

Special Provisions

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SPECIAL PROVISIONS

1. General.

Perform the work under this construction contract for Project 2240-00-77, Milwaukee Avenue, STH 20 to CTH Y, STH 36, Racine County, Wisconsin and for Project 2240-03-74, Milw Ave Village of Rochester; Bridges B-51-78 & 79 in Racine 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, 2020 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 (20191121)

2. Scope of Work.

The work under this contract shall consist of bridge deck concrete overlay, common excavation, base aggregate, asphaltic surface milling, HMA pavement, beam guard, concrete curb and gutter, storm sewer, pavement marking, signing replacement, traffic signals, concrete pavement repair/replacement and all incidental items necessary to complete the work as shown on the plans and included in the proposal and contract.

104-005 (20090901)

3. Prosecution and Progress.

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

Provide the time frame for construction of the project within the 2020 and 2021 construction season to the engineer in writing within a month after executing the contract but at least 14 calendar days before the preconstruction conference. Assure that the time frame is consistent with the contract completion time. Upon approval, the engineer will issue the notice to proceed within ten calendar days before the beginning of the approved time frame.

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

The Notice to Proceed will be issued such that work shall start no later than October 1, 2020, unless otherwise approved by the engineer.

The schedule of operations as required under standard spec 108.9.2 shall provide for common excavation, breaker run, base aggregate, temporary HMA pavement and pavement marking.

When, in the fall of 2020, after completion of the temporary crossovers, and weather conditions or seasonal restrictions preclude the satisfactory performance of further work under this contract, the engineer will, in writing, suspend operations until the spring of 2021. Construction operations shall be resumed in the spring of 2021 within ten days after the date on which a written order to do so has been issued by the engineer.

0031 (20090901)

Schedule of Operations – Roadway Construction

Conform to the requirements described below, unless the engineer approves modifications in writing.

There may be multiple mobilizations for such items as traffic control, signing items, temporary pavement marking, permanent pavement marking, asphalt, concrete, sawing, landscaping, and other incidental items related to the staging. The department will make no additional payment for these additional mobilizations.

The project shall be built in two phases, each with multiple stages. See the Traffic section of these Special Provisions for locations of phases and work required in each stage.

Complete Phase 1, temporary crossover construction in the 2020 construction season. Complete Phase 2, Stage 1, Stage 2 and Stage 3 construction in the 2021 construction season.

Do not at any time conduct construction operations in the median area and adjacent outside area of the roadway at the same time.

Do not perform work within intersection or median opening areas as shown in the traffic control plans during peak hours. Peak hours are defined in the Traffic Section of these Special Provisions.

Perform storm sewer removals and installations prior to subgrade construction and placement of breaker run and base aggregate.

Perform earthwork operations, placement of breaker run and an initial lift of base course as a continuous operation to prevent the subgrade from obtaining moisture and becoming unstable. Within four days of removing the existing pavement structure and base course from any location along the roadway, construct that portion of the roadway by constructing the final subgrade by cutting and filling and placing breaker run and the first lift of base course. If the weather forecast predicts rain within 48 hours, complete all earthwork and placement of breaker run and first lift of base course on any areas where the existing pavement and base course have been removed.

If asphalt or concrete pavement is recycled for use as base course or breaker run, stockpile and process the material off site.

Remove asphaltic pavement and restore HMA pavement at locations of asphaltic base patching in a single day.

Place concrete for Base Patching Concrete within 24 hours of removing pavement at a patch for Stage 2 and Stage 3 patches in closed lane areas. For patches in the signal loops on the side roads in Stage 3, place concrete before the end of the working day.

Complete Base Patching Asphaltic, Base Patching Concrete, and Asphaltic Surface for signal loop replacements before performing Asphaltic Surface Milling at these locations.

Do not leave milled pavement surface exposed for more than 72 hours. Where STH 36 or STH 164 traffic is exposed to milled pavement surface, post Grooved Pavement signs (WO8-15). Where side road traffic is exposed to milled pavement surface, post Bump Signs (WO8-1).

Fish Spawning

There shall be no instream disturbance of the Fox River or the Wind Lake Drainage Canal as a result of construction activity under or for this contract, from March 1st to June 15th both dates inclusive, in order to avoid adverse impacts upon the spawning of fish eggs and substrate for aquatic organisms.

Any change to this limitation will require submitting a written request by the contractor to the engineer, subsequent review and concurrence by the Department of Natural Resources in the request, and final approval by the engineer. The approval will include all conditions to the request as mutually agreed upon by WisDOT and DNR.

0036 (20090901)

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 have been identified within 150 feet of the project limits. 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).

To avoid adverse impacts upon the NLEBs, no Clearing is allowed between June 1 and July 31, both dates inclusive.

If the required Clearing is not completed by May 31, the department will suspend all clearing and associated work directly impacted by Clearing. The department will issue a notice to proceed with Clearing and associated work directly impacted by clearing after consulting with the United States Fish and Wildlife Service (USFWS).

Submit a schedule and description of Clearing operations with the ECIP 14 days prior to any Clearing operations. The department will determine, based on schedule and scope of work, what additional erosion control measures shall be implemented prior to the start of Clearing operations, and list those additional measures in the ECIP.

4. Traffic

General

Construct the project using the construction staging and traffic control shown in the plans, standard detail drawings, and described in these special provisions.

Keep STH 36 open to through traffic at all times for the duration of this project except where noted below and in the Prosecution and Progress article in these special provisions.

Provide a 24-hour-a-day availability of equipment and forces to expeditiously restore barricades, lights, signs, markers, or other traffic control devices that are damaged or disturbed. The cost to maintain, restore and replace the above items shall be incidental to the bid item Traffic Control (project) 2240-00-77 and no additional payment will be made.

Employ flaggers, signs, barricades, and drums as may be necessary to safeguard and direct vehicular and pedestrian traffic at all locations where construction operations may interfere with or restrict the smooth flow of traffic and to protect and delineate hazards such as open excavations and abrupt drop-offs.

Do not proceed with any operation until all traffic control devices for such work are in the proper location. Place traffic control devices as the plans and standard detail drawings show or as directed by the engineer. Maintain adequate turning provisions for vehicles, including busses and trucks at all intersections within the construction limits.

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

Peak hours are defined as:

6:00 AM – 9:00 AM and 3:00 PM to 6:00 PM, Monday through Friday

Phasing

Phase 1: Construct Temporary Crossovers.

Phase 2: Complete all work from STA 226+70 to STA 663+50 and Temporary Crossovers Removal.

Staging

Stage the work as shown on the plans or as directed by the engineer. Notify the engineer at least 7 days before switching to Stage 2. Notify the engineer at least 14 days before switching to Stage 3. Do not conduct traffic control stage changes during peak hours.

Complete work in Stage 1 in a given area before beginning Stage 2 work in the same area. The contractor may transition from a Stage 1 lane closure in one area to a Stage 2 lane closure in another area using the Traffic Control Detail: Transition between Stages 1 and 2. This also applies for transitioning from Stage 2 to 3.

Phase 1 Construction:

STH 36 inside lane closure – construct temporary crossovers, common excavation, breaker run, base aggregate, temporary culvert pipes and asphaltic surface temporary.

Phase 2 Construction:

Stage 1 - STH 36 outside lane closure – asphalt milling, HMA pavement to remove rumble strips and pavement marking

Stage 2 - STH 36 inside lane closure – common excavation, breaker run, base aggregate, base patching, concrete pavement repair / replacement, asphalt milling, HMA pavement, concrete curb and gutter, storm sewer, structure work, beam guard, permanent signing, traffic signals, lighting, permanent pavement marking, base aggregate shoulders, and erosion control.

Stage 3 - STH 36 outside lane closure – common excavation, curb and gutter removal, asphalt milling, HMA pavement, base aggregate, base patching, concrete pavement repair / replacement, concrete curb and gutter, concrete sidewalk, asphalt surface path, cleaning culverts, structure work, beam guard, ditching and shaping, permanent signing, traffic signals, lighting, base aggregate shoulders, erosion control, construct shoulder asphaltic shoulder rumble strips, remove temporary crossovers, restore median, and install remaining permanent pavement markings.

Traffic Control

Supplement standard spec 643.3.1 with the following:

Provide the Racine County Sheriff's Department, the Wisconsin State Patrol, village of Rochester Police Department and the project engineer a current telephone number with which the contractor or his representative can be contacted during non-working hours in the event a safety hazard develops.

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

Do not permit construction or personnel equipment or vehicles to directly cross the live traffic lanes of STH 36. Yield to all through traffic at all locations. Equip all vehicles or equipment operating in the live traffic lanes with a hazard identification beam (flashing yellow signal light) that is visible from 360 degrees. Operate the flashing yellow beam only when merging or exiting live traffic lanes or when parked or operating on shoulders, except when parked behind barrier wall. Do not park personal vehicles within the access control limits of the freeway. Do not cross live traffic lanes of STH 36 with equipment or vehicles.

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

Do not disturb, remove or obliterate any traffic control signs, advisory signs, sand barrel array, shoulder delineators or beam guard in place along the traveled roadways without the approval of the engineer.

Ensure that Flagging operations conform to standard spec 104.6.1.(4) and chapter 6E of the WMUTCD.

Replace standard spec 643.3.1.(7) with the following:

Provide equipment, forces, and materials to promptly restore any traffic control devices or pavement markings damaged or disturbed within 2 hours of being contacted.

SER-643-001 (20170808)

Traffic Control Signs Portable Changeable Message

Place and operate Traffic Control Signs Portable Changeable Message near the beginning and end of Phase 1 ten calendar days before starting roadway construction with the message "WIS 36, ROAD WORK" "BEGINS, XX-XX".

Place and operate Traffic Control Signs Portable Changeable Message near the beginning and end of Phase 2 ten calendar days before starting roadway construction with the message "WIS 36, ROAD WORK" "BEGINS, XX-XX".

Place signs seven calendar days before beginning Stage 2 with the message "New Traffic, Pattern" "Begins, XX-XX". Place signs 500 ft in advance of temporary crossovers.

After the start of Stage 2, change the message on the signs to "New Traffic Pattern" "Ahead" and leave signs in place for three calendar days.

Place and operate Traffic Control Signs Portable Changeable Message near the beginning of the Milwaukee Ave ramp to northbound WIS 36 ten calendar days before beginning Stage 3 construction on the northbound bridges under project ID 2240-03-74 with message "RAMP CLOSED, BEGINS XX-XX"

Place signs seven calendar days before beginning Stage 3 with the message "New Traffic, Pattern" "Begins, XX-XX". Place signs 500 ft in advance of temporary crossovers.

After the start of Stage 3, change the message on the signs to "New Traffic Pattern" "Ahead" and leave signs in place for three calendar days.

Traffic Control Fixed Message Signs

For Phase 1 construction, place Fixed Message Signs north of CTH A and near the Milwaukee Ave ramp to northbound STH 36 for northbound STH 36 and north of STH 20 for southbound STH 36. Place signs ten calendar days before starting roadway construction. Remove signs after Phase 1 lane closures are completed.

For Phase 2 construction, place Fixed Message Signs north of CTH A and near the Milwaukee Ave ramp to northbound STH 36 for northbound STH 36 and north of CTH Y for southbound STH 36. Place signs ten calendar days before starting roadway construction. Remove signs after Phase 2 lane closures are completed.

Access

Maintain emergency and local vehicular access through the construction period, including during underground operations, removals, grading, and paving operations. Provide access via existing pavement, temporary placement of base course, new base course, the new pavement, or a combination thereof at least 15-feet wide. Provide adequate turning provisions at driveways and intersections for emergency and local vehicular traffic. At no time is it acceptable to require emergency or local traffic to traverse breaker run, base material containing loose reinforcement bar or wire, or crushed concrete or broken concrete.

Within the asphalt resurfacing section, at locations that traffic and access will be maintained, provided temporary means to prevent grade differences greater than 2 inches between milled surfaces and existing/newly paved surfaces (both longitudinal and transverse). Bridge vertical differences using temporary asphalt wedging (12:1 slope) or as otherwise approved by the engineer.

Inform property owners 2 working days before beginning construction activities in front of driveways on their properties. Short term closures of driveways will be allowed for milling and paving operations. The duration of these closures shall be as short as possible to complete the work in front of the driveway. Maintain access to all driveways at all times other than during milling and paving operations.

Maintain access to Seven Waters Trail during all stages of construction.

Local Contacts

Agency contacts:

Racine County	Julie Anderson	(262) 886-8440
Town of Norway	Scott Laux	(262) 895-6335
Village of Waterford	Jim Bergles	(414) 534-3980
Town of Waterford	Ken Hinz	(262) 534-5705
Village of Rochester	Chris Johnson	(262) 534-2008
City of Burlington	Peter Riggs	(262) 342-1181
Town of Burlington	Highway Department	(262) 763-3070
Racine County Sheriff	Office	(262) 636-3822
Norway Police Department	Office	(262) 895-2195
Norway Fire and Rescue	Office	(262) 895-7533
Wind Lake Volunteer Fire Co.	Chief Rob Robins	(262) 895-7533
Village of Waterford Fire Co.	Chief Rick Mueller	(262) 534-3980
Waterford Police Department	Chief Matthew Johnson	(262) 534-2119
City of Burlington Police	Chief Mark Anderson	(262) 342-1100
City of Burlington Fire	Chief Alan Babe	(262) 763-7842
Town of Burlington Police	Chief Michael Sevvick	(262) 763-7539
Town of Burlington Fire	Chief Bill Vrchota	(262) 763-3070

School Contacts:

Muskego-Norway School District	District Office	(262) 971-1800
Lakeview Elementary	Office	(262) 971-1850
Waterford School District	District Office	(262) 514-8250

5. 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 less than 16 feet)	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 feet or greater)	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.

Temporary Regulatory Speed Limit Reduction (Crossover Area Only)

During engineer-approved regulatory speed limit reductions, install temporary speed limit signs on the inside and outside shoulders of divided roadways to enhance visibility. On two lane two way roadways, install temporary speed limit signs on shoulders. When construction activities impede the location of a post-mounted regulatory speed limit sign, relocate the sign for maximum visibility to motorists. If work last less than 7 days, mount the regulatory speed limit sign on a portable sign support.

Post temporary regulatory speed limit signs in work zone only during continuous worker activity. During periods of no work activity or when the traffic controls are removed from the roadway, cover or remove the temporary speed limit signs.

Coordinate with Regional Traffic Section to identify the construction stages that have approved temporary regulatory speed zones documented in a Temporary Speed Zone Declaration. Primary contact phone number: 262-822-5947, secondary contact number: Enter Regional Traffic engineer's secondary phone.

Contact the Region Traffic Section at least 14-calendar days before installing the temporary speed zone. After installation of the temporary speed zone is complete, notify the Regional Traffic Section with field locations of temporary speed zones.

6. Holiday Work Restrictions.

Do not perform work on, nor haul materials of any kind along or across any portion of the highway carrying STH 36 traffic, and entirely clear the traveled way and shoulders of such portions of the highway of equipment, barricades, signs, lights, and any other material that might impede the free flow of traffic during the following holiday periods:

- From noon Wednesday, November 25, 2020 to 6:00 AM Monday, November 30, 2020 for Thanksgiving;
 - From noon Friday, May 28, 2021 to 6:00 AM Tuesday, June 1, 2021 for Memorial Day;
 - From noon Friday, July 2, 2021 to 6:00 AM Tuesday, July 6, 2021 for Independence Day;
 - From noon Friday, September 3, 2021 to 6:00 AM Tuesday, September 7, 2021 for Labor Day;
 - From noon Wednesday, November 24, 2021 to 6:00 AM Monday, November 29, 2021 for Thanksgiving;
- stp-107-005 (20181119)

7. Utilities.

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

stp-107-065 (20080501)

There are underground and overhead utility facilities located within the project limits. There are known utility adjustments required for this construction project. Coordinate construction activities with a call to Diggers Hotline or a direct call to the utilities that have facilities in the area as required per statutes. Use caution to ensure the integrity of the underground and overhead facilities.

Bidders are advised to contact each utility company listed in the plans, before preparing their bids, to obtain current information on the status of existing and new utility work.

If utility relocations are required during construction operations coordination with utilities will be required to minimize impacts during construction.

ANR Pipeline Co has three natural gas pipelines that cross STH 36 near highway STA 470+00. The scope of work at this location is a mill and overlay of the existing road surface. No conflicts are anticipated.

The field contact for this project is Todd Brister, (920) 477-2235, Todd_Brister@tcenergy.com.

AT&T Wisconsin has underground and aerial facilities within the construction project limits. The existing facilities are located along each side of STH 36. No conflicts are anticipated.

The field contact for this project is Matt Dinnauer, (262) 896-7690, md9542@att.com.

ATC Management, Inc. has transmission facilities within the project limits along the east side of STH 36 and along the east side of STH 36 northbound south of bridge B-51-78. The overhead line crosses to the west side of STH 36 southbound near the southern project limits.

There are no anticipated conflicts. Maintain a safe working clearance to the 138 kV conductors at all times based on the latest OSHA requirements.

The field contact for this project is Chris Dailey, (262) 506-6884, cdailey@atcllc.com.

Charter Communications has one relocation for this project, a down guy at CTH Y STA 105+10.

The field contact for this project is Neal Long, (414) 430-7189, Neal.Long@charter.com.

TDS Metrocom LLC has copper and fiber facilities underground in the ROW parallel to STH 36 within the construction project limits. No conflicts are anticipated.

The field contact for this project is Erik Borgen, (608) 664-4438, erik.borgen@tdstelecom.com.

Village of Waterford Department of Public Works has underground water and sewer facilities within the construction project limits. No conflicts are anticipated.

The field contact for this project is James Bergles, (262) 210-1208, jbergles@waterfordwi.org.

We Energies – Electricity has conflicts within the project limits. We energies anchor will be relocated to CTH Y STA 105+23.5, 41' RT. We energies will install a secondary pedestal at STH 164 STA 938+35, 46' LT and new service wire going to the existing lighting control cabinet at STH 164 STA 938+44, 52' LT.

Any facilities not explicitly identified as being relocated have been deemed to be not in conflict and will remain in place as is. It is expected that contractors will work safely around any facilities left within the work-zone. If plans change such that facilities become in conflict, it is expected that you will work with We-energies to resolve said conflict.

We Energies plans to relocate its facilities prior to the start of road construction, dependent on the conditions specified in this work plan.

The field contact for this project is Adam Psichulis, (262) 763-1011, adam.psichulis@we-energies.com.

We Energies - Gas/Petroleum has underground facilities within the construction project limits. The existing facilities are located along each side of STH 36. No conflicts are anticipated.

Any facilities not explicitly identified as being relocated have been deemed to be not in conflict and will remain in place as is. It is expected that contractors will work safely around any facilities left within the work-zone. If plans change such that facilities become in conflict, it is expected that you will work with We-energies to resolve said conflict.

The field contact for this project is Scott Holstein, (262) 763-1084, scott.holstein@we-energies.com.

Wisconsin Department of Transportation Signals and Lighting has conflicts within the project limits. All signal and lighting work to be complete under project pay items.

The field contact for this project is Joyce Murphy, (262) 548-5933, joyce.murphy@dot.wi.gov.

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

Order traffic signal equipment as soon as possible to assure the equipment is procured in a timely fashion and, therefore, installed, inspected, and ready for turn-on at the required date.

9. Traffic Signals, General.

All work shall be in accordance to the plans and the State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, 2020 Edition, and these special provisions.

Note that failure to comply with the state standards and specifications may result in the cost of the corrections to be made at the Contractors expense. Also, any additional disruption of Department-owned facilities shall be repaired or relocated as needed at the Contractors expense.

Notify the department's Electrical Field Unit at (414) 266-1170 at least three weeks prior to the beginning of the traffic signal work.

Furnish the engineer with material lists and specifications of all traffic control equipment for approval prior to installation.

10. 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 [Justin Suydam](#) at 262-548-8745.

stp-107-054 (20080901)

11. Environmental Protection, Aquatic Exotic Species Control.

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

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

Ensure that all equipment that has been in contact with waters of the state, or with infested or potentially infested waters, has been decontaminated for aquatic plant materials and zebra mussels before being used in other waters of the state. Before using equipment on this project, thoroughly disinfect all equipment that has come into contact with potentially infested waters. Guidelines from the Wisconsin Department of Natural Resources for disinfection are available at:

<http://dnr.wi.gov/topic/invasives/disinfection.html>

Use the following inspection and removal procedures:

1. Before leaving the contaminated site, wash machinery and ensure that the machinery is free of all soil and other substances that could possibly contain exotic invasive species;
2. Drain all water from boats, trailers, bilges, live wells, coolers, bait buckets, engine compartments, and any other area where water may be trapped;
3. Inspect boat hulls, propellers, trailers and other surfaces. Scrape off any attached mussels, remove any aquatic plant materials (fragments, stems, leaves, seeds, or roots), and dispose of removed mussels and plant materials in a garbage can before leaving the area or invested waters; and
4. Disinfect your boat, equipment and gear by either:
 - 4.1. Washing with ~212 F water (steam clean), or
 - 4.2. Drying thoroughly for five days after cleaning with soap and water and/or high pressure water, or
 - 4.3. Disinfecting with either 200 ppm (0.5 oz per gallon or 1 Tablespoon per gallon) Chlorine for 10-minute contact time or 1:100 solution (38 grams per gallon) of Virkon Aquatic for 20- to 30-minute contact time. Note: Virkon is not registered to kill zebra mussel veligers nor invertebrates like spiny water flea. Therefore this disinfect should be used in conjunction with a hot water (>104° F) application.

Complete the inspection and removal procedure before equipment is brought to the project site and before the equipment leaves the project site.

stp-107-055 (20130615)

12. Environmental Protection, Dewatering.

Add the following to standard spec 107.18:

If dewatering is required, treat the water to remove suspended sediments by filtration, settlement or other appropriate best management practice before 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 before 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:

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

13. Information to Bidders, WPDES General Construction Storm Water Discharge Permit.

The department has obtained coverage through the Wisconsin Department of Natural Resources to discharge storm water associated with land disturbing construction activities of this contract under the Wisconsin Pollutant Discharge Elimination System General Construction Storm Water Discharge Permit (WPDES Permit No. WI-S066796-1). A certificate of permit coverage is available from the regional office by contacting Enter contact name (construction project manager or design project manager if construction project manager unknown) at Enter phone number. Post the permit in a conspicuous place at the construction site.

stp-107-056 (20180628)

14. Construction Over or Adjacent to Navigable Waters.

The Fox River and Wind Lake Drainage Canal is classified as a state navigable waterway under standard spec 107.19.

stp-107-060 (20171130)

15. Waterway Marker Application and Permit

A Waterway Marker Application and Permit is required for the placement of navigational aids around the construction area during construction on the structures on STH 36 over both the Fox River and the Wind Lake Drainage Canal.

Contact the DNR to determine which type of navigational aids are needed in accordance with the project design and methods used during construction. The general steps for submission of a Waterway Marker Application and Permit are as follows:

Fill out the Waterway Marker Application and Permit form: <https://dnr.wi.gov/files/PDF/forms/8700/8700-058.pdf>

The Wisconsin Department of Transportation should be listed as the applicant.

Include an aerial map, diagram, or engineered diagram of the work location and the placement of the waterway markers (buoys). If proposed GPS coordinates for each buoy are not provided, then markers placed on the diagram must show distance (in feet) from each marker location and from one permanent fixture as a benchmark.

Provide the completed application/permit to the local municipalities having jurisdictional authority over the area in which the waterway markers will be placed. In an ordinance is required, consult with the local municipality regarding their ordinance process.

Forward the signed application permit to

Kristina Betzold

DNR Regional DOT Liaison

Wisconsin Dep. of Natural Resources

2300 North Dr. Martin Luther King Jr. Drive

Milwaukee, WI 53212

Penny Kanable

Boating Program Specialist

Wisconsin Dept. of Natural Resources

101 S Weber Street – LE/8

Madison, WI 53703

The Boating Program Specialist will communicate with the local Warden and Recreational Safety Warden in processing and finalizing the permit. If the permit application is incomplete or additional information is needed, the Boating Program Specialist will work with DNR's Regional DOT Liaison to resolve.

16. Erosion Control Structures.

Within three calendar days after completing the excavation for a substructure unit, place riprap or other permanent erosion control items required by the contract or deemed necessary by the engineer around

the unit at a minimum to a height equivalent to the calculated water elevation resulting from a storm that occurs on the average of once every two years (Q2) as shown on the plan, or as the engineer directs.

In the event that construction activity does not disturb the existing ground below the Q2 elevation, the above timing requirements for permanent erosion control shall be waived.

stp-107-070 (20191121)

17. Notice to Contractor – Contamination Beyond Construction Limits.

The department completed testing for soil and ground water contamination for locations within this project where excavation is required. Testing indicated that petroleum-contaminated soil is present at the following sites:

1. STH 36 Station 390+50 to 391+50 from the reference line to 60 feet RT of the reference line.
2. East Main Street Station 22+00 to 23+00 from the centerline to 20 feet LT of the centerline.

The contaminated soils at the above sites are expected to be beyond the excavation limits necessary to complete the work under this project. Control construction operations at these locations to ensure that they do not extend beyond the excavation limits indicated in the plans. If contaminated soils are encountered at these sites or elsewhere on the project during excavation, terminate excavation in the area and notify the engineer.

The Hazardous Materials Report is available by contacting: Justin Suydam, 262-548-8745.

stp-107-100 (20050901)

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

John Roelke, License Number All-119523, inspected Structure B-51-56 and B-51-57 for asbestos on August 1, 2016. No regulated Asbestos Containing Material (RACM) was found on this structure. A copy of the inspection report is available from: Justin Suydam, 262-548-8745.

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 before beginning any construction or demolition. Pay all associated fees. Provide a copy of the completed 4500-113 form to Justin Suydam, 262-548-8745 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-51-56, STH 36/STH 83 SB over FOX RIVER
- Site Address: STH 36 North, 2.2 MI S JCT STH 20; STH 36 South, 0.9M S JCT CTH J
- Ownership Information: WisDOT Transportation SE Region, 141 NW Barstow St, Suite 218, Waukesha, WI 53188
- Contact: Justin Suydam
- Phone: 262-548-8745
- Age: 53 years old. This structure was constructed in 1967
- Area: 11206 SF of deck
- Site Name: Structure B-51-57, STH 36/STH 83 SB over WIND LAKE DRAINAGE CANAL
- Site Address: Section Town Range: 0203N19E, Start: 424451.02, 881245.3, End: 424449.38, 881246.35
- Ownership Information: WisDOT Transportation SE Region, 141 NW Barstow St, Suite 218, Waukesha, WI 53188
- Contact: Justin Suydam
- Phone: 262-548-8745
- Age: 53 years old. This structure was constructed in 1967
- Area: 8937 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 as specified in standard spec 107.24. Keep material wet until it is abated or until it is determined to be non-asbestos containing material.

19. Archaeological Site.

Indian Hill Group (47RA32/BRA-0061) and Lapham Group (47RA28/BRA-0060) sites are located approximately STA 537+00 - 546+00 LT and RT of the reference line and STA 640+50 to 648+00 LT and RT of the centerline, respectively, within the limits shown on the plans.

Notify the Bureau of Technical Services – Environmental Process and Document Section (BTS-EPDS) at (608) 266-0099 at least two weeks before commencement of any ground disturbing activities. BTS-EPDS will determine if a qualified archaeologist will need to be on site during construction of this area.

Do not use the site for borrow or waste disposal. Do not use the site area not currently capped by asphalt/concrete for the staging of personnel, equipment and/or supplies.

stp-107-220 (20180628)

20. Erosion Control.

Supplement standard spec 107.20 with the following:

Erosion control best management practices (BMP's) shown on the plans are at suggested locations. The actual locations will be determined by the contractor's ECIP and by the engineer. Include dust control and each dewatering or by-pass (mechanical pumping) operation in the ECIP submittal. The ECIP will supplement information shown on the plans and not reproduce it. The ECIP will identify how to implement the project's erosion control plan. ECIP will demonstrate timely and diligently staged operations, continuing all construction operations methodically from the initial removals and topsoil stripping operations through the subsequent grading, paving, re-application of top soil, and restoration of permanent vegetation to minimize the period of exposure to possible erosion.

Provide the ECIP 14 days prior to the pre-construction meeting. Provide 1 copy of the ECIP to the department and 1 copy of the ECIP to the WDNR Liaison Kristina Betzold, (414) 263-8517, kristina.betzold@wisconsin.gov. Do not implement the ECIP without department approval and perform all work conforming to the approved ECIP.

Maintain Erosion Control BMP's until permanent vegetation is established or until the engineer determines that the BMP is no longer required.

Stockpile excess materials or spoils on upland areas away from wetlands, floodplains, and waterways. Immediately install perimeter silt fence protection around stockpiles. If stockpiled materials will be left for more than 14 days, install temporary seed or other temporary erosion control measures the engineer orders.

Re-apply topsoil on graded areas, as the engineer directs, immediately after the grading is completed within those areas. Seed, fertilize, and mulch/erosion mat top-soiled areas, as the engineer directs, within 5 days after placement of topsoil. If graded areas are left not completed and exposed for more than 14 days, seed those areas with temporary seed and mulch.

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

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

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

If dewatering operations require pumping of water containing sediments (sand, silt, and clay particles), the discharge will not be allowed to leave the work site or discharge to a storm water conveyance system without sediment removal treatment. Do not allow any excavation for; structures, utilities, grading, maintaining drainage that requires dewatering (mechanical pumping) of water containing sediments (sand, silt, and clay particles) to leave the work site or discharge to a storm water conveyance system without sediment removal treatment.

Prior to each dewatering operation, submit to the department a separate ECIP amendment for sediment removal. Guidance on dewatering can be found on the Wisconsin DNR website located in the Storm Water Construction Technical Standards, Dewatering Code #1061,

http://dnr.wi.gov/topic/stormwater/standards/const_standards.html.

Include reasoning, location, and schedule duration proposed for each operation. Per Code 1061, include all selection criteria: site assessment, dewatering practice selection, calculations, plans, specifications, operations, maintenance, and location of proposed treated water discharge. Provide a stabilized discharge area. If directing discharge towards or into an inlet structure, provide additional inlet protection for back-up protection. Dewatering is considered incidental to the contract.

Maintaining Drainage

Maintain drainage at and through worksite during construction conforming to standard spec 107.20, 204.3.2.1(3), 205.3.3 and 520.3.1(2). Use existing storm sewers, existing culvert pipes, existing drainage channels, temporary culvert pipes, or temporary drainage channels to maintain existing surface and pipe drainage. Pumps may be required to drain the surface, pipe, and structure discharges during construction. Costs for furnishing, operating, and maintaining the pumps is considered incidental to the contract.

SER-107-003 (20161220)

21. Erosion Control - Storm Water Management.

Construction of the bridge shall be completed as quickly as possible in order to minimize disruption. Construction shall minimize the removal of trees, shrubs and other shoreline vegetation above the ordinary high water mark (OHWM), unless otherwise directed by the WDNR Transportation Liaison. Construction equipment should not operate on the bed of the stream, below the OHWM, except for that which is necessary for the placement of the structure.

If erosion mat is used along stream banks, DNR recommends that biodegradable non-netted mat be used (e.g. Class I Type A Urban, Class I Type B Urban, or Class II Type C). Long-term netted mats may cause animals to become entrapped while moving in and out of the stream. Avoid the use of fine mesh matting that is tied or bonded at the mesh intersection such that the openings in the mesh are fixed in size.

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 must provide a means of separating the live flow channel of the waterway from disturbed areas (cofferdam, turbidity barrier, etc.). Provisions for these devices and associated bid items should be incorporated into the contract, including installation and maintenance of devices.

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, the site must be 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.). Do not stockpile fill or other construction materials in wetlands, waterways, or floodplains.

Construction materials and debris, including fuels, oil, and other liquid substances, will not be stored in the construction area in a manner that would allow them to enter a wetland or waterbody as a result of spillage, natural runoff, or flooding. If a spill of any potential pollutant should occur, it is the responsibility of the permittee to remove such material, to minimize any contamination resulting from this spill, and to immediately notify the State Duty Officer at 1-800-943-0003.

22. Erosion Control - Culvert Pipes.

Wetlands need to be protected during culvert cleaning. No sediment or debris should be left in wetlands as a result of the cleaning process.

Unless the culvert is dry for the duration of the cleaning, you must install a cofferdam upstream and down- stream of your project area. The coffer dam needs to be installed in conjunction with a method to maintain downstream flow.

Cofferdams and temporary diversion channels must be constructed of non-erodible material and secured with rock/ rock- bags at the bottom of the channel and top of the banks. No earthen cofferdams are permitted.

Pump intakes and discharges shall prevent impacts to fisheries, wildlife, and their habitat, and must be placed to prevent the disturbance, removal and/or scour of bed material.

Temporary bypass structures used to maintain streamflow (i.e. diversion channel, pump bypass system, diverting to one cul- vert at a time, etc.) need to be adequately sized to prevent damage from upstream flooding and downstream siltation, wash- out, or scouring.

Construction and dewatering activities shall be accomplished in such a manner as to prevent erosion and siltation into sur- face waters and wetlands.

Remove all coffer dams in such a way that minimizes the release of sediment and other downstream impacts. Conventional practice is to remove the downstream coffer dam first then slowly remove the upstream coffer dam. When no longer needed, restore any bypass channel to original condition.

Unless it is an emergency situation, avoid construction during periods of high water to avoid flooding the construction site.

23. Clearing and Grubbing, Emerald Ash Borer.

This applies to projects in the emerald ash borer (EAB) quarantined zones to include: Adams, Brown, Buffalo, Calumet, Columbia, Crawford, Dane, Dodge, Door, Douglas, Fond du Lac, Grant, Green, Iowa, Jackson, Jefferson, Juneau, Kenosha, Kewaunee, La Crosse, Lafayette, Manitowoc, Marquette, Milwaukee, Monroe, Oneida, Outagamie, Ozaukee, Portage, Racine, Richland, Rock, Sauk, Sheboygan, Trempealeau, Vernon, Walworth, Washington, Waukesha, Winnebago and Wood counties.

Supplement standard spec 201.3 with the following:

The emerald ash borer (EAB) has resulted in a quarantine of ash trees (*Fraxinus sp.*) by the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) and the Wisconsin Department of Natural Resources (DNR).

Ash trees species attacked by emerald ash borer include the following:

1. Green ash (*F. pennsylvanica*) is found throughout the state, but is most common in southern Wisconsin. It may form pure stands or grow in association with black ash, red maple, swamp white oak, and elm. It grows as an associate in upland hardwood stands, but is most common in and around stream banks, floodplains, and swamps.
2. Black ash (*F. nigra*) is distributed over the entire state but is most frequently found in northern Wisconsin. It is most common in swamps, but is also found in other wet forest types.
3. Blue ash (*F. quadrangulata*) is a threatened species that is currently found only at a few sites in Waukesha County. The species is at the edge of its range in Wisconsin, but is common in states farther south. The species is not of commercial importance. Blue ash twigs are 4-sided.
4. White ash (*F. americana*) tends to occur primarily in upland forests, often with *Acer saccharum*.

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

Note that blue ash twigs are 4-sided. All other Wisconsin ash trees have round stems. Also, Mountain ash (*Sorbus americana* and *S. decora*) is not a true ash and is not susceptible to EAB infestation.

The contractor shall be responsible for hiring a certified arborist to identify all ash trees that will be cleared and grubbed for the project. In addition, prior to scheduled clearing and grubbing activities, the arborist shall mark all ash trees with florescent lime flagging tied around the trunk perimeter.

Follow and obey the following Wisconsin Department of Agriculture, Trade, and Consumer Protection order:

ATCP 21.17 Emerald ash borer; import controls and quarantine.

(1) Importing or Moving Regulated Items from Infested Areas; Prohibition.

Except as provided in subsection (3), no person may do any of the following:

- a) Import a regulated item under subsection (2) into this state if that item originates from an emerald ash borer regulated area identified in 7CFR 301.53-3.
- b) Move any regulated item under subsection (2) out of an emerald ash borer regulated area that is identified in 7CFR 301.53-3 and located in this state.

Note: The United States Department of Agriculture-Animal and Plant Health Inspection Service (USDA-APHIS) periodically updates the list of regulated areas in 7CFR 301.53-3. Subsection (1) applies to new regulated areas as those areas are identified in the CFR.

Note: Each year, as a service, the Wisconsin department of agriculture, trade and consumer protection distributes an updated federal CFR listing to nursery license holders and other affected persons in this state. More frequent updates, if any, are available on the department's website at:

www.datcp.state.wi.us.

Subsection (1) applies to new regulated areas as those areas are identified in the CFR, regardless of whether affected persons receive update notices from the department. Persons may request update notices by calling (608) 224-4573, by visiting the department's website, or by writing to the following address:

Wisconsin Department of Agriculture
Trade and Consumer Protection
Division of Agricultural Resource Management
P.O. Box 8911
Madison, WI 53708-8911

(2) Regulated Items. The following are regulated items for purposes of subsection (1)

- a) The emerald ash borer, *Agrilus planipennis* Fairmaire in any living stage.
- b) Ash trees.
- c) Ash limbs, branches, and roots.
- d) Ash logs, slabs or untreated lumber with bark attached.
- e) Cut firewood of all non-coniferous species.
- f) Ash chips and ash bark fragments (both composted and uncomposted) larger than one inch in diameter.
- g) Any other item or substance not listed in subsection (2) that may be designated as a regulated item if a pest control official determines that it presents a risk of spreading emerald ash borer and notifies the person in possession of the item or substance that it is subject to the restrictions of the regulations.

(3) Inspected and Certified Items; Exemption.

Subsection (1) does not prohibit the shipment of a regulated item if a pest control official in the state or province of origin does all of the following:

- a) Inspects the regulated item.
- b) Certifies any of the following in a certificate that accompanies the shipment:
 - 1) The regulated item originates from non-infested premises and has not been exposed to emerald ash borer.
 - 2) The regulated item was found, at the time of inspection, to be free of emerald ash borer.
 - 3) The regulated item has been effectively treated to destroy emerald ash borer. The certificate shall specify the date and method of treatment.
 - 4) The regulated item is produced, processed, stored, handled or used under conditions, described in the certificate, that effectively preclude the transmission of emerald ash borer.

Regulatory Considerations

- a) The quarantine means that ash wood products may not be transported out of the quarantined area.
- b) Clearing and grubbing includes all ash trees that are to be removed from within the project footprint. If ash trees are identified within clearing and grubbing limits of the project, the following measures are required for the disposal:

Chipped Ash Trees

- a) May be left on site if used as landscape mulch within the project limits. If used as mulch on site, chips may not be applied at a depth greater than standard mulch applications as this will impede germination of seeded areas.
- b) May be buried on site within the right-of-way conforming to standard spec 201.3 (14).
- c) May be buried on adjacent properties to projects within the quarantined zone with prior approval of the engineer conforming to standard spec 201.3 (15).
- d) May be trucked to a licensed landfill within the quarantined zone with the engineer's approval conforming to standard spec 201.3 (15).

- e) Burning chips is optional if in compliance with standard spec 201.3.
- f) Chips must be disposed of immediately if not used for project mulching and may not be stockpiled and left on site for potential transport by others. Chips may be stockpiled **temporarily** if they will be used for project mulching and **are not readily accessible to the public**.
- g) Chipper equipment must be cleaned following post-chipping activities to insure no spread of wood chip debris into non-quarantined counties.

Ash logs, Branches, and Roots

- a) May be buried without chipping within the existing ROW or on adjacent properties conforming to standard spec 201.3 (14) and (15).
- b) May be trucked to a licensed landfill within the quarantined zone with the engineer's conforming to standard spec 201.3 (15).
- c) Burning is optional if in compliance with standard spec 201.3.
- d) Ash logs, branches, and roots must be disposed of immediately and may not stockpiled.
- e) All additional costs will be incidental to clearing and grubbing items.
- f) Do not bury or use mulch in an area that will be disturbed again during later phases of the project.
- g) Anyone moving firewood or ash products from the state or these counties is subject to state and federal fines up to \$1,000.00. All fines are the responsibility of the contractor. Obtain updated quarantine information at the DNR Firewood Information Line at 1-800-303-WOOD.

Furnishing and Planting Plant Materials

Supplement standard spec 632.2.2 with the following:

Ash trees may be obtained from inside or outside the quarantine area and planted within the quarantined area. Ash trees from within the quarantine area may not be transported and planted into the non-quarantined area.

SER-201-001 (20160808)

24. Removing Inlet Covers, Item 204.9090.S.

A Description

This special provision describes removing **Inlet Covers** conforming to standard spec 204.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Removing **Inlet Covers** as **EACH** acceptably completed, including attached parts and connections.

E Payment

Add the following to standard spec 204.5:

ITEM NUMBER	DESCRIPTION	UNIT
204.9090.S	Removing Inlet Covers	LF

stp-204-025 (20150630)

25. Removing Pipe Underdrain, Item 204.9090.S.

A Description

This special provision describes removing **Pipe Underdrain** conforming to standard spec 204.

B (Vacant)

C (Vacant)

D Measurement

The department will measure Removing **Pipe Underdrain** in **feet** acceptably completed. The department will measure along the centerline of the pipe, center to center of junctions, fittings, and AEWs.

E Payment

Add the following to standard spec 204.5:

ITEM NUMBER	DESCRIPTION	UNIT
204.9090.S	Removing Pipe Underdrain	LF

Payment for Removing Pipe underdrain also includes removing Pipe Underdrain AEW.

stp-204-025 (20150630)

26. Removing Traffic Signals STH 36 & Main Street, Item 204.9105.S.01; STH 36 & STH 164/CTH K, Item 204.9105.S.02.

A Description

This special provision describes removing existing traffic signals as shown on the plans, in accordance to the pertinent provisions of standard spec 204, and as hereinafter provided. Specific removal items are noted in the plans.

B (Vacant)

C Construction

Arrange for the de-energizing of the traffic signals with the local electrical utility after receiving approval from the engineer that the existing traffic signals can be removed.

Notify the department's Electrical Field Unit at (414) 266-1170 at least five working days prior to the removal of the traffic signals. Complete the removal work as soon as possible following shut down of this equipment.

The Department assumes that all equipment is in good condition and in working order prior to the contractor's removal operation. Prior to removal, inspect and provide a list of any damaged or non-working traffic signal equipment to the engineer. Any equipment not identified as damaged or not working, prior to removal, will be replaced by the contractor at no cost to the department.

Remove all standards and poles per plan from their concrete footings and disassemble out of traffic. Remove the transformer bases from each pole. Remove the signal heads, emergency vehicle preemption heads (evp), mast arms, luminaires, wiring/cabling, and traffic signal mounting devices from each signal standard, arm or pole. Ensure that all access hand-hole doors and all associated hardware remain intact. Dispose of the underground signal cable, internal wires and street lighting cable off the state right of way. Deliver the remaining materials to the West Allis Electrical Service Facility at 935 South 60th Street, West Allis, Milwaukee County. Contact the department's Electrical Field Unit at (414) 266-1170 at least five working days prior to delivery to make arrangements.

DOT forces shall remove the signal cabinet from the footing. The signal cabinet and associated signal cabinet equipment will be removed from the site by DOT forces and will remain the property of the department.

D Measurement

The department will measure Removing Traffic Signals as a single lump sum of work for each intersection, acceptably completed.

E Payment

Add the following to standard specification 204.5:

ITEM NUMBER	DESCRIPTION	UNIT
204.9105.S.01	Removing Traffic Signals STH 36 & Main Street	LS
204.9105.S.02	Removing Traffic Signals STH 36 & STH 164/CTH K	LS

27. Removing Loop Detector Wire and Lead-in Cable STH 36 & Main Street, Item 204.9105.S.03; STH 36 & STH 164/CTH K, Item 204.9105.S.04.

A Description

This special provision describes removing loop detector wire and lead-in cable as shown on the plans, in accordance to the pertinent provisions of 204 of the standard specs, and as hereinafter provided.

B (Vacant)

2240-00-77, 2240-03-74

C Construction

Notify the department's Electrical Field Unit at (414) 266-1170 at least five working days prior to the removal of the loop detector wire and lead-in cable.

Remove and dispose of detector lead-in cable including loop wire for abandoned loops off the project site.

D Measurement

The department will measure Remove Loop Detector Wire and Lead-in Cable as a single lump sum unit for each intersection acceptably completed.

E Payment

Add the following 204.5 of the standard specifications:

204.9105.S.03	Removing Loop Detector Wire and Lead-In Cable STH 36 & Main Street	LS
204.9105.S.04	Removing Loop Detector Wire and Lead-In Cable STH 36 & STH 164/CTH K	LS

28. Excavation, Hauling, and Disposal of Petroleum Contaminated Soil, Item 205.0501.S.

A Description

A.1 General

This special provision describes excavating, loading, hauling, and disposing of petroleum contaminated soil at a DNR approved bioremediation facility. The closest DNR approved bioremediation facility is

Waste Management Metro Landfill	Advanced Disposal Emerald Park Landfill
10712 South 124th Street	W124 S10629 124th Street
Franklin, WI 53132	Muskego, WI 53150
(414) 529-6180	(414) 529-1360

Perform this work conforming to standard spec 205 and Chapters NR 700-754 of the Wisconsin Administrative Code, as supplemented herein. Per NR 718.07, a solid waste collection and transportation service-operating license is required under NR 502.06 for each vehicle used to transport contaminated soil.

A.2 Notice to the Contractor – Contaminated Soil Locations

The department and others completed testing for soil and groundwater contamination for locations within this project where excavation is required. Testing indicated that soil contaminated with petroleum volatile organic compounds (PVOCs) is present at the following locations where excavation is required, as shown on the plans:

1. STH 36 from STA 390+50 to 391+50, from reference line to project limits right, from 4' bgs. to 16' bgs. Soil contains PVOCs and must be managed. Approximately 0 cubic yards (approximately 0 tons at an estimated 1.7 tons per cubic yard) of soil will be excavated from this location.
2. North side of East Main Street, east of STH 36, from STH 36 STA 389+15 to 389+40, from 200' right of STH 36 reference line to 300' right of STH 36 reference line, from 1' bgs to 4' bgs. (North side of East Main Street from STA 22+00 to 23+00 from the centerline to 20' LT of the centerline.) Soil contains PVOCs and must be managed. Approximately 0 cubic yards (approximately 0 tons at an estimated 1.7 tons per cubic yard) of soil will be excavated from this location.

Directly load soil excavated by the project at the above location into trucks that will transport the soil to a WDNR-licensed landfill facility for disposal.

If contaminated soils are encountered elsewhere on the project, terminate excavation activities in the area and notify the engineer. If dewatering is required at the above locations, conduct the dewatering in accordance with Section C below.

The excavation management plan for this project has been designed to minimize the offsite treatment or disposal of contaminated material. The excavation management plan, including these special provisions, has been developed in cooperation with the WDNR. The WDNR concurrence letter is on file at the

Wisconsin Department of Transportation. For further information regarding previous investigation and remediation activities at these sites contact:

Name: Mr. Andrew Malsom
Address: 141 NW Barstown Street, Suite 218, PO Box 798, Waukesha, WI 53187-0798
Phone: 262-548-6705
Fax: 262-548-6891
e-mail: Andrew.Malsom@dot.wi.gov

A.3 Coordination

Coordinate work under this contract with the environment consultant:

Consultant: O'Brien & Gere Engineers, Inc. (OBG)
Address: 234 W. Florida Street, Fifth Floor, Milwaukee, WI 53204
Contact: Mr. Mark Walter, PE
Phone: 414-837-3563
Fax: 414-837-3608
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The role of the environmental consultant will be limited to:

1. Determining the location and limits of contaminated soil to be excavated based on soil analytical results from previous investigations, visual observations, and field screening of soil that is excavated;
2. Identifying contaminated soils to be hauled to the bioremediation facility;
3. Documenting that activities associated with management of contaminated soil are in conformance with the contaminated soil management methods for this project as specified herein; and
4. Obtaining the necessary approvals for disposal of contaminated soil from the bioremediation facility.

Provide at least a 14-calendar day notice of the preconstruction conference date to the environmental consultant. At the preconstruction conference, provide a schedule for all excavation activities in the areas of contamination to the environmental consultant. Also notify the environmental consultant at least three calendar days before beginning excavation activities in each of the contaminated areas.

Coordinate with the environmental consultant to ensure that the environmental consultant is present during excavation activities in the contaminated areas. Perform excavation work in each of the contaminated areas on a continuous basis until excavation work is completed.

Identify the DNR approved bioremediation facility that will be used for disposal of contaminated soils, and provide this information to the environmental consultant no later than 30 calendar days before beginning excavation activities in the contaminated areas or at the preconstruction conference, whichever comes first. The environmental consultant will be responsible for obtaining the necessary approvals for disposal of contaminated soils from the bioremediation facility. Do not transport contaminated soil offsite without prior approval from the environmental consultant.

A.4 Health and Safety Requirements

Add the following to standard spec 107.1:

During excavation activities, expect to encounter soil contaminated with gasoline, diesel fuel, fuel oil, or other petroleum related products. Site workers taking part in activities that will result in the reasonable probability of exposure to safety and health hazards associated with hazardous materials shall have completed health and safety training that meets the Occupational Safety and Health Administration (OSHA) requirements for Hazardous Waste Operations and Emergency Response (HAZWOPER), as provided in 29 CFR 1910.120.

Prepare a site-specific Health and Safety Plan, and develop, delineate and enforce the health and safety exclusion zones for each contaminated site location as required by 29 CFR 1910.120. Submit the site-specific health and safety plan and written documentation of up-to-date OSHA training to the engineer before the start of work.

B (Vacant)

C Construction

Add the following to standard spec 205.3:

Control operations in the contaminated areas to minimize the quantity of contaminated soil excavated.

The environmental consultant will periodically evaluate soil excavated from the contaminated areas to determine if the soil will require offsite bioremediation. The environmental consultant will evaluate excavated soil based on field screening results, visual observations, and soil analytical results from previous environmental investigations. Assist the environmental consultant in collecting soil samples for evaluation using excavation equipment. The sampling frequency shall be a maximum of one sample for every 15 cubic yards excavated.

Directly load and haul soils designated by the environmental consultant for offsite bioremediation to the DNR approved bioremediation facility. Use loading and hauling practices that are appropriate to prevent any spills or releases of petroleum-contaminated soils or residues. Before transport, sufficiently dewater soils designated for off-site bioremediation so as not to contain free liquids.

If dewatering is required in areas of known contamination, water generated from dewatering activities will likely contain PVOCS. Such water may, with approval of the local wastewater treatment utility, be discharged to the sanitary sewer or at the treatment facility directly as follows:

Meet all applicable requirements, including the control of suspended solids. Perform all necessary monitoring to document compliance with requirements. Furnish, install, operate, maintain, disassemble, and remove treatment equipment necessary to comply with requirements.

Ensure continuous dewatering and excavation safety at all times. Provide, operate, and maintain adequate pumping equipment and drainage and disposal facilities.

Notify the engineer of any dewatering activities, and obtain any permits necessary to discharge water. Provide copies of such permits to the engineer. Meet any requirements and pay any costs for obtaining and complying with such permit use. Follow all applicable legislative statutes, judiciary decisions, and regulations of the State of Wisconsin.

Costs associated with excavation dewatering in the contaminated areas are considered incidental to this pay item. The Wisconsin Department of Transportation will be the generator of regulated solid waste from this construction project.

D Measurement

The department will measure Excavation, Hauling, and Disposal of Petroleum Contaminated Soil in tons of contaminated soil, accepted by the bioremediation facility as documented by weight tickets generated by the bioremediation facility.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
205.0501.S	Excavation, Hauling, and Disposal of Petroleum Contaminated Soil	Ton

Payment is full compensation for excavating, segregating, loading, hauling, and treatment via bioremediation of contaminated soil; obtaining solid waste collection and transportation service operating licenses; assisting in the collection soil samples for field evaluation; and dewatering of soils before transport, if necessary. Management and disposal of contaminated water is considered incidental to other bid items in the contract. The department will not pay directly for management and disposal/treatment of contaminated water.

~~stp-205-003 (20150630)~~

29. Backfill Controlled Low Strength, Item 209.0200.S.

A Description

This special provision describes furnishing and placing a controlled low strength material designed for use as backfill in trenches for culverts, sewers, utilities, or similar structures, as backfill behind bridges abutments, or as fill for the abandonment of culverts, pipes, or tanks.

B Materials

Provide controlled low strength backfill that consists of a designed cementitious mixture of natural or processed materials. Allowable materials include natural sand, natural gravel, produced sand, foundry sand, produced gravel, fly ash, Portland cement, and other broken or fragmented mineral materials. The designed mixture shall be self-leveling and shall be free of shrinkage after hardening. Design the mixture to reach a state of hardening such that it can support foot traffic in no more than 24 hours. Provide a mixture that also meets the following requirements.

TEST	METHOD	VALUE
Flow (inch)	ASTM D-6103	9 min
Compressive	ASTM D-6024	20-40 @ 14 days
Strength (psi)		40-80 @ 28 days
		80-120 @ 90 days

Chemical admixtures to control air content and setting time are allowable. Ten days before placement, furnish the engineer with a design mix detailing all components and their proportions in the mix.

C Construction

Place controlled low strength backfill at the locations and to the lines and grades as shown on the plan. Proportion and mix materials to produce a product of consistent texture and flow characteristics. The engineer may reject any materials exhibiting a substantial change in properties, appearance, or composition.

If the official Weather Bureau forecast for the construction site predicts temperatures at or below freezing within the next 24 hours after placement of controlled low strength backfill, protect the placed materials from freezing during that time period. If the temperature is not forecast to rise above 40° F for 72 hours after placement, the engineer may require protection from freezing for up to 72 hours.

No controlled low strength backfill shall be allowed to enter any stream, lake, or sewer system. The contractor shall be responsible for any clean up or remediation costs resulting from such occurrences.

D Measurement

The department will measure Backfill Controlled Low Strength in volume by the cubic yard of material, placed and accepted. Such volume shall be computed from actual measurements of the dimensions of the area to be backfilled. In irregular or inaccessible areas, the engineer may allow volume to be determined by other appropriate methods.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
209.0200.S	Backfill Controlled Low Strength	CY

Payment is full compensation for designing the mix; supplying all materials; preparing the proportioned mix; hauling it to the construction site; placing the material; and protecting it from freezing.

stp-209-010 (20191121)

30. 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 except 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.

<http://wisconsindot.gov/rdwy/cmm/cm-08-00toc.pdf>

- (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/>

B Materials

B.1 Personnel

- (1) Nuclear gauge owners and personnel using nuclear gauges shall comply with WisDOT requirements according to 460.3.3 and CMM 8-15.

B.2 Testing

- (1) Conform to ASTM D2950 and CMM 8.15 for density testing and gauge monitoring methods. Conform to CMM 8-15.10.4 for test duration and gauge placement.

B.3 Equipment

B.3.1 General

- (1) Furnish nuclear gauges according to CMM 8-15.2.
- (2) Furnish nuclear gauges from the department's approved product list at <http://wisconsin.dot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrcs/tools/appr-prod/default.aspx>

B.3.2 Comparison of Nuclear Gauges

B.3.2.1 Comparison of QC and QV Nuclear Gauges

- (1) Compare QC and QV nuclear gauges according to CMM 8-15.7.

B.3.2.2 Comparison Monitoring

- (1) Conduct reference site monitoring for both QC and QV gauges according to CMM 8-15.

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) Divide the pavement into lots and sublots for nuclear density testing according to CMM 8-15.10.2.
- (2) Determine required number of tests according to CMM 8-15.10.2.1.
- (3) Determine random testing locations according to CMM 8-15.10.3.

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

- (1) Divide the pavement into lots and sublots for nuclear density testing according to CMM 8-15.10.2.
- (2) Determine required number of tests according to CMM 8-15.10.2.2.
- (3) Determine random testing locations according to CMM 8-15.10.3.

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 as specified in 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 subplot. Testing in a previously accepted subplot 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 subplot width within the traffic lanes or shoulders.
- (4) Retesting and acceptance of replaced pavement will be as specified in 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 subplot and lot densities.
- (6) If 2 consecutive subplot 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 subplot 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 subplot using the same testing requirements and frequencies as the QC tester.
- (3) If the verification subplot average is not more than one percent below the specified minimum target density, use the QC tests for acceptance.
- (4) If the verification subplot average is more than one percent below the specified target density, compare the QC and QV subplot averages. If the QV subplot average is within 1.0 lb/ft³ of the QC subplot average, use the QC tests for acceptance.
- (5) If the first QV/QC subplot average comparison shows a difference of more than 1.0 lb/ft³ each tester will perform an additional set of tests within that subplot. Combine the additional tests with the original set of tests to compute a new subplot average for each tester. If the new QV and QC subplot averages compare to within 1.0 lb/ft³, use the original QC tests for acceptance.
- (6) If the QV and QC subplot 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 subplot density test results or retesting of the subplot 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 as specified in standard spec 460.5.2.2.

E.3 Incentive for HMA Pavement Density

- (1) The department will administer density incentives as specified in standard spec 460.5.2.3.
stp-460-020 (20181119)

31. HMA Percent Within Limits (PWL) Test Strip Volumetrics, Item 460.0105.S; HMA Percent Within Limits (PWL) Test Strip Density Item 460.0110.S.

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 contracts constructed under HMA Percent Within Limits (PWL) QMP. A density test strip is required for each pavement layer placed over a specific, uniform underlying material, unless specified otherwise in the plans. Each contract is restricted to a single mix design per mix type per layer (e.g., upper layer and lower layer may have different mix type specified or may have the same mix type with different mix designs). Each mix design requires a separate test strip. Density and volumetrics testing will be conducted on the same test strip whenever possible.

Perform work according to standard spec 460 and as follows.

B Materials

Use materials conforming to HMA Pavement Percent Within Limits (PWL) QMP special provision.

C Construction

C.1 Test Strip

Submit the test strip start time and date to the department in writing at least 5 calendar days in advance of construction of the test strip. If the contractor fails to begin paving within 2 hours of the submitted start time, the test strip is delayed and the department will assess the contractor \$2,000 for each instance according to Section E of this document. Alterations to the start time and date must be submitted to the

department in writing a minimum of 24 hours prior to the start time. The contractor will not be liable for changes in start time related to adverse weather days as defined by standard spec 101.3 or equipment breakdown verified by the department.

On the first day of production for a test strip, produce approximately 750 tons of HMA. (Note: adjust tonnage to accommodate natural break points in the project.) Locate test strips in a section of the roadway to allow a representative rolling pattern (i.e. not a ramp or shoulder, etc.).

C.1.1 Sampling and Testing Intervals

C.1.1.1 Volumetrics

Laboratory testing will be conducted from a split sample yielding three components, with portions designated for QC (quality control), QV (quality verification), and retained.

During production for the test strip, obtain sufficient HMA mixture for three-part split samples from trucks prior to departure from the plant. Collect three split samples during the production of test strip material. Perform sampling from the truck box and three-part splitting of HMA according to CMM 8-36. These three samples will be randomly selected by the engineer from each *third* of the test strip tonnage (T), excluding the first 50 tons:

<u>Sample Number</u>	<u>Production Interval (tons)</u>
<u>1</u>	50 to $\frac{T}{3}$
<u>2</u>	$\frac{T}{3}$ to $\frac{2T}{3}$
<u>3</u>	$\frac{2T}{3}$ to T

C.1.1.2 Density

Required field tests include contractor QC and department QV nuclear density gauge tests and pavement coring at ten individual locations (five in each half of the test strip length) in accordance with Appendix A: *Test Methods and Sampling for HMA PWL QMP Projects*. Both QV and QC teams shall have two nuclear density gauges present for correlation at the time the test strip is constructed. QC and QV teams may wish to scan with additional gauges at the locations detailed in Appendix A, as only gauges used during the test strip correlation phase will be allowed.

C.1.2 Field Tests

C.1.2.1 Density

For contracts that include STSP 460-020 QMP Density in addition to PWL, a gauge comparison according to CMM 8-15.7 shall be completed prior to the day of test strip construction. Daily standardization of gauges on reference blocks and a project reference site shall be performed according to CMM 8-15.8. A standard count shall be performed for each gauge on the material placed for the test strip, prior to any additional data collection. Nuclear gauge readings and pavement cores shall be used to determine nuclear gauge correlation in accordance with Appendix A. The two to three 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 will be used to adjust raw density readings of the specific gauge and shall appear on the density data sheet along with gauge and project identification. An offset is specific to the mix and layer; therefore, a separate value shall be determined for each layer of each mix placed over a differing underlying material for the contract. This constitutes correlation of that individual gauge for the given layer. Two gauges per team are not required to be onsite daily after completion of the test strip. Any data collected without a correlated gauge will not be accepted.

The contractor is responsible for coring the pavement from the footprint of the density tests and filling core holes according to Appendix A. Coring and filling of pavement 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 laboratory testing and will be responsible for any verification testing at the discretion of the engineer.

The target maximum density to be used in determining core density is the average of the three volumetric/mix Gmm values from the test strip multiplied by 62.24 lb/ft³. In the event mix and density portions of the test strip procedure are separated, or if an additional density test strip is required, the mix portion must be conducted prior to density determination. The target maximum density to determine core densities shall then be the Gmm four-test running average (or three-test average from a PWL volumetric-only test strip) from the end of the previous day's production multiplied by 62.24 lb/ft³. If no PWL production volumetric test is to be taken in a density-only test strip, a non-random three-part split mix sample will be taken and tested for Gmm by the department representative. The department Gmm test results from this non-random test will be entered in the HMA PWL Test Strip Spreadsheet and must conform to the Acceptance Limits presented in C.2.1.

Exclusions such as shoulders and appurtenances shall be tested and reported according to CMM 8-15. However, all acceptance testing of shoulders and appurtenances will be conducted by the department, and average lot (daily) densities must conform to standard spec Table 460-3. No density incentive or disincentive will be applied to shoulders or appurtenances. However, unacceptable shoulder material will be handled according to standard spec 460.3.3.1 and CMM 8-15.11.

C.1.3 Laboratory Tests

C.1.3.1 Volumetrics

Obtain random samples according to C.1.1.1 and Appendix A. Perform tests the same day as taking the sample.

Theoretical maximum specific gravities of each mixture sample will be obtained according to AASHTO T 209 as modified in CMM 8-36.6.6. Bulk specific gravities of both gyratory compacted samples and field cores shall be determined according to AASHTO T 166 as modified in CMM 8-36.6.5. The bulk specific gravity values determined from field cores shall be used to calculate a correction factor (i.e., offset) for each QC and QV nuclear density gauge. The correction factor will be used throughout the remainder of the layer.

C.2 Acceptance

C.2.1 Volumetrics

Produce mix conforming to the following limits based on individual QC and QV test results (tolerances based on most recent JMF):

ITEM	ACCEPTANCE 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 ^[1]	- 0.5
Air Voids	-1.5 & +2.0
VMA in percent ^[2]	- 1.0
Maximum specific gravity	+/- 0.024

^[1] Asphalt content more than -0.5% below the JMF will be referee tested by the department's AASHTO accredited laboratory and HTCP certified personnel using automated extraction according to ASTM D8159 as modified in CMM 8-36.6.3.1.

^[2] VMA limits based on minimum requirement for mix design nominal maximum aggregate size in [table 460-1](#).

QV samples will be tested for Gmm, Gmb, and AC. Air voids and VMA will then be calculated using these test results.

Calculation of air voids shall use either the QC, QV, or retained split sample test results, as identified by conducting the paired t-test with the WisDOT PWL Test Strip Spreadsheet.

If QC and QV test results do not correlate as determined by the split sample comparison, the retained split sample will be tested by the department's AASHTO accredited laboratory and HTCP certified personnel as a referee test. Additional investigation shall be conducted to identify the source of the difference between QC and QV data. Referee data will be used to determine material conformance and pay.

C.2.2 Density

Compact all layers of test strip HMA mixture to the applicable density shown in the following table:

TABLE 460-3 MINIMUM REQUIRED DENSITY^[1]

LAYER	MIXTURE TYPE	
	LT & MT	HT
LOWER	93.0 ^[2]	93.0 ^[3]
UPPER	93.0	93.0

^[1] If any individual core density test result falls more than 3.0 percent below the minimum required target maximum density, the engineer will investigate the acceptability of that material per CMM 8-15.11.

^[2] Minimum reduced by 2.0 percent for a lower layer constructed directly on crushed aggregate or recycled base courses.

^[3] Minimum reduced by 1.0 percent for lower layer constructed directly on crushed aggregate or recycled base courses.

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 mix design. The offset is not to be entered into any nuclear density gauge as it will be applied by the department-furnished Field Density Worksheet.

C.2.3 Test Strip Approval and Material Conformance

All applicable laboratory and field testing associated with a test strip shall be completed prior to any additional mainline placement of the mix. All test reports shall be submitted to the department upon completion, and approved before paving resumes. The department will notify the contractor within 24 hours from start of test strip regarding approval to proceed with paving, unless an alternate time frame is agreed upon in writing with the department. The 24-hour approval time includes only working days as defined in standard spec 101.3.

The department will evaluate material conformance and make pay adjustments based on the PWL value of air voids and density for the test strip. The QC core densities and QC and QV mix results will be used to determine the PWL values as calculated in accordance with Appendix A.

The PWL values for air voids and density shall be calculated after determining core densities. An approved test strip is defined as the individual PWL values for air voids and density both being equal to or greater than 75, mixture volumetric properties conforming to the limits specified in C.2.1, and an acceptable gauge-to-core correlation. Further clarification on PWL test strip approval and appropriate post-test strip actions are shown in the following table:

PWL Test Strip Approval and Material Conformance Criteria

PWL Value for Air Voids and Density	Test Strip Approval	Material Conformance	Post-Test Strip Action
Both PWL $\geq$ 75	Approved ¹	Material paid for according to Section E.	Proceed with Production
$50 \leq$ Either PWL < 75	Not Approved	Material paid for according to Section E.	Consult BTS to determine need for additional test strip.
Either PWL < 50	Not Approved	Unacceptable material removed and replaced or paid for at 50% of	Construct additional Volumetrics or

		the contract unit price according to Section E.	Density test strip as necessary.
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¹ In addition to these PWL criteria, mixture volumetric properties must conform to the limits specified in C.2.1, split sample comparison must have a passing result and an acceptable gauge-to-core correlation must be completed.

A maximum of two test strips will be allowed to remain in place per pavement layer per contract. If material is removed, a new test strip shall replace the previous one at no additional cost to the department. If the contractor changes the mix design for a given mix type during a contract, no additional compensation will be paid by the department for the required additional test strip and the department will assess the contractor \$2,000 for the additional test strip according to Section E of this special provision. For simultaneously conducted density and volumetric test strip components, the following must be achieved:

- i. Passing/Resolution of Split Sample Comparison
- ii. Volumetrics/mix PWL value ≥ 75
- iii. Density PWL value ≥ 75
- iv. Acceptable correlation

If not conducted simultaneously, the mix portion of a test strip must accomplish (i) & (ii), while density must accomplish (iii) & (iv). If any applicable criteria are not achieved for a given test strip, the engineer, with authorization from the department's Bureau of Technical Services, will direct an additional test strip (or alternate plan approved by the department) be conducted to prove the criteria can be met prior to additional paving of that mix. For a density-only test strip, determination of mix conformance will be according to main production, i.e., HMA Pavement Percent Within Limits (PWL) QMP special provision.

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 correlation for a Test Strip. Material quantities shall be determined according to 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
460.0105.S	HMA Percent Within Limits (PWL) Test Strip Volumetrics	EACH
460.0110.S	HMA Percent Within Limits (PWL) Test Strip Density	EACH

These items are intended to compensate the contractor for the construction of the test strip for contracts paved under the HMA Pavement Percent Within Limits QMP article.

Payment for HMA Percent Within Limits (PWL) Test Strip Volumetrics is full compensation for volumetric sampling, splitting, and testing; for proper labeling, handling, and retention of split samples.

Payment for HMA Percent Within Limits (PWL) Test Strip Density is full compensation for collecting and measuring of pavement cores, acceptably filling core holes, providing of nuclear gauges and operator(s), and all other work associated with completion of a core-to-gauge correlation, as directed by the engineer.

Acceptable HMA mixture placed on the project as part of a volumetric or density test strip will be compensated by the appropriate HMA Pavement bid item with any applicable pay adjustments. If a test strip is delayed as defined in C.1 of this document, the department will assess the contractor \$2,000 for each instance, under the HMA Delayed Test Strip administrative item. If an additional test strip is required because the initial test strip is not approved by the department or the mix design is changed by the contractor, the department will assess the contractor \$2,000 for each additional test strip (i.e. \$2,000 for each individual volumetrics or density test strip) under the HMA Additional Test Strip administrative item.

Pay adjustment will be calculated using 65 dollars per ton of HMA pavement. The department will pay for measured quantities of mix based on \$65/ton multiplied by the following pay adjustment:

PAY ADJUSTMENT FOR HMA PAVEMENT AIR VOIDS & DENSITY	
<i>PERCENT WITHIN LIMITS</i>	<i>PAYMENT FACTOR, PF</i>
<i>(PWL)</i>	<i>(percent of \$65/ton)</i>
≥ 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] Material resulting in PWL value less than 50 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 contract unit price 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 according to Table 460-3 as modified herein. Pay adjustment will be determined for an acceptably completed test strip and will be computed as shown in the following equation:

$$\text{Pay Adjustment} = (\text{PF} - 100) / 100 \times (\text{WP}) \times (\text{tonnage}) \times (\$65/\text{ton})^*$$

*Note: If Pay Factor <50, the contract unit price will be used in lieu of \$65/ton

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

<u>Parameter</u>	<u>WP</u>
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 (i.e., from truck tickets), and PF_{density} will be multiplied by the calculated tonnage used to pave the mainline only (i.e., traffic lane excluding shoulder) as determined in accordance with Appendix A.

The department will pay incentive for air voids under the following bid item:

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.

stp-460-040 (20191121)

32. Appendix A.

Test Methods & Sampling for HMA PWL QMP Projects.

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

- WisDOT Procedure for Nuclear Gauge/Core Correlation – Test Strip
 - WisDOT Test Method for HMA PWL QMP Density Measurements for Main Production
 - Sampling for WisDOT HMA PWL QMP
 - Calculation of PWL Mainline Tonnage Example

WisDOT Procedure for Nuclear Gauge/Core Correlation – Test Strip

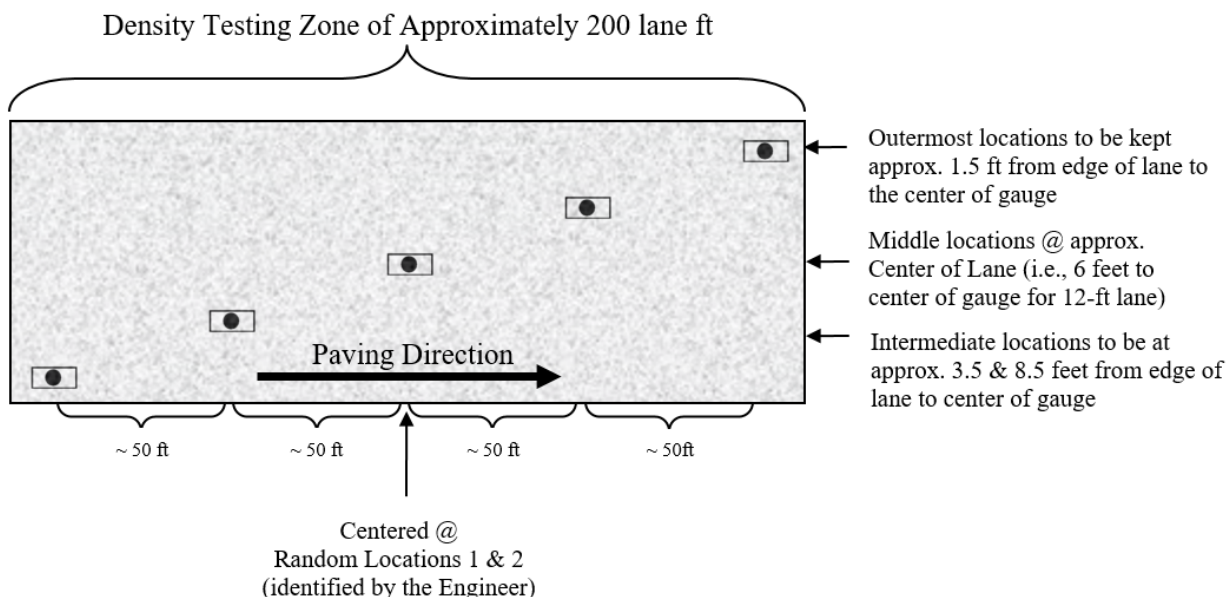


Figure 1: Nuclear/Core Correlation Location Layout

The engineer will identify two zones in which gauge/core correlation is to be performed. These two zones will be randomly selected within each *half* of the test strip length. (Note: Density zones shall not overlap and must have a minimum of 100 feet between the two zones; therefore, random numbers may be shifted (evenly) in order to meet these criteria.) Each zone shall consist of five 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*
- pavement core sample

*If the two readings exceed 1.0 pcf of one another, a third reading is conducted in the same orientation as the first reading. In this event, all three readings are averaged, the individual test reading of the three which falls farthest from the average value is discarded, and the average of the remaining two values is used to represent the location for the gauge.

The zones are supposed to be undisclosed to the contractor/roller operators. The engineer will not lay out density/core test sites until rolling is completed and the cold/finish roller is beyond the entirety of the zone. Sites are staggered across the 12-foot travel lane, and do not include shoulders. The outermost locations should be 1.5-feet from the center of the gauge to the edge of lane. [NOTE: This staggered layout is only applicable to the test strip. All mainline density locations after test strip should have a longitudinal- as well as transverse-random number to determine location as detailed in the *WisDOT Test Method for HMA PWL QMP Density Measurements for Main Production* section of this document.]

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 a minimum of two one-minute readings per nuclear site, with the gauge rotated 180 degrees between readings, as seen here:



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

Photos should be taken of each of the 10 core/gauge locations of the test strip. This should include gauge readings (pcf) and a labelled core within the gauge footprint. If a third reading is needed, all three readings should be recorded and documented. Only raw readings in pcf should be written on the pavement during the test strip, with a corresponding gauge ID/SN (generalized as QC-1 through QV-2 in the following Figure) in the following format:



Figure 3: Layout of raw gauge readings as recorded on pavement

Each core will then be taken from the center of the gauge footprint and will 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 core is damaged at the time of extracting from the pavement, a replacement core should be taken immediately adjacent to the damaged core, i.e., from the same footprint. If a core is damaged during transport, it should be recorded as damaged and excluded from the correlation. Coring after traffic is on the pavement should be avoided. 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 will 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 is responsible for any verification testing.

Each core 150 mm (6 inches) in diameter will be taken at locations as identified in Figure 1. 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 as modified by CMM 8-36.6.5.

Cores must be taken before the pavement is open to traffic. Cores are cut under department/project staff observation. Relabel each core immediately after extruding or ensure that labels applied to pavement prior to cutting remain legible. The layer interface should also be marked immediately following extrusion. Cores should be cut at this interface, using a wet saw, to allow for density measurement of only the most recently placed layer. Cores should be protected from excessive temperatures such as direct sunlight. Also, there should be department custody (both in transport and storage) for the cores until they are tested, whether that be immediately after the test strip or subsequent day if agreed upon between Department and Contractor. Use of concrete cylinder molds works well to transport cores. Cores should be placed upside down (flat surface to bottom of cylinder mold) in the molds, one core per mold, cylinder molds stored upright, and ideally transported in a cooler. Avoid any stacking of pavement cores.

Fill all core holes with non-shrink rapid-hardening grout, mortar, or concrete, or with HMA. When using grout, 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 the same day's production mix type at same day compaction temperature +/- 20 F. The core holes shall be dry and coated with tack before filling, filled with a top layer no thicker than 2.25 inches,

lower layers not to exceed 4 inches, 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.

WisDOT Test Method for HMA 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 subplot, with a subplot 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 subplot shall be determined with 3 independent random numbers. The PWL Density measurements do not include the shoulder and other appurtenances. Such areas are tested by the department and are not eligible for density incentive or disincentive. Each location will be measured with two one-minute gauge readings oriented 180 degrees from one another, in the same footprint as detailed in Figure 2 above. Each location requires a minimum of two readings per gauge. The density gauge orientation for the first test will be with the source rod towards the direction of paving. QV nuclear testing will consist of one randomly selected location per subplot. The QV is also comprised of two one-minute readings oriented 180 degrees from one another. For both QC and QV test locations, if the two readings exceed 1.0 pcf of one another, a third reading is conducted in the same orientation as the first reading. In this event, all three readings are averaged, the individual test reading of the three which falls farthest from the average value is discarded, and the average of the remaining two values is used to represent the location for the gauge. The subplot density testing layout is depicted in Figure 4, with QC test locations shown as solid lines and QV as dashed.

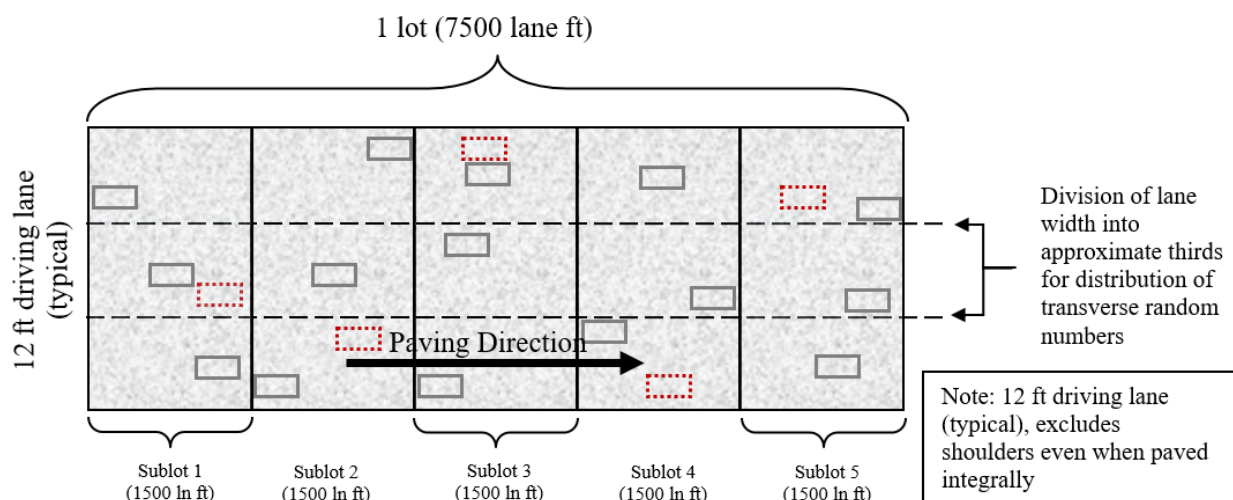


Figure 4: Locations of main lane HMA density testing (QC=solid lines, QV=dashed)

QC and QV nuclear density gauge readings will be statistically analyzed in accordance with Section 460.3.3.3 of the HMA PWL QMP SPV. (Note: For density data, if F- and t-tests compare, QC data will be used for the subsequent calculations of PWL value and pay determination. However, if an F- or t-test does not compare, the QV data will be used in subsequent calculations.)

Perform footprint testing as soon as both the QC and QV nuclear density technician are onsite and a minimum of once per day to ensure the gauges are not drifting apart during a project. Footprint testing compares the density readings of two gauges at the same testing location and can be done at any randomly selected location on the project. Each gauge conducts 2 to 3 1-minute tests according to CMM 8-15 and the final results from each gauge are compared for the location. If the difference between the QC and QV gauges exceeds 1.0 pcf (0.7 percent) investigate the cause, check gauge moisture and density standards and perform a second footprint test. If the cause of the difference between gauge readings cannot be identified, the regional HMA Coordinator will use their gauge to investigate the situation with the QC and QV personnel, with the consultation of the RSO, to determine necessary actions. Both teams are encouraged to conduct footprint testing as often as they feel necessary.

Sampling for WisDOT HMA PWL QMP Production

Sampling of HMA mix for QC, QV and Retained samples shall conform to CMM 8-36 except as modified here.

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

Sampling Hot Mix Asphalt

At the beginning of the contract, the contractor determines the anticipated tonnage to be produced. The frequency of sampling is 1 per 750 tons (subplot) for QC and Retained Samples and 1 per 3750 tons (lot or 5 sublots) for QV as defined by the HMA PWL QMP SPV. A test sample is obtained randomly from each subplot. Each random sample shall be collected at the plant according to CMM 8-36.4.1 and 8-36.4.2. The contractor must submit the random numbers for all mix sampling to the department before production begins.

Example 1

Expected production for a contract is 12,400 tons. The number of required samples is determined based on this expected production (per HMA 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
Sample X –
Sample 16 – from 11,251 to 12,000 tons
Sample 17 – from 12,001 to 12,400 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 subplot tonnage. This number will then be added to the final tonnage of the previous subplot 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).

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

If the production is less than the final randomly generated sample tonnage, then the random sample is to be collected from the remaining portion of that subplot 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 contract. Lot size will consist of 3750 tons with sublots of 750 tons. Partial lots with less than three subplot tests will be included into the previous lot, by the engineer.

It's intended that the plant operator not be advised ahead of time when samples are to be 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.

QC, QV, and retained samples shall be collected for all test strip and production mixture testing using a three-part splitting procedure according to CMM 8-36.5.2.

Calculation of PWL Mainline Tonnage Example

A mill and overlay project is being constructed with a 12-foot travel lane and an integrally paved 3-foot shoulder. The layer thickness is 2 inches for the full width of paving. Calculate the tonnage in each subplot eligible for density incentive or disincentive.

Solution:

$$\frac{1500 \text{ ft} \times 12 \text{ ft}}{9 \text{ sf/sy}} \times \frac{2 \text{ in} \times 112 \text{ lb/sy/in}}{2000 \text{ lb/ton}} = 224 \text{ tons}$$

33. Expansion Device, B-51-56.**A Description**

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

B Materials

The minimum thickness of the polychloroprene strip seal shall be 1/4 inch for non-reinforced elastomeric glands and 1/8 inch for reinforced glands. Furnish the strip seal gland in lengths suitable for a continuous one-piece installation at each individual expansion joint location. Provide preformed polychloroprene strip seals that conform to the requirements ASTM D3542, and have the following physical properties:

Property Requirements	Value	Test Method
Tensile Strength, min.	2000 psi	ASTM D412
Elongation @ Break, min	250%	ASTM D412
Hardness, Type A, Durometer	55 ± 5 pts.	ASTM D2240
Compression Set, 70 hours @212°F, max.	35%	D395 Method B Modified
Ozone Resistance, after 70 hrs. at 100°F under 20% Strain with 100 pphm ozone	No Cracks	ASTM D1149 Method A
Mass Change in Oil 3 after 70 hr. 212°F Mass Change, max.	45%	ASTM D471

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

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

Manufacturer	Model Number Strip Seal Gland Size ^[1]		
	4-Inch	5-Inch	6-Inch
D.S. Brown	SSA2-A2R-400	SSA2-A2R-XTRA	SSA2-A2R-XTRA
R.J. Watson	RJA-RJ400	RJA-RJ500	RJA-RJ600
Watson Bowman Acme	A-SE400	A-SE500	A-SE800
Commercial Fabricators	A-AS400	----	----

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

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

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

Manufacturer's certifications for adhesive and steel shall attest that the materials meet the specification requirements.

34. Cleaning Decks to Reapply Concrete Masonry Overlay, Item 509.0505.S.**A Description**

This special provision describes cleaning the entire bridge deck after the existing concrete masonry overlay is removed, prior to placing a new concrete masonry overlay.

B (Vacant)**C Construction**

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

existing epoxy-coated reinforcement remaining in place that is either uncovered by or damaged by the contractor's operations. Use engineer-approved patching or repair material compatible with the existing coating and inert in concrete.

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

D Measurement

The department will measure Cleaning Decks to Reapply Concrete Masonry Overlay by the square 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
509.0505.S	Cleaning Decks to Reapply Concrete Masonry Overlay	SY

Payment for Cleaning Decks to Reapply Concrete Masonry Overlay is full compensation for cleaning the concrete surfaces.

stp-509-065 (20171130)

35. Removing Asphaltic Concrete Deck Overlay B-51-56; B-51-57, Item 509.9010.S.

A Description

This special provision describes removing asphalt bridge deck overlays with or without an underlayment of waterproof membrane by milling the entire bridge deck as the plans show.

Conform to standard spec 204 as modified in this special provision.

B (Vacant)

C Construction

C.1 Milling

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

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

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

- Is free of sharp protrusions;
- Has uniform transverse grooves that measure up to 1/4 inch vertically and transversely; and
- If applicable, is acceptable to the manufacturer of the sheet waterproof membrane.

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

D Measurement

The department will measure Removing Asphaltic Concrete Deck Overlay in area by the square yard acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.9010.S	Removing Asphaltic Concrete Deck Overlay B-51-56	SY
509.9010.S	Removing Asphaltic Concrete Deck Overlay B-51-57	SY

Payment is full compensation for removing the asphaltic concrete with or without an underlayment of waterproof membrane; and for properly disposing of all materials.

stp-509-010 (20171130)

36. Cleaning Parapets, Item 509.9050.S.

A Description

This special provision describes cleaning the inside faces and top surface of the concrete parapet as the plans show and as the engineer directs.

B (Vacant)

C Construction

C.1 Blast Cleaning Operation

Blast clean the inside face and top surface of the concrete parapet according to SSPC SP-13 and ASTM D4259 for an abrasive blast cleaning to a surface roughness and finish as the engineer directs. Before abrasive blast cleaning operations are to begin for the entire bridge parapet, prepare a representative trial area on the parapet concrete surface, and have the method of blast cleaning approved by the engineer.

C.2 Water Cleaning Operation

After abrasive blast cleaning operations are completed, clean the prepared parapet surface with water according to ASTM D4258. Remove with this water cleaning all dust and loose material from the parapet inside face and top that is to be coated with pigmented surface sealer. Provide an adequate drying time of the parapet inside face and top surface of at least 24 hours before coating with the pigmented surface sealer. Remove all loose concrete, dirt, dust, or blast material that remains on the bridge deck, as the engineer directs.

D Measurement

The department will measure Cleaning Parapets in length by the linear foot of parapet, acceptably cleaned.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
509.9050.S	Cleaning Parapets	LF

Payment is full compensation for abrasive blast cleaning; for water cleaning; and for all additional clean up of the concrete surface and surrounding bridge deck area.

stp-509-050 (20151210)

37. Pipe Underdrain 6-Inch, Item 612.0106; Pipe Underdrain Unperforated 6-Inch, Item 612.0206.

Add the following to standard spec 612.3:

Connect underdrain to existing inlets and manholes according to standard spec 611.3.2.

Replace standard spec 612.5(2) with the following:

Payment for the Pipe Underdrain bid items is full compensation for providing the underdrain and connecting to existing inlets or manholes; and for excavating and backfilling.

38. Fence Safety, Item 616.0700.S.

A Description

This special provision describes providing plastic fence at locations the plans show.

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)

39. General Requirements for Electrical Work.

Add the following to 651.3.3 (3) of the standard specifications:

Notify the department's Electrical Field Unit at (414) 266-1170 to coordinate the inspection for state owned traffic signals. The department's Region Electrical personnel will perform the inspection for the state owned and maintained traffic signals.

Requests for signal inspection will include a completed SE Region Traffic Signal Checklist.

40. Electrical Service Meter Breaker Pedestal.

Add the following to standard specification 656.2.3:

The department will be responsible for the electric service installation request for any department maintained facility.

Electric utility company service installation and energy cost will be billed to and paid for by the maintaining authority.

Add the following to standard specification 656.3.4:

Install the cabinet base and meter breaker pedestal first, so the electric utility company can install the service lateral. Finish grade the service trench, replace topsoil that is lost or contaminated with other materials, fertilize, seed, and mulch all areas that are disturbed by the electric utility company.

Add the following to standard specification 656.5(3):

Payment for grading the service trench, replacing topsoil, fertilizer, seed, and mulch will be incidental to this work unless the bid items are in the contract and then they will be paid for at the contract price.

41. Signal Housings.

Replace 658.2(4) of the standard specifications with the following:

For pedestrian signal faces: furnish polycarbonate resin housings, doors, and visors. Use yellow, Federal Standard 595 – FS13538, housings and dull black door faces and visors. For 16-inch heads, mount a z-crate visor and gasket to the door with stainless steel tabs. Drill the housing for top and bottom pipe mounting with the ability to rotate 270 degrees on the poly mounting brackets.

42. Pedestrian Push Buttons.

Replace 658.2(5) of the standard specifications with the following:

For pedestrian push buttons: furnish freeze-proof ADA compliant pedestrian push buttons made by a department-approved manufacturer. The contractor shall place a Size 1, Type H reflective (R10-3EL, R, D) sign sticker (per state sign plate), message series – B, directly above each push button. Include a directional arrow or arrows on the sign as the plans show.

43. Signal Mounting Hardware.

Add the following to 658.2(7) of the standard specifications:

Use an approved type of pole or standard vertical mounting brackets/clamps for signal faces from an approved manufacturer. Pedestrian traffic signal heads mounted in the median shall use federal yellow aluminum side of pole 2-way upper and lower arm assemblies providing 16 ½-inch center to center spacing.

44. Traffic Signal Faces and Pedestrian Signal Face 16-Inch.

Add the following to standard specification 658.3:

⁽⁵⁾ Connect all ungrounded conductors with wire nuts in the appropriate sections of the signal heads. Connect the neutral conductors to the terminal strip. Be certain to twist wires prior to installing the wire nuts. All wire nuts must be installed facing up to prevent the entrance of water.

45. Temporary Traffic Signals for Intersections.

Replace 661.2.1(1) of the standard specifications with the following:

Furnish control cabinet and control equipment. The Department will supply, maintain, and install a signal controller, cellular modem, and ethernet switch to establish remote communication to the signal controller. The cabinet must be equipped with a 6-circuit Isotel independent of the GFI receptacles. Provide a cabinet with a Corbin #2 door lock and an access door that allows placing the controller in emergency flash. Provide keys to the access door to the engineer and law enforcement agencies as required. Also provide a manual control accessible by the police. Test traffic signal control cabinets before installation. The Department will provide the signal controller with the initial traffic signal timing, and the Department will be responsible for all subsequent signal timing changes.

Replace 661.2.1(3) of the standard specifications with the following:

⁽³⁾ Use existing underground electric service and meter breaker pedestal for the operation of the Temporary Traffic Signal. The contractor will be responsible for arranging any additional service connection to the temporary signal. The department will pay for all energy costs for the operation of the Temporary Traffic Signal.

Furnish and install a generator to operate the temporary traffic signals for the times required to switch the existing permanent traffic signal over to the temporary traffic signal and for the time required to switch the temporary traffic signal back over to the permanent traffic signal.

Contact the local electrical utility at least four days prior to making the switch from the Temporary Traffic Signal to the new Permanent Traffic Signal.

Add the following to standard specification 661.2.1:

⁽⁶⁾ Control equipment or controller equipment is defined as anything inside the control cabinet excluding the department furnished signal controller, cellular modem, and ethernet switch.

Replace 661.3.1(2) of the standard specifications with the following:

⁽²⁾ Request a signal inspection of the completed temporary traffic signal installation to the engineer at least five working days prior to the time of the requested inspection. Notify the SE Region Electrical Field Unit at (414) 266-1170 to coordinate the inspection. The SE Region electrical personnel will perform the inspection.

Replace 661.3.1.1(2) of the standard specifications with the following:

(2) Place the pole in the ground to no less than 1/5 of the pole's length as the plans show. Sawcut existing pavement and concrete curb and gutter as needed to install the wood poles and guy wire anchors. Sawcut existing pavement in accordance with the pertinent provisions in Section 690.3. Remove pavement and concrete curb and gutter as shown on the plans and if needed to install the wood poles and guy wire anchors. Remove only as much pavement as needed to install the wood poles. Remove pavement and curb and gutter in accordance to the pertinent provisions in Section 204.3, Construction. Hold any wood poles in place and/or move wood poles during construction due to conflicts with proposed work. All wood poles shall be plumb and level.

Add the following to standard specification 661.3.1.4:

(4) Arrange for every other week inspections with the engineer to check the height of the span wire above the roadways to ensure that the bottom of the traffic signal heads remain within the minimum and maximum heights allowed above the roadway. Make all height adjustments within 1-hour of an inspection indicating that adjustments are required. Notify the engineer in writing upon completion of all necessary adjustments. Maintain a written log to properly document the date of each every other week inspection, the heights above the roadway, the roadway clearance after adjustments have been made and acceptance by the engineer. Provide all documentation related to the every other week span wire height checks as well as all records related to maintenance performed on the temporary traffic signal installations to the engineer.

Replace 661.3.2.2(2) of the standard specifications with the following:

(2) Install the tether wire at 20 feet to 22 feet over the roadway

Replace 661.3.2.4(1) of the standard specifications with the following:

(1) Install the span wires free of any splices or kinks. Install the span wire mounted signal faces so the bottom is a maximum of 22 feet above the roadway (minimum height is 20 feet). Compute the vertical height of the span wire on the span pole using the following formula:

$$\text{HD (0.05) + RC+ HH = SH}$$

Replace 661.3.2.6(2) of the standard specifications with the following:

(2) Upon acceptance of new signal and completion of work, the department will switch control of the intersection over to the permanent cabinet installation. Remove signal cable and wires, wood poles, wood posts, control cabinet, control equipment, and incidental materials. Upon deactivation of the controller, call the electrical utility immediately for the temporary electrical service disconnect. The department shall remove the signal controller, cellular modem, and ethernet switch.

Replace 661.3.2.7(2) of the standard specifications with the following:

(2) Respond within one hour of notification to provide corrective action to any emergency such as but not limited to knockdowns, signal cable problems, and controller equipment failures. If equipment becomes damaged or faulty beyond repair, replace it within one working day. In order to fulfill this requirement, maintain, in stock, sufficient materials and equipment to provide repairs. Replace the traffic signal control equipment including the cabinet and cabinet accessories within 4 hours. If the outcome of the response identifies damage to the department furnished signal controller, notify the Traffic Management Center at (800) 375-7302 who will then dispatch the SE Region Electrical Field Unit.

Replace 661.5(2) of the standard specifications with the following:

(2) Payment for the Temporary Traffic Signals for Intersections bid item is full compensation for providing, operating, maintaining, and repairing the complete temporary installation; and for removal. Payment also includes the following:

1. Furnishing and installing the replacement equipment.
2. The cost of delivery and pick-up of the cabinet assemblies.

Payment is full compensation for drilling holes; furnishing and installing all materials, including bricks, and coarse aggregate; for excavation, bedding, and backfilling, including any sand or other required materials; furnishing and placing topsoil, fertilizer, seed, and mulch in disturbed areas; for properly disposing of surplus materials; for making inspections; for cleaning up and properly disposing of waste; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the work.

46. Cleaning Storm Sewer Pipes, Item SPV.0060.01.

A Description

This special provision describes cleaning existing storm sewer pipes.

B Materials (Vacant)**C Construction**

Clean the existing storm sewer pipes of dirt and vegetation. Use all suitable materials removed from the storm sewer pipes in other areas requiring fill material within the project limits as the engineer directs. Dispose of surplus and unsuitable material as specified in standard spec 205.3.12.

D Measurement

The department will measure Cleaning Storm Sewer Pipes as each individual storm sewer pipe acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.01	Cleaning Storm Sewer Pipes	EACH

Payment is full compensation for cleaning the storm sewer pipe and disposing of waste.

47. Concrete Bases Type 10 Special, Item SPV.0060.02.**A Description**

This special provision describes the installation of concrete base Type 10 Special.

B Materials

Furnish bar steel reinforcement conforming to 505.2.4.

Furnish grade A, A-FA, A-S, A-T, A-IS, A-IP, or A-IT concrete conforming to 501 as modified in 716. Provide QMP for class III ancillary concrete as specified in 716.

Furnish anchor rods, anchor rod templates, nuts, and washers conforming to 641.2.2.3

Use schedule 40 PVC electrical conduit conforming to 652.

C Construction

Construct drilled shaft concrete bases conforming to 636.3. Cure exposed portions of concrete footings as specified in 502.3.8.1. Wait until the concrete has attained 3500 psi compressive strength or 7 equivalent days as specified in 502.3.10 before erecting any portion of the structure on the footing.

Follow the guidelines outlined in Concrete Base Type 10 Special detail.

For Monotube base items: Collapsing excavations may occur during installations of the monotube drilled shafts. Do not leave excavations for monotube drilled shafts open for extended periods of time. For a copy of the Geotechnical Report, contact Justin Suydam at 262-548-8745.

D Measurement

The department will measure the Concrete Base Type 10 Special as each individual base acceptably completed.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0060.01	Concrete Bases Type 10 Special	EACH

Payment is full compensation for providing concrete bases; for embedded conduit and electrical components; for anchor rods, anchor rod templates, nuts, and washers; for bar steel reinforcement, if required; for excavating, backfilling, and disposing of surplus materials; and for furnishing all labor, tools, equipment, and incidentals necessary to complete the contract work.

48. Adjusting Pipe Underdrain AEW, Item SPV.0060.03.

A Description

This special provision describes adjusting Pipe Underdrain AEW to match graded slopes.

B Materials

Furnish materials according to standard spec 612.2.

C Construction

If the plans show, the contract provides, or the engineer directs, adjust existing Pipe Underdrain AEW to the required station, offset, and elevation to match the graded slopes. Use construction methods conforming to standard spec 612.3.

D Measurement

The department will measure Adjusting Pipe Underdrain AEW by the each 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.??	Adjusting Pipe Underdrain AEW	EACH

Payment is full compensation for providing required materials; for necessary excavation, backfilling, and for cleaning out and restoring the site; and for removing, reinstalling and adjusting the AEW; except the department will pay for Removing Pipe Underdrain separately.

49. Field Office Type T, Item SPV.0060.04.

A Description

This special provision describes furnishing, placing or erecting, equipping, and maintaining a field office as required in the contract at engineer-approved locations conforming to standard spec 642 and as follows.

B Materials

Provide Field Office Type T conforming to standard spec 642.2.1.

Add the following to standard spec 642.2.1:

Provide a facility with a minimum exterior dimensions of 12 feet wide and 60 feet long, excluding the hitch.

Equip facility as specified in standard spec 642.2.2.1 except delete paragraph (1) and (4) and add the following:

1. Provide each field office with a minimum of three rooms each with a minimum of two exterior doors and air conditioning.
2. 5 suitable office desks with drawers and locks.
3. 5 ergonomically correct office chairs in working condition with at a minimum: 5-legged base with casters, seat adjustable from 15 to 22 inches from the floor with a seamless waterfall, rounded, front edge, and high backrest with no arms or adjustable arms.
4. 4 six foot folding tables.
5. 1 ten foot folding table.
6. 5 two-drawer file cabinets.
7. 3 four-shelf bookcases.
8. 20 folding chairs.

C Construction

Conform to standard spec 642.3.

D Measurement

The department will measure Field Office Type T as each field office 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
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Payment is full compensation for providing, equipping, securing, and maintaining the facility; for telecommunications equipment, installation, and service fees; and for providing bottled water, utilities, fuel, ventilation, and toilet facilities as required, either independently or jointly with the field laboratory, for the time specified in standard spec 642.3.

The department will pay for the cost of telecommunications usage fees incurred by department staff.

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- 50. Install Poles Type 9, Item SPV.0060.05; Install Poles Type 10 Special, Item SPV.0060.06; Install Poles Over Height Type 10 Special, Item SPV.0060.07; Install Poles Type 13, Item SPV.0060.08; Install Poles Over Height Type 13, Item SPV.0060.09; Install Monotube Arms 30-FT, Item SPV.0060.10; Install Monotube Arms 35-FT, Item SPV.0060.11; Install Monotube Arms 40-FT, Item SPV.0060.12; Install Monotube Arms 45-FT, Item SPV.0060.13; Install Monotube Arms 50-FT, Item SPV.0060.14; Install Luminaire Arms Steel 15-FT, Item SPV.0060.15.**

A Description

This special provision describes installing state furnished materials conforming to standard spec 657, details shown in the plans, and as modified in this special provision.

B Materials

The department will furnish the monotube poles, monotube arms and luminaire arms. Provide any other necessary material required to complete the installation as the plans show.

C Construction

Install equipment in accordance to standard spec 657.3.

D Measurement

The department will measure Install [Equipment] at the contract unit price 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.0060.02	Install Poles Type 9	Each
SPV.0060.03	Install Poles Type 10 Special	Each
SPV.0060.04	Install Poles Over Height Type 10 Special	Each
SPV.0060.05	Install Poles Type 13	Each
SPV.0060.06	Install Poles Over Height Type 13	Each
SPV.0060.07	Install Monotube Arms 30-FT	Each
SPV.0060.08	Install Monotube Arms 35-FT	Each
SPV.0060.09	Install Monotube Arms 40-FT	Each
SPV.0060.10	Install Monotube Arms 45-FT	Each
SPV.0060.11	Install Monotube Arms 50-FT	Each
SPV.0060.12	Install Luminaire Arms Steel 15-FT	Each

Payment for the Install Poles bid items is full compensation for installing department furnished poles and for providing grounding lugs, fittings, shims, hardware, and other required components the department does not furnish.

Payment for the Install Monotube Arms and Install Luminaire Arms bid items is full compensation for installing department furnished arms; for providing high-strength bolt/nut/washer assemblies and DTIs including those required for testing; and for providing related mounting hardware, leveling shims, and other required components the department does not furnish.

51. Ditching and Shaping, Item SPV.0090.01.

A Description

Excavate, fill, grade, and shape as necessary to construct drainage ditches with a minimum slope of 0.005 foot per foot, at the locations shown on the plans, in accordance to the pertinent requirements of the standard spec, and as hereinafter provided.

B (Vacant)

C Construction

Perform all excavating, filling, and grading necessary to construct drainage ditches from the roadway shoulder. Wheeled or tracked equipment is not allowed within the wetland areas.

Properly dispose of all surplus and unsuitable material in accordance to subsection 205.3.12 of the standard spec.

D Measurement

The department will measure Ditching and Shaping in length by feet 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.0090.01	Ditching and Shaping	LF

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

The department will pay for salvaged topsoil, erosion mat, fertilizer, seeding, and temporary seeding separately under standard spec 625, 628, 629, and 630.

52. Transport and Install State Furnished Traffic Signal Cabinet STH 36 & Main Street, Item SPV.0105.01; STH 36 & STH 164/CTH K, Item SPV.0105.02.

A Description

This special provision describes the transporting and installing of department furnished materials for traffic signals.

B Materials

Use materials furnished by the department including: the traffic signal controller and the traffic signal cabinet.

Pick up the department furnished materials at the department's Electrical Shop located at 935 South 60th Street, West Allis. Notify the department's Electrical Field Unit at (414) 266-1170 and make arrangements for picking up the department furnished materials five (5) working days prior to picking the materials up.

Provide all other needed materials in conformance with sections 651.2, 652.2, 653.2, 654.2, 655.2, 656.2, 657.2, 658.2 and 659.2 of the standard specifications.

C Construction

Perform work in accordance with sections 651.3, 652.3, 653.3, 654.3, 655.3, 656.3, 657.3, 658.3 and 659.3 of the standard specifications except as specified below.

Request a signal inspection of the completed signal installation to the project engineer at least five (5) working days prior to the time of the requested inspection. The department's Region Electrical personnel will perform the inspection.

D Measurement

The department will measure Transport and Install State Furnished Traffic Signal Cabinet [Location] as a single lump sum unit of work in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.01	Transport and Install State Furnished Traffic Signal Cabinet STH 36 & Main Street	LS
SPV.0105.02	Transport and Install State Furnished Traffic Signal Cabinet STH 36 & STH 164/CTH K	LS

Payment is full compensation for transporting and installing the traffic signal controller and the traffic signal cabinet; for furnishing and installing all other items necessary (such as wire nuts, splice kits and/or connectors, tape, insulating varnish, ground lug fasteners, etc.) to make the proposed system complete from the source of supply to the most remote unit and for clean-up and waste disposal.

53. Transport & Install State Furnished EVP Detector Heads, STH 36 & Main Street, Item SPV.0105.03; STH 36 & STH 164/CTH K, Item SPV.0105.04.

A Description

This special provision describes the transporting and installing of department furnished Emergency Vehicle Preemption (EVP) Detector Heads and mounting brackets.

B Materials

Pick up the department furnished materials at the department's Electrical Shop located at 935 South 60th Street, West Allis. Notify the department's Electrical Field Unit at (414) 266-1170 and make arrangements for picking up the department furnished materials five working days prior to picking the materials up.

C Construction

Install the EVP detector heads and mounting brackets as shown on the plans. The department will determine the exact location to ensure that the installation does not create a sight obstruction. Mount the EVP detector heads and wire them per manufacturer instructions. For a cabinet that is not operating the signal, the contractor will terminate the ends and install the discriminators and card rack in the cabinet. If the cabinet is operating the signal, the cabinet wiring will be done by the department

Notify the department's Electrical shop at (414) 266-1170 upon completion of the installation of the Emergency Vehicle Preemption (EVP) Detector Heads and mounting brackets.

D Measurement

The department will measure Transport and Install State Furnished Emergency Vehicle Preemption (EVP) Detector Heads as a single lump sum unit of work in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.03	Transport & Install State Furnished EVP Detector Heads STH 36 & Main Street	LS
SPV.0105.04	Transport & Install State Furnished EVP Detector Heads STH 36 & STH 164/CTH K	LS

Payment is full compensation for transporting and installing of department furnished Emergency Vehicle Preemption (EVP) Detector Heads and mounting brackets.

54. Transporting Traffic Signal and Intersection Lighting Materials STH 36 & Main Street, Item SPV.0105.05; STH 36 & STH 164/CTH K, Item SPV.0105.06.

A Description

This special provision describes the transporting of department furnished materials for traffic signals and intersection lighting.

B Materials

Transport materials furnished by the department including: Monotube arms/poles and luminaire arms (to be installed on monotube assemblies).

Pick up the department furnished materials at the department's Electrical Shop located at 935 South 60th Street, West Allis. Notify the department's Electrical Field Unit at (414) 266-1170 and make arrangements for picking up the department furnished materials five (5) working days prior to picking the materials up.

Provide all other needed materials in conformance with sections 651.2, 652.2, 653.2, 654.2, 655.2, 656.2, 657.2, 658.2 and 659.2 of the standard specifications.

C Construction

Perform work in accordance with sections 651.3, 652.3, 653.3, 654.3, 655.3, 656.3, 657.3, 658.3 and 659.3 of the standard specifications except as specified below.

D Measurement

The department will measure Transporting Traffic Signal and Intersection Lighting Materials [Location] as a single lump sum unit of work in place and accepted.

E Payment

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

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0105.05	Transporting Traffic Signal and Lighting Materials STH 36 & Main Street	LS
SPV.0105.06	Transporting Traffic Signal and Intersection Lighting Materials STH 36 & STH 164/CTH K	LS

Payment is full compensation for transporting the monotube poles/arms and luminaire arms (to be installed on monotubes). Installation of these materials is included under a separate pay item.

55. Fiber Wrap Reinforcing Structural, Item SPV.0165.01.

A Description

This special provision describes providing structural strengthening using externally bonded, high-strength, fiber reinforced polymer (FRP) composite/epoxy resin systems field-applied per the details shown on the plans.

B Materials and Design

B.1 Materials

Furnish a glass or carbon composite fabric that is a continuous unidirectional filament woven fabric with a primary fiber of electrical (E) glass or carbon, respectively.

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.

The protective top coating shall be concrete gray in color and match the color of the adjacent unwrapped concrete. Protective top coating shall be vapor permeable and UV resistant.

The use of more than one FRP system in a project is not permitted. All components, including primer, putty, filler, protective coating, and other materials, shall be compatible with the FRP system.

Store products in a protected area at a temperature between 40 deg. F and 100°F with no moisture contact, no UV exposure, protected from dirt, chemicals, and physical damage, and according to the manufacture's requirements. Do not use components exceeding their shelf lives.

Provide the following to the engineer:

- The manufacturer's data sheet indicating physical, mechanical and chemical characteristics of all materials used in the FRP system including the primer, putty, resin, saturant, fibers, and top coating.
- The manufacturer's Material Safety Data Sheets (MSDS) for all materials used.
- The manufacturer's instructions for installation and repair, including information on lap details if required.
- The manufacturer's storage and handling requirements of all materials.

Supplied composite fabric and epoxy resin products must have a minimum of ten installations. Furnish proof of successful installations including date of construction and owner references. Furnish certified test reports including 1000 hour tests for 140° Fahrenheit, water, and salt water.

B.2 Design

It is the responsibility of the contractor to submit, to the Department, a design and supporting documentation as required by this special provision that is compliant with the design specifications. The FRP strengthening shall provide additional structural strength as shown on the structural plans. A copy of the below listed information shall be submitted to the engineer for review and acceptance no later than 60 days from the date of notification to proceed with the project.

The design/shop plans shall be prepared on reproducible sheets, 11 inch x 17 inch size, including borders. Each sheet shall have a title block including the project identification number and structure number. Drawings shall specifically identify number of layers, fiber orientation direction, dimensions, and any required laps, including their location and lengths. If anchors are required, drawings shall specifically identify type and properties of anchors, location of anchors, embedment depth, and splay width and length. Design calculations and notes shall be on 8-1/2" x 11" sheets and shall contain the project identification number, date of preparation, initials of the designer and the checker, and a page number at the top of the page. All plans and calculations shall be signed, sealed and dated by a professional engineer licensed in the State of Wisconsin.

The design of the FRP repair shall conform to the latest edition ACI 440.2R *Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures* including all updates and errata, the standard specifications, this special provision, and standard engineering design procedures as determined by the department, with the following exceptions to ACI 440.2R:

- The strengthening limit check in equation 9-1 can be omitted.
- The fire endurance check in equation 9-2 can be omitted.
- The value of d (distance from the extreme compression fiber to the centroid of the tension reinforcement) need not be taken less than $0.8 \cdot h$ as specified in ACI 318-14 Section 22.5.2.1, where h is the height of the member. The effective depth of the FRP shear reinforcement d_{fv} can also be calculated using this limited d .

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.

If more than three layers of FRP are required for the design, contact BOS to discuss before proceeding. It is desirable that no more than three layers of FRP be used.

For shear applications, U-wraps or complete (full) wraps must be used; side bonding is not allowed. Provide at least a 2 inch gap between FRP strips.

C Construction

C.1 Certified Applicators

Installers shall 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 shall 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.2 Surface Preparation

Remove spalled and loose concrete. Treat any areas of active corrosion of the reinforcement and patch the concrete surface so as to restore it to its original dimensions. When patching the concrete substrate, remove defective concrete down to sound concrete; the extents of the area to be removed and patched shall be 1/2-inch beyond the boundary of the distress on all sides. If there is a loss of bond between the reinforcing steel and the concrete, remove the surrounding concrete to a depth equal to the greater of 3/4-inch or the maximum aggregate size plus 1/4-inch. Allow patches to cure a minimum of 10 days before FRP application.

Epoxy inject cracks in the concrete larger than 0.25 mm in width at least 24 hours prior to FRP installation. Seal cracks smaller than 0.25mm in width in aggressive environments at the direction of the engineer.

Grind uneven surfaces or protrusions until smooth. Any corners or edges shall be rounded over to a minimum radius of 1/2-inch; this requirement also applies to beveled edges which must be chamfered to eliminate sharp spots.

The concrete surface shall be clean, and free of any material that could interfere with bonding, such as dirt, grease, wax, etc. The surface must also be free of moisture with a maximum moisture content of 4%. Immediately prior to bonding all contact surfaces shall receive a final cleaning by hand or oil-free compressed air to remove any residual dust, powder residue or laitance.

On each member to receive FRP, prepare an adjacent area just beyond the limits of the repair using the same surface preparation as the repair area for testing. Test the tensile bond strength of the prepared concrete substrate per ACI 503R at a minimum of 1 location per member. Location(s) will be determined by the engineer. A passing test will have a tensile strength greater than 250 psi, or a failure into the substrate where more than 50% of the core area has failed deeper than 1/4-inch. Patch the hole(s) created by the pull off tests. All tests shall be conducted in the presence of the engineer.

C.3 Installation

Place FRP only under the following conditions or per manufacturer's recommendation:

- Ambient temperature and the temperature of the epoxy resin components shall be between 55 and 90 degrees F during the entire application process.
- Relative humidity less than 85 percent.
- Surface temperature more than 5 degrees F above the dew point.
- Moisture level of all contact surfaces, including patched areas, less than 4% unless the resin has been specifically formulated for wet applications.

Unless directed otherwise by the engineer, install the FRP after all dead loads have been applied to the bridge. Do not install FRP while the component being repaired is subjected to live loads.

Apply, per manufacturer's instructions, a system-compatible putty as required to fill uneven surfaces or recesses. Depending on the manufacturer, the putty may be applied before or after the primer.

Apply the primer coat uniformly to the substrate using a roller or trowel. Primed and puttied surface shall be protected from all contaminants (i.e., dust, moisture, etc.) prior to the application of the fiber wrap.

Mix the components of the epoxy resin with a mechanical mixer and apply the epoxy resin uniformly to the fiber at a rate that ensures complete saturation of the fabric. Apply saturating resin uniformly to the prepared substrate. Begin resin application within one hour after the batch has been mixed. Use all resin within the pot life as specified by the manufacturer.

Apply the fabric as shown on the shop drawings. Fiber orientation shall not deviate from the orientation shown on the shop drawings. Handle fiber wraps in a manner to maintain fiber straightness and prevent fiber damage. Any kinks, folds, or severe waviness will not be accepted. Use rollers or hand pressure to remove any air trapped between the fabric and the concrete, or between fabric plies. Rolling must be parallel to the direction of the fibers to avoid fiber misalignment or damage. Do not use metal serrated rollers because they can damage the FRP fabric.

If anchors are required, install per manufacturer's instructions. When drilling in anchors, avoid prestressing strands. If needed, request girder shop drawings from the Bureau of Structures to better

locate strands. If draped strands are present, strands can be located fairly high in the web near girder ends.

Stagger the joints between plies so that a continuous sheet in one ply will span the joints of the sheets in the ply below. If multiple plies cannot all be placed in one day, defer to the manufacturer to determine the extent of the cure and surface preparation required for the previously placed layers required before proceeding. Laps shall be as shown on the design/shop drawings, with a minimum edge lap of 6 inches and a minimum end lap of 12 inches. Laps should be staggered between plies.

Detail fabric edges, including terminations points, with thickened epoxy or putty per manufacturer's instructions.

Cure per manufacturer's instructions. The FRP system shall be protected from weather, large temperature variations, moisture, sand, dust, and other foreign particles during curing. Do not allow the system to be subjected to live loads until it is completely cured. Defer to manufacturer's instructions regarding the degree of cure which must be achieved before additional dead loads can be applied to the wrapped member.

An additional protective coating is required to protect the fibers from the elements, specifically UV radiation, and to give the final aesthetic effect. Install protective coating per manufacturer's instructions after the field inspection described in section C.4.3 has been conducted. To prepare the FRP surface to receive the coating, clean and roughen the exterior surfaces of the composite wrap using a light abrasive after the final epoxy coat is completely polymerized. The abrasive shall be of the appropriate hardness to roughen the surface without damaging the fibers. Remove all dust, dirt, and other bond inhibiting materials and dry all cleaned and roughened surfaces.

For each member to receive FRP, install FRP using the same methods described above on the area adjacent to the repair area that received surface preparation and pull off testing in Section C.2. This area will be used for acceptance testing.

C.4 Testing and Acceptance

C.4.1 Records and Sampling

The contractor shall record the following information for each installation:

- Date, time, and specific location of installation.
- Surface preparation methods.
- Widths and lengths of cracks not injected with epoxy.
- Material information including product used, fiber and resin lot/batch numbers, mixture ratios, mixing times, etc.
- Ambient temperature, relative humidity, and general weather observations at the beginning and end of each installation.
- Concrete surface temperature, concrete moisture content, and surface cleanliness.
- Number of FRP layers used and fiber orientation of each layer.
- Square footage of fabric and volume of epoxy used each day.

Prepare a minimum of two sample batches daily for each layup configuration, each consisting of two 12 inch x 12 inch samples of cured composite (for a total of at least four samples daily per layup configuration). Collect materials for the sample batches at an appropriate 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 layers of saturated fabric to match layup configuration 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.4.2 Laboratory Testing and Acceptance

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 AC178, *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.

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 manufacturer's submitted design values are considered a failure and require remediation subject to the approval of the engineer.

Testing must be conducted prior to the subjecting the FRP to live traffic loads. In cases of staged construction, this may necessitate more than one round of testing.

C.4.3 Field Testing

Between 24 and 48 hours after FRP placement, conduct a minimum of one tensile bond tests per member as specified in ACI 503R in the presence of the engineer and at location(s) specified by the engineer. Drill cores through the FRP and into the existing concrete a minimum of 1/4-inch but no more than 1/2-inch. A passing test will have a tensile strength greater than 250 psi, or a failure into the substrate where more than 50% of the core area has failed deeper than 1/4-inch. Immediately patch test core holes by blowing out with oil- and moisture-free compressed air and filling epoxy per manufacturer's instructions.

In the presence of the engineer, the contractor will conduct a visual and acoustic sounding inspection to test for defects such as voids, delaminations, external cracks, chips, cuts, loose fibers, external abrasions, blemishes, foreign inclusions, depressible raised areas, or fabric wrinkles. Conduct this inspection after the FRP is cured but before the protective coating is applied.

In the presences of the engineer, the contractor will conduct a visual inspection of the protective coating for damage including but not limited to cracking, crazing, blisters, peeling, or external abrasions. Conduct this inspection after the protective coating is cured.

If any defects are found, they must be repaired as detailed in C.4.4 or removed and replaced.

C.4.4 Required Remediation

Inject or back fill any small voids or bubbles (1-1/2" diameter or less) with epoxy. If five or more such voids are found in an area smaller than 10 square feet, submit a proposed remediation procedure subject to the acceptance of the engineer.

Voids or delaminated areas greater than 3 inches 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 possesses 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.

Fiber misalignment exceeding 5 degrees (approximately 1 inch of deviation over 1 ft length) is considered unacceptable. Proposed remediation is subject to the acceptance of the engineer.

D Measurement

The department will measure Fiber Wrap Reinforcing Structural 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.0165.01	Fiber Wrap Reinforcing Structural	SF

Payment for Fiber Wrap Reinforcing Structural is full compensation for supplying a design and shop drawings; 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

protective coating system; sampling, sample preparation, and field and laboratory testing; and required remediation. No extra measurement or payment will be made for overlap areas.