

Special Provisions

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STSP'S Revised November 19, 2018

SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project 1030-15-70, IH 94, N-S & S-N Curve thru the Mitchell IC, Milwaukee 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, 2019 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 (20181119)

2. Scope of Work.

The work under this contract shall consist of high friction surface treatment, traffic control, erosion control, pavement marking, and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

3. Prosecution and Progress.

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

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

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

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.

Portable Changeable Message Signs (PCMS)

Obtain acceptance from the engineer regarding the wording of all messages on portable changeable message signs prior to placing the message. PCMS shall be in place with the appropriate message 5 days in advance of freeway closures or system ramp closures and 3 days in advance of service ramp closures.

Ramp Closures

All entrance and exit ramps shall be posted seven calendar days in advance of their closure with dates and time of closure. Do not close consecutive entrance ramps or consecutive exit ramps unless it is shown in the traffic control plans or approved by the engineer.

Schedule of Operations

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

Stage 1:

Stage 1 work consists of application of high friction surface treatment (HFST) on IH 94 on the two inside lanes and three feet of the inside shoulder (both directions). All work will be completed during night time hours.

Pavement markings shall be in place prior to opening the lanes to traffic. Temporary pavement markings shall be installed if the permanent pavement markings cannot be installed immediately.

Stage 2:

Stage 2 work consists of application of high friction surface treatment (HFST) on the south-to-north ramp (Ramp SN), the north-to-south ramp (Ramp NS), IH 94 on the outside lane and three feet of the outside shoulder (both directions), and the west-to-north ramp (Ramp WN) on the inside lane and three feet of the inside shoulder.

Pavement markings shall be in place prior to opening the lanes to traffic. Temporary pavement markings shall be installed if the permanent pavement markings cannot be installed immediately.

Stage 3:

Stage 3 work consists of application of high friction surface treatment (HFST) on the west-to-north ramp (Ramp WN) on the outside lane and three feet of the outside shoulder.

Pavement markings shall be in place prior to opening the lanes to traffic. Temporary pavement markings shall be installed if the permanent pavement markings cannot be installed immediately.

4. Lane Rental Fee Assessment.

A General

The contract designates some lane closures to perform the work. The contractor will not incur a Lane Rental Fee Assessment for closing lanes during the allowable lane closure times. The contractor will incur a Lane Rental Fee Assessment for each lane closure outside of the allowable lane closure times. If a lane is obstructed at any time due to contractor operations, it is considered a closure. The purpose of lane rental is to enforce compliance of lane restrictions and discourage unnecessary closures.

The allowable lane closure times are shown in the Traffic article.

Submit the dates of the proposed lane, ramp, and roadway restrictions to the engineer as part of the progress schedule.

Coordinate lane, ramp, and roadway closures with any concurrent operations on adjacent roadways within 3 miles of the project. If other projects are in the vicinity of this project, coordinate lane closures to run concurrent with lane closures on adjacent projects when possible. When lane closures on adjacent projects extend into the limits of this project, Lane Rental Fee Assessments will only occur if the closure facilitates work under this contract.

B Lane Rental Fee Assessment

The Lane Rental Fee Assessment incurred for each lane closure, each ramp closure, and each full closure of a roadway, per direction of travel, is as follows:

- Night time- \$Lane Rental Dollar Amount per lane, per direction of travel, per hour broken into 15 minute increments
- System Ramp- \$Lane Rental Dollar Amount per lane, per direction of travel, per hour broken into 15 minute increments
- Service Ramp- \$Lane Rental Dollar Amount per lane, per direction of travel, per hour broken into 15 minute increments
- Off Peak- \$Lane Rental Dollar Amount per lane, per direction of travel, per hour broken into 15 minute increments
- On Peak- \$Lane Rental Dollar Amount per lane, per direction of travel, per hour broken into 15 minute increments

The Lane Rental Fee Assessment represents a portion of the cost of the interference and inconvenience to the road users for each closure. All lane, roadway, or ramp closure event increments 15 minutes and less will be assessed as a 15-minute increment.

The engineer, or designated representative, will be the sole authority in determining time period length for the Lane Rental Fee Assessment.

Lane Rental Fee Assessments will not be assessed for closures due to crashes, accidents or emergencies not initiated by the contractor.

The department will assess Lane Rental Fee Assessment by the dollar under the administrative item Failing to Open Road to Traffic. The total dollar amount of Lane Rental Fee Assessment will be computed by multiplying the Lane Rental Assessment Rate by the number of 15-minute increments of each lane closure event as described above.

Lane Rental Fee Assessment will be in effect from the time of the Notice to Proceed until the department issues final acceptance. If interim completion time or contract time expires before the completion of specified work in the contract, additional liquidated damages will be assessed as specified in standard spec 108.11 or as specified within this contract.

stp-108-070 (20161130)

5. Traffic

Keep the freeways, all system ramps and all service ramps open to traffic at all times for the duration of this project except as noted below. The schedule of operations shall conform to the requirements contained herein, unless modifications are approved in writing by the engineer.

Local Street Work Restrictions

No work is being performed on the local roads under this contract. Closures on the local streets are restricted to closure of the right turn lane or left turn lane leading up to a freeway entrance ramp when this ramp has to be closed due to the freeway work. Follow the traffic control plans and details for lane closures on the local roads.

The lane closures on the local streets are allowed only during the times the freeway ramps are closed, as defined below.

Freeway Work Restrictions

Definitions

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

System Ramps: Freeway to freeway ramps

Service Ramps: Freeway to/from local road ramps

Night Time Hours

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

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

Closure Restrictions

Do not close freeway lanes or shoulders (including auxiliary lanes, system ramps, service ramps and CD road system) outside of Night Time Hours and ensure the roadway is entirely clear for traffic prior to opening to traffic.

Follow standard details and traffic control details for closures. If plan details are not provided in the traffic control plan, furnish plans for review by the engineer so that approval, or disapproval, is obtained at least three business days prior to any closure.

Provide signed detour routes, as the plans show that are fully open and free of construction during all system ramp closures.

Maintain emergency vehicular access along IH 41/43/94 at all times.

Staging is as follows:

Stage 1

The following movements are closed:

- Full Freeway Closure on IH 94.
- IH 43 NB/IH 94 WB ramps off STH 241 (27th street) are closed.
- The left lane is closed on the west-to-north ramp (Ramp WN)

Stage 2

The following movements are closed:

- IH 43 NB/IH 94 WB ramps off STH 241 (27th Street) are closed.
- IH 41 SB/IH 43 SB/IH 94 EB ramp off Howard Avenue.
- IH 94 WB ramp off Layton Avenue.
- IH 41 SB/IH 43 SB/IH 94 EB ramp onto Layton Avenue.
- The south-to-north ramp (Ramp SN), traffic to follow detour.
- The north-to-south ramp (Ramp NS), traffic to follow detour.
- The left lane is closed on the west-to-north ramp (Ramp WN)
- The two right lanes are closed on IH 94 (both directions)

Stage 3

The following movements are closed:

- IH 43 NB/IH 94 WB ramps off STH 241 (27th Street) are closed.
- IH 94 WB ramp off Layton Avenue.
- The south-to-north ramp (Ramp SN), traffic to follow detour.
- The right lane is closed on the west-to-north ramp (Ramp WN)

Detours

Provide signed detour routes, as shown in the plans that are fully free of construction during all system ramp closures. Install required traffic control and detour signs as shown in the plans at least 14 calendar days prior to beginning stage construction; remove the detour after completion of the project. Cover advance-warning signs and detour signs until work begins.

NS System Ramp Closure Detour:

This detour shall be established to provide access to the airport when the NS system ramp is closed, preventing access from the north to STH 119. Traffic on IH 94 will be detoured through IH 43 SB/IH 894 WB, STH 241 (27th Street) southbound, and Layton Avenue eastbound.

SN System Ramp Closure Detour:

This detour shall be established to provide access to IH 43 NB/IH 94 WB for all traffic entering IH 94 WB at College Avenue, STH 119 (Airport Spur), and Layton Avenue when the SN system ramp is closed. Traffic entering onto IH 94 WB at these locations will be detoured through Layton Avenue eastbound, STH 38 (Howell Avenue) northbound, and Howard Avenue westbound.

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.

6. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying IH 41/IH 43/IH 94 traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday periods:

- From noon Friday, May 22, 2020 to 6:00 AM Tuesday, May 26, 2020 for Memorial Day;
- From noon Thursday, July 2, 2020 to 6:00 AM Monday, July 6, 2020 for Independence Day;

stp-107-005 (20181119)

Freeway Special Event Restrictions

During the following events, keep open the freeway until one hour after the event closes each night:

- Summerfest 2020 (June 24, 2020 to July 22, 2020)
- Wisconsin State Fair 2020 (August 6, 2020 to August 16, 2020)
- Home games for the Milwaukee Brewers (keep open all roadways two hours prior to the start of a game until two hours after the end of the game)

Notice to Contractor – Work Restriction

From 5:30 AM Friday July 10th to 10:00 PM Sunday, July 19th, 2020:

Do not perform work; haul equipment; or haul materials, on, along, or across any portion of IH 41/IH 43/IH 94, including ramps. Any exceptions to this work restriction must be approved by the engineer in writing.

Roadway maintenance required by the contractor shall be in effect during this work restriction. A temporary suspension to perform necessary maintenance work will be as approved by the engineer.

7. Utilities.

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

stp-107-065 (20080501)

The department has determined that the scope of work for this project will not impact, interfere or unduly conflict with existing utilities within the project limits.

8. Other Contracts.

9. Railroad Insurance and Coordination - Soo Line Railroad Company (CP)

A Description

Comply with standard spec 107.17 for all work affecting Soo Line Railroad Company (CP) 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 Soo Line Railroad Company d/b/a Canadian Pacific.

Notify evidence of the required coverage, and duration to Jim Krieger, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail: jim.krieger@cpr.ca.

Also send a copy to the following: Paul Derksen, SE Region Railroad Coordinator; 141 N. W. Barstow Street, Waukesha, WI 53188; Telephone (262) 548-8770; E-mail: paul.derksen@dot.wi.gov.

Include the following information on the insurance document:

- Project ID: 1030-15-70
- Project Location: IH 94
- Route Name: IH 43/IH 94
- Crossing ID: 387976S
- Railroad Subdivision: C&M Sub
- Railroad Milepost: 80.25
- Work Performed: Traffic Control

A.2 Train Operation

Approximately Enter the number of trains passenger trains and Enter the number of trains through freight trains operate **Select from drop-down** through the construction site. Passenger trains operate at up to Enter the speed of the trains mph. Through freight trains operate at up to Enter the speed of the trains mph. Enter sentence about switching movements

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

Construction Contact

Jim Krieger, Manager Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4555; E-mail jim.krieger@cpr.ca 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

Dave LeClaire, Supervisor of Public Works; Canadian Pacific Plaza, 120 South 6th Street, Suite 700, Minneapolis, MN 55402; Telephone (612) 330-4556; E-mail dave.leclaire@cpr.ca Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

* Contact Soo Line (CP) prior to letting for flagman work hour availability.

Cable Locate Contact

In addition to contacting Diggers Hotline, contact CP Call Before You Dig line at (866) 291-0741, five working days before the locate is needed. Reference the Crossing ID, Wisconsin Milepost and Subdivision found in A.1.

Soo Line (CP) will only locate railroad owned facilities located in the railroad right-of-way. The railroad does not locate any other utilities.

A.4 Work by Railroad

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

A.5 Temporary Grade Crossing

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

A.6 Rail Security Awareness and Contractor Orientation

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

The department has secured right of entry to railroad property; neither the contractor nor subcontractors or their employees will be required to sign a right of entry form.

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

stp-107-026 (20170615)

10. Hauling Restrictions.

Replace standard spec 107.2 with the following:

Present to the **department**, five business days before proposed hauling, a proposed haul route plan detailing haul routes that are not part of the state trunk highway system. Include the months, days of the week, time of day, number of trucks, types of trucks and maximum loads of trucks anticipated to accomplish the project work in the haul route submittal.

The **department** will review the submittal and either approve or provide a letter with comments and proposed revisions to the contractor within five business days of its receipt. If approved, the department will subsequently survey the existing condition of that haul route to establish a baseline for assessing damage that the contractor's hauling operations might cause.

At all times, conduct operations in a manner that will cause a minimum of disruption to traffic on existing roadways.

sef-107-015 (20170310)

11. Erosion Control

Add the following to standard spec 107.20 as paragraphs nine through fifteen:

- (9) Erosion control best management practices (BMP's) the plans show are at suggested locations. The actual locations shall be determined by the contractor's ECIP and by the engineer. Include each dewatering (mechanical pumping) operation in the ECIP submittal. The ECIP shall supplement information the plans show and not reproduce it. The ECIP shall identify how to implement the project's erosion control plan. ECIP shall demonstrate timely and diligently staged operations, continuing all construction operations methodically from the initial removals and topsoil stripping operations through the subsequent grading, paving, and re-application of top soil to minimize the exposure to possible erosion.
- (10) Provide the ECIP 14 days before the pre-construction conference. Provide 1 copy of the ECIP to the department and 1 copy of the ECIP to the WDNR Liaison Kristina Betzold, (414) 263-8517, Kristina.Betzold@wisconsin.gov. Do not implement the ECIP until department approval, and perform all work conforming to the approved ECIP.

- (11) Maintain Erosion Control BMP's until permanent vegetation is established or until the engineer determines that the BMP is no longer required.
- (12) Stockpile excess materials or spoils on upland areas away from wetlands, floodplains, and waterways. Install perimeter silt fence protection around stockpiles within a timeframe acceptable to the engineer. If stockpiled materials will be left for more than 14 days, install temporary seed and mulch or other temporary erosion control measures the engineer orders.
- (13) Re-apply topsoil on graded areas, as designated by the engineer, within a timeframe acceptable to the engineer after grading is completed within those areas. Seed, fertilize, and mulch/erosion mat top-soiled areas, as designated by the engineer, within 5 days after placement of topsoil. If graded areas are left not completed and exposed for more than 14 days, seed those areas with temporary seed and mulch.
- (14) Do not allow excavation for; structures, utilities, grading, maintaining drainage that requires dewatering (mechanical pumping) of water containing sediments (sand, silt, and clay particles) to leave the work site or discharge to a storm water conveyance system without sediment removal treatment. Before each dewatering operation, submit to the department a separate ECIP amendment describing in words and pictorial format an appropriate BMP for sediment removal, conforming to WisDNR Storm Water Construction Technical Standard, Code 1061, Dewatering. Include reasoning, location, and schedule duration proposed for each operation. Per Code 1061, include all selection criteria: site assessment, dewatering practice selection, calculations, plans, specifications, operations, maintenance, and location of proposed treated water discharge. Provide a stabilized discharge area. If directing discharge towards or into an inlet structure, provide additional inlet protection for back-up protection.
- (15) Dewatering is incidental.
sef-107-010 (20180104)

12. Work Force Opportunities

The Work Force Opportunities workshop will provide a venue for contractors to have meaningful dialogue with Transportation Alliance for New Solutions (TrANS) providers regarding the hiring of TrANS graduates. Reference ASP-1 for additional information regarding TrANS. The prime contractor and the ## largest subcontractors according to let value of work shall provide staff with hiring authority to participate in a job-matching session during this workshop. Workshop participants will, at a minimum:

- Review contractor hiring processes for general labor positions.
- Listen to a presentation provided by TrANS providers regarding the TrANS training program, including details regarding how contractors can hire TrANS graduates.
- Review TrANS graduate availability for working on the project.
- Meet one-on-one for two minutes with each TrANS graduate in attendance at the meeting.

sef-108-036 (20180627)

13. Available Documents.

The department will make its information available to bidding contractors. The list of documents that are available for contractors' information includes:

- Design Study Report
- Environmental Document
- As-Built Drawings
- Traffic Management Plan

These documents are available from Amanda Johansen at 141 NW Barstow Street, Waukesha, WI 53187 (262) 521-4465.

Reproduction costs will be applied to all copies requested.

sef-102-005 (20170310)

14. Contractor Notification.

Replace standard spec 104.2.2.2(2) with the following:

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

Replace standard specs 104.3.2 and 104.3.3 with the following:

104.3.2 (Vacant)

104.3.3 Contractor Initial Written Notice

- (1) If required by 104.2, or if the contractor believes that the department's action, the department's lack of action, or some other situation results in or necessitates a contract revision, promptly provide a written notice to the engineer. At a minimum, provide the following:
1. A written description of the nature of the issue.
 2. The time and date of discovering the problem or issue.
 3. If appropriate, the location of the issue.
- (2) Provide the additional information specified in 104.3.5 as early as possible to assist the engineer in the timely resolution of an identified issue. The engineer will not require, in subsequent submissions, duplication of information already provided.

sef-104-005 (20141211)

15. Contractor Document Submittals.

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

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

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

Submit electronic copies in PDF format via email to accounts the engineer determines. If possible, create PDFs from original documents in their native format (e.g. Word, Excel, AutoCAD, etc.). Scan other documents to PDF format with a minimum resolution of 600 dpi.

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

sef-105-010 (20150619)

16. Maintaining Drainage

Maintain drainage at and through worksite during construction conforming to standard specs 107.22, 204, 205 and 520.

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

Dewatering (Mechanical Pumping) for Bypass Water (sediment-free) Operations

If dewatering bypass operations are required from one pipe structure to another downstream pipe structure or from the upstream to downstream end of a culvert and the bypass flow is not transporting sediments (sand, silt, and clay particles) from a tributary work site area, bypass pumping operations will be allowed provided that the department has been made aware of and approves operation. When pumping bypass flows, the discharge location will need to be stable and not produce erosion from the discharge velocity that would cause release of sediment downstream.

Dewatering (Mechanical Pumping) for treatment Water (sediment-laden) Operations

If dewatering operations require pumping of water containing sediments (sand, silt, and clay particles), the discharge will not be allowed to leave the work site or discharge to a storm water conveyance system without sediment removal treatment. Refer to article Erosion Control in these special provisions for additional requirements.

sef-107-016 (20170310)

17. Traffic Control Close-Open Freeway Entrance Ramp, Item SPV. 0060.0001.

A Description

This special provision describes closing and re-opening a freeway entrance ramp and associated auxiliary lane.

B (Vacant)

C Construction

Install or reposition traffic control devices required for closing a freeway entrance ramp and adjacent auxiliary lanes. Remove or return traffic control devices to their previous configuration when the closure is no longer required.

D Measurement

The department will measure Traffic Control Close-Open Freeway Entrance Ramp by each individual ramp closure acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV. 0060.0001	Traffic Control Close-Open Freeway Entrance Ramp	EACH

Payment is full compensation for daily surveillance; preparing and submitting the daily surveillance report with hourly metered tickets; mobilization; sweeping; and disposing of materials. Traffic Control devices will be paid separately.

sef-643-001 (20180627)

18. Traffic Control Full Freeway Closure, Item SPV. 0060.0002.

A Description

This special provision describes closing and re-opening a freeway or expressway.

B (Vacant)

C Construction

Install or reposition traffic control devices required for a full freeway closure. Remove or return traffic control devices to their previous configuration when the full closure is no longer required.

D Measurement

The department will measure Traffic Control Full Freeway Closure by each individual freeway closure that is set up and later removed in each traffic direction acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV. 0060.0002	Traffic Control Full Freeway Closure	EACH

Payment is full compensation for closing, and re-opening the freeway. Traffic Control devices will be paid separately.

sef-643-003 (20180627)

19. Traffic Control Close-Open Freeway to Freeway System Ramp, Item SPV. 0060.0003.

A Description

This special provision describes closing and re-opening a freeway to freeway system ramp.

B (Vacant)

C Construction

Install or reposition traffic control devices required for closing a freeway system ramp and adjacent auxiliary lanes. Remove or return traffic control devices to their previous configuration when the closure is no longer required.

D Measurement

The department will measure Traffic Control Close- Open Freeway to Freeway System Ramp by each individual closure acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV. 0060.0003	Traffic Control Close- Open Freeway to Freeway System Ramp	EACH

Payment is full compensation for closing, and re-opening a freeway to freeway system ramp. Traffic Control devices will be paid separately.

sef-643-002 (20180627)

20. Resin Binder High Friction Surface Treatment, Item SPV.0180.0001.

A Description

This special provision describes providing a high friction surface treatment (HFST) composed of aggregate in a resin binder on HMA or concrete pavements as the plans show and as follows.

B Materials

B.1 Resin Binder

Supply a two-part thermosetting resin binder which is compatible with the pavement type, bonds to the pavement surface, holds the aggregate firmly in place in a broad range of climates including below-freezing temperatures, and meets the requirements specified in Table 1. Supply a primer if recommended by the resin binder manufacturer.

Table 1. Resin Binder Properties

Property	Requirements	Test Method*
Viscosity	7 – 30 poises	ASTM D2556 1-pint specimen
Gel Time	10-minute minimum	ASTM C881 60g mass
Ultimate Tensile Strength	2,000 – 5,000 psi @ 7 days	ASTM D638 Type 1 specimen
Elongation at Break	30% - 70% @ 7 days	ASTM D638 Type 1 specimen
Compressive Strength	≥ 1000 psi @ 3 hrs & ≥ 5000 psi @ 24 hours	ASTM D695**
Water Absorption	≤ 1.0 % @ 24-hr	ASTM D570 24-hr immersion
Shore D Hardness	60 – 80 @ 7 days	ASTM D2240*** Type 1 precision, Type D method
Cure Rate	≤ 3 hours (Dry Through Time)	ASTM D1640 50-55 wet mil thickness***
Adhesive Strength	250 psi @ 24 hours or 100% substrate failure	ASTM C1583***

* Prepare samples per manufacturer's recommendation; cure all specimens at 73 ± 2° F and at 50 ± 2° F; and test all specimens at 73 ± 2° F.

** 2" x 2" cubes made of 2.75 parts of 20-30 mesh sand to 1 part mixed resin binder; use plastic inserts in oversized molds to produce 2" cubes.

*** Conduct testing on applicable pavement type.

B.2 Aggregate

Furnish calcined bauxite aggregate that is fractured or angular in shape; resistant to polishing and crushing; clean and free of surface moisture; free from silt, clay, asphalt, or other organic materials; compatible with the resin binder; and meet the properties and gradation requirements in Tables 2 and 3. Check with resin binder manufacturer for any compatibility requirements or concerns.

Table 2. Aggregate Properties

Property	Requirements	Test Methods
Moisture Content	≤ 0.2%	AASHTO T 255
Fine Aggregate Angularity	≥ 45%	AASHTO T 304, Method A
Micro-Deval	≤ 15% loss	ASTM D7428
LA Wear	≤ 10% loss @ 100 revolutions and ≤ 25% loss @ 500 revolutions	AASHTO T 96
Freeze-Thaw Soundness	≤ 9% loss @ 50, 16, or 25 cycles using Procedure A, B, or C, respectively	AASHTO T 103

Table 3. Aggregate Gradation (AASHTO T27)

Sieve Size	% Passing by Weight
No. 4	100
No. 6	95
No. 16	0-5
No. 30	0-1

B.3 Approval of High Friction Surface Treatment

A minimum of 20 working days before applying HFST, submit product data sheets and specifications from the manufacturer, and a certified test report from an independent laboratory verifying that the resin binder and the calcined bauxite aggregate meet all the requirements specified in Tables 1, 2 and 3. Documents must be dated within three years.

If resin binder has not been previously used in Wisconsin, also submit a list of at least five reference projects where the resin binder has been used for similar applications and in locations that have similar climatic conditions as Wisconsin. Supply a description of the projects along with contact information of the facility owner.

If the engineer requests, provide samples of the resin binder and aggregate for department testing before applying HFST.

C Construction

C.1 General

The contractor will provide documentation showing HFST application experience from at least three previous projects completed for WisDOT or other agencies.

Conduct a meeting with the resin binder manufacturer representatives before applying HFST to establish procedures for maintaining optimum working conditions and coordination of the work. Submit recommended application procedures, including quality control practices, to the engineer for approval. Ensure that a resin binder manufacturer representative is on site to provide technical assistance and quality assurance during surface preparation and for application of HFST.

Ensure that the resin binder components maintain their original properties during storage and handling. Store all aggregate in a dry environment and protect from contaminants on the job site.

C.2 Pavement Surface Preparation

C.2.1. Pavement Surface Repair

Remove visibly unsound or disintegrated areas of the pavement surface as the plans show or the engineer directs. Clean and dry all cracks too large to be filled with surface treatment. Fill cracks with a mixture of resin binder and aggregate before applying the surface treatment. Follow manufacturer's recommendations for curing before applying the surface treatment.

Check with resin binder manufacturer to ensure that products used for pavement repairs or patches are compatible with the resin HFST. Ensure that any new concrete or repairs are fully cured before placing the HFST.

C.2.2 Surface Preparation

Cover and protect utilities, drainage structures, expansion joints on bridge decks, and other structures within or adjacent to the application location to prevent materials from adhering to or entering those structures.

Remove pavement markings that are within the treatment area. Cover existing pavement markings adjacent to the application if they are to remain in place.

After all pavement repairs or patches have completely cured, and no more than 24 hours before HFST application, prepare a concrete pavement surface by shot blasting to roughen the surface texture. Ensure the pavement surface has no grease, oil, curing compound, loosely bonded mortar, pavement marking, or other foreign matter resting on the pavement surface.

Completely remove any grease, oil, pavement marking, or other foreign matter resting on an HMA pavement surface that could prevent proper bonding of the resin binder by shot blasting. Shot blast entire HMA pavement surfaces that are less than 30 days old prior to cleaning and installing HFST.

Sufficiently clean HMA and concrete pavement surfaces by vacuum-sweeping and blowing, with oil-free compressed air, just before applying HFST. Compressors must be equipped with functioning oil/water separators. Cleaning must be done the same day that HFST will be applied. Ensure the surface is clean, completely dry, and free of all dust, oil, debris and other material that might interfere with the bond between the resin binder and the existing pavement surface.

If the engineer requires additional verification of adequate surface preparation of the pavement, test the bond strength according to ASTM C1583. The surface is acceptable if the tensile bond strength is greater

than or equal to 250 psi, or failure is in the substrate. Repeat shot blasting, cleaning, and testing, if needed, until passing test results are obtained or the surface is acceptable to the engineer.

Keep vehicles and unnecessary equipment off the cleaned surface; only allow HFST application equipment on the clean surface. Apply HFST as soon as possible after pavement surface preparations are completed.

Abide by the established quality control practices and adhere to any additional manufacturer recommendations for surface preparation. Request that the engineer inspect and approve the pavement surface immediately prior to placing the HFST.

C.3 Application of the HFST

Do not apply the HFST if any of the following exists:

- Pavement surface is wet, damp, or has received rainfall in the previous 24 hours.
- Pavement surface is not sufficiently clean.
- Ambient air or pavement surface temperature is below 50o F or below the manufacturer's recommendations
- If the anticipated weather conditions would prevent adequate curing of the HFST.
- Rain is predicted before HFST completion or proper cure is achieved.
- Pavement preparation is inadequate or didn't pass pull-off test.

Close treatment areas to traffic until HFST is completely cured and pavement surface has been vacuum-swept.

Construct HFST to the full width of the existing pavement surface, or as the plans show or engineer directs. Extend the HFST application 2'-3' into the shoulders if application site is on a curve, Apply as a single layer 1/8 inch to 1/4 inch thick.

Apply a primer to the pavement surface if recommended by the resin binder manufacturer, and according to their application recommendations. Abide by the established quality control practices and adhere to any additional manufacturer recommendations for HFST application.

Blend and mix the resin binder components at the manufacturer's specified ratio using equipment capable of providing the desired results.

Apply the resin binder uniformly over the pavement surface manually or with automated equipment at a uniform thickness of 50-65 mils (25-32 ft²/gal). Use enough resin to cover the pavement surface and sufficiently embed half the thickness of the aggregate; do not apply so much that it covers the aggregate and creates a slick surface. Adjust application rate, as needed, based on the pavement surface type, profile, and condition.

If using automated equipment, ensure that the equipment features positive displacement, volumetric metering, and is capable of storing, mixing, heating, monitoring, and distributing the binder components at the proper mix ratio. Adjust the pressure and the speed of the equipment to achieve the proper application thickness. If applying the binder by hand, use a serrated edged squeegee to spread the resin binder and provide uniform coverage at the proper thickness.

Do not contaminate the wet binder or allow the binder material to separate or cure, and impair bonding of the aggregate.

Immediately after applying the resin binder, distribute a sufficient quantity of dry calcined bauxite aggregate to completely cover the resin binder by hand broadcasting or by using a standard chip spreader or equivalent machine. Ensure aggregate is placed within five minutes of the resin binder placement, before it begins to cure. When broadcasting, sprinkle or drop the aggregate onto the resin binder vertically. Do not distribute aggregate in a way that will cause it to roll in the resin binder before coming to a rest; do not push the aggregate into position with a broom or any other hand tool. If using a chip spreader, the machine shall follow closely behind the crew or equipment applying the resin binder. Immediately cover any visible wet or bare spots, or areas with excessive binder, with additional calcined bauxite aggregate before the resin binder begins to set.

Allow the HFST to properly cure, adhering to manufacturer recommendations for minimum cure times at applicable temperatures.

After the HFST is fully cured, remove excess loose surface aggregate by sweeping, blowing, or vacuuming. Do not tear or otherwise damage the surface. Excess calcined bauxite aggregate that is recovered by a vacuum sweeper can be reused if clean, uncontaminated and dry. Remove and replace

damaged areas or areas with excess or insufficient aggregate coverage. Clean expansion joints, utilities, and drainage structures of all debris before opening to traffic.

Additionally, within 3 to 7 days after opening to traffic, vacuum sweep the pavement surface to remove loosened aggregate from the high friction surface area, the shoulders, and any other areas within and immediately adjacent to the HFST site.

D Measurement

The department will measure Resin Binder High Friction Surface Treatment by the square yard acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0180.0001	Resin Binder High Friction Surface Treatment	SY

Payment for Resin Binder High Friction Surface Treatment is full compensation for testing materials; for preparing the pavement surface; filling all cracks; for providing the HFST; for cleanup; and for vacuum sweeping and disposing of excess material after the completion and again 3 to 7 days after completion.

The department will pay for concrete or HMA pavement repairs and traffic control separately under other contract bid items.

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