0180 Special 01. POLYMER OVERLAY PATCHING | 12.000 SY | | . | | . |
| 0640 | SPV.0180 Special 02. REMOVE POLYMER OVERLAY | 161.000 SY | | . | | . |
| | SECTION 0001 TOTAL | | | | | . |
| | TOTAL BID | | | | | . |

# PLEASE ATTACH SCHEDULE OF ITEMS HERE