**Special Provisions**

**Table of Contents**

**Article Description Page #**

[1. General. 2](#_Toc505243333)

[2. Scope of Work. 2](#_Toc505243334)

[3. Prosecution and Progress. 2](#_Toc505243335)

[4. Traffic. 3](#_Toc505243336)

[5. Holiday Work Restrictions. 5](#_Toc505243337)

[6. Railroad Insurance and Coordination - BNSF Railway Company 5](#_Toc505243338)

[7. Construction Over or Adjacent to Navigable Waters. 10](#_Toc505243339)

[8. Utilities. 10](#_Toc505243340)

[9. Public Convenience and Safety. 11](#_Toc505243341)

[10. Environmental. 11](#_Toc505243342)

[11. Notice to Contractor, Verification of Asbestos Inspection, No Asbestos Found. 13](#_Toc505243343)

[12. Expansion Device, B-47-40. 13](#_Toc505243344)

[13. Sawing Pavement Deck Preparation Areas, Item 509.0310.S. 15](#_Toc505243345)

[14. Concrete Masonry Deck Repair, Item 509.2100.S. 15](#_Toc505243346)

[15. Polymer Overlay, Item 509.5100.S. 16](#_Toc505243347)

[16. Epoxy Crack Sealing, Item 509.9020.S. 23](#_Toc505243348)

[17. Structure Repainting General. 23](#_Toc505243349)

[18. Structure Overcoating Cleaning and Priming B-47-40, Item 517.3000.S. 24](#_Toc505243350)

[19. Containment and Collection of Waste Materials B-47-40, Item 517.4000.S. 26](#_Toc505243351)

[20. Concrete Masonry Counterweight Pit Floor Repair, Item SPV.0035.01. 27](#_Toc505243352)

[21. Embedded Galvanic Anodes, Item SPV.0060.01 28](#_Toc505243353)

[22. Counterweight Protective Coating, Item SPV.0070.01. 30](#_Toc505243354)

[23. Stainless Steel Flashing, Item SPV.0085.01. 31](#_Toc505243355)

[24. Counterweight Calculations and Span Balancing, Item SPV.0105.01. 32](#_Toc505243356)

[25. Preparation Counterweight Pit Floors, Item SPV.0180.01. 33](#_Toc505243357)

[26. Polymer Overlay Counterweight Pit Floor, Item SPV.0180.02. 35](#_Toc505243358)

STSP’S Revised June 15, 2017

**SPECIAL PROVISIONS**

1. General.

Perform the work under this construction contract for Project 1530-01-75, St. Croix River Bridge B-47-40, Hastings-Prescott, USH 10, Pierce 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, 2018 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 (20171130)

1. Scope of Work.

The work under this contract shall consist of bridge rehabilitation, concrete surface repair, seal replacement, aluminimum flashing, polymer overlay, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

1. Prosecution and Progress.

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

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

To revise the start date, submit a written request to the engineer at least two weeks before the intended start date. The engineer will approve or deny that request based on the conditions cited in the request and its effect on the department’s scheduled resources. The completion date is June 14, 2019.

Contractor is required to coordinate with the United States Coast Guard (USCG) St. Louis, Missouri Office 30 days prior to starting work. A USCG approval letter must be received before work commences. Confirm the specific dates of the non-navigational season with the US Coast Guard during construction. Construction work shall be conducted with the bridge fully operational during the navigation season. During the navigation season, the bridge is in operation from 6:00 AM to 10:00 PM, Monday through Sunday. Channel restrictions are not allowed during navigation season. The bridge will be inoperable with the movable span in the down position during the non-navigational season for structural repairs.

United States Coast Guard Contact:

Commander, Eighth Coast Guard District

ATTN: Bridge Branch

1222 Spruce St, Room 2.102D

St Louis, MO 63103-2832

1. Traffic.

Accomplish the construction sequence, including the associated traffic control as detailed in the Traffic Control plan sheets and as described herein.

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

Weekday and weekend closures will be allowed except during holidays and festivals. Refer to the “Holiday Work Restrictions” article.

Materials and equipment cannot be stored on the movable span during construction.

During navigation season traffic control devices cannot be placed on the movable span unless secured to the open grid deck. Signs, barricades, and drums must be adjusted in the field to maintain this requirement; a non-standard gap in device spacing is allowed. All devices must be cleared from the movable span prior to final testing as well. All traffic control device locations must be approved by the engineer in the field.

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

Contact WisDOT to arrange for traffic signal timing modifications. Implement a dynamic max for the eastbound phase with a 90-second dynamic max and a 10-second dynamic step. Notify David Fenske with WisDOT, 715-836-2800, 7 days prior to the start of construction to make arrangements.

**Staging**

Staging shall conform to the traffic control plans. The project consists of three stages as follows, once in the fall for joint replacement and concrete surface repair and once in the spring for polymer overlay of the deck:

Maintain at least one lane of traffic in each direction during deck or joint work. Traffic control devices may only be used during active deck work or during required cure times. All traffic control devices must be removed outside of these times.

Stage 1: Close the eastbound outside shoulder and lane- 15' work zone. Maintain one eastbound and one westbound lane at 16' width each in the center of the bridge. Separate opposing traffic with flexible tubular markers.

Stage 2: Close the inside eastbound and westbound lane- 24' work zone. Maintain one eastbound and one westbound lane at 13'-8" width each on the outside edges of the bridge.

Stage 3: Close the westbound outside shoulder and lane- 15' work zone. Maintain one eastbound and one westbound lane at 16' width each in the center of the bridge. Separate opposing traffic with flexible tubular markers.

Parking, storing of equipment or materials is not allowed within the closed lanes during any stage of construction.

**Portable Changeable Message Signs – Message Prior Approval**

Notify the engineer, two business days prior to deploying or changing a message on a PCMS to obtain approval of the proposed message.

Notify all emergency services at least 10 days in advance of each traffic control staging change.

**Wisconsin Lane Closure System Advance Notification**

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

**TABLE 108-1 CLOSURE TYPE AND REQUIRED MINIMUM ADVANCE NOTIFICATION**

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

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

stp-108-057 (20161130)

1. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying USH 10 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 1, 2018 to 6:00 AM Tuesday, September 4, 2018, for Labor Day;
* From noon Friday, September 14, 2018 to 6:00 AM Monday, September 17, 2018;
* From noon Wednesday, November 21, 2018 to 6:00 AM Monday, November 26, 2018, for Thanksgiving;
* From noon Friday, December 21, 2018 to 6:00 AM Wednesday, December 26, 2018, for Christmas;
* From noon Friday, December 28, 2018 to 6:00 AM Wednesday, January 2, 2019, for New Years;
* From noon Friday, April 19, 2019 to 6:00 AM Monday, April 22, 2019, for Easter;
* From noon Friday, May 24, 2019 to 6:00 AM Tuesday, May 28, 2019 for Memorial Day;

**Event Periods**

Pierce County Fair - August 9-12, 2018

Minnesota State Fair - August 23 - September 3, 2018

Prescott Daze - September 7-9, 2018

Flood Run - September 15, 2018 & April 20, 2019

Gobble Gait- Hastings, MN – November 22, 2018

No work will be performed, nor will material haul of any kind be allowed across or along any portion carrying USH 10 traffic during holidays and special events. Lane closures are not allowed when work is not being completed or after curing is completed.

stp-107-005 (20050502)

1. Railroad Insurance and Coordination - BNSF Railway Company

**A Description**

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

**A.1 Railroad Insurance Requirements**

In addition to standard spec 107.26, provide railroad protective liability insurance coverage as specified in standard spec 107.17.3.

Insurance is filed in the name of BNSF Railway Company. Requirements of the standard specifications are changed as follows:1

Before the state issues its notice to proceed to the contractor or contractors (collectively, the contractor) awarded the contract for construction involving the project described in this stipulation (the project), the state shall require the contractor to provide certain insurance coverage to protect the railroad (as defined in this section) from loss for property and liability exposures relating to the construction activities on the PROJECT. The manner and process in which this will be accomplished is as detailed below.

|  |  |
| --- | --- |
| TYPE OF INSURANCE | MINIMUM LIMITS REQUIRED |
| 1. Commercial general liability insurance; shall be endorsed to include blanket contractual liability coverage; shall cover bodily injury and property damage, personal and advertising injury, and fire legal liability. There shall be no endorsements limiting coverage for the work to be performed pursuant to this Stipulation. | $5,000,000 combined single limits per occurrence with an annual aggregate limit of not less than  $10,000,000. |
| 2. Workers’ compensation and employer’s liability coverage. | Workers’ compensation limits: statutory limits. Employers’ liability limits: Bodily injury by accident $100,000 each accident Bodily injury by disease $500,000 each accident $100,000 each employee |
| 3. Commercial automobile liability insurance; shall cover all owned, non-owned, and hired vehicles used by the CONTRACTOR in carrying out the contract, and shall include coverage for bodily | $1,000,000 combined single limit per occurrence. |
| 4. Railroad Protective Liability Insurance, issued on a standard ISO form 00 35 10 93 or its equivalent and endorsed to include the Pollution Exclusion Amendment (ISO form CG 28 31 10 93) and the Limited Seepage and Pollution Endorsement. No endorsements restricting FELA coverage may be added. | $5,000,000 per occurrence  $10,000,000 in the aggregate |

1 As used in this section, “STATE” and “COMPANY” have the meanings assigned to them in the Stipulation to which this Exhibit is attached, “FELA” means the Federal Employment Liability Act, and “this Stipulation” means the Stipulation to which this Exhibit is attached.

2 The CONTRACTOR may satisfy the requirements for insurance types 1, 2 and 3 through primary insurance coverage or through excess/umbrella policies.

1. The policies for insurance types 1, 2 and 3 may not contain an exclusion for punitive damages.
2. The commercial general liability policy shall include an endorsement that removes any restrictions on coverage regarding work being performed within 50 feet of a railroad or railroad property and an endorsement that removes any exclusion related to explosion, collapse or underground hazard.
3. The CONTRACTOR must waive its right of recovery against the RAILROAD for all claims and suits against the RAILROAD. In addition, the CONTRACTOR’s insurers, through the terms of the policy or policy endorsement, must waive their right of subrogation against the RAILROAD for all claims and suits. The certificates of insurance must reflect the waiver of subrogation endorsement. The CONTRACTOR also must waive its right of recovery, and its insurers must also waive their right of subrogation, against the RAILROAD for loss of the CONTRACTOR’s owned or leased property or property under the CONTRACTOR’s care, custody or control.
4. The CONTRACTOR’s insurance policies, except for excess liability/umbrella policies, through policy endorsement, must include wording to the effect that such policies are primary and non-contributing with respect to any insurance carried by the RAILROAD. The certificates of insurance must reflect that such wording is included in the evidenced policies.
5. The policies for insurance types 1 and 3, above, must include a severability of interest endorsement. The RAILROAD and Jones Lang LaSalle Global Services- RR, Inc. must be named as an additional insured with respect to work performed under this project. Severability of interest and naming the RAILROAD and Jones Lang LaSalle Global Services- RR, Inc. as additional insured must be indicated on the certificates of insurance.
6. The CONTRACTOR shall provide the original Railroad Protective Liability policy to the RAILROAD prior to performing any work on the PROJECT.
7. The CONTRACTOR shall only obtain coverage from insurance companies licensed to do business in the State of Wisconsin that have an AM Best rating of A- and Class VII or better.
8. The CONTRACTOR is not allowed to self-insure.
9. Prior to performing any work on the PROJECT, the CONTRACTOR shall provide the RAILROAD acceptable certificates of insurance, including original signatures of the authorized representatives evidencing the required coverages, endorsements, and amendments and referencing the RAILROAD’s contract audit/folder number (if available), as evidence that required coverages for insurance types 1, 2 and 3 are in force.
10. The policies for insurance types 1, 2 and 3 must contain a provision that obligates the insurer to notify the RAILROAD at least 60 calendar days before a cancellation, non- renewal, substitution or material change in coverage, and such provision must be reflected on the insurance certificates.
11. The CONTRACTOR shall send the required insurance documentation to the RAILROAD at the following address:

BNSF Risk Management

2500 Lou Menk Drive AOB-1

Fort Worth, TX 76131-2828

1. Acceptance by the RAILROAD of a certificate of insurance that does not comply with this section shall not operate as a waiver of the CONTRACTOR’s obligation to provide the insurance required by this section.
2. If the RAILROAD notifies the STATE that the CONTRACTOR does not have the required insurance, the STATE’s engineer shall immediately suspend work on the PROJECT until the matter is resolved.
3. The requirements for insurance types 1, 2, and 3 shall apply with equal force whether the CONTRACTOR or a subcontractor, or anyone directly or indirectly employed by either, performs work on the PROJECT. If any portion of the PROJECT work is subcontracted, the CONTRACTOR must require the subcontractor to provide and maintain insurance coverages for insurance types 1, 2, and 3 that meet the requirements of this section, except that the minimum limits required for the subcontractor’s commercial general liability policy shall be $2,000,000 per occurrence and $4,000,000 in the aggregate.
4. The fact that the CONTRACTOR obtains insurance as required by this section shall not release or diminish the CONTRACTOR’s liability. Damages recoverable by the RAILROAD will not be limited by the required insurance coverages.
5. Upon request from the RAILROAD, the CONTRACTOR will provide a certified duplicate original of any requested policy.
6. For purposes of this section references to the RAILROAD mean the COMPANY, Burlington Northern Santa Fe Corporation, and the subsidiaries, successors, assigns and affiliates of each.

Notify evidence of the required coverage, and duration to **Jamie L. Johnson**, BNSF Railway Company, 2500 Lou Menk Drive, Building AOB-1, Fort Worth, Texas 76132-2828, FAX (817)352-7207.

Notify evidence of the required coverage, and duration to Contact Calvin Nutt, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail [calvin.nutt@BNSF.com](mailto:calvin.nutt@BNSF.com) to determine the applicable railroad rules and regulations. Once determined send the RPLI policy to Choose an item.. Approval of the policy will not take place until the Manager of Public Projects has been contacted.

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

Include the following information on the insurance document:

Project ID: 1530-01-75

Project Location: Prescott, WI

Route Name: USH 10, Pierce County

Railroad Subdivision: Aurora Sub

Crossing ID: Bridge 407.72

Railroad Milepost: 407.72

Work Performed: Concrete surface repair and epoxy seal on the counter weights, aluminum flashing on vertical side of counter weight, concrete repair on the pits of east and west towers, polymer overlay on the spans 1, 2, 4 and 5.

**A.2 Train Operation**

Approximately 44 through freight trains operate daily at up to 50 mph. There may be switching movements at lower speeds.

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

**Construction Contact**

Calvin Nutt, Manager of Public Projects; 80 44th Avenue NE, Minneapolis, MN 55421; Telephone (763) 782-3495; E-mail [Calvin.Nutt@BNSF.com](mailto:Calvin.Nutt@BNSF.com) for consultation on railroad requirements during construction.

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

**Flagging Contact**

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

**Cable Locate Contact**

In addition to contacting Diggers Hotline, contact the BNSF Communications Network Control Center at (800) 533-2891, five working days before the locate is needed. Reference Wisconsin Milepost 407.72 on Line Segment 3.

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

**A.4 Work by Railroad**

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

**A.5 Temporary Grade Crossing**

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

stp 107-026 (20170615)

1. Construction Over or Adjacent to Navigable Waters.

The St. Croix River is classified as a federal navigable waterway under standard spec 107.19.

stp-107-060 (20171130)

1. Utilities.

This contract comes under the provision of Administrative Rule Trans 220.

stp-107-065 (20080501)

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

Known utility work within the project area is as follows:

**Prescott Water Utility** (Water) has water facilities located within the project limits. The WisDOT water service lateral is attached to the southeast corner of the bridge and runs west to the operator’s house. The contractor must notify the utility 3 working days prior to surface repair work to have them shut off the water. The contractor must detach the water lateral from the abutment prior to concrete surface repair and reattach it once work is complete, incidental to the bid item Concrete Surface Repair.  The contractor is required to protect the existing facility during construction operations.

Contact: Hank Zwart, 800 Borner Street, Prescott, WI 54021, (715) 262-5544

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

* **Comcast** (Communication Line)
* **CenturyLink** (Communication Line)
* **Prescott Wastewater Treatment Facility** (Sanitary Sewer)

1. Public Convenience and Safety.

*Revise standard spec 107.8(6) as follows:*

Check for and comply with local ordinances governing the hours of operation of construction equipment. Do not operate motorized construction equipment from 10:00 PM until the following 7:00 AM, unless prior written approval is obtained from the engineer.

stp-107-001 (20060512)

1. Environmental.

**Environmental Protection**

Supplement standard spec 107.18 follows:

The nesting season for swallows and other birds is usually between May 1 and August 30. If there is evidence of migratory bird nesting on the existing structure, please note that under the U.S. Migratory Bird Treaty Act, destruction of swallows and other migratory birds or their nests is unlawful unless a permit has been obtained from the U.S. Fish & Wildlife Service.

Peregrine Falcon (Falco peregrinus), is a bird listed as Endangered in Wisconsin, prefers relatively inaccessible rock ledges on the sides of steep bluffs and ledges on highrise buildings in urban areas. The recommended avoidance period is from March 1 through July 31.

**Northern Long-eared Bat (*Myotis septentrionalis*)**

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

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

**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:
   1. Washing with ~212º F water (steam clean), or
   2. Drying thoroughly for five days after cleaning with soap and water and/or high pressure water, or
   3. 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.

stp-107-055 (20130615)

Properly contain all construction debris and avoid runoff into the canal. Dispose of all debris materials in accordance with all applicable regulations. The contractor must submit an erosion control implementation plan for runoff prevention 14 days prior to the preconstruction conference.

**Debris Control Measures**

The contractor will be required to capture and prevent debris from falling onto the Lower St. Croix National Scenic Riverway (St. Croix River). Disposal of waste or excess materials in floodplains, wetlands, or waterways is not permitted.

Refer to item 517.4000.S Containment and Collection of Waste Materials B-47-40, for painting debris, containment, and disposal. All painting work will occur within the counterweight pit. Refer to item SPV.0180.02 Polymer Overlay Counterweight Pit Floor for cleaning of the sump and sump pump and adhere to the containment and collection article for disposable of sump materials.

Deck cleaning prior to polymer overlay work may include sweeping or air blasting to clear debris. All materials cleared must be vacuumed or shoveled off of the roadway and disposed of in a sealed container to prevent migration to the waterway. No materials can be swept or blown into the open grid deck. Blow or sweep materials away from the movable span and toward the roadway.

Inlet protection is included off of the structure to collect excess debris. Sediment logs can be used near the open grid to provide a physical barrier for surface debris. Payment for sediment logs is incidental to the item 628.1905 Mobilizations Erosion Control.

1. Notice to Contractor, Verification of Asbestos Inspection, No Asbestos Found.

John Roelke, License Number All-119523, inspected Structure B-47-0040 for asbestos on July 10, 2017. No regulated Asbestos Containing Material (RACM) was found on this structure. A copy of the inspection report is available from: Matt Pfeifer, WisDOT Project manager, 715-579-0789.

stp-107-127 (20120615)

1. Expansion Device, B-47-40.

A Description

This special provision describes furnishing and installing an expansion device as the plans show conforming to standard spec 502 as modified in this special provision.

B Materials

The minimum thickness of the polychloroprene strip seal shall be 1/4 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 | 55 ± 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*[1]*** | | |
| **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 | ----- | ----- |

*[1]* Expansion device strip seal gland size requirement of 4", 5", and 6" shall be as the plans show.

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.

stp-502-020 (20171130)

1. Sawing Pavement Deck Preparation Areas, Item 509.0310.S.

A Description

This special provision describes sawing the boundaries of the existing concrete on the bridge deck that has been sounded and marked for deck preparation. These boundaries will be at least 2-inches and not greater than 6-inches outside of the unsound or disintegrated areas of concrete, as directed or marked by the engineer in the field.

B (Vacant)

C Construction

Make the saw cuts a minimum of 1 inch deep at the locations marked.

Use a diamond blade for sawing that will allow the concrete to be sawed dry. Upon completion of the daily sawing, remove the dust deposits from the deck.

D Measurement

The department will measure Sawing Pavement Deck Preparation Areas by the linear foot acceptably completed.

The department will not measure for payment over-cuts, cuts made beyond the limits marked in the field.

E Payment

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

ITEM NUMBER DESCRIPTION UNIT

509.0310.S Sawing Pavement Deck Preparation Areas LF

Payment is full compensation for making all saw cuts; and for debris disposal.

stp-509-070 (20171130)

1. Concrete Masonry Deck Repair, Item 509.2100.S.

**A Description**

This special provision describes providing concrete masonry on the sawed deck preparation areas of the concrete bridge deck and in full depth deck, curb, and joint repair areas. Conform to standard spec 502 and standard spec 509.

**B Materials**

**B.1 Neat Cement**

Furnish a neat cement bonding grout. Mix the neat cement in a water-cement ratio approximately equal to 5 gallons of water per 94 pounds of cement.

**B.2 Concrete**

Furnish grade C, C-FA, C-S, C-IS, C-IP, C-IT, or E concrete conforming to standard spec 501 for deck preparation, full-depth deck repair, curb repair and joint repair areas except as follows:

1. The contractor may increase slump of grade E concrete to 3 inches.

2. The contractor may use ready-mixed concrete.

**C Construction**

**C.1 Neat Cement**

Immediately before placing the concrete deck patching, coat the prepared surfaces with a neat cement mixture. Ensure the prepared concrete surfaces are moist without any standing water before coating with the neat cement mixture. Brush the neat cement mixture over the prepared concrete surfaces to ensure that all parts receive an even coating, and do not allow excess neat cement to collect in pockets. Apply the neat cement at a rate that ensures the cement does not dry out before being covered with the new concrete.

**C.2 Placing Concrete**

Place concrete conforming to standard spec 509. As determined by the engineer, consolidate smaller areas by internal vibration, strike them off, and finish the areas with hand floats to produce plane surfaces that conform to the grade and elevation of the adjoining surfaces. Give all deck patching areas a final hand float finish.

**C.3 Curing Concrete**

Cure the concrete masonry deck patching conforming to standard spec 502.2.6(1).

**D Measurement**

The department will measure the Concrete Masonry Deck Repair bid item by the cubic yard, acceptably completed.

The department will measure concrete used in deck preparation areas and in full depth deck, curb, and joint repair as part of the Concrete Masonry Deck Repair bid item.

The department will not measure wasted concrete.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 509.2100.S | Concrete Masonry Deck Repair | CY |

Payment is full compensation for furnishing, hauling, preparing, placing, finishing, curing, and protecting all materials.

stp-509-060 (20170615)

1. 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**

Furnish a 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 to 5000 psi @ 7 days | ASTM D638 |
| Chloride Permeability B | <100 coulombs @ 28 days | AASHTO T277 |

A Uncured, mixed polymer binder

B Cured, mixed polymer binder

The required properties of the polymer resin when mixed with aggregate:

|  |  |  |
| --- | --- | --- |
| **Property** | **Requirement** C | **Test Method** |
| Minimum Compressive  Strength | 1,000 psi @ 8 hrs  5,000 psi @ 24 hrs | ASTM C579 Method B,  Modified D |
| Thermal Compatibility | No Delaminations | ASTM C884 |
| Minimum Pull-off Strength | 250 psi @ 24 hrs | ASTM C1583 |

C Based on samples cured or aged and tested at 75°F

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

**B.3 Aggregates**

Furnish natural or synthetic 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 D5821 |
| Absorption | ≤1% | ASTM C128 |

\* Sampled and tested by the department prior to placement.

Gradation:

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

**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 report of test or analysis from an independent laboratory to the engineer for approval. The department will sample and test the aggregates for gradation and moisture content prior to placement. If requested, supply the department with samples of the polymer for the purpose of acceptance testing.

**B.5.1 Product Data Sheets and Specifications**

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.

**B.5.2 Certified Report of Test or Analysis**

*Polymer Binder:* Submit a certified report of test or analysis from an independent laboratory dated less than 3 years prior to the date of the project letting showing the polymer binder meets the requirements of section B.2.

*Aggregates:* Submit a certified report of test or analysis from an independent laboratory dated less than 6 months prior to the date of the project letting showing the aggregates meet the requirements of section B.3.

**C Construction**

**C.1 General**

*Field Review:* Conduct a field review of the existing deck to identify any possible surface preparation and material compatibility issues.

*Pre-Installation Meeting*: Conduct a pre-installation meeting with the manufacturer's representative and the engineer prior to construction. Discuss the field review findings, verification testing of the surface preparation and 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. Supply for the engineer’s use for the duration of the project, a Concrete Surface Profile (CSP) chip set of 10 from the International Concrete Repair Institute (ICRI).

*Manufacturer’s Representative:* An experienced 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. This requirement may be reduced at the engineer’s discretion.

*Material Storage:* Store and handle materials according to the manufacturer’s recommendations. Store resin materials in their original containers in a dry area. 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 profile meeting CSP 5 (medium-heavy shotblast) according to the ICRITechnical Guideline No. 310.2. If the engineer requires additional verification of the surface preparation, test the tensile bond strength according to ASTM C1593. 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.

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.

Prior to shot blasting, remove pavement markings within the treatment area using an approved mechanical or blasting method.

Prepare the vertical concrete surfaces adjacent to the deck a minimum of 2” above the overlay according to SSPC-SP 13 (free of contaminants, dust, and loose concrete) 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 (brush/breeze blast) the exposed surfaces.

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.2.3 Transitional Area**

If shown on the plans, create a transitional area approaching transverse expansion joints and ends of the deck using an approved mechanical or blasting method. Remove ¼” to 5/16” of concrete adjacent to the joint or end of deck and taper a distance of 3 feet.

If shown on the plans, create a transitional area on the approach pavement. Prep and place the first lift 3’ beyond the end of the deck the same width as the deck. Prep and place the second lift 6’ beyond the end of the deck the same width as the deck.

**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:

1. Ambient air temperature is below 50oF or above 100oF;
2. Deck temperature is below 50oF;
3. 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;
4. Rain is forecasted during the minimum curing periods listed under C.5;
5. Materials component temperatures below 65oF or above 99oF;
6. Concrete age is less than 28 days unless approved by the engineer.
7. The deck temperature exceeds 100oF.
8. 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. Provide appropriate protective measures to prevent contamination from equipment allowed on the deck during preparation and application operations. 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 method that provides a uniform, consistent coverage of aggregate and minimizes aggregate rolling or bouncing into final position. 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 equipment or 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. 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. |

If faster cure times are desired and achievable, submit to the engineer a certified test report from an independent laboratory showing the material is able to reach a compressive strength of 1000 psi as tested per ASTM C 579 Method B within the temperature ranges and cure times for which the product is proposed to be placed. Establish ambient air, material, and substrate temperatures from the manufacturer for field applications. Field applications will not be allowed below the documented temperatures.

**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 creating the transitional area; for providing the overlay; for cleanup; and for sweeping/vacuuming and disposing of excess materials. Concrete Deck Repair will be paid for separately.

stp-509-030 (20170615)

1. Epoxy Crack Sealing, Item 509.9020.S.

**A Description**

Seal vertical cracks in the interior walls of Pier 2 and Pier 3 according to the plan details and as hereinafter provided.

**B Materials**

Furnish a penetrating epoxy sealant manufactured by Sika, Adhesive Engineering, Technical Sealants, Dayton Superior, or equal. Before using, obtain the engineer’s approval for the epoxy system which is proposed to seal the cracks.

**C Construction**

Before sealing, clean the cracks by chipping and by using high-pressure air.

After all of the cleaning is completed, inject epoxy sealant into the cracks to be sealed. Seal the cracks using the penetrating epoxy sealant as recommended by the sealant manufacturer.

**D Measurement**

The department will measure Epoxy Crack Sealing in length by the linear foot of crack, acceptably sealed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| 509.9020.S | Epoxy Crack Sealing | LF |

Payment is full compensation for cleaning the cracks; and for furnishing and placing the epoxy sealant.

1. 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**

*Add the following to standard spec 105.9:*

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.

stp-517-005 (20150630)

1. Structure Overcoating Cleaning and Priming B-47-40, Item 517.3000.S.

A Description

This special provision describes cleaning and painting with two or three coats of paint the metal surfaces.

A.1 Areas to be Cleaned and Painted

Structure B-47-40

1. Two Coat Area: 0 SF with SP 1 cleaning.

2. Three Coat Area:

60 SF with SP 2 cleaning.

400 SF with SP 3 cleaning.

800 SF with SP 11 cleaning.

0 SF with SP 15 cleaning.

1,260 SF total three-coat area.

B (Vacant)

C Construction

C.1 Surface Preparation

Before overcoating or hand tool cleaning, solvent clean all surfaces to be coated according 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. 11 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 according to the manufacturer’s recommendations.

Before 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 according 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 with 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 Structure Overcoating Cleaning and Priming B-47-40 LS

Payment is full compensation for preparing and cleaning the designated surfaces; and for furnishing and applying the paint.

stp-517-036 (20080501)

1. Containment and Collection of Waste Materials B-47-40, Item 517.4000.S.

**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 | Containment and Collection of Waste Materials B-47-40 | LS |

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

stp-517-037 (20080902)

1. Concrete Masonry Counterweight Pit Floor Repair, Item SPV.0035.01.

**A Description**

This special provision describes providing concrete masonry for the counterweight pit floors. Conform to standard spec 502 and standard spec 509.

**B Materials**

**B.1 Neat Cement**

Furnish a neat cement bonding grout. Mix the neat cement in a water-cement ratio approximately equal to 5 gallons of water per 94 pounds of cement.

**B.2 Concrete**

Furnish grade C, C-FA, C-S, C-IS, C-IP, C-IT, or E concrete conforming to standard spec 501 for preparation and repair areas except as follows:

1. The contractor may increase slump of grade E concrete to 3 inches.

2. The contractor may use ready-mixed concrete.

**C Construction**

**C.1 Neat Cement**

Immediately before placing the concrete, coat the prepared surfaces with a neat cement mixture. Ensure the prepared concrete surfaces are moist without any standing water before coating with the neat cement mixture. Brush the neat cement mixture over the prepared concrete surfaces to ensure that all parts receive an even coating, and do not allow excess neat cement to collect in pockets. Apply the neat cement at a rate that ensures the cement does not dry out before being covered with the new concrete.

**C.2 Placing Concrete**

Place concrete conforming to standard spec 509. As determined by the engineer, consolidate smaller areas by internal vibration, strike them off, and finish the areas with hand floats to produce plane surfaces that conform to the grade and elevation of the adjoining surfaces. Give all patching areas a final hand float finish.

**C.3 Curing Concrete**

Cure the concrete masonry counterweight pit floor patching conforming to standard spec 502.2.6(1).

**D Measurement**

The department will measure the Concrete Masonry Counterweight Pit Floor Repair bid item by the cubic yard, acceptably completed.

The department will measure concrete used in counterweight pit floor preparation areas as part of the Concrete Masonry Counterweight Pit Floor Repair bid item.

The department will not measure discarded or unused concrete.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0035.01 | Concrete Masonry Counterweight Pit Floor Repair | CY |

Payment is full compensation for furnishing, hauling, preparing, placing, finishing, curing, and protecting all materials.

1. Embedded Galvanic Anodes, Item SPV.0060.01

**A Description**

This special provision describes furnishing all labor, materials, and equipment necessary to properly install embedded galvanic anodes in concrete.

**B Materials**

Furnish pre-manufactured galvanic anodes designed for cathodic protection when embedded in concrete and tied to steel reinforcing. The core of the anode shall consist of a minimum of 1.3 ounces of electrolytic high grade zinc in compliance with ASTM B418 cast around a pair of steel tie wires and encased in a highly alkaline cementitious shell with a pH of 14. The anodes shall have one side that is less than 1½-inches in height.

Submit the product information to the engineer for approval. Supply a certification of compliance to the engineer before starting work. Deliver, store, and handle all materials according to the manufacturer’s instructions.

Use one of the qualified galvanic anode products and manufacturers given below. An equivalent system may be used with the written approval of the Engineer.

Product Name Manufacturer/Supplier Telephone Number

Galvashield Vector Corrosion Technologies (319) 364-5355

Sentinel Euclid Chemical Company (800) 321-7628

Emaco CP Intact BASF Building Systems (262) 227-4045

**C Construction**

**C.1 Concrete Repair**

Repair the concrete and prepare the exposed reinforcing steel in accordance with Section 509 of the Standard Specifications. Use Portland cement based repair concrete materials with suitable electrical conductivity.

**C.2 Galvanic Anode Installation**

Install embedded galvanic anodes in accordance with manufacturer’s recommendations, as shown on the plans, and as listed in this specification.

**C.2.2** Install galvanic anodes to existing reinforcement along the perimeter of the repair at spacing as specified on the plans. In no case shall the distance between anodes exceed 24 inches.

**C.2.3** Provide 3/4-inch clearance between anodes and substrate to allow repair material to encase anode.

**C.2.4** Secure the galvanic anodes as close as possible to the patch edge using the anode tie wires. Tighten the tie wires to allow little or no free movement.

If the anode is to be tied onto a single bar, or if less than 1½-inch of concrete cover is expected, place anode beneath the uncoated bar and secure to reinforcing steel.

If 1½-inch concrete cover will exist over the anode, the anode may be placed at the intersection between two bars and secured to each bar.

**C.3 Electrical Continuity**

Confirm electrical connection between anode tie wire and uncoated reinforcing steel with a multi-meter. The maximum DC resistance shall be 1 Ohm. Confirm electrical continuity of the exposed uncoated reinforcing steel within the repair area. Steel reinforcement shall be considered continuous when the DC resistance is 1 Ohm or less. If necessary, establish the electrical continuity with uncoated steel tie wire.

**C.4 Inspection**

The engineer will verify proper installation of the galvanic anodes prior to placement of the concrete.

**D Measurement**

The department will measure Embedded Galvanic Anodes as each individual anode acceptably installed.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0060.01 | Embedded Galvanic Anodes | Each |

Payment is full compensation for furnishing and for properly installing; and for establishing and checking electrical continuity.

Concrete repair work will be paid for separately.

1. Counterweight Protective Coating, Item SPV.0070.01.

**A Description**

This special provision describes cleaning the concrete on the concrete counterweight and applying an epoxy coating. Perform this work following the concrete counterweight 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 counterweight concrete of all debris 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 profile meeting CSP 5 according to the International Concrete Repair Institute Technical Guideline No. 03732.

Clean and apply the epoxy coating to the repaired counterweight at least three days after completing the concrete surface repairs. Cleaning and protective coating areas include the concrete on the top of the counterweight below the rear break, the entire back face and the first five feet of the concrete underside of the counterweight.

**D Measurement**

The department will measure Counterweight Protective Coating by the gallon 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.0070.01 | Counterweight Protective Coating | Gal |

Payment is full compensation for cleaning and applying the protective coating to the counterweight concrete.

1. Stainless Steel Flashing, Item SPV.0085.01.

**A Description**

This special provision describes furnishing and installing stainless steel flashing under the rear break of each bascule leaf over the counterweight to deflect water and roadway debris away from the counterweight for the entire width of the break.

**B Materials**

Furnish 16-guage Type 316 stainless steel sheet metal flashing conforming to ASTM A240.

Provide ⅜”-16 x ¾” grade 8, stainless steel, self-threading screws to fasten the flashing to the bascule leaf steel rear break.

Furnish gray non-bituminous joint sealant according to standard specification 502.2.9.

**C Construction**

Install the flashing as required to completely cover and extend past the top of the counterweight at the rear break between the bascule leaf and bascule pier. Attach the stainless steel flashing to the rear break steel as shown in the plans with ⅜-inch stainless steel self-threading screws placed at 6-inch maximum centers. Drill a pilot hole in the steel rear break prior to installing the flashing and fasteners.

Place non-bituminous joint sealer across the entire width where the flashing contacts the rear break.

Details of the flashing system in the plans are conceptual in nature. Configure and install a flashing system so that the steel flashing extends the entire width of the rear break, with bends in the flashing as necessary to extend over the bascule girders and directs water and debris from the outside edges towards the center of the counterweight.

Submit drawings with details to the engineer for review and approval prior to installation. Do not install flashing until all counterweight concrete surface repair work is complete.

**D Measurement**

The department will measure Stainless Steel Flashing by the pound 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.0085.01 | Stainless Steel Flashing | LB |

Payment is full compensation for all work required under this bid item including furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

1. Counterweight Calculations and Span Balancing, Item SPV.0105.01.

**A Description**

This special provision describes the work required to rebalance the bascule bridge due to weight changes from the rehabilitation work. The present arrangement of counterweight adjustment blocks were considered to produce a desirable state of balance prior to the deterioration of the counterweight. The intent of the bridge balancing work is to restore this balance condition upon completion of the polymer overlay work on the concrete deck portion of the movable leaves and the concrete surface repair work on the counterweights. At no time shall the bridge be operated in an unbalanced state.

**B Materials**

Additional counterweight blocks are available on site if required to restore the balance condition of the bascule bridge. As part of balance testing, transport blocks to and from appropriate counterweight pockets. Store spare blocks in the bascule piers as directed by the engineer.

**C Construction**

Calculate a complete balancing weight take-off based on components being added to or removed from the movable span as a part of this contract. The goal of these calculations is to determine an accurate adjustment by addition or removal of counterweight blocks to the existing counterweight pockets. Submit these calculations to the engineer for review. Consider balance about the horizontal, vertical and longitudinal axis utilizing both upper and lower counterweight pockets as necessary. Make adjustments to the counterweights as required to bring each leaf to a slightly “leaf heavy” condition upon completion of the work affecting the span weight. Remove or add concrete counterweight blocks to the pockets to make the necessary adjustments. The contractor’s calculations shall be used to determine the counterweight adjustments necessary.

It is the contractor’s responsibility to determine and produce an accurate final balance condition. Determine the actual weight of the concrete polymer overlay to be used in the calculations by way of a physical test (scale weights) of a sample.

Prior to the start of any fieldwork, perform a series of “drift tests” in the presence of the engineer to document the existing balance condition. Make an accurate inventory of the number and position of existing balance blocks and void space available in the counterweight pockets. The existing balance condition shall be measured by recording the degrees of rotation it takes for each leaf to stop when power is removed from the hydraulic drive motors with the leaf moving at its normal speed and with the brakes released. This may require a means of energizing free-wheeling valves during operation to provide a “coasting” effect. During this operation the ability to promptly set brakes and stop “free-wheel” must be maintained in case of a “runaway” condition. Record the degrees of rotation required for the leaf to stop for both opening and closing cycles at various angles of opening. Perform these tests during times of calm weather with low wind velocities. If requested by the engineer, vary the specific methods of the test to produce the required information.

As the overlay work on the movable portion of the concrete roadway progresses, maintain an approximate balanced condition based on calculations. Upon completion of the bascule span work, measure and record the rehabilitated balance condition of each leaf and record per the same ‘drift test’ methods used to record the original balance condition. The final bridge balance condition shall be such that each leaf stops within 15° of rotation while free-wheeling and moving towards the closed position and stops within 5° of rotation while free-wheeling and moving towards the open position. If a leaf does not meet this criterion, add or remove concrete balance blocks from the counterweight pockets as necessary to achieve the specified balance condition. Check the balance condition again and repeat the process until this requirement and the engineer are satisfied.

The contractor shall be responsible to maintain and control the bridge balance throughout the entire contract duration and during all phases of work.

**D Measurement**

The department will measure Counterweight Calculations and Span Balancing, completed in accordance to the contract and accepted, as a single complete unit of work.

**E Payment**

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

|  |  |  |
| --- | --- | --- |
| ITEM NUMBER | DESCRIPTION | UNIT |
| SPV.0105.01 | Counterweight Calculations and Span Balancing | LS |

Payment is full compensation for making balancing calculations and counterweight adjustments and for furnishing all labor, tools, materials and equipment, both temporary and permanent, required to balance the movable leaves of the bridge. Performed work will only be paid for after final balancing has been completed and accepted.

1. Preparation Counterweight Pit Floors, Item SPV.0180.01.

**A Description**

This special provision describes cleaning or scarifying the counterweight pit floor to be overlaid under special provision Polymer Overlay Counterweight Pit Floor; removing and disposing of unsound concrete; the furnishing, placing and curing concrete as required in accordance with standard spec 509.

**B (Vacant)**

**C Construction**

**C.1 General**

Repair damage to existing reinforcement remaining in place that is either uncovered by or damaged by the contractor's operations. Use engineer-approved repair materials compatible with the existing materials and inert in concrete.

**C.2 Preparation**

Remove and dispose of unsound and deteriorated concrete of the existing counterweight pit floor as the plans show, or as the engineer directs.

Use construction methods conforming to standard spec 203, 502, 509, and the following:

1. Remove unsound concrete from the counterweight pit floor.
2. Take necessary precautions while removing deteriorated concrete to preserve and reuse existing reinforcing steel. Clean, realign, and retie existing reinforcing steel, as the engineer considers necessary.
3. Blast clean corroded existing reinforcing steel. If additional reinforcement is required, use grade 60 steel conforming to AASHTO M31, and to 505.2.
4. Remove concrete to sound concrete or to one inch behind the existing reinforcing steel, whichever depth is greater, at locations the plans show or as the engineer directs. Where concrete removal exposes the existing bar steel reinforcement for more than 1/2 of its peripheral area, and where bond between existing concrete and reinforcing bar has been destroyed, remove the adjacent concrete to provide a minimum one-inch clearance around the bar.
5. For removing the deteriorated concrete, use air chippers or breakers that weigh no more than 35 pounds and are equipped with flat, chisel-type points with a cutting edge not less than 3/4 inch or greater than 3 inches wide.
6. Make a 1-inch deep saw cut at the limits of the concrete surface repair before removal of the deteriorated concrete to control concrete breakout.
7. Clean the surface receiving the new concrete by mechanically dislodging contamination or debris and removing loose particles and dust with high-pressure water using a high-pressure nozzle to remove loose particles and dust. Ensure that no free-standing water remains before placing grout and that cleaning water conforms to 501.2.4.
8. Dispose of removed material as specified in 509.3.4.
9. Immediately before placing concrete, coat the surfaces of the old concrete receiving new concrete with neat cement as specified for concrete overlays in 509.3.9.2.

**D Measurement**

The department will measure Preparation Counterweight Pit Floors 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 | Preparation Counterweight Pit Floors | SY |

Payment is full compensation for completely removing the deteriorated and unsound concrete; for disposing of the waste material; for salvaging, blast cleaning and using the existing bar steel reinforcement.

Saw cutting is paid for separately under the Sawing Concrete bid item.

Repairing damage to existing reinforcement is incidental to the contract.

1. Polymer Overlay Counterweight Pit Floor, Item SPV.0180.02.

**A Description**

This special provision describes furnishing and applying two layers of a two-component polymer overlay system to the counterweight pit floor as 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**

Furnish a 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 to 5000 psi @ 7 days | ASTM D638 |
| Chloride Permeability B | <100 coulombs @ 28 days | AASHTO T277 |

A Uncured, mixed polymer binder

B Cured, mixed polymer binder

The required properties of the polymer resin when mixed with aggregate:

|  |  |  |
| --- | --- | --- |
| **Property** | **Requirement** C | **Test Method** |
| Minimum Compressive  Strength | 1,000 psi @ 8 hrs  5,000 psi @ 24 hrs | ASTM C579 Method B,  Modified D |
| Thermal Compatibility | No Delaminations | ASTM C884 |
| Minimum Pull-off Strength | 250 psi @ 24 hrs | ASTM C1583 |

C Based on samples cured or aged and tested at 75°F

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

**B.3 Aggregates**

Furnish natural or synthetic 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 D5821 |
| Absorption | ≤1% | ASTM C128 |

\* Sampled and tested by the department prior to placement.

Gradation:

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

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

A minimum of 20 working days prior to application, submit product data sheets and specifications from the manufacturer, and a certified report of test or analysis from an independent laboratory to the engineer for approval. The department will sample and test the aggregates for gradation and moisture content prior to placement. If requested, supply the department with samples of the polymer for the purpose of acceptance testing.

**B.5.1 Product Data Sheets and Specifications**

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.

**B.5.2 Certified Report of Test or Analysis**

*Polymer Binder:* Submit a certified report of test or analysis from an independent laboratory dated less than 3 years prior to the date of the project letting showing the polymer binder meets the requirements of section B.2.

*Aggregates:* Submit a certified report of test or analysis from an independent laboratory dated less than 6 months prior to the date of the project letting showing the aggregates meet the requirements of section B.3.

**C Construction**

**C.1 General**

*Field Review:* Conduct a field review of the existing counterweight pit floor to identify any possible surface preparation and material compatibility issues.

*Pre-Installation Meeting*: Conduct a pre-installation meeting with the manufacturer's representative and the engineer prior to construction. Discuss the field review findings, verification testing of the surface preparation and 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. Supply for the engineer’s use for the duration of the project, a Concrete Surface Profile (CSP) chip set of 10 from the International Concrete Repair Institute (ICRI).

*Manufacturer’s Representative:* An experienced 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. This requirement may be reduced at the engineer’s discretion.

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

**C.2 Counterweight Pit Floor Preparation**

**C.2.1. Floor Repair**

Remove all unsound or disintegrated areas of the concrete floor as the plans show, or as the engineer directs. Work performed to repair the concrete floor will be paid for under other items. Ensure that products used for floor 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 floor 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 profile meeting CSP 5 (medium-heavy shotblast) according to the ICRITechnical Guideline No. 310.2. If the engineer requires additional verification of the surface preparation, test the tensile bond strength according to ASTM C1593. 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 counterweight pit floor 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.

Protect drains, conduit, mechanical components, joints, access hatches, or other appurtenances 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. Prevent all material from entering the sump or being ejected through the sump pump.

Prior to shot blasting, remove visible deposits of oil or grease in accordance with SSPC-SP1.

Prepare the counterweight pit walls a minimum of 6” above the overlay according to SSPC-SP 13 (free of contaminants, dust, and loose concrete) 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 pit walls 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 moisture, lightly sandblast (brush/breeze blast) the exposed surfaces.

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

**C.2.3 Transitional Area**

Create a transition in the passageway to the Operator’s House in Pier 3 using an approved mechanical or blasting method. Taper a distance of 3 feet into the passageway. At the end of the taper in the passageway remove ¼” to 5/16” of concrete adjacent to the joint to be filled with 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:

1. Ambient air temperature is below 50oF or above 100oF;
2. Concrete pit floor temperature is below 50oF;
3. Moisture content in the concrete pit floor exceeds 4.5% when measured by an electronic moisture meter or shows visible moisture after 2 hours when measured in accordance with ASTM D4263;
4. Rain is forecasted, or potential for water rising into the pit during the minimum curing periods listed under C.5;
5. Materials component temperatures below 65oF or above 99oF;
6. Concrete age is less than 28 days unless approved by the engineer.
7. The concrete floor temperature exceeds 100oF.
8. If the gel time is 10 minutes or less at the predicted high air temperature for the day.

After the floor has been shotblasted or during the overlay curing period, only necessary surface preparation and overlay application equipment will be allowed on the pit floor. Provide appropriate protective measures to prevent contamination from equipment allowed on the floor during preparation and application operations. 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 method that provides a uniform, consistent coverage of aggregate and minimizes aggregate rolling or bouncing into final position. 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.

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. Do not allow equipment 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.

After the final layer has cured, clean all debris and loosened aggregates from the counterweight pit floor.

**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. |

If faster cure times are desired and achievable, submit to the engineer a certified test report from an independent laboratory showing the material is able to reach a compressive strength of 1000 psi as tested per ASTM C 579 Method B within the temperature ranges and cure times for which the product is proposed to be placed. Establish ambient air, material, and substrate temperatures from the manufacturer for field applications. Field applications will not be allowed below the documented temperatures.

**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 |
| SPV.0180.02 | Polymer Overlay Counterweight Pit Floor | SY |

Payment is full compensation for preparing the surface; for tensile bond testing; for creating the transitional area in Pier 3; for providing the overlay; for cleanup; and for sweeping/vacuuming and disposing of excess materials. Concrete Counterweight Pit Floor Repair will be paid for separately.