Special Provisions

Table of Contents

SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project ID 1130-32-71, Green Bay – Oconto, Lineville Road to Norfield Road, USH 41, Brown County, Wisconsin; Project ID 1150-54-71, Green Bay – Oconto, CTH B Interchange, USH 41, Brown County, Wisconsin and Project 1150-68-71, Green Bay – Oconto, Brown Road – Structure B-42-0110, USH 41/USH 141, Oconto 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, 2017 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 (20161130)

2. Scope of Work.

The work under this contract shall consist of excavation common, removing asphaltic surface milling, base aggregate, breaker run, concrete pavement, concrete curb and gutter, concrete sidewalk, HMA pavement, storm sewer, culvert pipe, pavement marking, signing, traffic control, lighting, signals, guardrail, high tension cable guard, polymer high friction surface treatment on structures, structures R-05-0114, B-05-0072, B-05-0073, B-05-0074, B-05-0075, B-05-0076, B-05-0077, B-05-0078, and B-05-0079, erosion control, finishing items 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. 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.

Check for and comply with local ordinances governing the hours of operation of construction equipment.

Coordinate the timing for the reconstruction of the railroad crossing at Station 14+70EB with Sault Saint Marie Bridge Company to coincide with construction activities.

Before the new railroad crossing at Station 14+70EB is opened to local traffic, all gates and signals must be operational. Pavement within 50 feet of the railroad crossing cannot be placed until the new railroad crossing has been installed. Adjust proposed pavement grades as necessary to match new railroad crossing height.

Traffic/Construction Overview
All shoulder work including milling and paving shall be done with full lane closures or ramp closures. Do not allow the milled surface to remain exposed for a period greater than 72 hours.

Stage 1

- Remove median cable barrier designated to be salvaged from the USH 41 median.
- Construct the south and north temporary crossovers.
- Remove, replace and widen the existing USH 41 shoulders as designated.

Stage 2

- Construct the outside (right) portions of structures B-5-73, B-5-77 and B-5-79 as shown in the Structure plans.
- Construct guardrail proposed for attachment to the outside of the structures.
- Construct a temporary asphaltic surface wedge to match the newly constructed portions of structures B-5-77 and B-5-79.

Stage 3

- Construct the inside (left) portions of structures B-5-73, B-5-77 and B-5-79 as shown in the Structure plans.
- Construct guardrail proposed for attachment to the inside of the structures.
- Construct a temporary asphaltic surface wedge to match the newly constructed portions of structures B-5-77 and B-5-79.

Stage 4

- Construct the outside (left) portions of structure B-5-76 and B-5-78 as shown in the Structure plans.
- Construct guardrail proposed for attachment to the outside of the structures.
- Provide a temporary asphaltic surface wedge to match the newly construction portions of B-5-76 and B-5-78

Stage 5

- Construct the inside (right) portions of structure B-5-76 and B-5-78 as shown in the Structure plans.

- Construct guardrail proposed for attachment to the inside of the structures.
- Provide a temporary asphaltic surface wedge to match the newly construction portions of B-5-76 and B-5-78

Stage 6

- Remove the south and north temporary crossovers and complete all remaining contract work under Project ID 1130-32-71 utilizing single lane and shoulder closures during allowable timeframes, except as described in the Traffic Section regarding work at structure B-5-131.

Do not close CTH B and the USH 41/CTH B interchange until 12:01 AM May 14, 2018.

Complete construction on CTH B east of Station 28+00EB, including the USH 41 northbound exit and entrance ramps to the stage necessary to reopen to traffic prior to 12:01 AM June 15, 2018. Do not reopen until completing the following work: pavement, curb and gutter, pavement marking, signing.

If the contractor fails to complete the contract work necessary to reopen CTH B east of Station 28+00EB, including the USH 41 northbound exit and entrance ramps prior to 12:01 AM June 15, 2018, the department will assess the contractor $1000 in interim liquidated damages for each calendar day that the road remains closed. An entire calendar day will be charged for any period of time within a calendar day that the lane remains closed beyond 12:01 PM.

Complete construction on CTH B west of Station 28+00EB, including the USH 41 southbound exit and entrance ramps, to the stage necessary to reopen to traffic prior to 12:01 AM July 13, 2018. Do not reopen until completing the following work: pavement, curb and gutter, pavement marking, signing, signals and lighting

If the contractor fails to complete the contract work necessary to reopen CTH B west of Station 28+00EB, including the USH 41 southbound exit and entrance ramps prior to 12:01 AM July 13, 2018, the department will assess the contractor $1000 in interim liquidated damages for each calendar day that the road remains closed. An entire calendar day will be charged for any period of time within a calendar day that the lane remains closed beyond 12:01 PM.

The department will not grant time extensions for the following:

1. Severe weather as specified in 108.10.2.2.
2. Labor disputes that are not industry wide.
3. Delays in material deliveries.

Oversized Over Weight Trucking Operations

Notify the Department's traffic section a minimum of two weeks prior to closing CTH B or installing temporary barrier wall along US 41 for Stages 2 and 3. Contact Rod Hamilton, Traffic Engineer, at (920) 492-5652.

Environmental Protection, Fish Spawning
Suamico River and unnamed waterways cross US 41 at this location are used heavily in the spring by fish for spawning and travel to spawning grounds. To protect developing fish eggs and substrate for aquatic organisms, all instream work that could adversely impact water quality should be undertaken between June 16 and February 28.

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.

Migratory Birds
Swallow and other migratory birds' nests have been observed on or under the existing bridge. All active nests (when eggs or young are present) of migratory birds are protected under the federal Migratory Bird Treaty Act. The nesting season for swallows and other birds is usually between May 1 and August 30.

Either prevent active nests from becoming established, or apply for a depredation permit from the US Fish and Wildlife Service for work that may disturb or destroy active nests. The need for a permit may be avoided by removing the existing bridge structure prior to nest occupation by birds, or clearing nests from all structures before the nests become active in early spring. As a last resort, prevent birds from nesting by installing a suitable netting device on the remaining structure prior to nesting activity. Preventative netting is incidental to construction.

Completion Date Liquidated Damages

Add the following to standard spec 108.11:

If the contractor fails to complete the above work in Article 2. Scope of Work prior to 12:01 AM, November 15, 2018, the department will assess the contractor liquidated damages of $2,065 for each calendar day that the work remains incomplete beyond 12:01 AM, November 15, 2018. An entire calendar day will be charged for any period of time within a calendar day that the work remains incomplete beyond 12:01 AM.

4. Traffic

The schedule of operations shall conform to the construction staging as shown in the traffic control plans and special provisions, unless the engineer approves modifications to the staging in writing.

USH 41

Work on structures B-5-73, B-5-76, B-5-77, B-5-78 and B-5-79 shall be staged in halves in order to maintain two lanes of traffic in each direction on USH 41 except during allowable single lane closure timeframes. Staging will require shifting a single lane of USH 41 northbound traffic onto USH 41 southbound while maintain a single lane of USH 41 northbound traffic on USH 41 northbound and vice versa between the north and south temporary crossovers. Outside of the traffic staging required for structure construction, all contract work shall be completed utilizing single lane closures and shoulder closures during allowable timeframes. See Traffic Control and Structure plans for details of each stage.

Stage 1

- Complete work utilizing single lane and shoulder closures during allowable timeframes.

Stage 2

- USH 41 northbound roadway – maintain a single lane of northbound traffic
- USH 41 southbound roadway – maintain two lanes of southbound traffic and a single lane of northbound traffic

Stage 3

- USH 41 northbound roadway – maintain a single lane of northbound traffic
- USH 41 southbound roadway – maintain two lanes of southbound traffic and a single lane of northbound traffic

Stage 4

- USH 41 northbound roadway – maintain two lanes of northbound traffic and a single lane of southbound traffic
- USH 41 southbound roadway – maintain a single lane of southbound traffic

Stage 5

- USH 41 northbound roadway – maintain two lanes of northbound traffic and a single lane of southbound traffic
- USH 41 southbound roadway – maintain a single lane of southbound traffic

Stage 6

- Complete all remaining contract work under Project ID 1130-32-71 utilizing single lane and shoulder closures during allowable timeframes.

Reduction of a single lane in either direction during Stages 2 through 5 is anticipated to be required during stage changes.

Work inside of the staged area is allowable, with the approval of the engineer, in lanes already closed for the structure staging along USH 41 northbound during Stages 2 and 3 and USH 41 southbound during Stages 4 and 5.

Work outside the staged construction area during Stages 2 through 5 is available to be completed utilizing single lane closures and shoulder closures during allowable timeframes.

Close Harbor Lights Road between W. Deerfield Lane and E. Deerfield Lane to complete work on structure B-5-131. Contact the Howard Suamico School District at (920) 662-7878 7 days prior to the closure.

Complete work to Norfield Road utilizing single lane closures with a flagging operation during daylight hours.

Nightly Detours

USH 41 will be detoured for removal operations at structure B-5-131 over USH 41 at Harbor Lights Road between the hours of 11:00 PM to the following 5:00 AM. USH 41 traffic will be detoured via Lineville Road to Velp Avenue to Brown Road.

CTH B Ramp Closures

Entrance and exit Ramps may be closed for milling and paving operations outside of the timeframes specified for work under Project ID 1150-54-71 only when an outside lane closure in place during the allowable timeframes. PCMS boards shall be in place 7 business days prior to a closure.

Rolling Lane Closures

Rolling lane closures are permitted between the hours of 11:00 PM to the following 5:00 AM.

Diversion Routes

The ramps at the CTH B interchange can be used as a diversion route between the hours of 11:00 PM to the following 5:00 AM. Diverted traffic shall be maintained on a paved surface.

Shoulder Closures

Shoulder closures are permitted at any time.

Single Lane Closures

Single lane closures are permitted during the times shown in the table below. Full closures are not permitted

Day of Week	**NB USH 41**	**SB USH 41**
Monday – Thursday	7:00 PM – 2:00 PM (next day)	6:00 AM – 9:00 AM
Friday	7:00 PM (Thursday) – 12:00 PM (Friday)	6:00 AM – 6:00 PM
Saturday	9:00 PM(Friday) – 10:00 AM (Saturday)	10:00 AM – 3:00 PM
Sunday	6:00 PM(Sunday) – 2:00 PM (Monday)	9:00 AM – 7:00 PM

CTH B Closure

Completely close CTH B from east of Velp Avenue to west of Veterans Avenue, and the USH 41/CTH B interchange ramps during the allowable timeframe. Following the completion of all contract work from Station 28+00EB and the USH 41/CTH B northbound interchange ramps, open the northbound ramps and CTH B east of the interchange to traffic

while maintaining a closure of CTH B west of Station 28+00EB. The intersections at the northbound ramps shall be stop controlled for all approaches.

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)

5. 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 lanes must be fully opened at times listed in the table below.

	Lane Closures Prohibited
USH 41 NB/USH 141 NB from Brown Rd. – Guluska Rd.	3:00 PM - 6:00 PM Monday – Thursday; 10:00 AM – 8:00 PM Friday

	Lane Closures Prohibited
USH 41 SB/USH 141 SB from Brown Rd. – Guluska Rd.	6:00 AM - 9:00 AM Monday – Thursday; 10:00 AM – 7:00 PM Sunday
USH 41 NB from 1 Mile S. of Frog Pond Rd. – B-42-0110	12:00 PM – 8:00 PM Friday
USH 41 SB from 1 Mile S. of Frog Pond Rd. – B-42-0110	12:00 PM – 8:00 PM Sunday

Full ramp closures will be needed for the single lane ramps of the USH 41/USH 141 Interchange. The single lane ramps are USH 141 SB to USH 41 NB and USH 41 SB to USH 141 NB. There are no time restrictions for the full ramp closures. The ramps can be closed a maximum of three consecutive days.

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.

A.1 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:

$750 per lane per hour broken into 15 minute increments

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

Lane Rental Fee Assessments will be made based on the applicable rate for any and all closures whether work is being performed or not. The engineer, or designated representative, will be the sole authority in determining time period length for the Lane Rental Fee Assessment.

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

B (Vacant)

C (Vacant)

D Measurement
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.

E (Vacant)

6. Lane Rental Fee Assessment for Lambeau Field Events

This special provision describes Lane Rental Fee Assessments associated with Lambeau Field Events with expected attendance over 30,000. These fees will be assessed in addition to all other damages stated in the contract.

The Lane Rental Fee Assessment will apply to US Highway 41/US Highway 141 SB.

Lane Rental Fee Assessment
There cannot be any closures on the above roadways during Lambeau Field Events with expected attendance over 30,000, 5 hours prior to the start of the event and 8 hours after the start of the event.

If a lane is closed during the above noted timeframe, the contractor will be subject to Lane Rental Fee Assessments. If a lane is obstructed at any time due to contractor operations, it is considered a closure.

The Lane Rental Fee Assessments listed below will be measure by 15-minute increments. All lane, roadway or ramp closure events increments less than 15 minutes will be assessed as 15 minute increments.

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

$750 per lane per hour for broken into 15 minute increments

Lane Rental Fee Assessments will be made based on the applicable rate for any and all closures whether work is being performed or not. The engineer, or designated representative, will be the sole authority in determining time period length for the Lane Rental Fee Assessment.

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

7. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying USH 41/USH 141, USH 41 ramps, CTH B, and Harbor Lights 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 25, 2018 to 6:00 AM Tuesday, May 29, 2018 for Memorial Day;
- From noon Friday, June 29, 2018 to 6:00 AM Thursday, July 5, 2018 for Independence Day;
- From noon Friday, August 31, 2018 to 6:00 AM Tuesday, September 4, 2018 for Labor Day.

stp-107-005 (20050502)

8. Utilities.

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

Project ID 1130-32-71
The following utilities have facilities with the project limits:

- AT&T Wisconsin (AT&T)
- American Transmission Company Management, Inc. (ATC)
- Brown County Technology Service (BCI)
- Howard-Suamico School District (HSSD)
- Merit Networks
- Time Warner Cable (TWC)
- Village of Suamico – Sewer
- Village of Suamico – Water
- Wisconsin Public Service Corporation (WPS) – Electrical Distribution
- Wisconsin Public Service Corporation (WPS) – Natural Gas

AT&T Wisconsin
The field contact information for their facilities is as follows:

Joseph Kassab
221 W. Washington St. 4th Floor
Appleton, WI 54911
Office: (920) 735-3206
Cell: (920) 202-4002
Email: jk572k@att.com

AT&T has underground fiber optic crossings at the following locations:

- STA 1413+30NB, south of Harbor Lights Road, no conflicts anticipated.
- STA 1473+50NB, along the north side of CTH B, no conflicts anticipated.
- STA 1515+50NB, north of SSAM Railroad bridge, no conflicts anticipated.

ATC Management
The field contact information for their facilities is as follows:

Doug Vosberg
5303 Fen Oack Drive
Madison, WI 53718
Office: (608) 877-7650
Email: dvosberg@atcllc.com

ATC has 138 kV overhead electrical transmission lines outside of the right of way along the right side of USH 41 from Lineville Road thru CTH B. No conflicts anticipated.

Brown County Technology Service (BCI)
The field contact information for their facilities is as follows:

Dan Becker
PO Box 11064
Green Bay, WI 54304
Office: (920) 393-3492 ext 702
Cell: (920) 6576-3496
Email: dbecker@mcae.biz

BCI & Merit has ductwork crossing USH 41 underground at STA 1515+50NB, no conflicts are anticipated.

Howard Suamico School District (HSSD)
The field contact information for their facilities is as follows:

Bruce Rowell
4933 Allen Road
Little Suamico, WI 54141
Office: (920) 819-2269
Email: browell@access-engineering.com

HSSD has an underground fiber optic line in a two inch conduit crossing under USH 41 along the north (left) side of Harbor Lights Road at approximately STA 1418+00NB, no conflicts anticipated. A vault located at STA 32+65HA left will be adjusted upon completion of grading. Notify HSSD upon completion of grading in the area of their vault. This work will take one (1) working day to complete.

Merit Networks
The field contact information for their facilities is as follows:

Dan Becker
PO Box 11064
Green Bay, WI 54304
Office: (920) 393-3492 ext 702
Cell: (920) 6576-3496
Email: dbecker@mcae.biz

BCI & Merit has ductwork crossing USH 41 underground at STA 1515+50NB, no conflicts are anticipated.

Time Warner Cable
The field contact information for their facilities is as follows:

Vince Albin
3545 Plank Rd.
Appleton, WI 54915
Phone: (920) 831-9249
Mobile: (920) 378-0444
vince.albin@twcable.com

Time Warner Cable has an underground fiber optic cable crossing under USH 41 at approximately STA 1515+50NB, no conflicts.

The Village of Suamico – Water
The field contact information for their facilities is as follows:

Mike Konyn
12781 Velp Ave
Green Bay, WI 54313
Office: (920) 434-8410
Cell: (920) 676-9173
Email: michael@suamico.org

The Village of Suamico has underground water main crossing USH 41 at the following locations:

- Approximately STA 1416+00NB installation of high tension cable guard in median will occur over this line will not impact these facilities.
- Along the north side of Riverside Drive at approximately STA 1458+50NB, no conflicts.
- Along the south side of CTH B at approximately STA 1472+80NB, see 1150-54-71 utility special provisions.

The Village of Suamico – Sanitary Sewer
The field contact information for their facilities is as follows:

Mike Konyn
12781 Velp Ave
Green Bay, WI 54313
Office: (920) 434-8410
Cell: (920) 676-9173
Email: michael@suamico.org

The Village of Suamico has underground **sanitary sewer** lines crossing USH 41 at the following locations:

- 10-inch PVC force main at approximately STA 1416+00NB
- 4-inch PVC force main at approximately STA 1418+50NB
- 4-inch PVC and 6-inch PVC force main along the south side of Riverside Drive at approximately STA 1458+50NB

The installation of high tension cable guard in the median over these crossings will not impact these facilities.

Wisconsin Public Service Corporation (WPS) –Natural Gas
The field contact information for their facilities is as follows:

Dena Andre
2850 S. Ashland Ave
Green Bay, WI 54307
Office: (920) 617-5092
Email: djandre@wisconsinpublicservice.com

WPS has underground natural gas lines at the following locations:

- Approximately STA 1326+45 NB, installation of high tension cable guard in median will be adjusted in the field to avoid conflict if necessary.
- Along the south side of Riverside Drive, under USH 41 at approximately STA 1456+70NB (STA 1457+25SB) installation of high tension cable guard in median will be adjusted in the field to avoid conflict if necessary.

Wisconsin Public Service Corporation– Electrical Distribution
The field contact information for their facilities is as follows:

Randy Steier
2850 S. Ashland Ave
Green Bay,WI 54307
Phone: (920) 617-5167
Mobile: (920) 655-1596
rdsteier@wisconsinpublicservice.com

WPS has electrical distribution lines crossing USH 41 at the following locations:

- Underground at approximately STA 1367+90NB, installation of high tension cable guard in median will be adjusted in the field to avoid conflict if necessary.
- Overhead at approximately STA 1456+10NB, no conflict.
- Overhead at approximately STA 1515+50NB, no conflict.

- Overhead at approximately STA 1528+25NB, no conflict.
- Overhead at approximately STA 1532+50NB, no conflict.
- Overhead at approximately STA 1539+00NB, no conflict.
- Overhead at approximately STA 1552+00NB, no conflict.
- Overhead at approximately STA 1565+60NB, no conflict.

Project ID 1150-54-71

The following utilities have facilities with the project limits:

- AT&T Wisconsin (AT&T)
- Brown County Technology Service (BCI)
- Merit Networks
- Time Warner Cable (TWC)
- Village of Suamico – Sanitary
- Village of Suamico – Water
- Wisconsin Public Service Corporation (WPS) – Electrical Distribution
- Wisconsin Public Service Corporation (WPS) – Natural Gas

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.

AT&T Wisconsin

The field contact information for their facilities is as follows:

Joseph Kassab
221 W. Washington St. 4th Floor
Appleton, WI 54911
Office: (920) 735-3206
Cell: (920) 202-4002
Email: jk572k@att.com

AT&T has communication facilities in the following locations:

- A fiber optic communication line between 30' and 40' south of the EB reference line of CTH B beginning in the SE quadrant of the intersection with Side Street, continuing east across the railroad tracks then turning south at STA 15+10EB RT to follow parallel to the railroad right of way. There is approximately a 1.5' cut over the top of this line at the proposed culvert however no conflict is anticipated, the line will be relocated to parallel the northern right of way line prior to construction.
- Along CTH B from STA 13+00WB to STA 29+80WB left there is a fiber optic and two copper communication facilities, relocations of the facility when listed will occur before construction to a location near the north right of way line.
    - A hand hole located at STA 13+60WB left will be moved 2' north and 20' east prior to construction to behind the power pole at STA 13+81WB, LT.

- The pedestal at STA 13+60WB left will be removed.
- From STA 13+75EB to STA 16+75WB left the underground fiber optic and copper communication lines are in conflict with the proposed storm sewer at STA 14+75WB left and STA 16+15WB left and will be relocated outside of the construction limits prior to construction.
- From STA 16+50WB to STA 29+50WB left along CTH B, the underground fiber optic and two copper communications lines will be relocated prior to construction.
- Pedestals at STA 29+60WB left and STA 30+00RT will remain, no conflicts anticipated.
- A fiber optic line crossing under CTH B at STA 30+00EB will not be in conflict.

Brown County Technology Service (BCI)
The field contact information for their facilities is as follows:

Dan Becker
PO Box 11064
Green Bay, WI 54307
Office: (920) 393-3492 ext702
Cell: (920) 676-3496

BCI and Merit have an underground communication facility in the following locations:

- A fiber optic duct package (1 – 2" HDPE SDR-11 (BCI) and 1 – 1.25" HDPE SDR-13.5), underground along the south side of CTH B from the beginning of the project thru West Deerfield Avenue, crossing Deerfield Avenue at STA 19+24DE to hand holes at STA 19+26DE, 28' RT and STA 19+20, 27' RT. The line continues south along W. Deerfield Avenue, approximately 24' RT of reference line.
- The hand holes along West Deerfield Avenue will be moved 6-inches east of current location and adjusted to match the final grade once traffic has been closed on West Deerfield Avenue, notify utility five (5) working days prior to closure. This work will take two (2) working days.
- Proposed 24-inch storm sewer will be within 6-inches of the top of the duct at STA 17+46EB, 67' RT. Notify the field contact representative, five (5) working days prior to excavation to allow for representative to be on site during excavation to assist with locating their facilities, a 6-inch clearance between bottom of storm sewer and top of duct anticipated.

Merit Networks
The field contact information for their facilities is as follows:

Dan Becker
PO Box 11064
Green Bay, WI 54307
Office: (920) 393-3492 ext702
Cell: (920) 676-3496

Merit Networks have underground facilities jointly owned with BCI. See BCI for locations and proposed work.

Time Warner Cable (TWC)
The field contact information for their facilities is as follows:

Vince Albin
3545 Plank Rd.
Appleton, WI 54915
Phone: (920) 831-9249
Mobile: (920) 378-0444
vince.albin@twcable.com

TWC has the following facilities within the project limits:

- Overhead coaxial line crossing CTH B from pole at STA 13+22EB, 60' RT to pole at STA 13+80WB, 29' left. The pole at STA 13+81WB left is owned by WPS and TWC's facilities will be moved in conjunction with that pole. No conflicts anticipated.
- An underground coaxial line runs between the pole at STA 18+63DE, 23' left to pedestal at STA 17+81WB, 44' left, crossing CTH B at STA 17+77EB (STA 17+78WB). This facility will be discontinued in place and a new facility will be placed at a deeper depth to avoid conflicts prior to construction. The pole and pedestal will remain, no conflicts anticipated.

Notify Time Warner Cable two (2) working days prior to removing or adjusting any coax or fiber optic cable to verify that the facility has been discontinued.

Village of Suamico – Sanitary Sewer
The contact information of the field representative for their facilities is as follows:

Mike Konyn
12781 Velp Ave
Green Bay, WI 54313
Office: (920) 434-8410
Cell: (920) 676-9173
Email: michael@suamico.org

The Village of Suamico has an underground sanitary line along East Deerfield Avenue terminating at a manhole at STA 19+60DE, 13' RT.

- Cut of 5' to install storm sewer crossing with sanitary at STA 19+30DE, 9' RT. No conflict.
- Adjust sanitary manhole at STA 19+60DE, 13' RT in accordance to the contract documents to match new pavement grades.

Village of Suamico - Water
The field contact information for their facilities is as follows:

Mike Konyn
12781 Velp Ave
Green Bay, WI 54313
Office: (920) 434-8410
Cell: (920) 676-9173
Email: michael@suamico.org

The village has underground 10-inch water main along the south (RT) side of CTH B for the length of the project with crossings under CTH B at STA 14+10EB and STA 18+65EB.

The following locations require installation of insulation over the water line:
Storm sewer installation at STA 14+25EB, 25' RT.
Storm sewer installation at STA 17+23EB, 43' RT
Storm sewer installation at STA 19+35DE, 24' RT
Storm sewer installation at STA 21+52EB, 45' RT
Storm sewer installation at STA 27+84EB, 31' RT

The following water valves require adjusting to match final grade, perform this work in accordance to the requirements of "Adjusting Water Valve Boxes":
Water valve at STA 14+00EB, 21' RT, behind proposed curb
Water valve at STA 18+34EB, 58' RT located in back slope.
Water valve at STA 18+44EB, 55' RT will be located in the multi-use trail
Water valve at STA 18+58EB, 61' LT will be located in the sidewalk.

The following structures are located within the project limits but are not in conflict and will remain:
Water valve at STA 14+02WB, 86' LT, no conflict
Hydrant at STA 14+53WB, 53' LT, no conflict.
Hydrant at STA 18+33EB, 64' RT, no conflict.
Water Valve at STA 31+41, 48' RT, no conflict.
Hydrant at STA 31+41, 50' RT, no conflict.

Wisconsin Public Service Corporation (WPS) – Electrical Distribution
The field contact information for their facilities is as follows:
Randy Steier
2850 S. Ashland Ave
Green Bay,WI 54307
Phone: (920) 617-5167
Mobile: (920) 655-1596
rdsteier@wisconsinpublicservice.com

WPS has electrical distribution lines at the following locations:

Overhead along the west side of Side Street to pole at STA 13+22EB, 60' RT (guyed by a pole at STA 13+84EB, 65' RT), crossing CTH B at STA 13+60EB (STA 13+67WB) to a pole at STA 13+81WB, 29' LT.

Pole at 13+81WB, 29' LT is located within 2' horizontal clearance required from face of curb and will be relocated prior to construction.

Street Light pole at STA 13+92EB, 32' RT is located in fill slope for Side Street reconstruction and will be removed during construction. Notify the Public Works Director for the Village of Suamico at (920) 434-8410 to order WPS to remove the light pole at least sixteen (16) working days prior to the desired removal date. Removal will take one (1) working day.

Underground from pole at STA 13+81WB, 29' LT (north) to STA 16+50WB, 65' LT

Underground electric line from STA 13+80WB, LT thru STA 14+90WB, LT will be have a 3.5' cut at culvert and inlet installation at STA 14+71WB, LT but will not be in conflict.

Overhead from a pole at STA 18+63DE, 23' LT to a light pole at STA 18+55EB, 33' RT.

Pole at STA 18+55EB, 33' RT will be removed during construction. Notify the Public Works Director for the Village of Suamico at (920) 434-8410 to order WPS to remove the light pole at least sixteen (16) working days prior to the desired removal date. Removal will take one (1) working day.

Underground from pole at STA 18+63DE, 23' LT crossing CTH B at STA 18+18EB (STA 13+30WB) to the left side of CTH B at STA 18+85WB, 80' LT.

Pole at STA 18+63DE, LT, no conflict.

Underground line along W. Deerfield Avenue has cut of 4.7' for storm sewer installation at STA 19+10DE, 18' LT and cuts ranging from 1' (typical) to 3.1' for W. Deerfield Ave and CTH B reconstruction. No conflict anticipated.

Underground line crossing W. Deerfield Avenue at 18+65DE, no conflict.

SE ramp crossing underground from Control cabinet at 618+01SE, 86' LT to 618+35SE, 69' RT with cuts of 0-4'. No conflict anticipated, WPS will coordinate the installation and cutover to the new cable with the highway contractor and WisDOT during construction. Notify WPS fifteen (15) working days prior to closing the SE ramp to traffic to disconnect service from the existing cabinet. This work will take one (1) working day. Notify WPS fifteen (15) working days prior to the completion of grading. WPS will then lower their line as required, this work will require ten (10) working days after the completion of grading.

NW ramp crossing underground from outside of the construction limits at STA20+51 WB, 66' LT to the signal control cabinet at STA 21+55WB, LT. Cuts from 0 – 2' will occur over this line, no conflict.

Underground from STA 29+80WB, 62' LT, crossing CTH B at STA 30+00WB (STA 30+06EB) to a control cabinet at STA 30+00EB 70' RT. From the cabinet, the underground line continues outside the right of way fence along the USH 41 northbound off-ramp. No conflict.

Overhead from the northwest quadrant of the intersection with Veteran's Avenue to a pole at STA 30+09WB, 63' LT. From this pole, a single overhead line continues to a pole at STA 29+45WB, 42' LT

Light pole at STA 29+45WB will be in new sideslope with a fill of 1', pole will remain.

Wisconsin Public Service Corporation (WPS) – Natural Gas

The field contact information for their facilities is as follows:

Dena Andre
2850 S. Ashland Ave
Green Bay, WI 54307
Office: (920) 617-5092
Email: djandre@wisconsinpublicservice.com

WPS has underground natural gas lines at the following locations:

A 6-inch natural gas main along the south side of CTH B from Velp Avenue to the southwest quadrant of Side Street where it reduces to a 4-inch natural gas main and turns to follow along the west side of Side Street. No conflicts.

A 2-inch PE natural gas line runs from STA 16+55WB, 55’ LT crossing CTH B at STA 16+48WB (STA 16+48EB) to STA 16+46EB, 55’ RT where it continues along the south (right) side to STA 17+37EB, 72' RT. From here the gas line turns south to continue down the west side of West Deerfield Avenue. The following locations are in close proximity to construction operations:

STA 16+48EB, 20’ LT, the existing gas line is located deeper than the proposed 5’ cut for storm sewer installation, no conflict.

STA 17+31EB, 70’ RT and STA 19+15DE, 24’ LT, cut of 4’ over gas line for storm sewer installation. WPS will lower the line during construction. Notify WPS five (5) working days prior to closing CTH B. WPS anticipates this work will take four (4) working days to complete.

Project ID 1150-68-71

9. Work by Others.

At the interchange of USH 41 & CTH B, the Wisconsin Department of Transportation Northeast Region Electrical Unit will perform the following work:

- Salvage the existing microwave detectors
- Salvage the two existing traffic signal cabinets
- Furnish monotube poles, arms, and steel luminaire arms
- Reinstall the two existing traffic signal cabinets
- Provide and install the microwave detector for the NB ramps
- Terminate all cables & wire in the traffic signal cabinets

The Sault Saint Marie Railroad will replace the railroad crossing during the closure of CTH B.

10. Railroad Insurance and Coordination.

Special provision being completed by NER.

11. Requirements for Conduit Installation – Under Railroad Tracks.

Install conduit below the railroad tracks as shown in the plans. Coordinate directly with the designated railroad contacts. Install conduit under railroad tracks in accordance with the conditions required by the railroad. Efforts and materials required to comply with railroad requirements shall be considered incidental to the conduit special bid items.

Refer to the following conditions specified by CN Railroad: https://www.cn.ca/en/delivering-responsibly/safety/erailsafe/utility-installations

Metallic conduit has been included in the quantities for conduit crossings underneath railroad tracks. It is the contractor's responsibility to ensure that conduit installed meets railroad requirements for under track crossings.

12. Temporary Regulatory Speed Limit Reduction

A reduction of the posted regulatory speed limit from 65 mph to 55 mph is required when any of the following conditions are created within the project limits: 1. Lane(s) closed and workers are present and active in close proximity to an open lane. 2. Lane(s) narrowed to less than 12 feet and adjacent shoulder width is reduced. 3. Traffic is shifted partly or completely onto a shoulder and/or temporary pavement and shoulder width is reduced. At all other times the posted regulatory speed limit shall be 65 mph.

During periods when traffic conditions do not require a Temporary Regulatory Speed Reduction, speed limit signs shall be changed to the permanent posted speed limit. This may require posted speed and sign changes twice a day or more. Changing temporary and existing/permanent signs between 65 mph and 55 mph shall be considered incidental to the item Traffic Control.

During approved temporary regulatory speed limit reductions, install regulatory speed limit signs on the inside and outside shoulders of the roadway at the beginning of the reduced regulatory speed zone, after all locations where traffic may enter the highway segment or every 1/2 mile within the reduced regulatory speed zone. Signs shall be installed at the end of the temporary regulatory speed zone to designate the end of the temporary regulatory speed zone and inform drivers the posted regulatory speed limit reverts back to 65 mph. To minimize possible confusion to the traveling public and to ensure appropriate speed enforcement, enhanced attention to placement and changing of speed limit signs is required.

Coordinate with Department construction field staff to notify the Northeast Region Traffic Section with field location(s) of the temporary regulatory speed zone. Primary contact phone number: 920-492-5652 (secondary contact number is 920-492-5641). Contact the Northeast Region Traffic Section at least 14-calendar days prior to installation of the temporary regulatory speed zone. After notification, Northeast Region Traffic will create a "Temporary Speed Zone Declaration" to meet statutory requirements, allowing enforcement of this temporary regulatory speed limit.

When construction activities impede the location of a post mounted regulatory speed limit sign, mount the regulatory speed limit sign on portable supports that meet the "crashworthy" definition and height criteria in the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD). (NER12-1003)

13. Special Events

Prior to preparing bids, verify the dates of each festival, game, or event listed to obtain current dates for work restrictions.

CTH B
CTH B must remain open to traffic with no hauling of any kind along or across between the hours listed on the following New Zoo & Adventure park events:

- Eggstravaganzoo , Saturday, March 31, 2018 (8:00AM to 8:00 PM)
- B'earth'day Party for the Animals, Saturday, April 21, 2018 (8:00AM to 8:00 PM)
- Mother's Day, Sunday May 13, 2018 (8:00AM to 8:00 PM)
- Feast with the Beast, Monday August 13, 2018 (5:00PM to 9:00 PM)
- Hot Dog Days of Summer, Saturday, September 15, 2018 (8:00AM to 8:00 PM)
- Pumpkin Carving, October 10, 2018 (4:00 PM to 8:00 PM)

USH 41/USH 141
USH 41/USH 141 shall be restored to two lanes in each direction during the following periods. Do not perform work on, nor haul materials of any kind along or across, any portion of the highway carrying USH 41/USH 141 traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights and any other material that might impede the free flow of traffic during the following special event periods:

- Green Bay Packer home games and Packer Family Scrimmage: From five hours prior to game until 5 hours after the game for USH 41/USH 141;
- Other events at Lambeau Field with 30,000 or greater attendance: From five hours prior to game until 5 hours after the game for USH 41/USH 141.

If the contractor fails to restore USH 41/USH 141 to two lanes in each direction during the above times, the department will assess the contractor $1,750 per lane in liquidated damages for each hour USH 41/USH 141 is not restored to two lanes in each direction. The

department will administer interim liquidated damages for the road not being open to traffic under the Failing to Open Road to Traffic administrative item.

14. Soil Borings

The contractor can obtain soil boring information from Matt Ternes at WisDOT Northeast Region, (920) 366-3028.

15. Labeling and Disposal of Waste Material.

The EPA ID number for Structure B-05-0131 shall be coordinated with the field engineer.

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

The state's waste management contractor shall furnish and deliver appropriate hazardous waste containers and site-specific labels to each bridge site. The provided containers shall be placed at pre-selected drop-off and pick-up points at each bridge site, and these locations shall be determined at the preconstruction conference. The custody of the containers and labels shall be the responsibility of the painting contractor while they are at the job site.

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

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

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

HAZARDOUS WASTE

WW-5257580999-001-01-0

STORAGE LABEL

DOT SHIPPING DESCRIPTION

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

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

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

DATE ACCUMULATED: 07/01/2005

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

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

GENERATOR EPA ID
WIR000121103

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

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

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

16. Environmental Protection, Wetlands.

Add the following to standard spec 107.18 follows:
The contractor shall not disturb nor store materials or topsoil within the nearby wetlands as shown on the erosion control sheets unless areas are designated to be filled or impacted as permitted in the projects U.S. Army Corps of Engineers Section 404 Permit. The work area shall be separated from the wetlands by silt fence, as shown on the plans, to avoid siltation and inadvertent fill into the wetland areas.

17. Environmental Protection, Phragmites.

Add the following to standard spec 107.18 follows:
Phragmites is an invasive species plant. Locations identified to have Phragmites shall be buried to a minimum of 2-feet below finished ground but outside of the 1:1 fill slopes. Reuse of the Phragmites soil as salvaged topsoil in areas where the plant currently exists is also allowed. For all equipment that comes into contact with Phragmites infested areas, follow the guidelines established under the Environmental Protection, Aquatic Exotic Species Control section of this special provision for inspection and cleaning of equipment prior to leaving the project site.

18. Environmental Protection, Dewatering.

Add the following to standard spec 107.18 follows:
If dewatering is required, treat the water to remove suspended sediments by filtration, settlement or other appropriate best management practice prior to discharge. The means and methods proposed to be used during construction shall be submitted for approval as part of the Erosion Control Implementation Plan for dewatering at each location it is required. The submittal shall also include the details of how the intake will be managed to not cause an increase in the background level turbidity prior to treatment and any additional erosion controls necessary to prevent sediments from reaching the project limits or wetlands and waterways. Guidance on dewatering can be found on the Wisconsin Department of Natural Resources website located in the Storm Water Construction Technical Standards, Dewatering Code #1061, "Dewatering". This document can be found at the WisDNR website: http://dnr.wi.gov/topic/stormwater/standards/const_standards.html

The cost of all work and materials associated with water treatment and/or dewatering is incidental to the bid items the work is associated.
(NER12-1010)

19. Environmental Protection, Non-Aquatic Invasive Species Plants

Phragmites, an invasive plant species, is known to exist within the project limits and in areas of ground disturbance or excavation work as shown in the plans. All topsoil from areas designated in the plan, that will be excavated or salvaged as part of the work within the contract shall be salvaged and used as topsoil within the project limits, placed in designated areas if shown in the plan, placed as fill per Section 205.3.12 of the Standard Specifications or deposited at an engineer approved waste site. All waste sites are subject to review and

approval by the department and shall be suitable for the waste of material containing invasive species to control their spread in compliance with NR 40. Waste sites suitable for invasive species would be areas that would prevent or control the growth and spread of the plant by burying, mowing or other control practices. The contractor shall submit his method for managing topsoil on this project for approval as part of the Erosion Control Implementation Plan. Prior to moving equipment out of infested area clean soils, seeds, plant parts, or invertebrates from exterior surfaces. Use most effective method that is practical by the following methods: Brush, broom, or other hand tools; high pressure air; steam cleaning; or portable wash station that contains runoff from washing equipment. Do not clean equipment, vehicles or trailers in or near waterways as it may promote the spread of invasive species downstream.

20. Erosion Control.

Proper erosion control measures must be used and maintained during all phases of construction. An erosion control implementation plan (ECIP) must be developed by the contractor and submitted to this office 14 days prior to the preconstruction conference. Erosion control devices should be specified on the construction plans.

If dewatering is required for any reason, the water must be pumped into a properly selected and sized dewatering basin before the clean/filtered water is allowed to enter any waterway or wetland. The basin must remove suspended solids and contaminants to the maximum extent practicable. A properly designed and constructed dewatering basin must take into consideration maximum pumping volume (gpm or cfs) and the sedimentation rate for soils to be encountered. Do not house any dewatering technique in a wetland.

The contractor should restrict the removal of vegetative cover and exposure of bare ground to the minimum amounts necessary to complete construction. Restoration of disturbed soils should take place as soon as conditions permit. If sufficient vegetative cover will not be achieved because of late season construction, it will be important that the site is properly winterized.

All temporary stock piles must be in an upland location and protected with erosion control measures (e.g. silt fence, rock filter-bag berm, etc.). Temporary Seed Stockpiles if expected to be in place for more than 7 days. Do not stockpile materials in wetlands, waterways, or floodplains.

21. Construction Over or Adjacent to Navigable Waters.

Add the following to standard spec 107.19:
The Suamico River is classified as a navigable waterway.
stp-107-060 (20150630)

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

The department has obtained a U.S. Army Corps of Engineers Section 404 permit. Comply with the requirements of the permit in addition to requirements of the special provisions. A copy of the permit is available from the regional office by contacting Jessica Kempke at (651) 290-5856 for projects 1130-32-71 & 1150-54-71. Contact Brian Haen at (920) 366-4788 for project ID 1550-68-71.
stp-107-054 (20080901)

23. Archaeological Site Protection

Project ID 1130-32-71 and ID 1150-54-71
Archaeological Sites
Five archaeologically significant sites exist within the general vicinity of the project.

Do not use the following sites for borrow, waste disposal, or for the staging of personnel, equipment and/or supplies:

Site	Description	Location
47OC32	Unnamed	STA 559+25 – 572+41 NB, RT
STA 558+95 – 585+39 SB, LT		
47OC475	Nelson	STA 1173+84 – 1186+82 NB, RT

If the undertaking includes ground disturbance beyond the existing right of way limits, a qualified archaeologist will need to monitor the construction-related ground disturbing activities and notice must be given to WisDOT at least 14 days prior for work within this area; contact Lynn Cloud, (608) 266-0099 or Jason Kennedy, (608) 267-6693.

The site shall not be used for borrow or waste disposal, and the site area not currently capped by asphalt/concrete should not be used for the staging of personnel, equipment and/or supplies.

Citgo Site

Site	Description	Location
47BR0460	Citgo Site	SE Ramp 614+25SE to 617+00SE right.

Place safety fence according to item 616.0700 as shown in the plan sheets prior to commencing work along the USH 41 northbound off-ramp at CTH B or as directed by engineer. No equipment or material may be placed in this area either temporarily or permanently. Should there be any unanticipated identification of human remains or a grave, in accordance with Wisconsin Statute 157.70 and Administrative Code HS2, work in this area should immediately cease, the area secured from further potential disturbance. Notify the Project engineer and the Wisconsin Historical Society immediately.

Project ID 1150-68-71

Archaeological Sites

Four archaeologically significant sites exist within the general vicinity of the project. The sites are listed in the table below.

Site	Description	Rough Location
47OC32	Unnamed	STA 559+25 – 572+41 NB, RT STA 558+95 – 585+39 SB, LT
47OC475	Nelson	STA 1173+84 – 1186+82 NB, RT STA 1173+64 – 1186+62 SB, LT
47OC505	Guise Farm	STA 1147+12 – 1149+61 SB, LT
47BR360	Sievert	315 ft. East of USH 41 & 95 ft. South of Brown Rd. (Located before the alignment starts.)

If the undertaking includes ground disturbance beyond the existing right of way limits, a qualified archaeologist will need to monitor the construction-related ground disturbing activities and notice must be given to WisDOT at least 14 days prior for work within this area; contact Lynn Cloud, (608) 266-0099 or Jason Kennedy, (608) 267-6693.

The site shall not be used for borrow or waste disposal, and the site area not currently capped by asphalt/concrete should not be used for the staging of personnel, equipment and/or supplies.

24. Nighttime Work Lighting-Stationary.

A Description

Provide portable lighting as necessary to complete nighttime work. Nighttime operations consist of work specifically scheduled to occur after sunset and before sunrise.

B (Vacant)

C Construction

C.1 General

This provision shall apply when providing, maintaining, moving, and removing portable light towers and equipment-mounted lighting fixtures for nighttime stationary work operations, for the duration of nighttime work on the contract.

At least 14 days prior to the nighttime work, furnish a lighting plan to the engineer for review and acceptance. Address the following in the plan:

1. Layout, including location of portable lighting – lateral placement, height, and spacing. Clearly show on the layout the location of all lights necessary for every aspect of work to be done at night.

2. Specifications, brochures, and technical data of all lighting equipment to be used.

3. The details on how the luminaires will be attached.

4. Electrical power source information.

5. Details on the louvers, shields, or methods to be employed to reduce glare.

6. Lighting calculations. Provide illumination with average to minimum uniformity ratio of 5:1 or less throughout the work area.

7. Detail information on any other auxiliary equipment.

C.2 Portable Lighting

Provide portable lighting that is sturdy and free standing and does not require any guy wires, braces, or any other attachments. Furnish portable lighting capable of being moved as necessary to keep up with the construction project. Position the portable lighting and trailers to minimize the risk of being impacted by traffic on the roadway or by construction traffic or equipment. Provide lightning protection for the portable lighting. Portable lighting shall withstand up to 60 mph wind velocity.

If portable generators are used as a power source, furnish adequate power to operate all required lighting equipment without any interruption during the nighttime work. Provide wiring that is weatherproof and installed according to local, state, federal (NECA and OSHA) requirements. Equip all power sources with a ground-fault circuit interrupter to prevent electrical shock.

C.3 Light Level and Uniformity

Position (spacing and mounting height) the luminaires to provide illumination with an average to minimum uniformity ratio of 5:1 or less throughout the work area.

Illuminate the area as necessary to incorporate construction vehicles, equipment, and personnel activities.

C.4 Glare Control

Design, install, and operate all lighting supplied under these specifications to minimize or avoid glare that interferes with all traffic on the roadway or that causes annoyance or discomfort for properties adjoining the roadway. Locate, aim, and adjust the luminaires to provide the adequate level of illumination and the specified uniformity in the work area without the creation of objectionable glare.

Provide louvers, shields, or visors, as needed, to reduce any objectionable levels of glare. As a minimum, ensure the following requirements are met to avoid objectionable glare on the roadways open to traffic in either direction or for adjoining properties:

1. Aim tower-mounted luminaires, either parallel or perpendicular to the roadway, so as to minimize light aimed toward approaching traffic.

2. Aim all luminaires such that the center of beam axis is no greater than 60 degrees above vertical (straight down).

If lighting does not meet above-mentioned criteria, adjust the lighting within 24 hours.

C.5 Continuous Operation
Provide and have available sufficient fuel, spare lamps, generators, and qualified personnel to ensure that the lights will operate continuously during nighttime operation. In the event of any failure of the lighting system, discontinue the operation until the adequate level of illumination is restored. Move and remove lighting as necessary.

D (Vacant)

E Payment
Costs for furnishing a lighting plan, and for providing, maintaining, moving, and removing portable lighting, tower mounted lighting, and equipment-mounted lighting required under this special provision are incidental to the contract.
stp-643-010 (20100709)

25. Traffic Control

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

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

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

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

The turning of traffic control devices when not in use to obscure the message will not be allowed under this contract.
Obtain prior approval from the engineer for the location of egress and ingress for construction vehicles to prosecute the work.

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

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

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

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

c. Equip all vehicles and equipment entering or leaving the live traffic lanes with a hazard identification beam (flashing yellow signal) capable of being visible on a sunny day when viewed without the sun directly on or behind the device from a distance of 1000 feet. Activate the beam when merging into or exiting a live traffic lane.

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

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

No hauling, deliveries, or removals to/from the median or outside shoulders of USH 41, for work pertaining to this project will be permitted without a full lane closure or engineer approval.

During the period when lane closures are allowed on USH 41, access into the work zones from USH 41 can be made from the closed lane, subject to the approval of the engineer. Construction traffic from the work zone entering USH 41 must run out of the closed lane. Once construction traffic is within a lane closures, all construction traffic re-entering USH 41 must come to within 10 mph of the posted speed for re-entering the live USH 41 lane.

Clear Zone Working Restrictions
Do not store materials or equipment within the clear zone of traffic lanes which are not protected by temporary precast barrier. Remove materials from the clear zone prior to opening lane closures. Do not leave any slopes steeper than 3:1 or any drop offs at the edge of the traveled way greater than 2 inches within the clear zone which are not protected by temporary precast barrier prior to opening lane closures.

Do not perform heavy equipment work in the median at any time unless protected by concrete barrier in both directions except as allowed during night work with lane closures.

Do not perform heavy equipment work within 18 feet of the edge of the traveled way unless protected by concrete barrier or a lane closure during the allowed closure periods.

Park equipment a minimum of 30-feet from the edge of the traveled way. Equipment may be parked in the median if it meets the minimum distance requirement from both traveled ways or if it is protected by concrete barrier.

If the contractor is unsure whether an individual work operation will meet the safety requirements for working within the clear zone, review the proposed work operation with the engineer before proceeding with the work.
(NER13-0507)

26. Portable Changeable Message Signs – Message Prior Approval

After coordinating with Department construction field staff, notify the Northeast Region Traffic Section at 920-366-8033 (secondary contact number is 920-360-3107) 3 business days prior to deploying or changing a message on a PCMS to obtain approval of the proposed message. The Northeast Region Traffic Unit will review the proposed message and either approve the message or make necessary changes.

PCMS boards must be deployed 7 days prior to the closure of CTH B.
(NER15-1112)

27. Survey Monument Coordination.

The contractor shall notify the Northeast Regional Survey Coordinator, Cormac McInnis, (920) 492-5638, at least 30 days prior to the beginning of construction activities. The Regional Survey Coordinator will then make the arrangements to have the Public Land Survey Monument and Landmark Reference Monuments tied out.

After the majority of construction is complete (prior to restoration) the contractor shall again notify the Survey Coordinator that the site is ready for the replacement of the monuments. The Survey Coordinator will then make arrangements to have the Public Land Survey Monument and Landmark Reference Monuments reset.
(NER14-0429)

28. Removing Small Pipe Culverts, Item 203.0100.

Add the following to standard spec 203.3.1 with the following:
Removal of apron endwalls shall be included in the removal of small pipe culverts item.

29. Abatement of Asbestos Containing Material Structure B-05-0076, Item 203.0210.S.001.

A Description
This special provision describes abating asbestos containing material on structures in accordance to the plans, the pertinent provisions of the standard specifications, and as hereinafter provided.

B (Vacant)

C Construction

John Roelke, License Number All-119523, inspected Structure B-05-0076 for asbestos on July 1 and July 14, 2014. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: The gaskets (17 square feet) located underneath the railing attachment plates on the concrete parapet.

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from Andew Fulcer at 920-492-5664. In accordance with NR447 and DHS159 , ensure that DNR or DHS receives a completed Notification of Demolition and/or Renovation (DNR Form 4500-113 (R 4/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days prior to beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Andrew Fulcer, WisDOT NE Region, 944 Vanderperren Way, Green Bay, WI 54304 and DOT BTS-ESS attn: Hazardous Materials Specialist PO Box 7965, Madison, WI. 53707-7965. In addition, comply with all local or municipal asbestos requirements.

Use the following information to complete WisDNR form 4500-113:

- Site Name: Structure B-05-0076, USH 41 SB over Sunset Beach Road (CTH B).
- Site Address: 6.0 miles south of junction with CTH S.
- Ownership Information: WisDOT Transportaion NE Region, 944 Vanderperren Way, Green Bay, WI 54304
- Contact: Andrew Fulcer
- Phone: 920-492-5664
- Age: 45 years. This structure was constructed in 1970
- Area: 7451 SF of deck

Insert the following paragraph in Section 6.g.:

- If asbestos not previously identified is found or previously non-friable asbestos becomes crumbled, pulverized, or reduced to a powder, stop work immediately, notify the engineer, and the engineer will notify the department's Bureau of Technical Services at 608-266-1476 for an emergency response in accordance to standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

D Measurement

The department will measure Abatement of Asbestos Containing Material (Structure), completed in accordance to the contract and accepted, as a single complete unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S.001	Abatement of Asbestos Containing Material Structure B-05-0076	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; properly disposing of all waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.
stp-203-005 (20120615)

30. Abatement of Asbestos Containing Material Structure B-05-0077, Item 203.0210.S.002

A Description
This special provision describes abating asbestos containing material on structures in accordance to the plans, the pertinent provisions of the standard specifications, and as hereinafter provided.

B (Vacant)

C Construction
John Roelke, License Number All-119523, inspected Structure B-05-0077 for asbestos on July 1 and July 14, 2014. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: The gaskets (17 square feet) located underneath the railing attachment plates on the concrete parapet.

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from Andew Fulcer at 920-492-5664. In accordance with NR447 and DHS159, ensure that DNR or DHS receives a completed Notification of Demolition and/or Renovation (DNR Form 4500-113 (R 4/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days prior to beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Andrew Fulcer, WisDOT NE Region, 944 Vanderperren Way, Green Bay, WI 54304 and DOT BTS-ESS attn: Hazardous Materials Specialist PO Box 7965, Madison, WI. 53707-7965. In addition, comply with all local or municipal asbestos requirements.

Use the following information to complete WisDNR form 4500-113:

- Site Name: Structure B-05-0077, USH 41 NB over Sunset Beach Road (CTH B).
- Site Address: 5.8 miles north of junction with USH 141.
- Ownership Information: WisDOT Transportation NE Region, 944 Vanderperren Way, Green Bay, WI 54304
- Contact: Andrew Fulcer
- Phone: 920-492-5664
- Age: 45 years. This structure was constructed in 1970
- Area: 7666 SF of deck

Insert the following paragraph in Section 6.g.:

- If asbestos not previously identified is found or previously non-friable asbestos becomes crumbled, pulverized, or reduced to a powder, stop work immediately, notify the engineer, and the engineer will notify the department's Bureau of

Technical Services at 608-266-1476 for an emergency response in accordance to standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

D Measurement
The department will measure Abatement of Asbestos Containing Material (Structure), completed in accordance to the contract and accepted, as a single complete unit of work.

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S.002	Abatement of Asbestos Containing Material Structure B-05-0077	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; properly disposing of all waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.
stp-203-005 (20120615)

31. Abatement of Asbestos Containing Material Structure B-05-0078, Item 203.0210.S.003

A Description
This special provision describes abating asbestos containing material on structures in accordance to the plans, the pertinent provisions of the standard specifications, and as hereinafter provided.

B (Vacant)

C Construction
John Roelke, License Number All-119523, inspected Structure B-05-0078 for asbestos on July 1 and July 14, 2014. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: The gaskets (18 square feet) located underneath the railing attachment plates on the concrete parapet.

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from Andew Fulcer at 920-492-5664. In accordance with NR447 and DHS159, ensure that DNR or DHS receives a completed Notification of Demolition and/or Renovation (DNR Form 4500-113 (R 4/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days prior to beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Andrew Fulcer, WisDOT NE Region, 944 Vanderperren Way, Green Bay, WI 54304 and DOT BTS-ESS attn: Hazardous Materials Specialist PO Box 7965, Madison, WI. 53707-7965. In addition, comply with all local or municipal asbestos requirements.

Use the following information to complete WisDNR form 4500-113:

- Site Name: Structure B-05-0078, USH 41 SB over Sault Saint Marie Bridge Company railroad.
- Site Address: 5.6 miles south of junction with CTH S.
- Ownership Information: WisDOT Transportation NE Region, 944 Vanderperren Way, Green Bay, WI 54304
- Contact: Andrew Fulcer
- Phone: 920-492-5664
- Age: 45 years. This structure was constructed in 1970
- Area: 8569 SF of deck

Insert the following paragraph in Section 6.g.:

- If asbestos not previously identified is found or previously non-friable asbestos becomes crumbled, pulverized, or reduced to a powder, stop work immediately, notify the engineer, and the engineer will notify the department's Bureau of Technical Services at 608-266-1476 for an emergency response in accordance to standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

D Measurement

The department will measure Abatement of Asbestos Containing Material (Structure), completed in accordance to the contract and accepted, as a single complete unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S.003	Abatement of Asbestos Containing Material Structure B-05-0078	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; properly disposing of all waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

stp-203-005 (20120615)

32. Abatement of Asbestos Containing Material Structure B-05-0079, Item 203.0210.S.004.

A Description

This special provision describes abating asbestos containing material on structures in accordance to the plans, the pertinent provisions of the standard specifications, and as hereinafter provided.

B (Vacant)

C Construction

John Roelke, License Number All-119523, inspected Structure B-05-0079 for asbestos on July 1 and July 14, 2014. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: The gaskets (18 square feet) located underneath the railing attachment plates on the concrete parapet.

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from Andew Fulcer at 920-492-5664. In accordance with NR447 and DHS159, ensure that DNR or DHS receives a completed Notification of Demolition and/or Renovation (DNR Form 4500-113 (R 4/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days prior to beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Andrew Fulcer, WisDOT NE Region, 944 Vanderperren Way, Green Bay, WI 54304 and DOT BTS-ESS attn: Hazardous Materials Specialist PO Box 7965, Madison, WI. 53707-7965. In addition, comply with all local or municipal asbestos requirements.

Use the following information to complete WisDNR form 4500-113:

- Site Name: Structure B-05-0079, USH 41 NB over Sault Saint Marie Bridge Company railroad.
- Site Address: 6.2 miles north of junction with USH 141.
- Ownership Information: WisDOT Transportation NE Region, 944 Vanderperren Way, Green Bay, WI 54304
- Contact: Andrew Fulcer
- Phone: 920-492-5664
- Age: 45 years. This structure was constructed in 1970
- Area: 10,654 SF of deck

Insert the following paragraph in Section 6.g.:

- If asbestos not previously identified is found or previously non-friable asbestos becomes crumbled, pulverized, or reduced to a powder, stop work immediately, notify the engineer, and the engineer will notify the department's Bureau of Technical Services at 608-266-1476 for an emergency response in accordance to standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

D Measurement

The department will measure Abatement of Asbestos Containing Material (Structure), completed in accordance to the contract and accepted, as a single complete unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S.004	Abatement of Asbestos Containing Material Structure B-05-0079	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; properly disposing of all waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.
stp-203-005 (20120615)

33. Abatement of Asbestos Containing Material Structure B-05-0131, Item 203.0210.S.005

A Description
This special provision describes abating asbestos containing material on structures in accordance to the plans, the pertinent provisions of the standard specifications, and as hereinafter provided.

B (Vacant)

C Construction
John Roelke, License Number All-119523, inspected Structure B-05-0131 for asbestos on July 1 and July 14, 2014. Regulated Asbestos Containing Material (RACM) was found on this structure in the following locations and quantities: The gaskets (21 square feet) located underneath the railing attachment plates on the concrete parapet, and the caulk in the parapet expansion joint (6 square feet).

The RACM on this structure must be abated by a licensed abatement contractor. A copy of the inspection report is available from Andew Fulcer at 920-492-5664. In accordance with NR447 and DHS159 , ensure that DNR or DHS receives a completed Notification of Demolition and/or Renovation (DNR Form 4500-113 (R 4/11), or subsequent revision) via U.S. mail, hand-delivery, or using the online notification system at least 10 working days prior to beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form and the abatement report to Andrew Fulcer, WisDOT NE Region, 944 Vanderperren Way, Green Bay, WI 54304 and DOT BTS-ESS attn: Hazardous Materials Specialist PO Box 7965, Madison, WI. 53707-7965. In addition, comply with all local or municipal asbestos requirements.

Use the following information to complete WisDNR form 4500-113 :

- Site Name: Structure B-05-0131, Harbor Lights Road over USH 41.
- Site Address: 0.5 miles west of junction with CTH J.
- Ownership Information: WisDOT Transportaion NE Region, 944 Vanderperren Way, Green Bay, WI 54304
- Contact: Andrew Fulcer
- Phone: 920-492-5664
- Age: 44 years. This structure was constructed in 1971
- Area: 8535 SF of deck

Insert the following paragraph in Section 6.g.:

- If asbestos not previously identified is found or previously non-friable asbestos becomes crumbled, pulverized, or reduced to a powder, stop work immediately,

notify the engineer, and the engineer will notify the department's Bureau of Technical Services at 608-266-1476 for an emergency response in accordance to standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

D Measurement

The department will measure Abatement of Asbestos Containing Material (Structure), completed in accordance to the contract and accepted, as a single complete unit of work.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0210.S.005	Abatement of Asbestos Containing Material Structure B-05-0131	LS

Payment is full compensation for submitting necessary forms; removing all asbestos; properly disposing of all waste materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

stp-203-005 (20120615)

34. Debris Containment B-05-0076, Item 203.0225.S.001.

A Description

This special provision describes providing a containment system to prevent debris from structure removal, reconstruction, or other construction operations from falling onto facilities located under the structure. Using this containment system does not relieve the contractor of requirements under standard spec 107.17 and standard spec 107.19 or requirements under a US Army Corps of Engineers Section 404 Permit.

B (Vacant)

C Construction

Prior to starting work, submit a debris containment plan to the engineer for review. Incorporate engineer-requested modifications. Do not start work over Sunset Beach Road (CTH B) until the engineer approves the debris containment plan.

Maintain adequate protection throughout construction for people and property within the potential fall zone. Ensure that a containment system capable of protecting underlying facilities from falling construction debris is in place before beginning deck repair, parapet removal, or other operations that may generate debris.

D Measurement

The department will measure Debris Containment B-05-0076 as a single lump sum unit of work for each structure acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0225.S.001	Debris Containment B-05-0076	LS

Payment is full compensation for furnishing, installing, maintaining, and removing a debris containment system.
stp-203-010 (20080902)

35. Debris Containment B-05-0077, Item 203.0225.S.002.

A Description
This special provision describes providing a containment system to prevent debris from structure removal, reconstruction, or other construction operations from falling onto facilities located under the structure. Using this containment system does not relieve the contractor of requirements under standard spec 107.17 and standard spec 107.19 or requirements under a US Army Corps of Engineers Section 404 Permit.

B (Vacant)

C Construction
Prior to starting work, submit a debris containment plan to the engineer for review. Incorporate engineer-requested modifications. Do not start work over Sunset Beach Road (CTH B) until the engineer approves the debris containment plan.

Maintain adequate protection throughout construction for people and property within the potential fall zone. Ensure that a containment system capable of protecting underlying facilities from falling construction debris is in place before beginning deck repair, parapet removal, or other operations that may generate debris.

D Measurement
The department will measure Debris Containment B-05-0077 as a single lump sum unit of work for each structure acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0225.S.002	Debris Containment B-05-0077	LS

Payment is full compensation for furnishing, installing, maintaining, and removing a debris containment system.
stp-203-010 (20080902)

36. Debris Containment B-05-0078, Item 203.0225.S.003.

A Description

This special provision describes providing a containment system to prevent debris from structure removal, reconstruction, or other construction operations from falling onto facilities located under the structure. Using this containment system does not relieve the contractor of requirements under standard spec 107.17 and standard spec 107.19 or requirements under a US Army Corps of Engineers Section 404 Permit.

B (Vacant)

C Construction

Prior to starting work, submit a debris containment plan to the engineer for review. Incorporate engineer-requested modifications. Do not start work over Sault Saint Marie Bridge Company railroad until the engineer approves the debris containment plan.

Maintain adequate protection throughout construction for people and property within the potential fall zone. Ensure that a containment system capable of protecting underlying facilities from falling construction debris is in place before beginning deck repair, parapet removal, or other operations that may generate debris.

D Measurement

The department will measure Debris Containment B-05-0078 as a single lump sum unit of work for each structure acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0225.S.003	Debris Containment B-05-0078	LS

Payment is full compensation for furnishing, installing, maintaining, and removing a debris containment system.

stp-203-010 (20080902)

37. Debris Containment B-05-0079, Item 203.0225.S.004.

A Description

This special provision describes providing a containment system to prevent debris from structure removal, reconstruction, or other construction operations from falling onto facilities located under the structure. Using this containment system does not relieve the contractor of requirements under standard spec 107.17 and standard spec 107.19 or requirements under a US Army Corps of Engineers Section 404 Permit.

B (Vacant)

C Construction
Prior to starting work, submit a debris containment plan to the engineer for review. Incorporate engineer-requested modifications. Do not start work over Sault Saint Marie Bridge Company railroad until the engineer approves the debris containment plan.

Maintain adequate protection throughout construction for people and property within the potential fall zone. Ensure that a containment system capable of protecting underlying facilities from falling construction debris is in place before beginning deck repair, parapet removal, or other operations that may generate debris.

D Measurement
The department will measure Debris Containment B-05-0078 as a single lump sum unit of work for each structure acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0225.S.004	Debris Containment B-05-0079	LS

Payment is full compensation for furnishing, installing, maintaining, and removing a debris containment system.
stp-203-010 (20080902)

38. Debris Containment B-05-0131, Item 203.0225.S.005.

A Description
This special provision describes providing a containment system to prevent debris from structure removal, reconstruction, or other construction operations from falling onto facilities located under the structure. Using this containment system does not relieve the contractor of requirements under standard spec 107.17 and standard spec 107.19 or requirements under a US Army Corps of Engineers Section 404 Permit.

B (Vacant)

C Construction
Prior to starting work, submit a debris containment plan to the engineer for review. Incorporate engineer-requested modifications. Do not start work over USH 41 until the engineer approves the debris containment plan.

Maintain adequate protection throughout construction for people and property within the potential fall zone. Ensure that a containment system capable of protecting underlying facilities from falling construction debris is in place before beginning deck repair, parapet removal, or other operations that may generate debris.

D Measurement
The department will measure Debris Containment B-05-0076 as a single lump sum unit of work for each structure acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
203.0225.S.005	Debris Containment B-05-0131	LS

Payment is full compensation for furnishing, installing, maintaining, and removing a debris containment system.
stp-203-010 (20080902)

39. Removing Underdrain, Item 204.9090.S204.9090.S.001

A Description
This special provision describes removing underdrain in accordance to the pertinent provisions of standard spec 204 and as hereinafter provided.

B (Vacant)

C Construction

Remove and dispose of existing underdrain in accordance with section 203 of the standard specification.

D Measurement
The department will measure Removing Underdrain per each lineal foot, acceptably completed.

E Payment
Add the following to standard spec 204.5:

ITEM NUMBER	DESCRIPTION	UNIT
204.9090.S204.9090.S.001	Removing Underdrain	LF

stp-204-025 (20150630)

40. 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)

41. QMP Base Aggregate.

A Description

A.1 General

(1) This special provision describes contractor quality control (QC) sampling and testing for base aggregates, documenting those test results, and documenting related production and

placement process changes. This special provision also describes department quality verification (QV), independent assurance (IA), and dispute resolution.

(2) Conform to standard spec 301, standard spec 305, and standard spec 310 as modified here in this special provision. Apply this special provision to material placed under all of the Base Aggregate Dense and Base Aggregate Open Graded bid items, except do not apply this special provision to material classified as reclaimed asphaltic pavement placed under the Base Aggregate Dense bid items.

(3) Do not apply this special provision to material placed and paid for under the Aggregate Detours, Breaker Run, Select Crushed, Pit Run, Subbase, or Riprap bid items.

(4) Provide and maintain a quality control program, defined as all activities related to and documentation of the following:

1. Production and placement control and inspection.
2. Material sampling and testing.

(5) Chapter 8 of the department's construction and materials manual (CMM) provides additional detailed guidance for QMP work and describes required sampling and testing procedures. The contractor may obtain the CMM from the department's web site at:
http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/rdwy/default.aspx

A.2 Small Quantities

(1) The department defines a small quantity, for each individual Base Aggregate bid item, as a contract quantity of 9000 tons or less of material as shown in the schedule of items under that bid item.

(2) The requirements under this special provision apply equally to a small quantity for an individual bid item except as follows:

A.2.1 Quality Control Plan

(1) Submit an abbreviated quality control plan consisting of the following:

1. Organizational chart including names, telephone numbers, current certification(s) with HTCP number(s) and expiration date(s), and roles and responsibilities of all persons involved in the quality control program for material under affected bid items.

A.2.2 Contractor Testing

(1)

Contract Quantity	Minimum Required Testing per source
≤ 6000 tons	One stockpile test prior to placement, and two production or one loadout test.
> 6000 tons and ≤ 9000 tons	One stockpile and Three placement tests[3] [4] [5]

[1] Submit production test results to the engineer for review prior to incorporating the material into the work. Production test results are valid for a period of 3 years.

[2] If the actual quantity overruns 6,000 tons, on the next day of placement perform one randomly selected placement test for each 3000 tons, or fraction of 3000 tons, of overrun.

[3] If the actual quantity overruns 9000 tons, on the next day of placement perform one randomly selected placement test for each 3000 tons, or fraction of 3000 tons, of overrun.

[4] For 3-inch material or lift thickness of 3-inch or less, obtain samples at load-out.

[5] Divide the aggregate into uniformly sized sublots for testing

(2) Stockpile testing for concrete pavement recycled in place will be sampled on the first day of production.

(3) Until a four point running average is established, individual placement tests will be used for acceptance. Submit aggregate load-out and placement test results to the engineer within one business day of obtaining the sample. Assure that all properties are within the limits specified for each test.

(4) Material represented by a sublot with any property outside the specification limits is nonconforming. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

A.2.3 Department Testing

(1) The department will perform testing as specified in B.8 except as follows:

- Department stockpile verification testing prior to placement is optional for contract quantities of 500 tons or less.

B Materials

B.1 Quality Control Plan

(1) Submit a comprehensive written quality control plan to the engineer at or before the pre-construction meeting. Do not place base before the engineer reviews and comments on the plan. Construct the project as that plan provides.

(2) Do not change the quality control plan without the engineer's review. Update the plan with changes as they become effective. Provide a current copy of the plan to the engineer and post in each of the contractor's laboratories as changes are adopted. Ensure that the plan provides the following elements:

1. An organizational chart with names, telephone numbers, current certifications and/or titles, and roles and responsibilities of QC personnel.
2. The process used to disseminate QC information and corrective action efforts to the appropriate persons. Include a list of recipients, the communication means that will be used, and action time frames.
3. A list of source and processing locations, section and quarter descriptions, for all aggregate materials requiring QC testing.
4. Test results for wear, sodium sulfate soundness, freeze/thaw soundness, and plasticity index of all aggregates requiring QC testing. Obtain this information from the region materials unit or from the engineer.

5. Descriptions of stockpiling and hauling methods.
6. Locations of the QC laboratory, retained sample storage, and where control charts and other documentation is posted.
7. An outline for resolving a process control problem. Include responsible personnel, required documentation, and appropriate communication steps.

B.2 Personnel

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

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

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

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

B.3 Laboratory

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

Materials Management Section
3502 Kinsman Blvd.
Madison, WI 53704
Telephone: (608) 246-5388
http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/appr-prod/qual-labs.aspx

B.4 Quality Control Documentation

B.4.1 General

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

B.4.2 Records

(1) Document all placement observations, inspection records, and control adjustments daily in a permanent field record. Also include all test results in the project records. Provide

test results to the engineer within one business day after obtaining a sample. Post or distribute tabulated results using a method mutually agreeable to the engineer and contractor.

B.4.3 Control Charts

(1) Plot gradation and fracture on the appropriate control chart as soon as test results are available. Format control charts according to CMM 8.30. Include the project number on base placement control charts. Maintain separate control charts for each base aggregate size, source or classification, and type.

(2) Provide control charts to the engineer within one business day after obtaining a sample. Post or distribute charts using a method mutually agreeable to the engineer and contractor. Update control charts daily to include the following:

1. Contractor individual QC tests.
2. Department QV tests.
3. Department IA tests.
4. Four-point running average of the QC tests.

(3) Except as specified under B.8.2.1 for nonconforming QV placement tests, include only QC placement tests in the running average. The contractor may plot process control or informational tests on control charts, but do not include these tests, conforming QV tests, or IA tests in the running average.

B.5 Contractor Testing

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

(2) Perform one stockpile test from each source prior to placement.

(3) Test gradation once per 3000 tons of material placed or fraction thereof. Determine random sample locations and provide those sample locations to the engineer. Obtain samples after the material has been bladed, mixed, and shaped but before compacting; except collect 3-inch samples or lift thickness of 3-inch or less from the stockpile at load-out. Do not sample from material used to maintain local traffic or from areas of temporary base that will not have an overlying pavement. On days when placing only material used to maintain local traffic or only temporary base that will not have an overlying pavement, no placement testing is required.

(4) Split each contractor QC sample and identify it according to CMM 8.30. Retain the split for seven calendar days in a dry, protected location. If requested for department comparison testing, deliver the split to the engineer within one business day.

(5) The engineer may require additional sampling and testing to evaluate suspect material or the technician's sampling and testing procedures.

(6) Test fracture for each gradation test until the fracture running average is above the lower warning limit. Subsequently, the contractor may reduce the frequency to one test per 10 gradation tests if the fracture running average remains above the warning limit.

(7) Test the liquid limit and plasticity index for the first gradation test. Subsequently, test the liquid limit and plasticity index a minimum of once per 10 gradation tests.

B.6 Test Methods

B.6.1 Gradation

(1) Test gradation using a washed analysis conforming to the following as modified in CMM 8.60:

Gradation..... AASHTO T 27
Material finer than the No. 200 sieve..... AASHTO T 11

(2) For 3-inch base, if 3 consecutive running average points for the percent passing the No. 200 sieve are 8.5 percent or less, the contractor may use an unwashed analysis. Wash at least one sample out of 10. If a single running average for the percent passing the No. 200 sieve exceeds 8.5 percent, resume washed analyses until 3 consecutive running average points are again 8.5 percent passing or less.

(3) Maintain a separate control chart for each sieve size specified in standard spec 305 or standard spec 310 for each base aggregate size, source or classification, and type. Set control and warning limits based on the standard specification gradation limits as follows:

1. Control limits are at the upper and lower specification limits.
2. There are no upper warning limits for sieves allowing 100 percent passing and no lower control limits for sieves allowing 0 percent passing.
3. Dense graded warning limits, except for the No. 200 sieve, are 2 percent within the upper and lower control limits. Warning limits for the No. 200 sieve are set 0.5 percent within the upper and lower control limits.
4. Open graded warning limits for the 1-inch, 3/8-inch, and No. 4 sieves are 2 percent within the upper and lower control limits. Upper warning limits for the No. 10, No. 40, and No. 200 sieves are 1 percent inside the upper control limit.

B.6.2 Fracture

(1) Test fracture conforming to CMM 8.60. The engineer will waive fractured particle testing on quarried stone.

(2) Maintain a separate fracture control chart for each base aggregate size, source or classification, and type. Set the lower control limit at the contract specification limit, either specified in another special provision or in table 301-2 of standard spec 301.2.4.5. Set the lower warning limit 2 percent above the lower control limit. There are no upper limits.

B.6.3 Liquid Limit and Plasticity

(1) Test the liquid limit and plasticity according to AASHTO T 89 and T 90.

(2) Ensure the material conforms to the limits specified in standard spec table 301-2.

B.7 Corrective Action

B.7.1 General

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

B.7.2 Placement Corrective Action

(1) Do not blend additional material on the roadbed to correct gradation problems.

(2) Notify the engineer whenever the running average exceeds a warning limit. When two consecutive running averages exceed a warning limit, the engineer and contractor will discuss appropriate corrective action. Perform the engineer's recommended corrective action and increase the testing frequency as follows:

1. For gradation, increase the QC testing frequency to at least one randomly sampled test per 1000 tons placed.
2. For fracture, increase the QC testing frequency to at least one test per gradation test.

(3) If corrective action improves the property in question such that the running average after four additional tests is within the warning limits, the contractor may return to the testing frequency specified in B.5.3. If corrective action does not improve the property in question such that the running average after four additional individual tests is still in the warning band, repeat the steps outlined above starting with engineer notification.

(4) If the running average exceeds a control limit, material starting from the first running average exceeding the control limit and ending at the first subsequent running average inside the control limit is nonconforming and subject to pay reduction.

(5) For individual test results significantly outside the control limits, notify the engineer, stop placing base, and suspend other activities that may affect the area in question. The engineer and contractor will jointly review data, data reduction, and data analysis; evaluate sampling and testing procedures; and perform additional testing as required to determine the extent of potentially unacceptable material. The engineer may direct the contractor to remove and replace that material. Individual test results are significantly outside the control limits if meeting one or more of the following criteria:

1. A gradation control limit for the No. 200 sieve is exceeded by more than 3.0 percent.
2. A gradation control limit for any sieve, except the No. 200, is exceeded by more than 5.0 percent.
3. The fracture control limit is exceeded by more than 10.0 percent.

B.8 Department Testing

B.8.1 General

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

B.8.2 Verification Testing

B.8.2.1 General

(1) The department will have an HTCP technician, or ACT working under a certified technician, perform QV sampling and testing. Department verification testing personnel must meet the same certification level requirements specified in B.2 for contractor testing personnel for each test result being verified. The department will notify the contractor before sampling so the contractor can observe QV sampling.

(2) The department will conduct QV tests of each base aggregate size, source or classification, and type during placement conforming to the following:

1. Perform one stockpile test from each source prior to placement.
2. At least one random test per 30,000 tons, or fraction of 30,000 tons, placed.

(3) The department will sample randomly, at locations independent of the contractor's QC work, collecting one sample at each QV location. The department will collect QV samples after the material has been bladed, mixed, and shaped but before compacting; except, for 3-inch aggregates or for a lift thickness of 3-inch or less, the department will collect samples at load-out. The department will split each sample, test half for QV, and retain half.

(4) The department will conduct QV tests in a separate laboratory and with separate equipment from the contractor's QC tests. The department will use the same methods specified for QC testing.

(5) The department will assess QV results by comparing to the appropriate specification limits. If QV test results conform to the specification, the department will take no further action. If QV test results are nonconforming, add the QV to the QC test results as if it were an additional QC test.

B.8.3 Independent Assurance

(1) Independence assurance is unbiased testing the department performs to evaluate the department's QV and the contractor's QC sampling and testing including personnel qualifications, procedures, and equipment. The department will perform an IA review according to the department's independent assurance program. That review may include one or more of the following:

1. Split sample testing.
2. Proficiency sample testing.
3. Witnessing sampling and testing.

4. Test equipment calibration checks.
5. Reviewing required worksheets and control charts.
6. Requesting that testing personnel perform additional sampling and testing.

(2) If the department identifies a deficiency, and after further investigation confirms it, correct that deficiency. If the contractor does not correct or fails to cooperate in resolving identified deficiencies, the engineer may suspend placement until action is taken. Resolve disputes as specified in B.9.

B.9 Dispute Resolution

(1) The engineer and contractor should make every effort to avoid conflict. If a dispute between some aspect of the contractor's and the engineer's testing program does occur, seek a solution mutually agreeable to the project personnel. The department and contractor may review the data, examine data reduction and analysis methods, evaluate sampling and testing procedures, and perform additional testing. Use ASTM E 178 to evaluate potential statistically outlying data.

(2) Production test results, and results from other process control testing, may be considered when resolving a dispute.

(3) If the project personnel cannot resolve a dispute, and the dispute affects payment or could result in incorporating non-conforming product, the department will use third party testing to resolve the dispute. The department's central office laboratory, or a mutually agreed on independent testing laboratory, will provide this testing. The engineer and contractor will abide by the results of the third party tests. The party in error will pay service charges incurred for testing by an independent laboratory. The department may use third party test results to evaluate the quality of questionable materials and determine the appropriate payment. The department may reject material or otherwise determine the final disposition of nonconforming material as specified in standard spec 106.5.

C (Vacant)

D (Vacant)

E Payment

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

(2) For material represented by a running average exceeding a control limit, the department will reduce pay according to CMM 8-10.6.2 for the affected Base Aggregate bid items listed in subsection A. The department will administer pay reduction under the Nonconforming QMP Base Aggregate Gradation or Nonconforming QMP Base Aggregate

Fracture Administrative items. The department will determine the quantity of nonconforming material as specified in B.7.2.
stp-301-010 (20161130)

42. Reheating HMA Pavement Longitudinal Joints, Item 460.4110.S.

A Description

This special provision describes reheating the abutting edge of the previously compacted layer in the adjacent lane while paving mainline asphalt pavements.

B (Vacant)

C Construction

C.1 Equipment

Provide a self-contained heating unit that heats by convection only. Do not use forced air to enhance the flame. Provide a fireproof barrier between the flame and the heater's fuel source. The heater must produce a uniform distribution of heat within the heat box. Provide automatic controls to regulate the heater output and shutoff the heater when the paver stops or the heater control system loses power.

Mount the heater on the paver inside the paver's automatic leveling device.

C.2 Reheating Joints

Evenly reheat at least an 8 inch (200 mm) wide strip of the previously compacted layer in the adjacent lane as follows:

- Reheat the joint to within 60 degrees F (15 degrees C) of the mix temperature at the paver auger. Measure joint temperature immediately behind the heater.

The engineer may allow the required joint reheat temperatures to be cooler than specified to adjust for weather, wind, and other field conditions. Coordinate the heater output and paver speed to achieve the required joint reheat temperature without visible smoke emission.

D Measurement

The department will measure Reheating HMA Pavement Longitudinal Joints by the linear foot acceptably completed as measured along each joint for each layer of asphalt placed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
460.4110.S	Reheating HMA Pavement Longitudinal Joints	LF

Payment is full compensation for all the work required under this bid item.
stp-460-015 (20140630)

43. HMA Pavement Percent Within Limits QMP.

A Description

This special provision describes the data collection, statistical analysis, and procedure used for determination of pay adjustments for HMA pavement using Percent Within Limits (PWL) specification methodology. Pay adjustments will be made for the properties of air voids and density.

This special provision describes PWL pay determination, providing and maintaining a contractor Quality Control Program, department Quality Verification Program, required sampling and testing, dispute resolution, corrective action, pavement density, and payment for HMA pavements. Pay is determined by statistical analysis performed on contractor and department results conducted according to the Quality Control Program and Quality Verification Program as specified in standard spec 460 and modified here within.

The Quality Management Program (QMP) detailed in standard spec 460.2.8 is supplemented by this article.

B Materials

Conform to the requirements of standard specs 450, 455, and 460 except where superseded by this special provision. The department will allow only one mix design for each type of mix required for the project unless approved by the engineer. The use of more than one mix design for each HMA pavement layer will require the contractor to construct a new test strip.

Replace standard spec 460.2.8.2.1.3.1 for contracts with 5000 Tons of Mixture or Greater with the following Contracts under Percent Within Limits to require a 3-way split, modify retained sample procedure, add ignition oven for AC determination for information, and modify lot and sublot sizes:

460.2.8.2.1.3.1 Contracts under Percent within Limits

(1) Furnish and maintain a laboratory at the plant site fully equipped for performing contractor QC testing. Have the laboratory on-site and operational before beginning mixture production.

(2) Obtain random samples and perform tests according to Appendix A Test Methods & Sampling for PWL QMP HMA Pavements. Obtain HMA mixture samples from trucks at the plant. The QV-split acts as the QC sample for a sublot where a QV sample is taken. For the sublot in which a QV sample is collected, the QC sample shall be discarded, and the QC team shall test the QV-split in its place.

(3) The department will retain the split portion(s) of the contractor HMA mixture and blended aggregate samples. The department will take possession of retained samples collected to date each day QV samples are collected. Samples shall be labeled in accordance with Appendix A. Additional handling instructions for retained samples are found in CMM 8-36.

(4) Use the test methods identified below, or other methods the engineer approves, to perform the following tests at a frequency greater than or equal to that indicated:

Blended aggregate gradations:
Field extraction by CMM 8-36 WisDOT Test Method or ignition oven according to AASHTO T 308.
Asphalt content (AC) in percent
AC by calculation.
AC by nuclear gauge reading, optional.
AC by inventory, optional.
AC by ignition oven according to AASHTO T 308 (required, but informational only)
Bulk specific gravity of the compacted mixture according to AASHTO T166.
Maximum specific gravity according to AASHTO T209.
Air voids (V_a) by calculation according to AASHTO T269.
VMA by calculation according to AASHTO R35.

(5) Test each design mixture at a frequency of 1 test per 750 tons of mixture produced and placed on the project. Add a random sample for any fraction of 750 tons at the end of a project. Lot size shall consist of 3750 tons with sublots of 750 tons. Partial lots with less than three sublot tests shall be included into the previous lot. Lots for PWL Air voids may include areas other than the main travel lane which may include shoulders, bypass/turn lanes, etc. as specified in the plan. Lot sizes for PWL Density and PWL Air Voids will not match in size.

(6) Also conduct field tensile strength ratio tests according to ASTM D4867 on all mixtures requiring an antistripping additive. Test each full 50,000 ton production increment, or fraction of an increment, after the first 5000 tons of production. Perform required increment testing in the first week of production of that increment. If field tensile strength ratio values are either below the spec limit or less than the mixture design JMF percentage value by 20 or more, notify the engineer. The engineer and contractor will jointly determine a corrective action.

Delete standard spec 460.2.8.2.1.5 and 460.2.8.2.1.6

Replace standard spec 460.2.8.2.1.7 Corrective Action with the following to add stop criteria and individual test tolerances:

460.2.8.2.1.7 Corrective Action

(1) Material must conform to the following action limits based on individual QC and QV test results (tolerances relative to JMF):

ITEM	ACTION LIMITS	CONFORMANCE LIMITS
Percent passing given sieve:		
37.5-mm	+/- 8.0	
25.0-mm	+/- 8.0	
19.0-mm	+/- 7.5	
12.5-mm	+/- 7.5	
9.5-mm	+/- 7.5	
2.36-mm	+/- 7.0	
75-µm	+/- 3.0	
Asphaltic content in percent	- 0.5	
Air Voids		- 1.0 & +2.0
VMA in percent[1]	- 0.5	-1.0

[1] VMA limits based on minimum requirement for mix design nominal maximum aggregate size in table 460-1.

(2) QV test results will be determined for air voids, VMA, Gmm, and Gmb, and AC Content

(3) If any individual test results fall outside the action limits, notify the engineer, investigate the cause, and take corrective action to return to within limits. If two consecutive test results fall outside the action limits, stop production. Production may not resume until approved by the engineer. An additional QV sample may be collected upon resuming production, at the discretion of the engineer. Any additional QV tests must meet the tolerances of the action limits or be subject to additional stoppage and/or remove and replace.

(4) For any additional tests outside the random number testing conducted for density or volumetrics, the data collected will not be entered into PWL calculations. However, additional QV testing shall meet the tolerances for material acceptance as specified in the Standard Specification and this document. If additional density data identifies nonconforming material, proceed in accordance with CMM 8-15.11.

(5) Remove and replace nonconforming material at no additional expense to the department. The engineer may allow nonconforming material to remain in place. The department will pay for the nonconforming HMA Pavement that remains in place at 50 percent of the contract price. Nonconforming material is defined as individual QC or QV tests resulting in material outside of the conformance limits or a PWL value < 50.

Delete standard spec 460.2.8.2.2

Replace standard spec 460.2.8.3.1.2 with the following:

(1) The department will provide at least one HTCP-certified HMA technician, certified at a level appropriate for sampling and mixture production control testing, to observe QV sampling of project mixtures.

(2) Under departmental observation, a contractor HMA technician certified at a level appropriate for sampling and mixture production control testing will collect and split samples.

(3) For QV testing, a department HMA technician certified at a level appropriate for sampling and mixture production control testing will ensure that all sampling is performed correctly and conduct testing, analyze test results, and post resulting data.

(4) The department will make an organizational chart available at the testing laboratory and to the contractor before mixture production begins. The department's chart will include names, telephone numbers, and current certifications of all QV testing personnel. The department will update the chart with appropriate changes, as they become effective.

Replace standard spec 460.2.8.3.1.4 with the following to require and explain 3-way split testing, add ignition oven for QV tests, and define QV frequency.

(1) HTCP-certified department personnel will obtain random samples by directly supervising HTCP-certified contractor personnel sampling from trucks at the plant. Sample size must be adequate to run the appropriate required tests in addition to one set of duplicate tests that may be required for dispute resolution (i.e., retained). This requires sample sizes which accommodate a three-way split for all random sampling per sublot. All QC samples shall provide the following: QC, QC-split, and QC-retained. All QV samples shall provide the following: QV, QV-split, and QV-retained. The contractor shall take possession and test the QC and QV-split portions. The engineer will observe the splitting and take possession of the samples intended for QV testing (i.e., QV and QC-split) and the retained portions. Additional sampling details are found in Appendix A.

(2) The department will verify product quality using the test methods enumerated here in 460.2.8.3.1.4(2), other engineer-approved methods, or other methods the industry and department HMA technical team recognizes. The department will identify test methods before construction starts and use only those methods during production of that material unless the engineer and contractor mutually agree otherwise.

(3) The department will perform all testing conforming to the following standards:
Bulk specific gravity (Gmb) of the compacted mixture according to AASHTO T166.
Maximum specific gravity (Gmm) according to AASHTO T209.
Air voids (Va) by calculation according to AASHTO T269.
VMA by calculation according to AASHTO R35.
AC by ignition oven according to AASHTO T 308 (required, but informational only)

(4) The department will randomly test each design mixture at the minimum frequency of one test for each lot (Normal lot size is 3750 tons).

Delete standard spec 460.2.8.3.1.6

Replace standard spec 460.2.8.3.1.7 Dispute Resolution with the following Data Acceptance for Volumetrics to define statistical analysis and dispute resolution process:

460.2.8.3.1.7 Data Acceptance for Volumetrics

(1) Acceptance of test data for pay determination will be contingent upon test results from both the contractor (QC) and the department (QV). Statistical analysis will be conducted on maximum specific gravity (Gmm) and bulk specific gravity (Gmb) data. The analysis determines the appropriate Gmm and Gmb to be used to calculate air voids. If either Gmm or Gmb result in non-comparable data as described in 460.2.8.3.1.7(2), the subsequent testing will be performed for both parameters.

(2) The engineer, upon completion of the lot, will compare the variances (F-test) and the means (t-test) of the verification test results with the quality control test results. If the F- and t-tests report comparable, the QC and QV data sets are determined to be statistically similar and QC data will be used to calculate air voids which in turn are used for PWL and pay adjustment calculations. If the F- and t-tests result in non-comparable data, proceed to the dispute resolution steps found below. Dispute resolution via further investigation is as follows:

[1] The QV-retained portion of the split from the most recent lot in the analysis window (specifically the sublot which triggered the warning that variances or means do not compare) shall be referee tested by the bureau's AASHTO accredited laboratory and certified personnel. This referee test result will replace the QV data of the sublot.

[2] A secondary statistical analysis shall be conducted inclusive of the referee test result. If The F- and t-tests now indicate that variances and means compare, no further testing is needed for the lot as QC data is determined to be appropriate to carry forward into subsequent calculations.

[3] If, however, the secondary statistical analysis inclusive of the referee test result yields an F- or t-test indicating non-comparable variances or means, the QC-splits will be tested by the department's regional lab for the remaining 4 sublots of the lot which generated the warning. This data shall be used with the initial referee test result in subsequent calculations.

[4] The contractor may choose to *dispute* the QC-split data collected on a lot basis. In this event, the QC-retained portion of each sublot shall be referee tested by the bureau's AASHTO accredited laboratory and certified personnel and the referee test results will supersede the regional results for the disputed lot. Dispute resolution testing shall include both Gmm and Gmb, i.e., not solely the individual parameter causing the warning.

[5] If the referee testing results in an increased calculated pay factor, the department will absorb the cost of the additional referee testing.

[6] If the additional referee testing of a disputed lot results in a lower calculated pay factor, the contractor pays for the additional referee testing.
[7] The cost of referee testing is $2000/lot.

(3) The department will notify the contractor of the referee test results within 3 working days after receipt of the samples by the bureau's AASHTO accredited laboratory. The intent is to provide referee test results within approximately 7 calendar days from completion of the lot.

(4) The department will determine mixture conformance and acceptability by analyzing referee test results, reviewing mixture project data, and inspecting the completed pavement all according to Standard Spec, this document, and accompanying Appendices.

(5) Nonconforming mix (i.e., resulting in a PWL value less than 50 or not meeting the requirements of 460.2.8.2.1.7 as modified here within) may be subject to remove and replace, at the discretion of the engineer. Replacement may be conducted on a sublot basis. If an entire PWL sublot is removed and replaced, the test results of the newly placed material shall replace the original data for the sublot. Any remove and replace shall be performed at no additional cost to the department. If the engineer approves the nonconforming material to remain in place, it will be paid at 50% of the HMA Pavement contract price. (See the *About* worksheet of the WisDOT PWL Analysis Template for additional information regarding Dispute Resolution.)

Delete standard spec 460.2.8.3.1.8 Corrective Action.

C Construction
Replace standard spec 460.3.3.2 Pavement Density Determination with the following to define lot sizes and locations of density testing:

460.3.3.2 Pavement Density Determination
(1) The engineer will determine the target maximum density using department procedures described in CMM 8-15. The engineer will determine density as soon as practicable after compaction and before placement of subsequent layers or before opening to traffic.

(2) Do not re-roll compacted mixtures with deficient density test results. Do not operate continuously below the specified minimum density. Stop production, identify the source of the problem, and make corrections to produce work meeting the specification requirements.

(3) A lot is defined as 7500 lane feet with sublots of 1500 lane feet (excluding shoulder, even if paved integrally) and placed within a single layer for each location and target maximum density category indicated in table 460-3. The contractor is required to complete 15 QC tests per complete lot (3 randomly per sublot) and the department will randomly conduct one (1) QV test per sublot. A partial quantity less than 1500 lane feet will be included with the previous sublot at the end of the project. Partial lots with less than three sublots shall be included into the previous lot. [Exclusions such as shoulders and

appurtenances shall be tested in accordance with CMM 8-15. However, all acceptance testing of shoulders and appurtenances will be conducted by the department.]

(4) The three QC locations per sublot will represent the outside, middle, and inside of the paving lane (i.e., the lane width will be divided into thirds as shown in Appendix A and random numbers will be used to identify the specific transverse location within each third in accordance with CMM 8-15). Each location will be measured with two one-minute gauge readings oriented 180 degrees from one another, in the same footprint as detailed in Appendix A. Each location will be the average of the two readings. If the two readings exceed 1.0 lb/ft3 of one another, a third reading shall be conducted at either orientation. In this event, all three readings shall be averaged, discard the initial of the three readings which falls farthest from the average value and then average the remaining two values to represent the location for the gauge. Multiple locations are not to be averaged together.

(5) QV nuclear testing will consist of a randomly selected location per sublot. The QV is also comprised of two one-minute readings, averaged as described in (4) above.

(6) A certified nuclear density technician shall locate samples and perform the testing. The responsible certified technician shall ensure that sample location and testing is performed correctly, analyze test results, and provide density results to the contractor weekly, at the completion of each lot.

Replace standard spec 460.3.3.3 Waiving Density Testing with Acceptance of Density Data to define statistical analysis and dispute resolution:

460.3.3.3 Acceptance of Density Data

(1) Acceptance of test data for pay determination will be contingent upon test results from both the contractor (QC) and the department (QV).

(2) The engineer, upon completion of the lot, will compare the variances (F-test) and the means (t-test) of the verification test results with the quality control test results. If the F- and t-tests indicate variances and means compare, the QC and QV data sets are determined to be statistically similar and QC data will be used for PWL and pay adjustment calculations.

(3) If the F- and t-tests indicate variances and means compare, QC data is determined to be appropriate to carry forward into subsequent calculations. If the F- and t-tests indicate variances or means do not compare, the QV data will be used for subsequent calculations.

(4) The department will determine mixture density conformance and acceptability by analyzing test results, reviewing mixture project data, and inspecting the completed pavement all according to Standard Spec, this document, and accompanying Appendices.

(5) Nonconforming mix (i.e., resulting in a PWL value less than 50 or not meeting the requirements of 460.3.3.1) may be subject to remove and replace, at the discretion of the engineer. Replacement may be conducted on a sublot basis. If an entire PWL sublot is removed and replaced, the test results of the newly placed material shall replace the original

data for the sublot. Any remove and replace shall be performed at no additional cost to the department. If the engineer approves the nonconforming material to remain in place, it will be paid for at 50% of the HMA Pavement contract price.

D Measurement

The department will measure the HMA Pavement bid items acceptably completed by the ton as specified in standard spec 450.4 and as follows in standard spec 460.5 as modified here within.

E Payment

Replace standard spec 460.5.2 HMA Pavement with the following to add payment for PWL:

460.5.2 HMA Pavement

460.5.2.1 General

(1) Payment for HMA Pavement Type LT, MT, HT, and SMA mixes is full compensation for providing HMA mixture designs; for preparing foundation; for furnishing, preparing, hauling, mixing, placing, and compacting mixture; for QMP testing and aggregate source testing; for warm mix asphalt additives or processes; for stabilizer, hydrated lime and liquid antistripping agent, if required; and for all materials including asphaltic materials.

(2) If provided for in the plan quantities, the department will pay for a leveling layer, placed to correct irregularities in an existing paved surface before overlaying, under the pertinent paving bid item. Absent a plan quantity, the department will pay for a leveling layer as extra work.

460.5.2.2 Calculation of Pay Adjustment for HMA Pavement using PWL

(1) Pay adjustments will be calculated using a unit price of 65 dollars per ton of HMA pavement. The analysis template, including data, will be provided to the contractor by the department as soon as practicable upon completion of each lot. The department will pay for measured quantities of mix based on the unit price multiplied by the following pay adjustment calculated in accordance with the *Calculations* worksheet of the WisDOT PWL Analysis Template:

PAY FACTOR FOR HMA PAVEMENT AIR VOIDS & DENSITY

PERCENT WITHIN LIMITS (PWL)	*PAYMENT FACTOR, PF (percent of contract price)*
> 90 to 100	PF = ((PWL – 90) * 0.4) + 100
≥ 50 to 90	(PWL * 0.5) + 55
<50	50%[1]

where PF is calculated per air voids and density, denoted $PF_{air\ voids}$ & $PF_{density}$

[1] Any material resulting in PWL value of 50 or less shall be removed and replaced unless the engineer allows for such material to remain in place. In the event the material remains in place, it will be paid at 50% of the above stated unit price of 65 dollars per ton of HMA pavement.

For air voids, PWL values will be calculated using lower and upper specification limits of 2.0 and 4.3 percent, respectively.. Lower specification limits for density shall be in accordance with Table 460-3. Pay adjustment will be determined on a lot basis and will be computed as shown in the following equation.

Pay Adjustment = (PF-100)/100 x (WP) x (tonnage) x (unit price)

The following weighted percentage (WP) values will be used for the corresponding parameter:

Parameter	WP
Air Voids	0.5
Density	0.5

Individual Pay Factors for each air voids ($PF_{air\ voids}$) and density ($PF_{density}$) will be determined. $PF_{air\ voids}$ will be multiplied by the total tonnage produced, and $PF_{density}$ will be multiplied by the tonnage used to pave the mainline only (i.e., excluding shoulder) as calculated in accordance with CMM 8-15.

The department will pay incentive for air voids and density under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
460.2005	Incentive Density PWL HMA Pavement	DOL
460.2010	Incentive Air Voids HMA Pavement	DOL

The department will administer disincentives under the Disincentive Density HMA Pavement and the Disincentive Air Voids HMA Pavement administrative items.

Note: PWL value determination is further detailed in the *Calculations* worksheet of the WisDOT PWL Analysis Template.

bts-PWL QMP (20161215)

44. Test Methods & Sampling for Percent Within Limit QMP HMA Pavement

Appendix A

TEST Methods & Sampling for PWL QMP HMA Pavements

The following procedures are included to the HMA Pavement Percent Within Limits Quality Management Program (PWL QMP) special provision:

- WisDOT Procedure for Nuclear Gauge/Core Correlation
- WisDOT Test Method for PWL QMP Density Measurements for Main Production

- Sampling for WisDOT PWL QMP

WisDOT Procedure for Nuclear Gauge/Core Correlation

The engineer is responsible for identifying the two zones in which gauge/core correlation is to be performed. These two zones are to be randomly selected within each of two sublots of the 750 ton test strip. Test strip sublots 1 and 2 are identified as between 50-400 tons and 401-750 tons, respectively.

Required field tests include contractor quality control (QC) and department quality verification (QV) nuclear density gauge tests and pavement coring. Each zone shall consist of five (5) locations across the mat as identified in Figure 1. The following shall be determined at each of the five locations within both zones:

- two one-minute nuclear density gauge readings for QC team*
- two one-minute nuclear density gauge readings for QV team*
- one pavement core sample

*If the two readings performed with the same gauge by the same team are not within +/- 1.0 lb/ft^3 of one another, a third reading shall be conducted. In this event, all three readings shall be averaged, discard the initial of the three readings which falls farthest from the average value and then average the remaining two values to represent the location for the gauge.

This appears as follows, in the field:

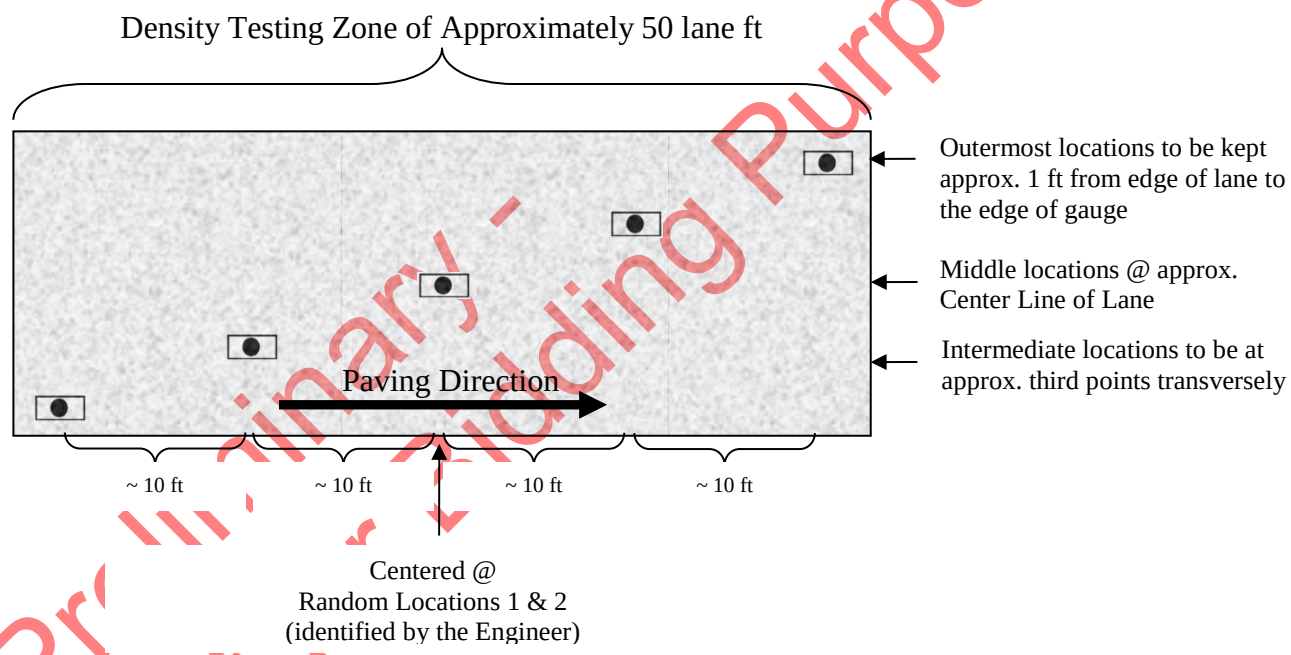
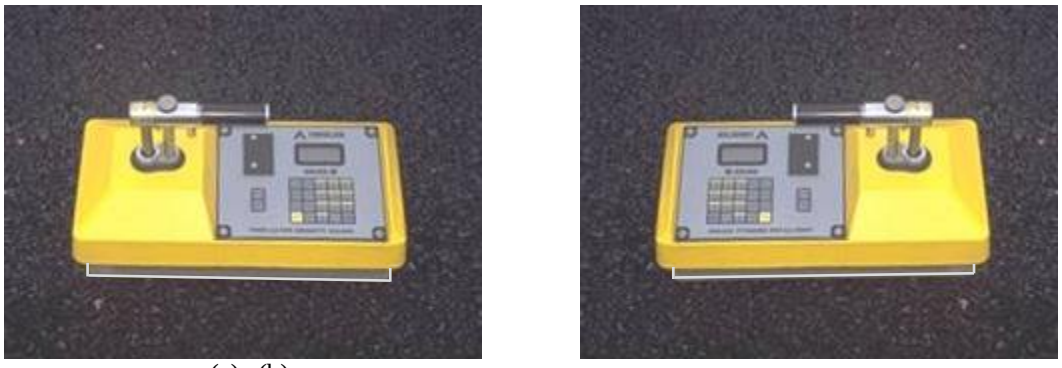


Figure 1: Nuclear/Core correlation locations depicted

Individual locations are represented by the  symbol as seen in Figure 1 above. The symbol is two-part, comprised of the nuclear test locations and the location for coring the pavement, as distinguished here:

The nuclear site is the same for QC and QV readings for the test strip, i.e., the QC and QV teams are to take nuclear density gauge readings in the same footprint. Each of the QC and QV teams are to take two one-minute readings per nuclear site, with the gauge rotated 180 degrees between readings, as seen here:



(a) (b)

Figure 2: Nuclear gauge orientation for (a) 1st one-minute reading and (b) 2nd one-minute reading

The core shall then be taken from the center of said footprint to be used to correlate each gauge with laboratory measured bulk specific gravities of the pavement cores. One core in good condition must be obtained from each of the 10 locations. If a second core is needed, it shall be obtained from within the same gauge footprint. The contractor is responsible for coring of the pavement. Coring and filling of core holes must be approved by the engineer. The QV team is responsible for the labeling and safe transport of the cores from the field to the QC laboratory. Core density testing shall be conducted by the contractor and witnessed by department personnel. The contractor is responsible for drying the cores following testing. The department shall take possession of cores following initial testing and shall be responsible for any verification testing.

Each core 100 or 150 mm (4 or 6 inches) in diameter will be taken at locations identified in Figure 1. [Appropriate core diameter shall be selected based on layer thickness and shall be decided at the prepave meeting and remain consistent for the duration of the project.] Each random core will be full thickness of the layer being placed. The contractor is responsible for thoroughly drying cores obtained from the mat in accordance with ASTM D 7227 prior to using specimens for in-place density determination in accordance with AASHTO T 166.

All core holes shall be filled with non-shrink grout or HMA. When using rapid hardening grout, all water shall be removed from the core holes prior to filling and the mortar or concrete shall be mixed in a separate container prior to placement in the hole. If HMA is used, fill all core holes with hot-mix matching that day's production mix type at that day's compaction temperature +/- 20F. The core holes shall be dry and coated with tack before filling, filled with a minimum of two layers (single layer allowed for pavement layers $\leq$ 2 inches in thickness), and compacted with a Marshall hammer or similar tamping device using approximately 50 blows per layer. The finished surface shall be flush with the pavement surface. Any deviation in the surface of the filled core holes greater than 1/4 inch at the time of final inspection will require removal of the fill material to the depth of the layer thickness and replacement.

The core densities collected from the 10 locations of the test strip and the QV results from the three split samples will be used to determine material acceptance and pay. The PWL value is calculated in accordance with the calculations worksheet in the WisDOT PWL Analysis Template.

A PWL value for air voids and density shall be calculated after completion of the testing. An acceptable test strip is defined as the individual PWL values for air voids and density are both above 75 or the average of the two are above 80. Full production may not continue until an acceptable test strip has been completed. If a PWL value on the test strip is below 50, the material is considered nonconforming and the test strip is unacceptable. If the material is allowed to remain in place, a second test strip shall be constructed. If the material is determined to be removed and replaced, a new test strip will replace the previous one at no additional cost to the department. If a PWL value is between 50 and 75, the material is considered conforming, although a second test strip will need to be constructed. If the second test strip is not acceptable as defined above, it shall be removed and replaced. A maximum of two test strips may be left in place on the project. Additional guidance on test strip and material acceptance is found in Figure 3.

PWL Value	Test Strip & Material Acceptance
>75 (individual) & 80 (combined)	Material conforms, Test Strip is acceptable
50 ≤ PWL ≤ 75	Material conforms, Test Strip is not acceptable*
< 50	Material nonconforming, may be removed & replaced, Test Strip not acceptable*

* A maximum of two test strips may be left in place on the project.

All test reports shall be submitted to WisDOT upon completion, and approved before paving resumes. The department shall notify the contractor within as soon as practicable after completion of the test strip regarding approval to proceed with paving beyond the test strip.

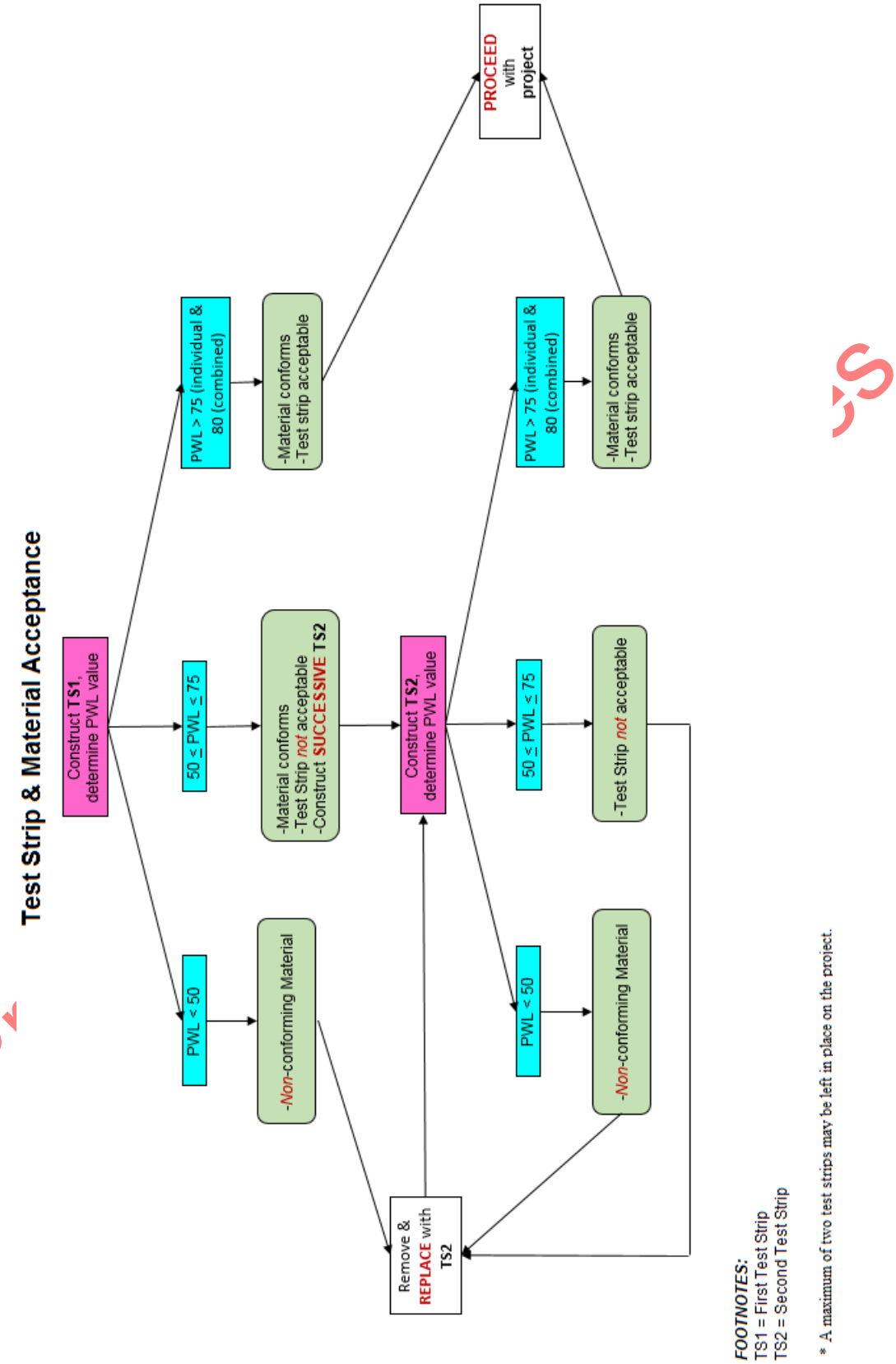


Figure 3: Flowchart for guidance of material and test strip acceptance for PWL

WisDOT Test Method for PWL QMP Density Measurements for Main Production

For nuclear density testing of the pavement beyond the test strip, QC tests will be completed at three locations per sublot, with a sublot defined as 1500 lane feet. The three locations will represent the outside, middle, and inside of the paving lane (i.e., the lane width will be divided into thirds as shown by the dashed longitudinal lines in Figure 3 and random numbers will be used to identify the specific transverse location within each third in accordance with CMM 8-15). Longitudinal locations within each sublot shall be determined with 3 independent random numbers. Each location will be measured with two one-minute gauge readings oriented 180 degrees from one another, in the same footprint as detailed above. Each location will be the average of the two readings. Multiple locations are not to be averaged together. QV nuclear testing will consist of randomly selected location per sublot. The QV is also comprised of two one-minute readings. This is depicted as follows, with QC test locations shown as solid lines and QV as dashed.

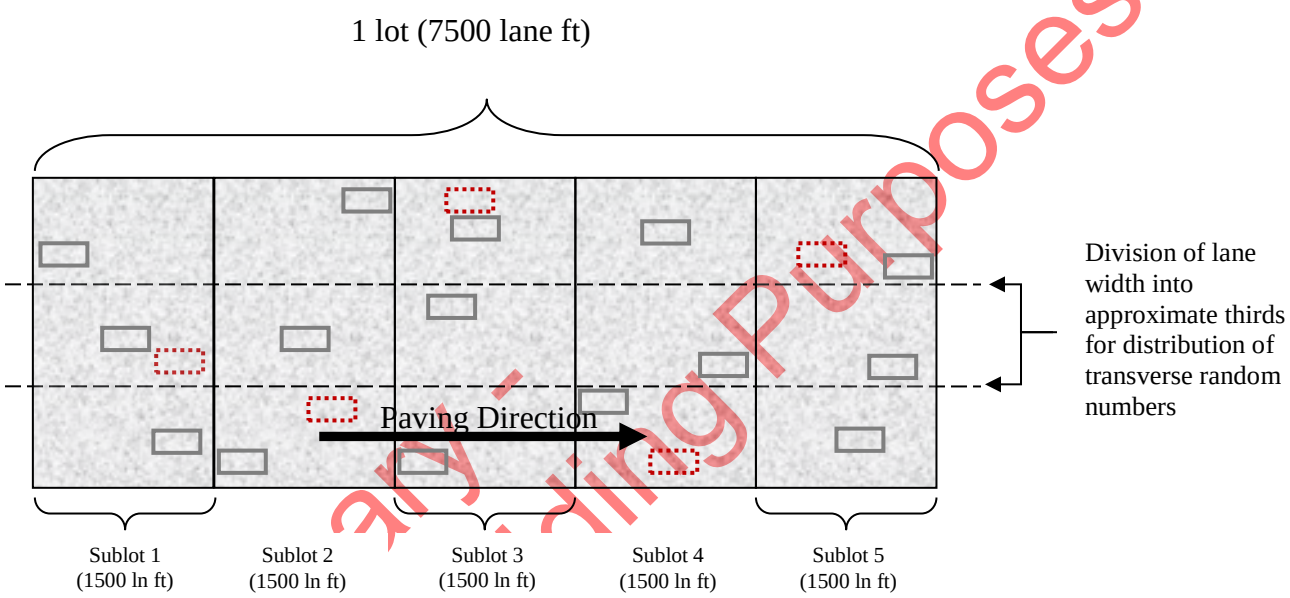


Figure 3: Locations of main lane HMA density testing (QC=solid lines, QV=dashed)

QC and QV nuclear density gauge readings will be statistically analyzed in accordance with the following section of this Appendix. (Note: For density data, if F- and t-tests pass, QC data will be used for the subsequent calculations of PWL value and pay determination. However, if an F- or t-test failure occur, the QV data will be used in subsequent calculations.)

Sampling for WisDOT PWL QMP

Delete CMM 8-36.4 Sampling Hot Mix Asphalt and replace with the following to update sublot tonnages:

Sampling Hot Mix Asphalt

At the beginning of each day the contractor determines the anticipated tonnage to be produced. The frequency of sampling (minimum number of required tests for the day's anticipated production) is defined by the PWL QMP SPV. A test sample is obtained randomly from each sublot.

Example 1

Expected day's production is 2,400 tons. The number of required samples is determined based on this expected production (per PWL QMP SPV) and is determined by the random sample calculation.

Sample 1 – from 50 to 750 tons
Sample 2 – from 751 to 1500 tons
Sample 3 – from 1501 to 2250 tons
Sample 4 – from 2251 to 3000 tons

The approximate location of each sample within the prescribed sublots is determined by selecting random numbers using ASTM Method D-3665 or by using a calculator or computerized spreadsheet that has a random number generator. The random numbers selected are used in determining when a sample is to be taken and will be multiplied by the sublot tonnage. This number will then be added to the final tonnage of the previous sublot to yield the approximate cumulative tonnage of when each sample is to be taken.

To allow for plant start-up variability, the procedure calls for the first random sample to be taken at 50 tons or greater per production day (not intended to be taken in the first two truckloads). Random samples calculated for 0-50 ton should be taken in the next truck (51-75 ton).

Example 2

Required Sample	Sublot Sample Tonnage Range	Random No. ASTM D-3665	Sublot Sample Ton (Random No. x Sublot ton)	End of Previous. Range	Cumulative Sample Tonnage
1	50 - 750	0.572	RN x 750= 429	0	429
2	751 - 1500	0.353	RN x 750= 265	750	1015
3	1501 - 2250	0.656	RN x 750= 492	1500	1992
4	2251-3000	0.251	RN x 750= 188	2250	2438

This procedure is to be used for any number of samples per day.

If the day's production is less than the final randomly generated sample tonnage for that day, then the random sample is to be collected from the remaining portion of that sublot on a subsequent day of production. If the randomly generated sample is calculated to be within the first 0-50 tons of the subsequent day of production, it should be taken in the next truck. Add a random sample for any fraction of 750 tons at the end of the project. Lot size will consist of 3750 tons with sublots of 750 tons. Partial lots with less than three sublot tests shall be included into the previous lot.

It's intended that the plant operator not be advised ahead of time when samples are to be taken. If the plant operator is involved in recording a Pb (%AC) to match up with the mix sample tonnage, then notification need not be earlier than 60 minutes before the mix sample being taken.

If belt samples are used during troubleshooting, the blended aggregate will be obtained when the mixture production tonnage reaches approximately the sample tonnage. For plants with storage silos, this could be up to 60 minutes in advance of the mixture sample that's taken when the required tonnage is shipped from the plant.

Delete CMM 8-36.4.2.1 through 8-36.4.2.3 and replace with the following PWL (3-way) Split Sample Sizes

PWL (3-way) Split Sample Sizes

- Minimum sample sizes are referenced below and are guidance for meeting requirements for test completion.

Mixture NMAS	Sample Size
≤ 12.5mm (1/2")	105 lb
19.0mm - 25.0mm (3/4" – 1")	150 lb
≥ 37.5mm (1-1/2")	240 lb

- The total sample for larger NMAS (nominal maximum aggregate size) mixtures will be enough to provide the required minimum testing sample size as defined in Figure 3.

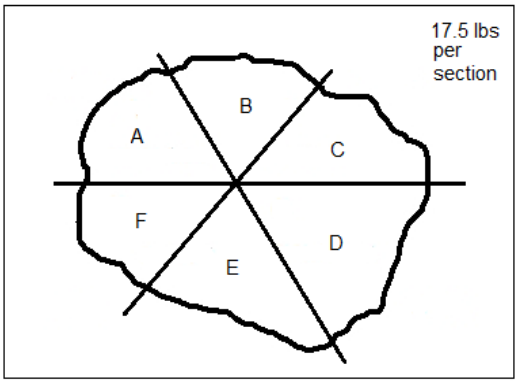
Delete 8-36.5.1.1 Step 1 and replace with the following Initial Splitting of Sample

Initial Splitting of Sample

For QC sample reduction the HMA sample in the containers is mixed and quartered. The quartering process should then proceed as follows:

i. Collect the minimum sample size given in the *PWL Split Sample Size* section above. Split the sample into "Test" and "Retained" samples. Place entire sample on table, quickly re-mix and split to minimize temperature loss. Split the Test & Retained samples as shown on Figure 3. For 1/2" mixes start with at least a total of 105 lbs of HMA.

Figure 3 Superpave Sample for 105 lbs for three-way split for QC, QV, and retained samples



(a) *(b)*

ii. For a three-way split shown in Figure 3, *diagonal sections*, as indicated on the sketch, must be combined

to form the QV sample (A+D), retained sample (B+E) and the QC test sample (C+F). The retained sample must be bagged, labeled, and stored in a safe dry place. The retained samples may be tested using the "rule of retained" (see "Definitions" section).

iii. The QC & QV test samples are then further split for the specified tests. Continue the splitting process in *Further Reduction of Samples to Test Sizes* for the test materials until individual samples are in the oven.

Delete CMM 8-36.5.2 Use of Alternative Sampling / Quartering Devices (ex: Quartermaster) and replace with the following:

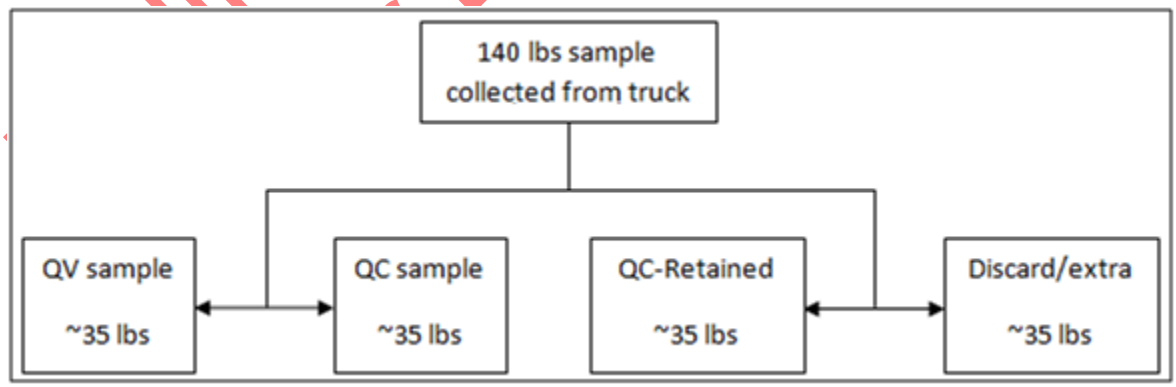
Use of Alternative Sampling / Quartering Devices (ex: Quartermaster)

Use of other devices to assist in the sampling and splitting procedures may be used with approval of the department. The Quartermaster is one such device. A picture of a Quartermaster device is shown in Figure 6.

Figure 6 Quartermaster Quartering Device

Example 3

If a quartermaster is used to reduce a three-way split sample into the proper quanitites, it is required to collect approximately 133% the minimum sample size shown in *PWL Split Sample Sizes* (e.g. 133% of 105 is approximately 140 lbs), use the selected device to split, and discard the extra quadrant of material.



45. QMP HMA Pavement Nuclear Density.

A Description

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

(1) This special provision describes density testing of in-place HMA pavement with the use of nuclear density gauges. Conform to standard spec 460 as modified in this special provision.

(2) Provide and maintain a quality control program defined as all activities and documentation of the following:

1. Selection of test sites.
2. Testing.
3. Necessary adjustments in the process.
4. Process control inspection.

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

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

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

http://www.atwoodsystems.com/mrs

B Materials

B.1 Personnel

(1) Perform HMA pavement density (QC, QV) testing using a HTCP certified nuclear technician I, or a nuclear assistant certified technician (ACT-NUC) working under a certified technician.

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

B.2 Testing

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

B.3 Equipment

B.3.1 General

(1) Furnish nuclear gauges from the department's approved product list at http://www.dot.wisconsin.gov/business/engrserv/approvedprod.htm.

(2) Have the gauge calibrated by the manufacturer or an approved calibration service within 12 months of its use on the project. Retain a copy of the manufacturer's calibration certificate with the gauge.

(3) Prior to each construction season, and following any calibration of the gauge, the contractor must perform calibration verification for each gauge using the reference blocks located in the department's central office materials laboratory. To obtain information or schedule a time to perform calibration verification, contact the department's Radiation Safety Officer at:

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

B.3.2 Comparison of Nuclear Gauges

B.3.2.1 Comparison of QC and QV Nuclear Gauges

(1) Select a representative section of the compacted pavement prior to or on the first day of paving for the comparison process. The section does not have to be the same mix design.

(2) Compare the 2 or more gauges used for density measurement (QC, QV). The QC and QV gauge operators will perform the comparison on 5 test sites jointly located. Record each density measurement of each test site for the QC, QV and back up gauges.

(3) Calculate the average of the difference in density of the 5 test sites between the QC and QV gauges. Locate an additional 5 test sites if the average difference exceeds 1.0 lb/ft3. Measure and record the density on the 5 additional test sites for each gauge.

(4) Calculate the average of the difference in density of the 10 test sites between the QC and QV gauges. Replace one or both gauges if the average difference of the 10 tests exceeds 1.0 lb/ft3 and repeat comparison process from B.3.2.1 (2).

(5) Furnish one of the QC gauges passing the allowable comparison tolerances to perform density testing on the project.

B.3.2.2 Comparison Monitoring

(1) After performing the gauge comparison specified in B.3.2.1, establish a project reference site approved by the department. Clearly mark a flat surface of concrete or asphalt or other material that will not be disturbed during the duration of the project. Perform comparison monitoring of the QC, QV, and all back-up gauges at the project reference site.

(2) Conduct an initial 10 density tests with each gauge on the project reference site and calculate the average value for each gauge to establish the gauge's reference value. Use the gauge's reference value as a control to monitor the calibration of the gauge for the duration of the project.

(3) Check each gauge on the project reference site a minimum of one test per day if paving on the project. Calculate the difference between the gauge's daily test result and its reference value. Investigate if a daily test result is not within 1.5 lb/ft3 of its reference value. Conduct 5 additional tests at the reference site once the cause of deviation is corrected. Calculate and record the average of the 5 additional tests. Remove the gauge from the project if the 5-test average is not within 1.5 lb/ft3 of its reference value established in B.3.2.2(2).

(4) Maintain the reference site test data for each gauge at an agreed location.

B.4 Quality Control Testing and Documentation

B.4.1 Lot and Sublot Requirements

B.4.1.1 Mainline Traffic Lanes, Shoulders, and Appurtenances

(1) A lot consists of the tonnage placed each day for each layer and target density specified in standard spec 460.3.3.1. A lot may include partial sublots.

(2) Divide the roadway into sublots. A sublot is 1500 lane feet for each layer and target density.

(3) A sublot may include HMA placed on more than one day of paving. Test sublots at the pre-determined random locations regardless of when the HMA is placed. No additional testing is required for partial sublots at the beginning or end of a day's paving.

(4) If a resulting partial quantity at the end of the project is less than 750 lane feet, include that partial quantity with the last full sublot of the lane. If a resulting partial quantity at the end of the project is 750 lane feet or more, create a separate sublot for that partial quantity.

(5) Randomly select test locations for each sublot as specified in CMM 8.15 prior to paving and provide a copy to the engineer. Locate and mark QC density test sites when performing the tests. Perform density tests prior to opening the roadway to traffic.

(6) Use Table 1 to determine the number of tests required at each station, depending on the width of the lane being tested. When more than one test is required at a station, offset the tests 10 feet longitudinally from one another to form a diagonal testing row across the lane.

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

Table 1

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

(1) A lot represents a combination of the total daily tonnage for each layer and target density.

(2) Each side road, crossover, turn lane, ramp, and roundabout must contain at least one sublot for each layer.

(3) If a side road, crossover, turn lane, or ramp is 1500 feet or longer, determine sublots and random test locations as specified in B.4.1.1.

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

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

Table 2

B.4.2 Pavement Density Determination

B.4.2.1 Mainline Traffic Lanes and Appurtenances

(1) Calculate the average sublot densities using the individual test results in each sublot.

(2) If all sublot averages are no more than one percent below the target density, calculate the daily lot density by averaging the results of each random QC test taken on that day's material.

(3) If any sublot average is more than one percent below the target density, do not include the individual test results from that sublot when computing the lot average density and remove that sublot's tonnage from the daily quantity for incentive. The tonnage from any such sublot is subject to disincentive pay according to standard spec 460.5.2.2.

B.4.2.2 Mainline Shoulders

B.4.2.2.1 Width Greater Than 5 Feet

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

B.4.2.2.2 Width of 5 Feet or Less

(1) If all sublot test results are no more than 3.0 percent below the minimum target density, calculate the daily lot density by averaging all individual test results for the day.

(2) If a sublot test result is more than 3.0 percent below the target density, the engineer may require the unacceptable material to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine the limits of the unacceptable material according to B.4.3.

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

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

B.4.2.4 Documentation

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

B.4.3 Corrective Action

(1) Notify the engineer immediately when an individual test is more than 3.0 percent below the specified minimum in standard spec 460.3.3.1. Investigate and determine the cause of the unacceptable test result.

(2) The engineer may require unacceptable material specified in B.4.3(1) to be removed and replaced with acceptable material or allow the nonconforming material to remain in place with a 50 percent pay reduction. Determine limits of the unacceptable area by measuring density of the layer at 50-foot increments both ahead and behind the point of unacceptable density and at the same offset as the original test site. Continue testing at 50-foot increments until a point of acceptable density is found as specified in standard spec 460.5.2.2(1). Removal and replacement of material may be required if extended testing is in a previously accepted sublot. Testing in a previously accepted sublot will not be used to recalculate a new lot density.

(3) Compute unacceptable pavement area using the product of the longitudinal limits of the unacceptable density and the full sublot width within the traffic lanes or shoulders.

(4) Retesting and acceptance of replaced pavement will be according to standard spec 105.3.

(5) Tests indicating density more than 3.0 percent below the specified minimum, and further tests taken to determine the limits of unacceptable area, are excluded from the computations of the sublot and lot densities.

(6) If 2 consecutive sublot averages within the same paving pass and same target density are more than one percent below the specified target density, notify the engineer and take necessary corrective action. Document the locations of such sublots and the corrective action that was taken.

B.5 Department Testing

B.5.1 Verification Testing

(1) The department will have a HTCP certified technician, or ACT working under a certified technician, perform verification testing. The department will test randomly at locations independent of the contractor's QC work. The department will perform verification testing at a minimum frequency of 10 percent of the sublots and a minimum of one sublot per mix design. The sublots selected will be within the active work zone. The contractor will supply the necessary traffic control for the department's testing activities.

(2) The QV tester will test each selected sublot using the same testing requirements and frequencies as the QC tester.

(3) If the verification sublot average is not more than one percent below the specified minimum target density, use the QC tests for acceptance.

(4) If the verification sublot average is more than one percent below the specified target density, compare the QC and QV sublot averages. If the QV sublot average is within 1.0 lb/ft3 of the QC sublot average, use the QC tests for acceptance.

(5) If the first QV/QC sublot average comparison shows a difference of more than 1.0 lb/ft3 each tester will perform an additional set of tests within that sublot. Combine the additional tests with the original set of tests to compute a new sublot average for each tester. If the new QV and QC sublot averages compare to within 1.0 lb/ft3, use the original QC tests for acceptance.

(6) If the QV and QC sublot averages differ by more than 1.0 lb/ft3 after a second set of tests, resolve the difference with dispute resolution specified in B.6. The engineer will notify the contractor immediately when density deficiencies or testing precision exceeding the allowable differences are observed.

B.5.2 Independent Assurance Testing

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

B.6 Dispute Resolution

(1) The testers may perform investigation in the work zone by analyzing the testing, calculation, and documentation procedures. The testers may perform gauge comparison according to B.3.2.1.

(2) The testers may use comparison monitoring according to B.3.2.2 to determine if one of the gauges is out of tolerance. If a gauge is found to be out of tolerance with its reference value, remove the gauge from the project and use the other gauge's test results for acceptance.

(3) If the testing discrepancy cannot be identified, the contractor may elect to accept the QV sublot density test results or retesting of the sublot in dispute within 48 hours of paving. Traffic control costs will be split between the department and the contractor.

(4) If investigation finds that both gauges are in error, the contractor and engineer will reach a decision on resolution through mutual agreement.

B.7 Acceptance

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

C (Vacant)

D (Vacant)

E Payment

E.1 QMP Testing

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

E.2 Disincentive for HMA Pavement Density

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

E.3 Incentive for HMA Pavement Density

(1) The department will administer density incentives according to standard spec 460.5.2.3.

stp-460-020 (20161130)

46. Expansion Device, B-05-131.

A Description

This special provision describes furnishing and installing an expansion device in accordance to standard spec 502, as shown on the plans, and as hereinafter provided.

B Materials

The minimum thickness of the polychloroprene strip seal shall be 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	60 ± 5 pts.	ASTM D2240
Compression Set, 70 hours @212˚F, max.	35%	D395 Method B Modified
Ozone Resistance, after 70 hrs. at 100˚F under 20% Strain with 100 pphm ozone	No Cracks	ASTM D1149 Method A
Mass Change in Oil 3 after 70 hr. 212˚F Mass Change, max.	45%	ASTM D471

Install the elastomeric strip seal gland with tools recommended by the manufacturer, and with a lubricant adhesive conforming to the requirements of ASTM D4070.

The manufacturer and model number shall be one of the following approved strip seal expansion device products:

	Model Number Strip Seal Gland Size*		
Manufacturer	**4-Inch**	**5-Inch**	**6-Inch**
D.S. Brown	SSA2-A2R-400	SSA2-A2R-XTRA	SSA2-A2R-XTRA
R.J. Watson	RJA-RJ400	RJA-RJ500	RJA-RJ600
Watson Bowman Acme	A-SE400	A-SE500	A-SE800
Commercial Fabricators	A-AS400	-----	-----

*Expansion device strip seal gland size requirement of 4", 5", and 6" shall be as shown on the plans.

Furnish manufacturer's certification for production of polychloroprene represented showing test results for the cured material supplied, and certifying that it meets all specified requirements.

The steel extrusion or retainer shall conform to ASTM designation A 709 grade 36 steel. After fabrication, steel shall be galvanized conforming to the requirements ASTM A123.

Manufacturer's certifications for adhesive and steel shall attest that the materials meet the specification requirements.
stp-502-020 (20110615)

47. 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 1/4".

B Materials
B.1 General
Furnish materials specifically designed for use over concrete bridge decks. Furnish polymer liquid binders from the department's approved product list.

B.2 Polymer Resin
The polymer resin base and hardener shall be composed of two-component, 100% solids, 100% reactive, thermosetting compound with the following properties:

Property	Requirements	Test Method
Gel Time [A]	15 - 45 minutes @ 73° to 75° F	ASTM C881
Viscosity [A]	7 - 70 poises	ASTM D2393, Brookfield RVT, Spindle No. 3, 20 rpm

Property	Requirements	Test Method
Shore D Hardness [B]	60-75	ASTM D2240
Absorption [B]	1% maximum at 24 hr	ASTM D570
Tensile Elongation [B]	30% - 70% @ 7 days	ASTM D638
Tensile Strength [B]	>2000 psi @ 7 days	ASTM D638
Chloride Permeability [B]	<100 coulombs @ 28 days	AASHTO T277

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

B.3 Aggregates

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

Aggregate Properties:

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

* Sampled and tested at the time of placement.

Gradation:

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

B.4 Required Properties of Overlay System

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

Property	Requirement [A]	Test Method
Minimum Compressive Strength at 8 Hrs. (psi)	1,000 psi @ 8 hrs 5,000 psi @ 24 hrs	ASTM C 579 Method B, Modified [B]

Property	Requirement [A]	Test Method
Thermal Compatibility	No Delaminations	ASTM C 884
Minimum Pull-off Strength	250 psi @ 24 hrs	ACI 503R, Appendix A

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

B.5 Approval of Bridge Deck Polymer Overlay System
A minimum of 20 working days prior to application, submit product data sheets and specifications from the manufacturer, and a certified test report to the engineer for approval. The engineer may request samples of the polymer and/or aggregate, prior to application, for the purpose of acceptance testing by the department.

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

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

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

C Construction
C.1 General
Conduct a pre-installation conference with the manufacturer's representative prior to construction to establish procedures for maintaining optimum working conditions and coordination of work. Furnish the engineer a copy of the recommended procedures and apply the overlay system according to the manufacturer’s instructions. The manufacturer's representative familiar with the overlay system installation procedures shall be present at all times during surface preparation and overlay placement to provide quality assurance that the work is being performed properly.

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

C.2 Deck Preparation
C.2.1. Deck Repair
Remove all asphaltic patches and unsound or disintegrated areas of the concrete decks as the plans show, or as the engineer directs. Work performed to repair the concrete deck will

be paid for under other items. Ensure that products used for deck patching are compatible with the polymer overlay system.

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

C.2.2 Surface Preparation

Determine an acceptable shotblasting machine operation (size of shot, flow of shot, forward speed, and/or number of passes) that provides a surface profile meeting CSP 5 according to the International Concrete Repair Institute Technical Guideline No. 03732. If the engineer requires additional verification of the surface preparation, test the tensile bond strength according to ACI 503R, Appendix A of the ACI *Manual of Concrete Practice*. The surface preparation will be considered acceptable if the tensile bond strength is greater than or equal to 250 psi or the failure area at a depth of 1/4 inches or more is greater than 50% of the test area. Continue adjustment of the shotblasting machine and necessary testing until the surface is acceptable to the engineer or a passing test result is obtained.

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

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

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

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

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

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

C.3 Application of the Overlay

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

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

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

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

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

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

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

C.4 Application Rates

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

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

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

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

C.5 Minimum Curing Periods

As a minimum, cure the coating as follows:

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

C.6 Repair of Polymer Overlay

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

D Measurement

The department will measure Polymer Overlay in area by the square yard, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.5100.S	Polymer Overlay	SY

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

stp-509-030 (20150630)

48. Preparation and Coating of Top Flanges B-05-0131, Item 517.0900.S.

A Description

This special provision describes thoroughly cleaning and coating the top surface and edges of the top flanges, removing loose paint, rust, mill scale, dirt, oil, grease, or other foreign substances until the specified finish is obtained.

B (Vacant)

C Construction

For top flanges and edges that have no paint on them and in accordance with the department's Pre-Qualified Paint Systems for Structure Overcoating Cleaning and Priming, clean the top surface and edges of the top flanges and paint them with one coat of an approved zinc rich primer. Paint for Solvent Cleaning for Overcoat-minimum Cleaning (SP-1) is not allowed.

For top flanges and edges that have paint on them and in accordance with the department's Pre-Qualified Paint Systems for Structure Overcoating Cleaning and Priming, clean all areas of rust and loose paint on the top surface and edges of the top flanges. Wash the top surface and edges of the top flanges and paint them with one coat of an approved zinc-rich primer in accordance with paint manufacture's recommendations. If flash rusting occurs prior to the application of the primer, stop painting application, remove the flash rusting and paint cleaned surface. Paint for Solvent Cleaning for Overcoat-minimum Cleaning (SP-1) is not allowed.

Where plans call for the cleaning of other painted structural steel including hanger assemblies, bearings, field splices, and connections, clean areas of loose paint and rust in accordance with the department's Pre-Qualified Paint Systems for Structure Overcoating Cleaning and Priming, or and in accordance with paint manufacture's cleaning recommendations. Sound paint need not be removed with the exception of an area 12-inch on either side of hanger assembly centerlines. Clean this area to base metal in accordance to the paint manufacture's cleaning recommendations and paint them one coat of an approved zinc-rich primer in accordance with paint manufacture's recommendations. Paint for Solvent Cleaning for Overcoat-minimum Cleaning (SP-1) is not allowed.

For areas of exposed steel members that are to be imbedded in new concrete and in accordance with the department's Pre-Qualified Paint Systems for Structure Overcoating Cleaning and Priming, thoroughly clean the surface area of exposed steel members that are to be imbedded in the new concrete and solvent wash and paint one coat of an approved zinc rich primer in accordance with paint manufacture's recommendations to these areas. Paint for Solvent Cleaning for Overcoat-minimum Cleaning (SP-1) is not allowed.

In accordance to the approved project specific hazardous material containment plan, furnish and erect tarpaulins or other materials to collect all of the spent paint containing material resulting from blasting or hand and power tool cleaning and coating. Minimize dust during all clean-up activities. Collect and store waste material at the end of each work day or more

often if needed. Store waste materials in the hazardous waste containers provided. Lock and secure all waste containers at the end of each work day. Cover the container(s) at all times except when adding or removing 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. Transportation and disposal of such waste material will be the responsibility of the department.

Damage to existing painted surfaces as a result of construction operations, shall be restored to the approval of the engineer at the contractor's expense.

D Measurement

The department will measure Preparation and Coating of Top Flanges (Structure) as a single complete lump sum unit of work for the structure, completed in accordance to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.0900.S	Preparation and Coating of Top Flanges B-05-0131	LS

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

stp-517-010 (20140630)

49. Concrete Staining R-05-0114, Item 517.1010.S.

A Description

Furnish and apply a two coat concrete stain to the exposed concrete surfaces of the structure, as detailed in the plans and as hereinafter provided.

B Materials

B.1 Mortar

Use mortar for sack rubbing the concrete surfaces as given in standard spec 502.3.7.5 or use one of the following products:

Preblended, Packaged Type II Cement:	Tri-Mix by TK Products
	Thoroseal Pearl Gray by Thoro Products

The mortar shall contain one of the following acrylic bonding admixtures mixed and applied in accordance to manufacturer’s recommendations:

Acrylic Bonding Admixture:	TK-225 by TK Products
	Achro 60 by Thoro Products
	Achro Set by Master Builders

B.2 Concrete Stain

Use concrete stain manufactured for use on exterior concrete surfaces, consisting of a base coat and a pigmented sealer finish coat. Use the following products, or equal as approved by the department, as part of the two coat finish system:

Tri-Sheen Concrete Surfacer, Smooth by TK Products
Tri-Sheen Acrylic by TK Products
TK-1450 Natural Look Urethane Anti-Graffiti Primers by TK Products
Safe-Cure & Seal EPX by Chem Masters
H&C Concrete Stain Solid Color Water Based by Sherwin-Williams

C Construction

C.1 General

Furnish, prepare, apply, cure, and store all materials in accordance to the product manufacturer's specifications for the type and condition of application required.

Match or exceed the stain manufacturer's minimum recommended curing time of the concrete or 28 days, whichever is greater, prior to staining.

C.2 Preparation of Concrete Surfaces

Provide a sack rubbed finish in accordance to standard spec 502.3.7.5, using mortar as indicated above on concrete surfaces with open voids or honeycombing.

Following the sack rubbing, clean all concrete surfaces that are to be coated to ensure that the surface is free of all laitance, dirt, dust, grease, efflorescence, and any foreign material and that the surface will accept the coating material according to product requirements. As a minimum, clean the surface using a 3000-psi water blast. Hold the nozzle of the water blaster approximately 6 inches from the concrete surface and move it continuously in a sweeping motion. Give special attention to smooth concrete surfaces to produce an acceptable surface texture. Correct any surface problems resulting from the surface preparation methods. Grit blasting of the concrete surface is not allowed.

C.3 Staining Concrete Surfaces

Apply the concrete stain in accordance to the manufacturer's recommendations.

Apply the concrete stain when the temperature of the concrete surface is 45º F or higher, or as given by the manufacturer.

The color of the stain shall be as given on the plan. Tint the base coat to match the finish coat; the two coats shall be compatible with each other.

Do not begin staining the structure until earthwork operations are completed to a point where this work can begin without receiving damage. Where this work is adjacent to exposed soil or pavement areas, provide temporary covering protection from overspray or splatter.

C.4 Test Areas
Prior to applying stain to the structure, apply the stain to sample panels measuring a minimum of 48-inches x 48-inches and constructed to demonstrate workmanship in the use of the form liner specified on the structure if applicable. Match or exceed the stain manufacturer's minimum recommended curing time of the concrete or 28 days, whichever is greater, prior to staining. Prepare the concrete surfaces of the sample panels and apply stain using the same materials and in the same manner as proposed for the structure, including staining of the joints between the stones produced by the form liner if applicable. Do not apply stain to the structure until the department approves the test panels.

C.5 Surfaces to be Coated.
Apply concrete stain to the surfaces in accordance to the plan.

D Measurement
The department will measure Concrete Staining R-05-0114 in area by the square foot of surface, acceptably prepared and stained.

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1010.S	Concrete Staining R-05-0114	SF

Payment is full compensation for furnishing and applying the two coat system; for preparing the concrete surface; and for preparing the sample panels.
stp-517-110 (20140630)

50. Architectural Surface Treatment R-05-0114, Item 517.1050.S.

A Description
Construct a concrete masonry architectural surface treatment on the exposed concrete surfaces of the structure, as detailed in the plans and as hereinafter provided.

B Materials
Use form liners that attach easily to the forming system, and do not compress more than 1/4-inch when poured at a rate of 10 vertical feet/hour.

Use a release agent that is compatible with the form liner and coloring materials.

Wall ties shall have set "break-backs" at a minimum of 3/4-inches from the finished concrete surface.

C Construction

C.1 Equipment

Equipment and tools necessary for performing all parts of the work shall be satisfactory as to design, capacity, and mechanical condition for the purposes intended. Repair, improve, replace, or supplement all equipment that is not maintained in full working order, or which is proven inadequate to obtain the results prescribed.

C.2 Form Liner Preparation

Clean the form liner prior to each pour and ensure that it is free of any build-up. Visually inspect each liner for blemishes or tears, and repair if necessary per manufacturer's recommendations.

Apply form release per manufacturer's recommendations.

C.3 Form Liner Attachment

Place adjacent liners less than 1/4-inch from each other, attach liner securely to forms in accordance to the manufacturer's recommendations, and coordinate wall ties with form liner and form manufacturer, e.g., diameter, size, and frequency.

C.4 Surface Finishing

Ensure that the textured surface is free of laitance; sandblasting is not permitted.

Grind or fill pouring blemishes.

D Measurement

The department will measure Architectural Surface Treatment R-05-0114 in area by the square foot of architectural surface acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1050.S	Architectural Surface Treatment R-05-0114	SF

Payment is full compensation for producing the proposed architectural surface treatment including: preparing the foundation; finishing and protecting the surface treatment; and for properly disposing of surplus material.

stp-517-150 (20110615)

51. Structure Repainting Recycled Abrasive B-05-0131, Item 517.1800.S.

A Description

This special provision describes surface preparation and painting of the metal surfaces in accordance to the manufacturer's recommendations and as hereinafter provided.

A.1 Areas to be Cleaned and Painted

All structural metal surfaces of:

1. Structure B-05-0131: 13,900 SF.

Areas are approximate and given for informational purposes only.

B Materials

B.1 Coating System

Furnish a complete coating system from the department's approved list for "Structure Repainting Recycle Abrasive Structure". The color for the finish coating material shall match the color number shown on the plans in accordance with Federal Standard Number 595B, as printed in 1989. Supply the engineer with the product data sheets for approval before any coating is applied. The product data sheets shall indicate the mixing and thinning directions, the recommended spray nozzles and pressures, and the minimum drying time between coats.

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

C Construction

C.1 Surface Preparation

Prior to blast cleaning, solvent clean all surfaces to be coated in accordance to SSPC-SP1.

All metal surfaces must be blast cleaned in accordance with SSPC-SP10 and verified prior to painting.

Upon completion of surface preparation, test representative surfaces, which were previously rusted (i.e. pitted steel) for the presence of residual chloride. Perform Surface Contamination Tests (SCAT) in accordance with the manufacturer's recommendations. The tests must be witnessed by the Engineer. If chlorides are detected at levels greater than 7ug/cm^2, continue to clean the affected areas until results are below the specified limit. Submit anticipated testing frequencies and chloride remediation methods to the Engineer for review and approval.

Apply the prime coat the same day that the metal surfaces receive the No. 10 blast or re-blast before application. Cleaned surfaces shall be of the specified condition immediately prior to paint application. If rust bloom occurs prior to applying the primer, stop the painting operation in the area of the rust bloom and re-blast and clean the area to SSPC SP-10 prior to applying the primer.

The steel grit and any associated equipment brought to the site and used for blast cleaning shall be clean. Remove immediately dirty grit or equipment brought to the site at no expense to the department. Furnish an abrasive that has a gradation such that it will produce a uniform

surface profile between 1 to 3 mils on the steel surface, as measured in accordance with ISO 8503-5.

The abrasive blasting and recovery system shall be a completely integrated self-contained system for abrasive blasting and recovery. It shall be an open blast and recovery system that will allow no emissions from the recovery operation. The recovery equipment shall be such that the amount of contaminants in the clean recycled steel grit shall be less than 1 percent by weight as per SSPC AB-2.

Remove by grinding all fins, tears, slivers, and burred or sharp edges that are present on any steel member, or that appear during the blasting operation, and re-blast the area to give a 1 to 3 mils surface profile.

Remove all spent material and paint residue from steel surfaces with a good commercial grade vacuum cleaner equipped with a brush-type cleaning tool, and test cleanliness in accordance with ASTM D4285. The airline used for surface preparation shall have an in-line water trap and the air shall be free of oil and water as it leaves the airline.

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

C.2 Coating Application

Apply paint in accordance to the manufacturer's recommendations in a neat workmanlike manner. Paint application shall normally be by airless spray or inaccessible areas by brush, roller or other methods approved by the engineer.

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

Mix the paint or coatings in accordance to the manufacturer's directions to a smooth lump-free consistency. Keep paint thoroughly mixed during the painting application.

After the inspector approves the entire cleaned surface to be coated, apply a prime coat uniformly to the entire surface. Either before or after applying the prime coat, brush or spray a stripe coat of primer on all plate edges, bolt heads, nuts, and washers. Apply succeeding coats as the product data sheet shows.

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

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

The resultant paint film shall be smooth and uniform, without skips or areas of excessive paint in accordance with SSPC PA1.

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

During surface preparation and coating application the ambient and steel temperature shall be between 39 degrees F and 100 degrees F. The steel temperature shall be at least 5 degrees F above the dew point temperature. (This requires the steel to be dry and free of any condensation or ice regardless of the actual temperature of the steel.) The relative humidity shall not exceed 85%. The manufacturer's ambient condition requirements must be followed if they are more stringent.

Paint thickness shall be within the requirements for a three coat paint system listed in the department's approved list for Structure Repainting Recycle Abrasive Structure and the paint system being used.

Time to recoat shall be according to the manufacturer's recommendations.

The dry film thickness will be determined by use of a magnetic film thickness gage. The gage shall be calibrated for dry film thickness measurement in accordance to SSPC-PA 2. Dry film thickness in each area measured will be based on an average of three gage readings, after calibration of the gage to account for surface profile of the bare steel as a result of surface preparation.

D Measurement

The department will measure Structure Repainting Recycled Abrasive (Structure) as a single complete lump sum unit of work, completed in accordance to the contract and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.1800.S	Structure Repainting Recycled Abrasive B-05-0131	LS

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

stp-517-050 (20150630)

52. Containment and Collection of Waste Materials B-05-0131, 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-05-0131	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)

53. Negative Pressure Containment and Collection of Waste Materials, B-05-0131, Item 517.4500.S.

A Description

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

B (Vacant)

C Construction

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

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

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

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

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

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

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

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

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

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

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

D Measurement

The department will measure Negative Pressure Containment and Collection of Waste Materials (Structure) as a single complete lump sum unit of work for each structure designated in the contract, completed in accordance with the contract and accepted,.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.4500.S	Negative Pressure Containment and Collection of Waste Materials B-05-0131	LS

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

54. Portable Decontamination Facility, Item 517.6001.S.

A Description

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

B Materials

Supply and operate all equipment in accordance with OSHA.

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

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

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

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

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

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

C Construction

Properly contain, store, and dispose of the wastewater.

D Measurement

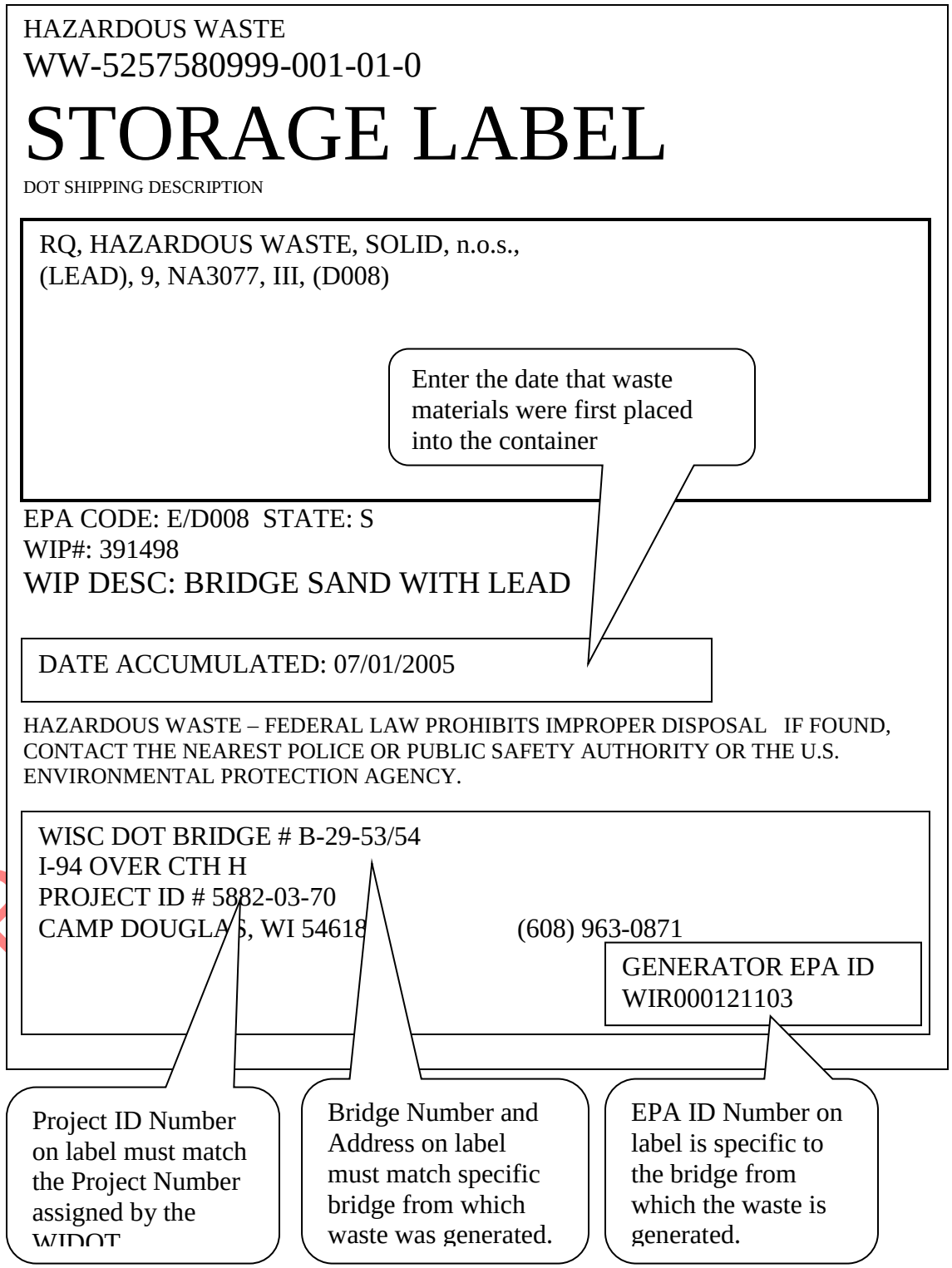
The department will measure Portable Decontamination Facility by each individual unit, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
517.6001.S	Portable Decontamination Facility	Each

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



55. Culvert Pipe Liners, 18 -Inch, Item 520.9700.S.001; Culvert Pipe Liners, 30-Inch, Item 520.9700.S.002; Cleaning Culvert Pipes for Liner Verification, Item 520.9750.S.001.

A Description

This special provision describes providing and pressure grouting culvert pipe liners for circular culverts.

B Materials

B.1 General

Provide flow calculations at the preconstruction conference. Use contractor-proposed liner properties, the Manning's coefficients listed on the department's approved products list, and base calculations on existing culvert sizes and liner sizes the plans show. Ensure that pipes when lined have a capacity within ±5% of the original full flow capacity of the pipe.

B.2 Flexible Pipe Liner

Use liners with a Manning's coefficient value published on the department's approved products list. Upon delivery provide manufacturer certificates of compliance certifying that the liners conform to the following:

Pipe Type	ASTM Designation	ASTM D3350 Resin
High Density Polyethylene (HDPE)		
Profile Wall Pipe	F894	345463C
Solid Wall Pipe	F714	345463C
Polyvinylchloride (PVC)	F949	---

B.3 Grout

Provide grout consisting of:

- One part of type I or II portland cement
- Three parts sand conforming to standard spec 501.2.5.
- Water to achieve required fluidity.

Alternatively the contractor may use an engineer-approved commercial cellular concrete grout conforming to the following:

Cement	ASTM C150	Type I or II
Density	ASTM C495 (no oven drying)	50 pcf min
Compressive Strength	ASTM C495	300 psi @ 28 day min 100 psi in 24 hours
Shrinkage	ASTM	1% by volume
Flow	ASTM C939	35 sec max

C Construction

C.1 General

As soon as possible after contract execution, survey existing culvert pipes to determine which culverts need cleaning in order to verify the required liner diameter and length. Notify the

engineer before cleaning to confirm payment under the Cleaning Culvert Pipes for Liner Verification bid item.

Coordinate with the engineer to field verify culvert diameter and length, shape, material, and condition before ordering the liners.

Obtain easements if necessary for installing long sections of pipe.

C.2 Excavating and Cleaning
Before inserting the liner, clean and dry the pipe. Excavate and pump as required to remove debris and other materials that would interfere with the placement or support of the inserted liner. Dispose of and replace unserviceable endwalls as the engineer directs.

C.3 Placing Liners
Unload liners using slings and boom-type trucks or equivalents. Do not use chains or wire rope to handle liners and do not dump liners from the trucks when unloading.

Connect joints conforming to the manufacturer's recommendations.

C.4 Pressure Grouting
After the liner is in place, fill the area between the original pipe and the liner completely with grout to provide uniform space between the liner and the original pipe. Block, grout in lifts, or otherwise secure liners to prevent floatation associated while grouting.

Use a grout plant that is capable of accurately measuring, proportioning, mixing, and discharging by volume and at discharge pressures the liner manufacturer recommends. Do not exceed manufacturer-specified maximum pressures. The contractor may place grout in lifts to prevent exceeding maximum allowable pressures.

C.4 Site Restoration
Replace pipe sections damaged or collapsed during installation or grouting operations. Restore the grade to its original or improved cross section. Dispose of waste material.

D Measurement
The department will measure the Culvert Pipe Liners bid items by the linear foot measured in place for each culvert location, acceptably completed.

The department will measure Cleaning Culvert Pipes for Liner Verification as each culvert, acceptably cleaned. The department will only measure culverts the engineer approves for payment.

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

ITEM NUMBER	DESCRIPTION	UNIT
520.9700.S.001	Culvert Pipe Liners 18-inch	LF

ITEM NUMBER	DESCRIPTION	UNIT
520.9700.S.002	Culvert Pipe Liners 30-inch	LF
520.9750.S.001	Cleaning Culvert Pipes for Liner Verification	Each

Payment for the Culvert Pipe Liners bid items is full compensation for providing pipe liners; obtaining easements; for excavation and pumping; for cleaning the existing pipe before liner installation; for pressure grouting; for replacing contractor-damaged pipe and endwalls; and for restoring the grade and disposing of waste materials.

The department will pay the contractor $150 per cubic yard for grout required in excess of 110 percent of the theoretical quantity required to fill the space between the inside diameter of the existing pipe and the outside diameter of the liner.

Payment for Cleaning Culvert Pipes for Liner Verification is full compensation for cleaning required to verify liner length and diameter; for excavation and pumping; and for disposing of waste material.

The department will pay separately for replacing unserviceable endwalls not rendered unserviceable by contractor operations under the appropriate contract endwall bid item, or absent the appropriate item as extra work.
stp-520-015 (20140630)

56. Slope Paving Repair Crushed Aggregate, Item 604.9010.S.

A Description
Furnish and place crushed aggregate slope paving where erosion has occurred, according to standard spec 604, the plans, and as hereinafter provided.

B Materials
Furnish materials conforming to standard spec 604.2.

C Construction
Replace paragraph (1) of standard spec 604.3.2 with the following:

Place the crushed aggregate on the prepared foundation in areas where erosion has occurred. Shape and consolidate it using mechanical or hand methods to provide a stable, even and uniform surface.

D Measurement
The department will measure Slope Paving Repair Crushed Aggregate by the cubic yard acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
604.9010.S	Slope Paving Repair Crushed Aggregate	CY

Payment is full compensation for all excavating and backfilling required to prepare the foundation; disposing of surplus materials; providing, handling, placing, and consolidating the crushed aggregate; providing, handling, heating, and for applying the asphaltic material. stp-604-010 (20100709)

57. Manhole, Inlet, and Catch Basin Adjusting Rings

Supplement standard specification 611.3 as follows:

When using concrete adjustment rings:
The height of the grade ring shall equal (to within an inch and not to exceed) the height of the adjustment to minimize the number of joints in the chimney section. Multiple grade rings will not be allowed where one will suffice. Concrete grade rings less than 2-inches in thickness are not allowed. Concrete rings shall be of a size that closely matches the inside and outside dimensions of the structures.

When using rubber adjustment rings:
Rubber grade rings shall be in a flat and/or tapered configuration of a size to closely match the inside and outside dimensions of circular or rectangular structures, installed individually or in combination not to exceed 3-inches in height. If more than 3-inches of adjustment is necessary, use one concrete ring 3-inches or more in height with rubber rings on top of the concrete ring. If multiple rubber adjustment rings are necessary, a maximum of two adjustment rings can be used. Rubber grade rings shall be tapered to match the cross slope and profile of the roadway.
(NER13-0611)

58. Cable Barrier Type 1, Item 613.1100.S; Cable Barrier End Terminal Type 1 Item 613.1200.S.

A Description
This special provision describes providing socketed high-tension TL-3 cable guard meeting the National Cooperative Highway Research Program (NCHRP) Report 350, Test Level 3 .

B Materials
Provide either the CASS TL-3 system manufactured by Trinity Highway Products or the Safence TL-3 system manufactured by Safence that is on the approved product list for the cable barrier system.

Provide a calibrated tension gauge to each county for the specific system installed in each county.

Provide one copy of video training material on the proper maintenance techniques and recovery of vehicles to each county for the specific system installed in each county. At a minimum, this training is to address, proper tension techniques, proper operation of

calibrated tension gauge, proper repair techniques, and proper methods to removed vehicles entrapped in the cable barrier.

B.2 Design Requirements

Thirty days before installation provide the engineer with two sets of manufacturer prepared drawings, Wisconsin P.E. stamped calculations, documentation, notes, plan details, and construction specifications. Provide required information in a PDF format or other in electronic format that the department can review information.

Obtain prior approval from the Bureau of Project Development (Erik Emerson at (608) 266-2842) for all hardware substitutions before delivering the hardware on the project.

C Construction

Construct concrete as specified in standard spec 501.
Construct steel reinforcement as specified in standard spec 505.

Construct terminal units at each end of a run of cable guard as shown in the plans. The contractor may determine the location of anchors subject to the engineer's approval.

Tension the cable according to the manufacturer's recommendations at the time of installation, and then check and adjust approximately three weeks after installation. If system is not maintaining proper tension, adjust tension and return three weeks later. Provide engineer documentation of date, time, location, tension value, and who checked the tension for each barrier run.

Use only one-half the available adjustment in each turnbuckle or tension adjustment connection to achieve manufacture's recommend tension values.

Certify that the installation was done according to manufacturer's recommendations and the plan requirements.

The engineer will allow the contractor to open the roadway to traffic or remove traffic control devices if concrete attains manufacture's compressive strength. Without compressive strength information, the engineer may allow the contractor to remove traffic control devices 14 equivalent curing days. Equivalent curing days are defined in standard spec 415.3.

D Measurement

The department will measure Cable Barrier Type 1 by the linear foot acceptably completed, measured as the length from end of terminal to end of terminal and rounded to the nearest linear foot.

The department will measure Cable Barrier End Terminal Type 1 as each individual unit, acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
613.1100.S	Cable Barrier Type 1	LF
613.1200.S	Cable Barrier End Terminal Type 1	Each

Payment is full compensation for designing and providing cable barrier end terminal and cable barrier.
stp-613-010 (20161130)

59. Fence Safety, Item 616.0700.S.

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

B Materials
Furnish notched conventional metal "T" or "U" shaped fence posts.

Furnish fence fabric meeting the following requirements.

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

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

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

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

D Measurement
The department will measure Fence Safety by the linear foot along the base of the fence, center-to-center of posts, 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
616.0700.S	Fence Safety	LF

Payment is full compensation for furnishing and installing fence and posts; maintaining the fence and posts in satisfactory condition; and for removing and disposing of fence and posts at project completion.
stp-616-030 (20160607)

60. Removing Signs Type II.

Perform this work according to the pertinent requirements of standard spec 638.

Separate all department signs removed and not identified for reuse, plywood from aluminum, and palletize the shipment for handling with a forklift. Notify WisDOT NE Region Green Bay Sign Shop at least five business days prior to sign delivery to coordinate shipment.

61. Blue Specific Service Signs.

Add the following to standard spec 638.3.4:
Do not remove or move blue specific service signs or their associated posts. Specific service signs are signs with logos that identify commercial entities providing gas, food, lodging, camping, or attractions. A separate contractor, Interstate Logos - Wisconsin, is responsible for these signs. Contact Interstate Logos - Wisconsin at (844) 496-9163 a minimum of 14 calendar days in advance to coordinate removing, moving, or re-installation of these signs.

The contractor is responsible for damage done to these signs due to contractor operations.
stp-638-010 (20150630)

62. Pavement Marking Grooved Wet Reflective Contrast Tape 4-Inch, Item 646.0841.S; 8-Inch, Item 646.0843.S.

A Description

This special provision describes furnishing, grooving and installing preformed wet reflective pavement marking contrast tape for grooved applications as shown on the plans, according to standard spec 646, and as hereinafter provided.

B Materials

Furnish wet reflective pavement marking contrast tape and adhesive material, per manufacturer's recommendation if required, from the department's approved products list.

Furnish a copy of the manufacturer's recommendations to the engineer before preparing the pavement marking grooves.

C Construction

C.1 General

For quality assurance, provide the project engineer and the region's Marking Section evidence of manufacturer training in the proper placement and installation of pavement marking contrast tape.

Plane the grooved lines according to details in the plan and per manufacturer's recommendations. Use grooving equipment with a free-floating, independent cutting head. Plane a minimum number of passes to create a grooved surface per manufacturer's recommendations.

C.2 Groove Depth

Cut the groove to a depth of 120 mils ± 10 mils from the pavement surface or, if tined, from the high point of the tined surface. To measure the depth, the contractor may use a depth plate placed in the groove and a straightedge placed across the plate and groove, or the contractor may use a straightedge placed perpendicular to the groove. The department may periodically check groove depths.

C.3 Groove Width – Longitudinal Markings

Cut the groove one-inch wider than the width of the tape.

C.4 Groove Position

Position the groove edge according to plan details. Groove a minimum of 4 inches, but not greater than, 12 inches from both ends of the tape segment. Achieve straight alignment with the grooving equipment.

C.5 Groove Cleaning

C.5.1 Concrete

Cooling the cutting head with water may be necessary for some applications and equipment. If cooling water is necessary, flush the groove immediately with high-pressure water after cutting to remove any build-up of cement dust and water slurry. If this is not done, the slurry may harden in the groove.

If water is used in the grooving process, allow the groove to dry a minimum of 24 hours after groove cleaning, and prior to pavement marking application. The groove surface shall be clean and dry before applying the adhesive, and the pavement marking tape. Use a high-pressure air blower with at least 185 ft^3/min air flow and 120 psi air pressure to clean the groove; use of the air blower does not decrease the amount of time required for the groove to dry.

C.5.2 New Asphalt

Groove pavement five or more days after paving.

Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.5.3 Existing Asphalt
Check for structural integrity in supporting grooving operations. If the structural integrity of the asphalt pavement is inadequate to support grooving operations, immediately notify the engineer.

Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

C.6 Tape Application
Apply the tape when both the air and surface temperature are 40 degrees F and rising.

Apply tape in the groove as per manufacturer's recommendations. If manufacturer's recommendations require surface preparation adhesive

1) For the Southeast Region and the ozone non-attainment Northeast Region counties of Sheboygan, Manitowoc, and Kewaunee:
- Apply SPA-60 during May 1 to September 30, both dates inclusive due to Volatile Organic Compound Limitations.
- Apply P-50 during October 1 to April 30, both dates inclusive.

2) For the remainder counties:
- Apply either adhesive.

Refer to the manufacturer's instructions for determining when the surface preparation adhesive is set.

Tamp the wet reflective pavement marking contrast tape with a tamper cart roller, with a minimum of a 200-lb load, cut to fit the groove. Tamp a minimum of three complete cycles (6 passes) with grooved modified tamper roller cart.

D Measurement
The department will measure Pavement Marking Grooved Wet Reflective Contrast Tape (Width) for grooved applications in length by the linear foot of tape placed according to the contract and accepted.

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

ITEM NUMBER	DESCRIPTION	UNIT
646.0841.S	Pavement Marking Grooved Wet Reflective Contrast Tape 4-Inch	LF
646.0843.S	Pavement Marking Grooved Wet Reflective Contrast Tape 8-Inch	LF

Payment is full compensation for cleaning and preparing the pavement surface; furnishing and installing the material; and for removing temporary pavement marking, if necessary.
stp-646-022 (20120615)

63. Pavement Marking Grooved Wet Reflective Epoxy 4-Inch, Item 646.2304.S.

A Description

This special provision describes furnishing, grooving, and installing wet reflective epoxy pavement marking as shown on the plans, in accordance with standard spec 646, and as hereinafter provided.

B Materials

Furnish a 20 mils application of modified epoxy binder pavement marking, from the Wisconsin's Approved Products List, in a grooved slot. Provide a double drop system of 5.3 pounds per gallon of wet reflective elements from Wisconsin's Approved Products List and Utah Performance beads mixture at a drop rate of 12-22 pounds per gallon.

Replace standard spec 646.2.3 (1) with the following:

Furnish Utah Performance beads with the following gradation:

Utah Bead Gradation

US Mesh	Percent Passing (ASTM D1214)
18	65-80
20	
25	
30	30-50
40	
50	0-5

Beads **shall** achieve a minimum of 275 mcd (dry reading), initial for white and 180 mcd (dry reading) for yellow.

C Construction

C.1 General

For quality assurance, provide the project engineer and the region's Marking Section evidence of manufacturer training in the proper placement and installation of the grooved wet reflective epoxy.

Plane the grooved lines in accordance with details in the plan. Use grooving equipment with a free-floating, independent cutting or grinding head. Plane a minimum number of passes to create a smooth groove. Remove lane line and center line pavement markings during the grooving process.

C.2 Groove Depth

Cut the groove to a depth of 80 mils ±10 mils from the pavement surface. The department may periodically check groove depths.

C.4 Groove Width – Longitudinal Markings
Cut the groove 1inch wider than the width of the pavement marking.

C.5 Groove Position
Position the groove edge in accordance with Standard Detail Drawing Pavement Marking (Mainline). If necessary, groove a minimum of 4 inches from both ends of the pavement marking segment. Achieve straight alignment with the grooving equipment.

C.6 Groove Cleaning
C.6.1 Concrete
Cooling the cutting head with water may be necessary for some applications and equipment. If cooling water is necessary, flush the groove immediately with high-pressure water after cutting to remove any build-up of cement dust and water slurry. If this is not done, the slurry may harden in the groove.

If water is used in the grooving process, allow the groove to dry a minimum of 24 hours after groove cleaning, and prior to pavement marking application. The groove surface shall be clean and dry before applying the marking. Use a high-pressure air blower with at least 185 ft^3/min air flow and 120 psi air pressure to clean the groove.

C.6.2 Asphalt
Groove pavement five or more days after paving.

If opening to traffic an asphalt lane that is not grooved, place temporary pavement marking. For asphalt lanes not open to traffic, temporary pavement marking is not required.

Check for structural integrity in supporting grooving operations. If the structural integrity of the asphalt pavement is inadequate to support grooving operations, immediately notify the engineer.

Use a high-pressure air blower with at least 185 ft^3/min air flow and 90 psi air pressure to clean the groove.

D Measurement
The department will measure Pavement Marking Grooved Wet Reflective Epoxy (width) bid items by the linear foot of line, acceptably completed.

The department will measure Pavement Marking Grooved Contrast Wet Reflective Epoxy (width) bid items by the linear foot of line, acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
646.2304.S	Pavement Marking Grooved Wet Reflective Epoxy 4-Inch	LF

Payment is full compensation for cleaning and preparing the pavement surface; furnishing and installing the epoxy, 3M elements and beads; and for removing existing or temporary marking, if necessary.
stp-646-024 (20161130)

64. Electrical Service for WisDOT Traffic Signals at USH 41 & CTH B

A Description
Work under this item shall be in accordance with Section 656 of the Standard Specifications with the following addition.

B Materials (Vacant)

C Construction
The Contractor is responsible for making early application for the electric service laterals.

Contact Wisconsin Public Service at (877) 444-0888 or email at businesscenter@wisconsinpublicservice.com to make application and request a time of use meter, Option 1. The future monthly invoices can go to the following address:

For USH 41 NB & CTH B:
Wisconsin Dept of Transportation
Expenditure Acct (S05-2002)
P.O. Box 7366
Madison, WI 53707-7366

For USH 41 SB & CTH B:
Wisconsin Dept of Transportation
Expenditure Acct (S05-2003)
P.O. Box 7366
Madison, WI 53707-7366

E Payment
The Contractor shall pay the utility company promptly for the electric service lateral installation cost.

65. Concrete Surface Repair Corrosion Inhibiting Admixture, Item SPV.0035.001.

A Description
This special provision describes furnishing and incorporating a corrosion inhibiting admixture into the concrete surface repair concrete in accordance with the requirements of section 501 of the standard specifications, the details as shown on the plans, and as hereinafter provided.

B Materials
Use one of the following qualified admixture sources and products, or equal.

Admixture	Producer	Regional Supplier	Application Rate
Ipanex	IPA Systems, Inc. 2745 N. Amber Street Philadelphia, PA 19134 215-425-6607 800-523-3834	Braun Industrial Coatings & Eqpt., Inc. 3114 Todd Drive Madison, WI 53713 608-273-8877 Attn: Bill Braun	13.8 ounces per 100 pounds of cement
Rheocrete 222	Master Builders, Inc. Admixture Division 23700 Chagrin Blvd. Cleveland, OH 44122-5554 216-831-5500	Master Builders, Inc. Admixture Division PO Box A Mukwonago, WI 53149 800-869-9259 Attn: Neal R. Moss	1 gallon per cubic yard of concrete
Armatec 2000	Sika Corporation PO Box 297 Lyndhurst, NJ 07071 201-933-8800 800-933-7452	Conadmix, Inc. 1425 Commerce Avenue Brookfield, WI 53045 414-784-9003 Attn: Al Brunner	1/2 gallon per cubic yard of concrete

C Construction

Incorporate a corrosion-inhibiting admixture into the concrete mix of the concrete surface repair concrete only, in accordance with subsections 501.3.2.4, 501.3.4.4.1 and 501.3.4.7 of the standard specifications. Add the corrosion-inhibiting admixture in the proportions recommended by the manufacturer and under the supervision of the manufacturer and engineer to ensure proper mix design and compatibility with other admixtures. The corrosion inhibiting admixture may or may not increase the amount of air entrainment in the concrete mix. For all admixtures used in air-entrained concrete, the air content of the concrete mix shall be within the range specified in subsection 501.3.2.4 for air entrained concrete.

D Measurement

The department will measure Concrete Surface Repair Corrosion Inhibiting Admixture by the cubic yard acceptably completed.

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.0035.001	Concrete Surface Repair Corrosion Inhibiting Admixture	CY

Payment is full compensation for furnishing and incorporating the corrosion-inhibiting admixture into the concrete for the Concrete Masonry Bridges bid item; and for furnishing all labor, tools, equipment, materials, and incidentals necessary to complete the contract work.

66. Pull Box Non-Conductive (24x42-Inch), Item SPV.0060.001

A Description

This special provision describes furnishing and installing Pull Box Non-Conductive (24x42-Inch) as shown on the plans.

B Materials

Furnish pull boxes, frames, and lids made of non-conductive material. Pull boxes, frames, and lids shall be suitable for Tier 15 loading as specified in ANSI/SCTE 77.

C Construction

Provide pull boxes, frames, and lids made of non-conductive materials. The contractor may extend Pull Box Non-Conductive (24x42-Inch) as the plan details show using the same material as the pull box. Saw extensions parallel to the extension ring. Secure extension to original box as shown in the plan details. Excavate, place coarse aggregate drain material, and backfill as the plan details show. Dispose of surplus or unsuitable materials as specified under 205.3.12. Use covers stamped with "ELECTRICAL" for traffic signal and lighting pull boxes or "WISDOT COMMUNICATIONS" for communications pull boxes.

Provide one (1) 24" length of #6 reinforcing steel to be driven vertically on the north side of the pull box.

D Measurement

The department will measure Pull Box Non-Conductive (24x42-Inch) as each individual unit, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.001	Pull Box Non-Conductive (24x42-Inch)	Each

Payment for Pull Box Non-Conductive (24x42-Inch) is full compensation for providing and installing pull boxes, frames, lids, aggregate, fasteners, reinforcing steel; conduit extensions less than 10 feet long including fittings; and for all excavating, backfilling and disposing of surplus material. The department will pay separately for engineer-directed pull box drain duct under the Conduit Rigid Nonmetallic bid items as specified in 652.5.

67. Adjusting Water Valve Box, Item SPV.0060.002

A Description

Adjust water valve boxes to final pavement elevations, as shown in the plans and as hereinafter provided.

B Materials
Utilize existing valve boxes where the required extent of adjustment allows. If additional sections are necessary, coordinate with the Village of Suamico and contact Dan Drewery at (920) 434-8410.

C Construction
Prior to completion of paving operations, adjust the water valve boxes to match the final proposed grade. Excavate and expose the existing water main valve box to the depth needed to adjust the valve box to grade, add or remove extension(s) as needed, and backfill with base aggregate material in accordance to the requirements for the adjacent roadway base course construction.

Complete adjustments in such a manner to avoid any damage to the water valve boxes.

D Measurement
The department will measure Adjusting Water Valve Box as a unit of work for each valve box acceptably adjusted in accordance to the contract.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.002	Adjusting Water Valve Box	Each

Payment is full compensation for adjusting each valve box; excavating as necessary to access the valve box; backfilling; repairing any damage done to the valve box during adjustment; and for adding new sections if necessary.
(NER12-0206)

68. Cable Barrier Nucor, Item SPV.0090.008; Cable Barrier End Terminal Nucor SPV.0060.003.

A Description
This special provision describes providing and installing Nucor cable guard and end terminals meeting the National Cooperative Highway Research Program (NCHRP) Report 350, Test Level 4.

B Materials

C Construction

D Measurement
The department will measure Cable Barrier Nucor by the linear foot acceptably completed, measured as the length from end of terminal to end of terminal and rounded to the nearest linear foot.

The department will measure Cable Barrier Nucor End Terminal Nucor as each individual unit, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.008	Cable Barrier Nucor	LF
SPV.0060.003	Cable Barrier End Terminal Nucor	Each

Payment is full compensation for designing and providing cable barrier end terminal and cable barrier.

69. HMA Percent Within Limits (PWL) Test Strip, Item SPV.0060.004.

A Description

This special provision describes the Hot Mix Asphalt (HMA) density and volumetric testing tolerances required for an HMA test strip. An HMA test strip is required for projects constructed under HMA Percent Within Limits QMP. A test strip is required for each pavement layer. Each project is restricted to a single mix design for each mix type required (e.g., upper layer and lower layer may have different mix type specified).

B (Vacant)

C Construction

C.1 Test Strip

Notify the department at least 48 hours in advance of construction of the test strip. On the first day of production of each new mix design requiring a test strip, produce approximately 750 ton of HMA and cease production until the required testing is completed. Test strips shall be located in a section of the roadway to allow a representative (i.e. not a ramp or shoulder, etc.) rolling pattern.

C.1.1 Sampling and Testing Intervals

Laboratory testing will be conducted from a three-way split sample, with portions designated for QC, QV, and retained. Required field tests include contractor quality control (QC) and department quality verification (QV) nuclear density gauge tests and pavement coring.

During production for the test strip, HMA mixture samples shall be obtained from trucks prior to departure from the plant. Three four-way split samples shall be collected during the production of test strip material. Sampling and splitting shall be in accordance with Appendix C: *Sampling for WisDOT PWL QMP*. These three samples shall be randomly selected from the following production intervals and will be identified by the engineer:

Sample Number	Production Interval (tons)
1	50-250
2	251-500
3	501-750

The engineer will identify two zones in which gauge/core correlation is to be performed. These two zones will be randomly selected within each of two density sublots of the 750 ton test strip. Test strip sublots 1 and 2 are identified as between 50-400 tons and 401-750 tons, respectively. Each zone shall consist of five locations across the mat as identified in Appendix A. The following shall be determined at each of the five locations within both zones:

- two one-minute nuclear density gauge readings for QC team*
- two one-minute nuclear density gauge readings for QV team*
- pavement core sample

*If the two readings exceed 1.0 lb/ft^3 of one another, a third reading shall be conducted at either orientation. In this event, all three readings shall be averaged, discard the initial of the three readings which falls farthest from the average value and then average the remaining two values to represent the location for the gauge.

Both the QV and QC teams shall have two nuclear density gauges present for correlation at the time the test strip is constructed. The above testing shall be conducted in accordance with Appendix A: *Test Methods & Sampling for PWL QMP HMA Pavements*. All test reports shall be submitted to the department upon completion, and approved before paving resumes.

C.1.1.1 Field Tests

Daily standardization of gauges on reference blocks and a reference site shall be performed in accordance with CMM 8-15. Nuclear gauge readings and pavement cores shall be used to determine nuclear gauge correlation in accordance with Appendix A. The two readings per location per gauge shall be averaged. The readings for the five locations across the mat for each of two zones shall be provided to the engineer. The engineer will analyze the readings of each gauge relative to the densities of the cores taken at each location. The engineer will determine the average difference between the nuclear gauge density readings and the measured core densities to be used as a constant offset value. This offset is to be used to adjust raw density readings for the specific gauge for the remainder of the project and shall appear on the density data sheet along with gauge and project identification. An offset is specific to the mix and layer, and therefore a separate value shall be determined for each layer of each mix of the project. This constitutes correlation of that individual gauge. Each team must have two gauges correlated at the time of the test strip. Any data collected by a team without an acceptable gauge (i.e., correlated during test strip) will not be accepted.

The contractor is responsible for coring of the pavement. Coring and filling of core holes must be approved by the engineer. The QV team is responsible for the labeling and safe transport of the cores from the field to the QC laboratory. Testing of cores shall be conducted by the contractor and witnessed by department personnel. The contractor is responsible for

drying the cores following testing. The department will take possession of cores following initial testing and will be responsible for any verification testing.

Each core 100 or 150 mm (4 or 6 inches) in diameter shall be taken at locations identified in Section C.1.1 [Appropriate core diameter shall be selected based on layer thickness and shall be decided at the prepave meeting and remain consistent for the duration of the project.] Each random core shall be full thickness of the layer being placed. Thoroughly dry cores obtained from the mat in accordance with ASTM D 7227 prior to using specimens for in-place density determination in accordance with AASHTO T 166.

Fill all core holes with non-shrink grout or HMA. When using rapid hardening mortar or concrete, remove all water from the core holes prior to filling. Mix the mortar or concrete in a separate container prior to placement in the hole. If HMA is used, fill all core holes with hot-mix matching that day's production mix type at that day's compaction temperature +/- 20F. The core holes shall be dry and coated with tack before filling, filled with a minimum of two layers (single layer allowed for pavement layers $\leq$ 2 inches in thickness), and compacted with a Marshall hammer or similar tamping device using approximately 50 blows per layer. The finished surface shall be flush with the pavement surface. Any deviation in the surface of the filled core holes greater than 1/4 inch at the time of final inspection will require removal of the fill material to the depth of the layer thickness and replacement.

All laboratory and field testing associated with the test strip shall be completed the same day as paving of the test strip. All test reports shall be submitted to the department upon completion, and approved before paving resumes. The department will notify the contractor by the end of the day regarding approval to proceed with paving beyond the test strip.

C.1.1.2 Laboratory Tests

Material shall be collected from trucks at the plant according to the frequency described in section C.1.1 above. Sample sizes shall be consistent with the minimums for a three-way split as shown below:

Mixture NMAS	Sample Size
$\leq$ 12.5mm (1/2")	105 lb
19.0mm - 25.0mm (3/4" – 1")	150 lb
$\geq$ 37.5mm (1-1/2")	240 lb

Bulk specific gravities shall be determined for cores in accordance with AASHTO T 166. The bulk specific gravity values determined from field cores shall be used to calculate a correction factor (i.e., offset) for the QC and QV nuclear density gauges to be used throughout the remainder of the project. QC and QV teams may wish to scan with additional gauges at the locations detailed in C.1.1 above, as only gauges used during the test strip correlation phase will be allowed on the remainder of the project.

C.2 Acceptance

Conform to the following limits based on individual QC and QV test results (tolerances based on initial JMF/mix design):

ITEM	CONFORMANCE LIMITS
Percent passing given sieve:	
37.5-mm	+/- 8.0
25.0-mm	+/- 8.0
19.0-mm	+/- 7.5
12.5-mm	+/- 7.5
9.5-mm	+/- 7.5
2.36-mm	+/- 7.0
75-µm	+/- 3.0
Asphaltic content in percent	- 0.5
Air Voids	-1.0 & +2.0
VMA in percent[1]	- 1.0
Maximum specific gravity	+/- 0.024

[1] VMA limits based on minimum requirement for mix design nominal maximum aggregate size in table 460-1.

QV test results will be determined for air voids and VMA, Gmm, and Gmb, and AC Content. Compact all layers of test strip HMA mixture to the applicable density shown in the following table:

	MIXTURE TYPE	
LAYER	LT & MT	HT
LOWER	93.0[1]	93.0[2]
UPPER	93.0	93.0

[1] Minimum reduced by 2.0 percent for a lower layer constructed directly on crushed aggregate or recycled base courses.

[2] Minimum reduced by 1.0 percent for lower layer constructed directly on crushed aggregate or recycled base courses.

Differences between the QC and QV split sample test results are acceptably identified by conducting a paired t-test in accordance with the WisDOT PWL Analysis Template.

If QC and QV test results do not correlate as determined by the paired t-test, the retained split sample will be tested by the bureau's AASHTO accredited laboratory and certified personnel as a referee test. Any referee test results will be used for subsequent calculations and material acceptance. Additional investigation shall be conducted to identify the source of the difference between QC and QV data. QV or referee data will be used to determine material acceptance and pay.

Nuclear density gauges are acceptable for use on the project only if correlation is completed for that gauge during the time of the test strip and the department issues documentation of acceptance stating the correlation offset value specific to the gauge and the mix design. The documentation must accompany the gauge any time the gauge appears on the project and the department may confirm at any time that the offset value being used matches that documented.

The core densities collected from the 10 locations of the test strip and the QV results from the three split samples will be used to determine material acceptance and pay. The PWL value is calculated in accordance with Appendix A.

A PWL value for air voids and density shall be calculated after completion of the testing. An acceptable test strip is defined as the individual PWL values for air voids and density are both above 75 or the average of the two are above 80. Full production may not continue until an acceptable test strip has been completed. If a PWL value on the test strip is below 50, the material is considered nonconforming and the test strip is unacceptable. If the material is allowed to remain in place, a second test strip shall be constructed. If the material is determined to be removed and replaced, a new test strip will replace the previous one at no additional cost to the department. If a PWL value is between 50 and 75, the material is considered conforming, although a second test strip will need to be constructed. If the second test strip is not acceptable as defined above, it shall be removed and replaced. A maximum of two test strips may be left in place on the project. Additional guidance on test strip and material acceptance is found in Appendix A.

PWL Value	Test Strip & Material Acceptance
≥75 (individual) & 80 (combined)	Material conforms, Test Strip is acceptable
50 ≤ PWL < 75	Material conforms, Test Strip is not acceptable*
< 50	Material nonconforming, may be removed & replaced, Test Strip not acceptable*

* A maximum of two test strips may be left in place on the project.

D Measurement

The department will measure HMA Percent Within Limits (PWL) Test Strip as each unit of work, acceptably completed as passing the required air void, VMA, asphalt content, gradation, and density tests for a Test Strip only. Material quantities shall be determined in accordance with standard spec 450.4 and detailed here within.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.004	HMA Percent Within Limits (PWL) Test Strip	Each

Payment for HMA Percent Within Limits (PWL) Test Strip is full compensation for providing HMA mixture designs; for preparing foundation; for volumetric and density testing and aggregate source testing; for asphalt binder from recycled sources, and for warm

mix asphalt additives or processes. Acceptable HMA mixture placed on the project as part of the test strip will be compensated by the appropriate HMA Pavement bid item.

This item is intended to compensate the contractor for the construction of the test strip for projects paved under the HMA Pavement Percent Within Limits QMP article.

Pay adjustments will be calculated using a unit price of 65 dollars per ton of HMA pavement. The department will pay for measured quantities of mix based on the unit price multiplied by the following pay adjustment calculated in accordance with Appendix A:

PAY ADJUSTMENT FOR HMA PAVEMENT AIR VOIDS & DENSITY

PERCENT WITHIN LIMITS (PWL)	*PAYMENT FACTOR, PF (percent of contract price)*
> 90 to 100	PF = ((PWL – 90) * 0.4) + 100
≥ 50 to 90	(PWL * 0.5) + 55
<50	50%[1]

where,

PF is calculated per air voids and density, denoted $PF_{air\ voids}$ & $PF_{density}$

[1] Any material resulting in PWL value of 50 or less shall be removed and replaced, unless the engineer allows for such material to remain in place. In the event the material remains in place, it will be paid at 50% of the above stated unit price of 65 dollars per ton of HMA pavement.

For air voids, PWL values will be calculated using lower and upper specification limits of 2.0 and 4.3 percent, respectively. Lower specification limits for density will be in accordance with Table 460-3. Pay adjustment will be determined for an acceptably completed test strip and will be computed as shown in the following equation.

Pay Adjustment = (PF-100)/100 x (WP) x (tonnage) x (unit price)

The following weighted percentage (WP) values will be used for the corresponding parameter:

Parameter	WP
Air Voids	0.5
Density	0.5

Individual Pay Factors for each air voids ($PF_{air\ voids}$) and density ($PF_{density}$) will be determined. $PF_{air\ voids}$ will be multiplied by the total tonnage produced, and $PF_{density}$ will be multiplied by the tonnage used to pave the mainline only (i.e., excluding shoulder) as calculated in accordance with CMM 8-15.

The department will pay incentive for air voids and density under the following bid items:

ITEM NUMBER	DESCRIPTION	UNIT
460.2005	Incentive Density PWL HMA Pavement	DOL
460.2010	Incentive Air Voids HMA Pavement	DOL

The department will administer disincentives under the Disincentive Density HMA Pavement and the Disincentive Air Voids HMA Pavement administrative items.

bts-PWL Test Strip (20161215)

70. Soil Nail Verification Tests R-05-0114, Item SPV.0060.100; Soil Nail Proof Tests R-05-0114, Item SPV.0060.101.

A Description

This special provision describes verification and proof testing of soil nails.

B Materials

Test soil nails in accordance to the contract and as directed. "Verification tests" are performed on nails not incorporated into soil nail walls, i.e., sacrificial nails and "proof tests" are performed on nails incorporated into walls, i.e., production nails. Define "verification test nail" and "proof test nail" as a nail tested with either a verification or proof test, respectively. Define "test nails" as verification or proof test nails.

Verification tests are typically required for at least one nail per soil type per soil nail wall or 2 nails per wall, whichever is greater. Proof tests are typically required for at least one nail per nail row per soil nail wall or at least 5% of production nails, whichever is greater. More or less test nails may be required depending on subsurface conditions encountered. The engineer will determine the number and locations of verification and proof tests required.

Do not test nails until grout and shotcrete attain the required 3-day compressive strength. Do not install any production nails until verification tests are accepted.

Test Equipment

Use the following equipment to test nails:

1. Two dial gauges with rigid supports,
2. Hydraulic jack and pressure gauge,
3. Jacking block or reaction frame and
4. Electrical resistance load cell (verification tests only).

Provide dial gauges with enough range and precision to measure the maximum test nail movement to 0.001". Use pressure gauges graduated in 100 psi increments or less. Submit identification numbers and calibration records for load cells, jacks and pressure gauges with the soil nail wall construction plan. Calibrate each jack and pressure gauge as a unit.

Align test equipment to uniformly and evenly load test nails. Use a jacking block or reaction frame that does not damage or contact shotcrete within 3 feet of nail heads. Place dial gauges opposite each other on either side of test nails and align gauges within 5° of

bar inclinations. Set up test equipment so resetting or repositioning equipment during nail testing is not needed.

C Construction

C.1 Test Nails

Test nails include both unbonded and bond lengths. Grout only bond lengths before nail testing. Provide unbonded and bond lengths of at least 3 feet and 10 ft, respectively.

Steel bars for production nails may be overstressed under higher test nail loads. If necessary, use larger size or higher grade bars with more capacity for test nails instead of shortening bond lengths to less than the minimum required.

C.2 Verification Tests

The Contractor shall perform a number of verification tests on sacrificial soil nails as established in the approved design drawings. Verification testing shall be conducted prior to installation of production soil nails on sacrificial soil nails to confirm the appropriateness of the Contractor's drilling and installation methods, and verify the required nail pullout resistance.

The maximum test load in verification tests (VTL) shall be calculated based on as-built bonded lengths per FHWA Geotechnical Circular No. 7 "Soil Nail Walls," Chapter 9. The load schedule for verification testing shall comply with FHWA Geotechnical Circular No. 7 "Soil Nail Walls," Chapter 9.

C.3 Proof Tests

Successful proof testing shall be demonstrated on at least 5 percent of production soil nails in each nail row or a minimum of one per row. The soil nail wall designer shall determine the locations and number of proof tests prior to nail installation in each row. Verification tests shall not be counted towards the minimum of 5 percent of production nails.

The maximum test load in proof tests (PTL) shall be calculated based on as-built bonded lengths per FHWA Geotechnical Circular No. 7 "Soil Nail Walls," Chapter 9. The load schedule for proof testing shall comply with FHWA Geotechnical Circular No. 7 "Soil Nail Walls," Chapter 9.

C.3 Test Nail Acceptance

Submit 2 copies of test nail records including load versus movement and time versus creep movement plots within 24 hours of completing each verification or proof test. The engineer will review the test nail records to determine if test nails are acceptable. Test nail acceptance is based in part on the following criteria:

1. For verification tests, total movement during creep test is less than 0.08" between the 6 and 60 minute readings and creep rate is linear or decreasing throughout hold time.
2. For proof tests, total movement during creep test is less than 0.04" between the 1 and 10 minute readings or less than 0.08" between the 6 and 60 minute

readings and creep rate is linear or decreasing throughout hold time.

3. Total movement measured at VTL and PTL exceeds 80% of the theoretical elastic elongation of the unbonded length of the test nail, as defined in FHWA Geotechnical Circular No. 7 "Soil Nail Walls," Chapter 9.
4. Pullout failure does not occur at loads less than 1.00 x VTL or 1.00 x PTL. Define "pullout failure" as the inability to increase load while movement continues. Record pullout failure load as part of test nail data.

For proof test nails, maintain stability of unbonded lengths for subsequent grouting. If a proof test nail is accepted but the unbonded length cannot be satisfactorily grouted, do not incorporate the proof test nail into the soil nail wall and add another production nail to replace the test nail.

If the engineer determines a verification test nail is unacceptable, revise the soil nail design or installation methods. Submit a revised soil nail wall design or construction plan for acceptance and provide acceptable verification test nails with the revised design or installation methods.

If the engineer determines a proof test nail is unacceptable, either perform additional proof tests on adjacent production nails or revise the soil nail design or installation methods for the production nails represented by the unacceptable proof test nail as determined by the engineer. Submit a revised soil nail wall design or construction plan for acceptance, provide an acceptable proof test nail with the revised design or installation methods and install additional production nails for the nails represented by the unacceptable proof test nail.

After completing nail testing for each soil nail wall or stage of a wall, provide a PDF copy of all corresponding test nail records.

D Measurement

The department will measure Soil Nail Verification Tests and Soil Nail Proof Tests as each individual test, 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.0060.100	Soil Nail Verification Tests R-05-0114	Each
SPV.0060.101	Soil Nail Proof Tests R-05-0114	Each

Payment for Soil Nail Verification Tests and Soil Nail Proof Tests is full compensation for providing testing apparatus and instrumentation; completing tests; and providing documentation for initial nail testing. No payment will be made for subsequent nail testing performed on the same or replacement test nails.

71. Fence Decorative Bridge, Item SPV.0090.001

A Description

This special provision describes work consisting of fabricating, galvanizing, painting, delivering and installing decorative fencing on bridge superstructures and wingwalls.

B Materials

B.1 General

Provide materials meetings the requirements as shown on the plans and the applicable sections of the standard specifications as follows:

- Structural Steel: Section 506.2.2
- Steel Mesh: Section 505.2.5
- Painting: Section 517.2 and 517.3

Prior to fabrication, blast clean steel per SSPC-SP 6 and galvanize steel according to ASTM A 123. All bolts, nuts and washers shall be supplied as factory galvanized according to ASTM A 153. Repair zinc coating damaged during fabrication as specified in 635.3.5. Grind the welded joints to a smooth finish where shown in the plans.

Steel preparation includes the chamfering of sharp edges. Flatten all sharp edges by a single pass of a grinder or suitable device along the sharp edge. Condition any thermal cut edges before blast cleaning by shallow grinding or other cleaning to remove any hardened surface layer. Remove all evident steel defects exposed in accordance to AASHTO M 160 prior to blast cleaning.

The fence fabric shall consist of 10 GA. 2 inch by 2 inch welded wire mesh galvanized to ASTM A 123 and then painted with a pre-approved tie and top coat as given in this special provision. The vertical wires of the mesh shall be placed on the inside (Pedestrian/Traffic side) face of the fence.

B.2 Painting

Clean all galvanizing surfaces per SSPC-SP1 to remove, chlorides, sulfates zinc salts, oil, dirt, organic matter and other contaminants. The cleaned surface should then be Brush Blast Cleaned per SSPC-SP7 to create a slight angular surface profile (1.0 – 1.5 mils suggested) for adhesion. Blasting should not fracture the galvanized finish or remove any dry film thickness.

After cleaning provide a tie coat from an approved coating system that is specifically intended to be used on a galvanized surface. The tie coat shall etch the galvanized rail and prepare the surface for the top coat. Apply a top coat matching the specified color. The tie and top coats should be of contrasting colors. Use a pre-approved top coat that is resistant to the effects of the sun, and is suitable for use in a marine environment. The various decorative fence components shall be painted with the tie and top coats before final assembly of the fence panels. Care should be taken to not damage the painted surface during panel assembly or fence installation.

Use one of the qualified paint sources and products given below. An equivalent system may be used with the written approval of the engineer.

Producer	Coat	Products	Dry Film Minimum Thickness (mils)	Minimum Time Between Coats (hours)
Sherwin Williams 1051 Permeter Drive, Suite 710 Schaumburg, IL 60173 847.330.1562	Tie	Recoatable Epoxy Primer B67-5 Series/B67V5	2.0 to 4.0	6
	Top	Acrolon 218 HS Polyurethane , B65-650	2.0 to 4.0	NA
Carboline 350 Hanley Industrial St. Louis, MO 63144 314.644.1000	Tie	Rustbond Penetrating Sealer FC	1	36
	Top	Carboline 133 LH	4	NA
Wasser Corporation 4118 B Place NW Suite B Aubum, WA 98001	Tie	MC-Ferrox B 100	3.0 to 5.0	8
	Top	MC-Luster 100	2.0 to 4.0	NA

B.2 Color

Provide a finished color for the coating system for decorative fencing matching Federal Color 27038, semi-gloss black.

C Construction

Provide shop drawings in accordance to the requirements of section 506.3.2 of the standard specifications. Shop drawings shall contain material sizes and types, weld sizes and locations, and all necessary details, dimensions, and information to allow fabrication of the fence in conformance with the requirements of the contract. Do not begin fabrication prior to shop drawing review and acceptance.

During construction and at the time of delivery the engineer will inspect the frame components. The engineer will accept the product after the delivery is unloaded on the site. After the product is unloaded, the installation contractor shall signify in writing that the fence was received in acceptable condition per the engineer's inspection. Any damage to the fence panels after the acceptable delivery will be the responsibility of the installation contractor.

Complete all welding in accordance with the applicable requirements of section 506 of the standard specifications. No field welding, field cutting, or drilling will be permitted without the approval of the engineer.

Take special care during construction to minimize the number and size of touch-up spots. Follow the manufacturer's recommendations for damaged area repairs. The engineer will approve the field paint appearance prior to final acceptance.

Provide the engineer with the name, address, and phone number of a representative of the fence fabricator for future coordination.

During handling, protect finish coating from damage. If damaged during handling the fencing may be rejected by the engineer or engineer may direct fabricator that the finish shall be repaired in accordance to the manufacturer's recommendations.

D Measurement

The department will measure Fence Decorative Bridge and Fence Decorative Wing by the linear foot acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.001	Fence Decorative Bridge	LF

Payment is full compensation for fabricating, furnishing, delivering and unloading fence panels and posts; installing fence posts and panels and hardware; for preparing shop drawings, painting, galvanizing metal fence components and for furnishing all labor, equipment, tools and incidentals necessary to complete the work.
(NER41-20111018)

72. Concrete Curb & Gutter 24-Inch, Item SPV.0090.002.

Construct the Concrete Curb & Gutter 24-Inch in accordance to section 601 of the standard specifications and in accordance to the standard detail drawing for concrete curb and gutter 30" with a gutter width of 1'6" in place of 2'0".

73. Salvage and Reinstall High Tension Cable Barrier, Item SPV.0090.003.

A Description

This special provision describes removing and reinstalling the existing 4-strand high tension (HT) cable barrier as shown in the plans. The existing system is a Nucor/Marion TL-4.

B Materials

Utilize the existing materials that are to be salvaged and reinstalled. Any damaged or missing components shall be provided by the contractor at no additional expense. Consult with the manufacturer regarding parts or hardware that may not be reusable.

C Construction

Completely disassemble the existing cable barrier system and carefully salvage all posts, cable and hardware (brackets, reflectors, nuts, washers, bolts and other appurtenances) in a

manner that will preclude any damage (cutting or destructive measures are not allowed). Store the materials on the right-of-way, outside the limits of construction at a location approved by the engineer. Store the materials in a location so as to not come in contact with the ground as follows:

- Posts – Banded and neatly stacked
- Cable – Coiled on a cable reel or neatly coiled on pallets.
- Hardware – In 5-gallon pails or burlap sacks.

The contractor is responsible for replacing any damaged or missing materials. The contractor is responsible for protecting components that are not required to be removed. Line post bases, if damaged or removed, shall be replaced with cast-in-place to the identical dimensions and specifications as those removed. All replacement components, if required, will be obtained from the original manufacturer. The contractor is responsible for any costs associated with coordinating with the original manufacturer and any expenses incurred by the manufacturer.

Tension the cable according to the manufacturer's recommendations at the time of installation, and then check and adjust approximately three weeks after installation. If system is not maintaining proper tension, adjust tension and return three weeks later. Provide engineer documentation of date, time, location, tension value, and who checked the tension for each barrier run.

Use only one-half the available adjustment in each turnbuckle or tension adjustment connection to achieve manufacture's recommend tension values.

Certify that the installation was done according to manufacturer's recommendations and the plan requirements.

If post sockets have been damaged or removed, replace sockets per manufacturer's original specifications. Reset steel posts in socketed concrete foundations according to the manufacturer's recommendations. Line posts must be easily removed from sleeve, plumb, and hold cables at proper elevations. Tension the cable according to the manufacturer's recommendations at the time of installation, and then check and adjust approximately 3 weeks after installation. If system is not maintaining proper tension, adjust tension and return 3 weeks later. Provide engineer documentation of date, time, location, tension value, and who checked the tension for each barrier run.

If removal and replacement of end terminal is required, replacement of new terminal will be paid for separately.

Where needed construct concrete as specified in standard spec. 501.

D Measurement

The department will measure Salvage and Reinstall HT Cable Barrier by the linear foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.003	Salvage and Reinstall High Tension Cable Barrier	SF

Payment is full compensation for removing, storing, protecting and reinstallation of cable barrier, posts, and appurtenances

74. Pavement Marking Crosswalk Epoxy 8-Inch, Item SPV.0090.004.

Construct Pavement Marking Crosswalk Epoxy 8-Inch in accordance to section 647 of the standard specifications and in accordance to the standard detail drawing for crosswalk pavement marking with a line width of 8-inches in place of 6-inches.

75. Temporary Drain Slotted Vane Longitudinal, Item SPV.0090.005.

A Description

This special provision describes furnishing, installing and removing a temporary slotted vane drains and pipe as shown on the plans, according to standard spec 204, 501, 505, 607, and 611, and as hereinafter provided.

B Materials

The pipe that the vane drain casting rests in shall be 15-inch diameter SDR-35 poly vinyl chloride, (PVC) sewer pipe. Provide QMP for class II ancillary concrete as specified in standard spec 716.

C Construction

Prior to encasing the pipe in concrete, cover the upper end of the slotted drain as shown on the plans, or as approved by the engineer.

Prior to construction operations adjacent to the slotted area of the slotted vane drain pipe, cover the slots on the top of the drain. Remove any material entering the pipe at the contractor's expense.

Exercise care to avoid damage to the slotted vane drainpipe. If any section of pipe is damaged or is unsatisfactory as determined by the engineer, replace the drainpipe at contractor's expense.

Conform to standard spec 204.3 for removal of drain slotted vain longitudinal and pvc sewer pipe.

D Measurement

The department will measure Temporary Drain Slotted Vane Longitudinal by the linear foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.005	Temporary Drain Slotted Vane Longitudinal	LF

Payment is full compensation for furnishing and installing all materials, including PVC pipe and end cap, slotted vane drain castings, concrete masonry and reinforcement; adjusting bricks; drilling inlet or manhole cover to accommodate connection bolts to vane drain; hauling and placing the pipe; making connections to existing inlets; and for cleaning out and restoring site of work after construction and removal.

76. Remove and Reinstall Guardrail, Item SPV.0090.006.

A Description

The work under this item shall include removing and reinstalling of existing guardrail rails and end treatment rails in accordance with the applicable sections of standard spec 204 and 614 to ensure the proper lap splice direction.

B Materials

Utilize the existing guardrail materials. Any materials damaged during the removal process shall be replaced with new replacement materials conforming to standard spec 614.

C Construction

Conform to standard spec 614.

D Measurement

The department will measure Remove and Reinstall Guardrail by the linear foot, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.006	Remove and Reinstall Guardrail	LF

Payment is full compensation for removing, reinstallation and furnishing new materials for components damaged during removal and installation.

77. Glare Screens Temporary, Item SPV.0090.007.

A Description

The work under this item shall include furnishing, installing, maintaining, and removing a modular paddle glare guard system on concrete barrier temporary precast at the indicated locations according to the plans and standard specifications, as directed by the engineer and as hereinafter provided.

B Materials

Glare guard units shall be modular units consisting of vertical blades, bases, and a horizontal base rail. The paddle devices shall be a minimum of 24-inches in height and be constructed of durable, impact resistant, non-warping flexible materials.

Units shall be modular in design to provide for portability, quick repair and easy installation. The cumulative nominal length of the modular units shall equal the length of the temporary barrier on which they are installed so that the joint between the barrier sections shall not be spanned by any one unit. Units shall not alter the design of the concrete barrier.

The relative connection strengths between various components of the assembly shall be designed to minimize the potential impact and debris hazard to approaching traffic and to simplify repairs. The modular units shall be fabricated in a manner to allow replacement of individual blades while the modular unit remains in place.

The blade, base and rail shall be made of high impact materials with sufficient strength to withstand three impacts from a horizontal steel bar traveling at 40 mph and impacting at mid-height of the blade. After three impacts, there shall be no evidence of cracking, splitting, delaminating or separation from the system.

The paddle glare guard provided shall be a material manufactured by Safe-Hit Corporation, 2405 IH 35 West, New Braunfels, Texas, 78130; Carsonite International, 2900 Lockhead Way, Carson City, Nevada, 89701; Flexstake Incorporated, 2150 Andrea Lane, Fort Myers, Florida, 33912; or approved equal.

C Construction

Attachment of the base rail to the top of the concrete barrier temporary precast shall be by means of a mechanical or adhesive system with a minimum pullout and shear of 3000 psi. All mounting hardware shall be as specified by the manufacturer.

D Measurement

The department will measure Glare Screens Temporary by the linear foot of paddle glare guard, acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0090.007	Glare Screens Temporary	LF

78. Remove Traffic Signal (USH 41 NB & CTH B), Item SPV.0105.001; Remove Traffic Signal (USH 41 SB & CTH B), Item SPV.0105.002

A Description

This work shall consist of removing the existing traffic signal equipment from the interchange of USH 41 & CTH B in accordance with the requirements of Section 657 and Section 658 of the Standard Specifications for Highway and Structure Construction, standard detail drawings, and as hereinafter provided.

B (Vacant)

C Construction

After coordination with the NE Region Electrical Unit, the existing traffic signal equipment shall be disconnected from the concrete bases and transported off site to the electrical subcontractor facilities and/or to a recycling/garbage facility.

D Measurement

The department will measure Remove Traffic Signal bid item as a single lump sum unit acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.001	Remove Traffic Signal (USH 41 NB & CTH B)	LS
SPV.0105.002	Remove Traffic Signal (USH 41 SB & CTH B)	LS

Payment for Remove Traffic Signal is full compensation for removal and transporting to the appropriate facility and for all labor, tools, equipment, materials and incidentals necessary to complete the work

79. Concrete Pavement Joint Layout, Item SPV.0105.003.

A Description

(1) This special provision describes providing a concrete pavement joint layout design for intersections and marking the location of all joints in the field.

B Materials (Vacant)

C Construction

(1) Plan and locate all points necessary to establish the horizontal position of the transverse and longitudinal joints in the concrete pavement to prevent uncontrolled cracking. Submit a joint layout design to the engineer before paving each intersection. Mark the location of all concrete pavement joints in the field. Follow the plan details for joints in concrete pavements making adjustments as required to fit field conditions.

D Measurement

(1) The department will measure Concrete Pavement Joint Layout as a single lump sum unit for all joint layout designs and marking acceptably completed under the contract.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.003	Concrete Pavement Joint Layout	LS

(2) Payment is full compensation for providing the intersection joint layout designs and marking all joints in the field.

(3) The department will adjust pay for crack repairs as specified in standard spec 415.5.3.

80. Wavetronix Detector, Item SPV.0105.004.

PLACEHOLDER

81. Electrical Service Meter Breaker Pedestal Special, Item SPV.0105.005.

A Description

Perform work in accordance with the requirements of section 656 of the standard specifications for highway and structure construction (2017 Edition), the plans, standard detail drawings, and as hereinafter provided.

B Materials

In accordance with the plans and section 656.2 of the standard specifications and as hereinafter provided:

Amend Section 656.2.3, Meter Breaker Pedestal Service, by adding the following paragraphs:

(1) Furnish meter pedestal with provisions for a minimum of two 30A single-pole breakers in a water-tight outdoor rated enclosure.

(2) Furnish stainless steel square tubing, concrete masonry and steel reinforcement as the plans show for rigidly mounting the meter pedestal.

(3) Furnish lighting controls integral with the meter pedestal enclosure.

(4) Furnish photocell on meter breaker pedestal for street light operations.

C Construction
In accordance with the plans and section 656.3 of the standard specifications and as hereinafter provided:

1. Ensure that electrical service is installed and energized a minimum of one week prior to the system activation deadline.

D Measurement
The department will measure the Electrical Service Meter Breaker Pedestal Special bid item as a single lump sum for each service acceptably completed.

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.005	Electrical Service Meter Breaker Pedestal Special	LS

Payment is full compensation for furnishing and installing all materials; for excavation, backfill, and disposal of surplus materials; and for all labor, tools, equipment, and incidentals necessary to complete this item of work.

82. Fiber Wrap Reinforcing Structural, Item SPV.0165.001.

A Description
This special provision describes providing structural strengthening using externally bonded, high-strength, fiber reinforced polymer (FRP) composite/epoxy resin systems field-applied in accordance with the details shown on the plans and as specified herein.

B Materials
Furnish a glass or carbon composite fabric that is a continuous unidirectional filament woven fabric with the following minimum requirements:

E-Glass Fabric:
- Primary fibers for the fabric shall be electrical (E) glass fibers.
- 80,000 psi minimum ultimate tensile strength in the primary fiber direction per ASTM D-3039.
- 0.05 inch minimum laminate thickness.

Carbon Fabric:
- Primary fibers for the fabric shall be carbon fibers.
- 140,000 psi minimum ultimate tensile strength in the primary fiber direction per ASTM D-3039.
- 0.04 inch minimum laminate thickness.

Use a two-component, solvent-free with 0% volatile organic compound (VOC) epoxy that is supplied by the manufacturer. Polyester resin shall not be allowed as a substitute for epoxy

resin. Deliver epoxy materials in factory sealed containers with the manufacturer's labels intact and legible with verification of the date of manufacture and shelf life. Store products in a protected area at a temperature between 40°F and 100°F with no moisture contact, no UV exposure, and according to the manufacture's requirements.

Provide to the engineer the FRP manufacturer's data sheet indicating physical, mechanical and chemical characteristics of all materials used in the FRP system. Provide to the engineer the FRP manufacturer's Material Safety Data Sheets (MSDS) for all materials used.

Supplied composite fabric and epoxy resin products must have a minimum of ten successful installations. Furnish proof of successful installations including date of construction and owner references. Furnish certified test reports including 1000 hour tests for 140°F, water, salt water, alkaline soil, ozone, and efflorescence.

C Construction

C.1 Design

For the prestressed beams shown in the plans, design the FRP strengthening to provide additional structural strength as required on the "Fiber Wrap Reinf. Details" sheet of the structure plans. Design the externally bonded FRP strengthening system in accordance to ACI 440.2R-08, *Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures*, based on the design modulus and associated area of the cured laminate for the FRP system to be installed. FRP laminate design values must be lower than the calculated mean determined from the test results of ASTM D7565 and/or ASTM D3039 field test specimens.

Submit structural design calculations stamped and signed by a professional engineer.

C.2 Certified Applicators

Installers must have a minimum of three years of experience performing similar FRP composite strengthening and be trained and certified by the manufacturer of the supplied FRP composite/epoxy resin system being used. Submit a list of completed surface-bonded FRP composite strengthening projects completed with the manufacturer's FRP composite system in the past three years. The list must include a minimum of 10 projects with the proposed FRP system, the dates when work was performed, general description of work, quantity of work and owner references. Provide written verification from the FRP composite manufacturer that the applicator has received the required training and is a certified installer by the FRP manufacturer.

C.3 Surface Preparation

Prepare the surfaces of the elements designated in the plans for strengthening so that they are free from fins, sharp edges, protrusions and cavities that may cause voids behind the casing or that, in the opinion of the engineer, may damage the fiber. For discontinuous applications, prepare the surface for bonding using a light abrasive sandblast, grinding or other methods approved by the engineer. Immediately prior to bonding all contact surfaces shall receive a final cleaning by hand or compressed air to remove any residual dust, powder residue or laitance.

C.4 Installation

At the time of mixing, the ambient temperature and the temperature of the epoxy resin components shall be between 55 and 95 degrees F. Apply the composite when the relative humidity is less than 85 percent and the surface temperature is more than 5 degrees F above the dew point. Begin application within one hour after the batch has been mixed.

Mix the components of the epoxy resin with a mechanical mixer and apply the epoxy resin uniformly to the fiber at a rate that shall ensure complete saturation of the fabric.

Apply the fabric in one continuous piece surrounding both sides and the bottom of prestressed beams for shear strengthening. The fiber wrap shall be a minimum of one layer with edge laps of 6-inches and end laps of 12-inches. Multiple layers shall have end laps offset by a minimum of 90 degrees.

In order to achieve complete bond between layers, place successive layers of composite materials before polymerization of the previous layer of epoxy is complete. If polymerization does occur between layers, roughen the surface using a light abrasive that will not damage the fiber. Release or roll-out entrapped air before the epoxy sets.

Cover the final layer of fabric with a 15-mil thick coat of epoxy that produces a uniform finished surface.

After the final epoxy coat is completely polymerized, clean and roughen the exterior surfaces of the composite wrap using a light abrasive. The abrasive shall be of the appropriate hardness to roughen the surface without damaging the fibers. Before painting, dust and dry all cleaned and roughened surfaces.

An additional coating system consisting of paint is required to protect the fibers from the elements, specifically UV radiation, and to give the final aesthetic effect. Paint the areas with a minimum of two finish coats of acrylic paint. The color, to be selected by the engineer, is to closely match the concrete color. The total dry film thickness of all applications of the finish coats shall be not less than 4 mils or more than 8 mils.

C.5 Testing and Acceptance

C.5.1 Records and Sampling

Record lot number of fabric and epoxy resin used, and location of installation. Record square footage of fabric and volume of epoxy used each day.

Prepare sample batches consisting of two 12 inch x 12 inch samples of cured composite made each day. A minimum of two sample batches shall be made daily. Collect materials for the sample batches at an appropriately spaced interval during the day to ensure the maximum material deviance in the components of the FRP composite.

Prepare samples on a smooth, level surface covered with polyethylene sheeting or 16 mil plastic film. Prime the sheeting or film surface with epoxy resin. Place one layer of saturated

fabric and apply additional topping of epoxy. Cover with plastic film and squeegee out all air bubbles. Store samples flat in a sample box or in a protected area and do not move for a minimum of 48 hours after casting.

C.5.2 Laboratory Testing

The prepared, identified samples shall be tested by an approved, experienced laboratory. Precondition the samples at 140°F for 48 hours before testing. Cut test specimens from samples provided and test for ultimate tensile strength, tensile modulus and percentage elongation per ASTM D7565 and/or ASTM D3039 in the longitudinal fiber direction.

Test a minimum of 15% of all samples per ICC AC 178, *Interim Criteria for Inspection and Verification of Concrete and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber Reinforced (FRP) Composite Systems.* If one set of coupons fails to meet the design values (on average) then the other 12 inch x 12 inch sample from the same sample batch will be tested. If the second sample tested also fails (on average) to meet the design values, the remaining sample batch for that day will be tested and appropriate remediation shall be taken to ensure the integrity of the system at the locations from the failed sample batch.

C.5.3 Acceptance

FRP design values must be lower than the calculated mean determined from the test ASTM D7565 and or ASTM D3039 test results. Acceptable minimum values for the ultimate tensile strength, tensile modulus and elongation shall not be below the submitted design values.

Any test result values on average below the submitted design values are considered a failure and require remediation.

C.5.4 Required Remediation

Inject or back fill any small voids or bubbles (3" diameter or less) with epoxy. Voids or delaminated areas greater than 3" in diameter or an equivalent rectangular area shall be reported to the engineer. Proposed remediation procedure(s) for addressing these areas are subject to the acceptance of the engineer.

In the event the laboratory testing determines a sample batch possess material properties (on average) below the material properties assumed for design, remedial measures are required. Any structural member where the installed FRP composite system has tested material properties below the values used for the design must be remediated. Install additional layers or provide other remediation acceptable to the engineer.

D Measurement

The department will measure Fiber Wrap Reinforcing by the square foot, acceptably completed.

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.0165.001	Fiber Wrap Reinforcing Structural	SF

Payment is full compensation for design, preparing required submittals, cleaning and preparing the surfaces of elements to be strengthened; furnishing, transporting, handling, and installing the fabric, finish coat of epoxy, the final paint-coating system; sampling, sample preparation and laboratory testing, required remediation. No extra measurement or payment will be made for overlap areas.

83. Insulation Board (2-Inch), Item SPV.0165.002.

A Description

This special provision describes furnishing and installing insulation board.

B Materials

In accordance to Chapter 8.50.2 of the Standard Specifications for Sewer and Water Construction in Wisconsin (latest edition).

C Construction

Perform all construction in conformance with Chapter 4.17.2(a) of the Standard Specifications for Sewer and Water Construction in Wisconsin (latest edition).

D Measurement

The department will measure Insulation Board (Inch) by the square foot acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.002 (NER11-0207)	Insulation Board (2-Inch)	SF

84. Soil Nail Retaining Walls R-05-0114, SPV.0165.100.

A Description

This special provision describes designing and constructing a permanent soil nail retaining wall consisting of soil nails spaced at a regular pattern and connected to a cast-in-place reinforced concrete facing. Use shotcrete for temporary support of excavations during construction. Design and construct soil nail retaining walls based on actual elevations and wall dimensions in accordance to the contract and accepted submittals.

B Materials

Refer to the Standard Specifications.

Item	Standard Spec
Curing Agents	501
Geocomposites	645
Concrete Masonry Retaining Walls	501
Reinforcing Steel	505
Base Aggregate Open Graded	310
Wall Drain Materials	612
Welded Stud Shear Connectors	506

Provide Base Aggregate Open Graded for leveling pads.

Provide soil nails consisting of grouted steel bars and nail head assemblies. Use epoxy coated or encapsulated deformed steel bars that meet AASHTO M 275 or M 31, Grade 60 or 75.

Nail Grout consisting of neat cement or sand/cement mixture with a minimum 3-day compressive strength of 1,500psi and a minimum 28-day compressive strength of 3,000psi per AASHTO T106.

All shotcrete mixes shall be designed by a PCC Tech II in the State of Wisconsin. Shotcrete shall be applied by a nozzelman certified as an ACI Shotcrete Nozzelman in accordance to ACI Certification Publication CP-60. Nozzlemen shall be certified in either dry-mix or wet-mix shotcrete based on the process to be used for the work. Provide shotcrete with a 3-day compressive strength of 2,000psi and a 28-day strength of 4,000psi.

For encapsulated bars, use nonperforated corrugated HDPE sheaths at least 0.04" thick that meet AASHTO M 252. Provide at least 0.4" of grout cover between bars and sheathing and at least 0.8" of grout cover between sheathing and drill hole walls.

Fabricate centralizers from schedule 40 PVC plastic pipe or tube, steel or other material not detrimental to steel bars (no wood). Size centralizers to position bars within 1" of drill hole centers and allow tremies to be inserted to ends of holes. Use centralizers that do not interfere with grout placement or flow around bars. Centralizers are required both inside and outside sheaths for encapsulated nails.

Provide galvanized nail head assemblies consisting of nuts, washers and bearing plates with welded stud shear connectors. Use steel bearing plates that meet ASTM A36 and steel washers and hex nuts recommended by the Soil Nail Manufacturer.
Provide material certifications for soil nail materials in accordance to standard spec 506. Store steel materials on blocking at least 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store soil nail wall materials so materials are kept clean and free of damage. Do not crack, fracture or otherwise damage grout inside sheaths of encapsulated nails. Damaged or deformed materials will be rejected.

B.1 Contractor Qualifications

The soil nailing contractor shall meet the following experience requirements:

1. Use a qualified soil nail wall contractor, who has completed at least 3 permanent soil nail walls in the past 3 years totaling at least 10,000 square feet of face area and 500 permanent soil nails, to construct soil nail retaining walls.
2. Provide a design by a registered Professional Engineer with experience in the design of permanent soil nail walls for at least 3 completed projects over the past 3 years.
3. Provide on-site supervisors and drill operators with experience installing permanent soil nail walls on at least 3 projects over the past 3 years.

C Construction

C.1 Preconstruction Requirements

C1.1 Soil Nail Wall Surveys

The Retaining Wall Plans show a plan view, typical sections, details, notes and an elevation or profile view (wall envelope) for each soil nail wall. Before beginning soil nail wall design, survey existing ground elevations shown in the plans and other elevations in the vicinity of soil nail wall locations as needed. Based on these elevations, finished grades and actual soil nail wall dimensions and details, submit revised wall envelopes for acceptance. Use accepted wall envelopes for design.

C1.2 Geotechnical

A geotechnical report has been completed for this project and is available from the department. The contractor, at their own expense, may perform additional subsurface investigation to aid in their design.

C1.3 Soil Nail Wall Designs

Submit complete design calculations and wall design drawings to the engineer at least 30 days before the starting construction of the soil nail wall. Do not begin soil nail wall construction until a design submittal has been accepted.

Design soil nail walls in accordance to the plans and the following standards:

1. FHWA Geotechnical Engineering Circular No. 7 “Soil Nail Walls” (Publication No. FHWA-IF-03-017)
2. Standard Specifications for the Construction of Roads and Bridges on Federal Highway Projects.

Design soil nails that meet the following unless otherwise approved:

1. Horizontal and vertical spacing of at least 3 ft.
2. Inclination of at least 12° below horizontal.
3. Clearance between ends of bars and drill holes of at least 6".
4. Diameter of 6" to 10".

Maintain a clearance of at least 6" between existing bridge piling and nails.

Design soil nail walls for a live load surcharge of 100 lb/sf.

Provide wall drainage systems consisting of geocomposite drain strips, drains and outlet components. Place drain strips with a horizontal spacing of no more than 5 feet and center strips between adjacent nails. Attach drain strips to excavation faces and connect strips to leveling pads. Locate a continuous aggregate shoulder drain along the base of concrete facing.

Use shotcrete at least 4" thick and reinforce shotcrete with #4 waler bars around nail heads. Two waler bars (one on each side of nail head) in the horizontal and vertical directions are required for a total of 4 bars per nail.

Use Base Aggregate Open Graded for aggregate leveling pads as indicated on plans.

Attach concrete facing to nail heads with welded stud shear connectors. Use concrete facing at least 8" thick and extend facing at least 6" above where the grade intersects back of concrete facing unless required otherwise in the plans.

Submit working drawings and design calculations including unit grout/ground bond strengths for acceptance. Submit working drawings showing plan views, wall profiles with nail locations including known test nail locations, typical sections and details of nails, drainage, shotcrete, leveling pads and concrete facing. Submit design calculations for each wall section with different loads, geometry or material parameters. At least one analysis is required for each wall section with different nail lengths. When designing soil nail walls with computer software, a hand calculation is required for the wall section with the longest nails.

C1.4 Soil Nail Wall Construction Plan

Submit a PDF copy of a soil nail wall construction plan and details with the wall design calculations at least 30 days before the preconstruction meeting. Do not begin soil nail wall construction until the construction plan submittal is accepted. Provide detailed project specific information in the soil nail wall construction plan that includes the following:

1. Overall description and sequence of soil nail wall construction.
2. List and sizes of excavation equipment, drill rigs and tools, tremies and grouting equipment.
3. Procedures for excavations, drilling and grouting, soil nail and wall drainage system installation and facing construction.
4. Details of shotcrete equipment and application including mix process, test panels, thickness gauges and shooting methods.
5. Shotcrete nozzleman with ACI nozzleman certification.
6. Plan and methods for nail testing with calibration certificates dated within 90 days of submittal date.
7. Examples of construction and test nail records to be used.
8. Nail grout mix design, including compressive strength test results (per AASHTO T106/ASTM C109) supplied by a qualified independent testing lab verifying the

specified minimum 3-day and 28-day grout compressive strengths. For neat cement grout include specific gravity test results of the fresh grout used for compressive testing.

9. Nail grout placement procedures and equipment.
10. Shotcrete mix design and compressive strengths (3-day and 28-day)
11. Other information shown in the plans or requested by the engineer.

If alternate construction procedures are proposed or necessary, a revised soil nail wall construction plan submittal may be required. If the work deviates from the accepted submittal without prior approval, the engineer may suspend soil nail wall construction until a revised plan is accepted.

C1.5 Preconstruction Meeting

Before starting soil nail wall construction, hold a preconstruction meeting to discuss the construction, inspection and testing of the soil nail walls. Schedule this meeting after all soil nail wall submittals have been accepted. The engineer, geotechnical engineer, contractor and soil nail wall contractor superintendent will attend this preconstruction meeting.

Construction Methods

Control drainage during construction in the vicinity of soil nail walls. Direct run off away from soil nail walls and areas above and behind walls.

Notify the engineer before blasting in the vicinity of soil nail walls. Perform blasting in accordance to the contract. Unless required otherwise in the plans, install foundations located behind soil nail walls before beginning wall construction. Install soil nail walls in accordance to the accepted submittals and as directed. Do not excavate behind soil nail walls. If overexcavation occurs, repair walls with an approved method and a revised soil nail wall design or construction plan may be required.

Excavation

Excavate for soil nail walls from the top down in accordance to the accepted submittals. Excavate in staged horizontal lifts with no negative batter (excavation face leaning forward). Excavate lifts in accordance to the following:

1. Heights not to exceed vertical nail spacing.
2. Bottom of lifts no more than 3 feet below nail locations for current lift.
3. Horizontal and vertical alignment within 2" of location shown in the accepted submittals.

Remove any cobbles, boulders, rubble or debris that will protrude more than 2" into the required shotcrete thickness. Rocky ground such as colluvium, boulder fills and weathered rock may be difficult to excavate without leaving voids.

Apply shotcrete to excavation faces within 24 hours of excavating each lift unless otherwise approved. Shotcreting may be delayed if it can be demonstrated that delays will not

adversely affect excavation stability. If excavation faces will be exposed for more than 24 hours, use polyethylene sheets anchored at top and bottom of lifts to protect excavation faces from changes in moisture content.

If an excavation becomes unstable at any time, suspend soil nail wall construction and temporarily stabilize the excavation by immediately placing an earth berm up against the unstable excavation face. When this occurs, repair walls with an approved method and a revised soil nail wall design or construction plan may be required.

Do not excavate the next lift until nail installations and testing and shotcrete application for the current lift are accepted and grout and shotcrete for the current lift have cured at least 3 days and 1 day, respectively.

Soil Nails

Install soil nails in the same way as acceptable test nails. Drill and grout nails the same day and do not leave drill holes open overnight.

Control drilling and grouting to prevent excessive ground movements, damaging structures and pavements or fracturing rock and soil formations. If ground heave or subsidence occurs, suspend soil nail wall construction and take corrective action to minimize movement. If property damage occurs, make repairs with an approved method and a revised soil nail wall design or construction plan may be required.

Drilling

Use drill rigs of the sizes necessary to install soil nails and with sufficient capacity to drill through whatever materials are encountered. Drill straight and clean holes with the dimensions and inclination shown in the accepted submittals. Drill holes within 6" of locations and 2° of inclination shown in the accepted submittals unless otherwise approved.

Stabilize drill holes with temporary casings if unstable, caving or sloughing material is anticipated or encountered. Do not use drilling fluids to stabilize drill holes or remove cuttings.

Steel Bars

Center steel bars in drill holes with centralizers. Securely attach centralizers along bars at no more than 8 feet centers. Attach uppermost and lowermost centralizers 18" from excavation faces and ends of holes.

Do not insert steel bars into drill holes until hole locations, dimensions, inclination and cleanliness are approved. Do not vibrate, drive or otherwise force bars into holes. If a steel bar cannot be completely and easily inserted into a drill hole, remove the bar and clean or redrill the hole.

Grouting
Remove oil, rust inhibitors, residual drilling fluids and similar foreign materials from holding tanks/hoppers, stirring devices, pumps, lines, tremie pipes and any other equipment in contact with grout before use.

Inject grout at the lowest point of drill holes through tremies, e.g., grout tubes, casings, hollow-stem augers or drill rods, in one continuous operation. Fill drill holes progressively from ends of holes to excavation faces and withdraw tremies at a slow even rate as holes are filled to prevent voids in grout. Extend tremies into grout at least 5 feet at all times except when grout is initially placed in holes.
Provide grout free of segregation, intrusions, contamination, structural damage or inadequate consolidation (honeycombing). Cold joints in grout are not allowed except for test nails. Remove any temporary casings as grout is placed and record grout volume for each drill hole.

Nail Heads
Weld stud shear connectors to bearing plates of nails in accordance to standard spec 506. Install nail head assemblies after shotcreting. Before shotcrete reaches initial set, seat bearing plates and tighten nuts so plates contact shotcrete uniformly. If uniform contact is not possible, install nail head assemblies on mortar pads so nail heads are evenly loaded.

Wall Drainage Systems
Install wall drainage systems as shown in the accepted submittals as detailed in the plans. Before shotcreting, place geocomposite drain strips with the geotextile side against excavation faces. For highly irregular faces and at the discretion of the engineer, drain strips may be placed after shotcreting over weep holes through the shotcrete. Hold drain strips in place with anchor pins so strips are in continuous contact with surfaces to which they are attached and allow for full flow the entire height of soil nail walls. Discontinuous drain strips are not allowed. If splices are needed, overlap drain strips at least 12" so flow is not impeded. Connect drain strips to leveling pads by embedding strip ends at least 4" into Base Aggregate Open Graded.

Shotcrete
Clean ungrouted zones of drill holes and excavation faces of loose materials, mud, rebound and other foreign material. Moisten surfaces to receive shotcrete. Secure reinforcing steel so shooting does not displace or vibrate reinforcement. Install approved thickness gauges on 5 feet centers in the horizontal and vertical directions to measure shotcrete thickness.

Apply shotcrete in accordance to the contract and accepted submittals. Use approved shotcrete nozzlemen who made satisfactory preconstruction test panels to apply shotcrete. Direct shotcrete at right angles to excavation faces except when shooting around reinforcing steel.

Make shotcrete surfaces uniform and free of sloughing or sagging. Completely fill ungrouted zones of drill holes and any other voids with shotcrete. Taper construction

joints to a thin edge over a horizontal distance of at least the shotcrete thickness. Wet joint surfaces before shooting adjacent sections.

Repair surface defects as soon as possible after shooting. Remove any shotcrete which lacks uniformity, exhibits segregation, honeycombing or lamination or contains any voids or sand pockets and replace with fresh shotcrete to the satisfaction of the engineer. Protect shotcrete from freezing and rain until shotcrete reaches initial set.

Leveling Pads and Concrete Facing
Construct aggregate leveling pads at elevations and with dimensions shown in the plans.

Construct concrete facing in accordance to the accepted submittals and standard spec 501. Do not remove forms until concrete attains a compressive strength of at least 2,400 psi. Construct concrete facing joints at a maximum spacing of 30 feet unless required otherwise in the plans. Provide expansion joints in conformance to the plan details. Stop reinforcing steel for concrete facing 2 inches clear from either side of expansion joints.

Construct rustications in accordance to plan details.

Seal joints above and behind soil nail walls between concrete facing and ditches or concrete slope paving with non-staining non-bituminous joint sealer.

Construction Records
Provide 2 copies of soil nail wall construction records within 24 hours of completing each lift. Include the following in construction records:

1. Names of soil nail wall contractor, superintendent, nozzleman, drill rig operator, project manager and design engineer.
2. Wall description, county, department's contract, TIP and WBS element number.
3. Wall station and number and lift location, dimensions, elevations and description.
4. Nail locations, dimensions and inclinations, bar types, sizes and grades, corrosion protection and temporary casing information.
5. Date and time drilling begins and ends, steel bars are inserted into drill holes, grout and shotcrete are mixed and arrives on-site and grout placement and shotcrete application begins and ends.
6. Grout volume, temperature, flow and density records.
7. Ground surface water conditions and elevations if applicable.
8. Weather conditions including air temperature at time of grout placement and shotcrete application.
9. All other pertinent details related to soil nail wall construction.

After completing each soil nail wall or stage of a wall, provide a PDF copy of all corresponding construction records.

D Measurement
The department will measure Soil Nail Retaining Wall R-05-0114 in square feet of wall face, acceptably completed. Soil nail walls will be measured as the square feet of concrete

wall facing area with the height equal to the difference between top and bottom of wall facing elevations. Define "top of wall" as top of concrete facing. Define "bottom of wall" as shown in the plans. No measurement will be made for portions of soil nail walls embedded below bottom of wall elevations.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0165.100	Soil Nail Retaining Walls R-05-0114	SF

Payment is full compensation for providing designs, submittals, labor, tools, equipment and soil nail wall materials, excavating, hauling and removing excavated materials, installing soil nails, grouting, shotcreting and supplying wall drainage systems and any incidentals necessary to construct soil nail walls.

No additional payment will be made and no extension of completion date or time will be allowed for repairing property damage, over excavations or unstable excavations, unacceptable test nails or thicker shotcrete or concrete facing.

Base aggregate for leveling pad, geotextile fabric, pipe underdrain, concrete facing and soil nail verification and proof tests will be paid for separately.

85. Cable Guard Median Grading and Shaping, Item SPV.0170.001

A Description

This work is for grading and shaping of median areas of USH 41/USH 141, where cable guard is being installed. Perform work as shown in the plans, and as hereinafter provided.

B Materials

Borrow to conform to standard spec 208

Topsoil & Salvaged Topsoil to conform to standard spec 625

C Construction

Grade, shape and finish slopes for all cable guard systems at the locations the plans shown. Construct as shown on plans and engineer directs conforming to the following:

Common excavation and material disposal……Section 205

Borrow……Section 208

Topsoil/Salvaged Topsoil ……...……Section 625

Topsoil can be substituted for borrow. Stripping topsoil from median is not required if topsoil is substituted as borrow. Restore site once topsoil is accepted.

D Measurement

The department will measure Cable Guard Median Grading and Shaping by the station 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.0170.001	Cable Guard Median Grading and Shaping	STA

Payment is full compensation for Grading and Shaping Median at cable guard locations including: construction staking, excavation, borrow, topsoil, and salvaged topsoil. Emat, fertilizer, and seeding will be paid separately under bid items.